



*To arrive at the edge of the world's knowledge, seek out the most complex and sophisticated minds, put them in a room together, and have them ask each other the questions they are asking themselves.*

<https://www.edge.org/response-detail/25411>  
Printed On Wed January 11th 2023



## 2014 : WHAT SCIENTIFIC IDEA IS READY FOR RETIREMENT?

[In the News \[ 60 \]](#)

[Contributors \[ 177 \]](#) | [View All Responses \[ 184 \]](#)



**[Robert Kurzban](#)**

*Psychologist, UPenn; Director, Penn Laboratory for Experimental Evolutionary Psychology (PLEEP); Author, [Why Everyone \(Else\) is a Hypocrite](#)*

### Cartesian Hydrolicism

In the 17<sup>th</sup> century, René Descartes proposed that the nervous system worked a bit like the nifty statues in the royal gardens of Saint-Germain, whose moving parts were animated by water that ran through pipes inside of them. Descartes' idea is illustrated in the well-known line drawing that appears in many introductory psychology textbooks that shows a person puzzlingly sticking his foot in a fire, presumably to illustrate Descartes' idea about hydraulic reflexes.

Three centuries on, in the mid-1900's, the detritus of the hydraulic conception of behavior, now known to be luminously wrong, was strewn about here and there. In the scholarly literature, for instance, there were traces in Freud's corpus—catharsis will relieve all that *pressure*. Among the Folk, hydraulic metaphors were—and still are—used to express mental states. I'm going to *blow my top*. Having written an essay for *Edge* today, I feel *drained*.

There is, to be sure, still plenty of debate about how the mind works. No doubt even on the pages of this year's Question there will be spirited discussion about how well the brain-as-device-that-computes notion is doing to advance psychology. Still, while the computational theory of mind might not have won over everyone, the hydraulic model Descartes proposed is dead and buried.

Well, dead anyway. Buried... maybe not. (And, to be sure, hydraulics is, as it turned out, the right explanation for a pretty important (male) biological function; just not the one Descartes had in mind.) The metaphors that recruit the intuition that the mind is built of fluid-filled pipes, along with junctions, valves, and reservoirs, point to the possibility that Descartes was drawn to the notion of a hydraulic mind not only because of the technology of the day, but also because there is something intuitively compelling about the idea.

And, indeed, Cartesian hydraulics has been revived in at least one incarnation in the scholarly literature, though I doubt it's the only one. For the last decade or so, some researchers have been advancing the notion that there is a "reservoir" of willpower. You can't have an *empty reservoir*, the theory goes, in order to exert self-control—resisting

eating marshmallows, avoiding distractions, etc.—and as the reservoir gets *drained*, it become harder and harder to exert self-control.

Given how wrong Descartes was about how the mind works, it's pretty clear that this sort of idea just can't be right. There have recently been a number of experimental results that disconfirm predictions made by the model, but that's not why the idea should be abandoned. Or, at least, the data aren't the *best* reason the idea should be abandoned. The reason the idea should be left to die is the same reason that Descartes' idea should be: Although the mind might not work *just like* a digital computer—no doubt the mind is different from your basic PC in any number of important ways—we *do* know that computation of some sort is much, much more likely to be a good explanation for human behavior than hydraulics.

People will disagree about whether Planck was right about the speed of scientific change. Psychology, I would argue, has a couple of handicaps that might make the discipline more susceptible to Planck's worries than some other disciplines.

First, theories in psychology are often driven by—indeed, held captive by—our intuitions. I'm fond of the way that Dan Dennett put it in 1991 when he was talking about the (also luminously wrong) idea of the Cartesian Theater, the dualist idea that there is a "special center in the brain," the epicenter of identity, the One and True Me, the wizard behind the curtain. He thought this notion was "the most tenacious bad idea bedeviling our attempts to think about consciousness." Human intuitions tell us that there's a special "me" in there somewhere, an intuition that serves to resurrect the idea of a special center over and over again.

Second, psychologists are too polite with each other's ideas. (Economists, for example, in my experience, don't frequently commit this particular sin.) In 2013, a prominent journal in psychology published a paper that reported the results of attempts to replicate a previously published finding. The title of the article was, before the colon, the phenomenon in question and then, after the colon: "Real or Elusive Phenomenon?" The pairing of real versus *elusive* as opposed to *nonexistent* highlights that it's considered so rude to suggest that a result was a false positive—as opposed to something that's simply hard to replicate—that people in the field won't even say out loud that prior work might have been pointing to something that isn't, really, there.

Of course intuitions interfere with theoretical innovation in other disciplines. No doubt the obviousness of the sun going around the Earth, bending across the sky each day, delayed acceptance of the heliocentric model. Everyone knows the mind isn't a hydraulic shovel, but it does feel like some sort of *reservoir of stuff* gets used up just as it does feel like the sun is moving while we stay put.

Still, it's time that Cartesian hydrolicism be put to rest in the same way that Cartesian dualism was.

[Return to Table of Contents](#)

