Infinite Universes Versus Losing a Puppy

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https://www.youtube.com/watch?v=ByXX6g6J4jA&lc=UgxFO4JXgLxKJehAqcd4AaABAg

A Comment on the Closer to Truth post:
Max Tegmark - Are There Multiple Universes?
https://youtu.be/ByXX6g6J4jA?t=4m58s

PREAMBLE: *If you lose a puppy, the puppy doesn't cease to exist, replicate infinitely, or care much that you lost it. You merely lack the information to find it and thus can make only broad remarks about the expanding circle of where the puppy may be. Physics has a more robust version in which recent information on the puppy's location isn't just hard to find but does not exist anywhere. We call that a quantum state. Once again, though, the puppy doesn't care. It just wonders why everything got so very dark for a while.*

4:58 Tegmark "... Heisenberg uncertainty ... says [the balanced pencil] will fall ... in all directions in a ... so-called quantum superposition ... that's how easy it is to create ... quantum parallel worlds." No. The *observed* physics is that if you can shield the pencil from all scales of external linear momentum interactions, even ones as minute as one photon reflecting from the pencil, then — and *only* then — you must switch to a quantum representation of the pencil's angular state. That is an entirely different statement from saying all perfect symmetries "must" go quantum.

Even if you manage to keep a balanced pencil isolated from the rest of the universe, it's the pencil's *angle* — its positional relation to the rest of the universe — that becomes an infinite superposition, not the pencil. Notably, an infinite superposition of angles has no additional energy cost, while an infinite superposition of *pencils* has an infinite energy cost that would create a black hole. Since we seldom observe pencils turning into black holes, it's a good bet that the superposition math stands for angles, not pencils.

Feynman's lecture on electrons self-interfering as they pass through two slits provides a cautious and insightful analysis of such issues. In particular, he points out the curiously direct relationship between photon momentum wavelengths and the degree of localization of the electron near the slits.

That lecture is a beautifully specific and underappreciated example of how "wave collapse" is neither an all-or-nothing concept nor an experimentally inaccessible one. Feynman notes, for example, that the degree of "collapse" of a quantum wave never exceeds the minimum photon wavelength, which also gives the photon's momentum. That kind of specificity sounds far more like a nonlinear and irreversible spacetime event than it does the formation of new, *unobservable* universes.

The phrase "I believe" pops up a lot in this video. One can, of course, interpret equations derived from experiments any way one wishes. Still, Feynman's deep respect for the experimental sources behind the equations seems like a good starting point for any interpretation.

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PDF: https://sarxiv.org/apa.2022-12-19.0232.pdf