

Morten Tolboll

Observer (Quantum Mechanics) - The Matrix Dictionary

The claim that *quantum mechanics proves that consciousness creates reality* is one of the biggest lies in the last century, and it just grows bigger and bigger. It's called Quantum Mysticism (see the entry [Quantum Mysticism](#)).

How is that?

Susan Jacoby's new book *The Age of American Unreason* might be viewed as a kind of sequel to Richard Hofstadter's 1963 classic, "Anti-Intellectualism in American Life." A cultural history of the last forty years, *The Age of American Unreason* focuses on the convergence of social forces—usually treated as separate entities—that has created a perfect storm of anti-rationalism. These include the upsurge of religious fundamentalism, with more political power today than ever before; the failure of public education to create an informed citizenry; and the triumph of video over print culture. Sparing neither the right nor the left, Jacoby asserts that Americans today have embraced a universe of "junk thought" that makes almost no effort to separate fact from opinion.

You can see the popular reception of Quantum Mysticism in the USA as being symptomatic of many Americans' historical inability (as Jacoby puts it) "to distinguish between real scientists and those who peddled theories in the guise of science". Many of the so-called "Quantum Gurus" would never have had a chance of creating themselves in Denmark. But the American self-made Quantum Gurus is received well in Denmark, precisely because it seems like they are approved in America. But America is also known for junk education, pseudo-scholarship and diploma mills which neither would have had a chance in Denmark (see the entries on [Pseudo-scholarship](#) and [Diploma Mills](#)).

But since America apparently has approved the lies of Quantum Mysticism, the lie is just growing bigger and bigger. In USA you can directly get an education from a University where the educations are building on Quantum Mysticism; the so-called [Quantum University](#)

The website says:

Quantum University is the world's largest institution of higher learning to provide online degrees and certification programs in holistic, alternative, natural, and integrative medicine based on the science of quantum physics.

Students can earn bachelor's, master's, doctorate and PhD degrees leading to professional board certifications. We are proud to be at the forefront of online learning technologies, including iPad Education, an innovative learning management platform, inspiring online video courses, and engaging teaching materials.

World-class educators and leaders have come together to create a new innovative curriculum and model of education that incorporates the key concepts of quantum physics. This scientific language explains many alternative healing modalities and fields of ancient and modern medical studies.

The presence of these kinds of Diploma Mills are enormous, and so is the amount of people on the internet presenting themselves with such kinds of degrees.

What is the key in the lies?

In quantum mechanics, "observation" is synonymous with quantum measurement and "observer" with a measurement apparatus and "observable" with what can be measured. Thus the quantum mechanical observer does not have to necessarily present or solve any problems over and above the issue of measurement in quantum mechanics.

The framework of quantum mechanics requires a careful definition of measurement. The issue of measurement lies at the heart of the problem of the interpretation of quantum mechanics, for which there is currently no consensus. Though according to my professor David Favrholt, Niels Bohr is the only person in the world who has created a profound philosophy about this – but which not yet has been discovered (I will return to that).

The quantum mechanical observer is also intimately tied to the issue of observer effect. In physics, the observer effect is the fact that simply observing a situation or phenomenon necessarily changes that phenomenon. This is often the result of instruments that, by necessity, alter the state of what they measure in some manner. A commonplace example is checking the pressure in an automobile tire; this is difficult to do without letting out some of the air, thus changing the pressure. Similarly, it is

not possible to see any object without light hitting the object, and causing it to reflect that light. While the effects of observation are often negligible, the object still experiences a change. This effect can be observed in many domains of physics and can often be reduced to insignificance by using different instruments or observation techniques.

An especially unusual version of the observer effect occurs in quantum mechanics. Physicists have found that even passive observation of quantum phenomena (i.e. observations that do not directly act upon the phenomena), can actually change the phenomena; the 1998 Weizmann experiment is a particularly famous example. These findings have led to the speculations about whether the conscious mind can actually affect reality, though most physicists today consider this to be a misconception of quantum mechanics. It is rooted in a misunderstanding of the quantum wave function ψ and the quantum measurement process.

A number of new-age religious or philosophical interpretations of quantum mechanics, notably "consciousness causes collapse", give the observer a special role, or place constraints on who or what can be an observer.

