

On the Road to a Science of Consciousness

by Dana Bryan Jones

For how long have we wondered what we are? Where we came from? Why we are here? Did Lucy wonder about these things over 3 million years ago? Do apes wonder about it? How about dolphins or dogs or pigs? Bacteria? I believe we owe this wonder to consciousness: the awareness of ourselves, our surroundings, and our place within it. The exact definition of consciousness may be debated by some, or many, but I think this will serve my purposes today. For at least a few millennia we, as a species, have been trying to figure out and describe what this is exactly. It has been proving very hard to pin down and some of the greatest minds we've known have set to work on figuring it out. Some approach it from a purely philosophical angle, others from a scientific one, many from a religious or artistic standpoint. Some of them have even tried some combination of some or all of the above and then some.

What does it mean to be conscious?

I'm alive. I'm aware. So what? When I first saw *The Matrix*, it freaked me out. I kept feeling the back of my neck wondering how the heck I'd be able to tell if this was the real reality or if I was plugged into a virtual reality. Was I really who and where I thought I was? It was deeply unsettling.

Five or so years later I came across a young man who had a similar dilemma on his mind (not specifically with *The Matrix*, however) and I told him what I eventually told myself: It really doesn't matter if I truly exist or if I'm just imagining I exist. I'm still having the same experience either way. Furthermore, if I'm

imagining it, then whoever is doing the imagining must be real and it must be me. He vehemently disagreed. Another seven years or more have gone by and I still like my answer better. Of course, I might be upset to find out that all of my loved ones, and everyone else for that matter, we're kept alive only to be used as batteries for some great machine. But hey, maybe we're really here just to provide carbon dioxide for the plants and trees.

I'm aware that I have a physical body. I'm aware that this physical body includes a physical brain. I'm also aware, however, that I have something inside that may or may not be entirely physical as we currently think of the term. This is what we call the mind. Is the mind the seat of consciousness? Does the mind reside fully in the brain? Would that make the brain the seat of consciousness? Does consciousness even need a seat? I have my five senses, I can tell from the things I sense whether I like them or not. I like to be happy. I like to be in love. I don't like pain but I can often appreciate the growth opportunities that it presents.

Are these the kinds of things that make me conscious? Assuming you're not a true believer in solipsism, if I wasn't human, say I was a robot or an extra-terrestrial, and I had said all of that how could I prove to you that it was true? What would make you believe me? If you do believe in solipsism, then I guess you don't have to finish reading this post since you must've been the one who wrote it. 😊 I can tell that there are things that make my dog happy and there are things that make her sad. There are things that hurt her and there are things that she thinks feels good. Does that make her conscious as well? Where would that end?

We, as a species, are pretty clever and we can devise software to upload to pretty much any type of hardware that could reasonably mimic a lot of the behaviors I just described. Does that make it conscious? Again, how would we be able to tell? A sufficiently complex piece of software could appear conscious but I don't know how many people would agree that it actually is.

Does intelligence imply consciousness?

What does it mean to be intelligent?

We can program a machine to appear intelligent but, again, I don't think many people would argue for its civil liberties because it is now a sentient being. So, what is it that makes us intelligent? Because we can speak? Do math? Create symphonies? Solve problems? Learn from one experience and apply it to another? All of this can be programmed into a machine. I'm sure there's plenty of debate as to what actually constitutes intelligence but I'm also pretty sure some of what's on my list here is on other lists as well.

Artificial intelligence

First of all, I have a problem with the term artificial. Just because something is man-made doesn't mean it wasn't created in nature; is man not nature? Maybe the only or most efficient way nature had of creating a baseball stadium was to have humans do it. But that's for another day.

So, we've made a machine that can feign intelligence. Now how do we tell how conscious it is? I imagine there would be some kind of scale, a range of values or degrees and not just yes, it is or no, it isn't. I could be wrong. Integrated Information Theory postulates a range as well. They could be wrong too, though. There is the Turing test, of course. If we could get this machine to pass the Turing test then maybe it has some consciousness to it after all. And guess what? That would be a consciousness we made in a lab. Welcome home, Prometheus.

But what about the philosophical zombie. I believe that, too, would pass the Turing test. However, by definition there is no consciousness in the philosophical zombie (philozom...did I just make a word?!?).

Consciousness as an emergent property of an ultra-complex system

There are some who believe consciousness emerged as a result of the vast complexity of the universe, starting with the big bang, taking hold with the introduction of single cellular life on Earth and leading up, through evolution, to what we see here today. There's definitely something to be said for the whole being more than the sum of its parts. But this is a tricky situation. The universe is indeed vast, unimaginably so, and it has been around for a very, very long time. If Einstein's God-dice were rolled that many times, maybe it did just happen upon the conscious intent that got the ball rolling for evolution. But there is something that we can't quite grasp between the before the emergent property and after it. For instance, when do two hydrogen atoms and an oxygen atom at a given temperature and pressure become wet? I imagine it happens the moment all three of them bond at that temperature and pressure. Is that something we can witness? Is it a quantum thing or is there an in-between phase? If

there's an in-between phase does that become another rabbit hole? Another one of Zeno's paradoxes where there's always an in-between phase so it never actually gets to where it wants to go? And studying two gasses in isolation, could we have predicted that combining them would turn them into a liquid? I know a chemist, I'll have to ask her.

Consciousness as a fundamental property of the universe

But sometimes it seems like things worked out just too perfectly to be left up to chance. That an electron and a proton happen to exist. That they happen to be attracted to each other. That they happen to form the most useful structure the universe may ever know. That there are so many of them, enough to form something as massive and powerful as a star (and so many of those as well). That a star in the right spot in a galaxy created a planet that's in the right spot in a solar system and has everything we could possibly need to thrive in this universe. There are so many more levels of seemingly coincidental just-so conditions left out of this depiction, but I'm sure you get my point. It almost seems like something intended it all to happen. Since we communicate with language, we have to call it something; some call it God, Spirit, Source, the Universe, Nature; whatever it's called, it's hard to deny that sometimes it really does seem like all of this was intended to be.

Wrap It Up

There seems to be a tendency to put people into two camps: one that believes in some kind of intelligent design and one that believes in science. I think there needs to be more middle ground. What

would be wrong with a science that could describe the divine? What if discovering that consciousness is a fundamental aspect of the universe was just like discovering the electron? Just because science can describe something and predict some of its future behavior or explain some of its past doesn't need to make the phenomenon any less awesome. And even though I'm not yet convinced consciousness just happened as a result of the emergent behavior of complex systems doesn't mean I don't think we can use complexity science to help gain insights into its nature. Being interdisciplinary by nature it really does seem suited to help with issues where psychology, quantum mechanics, relativity, chemistry, biology, social sciences, computer science, and many other disciplines, scientific or otherwise, all have been used to help attempt to describe the nature of consciousness.

Since we don't yet know for sure, let's reunite the Scientist, the Artist, and the Mystic and see what we find.

2017