

Review of: "On the statistical arrow of time"

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This is an interesting paper, well written and with a well argued thesis and the subjectivist and the objectivist interpretations of probabilities are at the core of the discussion. I would though quote also De Finetti's view point, at least as for the remark that when probabilities are mathematized an "observer" needs to chose a measure, in the mathematical sense (Lebesgue's or other) – a key "subjective" step. Moreover, and more importantly, there is a perspective that is missing, an intermediate one between the subjectivist and the objectivist interpretations. This is nicely spelled out in Rovelli's book, *The Order of Time*, that the author does not quote. In this case the order of time is imposed by the interaction of two systems (one may be an observer, but not necessarily), which forces a "coarse graining". This view is applied in the understanding of time in Biology, in Longo G. *Confusing biological twins and atomic clocks. Today's ecological relevance of Bergson-Einstein debate on time.* In "Einstein vs Bergson. An enduring quarrel of time", A. Campo and S. Gozzano, eds, De Gruyter, 2021 (downloadable): to put it shortly (and incorrectly) as soon as there are two interacting living cells, a coarse graining is established and, following Rovelli's interpretation, an arrow of time.