In his treatise *The Mathematical Foundations of Quantum Mechanics*, [John von Neumann](#) deeply analyzed the so-called measurement problem. He concluded that the entire physical universe could be made subject to the Schrödinger equation (the universal wave function). He also described how measurement could cause a collapse of the wave function. This point of view was prominently expanded on by [Eugene Wigner](#), who argued that human experimenter consciousness (or maybe even dog consciousness) was critical for the collapse, but he later abandoned this interpretation.

Variations of the consciousness causes collapse interpretation include:

1) *Subjective reduction research*

This principle, that consciousness causes the collapse, is the point of intersection between quantum mechanics and the mind/body problem; and researchers are working to detect conscious events correlated with physical events that, according to quantum theory, should involve a wave function collapse; but, thus far, results are inconclusive.

2) *Participatory anthropic principle (PAP)*

[John Archibald Wheeler](#)'s participatory anthropic principle says that consciousness plays some role in bringing the universe into existence.

Other physicists have elaborated their own variations of the consciousness causes collapse interpretation; including:

[Henry P. Stapp](#) (Mindful Universe: Quantum Mechanics and the Participating Observer)

Bruce Rosenblum and Fred Kuttner (Quantum Enigma: Physics Encounters Consciousness)

Amit Goswami (The Self-Aware Universe)

However, all this is not founded in quantum physics.

The Copenhagen interpretation is the "standard" interpretation of quantum mechanics formulated by Niels Bohr and Werner Heisenberg while collaborating in Copenhagen around 1927. Bohr and Heisenberg extended the probabilistic interpretation of the wavefunction proposed originally by Max Born.

The Copenhagen interpretation rejects questions like "where was the particle before I measured its position?" as meaningless. The measurement process randomly picks out exactly one of the many possibilities allowed for by the state's wave function in a manner consistent with the well-defined probabilities that are assigned to each possible state. According to the interpretation, the interaction of an observer or apparatus that is external to the quantum system is the cause of wave function collapse, thus according to Paul Davies, "reality is in the observations, not in the electron".

There are many other interpretations, but, according to my professor in Philosophy, the late David Favrholt, Niels Bohr is a genius philosophical exception.

Favrholt followed Bohr's lectures and talks closely from 1951 to his death in 1962. He has read all his letters from his earliest youth, has edited parts of the world edition of *Niels Bohr: Collected Works*. He has worked together with many of Bohr's students, inclusive Aage Bohr, has had discussions with Werner Heisenberg and corresponded with many of the great names within nuclear physics. So, Favrholt is one of the World's leading experts in quantum mechanics, and is probably the only person, who in depth has investigated Bohr's philosophy.

It is David Favrholt who has taught me about the philosophical aspects of Niels Bohr's thinking. His new book is called *The Philosopher Niels Bohr*. David

Favrholdt claims, that Bohr's philosophy originates from his physics. And Favrholdt says, that Bohr's philosophy hasn't gained so much a footing as his discoveries within the physics. But this it ought to. Bohr's basic view on language is epochal, Favrholdt claims, though he must admit that the epoch not yet has turned up.

What is Bohr's philosophical viewpoint? You can read about this in my article [Quantum Mechanics and the Philosophy of Niels Bohr](#).

The point with this article is to show the foundation for the misinterpretation, that goes on, that it is the *consciousness* of the physicist, which affects the light. This has led to the misunderstanding in the public, that quantum mechanics should imply, that there isn't given any objective or true description of the physical reality, consequently that it is the human consciousness, which produces the phenomena: subjectivism. The same misunderstanding characterizes by the way also Einstein's theory of relativity, that this should support relativism.

But it is *not* the consciousness of the physicist (the subjective), which makes the electron behave like a particle or a wave. It is the macrophysical (material) experimental devices, which affect the electron in a certain way, so that you *unambiguous* know, that if you work with this type of apparatus, then it will *always* behave like a wave, and with another type of apparatus, like a particle.

You must always remember this, when new discoveries are made in quantum physics; that such not are new discoveries about consciousness, it is new discoveries made possible by new experimental devices: the observers in quantum mechanics.

Related articles:

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[Quantum Mechanics and the Philosophy of Niels Bohr](#)

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