

### The Meaning of Gratitude

Zero. Well, approximately zero. The probability of my existence was approximately zero. The first thing you are probably thinking is that I am talking about conception and the fact that, out of hundreds of millions of sperm and egg combinations, the zygote that would become me formed. I could have been a miscarriage, or I could have had a disease that killed me shortly after birth. I could have lived a couple hundred years ago and been one of the about 27% of people who died before turning one year old, or I could have been one of the 46% who did not make it to age five. I could have died of hunger or thirst, or I could have been one of the approximately 50% of all human beings that have ever existed that died of malaria. Of course, it is not just me. In fact, as you are reading this, you are probably realizing that the probability of your existence was approximately zero too. Now you may still be skeptical of that number; you're probably thinking that zero is a big claim to make, even with everything I've mentioned. And you're right. But those were all just examples meant to set the tone. The real reason I am certain the probability of you or I existing was approximately zero is much grander. For starters, the principle forces and laws of physics that govern the universe, if any different from how they are exactly, would have resulted in a completely different universe. Perhaps gravity could have been too weak to form galaxies or stars. Maybe the strong nuclear force could have been too weak to allow hadrons (protons and neutrons) or nuclei to form, and no meaningful structures could have emerged. The speed of light could have been too slow to allow fusion to occur in stars (thanks to  $E=mc^2$ ), or the weak nuclear force could have been strong enough to turn all the hydrogen in the universe into Helium immediately after the big bang, creating a universe where stable stars and water are scarcities. Yet, it goes further than the fundamental forces of the universe. Life could have just not occurred on Earth, but it did. The first eukaryote could have just not formed, but it did. Any one of the five major mass extinctions that each reshaped the biosphere of Earth, changing the course of evolution, could have not occurred, or more of them could have occurred. Either way, life on Earth today would have been

significantly different. I could go on and on and on and on, but, by now, my point is clear: when you take into account all the factors and consider all the different possibilities, timelines, paths, and courses of events, you end up with a practically infinite number of potential realities that could have occurred, in which you and I do not exist, placing the probability of our existence at approximately zero. And yet, in spite of all of this, against all the odds, the reality that occurred is the one in which I exist, in which you exist, and in which the universe exists exactly the way it is. So, I think that, considering everything, we're pretty darn lucky to exist, and if that's not something to be grateful for, then I don't know what is.