Making Sense of Science

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Does your consciousness influence the physical universe?

If you've ever attended a personal development seminar or listened to a motivational speaker, you may have heard the claim that our conscious awareness influences the universe, and that this is a proven fact of modern science. Well, what does science really say?

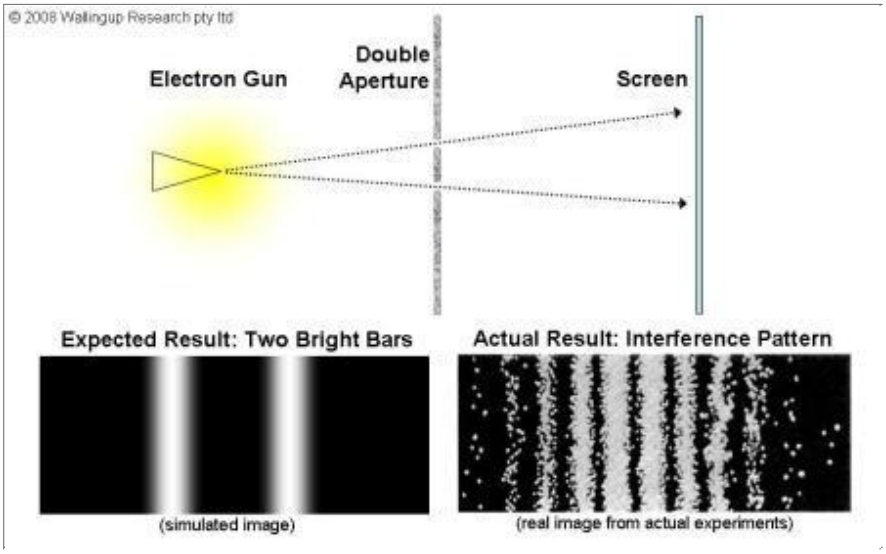
Back when Isaac Newton's equations were the only tools for understanding how things work, there were some philosophically-minded people who wondered if physics had implications for religion and spirituality.

The philosophers decided that since Newtonian Mechanics is rigidly predictive once the starting conditions are known, then maybe everything else is that way too, including you and me. They reasoned that everything happening now could only be happening as a direct result of the things that happened immediately prior, and so forth back to the start of time. Everything is therefore absolutely predestined from the Beginning. They concluded that in effect we have no free will. Then along came Quantum Mechanics and an entirely new way to misinterpret Science in the context of Religion.

Now, don't get me wrong: I myself have a spiritual life and I regularly participate in one of Australia's many excellent religions. On the other hand, I feel that asking Science for spiritual guidance or asking Religion for scientific know-how is like asking my cat what shares to buy and sell.

How could my cat possibly have that sort of information? (I don't even let him use the internet anymore, not after that whole hedge fund thing went sour.)

Quantum Mechanics proves the reality that most of us suspected all along, that there is both randomness and clockwork regularity in the world. These concepts work together to create the endlessly amazing spectacle of Nature. One of the most startling experiments demonstrating Quantum Mechanics is called the two-slit experiment.



When electrons (tiny pips of mass and electrical charge) are launched one at a time at a target with two slits in it, some of them pass through the slits and are recorded on a screen. We assume that solid particles like electrons would pass through either one slit or the other, producing a pattern of two bright bars like the one shown in the diagram. Instead, we get an interference pattern.

The interference pattern implies that the electron must have changed into some kind of wave, passed through both slits simultaneously, then re-formed into a solid particle on the

screen. Its chance of ending up at a particular spot on the screen is greater where the wave's interference pattern is strong, and less where the pattern is weak. Even testing one electron at a time results in the pattern emerging after a while. Weird!

Now things get even weirder. If we try to observe which slit each electron passes through by placing an electron detector at each slit, we can see the electron entering one slit or the other but not both. When we do this, however, the interference pattern vanishes and becomes what we expected in the first place: two bright spots, one from each slit. Somehow, the act of observing the electron has completely changed the result of the experiment.

Now the philosophers show up (late for class, as usual) and insist that this proves human consciousness has a direct mystical influence on the universe. If a tree grows in the forest and nobody sees it, it isn't there. Because they use technical jargon and base this claim on a science few people understand, many accept this as reality.

Sorry to interrupt the fantasy, folks, but it just isn't so. This little misunderstanding comes about mostly through careless use of language. In an attempt to teach Quantum Mechanics to first-year students (usually in vain), analogies are used which are sometimes taken too literally. You've probably heard of Schroedinger's Cat. No, he wasn't a stock market wizard; this clever kitty's talent was that he existed in an ambiguous state of being simultaneously alive and dead. When his owner finally "observed" the cat, the act of observation supposedly forced the cat to fully assume one state or the other. Of course it's a fairy tale: nothing of the kind happens in real life except to subatomic particles, such as a single electron passing through two slits at the same time.

At the centre of this error is the word "observation" and its implied association with intelligence and awareness. Delete that word every place it occurs and replace it by the word "interaction." In the second experiment the electron resumes its solid particle behaviour as it passes through a slit, not because there is any human consciousness involved, but because the electron has had some kind of interaction with another physical object: a photon, another electron, an atom. Anything that can detect an electron also nudges it slightly and causes it to assume a specific localized form. This happens whether the detector is plugged in and turned on, whether the data is recorded by a computer, whether anybody even sees the printout, or not.

Physical processes therefore continue whether or not we are aware of them. Particles constantly interact with one another, thus preventing ambiguous quantum states from existing for very long. A tree growing in a forest definitely exists whether any consciousness is aware of it or not.

Another interesting fact about Quantum Mechanics is that although weird things happen to single tiny particles, Quantum Mechanics predicts that large collections of particles such as cats, trees or human bodies will strictly follow Newton's Laws. Contrary to popular belief, Quantum Mechanics did not topple Newtonian Physics, rather it placed Newton on a firmer theoretical foundation than ever before. Newton was right and Quantum Mechanics proves it, but you won't sell many popular science books that way.

The question I initially posed was this: Does your consciousness influence the physical universe? The surprising answer is . . . Yes. But not because of anything to do with Quantum Mechanics! I know of at least one completely ordinary way in which our physical world is shaped by our consciousness.

Our behaviours are the direct result of brain activity, including our conscious thoughts. Those behaviours, if consistent over a period of time, largely create and define our individual levels of health, wealth, and social circumstances.

If a person decides to change what he or she thinks about (and we all are perfectly at liberty to do so anytime), and if that change is persistent enough, then outward results will eventually reflect this change as surely and predictably as a Swiss watch ticks away the minutes and hours. The plain old-fashioned science of cause and effect - it still works.

Regards,

John

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