

Re: Why physicists should pay attention to the mind

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Hendrik van Hees wrote:

On my opinion "solutions" of this dilemma like the de Broglie–Bohm interpretation do not really solve the problem [...] because then one introduces nonlocal interactions which never have been observed at all, and the formulation of these interpretations for relativistic quantum field theory is not settled yet.

Flanagan

JS Bell wrote that his chief motivation in pursuing hidden variables flowed from an interest in providing a homogenous account of the world — and I think that is just right. Thus, one often reads that Schrodinger's equation contains, in principle, all that can be known about a physical system. Yet the author of that equation disagreed:

"If you ask a physicist what is his idea of yellow light, he will tell you that it is transversal electromagnetic waves of wavelength in the neighborhood of 590 millimicrons. If you ask him: But where does yellow come in? he will say: In my picture not at all, but these kinds of vibrations, when they hit the retina of a healthy eye, give the person whose eye it is the sensation of yellow."

Schrödinger, 'Mind & Matter' (Cambridge)

As I may have mentioned once or twice, this little difficulty was initially gotten around by Galileo and Newton, who, following the Greek atomists, declared that colors and such do not belong to the physical realm:

"Hence I think that these tastes, odours, colours, etc., on the side of the object in which they seem to exist, are nothing else than mere names, but hold their residence solely in the sensitive body..."

Galileo

"For the Rays (of light) to speak properly are not coloured. In them there is nothing else than a certain Power and Disposition to stir up a Sensation of this or that Colour. ... in the Rays they are nothing but

Re: Why physicists should pay attention to the mind

their Dispositions to propogate this or that Motion into the Sensorium, and in the Sensorium they are Sensations of those Motions under the form of Colours."

Newton

Galileo and Newton never got around to explaining how colors arise in the brain, which is presumably part of the physical world, and so the mind was made to do this work... somehow. Austen Clark, in his admirable text on 'Sensory Qualities,' brings us up to date:

"The world as described by natural science has no obvious place for colours, tastes, or smells. Problems with sensory qualities have been philosophically and scientifically troublesome since ancient times, and in modern form at least since Galileo in 1623 identified some sensory qualities as characterizing nothing real in the objects themselves...

The qualities of size, figure (or shape), number, and motion are for Galileo the only real properties of objects. All other qualities revealed in sense perception—colours, tastes, odours, sounds, and so on—exist only in the sensitive body, and do not qualify anything in the objects themselves. They are the effects of the primary qualities of things on the senses. Without the living animal sensing such things, these 'secondary' qualities (to use the term introduced by Locke) would not exist.

Much of modern philosophy has devolved from this fateful distinction. While it was undoubtedly helpful to the physical sciences to make the mind into a sort of dustbin into which one could sweep the troublesome sensory qualities, this stratagem created difficulties for later attempt to arrive at some scientific understanding of the mind. In particular, the strategy cannot be reapplied when one goes on to explain sensation and perception. If physics cannot explain secondary qualities, then it seems that any science that can explain secondary qualities must appeal to explanatory principles distinct from those of physics. Thus are born various dualisms."

The trouble is, colors behave as though they are physical:

"A color is a physical object a soon as we consider its dependence, for instance, upon its luminous source, upon temperatures, and so forth."

Mach, 'Analysis of Sensations'

If we accept Mach's reasoning, it is incumbent upon us to find some place in physical theory where colors can be inserted without doing harm to the whole imposing edifice.

It would seem increasingly difficult to maintain that nonlocal interactions have never have been observed.

<http://arxiv.org/abs/hep-th/9902020>

http://prola.aps.org/abstract/PRL/v69/i9/p1293_1

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• **References:**

- ◆ ***Re: Why physicists should pay attention to the mind***
◇ From: rof
- ◆ ***Re: Why physicists should pay attention to the mind***
◇ From: Hendrik van Hees

- Prev by Date: ***FTL Communication ?***
- Next by Date: ***Re: Re: Why physicists should pay attention to the mind***
- Previous by thread: ***Re: Why physicists should pay attention to the mind***
- Next by thread: ***Re: Why physicists should pay attention to the mind***
- Index(es):
 - ◆ ***Date***
 - ◆ ***Thread***