

The Grubby Space Time (GST) Interpretation of the Universe

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<https://youtu.be/F2qwbcTmRhw&lc=UgzTLPz4Ib6myjXb-VZ4AaABAq>

A Comment on the [Closer To Truth](#) YouTube post:
John Leslie - The Mystery of Existence (May 4, 2023)
<https://youtu.be/F2qwbcTmRhw?t=0m0s>

[0:00](#) Kuhn "*Given the expansion of our understanding of what's real in the physical world — with multiverses, with the unbelievable profusion of possibility — what is the landscape of possible explanations for how the universe came about?*" Regarding a profusion of possibilities, here is a counterquestion: Is a lump of clay the sum of every object that it *could* become, or is it only a lump with rules for how to transform it into new shapes?

The question of infinite sums arises because quantum field theory assumes the existence of an infinitely precise, infinitely malleable spacetime whose modes of vibration are the particles we see in everyday life. Tossing a grubby particle into this Platonic perfection is akin to striking a beautiful gong with a pointy mallet: It creates an infinite spectrum of vibrations that, in turn, represents the many possible futures of that particle. Some, such as Richard Feynman, viewed this spectrum as a calculation method that lacked physical reality until the subsequent particle detection. Others, Hugh Everett in particular, assigned each vibration a reality of its own, creating an expanding multiverse in which the original particle existed, at best, as little more than a sum of all its futures.

With so many infinities rummaging and bumping about, it's easy to assume that Everett-style multiverses also encompass the full range of possible explanations for how the universe came about. After all, how could the completed landscape of possible universe origins *not* exist somewhere within such infinite diversity?

If the goal is completeness, then what is missing is a full exploration of the axioms themselves. More specifically, quantum field theory says that spacetime is the first reality, and particles are nothing more than vibrations residing in that more profound reality.

But what if you switch the particle and spacetime roles?

Think of every description you've seen of quantum mechanics. If you look at it carefully, you see that spacetime is perfect, and it is always the *particles* that lose track of where they reside within it. Silly, grubby, imperfect particles!

But maths are marvelously flexible things. They capture what must happen without necessarily defining the details of the mechanisms involved.

Consider this alternative: What if it's *spacetime*, not the particles, that is silly, grubby, and imperfect? What if the reason you cannot find a particle has *nothing to do with the particle*, but everything to do with the inability of an imperfect spacetime to keep close track of where that particle resides relative to the rest of the universe?

Let's call this the GST (Grubby Space Time) interpretation. What are its consequences?

Think of the electron double-slit interference experiment. In GST, the electron never stops being an electron and never "loses" itself. What *does* happen is that it takes a sneaky side door that keeps the universe from constructing a well-defined spacetime path for its behaviors. In the end, poor GST gives up and says, "I can't *tell* which path it took!"

Similarly, an unstable particle never stops being an unstable particle. A muon either decays or does not, and *does not care* what the rest of the universe thinks about it.

There are no superpositions of dead and alive cats in a GST universe. If you manage to meet the demanding criteria for keeping the box quantum — e.g., *one* photon impacting the box destroys much of its coherence — all you end up doing is introducing a bit of uncertainty as to *where* the box winds up in GST. The cat could care less about such trivia and worries far more about that vial of poison if it's a particularly clever cat.

"But quantum field theory *works beautifully*, and relies utterly on the ability of Platonic spacetime to support infinite modes of vibrations! Where do all the vibration modes go if you flip it upside down? How do photons propagate through empty space?" The simple answer is that QFT never answered that question in the first place since it is inherently an *aether theory* that uses fields *locked into a specific relativistic frame* — the same one at either end of a Feynman diagram, to be more specific. The emergence of quantum waves, which are waves not of substance but of incomplete knowledge, is far subtler and more entangled than any such brute-force, intensely classical wave model suggests. Holographic representations get closer to the truth, but they, too, fall short of describing the dynamics of how photons cross vast gulfs of empty space. This area needs work.

So is a single-outcome GST universe superdeterministic? That is, is GST just another way of saying that everything in the universe follows only *one* customized worldline?

In terms of variety, GST certainly falls closer to superdeterminism than Everett's many worlds. However, the answer is no, since superdeterminism is another form of infinitely precise spacetime. But that's a discussion for some other time.

In a GST universe, the future of a lump of clay remains open but never infinite. Its fate becomes the choice of those who mold it, subject to local and beyond-time rules constraining its possible future paths. Does a GST universe fall within John Leslie's arguments for the emergence of what is ethically valuable? Only he can answer that. A GST universe, by definition, lacks Platonic perfection of space and time. Yet at the same time, its complex interaction of timeless and timebound processes approximates those Platonic ideals well enough to allow us to conceive and converse about them.