
Simulation

In 2003, philosopher Nick Bostrom proposed the idea that we might be living in a simulation created by a super intelligent and highly advanced species that is trying to study its origins (Greene, 2019). This spiraled an endless discussion, promoting the question, "Are we living in a simulation?" Physicists, philosophers, and scientists have been wrestling with the idea for decades, asking questions like, "How can we tell if we are living in a simulation", and "How can we tell what is real and what is not real". While these are very interesting questions to discuss, this journal is going to take a different approach. Instead of debating whether we are living in a simulation – or not, I'm going to assume the answer is yes, and discuss potential ways to break it.

First of all, since we are living in a simulation, there must be a super powerful computer powering our perception of reality. In fact, the universe can be seen as one gigantic super computer. It's calculating every major and minor event. From particles spinning to volcanoes erupting, and everything in between. The universe has hard coded limits. For example, the fastest anything or anyone can travel in the universe is at the speed of light. Nothing can travel faster than the speed of light. This is equivalent to a static-variable¹ in computer programming. Once the value is set, it cannot be modified. And the universe enforces this limit using a method similar to conditionals in computer programming. Anyways, in order to break out of this simulation, we need to crash the computer. The two most common ways to crash a computer involve flooding/corrupting the memory or forcing the machine to do a bunch of computations, causing it to lag and eventually crash. This is similar to spawning a bunch of explosives/TNT in

Minecraft², and then detonating all of them at once. Since the computer can't calculate the explosion fast enough, the game lags and eventually crashes.

Flooding or corrupting the super computer's memory is not possible due to the Law of Conservation of Mass, which states that for any closed system "mass is neither created nor destroyed... [and] the total mass will be the same at any point in time in any closed system" (Stern, Small, and Hood, 2011). Because matter cannot be created or destroyed, only transferred, we don't have the means of adding to the system's memory – assuming matter equals real memory. Hence, this leaves us with the second option, forcing the super computer to do a bunch of heavy computations that may or may not involve changing matter. Since creating an explosion on an intergalactic scale is not feasible or ethical, the best way to crash the super computer is by building a quantum computer and executing simulations on it. With enough quantum computers running intense computations, we may be able to crash the computer powering our reality. You can think of the super computer powering our reality as a gaming computer running Minecraft². The game is our reality and each quantum computer we introduce is a block of TNT. Executing intense computations on the quantum computer can crash the super computer, just like detonating thousands of TNT blocks in Minecraft will crash the gaming computer.

¹ Static Variable: https://en.wikipedia.org/wiki/Static_variable

² Minecraft TNT: <https://www.youtube.com/watch?v=CF9i5b1uzzg>

These links are here for the reader/TA. If you want to see someone crash a Minecraft server, the links above will help you.

References

Sterner, R. W., Small, G. E. & Hood, J. M. (2011) The Conservation of Mass.

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Greene, P. (2019, August 10). Are We Living in a Computer Simulation? Let's Not Find Out.

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