EXISTENCE IN AN INFINITE UNIVERSE

STEVEN B. WILLIAMSON

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Steven B. Williamson

Table of Contents

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Chapter II: Determined to Succeed

"There are two possible outcomes: if the result confirms the hypothesis, then you've made a measurement. If the result is contrary to the hypothesis, then you've made a discovery."
– Enrico Fermi

Jung at Heart

If my observations are correct, and if all the strange events in this chapter are not explainable by math or caused by God, then does the physical universe provide us with a third option? One well-known expert strongly believed that it does.

***Figure 2*. Dreams can create surreal landscapes full of potentially symbolic images.**

Carl Jung didn't just write about dreams, he was also highly influential in the study of the human psyche. He theorized that there were three parts to the psyche: the ego (the conscious mind), the personal unconscious (where thoughts and memories reside which have been forgotten or suppressed by the conscious mind), and the collective unconscious (a universal part of our psyche containing common patterns of thought that we are all born with). Jung called these universal patterns *archetypes*. He specified four main archetypes but he thought that many others were also possible.

Jung believed that archetypes link our minds to some mysterious field or other dimension where subjective thoughts and images exist. There, our collective unconscious accesses them and combines them with the objective things that we observe in our physical world, which can cause events to occur in a remarkable manner far beyond mere coincidence. Jung coined the term *synchronicity* to describe such a phenomenon: a situation in which two events occur with a common element that appears to be purely coincidental, but in reality, the two events are related in some imperceptible yet important way (although not linked by causation). Improbable events of this kind are known as *significant coincidences*. Jung believed that our collective unconscious was the force behind synchronicity.

Are we all unconsciously connecting with an invisible field or mechanism that causes those significant coincidences to happen? Is coincidence a sign of that mechanism's existence? Jung thought so. When I used to occasionally have what I felt were premonitions, were those examples of synchronicity or merely coincidence? It is conceivable that, through forces which we do not yet understand, synchronicity is causing the occurrence of some apparently-coincidental events which are not pure chance but which have an underlying significance.

Despite Jung's progressive ideas, many of today's skeptics

do not have a favorable view of his work in psychology because it references what they view as psychic phenomena, since those things are difficult to replicate and therefore prove scientifically. Critics dismiss synchronicity as the result of *confirmation bias* (remembering results that confirm a theory and forgetting the ones that don't).

My own personal experiences have led me to believe that some sort of collective consciousness might be automatically at work on some level that we humans cannot individually access. I also think it is possible that our collective consciousness causes synchronicity. Yes, it is certainly true that strange things do occur which are simply mathematically-probable coincidences. Nevertheless, I am convinced that a few things defy such a simple explanation. Synchronicity? Perhaps.

Do street lamps go out as you walk past them? I've had that happen to me and I've read that other people have also reported this strange phenomenon. Another oddity that I've noticed is that cigarette smoke seems to always drift toward some persons, myself included. My theory is that the ionization of air particles might be responsible. Cells in the human body are protected by an external membrane. They have a negative electrical charge on the inside (potassium ions) and a positive charge on the outside (sodium ions). This imbalance, and the flow of charges across the membranes (called the *sodium-potassium gate*), is what allows the body to generate electrical currents. It seems logical that this flow of current through the body would affect it externally as well as internally.

While the human body typically has both positive and negative ions in the space surrounding it, cigarette smoke contains positive ions. Opposite charges attract, so if your body's magnetic field becomes charged more negatively than positively (an effect presumably caused by the currents produced inside the body), then you would attract positively

charged air particles – such as those in cigarette smoke. One individual might be the only person in a given group having a negative charge, thereby drawing the smoke in that direction.

A different explanation proposed for this phenomenon suggests that air temperature could be responsible. When warm air rises (such as that heated by fire), it draws cooler air in that direction. When a person's body blocks the air flow, the drop in air pressure around it could cause the rising warm air (cigarette smoke) to drift in that direction. At first glance, this theory seems to makes sense according to the principles of physics. However, if this process was occurring, then the phenomenon should affect multiple persons nearby, not only certain individuals within a group.

Discussions about these topics on the Internet (where everything must be taken with a grain of salt), sometimes claim that these kinds of phenomena happen when our “vibration” is out of tune. When this type of event occurs, could we be suffering from negative energy, or is it the result of a jinx?

