Does god play dice with the world?

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Many complex deterministic real-world phenomena (physical, biological, chemical, economical, etc.) can be described by simple probabilistic mechanisms, in which a large number of agents (particles, cells, atoms, users, etc.) interact with each other according to primitive rules. Although the nature of the interaction is probabilistic, law of large numbers phenomena yield an almost deterministic outcome, which is what we observe. I will explain this philosophy in general and then give examples, such as: viral marketing on Facebook, the magnetization of iron, making whipped cream and more. No previous background is required.