Is reality deterministic?

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Content from

Why? In Pursuit of the Ultimate Answer (2008), *Why Human Life Makes Sense* (2011, 2012)

♦ Context

- ◊ **We can imagine impossible things:**

  Perpetual motion machine. Flying by flapping arms.

- ◊ **We can imagine determinism, but it is impossible.**

♦ Spacetime is continuous

- ◊ **Square having sides of integer length 2 has diagonal of length 2 √2.**
- ◊ **Real numbers are required to represent spacetime.**

♦ Definition of determinism

- ◊ **State A occurs before state B.**
- ◊ **Given that state A occurs, state B must occur by logical necessity.**
- ◊ **Ex: God can't create a deterministic system.**

♦ Kinds of states: discrete vs. continuous

- ◊ **Discrete state has discrete boundaries — boundaries of infinite precision.**
- ◊ **Continuous state has no boundaries — probability distribution with infinite tails.**

♦ Determinism requires discrete states

- ◊ **Determinism requires precise values as to location in space, in time, and on any other continuum, such as color.**
- ◊ **Determinism is impossible if distribution has infinite tails.**

♦ Discrete state can't be realized, making determinism impossible

- ◊ **An infinite value cannot be realized because realization would require an infinite amount of time, which is impossible.**

♦ Quantum mechanics

- ◊ **The foregoing insights are consistent with quantum mechanics:**

  Location of electron. Heisenberg uncertainty principle.

♦ Zeno paradoxes

- ◊ **The foregoing insights solve the Zeno paradoxes.**
- ◊ **Ex: dichotomy paradox**