I just know one thing is for certain. If I fall asleep on the couch while watching TV too late at night, when I wake up around 3 a.m., something will have fallen on the floor. Mysteriously, it's usually my reading glasses, which I never wear to watch television.

Chapter V: The Writer's Guide to the Universe

"What then is time? If no one asks me, I know what it is. If I wish to explain it to him who asks, I do not know."
– Saint Augustine

Time Management

Aside from the possible psychological issues for time travelers and the inherent threats to human civilization, there are many other potential complications and sticky situations that you could encounter on your time journey – things that you might not have thought about before leaving the present.

What if your '80s model time machine breaks down and you're left stuck in the past without a supply of plutonium to power your beat-up DeLorean? Sure, the Old West was dangerous in 1885, but other eras were even worse – full of wars, famines, plagues, and various other types of suffering. And don't forget that there were evil rulers who made *Game of Thrones* tyrant King Joffrey look like Mahatma Ghandi.

Getting stuck in the future might be just as bad or even worse. We don't know what's there: quite possibly more of the same misery as in the past. You might arrive in the year 3,000 and find that no one is left but giant cockroaches. Why? What happened to everybody? You would have to go look for the ruins of an old library and hope that you could find out what destroyed the world. Just watch out for the big creepy mutant thing that keeps moving around in the shadows or you might become its lunch. On the other hand, if people are still around, they might be a bunch of curious posthumans who will decide

to lock you up in a cage – because studying a live person is *much* more fun than watching a computer simulation.

***Figure 11*. Hip time travelers might someday be able to observe such historic scenes as the signing of the Declaration of Independence.**

Visiting the past, you would have to be really careful about everything that you did, keeping in mind that even the smallest actions could have a major effect on the timeline, even unintentionally. You could really screw up the future without realizing it just by saving your dad from getting knocked over by a car – or doing something perfectly innocuous like humming your favorite hit song from the year that you came from. And don't even think about pursuing love, you don't know if that other person is actually your relative. (Also, the farther back in time you go, the likelier that becomes. Ewww.) I doubt if doing one of those DNA ancestry tests before you go would really help you all that much, they're not that precise.

Now that I've told you this, any messing around in the past should seem gross, unless your favorite characters in *Game of Thrones* were the Lannisters.

If you travel into the future, altering the timeline might not be quite as big a deal to you personally, but you would still be wise to avoid messing around with the locals. That is, unless you're only skipping ahead a few years. Maybe you just want to find out if your favorite old band is still touring in the next decade. Here's another hint: they will be, if there's money to be made because **it's all about the Benjamins.**

Consider this: simply by living your life right now, each one of your decisions every day already changes the future. Just try not to think too hard about the millions of people down the line that all of your current actions will affect in some way – if you did, you might never leave the house again. (But that decision would also change the future. Choosing to *not* act is a course of action in itself. Either way, you're stuck being a contestant in our universe, so you might as well come on down and play the game while you're here.

Chapter VIII: The Illusion of Disneyland

"Life is not a problem to be solved, but a reality to be experienced." – Søren Kierkegaard

Reality Check

Virtual reality refers to highly-detailed computer simulations that accurately recreate elements of the real world (sometimes arranging them in a very different way), in which users can interact with the simulations as if they were real. *Simulation theory* suggests that our universe is artificial and all of us humans are actually living in such a computer simulation. How could that possibly be true? How could our universe not be real?

Humans have traditionally believed that either the universe was created by God or that it occurred naturally through some physical process that scientists do not yet fully understand. But maybe that's not the case. It's been suggested that the universe was created by a scientist and that we might only be the subjects of an experiment.

Nick Bostrom, a professor of philosophy at the prestigious University of Oxford in England, developed this stunning theory that turns our entire view of reality upside-down. In a 2003 essay published in *Philosophical Quarterly*, Bostrom wrote that it's possible our entire universe is a fake, advancing the hypothesis that we might be living in a complex computer simulation, most likely run by *posthumans*.

Who or what would posthumans be? These technologically-advanced beings might consist of a more highly-evolved (or a

genetically-modified but mostly biological) version of humanity, *cyborgs* (cybernetic organisms, part machine and part biological), or *androids* (entirely artificial persons). It is certainly possible that posthuman society could include a mix of all three types of beings. Presumably, posthumans would use "ancestor simulations" to learn about us and how we lived.

