Reality Reloaded: The Scientific Case for a Simulated Universe

Melvin M. Vopson

Melvin Vopson makes a strong case that at the fundamental level of reality, space, time, and energy are not continuous but are pixelated into indivisible units of Planck length, Planck time, and Planck energy. This “atomistic” idea is not unprecedented and has its roots in ancient religions and philosophies. Indian Buddhist teach that everything is built from indivisible atoms, and while ancient Egyptian and Greek philosophers such as Plato and Aristotle believed in a continuous universe, many ancient Greek thinkers such as Leucippus, Democritus. Epicurus, and Zeno believed that reality is discrete.

Vopson says that: “The concept of a simulated universe emerged as a modern extension of idealism driven by recent technological advancements in computing and digital technologies…As humans create increasingly sophisticated simulations, the line between the virtual and the real becomes blurred…”

This new idealistic view has found favor with many prominent scientists and philosophers. Nick Bostrom, one of the leading advocates of simulation theory, has stated that an advance civilization could create a simulation that is undetectable from observed reality. Others, such as physicist Seth Lloyd, believe that the universe itself might be computing its own simulated reality, and Elon Musk has stated that the chances we live in a simulation are better than 50/50.

Support for the simulation hypothesis comes from both classical and quantum physics. General relativity theory and special relativity theory point to correlations that can be interpreted as simulated reality.

For instance, the slowing of time and the red shifting of light near a large gravitational mass such as a black hole in general relativity theory could well be interpreted as data overload causing the processing of information to slow. Likewise, special relativity’s idea that time from the perspective of a stationary observer appears to slow as an object nears the speed of light finds a corollary in processing units in which there is information overload. Other aspects of classical physics could also support simulated reality.

For example, the big bang theory has been very successful in explaining many aspects of our expanding universe, but it falls short of explaining the cause of the initial big bang and the nature of dark matter and dark energy which can only be detected from its gravitational signature. Vopson says that, since information is physical, it must have a small amount of mass, and it should be the dominant form of matter in the universe. Vopson states: "It [information] would be impossible to detect because a bit of information would have no charge, no spin, and no other properties except mass so it would not interact with electromagnetic radiation. These are, in fact, the characteristics of the elusive dark energy and dark matter."

Quantum theory was founded on the very notion that matter and energy are quantatized when quantum theory's founder Max Planck used his mathematical formula, E=hv, to explain why the emission of electrons from a black body are dependent only upon the frequency of energy absorbed rather than the intensity of light, and Niels Bohr discovered that an electron in an atom can occupy only whole unit energy levels, which in turn, prompted Albert Einstein to theorize that, if energy levels in an electron can exist only in whole units of energy, then light itself must be quantatized.

These mathematical laws led Einstein to proclaim that the only incomprehensible thing about the universe is that is comprehensible. He was astounded that we humans are able to use mathematics to describe these laws of nature from the movement of planets around the sun to the arrangement of petals on a flower elucidating the fact that the universe itself must be mathematical.

One of the most counter-intuitive aspects of quantum theory is entanglement. Experiments show that when two correlated particles in a system are individual shot off in opposite directions a measurement of one particle will instantaneously give information about the second particle when it is measured even if the two particles are separated by vast distances. No energy transfer takes place between particles, only information exchange. In the QBist viewpoint, this information exchange is a change of consciousness within the observer.

Vopson explains that the phenomenon of non-locality in quantum entanglement could be explained by considering that, in a simulation, all points are equidistant from the central processing unit.

Only a limited part of this book was accessible to this reader as much of the book was too technical. Still, it contained many gems that helped me to understand the nature of reality.