

Do we have a collective paradigm? Else, is it fragmented?

<http://www.quora.com/Quantum-Mechanics/Do-we-have-a-collective-paradigm-Else-is-it-fragmented/answer/John-Ringland>

<http://anandavala.info/article/Do-we-have-a-collective-paradigm-Else-is-it-fragmented.pdf>

I answer a definite **yes**, we do have a collective paradigm, which the vast majority of people within and outside of science subscribe to. They are not doing so consciously, it is experienced as "*simply the way things are*".

I will first illustrate the existence of the paradigm via quotes then briefly describe the structure of the paradigm, followed by a brief examination of its core beliefs and limitations, as well as the reasons for these. Once this is understood it then becomes possible to comprehend a glimpse of the emerging paradigm.

Revealing the collective paradigm

The paradigm is so deeply engrained and unconscious that it is essentially invisible to those who subscribe to it. Anything that cannot be understood within that paradigm is assumed to be fundamentally incomprehensible. Any problems that lie outside of its scope are avoided. The few who do not subscribe to it are assumed to be stupid, charlatans or crazy.

So how can it be revealed?

"The essence of science: ask an impertinent question, and you are on the way to a pertinent answer." (Jacob Bronowski)

Core features of that paradigm have been brought into question, most notably by quantum mechanics. Hence that 'invisible' paradigm is beginning to come into view and people are beginning to question its validity.

"There exists a cognitive repression of the interpretation problem by the majority of physicists. For that majority the questions concerning the meaning of quantum mechanics are answered once and for all by the Copenhagen interpretation, and all further inquiry is rejected as a sign that the inquirer does not understand the topic. Further questions are called "only philosophical" and thus not befitting a physicist. But if one inquires in depth what the Copenhagen interpretation says one gets a variety of different answers. According to Fox-Keller this, too, is a sign for evasion, whereby what is evaded is the necessity of a new cognitive structure which differs radically from the existing one. Fox-Keller calls the old structure classical objectivism." (Anton Zeilinger, On the Interpretation and Philosophical Foundation of Quantum Mechanics)

"discussions about the meaning of quantum mechanics remain stymied as a result of the failure of physicists to formulate a cognitive paradigm adequate to their theory... implicitly, they retain one or the other of the two basic tenets of classical physics, the objectivity or the knowability of nature." (Evelyn Fox Keller, Cognitive repression in contemporary physics)

How does one recognise when one is caught within a self-reinforcing delusion?

"The most exciting phrase to hear in science, the one that heralds the most discoveries, is not 'Eureka!' (I found it!) but 'That's funny...'" (Isaac Asimov)

"The paradox is only a conflict between reality and your feeling what reality ought to be." (Richard Feynman)

For an example of the paradoxical nature of quantum systems see [In simple terms, what does the Stern-Gerlach experiment imply about the nature of quantum systems and observable phenomena?](#)

A good way to reveal an all-pervasive, unconscious collective paradigm is to observe the cognitive dissonance that arises when that paradigm clashes with the paradigm that is emerging from quantum mechanics.

Here are some quotes that illustrate the prevailing cognitive dissonance:

"He has a grad student who is thinking about the meaning of quantum mechanics – he's doomed." (John von Neumann)

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

"Einstein said that if quantum mechanics is right, then the world is crazy. Well, Einstein was right. The world is crazy." (Daniel Greenberger)

"Everything we call real is made of things that cannot be regarded as real." (Niels Bohr)

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

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

"It is safe to say that nobody understands quantum mechanics." (Richard Feynman)

"Quantum mechanics makes absolutely no sense." (Roger Penrose)

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

"Do not keep saying to yourself, if you can possibly avoid it, 'but how can it be like that?' because you will get 'down the drain,' into a blind alley from which nobody has yet escaped. Nobody knows how it can be like that." (Richard Feynman)

"Of all the theories proposed in the 20th century, the silliest is quantum theory... The only thing quantum theory has going for it is that it is unquestionably correct." (Michio Kaku)

"Whoever endows the wave function with more meaning than is needed for computing observable phenomena is responsible for the consequences." (Nico van Kampen)

"Electrons seem to have modes of being, or modes of moving, available to them which are quite unlike what we know how to think about." (David Z. Albert)

"Quantum mechanics is magic." (Daniel Greenberger)

"If you think you understand quantum mechanics, you don't understand quantum mechanics." (Richard Feynman)

"Had I known that we were not going to get rid of this damned quantum jumping, I never would have involved myself in this business!" (Erwin Schrödinger)

"[Quantum mechanics is] the intellectual scandal of the century." Rene Thom

"After more than 50 years (now over 80 years) of unquestionable success as a theory, questions about the interpretation of quantum mechanics continue to plague both physicists and philosophers." Evelyn Fox Keller

"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)

Structure of the collective paradigm

It originates from [Naive Realism](#), see [What is naive realism?](#) This is its unconscious roots that permeate almost the entire human population.

It manifests within science as classical objectivism and empiricism, see: [Can it ever be said that Scientific realism takes off from the springboard of commonsense or naive realism?](#)

Core beliefs

The affect of naive realism means that the resulting paradigm inevitably leads to an unconscious, unshakeable, unquestionable belief in materialism and an objective physical universe, as well as a strong aversion to subjective experience and anything related to it.

“some perceptions are interrelated or associated to form other perceptions which are then projected onto a world putatively outside the mind.” (David Hume)

The reason why these beliefs arise is because naive realism leads us to unconsciously ignore the role of experience in the apprehension of that which is experienced and to assume objective existence for the objects that are portrayed by experience. This is why empiricism was such an obvious and compelling methodology for science to initially adopt. It also explains why the role of the objective observer was the obvious role for naive realist scientists to adopt.