(You will see Bostrom's name a lot in this book. He is a highly accomplished scholar with multiple degrees and who has authored a wide variety of academic papers, many of which contain cautionary themes. His visionary theories are extremely relevant to the subjects that I'll be writing about, so you'll read more about them in upcoming chapters.)

There is some sound logic behind the *simulation argument*, a line of reasoning which maintains that one of the following conditions *must* be true: either (1) *no* civilizations ever develop technologically to the point that they can create virtual reality simulations which are indistinguishable from actual reality, or (2) even if some civilizations do become technologically-advanced, *none* of them would ever choose to run such simulations, despite the fact that their advanced computing power would probably allow them to run thousands or even millions of them simultaneously, or (3) the total number of simulations would be many times more than the number of real universes. In that case, odds are that we are living in one of those simulations and not in a real universe.

If the first condition is true, then we're all in a lot of trouble. It might mean that humanity isn't going to make it very much farther. If the first condition is false, then it seems reasonable to believe that the second one is likely to be false as well. So the bottom line with the simulation argument is that either we might be living in a totally false reality, or that humanity might be destroyed before software creators can design lifelike virtual universes. Those are two really grim possibilities there. Are

there any paths that end with a different outcome? Yes, and we won't even need to ask the Avengers' Doctor Strange to find out if they exist. They do.

We might not be very far away from disproving the first condition. In the last couple of decades, programmers working with virtual reality have been steadily getting closer to creating worlds that would seem just like the real one. Also, considering that someone has already developed the Sims computer video game (featuring an artificial world full of lifelike simulated people), it seems a certainty that humans will create entire highly-detailed virtual universes if we are ever able to do so. While that's still a big "if," the outcome (whether yes or no) could have a substantial impact on humanity's future. In the opinion of famed entrepreneur Elon Musk, "Either we're going to create simulations that are indistinguishable from reality or civilization will cease to exist. Those are the two options."

A number of futurists, such as Musk and astrophysicist Neil deGrasse Tyson, have said that they believe it is most likely that we are living in a simulated universe. Also, if an infinite number of universes exist, the math tells us that there must be countless worlds containing intelligent humans or posthumans – many of whom might be capable of creating simulated worlds on their computers. That would further increase the chance that we are living in one of those simulations.

An even more bizarre theory (somehow, that is possible) suggests that reality could be like the layers of an onion. Our universe might be just one in a long series of nested simulations, like Russian Matryoshka dolls. In fact, some people believe it's highly likely that our theoretical posthuman overlords are merely simulations themselves. How many of their universes might be artificial too, and where does it all end? The onion might be far larger than we can possibly conceive of. (Don't think about that for too long.)

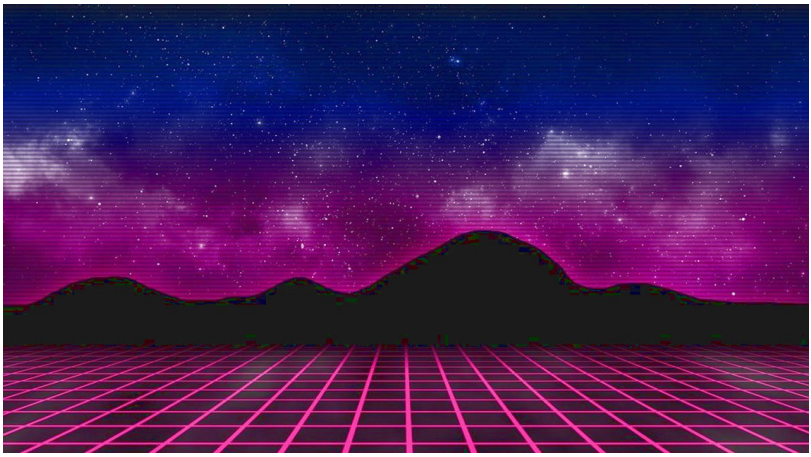

***Figure 15*. If we live in a simulated universe, it might be possible to see parts of the underlying structure it was built on (*artwork by "BlueCakeCZ"*).**

It has also been asked whether the world that we live in is "real" (in a figurative sense), or is Disneyland the true reflection of our society? Taking that notion one step further, if we are actually living in a simulated universe, then everything we experience is just an illusion, a twisted version of Disneyland – and we do not even know that we are there.

