

## **Reality Is What Our Minds Make Of It**

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by Marcelo Gleiser

Last week, I [wrote about](#) the notion that reality is composed of many layers, each with its own set of physical laws and principles. Reductionism would pose the opposite, that reality can be traced down to the ultimate, or most fundamental, components of matter.

Under this prism, everything that exists can be explained from the way these material bits interact to create the structures we see in the world. The laws that dictate their behavior are the only fundamental laws; everything else comes from them.

There were many thoughtful responses and comments to my post that deserve to be addressed in more detail. Mostly, they hinged on an old, and quite difficult, philosophical question: what is reality and how do we know? Let's see what we can do in less than 1000 words.

We can start by contrasting Hume and Kant. Hume, the ultimate empiricist, would claim that all that we know comes from the outside, from sensorial experience. We collect information about the world through our senses (that is, our measurements) and, based on this information, we define what is real. So, a person disconnected from the world, say, someone that grew up without any contact with external stimuli and that was fed intravenously, would not be able to think much: without input we are clueless of what goes on.

Kant would counter that we have a priori "intuitions," thought structures that give meaning to the sensorial input that Hume considered vital. Without these intuitions, Kant would say, the sensorial input would be meaningless. Two of these intuitions are the a priori notions of space and time; they weave the fabric of reality, connecting data that, without them, wouldn't make any sense. So, Kant brings the human mind to center stage, crediting it with the construction of reality itself: what we call real depends on our a priori structures. A mind with different a priori structures would have a different sense of the real.

Now, Kant doesn't dismiss the sensorial input. To him, even though knowledge begins with experience, it doesn't follow that it arises *out of*

experience. That is, we need the sensorial input to start with but meaning doesn't come from the input alone. It needs to be framed by a priori intuitions, ordered in time, arranged in space.

During the early twentieth century, two revolutions in our understanding of Nature forced us to rethink the neat Kantian order. Einstein's relativity combined space and time into a single framework, making them dependent on the observer's perspective. They ceased to be universal quantities, becoming observer-dependent quantities. Of course, Einstein's theory would actually restore universality, in that it provided the means for different observers to compare their measurements. Still, the net result is that although space and time remain aprioristic (or we should say space-time became a prioristic), they are now imbued with something else, a relation between two or more observers and their relative state of motion.

The second revolution was, of course, the advent of quantum mechanics. For today's discussion, its most relevant aspect is the relation between observer and observed.

In Kant's time, the separation between the two was assumed to be absolute: the object existed independently of it being observed. Quantum mechanics will revise this intuition: an object's physical nature — for example, whether an electron is a particle or a wave — is defined by the act of observation. This implies that the choice made by the observer induces the physical nature of what is being observed. More dramatically, we can state that the observer *defines* reality. And since the observer has intent and his/her intent comes from his/her mind, it follows that mind defines reality. (This seems to imply something that would need much more unpacking: that free will determines reality!)

Mind still needs a priori intuitions to make sense of the real; but mind also helps determine the real. Impartial objectivity becomes a thing of the past. Mind and reality become weaved into a single whole. Things get a bit confusing, no question about it.

These notions have some interesting and puzzling consequences, and I hope to touch upon some of them in future posts. Here is one: since evolution tells us that the human mind is fairly recent, what was going on before humans were around? Clearly, even if there isn't a mind to think about reality, reality goes on perfectly fine without it. This is not only true before we were around, but also at the majority of the cosmic volume where we are not around and other minds aren't either.

On the other hand, if there is no one to think about what is real, reality is rather dull.

This may sound like a dangerously humancentric view of reality, I know. But it isn't. I used the term "humancentrism" in my last book [A Tear at the Edge of Creation](#) to stress what I see as our newly-found cosmic importance. I don't mean our minds have a better view of reality than others. They simply have the view that matters to us. If there are other minds defining their reality out there, all the better. Since their minds would have evolved very differently from ours, their reality will be very different from ours.

So, not only what we call reality evolves along with science (what was real 500 or 100 years ago is very different from what is real today), but it also hinges on the evolutionary history of the mind in question: different planetary histories (and they are *all* different!), different minds; different minds, different reality. I wonder if Kant would agree to this. I think he would.