In the early formulation of the scientific method people were assumed to be capable of studying nature "*with minds washed clean from opinions*" (Francis Bacon) thus able to apprehend the natural world as it is. Thus the influence of naive realism was not recognised and it became enshrined in the scientific method in the form of empiricism.

“Empiricists claim that sense experience is the ultimate source of all our concepts and knowledge” ([Rationalism vs. Empiricism](#))

Thus the scientific discourse became entangled within a closed loop of self-reinforcing hidden assumptions, which necessitated the postulation of more and more beliefs to explain the distorted view of reality that was being examined.

To explain the many objects that we apprehend we long ago postulated the existence of 'matter', which serves as the substance in which the observable properties inhere. Not realising that those observations were actually arising in our experiences and not inhering in external objects.

"materialism is the philosophy of the subject who forgets to take account of himself."
(Schopenhauer)

This further required us to postulate an objective 'fabric' of space and an objective 'arrow' of time.

And much more, analogous to the proliferation of epicycles in the Ptolemaic system of astronomy. These assumptions underlie all of classical physics and they served us well right up until the advent of relativity theory and quantum mechanics which revealed how inadequate these ideas really are. In the face of energy / mass conversion, relativistic inertial frames, quantum non-locality, etc the ideas of objective matter, space and time break down.

"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... 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, *The Fundamental Principles of Quantum Mechanics*)

Core limitation

The whole idea of an objective external world is undermined by modern science and the world-view that modern science forces upon us seems paradoxical because the belief system upon which classical science was formed had, from the outset, consistently ignored the role of subjective experience in the apprehension of phenomena.

"Useful as it is under everyday circumstances to say that the world exists 'out there' independent of us, that view can no longer be upheld." (John Wheeler)

Overlooking the role of subjective experience in the apprehension of phenomena leads directly to the core limitation of the current paradigm. That is its complete inability to coherently approach the topic of consciousness, which is thus known as the [Hard Problem of Consciousness](#).

Science has "looked through" consciousness whilst pretending to be objectively apprehending an external world. It has studied those allegedly external objective phenomena and then much later it attempts to explain consciousness in terms of those phenomena. That is why consciousness is such a mystery to science.

This is significantly compounded by the entrenched belief in inanimate matter that engages in inanimate mechanical processes that are mysteriously guided by universal laws. This belief arose from the focus on the outer appearances of things whilst overlooking the inner experiences of ourselves and totally denying that other systems could also have inner experiences of some kind appropriate to their nature. Animals were once believed to be automatons and behavioural psychology in the 20th century even garnered significant support for its claims that humans also had no inner experiences. That is the extreme of the objectivist approach, to utterly deny the existence of subjectivity.

"The old foundations of scientific thought are becoming unintelligible. Time, space, matter, material, ether, electricity, mechanism, organism, configuration, structure, pattern, function, all require reinterpretation. What is the sense of talking about a mechanical explanation when you do not know what you mean by mechanics? The truth is that science started its modern career by taking over ideas derived from the weakest side of the philosophies of Aristotle's successors. In some respects it was a

happy choice. It enabled the knowledge of the seventeenth century to be formulated so far as physics and chemistry were concerned, with a completeness which lasted to the present time. But the progress of biology and psychology has probably been checked by the uncritical assumption of half-truths. If science is not to degenerate into a medley of ad hoc hypotheses, it must become philosophical and must enter upon a thorough criticism of its own foundations.” (Alfred North Whitehead)

However quantum mechanics, due to the fact that it is a rationalist science and not an empiricist science could overcome the limitations of naive realism. See [Can it ever be said that Scientific realism takes off from the springboard of commonsense or naive realism?](#)

Thus in quantum mechanics the role of the observer is central.

"Wheeler labels the individual quantum phenomenon an elementary act of creation. We as observers play a significant role in this process... We have now gradually brought the role of the observer into the center of our discussion, a role which is expressed by Clauser in his joint analysis with Shimony of the present EPR-Bell situation as follows: "perhaps an unheard tree falling in the forest makes no sound after all"". (Anton Zeilinger, On the Interpretation and Philosophical Foundation of Quantum Mechanics)

"I had come to suspect, and now felt compelled to acknowledge, that science and the physical world were products of human imagining; that we were not the cool observers of that world, but its passionate creators. We were all poets and the world was our metaphor." (Roger S Jones)

"Quantum theory essentially erased the difference between matter and fields, making reality a unit that exhibits the properties of both. This single, unitary stuff gave rise to the fantastically successful algorithm now used by physicists in all calculations involving quantum theory. But nobody knows what this unitary stuff really is. Most quantum physicists, of course, stop short of calling this unitary substance consciousness." (Norman Friedman)

These tensions between what science is saying about reality and the current paradigm, with its beliefs about how reality ought to be result in avoidance and cognitive repression: see [Despite having evidence that contradicts someone's belief, why can't they come to believe something new?](#)

This inevitably produces a degree of dogmatism in contemporary science: see [Has science become too dogmatic?](#)

Glimpse of the emerging paradigm

For a discussion on the paradigm emerging from quantum mechanics and how to understand it see [Will we ever be able to truly understand Quantum Mechanics?](#)

Instead of recoiling from the apparent paradoxes and simply stating that quantum mechanics makes no sense it is possible to shift to a different paradigm from which these paradoxes can be seen to be

sensible and necessary features of reality. For example, see [Is light a wave or a particle?](#)

Once the emerging paradigm is understood it becomes possible to begin to address other outstanding issues, such as the question of what is consciousness. For some insights into this see [What is consciousness?](#)

It also becomes possible to consider the broader issue of [The Big Philosophical Questions: Now that naive realism has been disproven by quantum mechanics, how will this impact our collective paradigm?](#)