What kind of system?

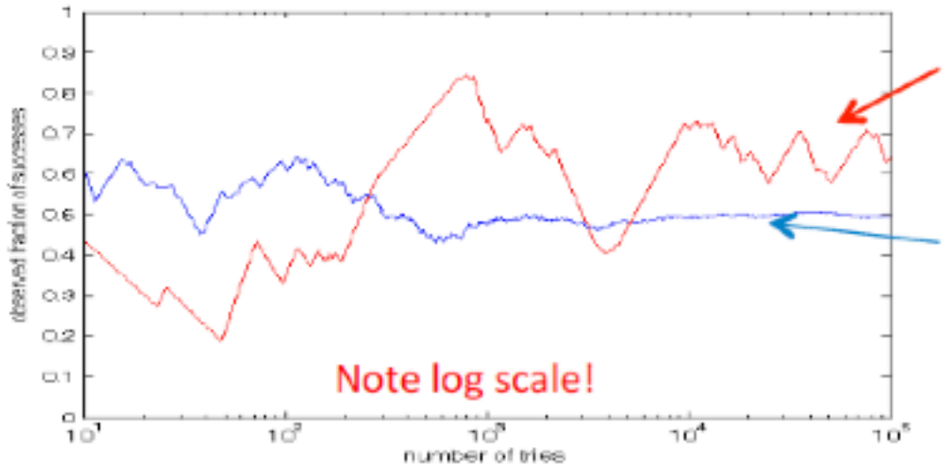
1. Non-*ergodic*
(non-stationarity of level & trend of central moments, non-homogeneous fluctuations/ variance)

2. No *memorylessness* property
(after-effects of interactions with internal and external environment: long-range dependence, anomalous diffusion)

What kind of system?

For complex adaptive systems (with internal state) the very notion of probability may not make sense.

Every time you click the button, either the Red or Green light goes on. By repeated clicks, estimate the probability P(Red).



Red fraction never converges!

By comparison, this is what a process converging as $t^{-1/2}$ would look like.

For those mathematically inclined: Would you be more surprised if I told you that the internal state of the machine is exactly statistically stationary, that is, P(state | *t*) does not depend on *t*?

Press, W. H. (2014). Reproducibility Now at Risk? Paper presented at the Symposium on Evidence in the Natural Sciences New York, NY. https://www.simonsfoundation.org/event/symposium-on-evidence-in-the-natural-sciences/