Chapter XVI: Strangers in the Ocean of Night

"Sometimes I think we're alone in the universe, and sometimes I think we're not. In either case, the idea is quite staggering." – Arthur C. Clarke

In the next few pages, we will look deep into distant and uncharted parts of the universe. Warning: some of the theories in this chapter might keep you awake at night if you think about them for too long. So don't worry and get to bed early because you'll still have to go to work in the morning, even if the aliens from Rick and Morty's Galactic Federation land on the White House lawn during primetime TV tonight.

Hold All Our Calls

In his bestselling book, *Men Are from Mars, Women Are from Venus*, John Gray theorized that fundamental psychological differences between the sexes cause many problems in the relationships between men and women.

If there is such a great lack of understanding among humans, how can we ever hope to comprehend the psyche of aliens? Not only would each group of *extraterrestrials* (intelligent beings from other planets) have an entirely different biology, but their psychology, customs, culture, and home environment would also be totally unlike our own. Alien beings would be a complete mystery to us; "alien" is the key word here. Concepts like morality and ethics might have entirely different meanings to them – or even none at all.

Although our radio and television broadcasts have been

heading out into space for a century, they actually haven't traveled very far yet. Fortunately, they're relatively slow. So aliens might only be able to find us by accident, unless they sent probes to every star in the galaxy.

Deliberately sending powerful signals deep into outer space might not be a smart move on our part. (Stephen Hawking publicly stated the same opinion.) We don't know who might be listening. Maybe we don't really want them to know that we're here.

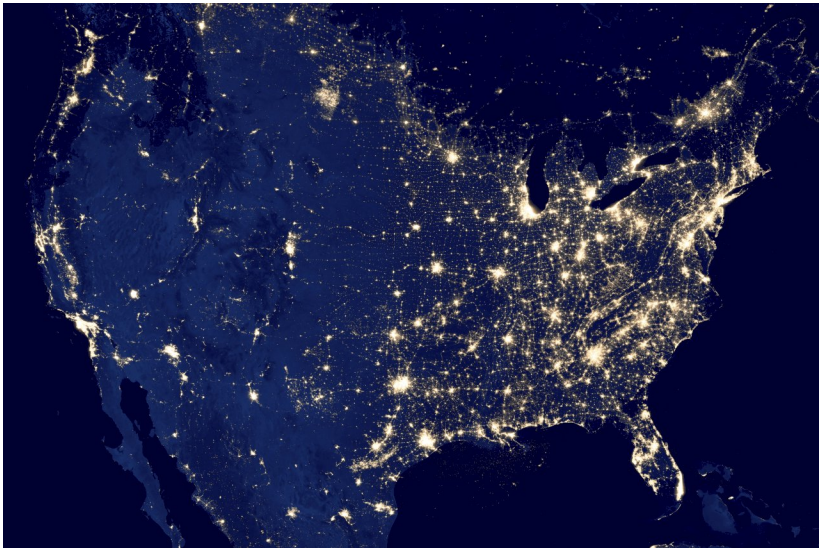

***Figure 23*. Alien probes might be able to spot evidence of life on Earth, as seen in this satellite image of the USA at night (*photo by Robert Simmon/NASA Earth Observatory*).**

One hypothesis suggests that intelligent beings that survive their early history and make it to the space age must be warlike by their fundamental nature, like the Klingons on *Star Trek*. Being predators might be a necessity for evolutionary success,

per the concept known as “survival of the fittest.” Equally bad, an alarming theory suggests that the universe might be inhabited primarily by artificially-intelligent machines, so the outlook for humanity's future could be bleak if those machines have an utter disregard for biological life-forms like us.

Those two grim possibilities should make us think carefully about the signals we send out into the cosmos. Albert Einstein once said, “Only two things are infinite, the universe and human stupidity, and I'm not sure about the former.” **Just because you *can* do something, doesn't mean you *should*.**

If intelligent life exists far away in the vast universe, could we communicate with it, or even locate it? Consider the possibility that if we did receive a message from distant aliens, we might not be able to think of a way to decode it.

NASA can pick up messages from Voyager 1 as it sails along through interstellar space 11.7 billion miles from Earth, but I lose my wireless Internet signal outside on the patio.