

Review of: "On the statistical arrow of time"

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The author for the most part of the article, recapitulates what is well established in literature. The article can be best summed up as “a review of subjective interpretation of probability from a classical perspective” in the context of statistical mechanics. The present title is very catchy and hence has deserved attention. I, personally have some contentions regarding the usage of entropy as merely “a lack of information”, however, I will not hold the author against that. The case of gas molecules in a container could have been explained in a better way, also the deck of cards example does not feel right. What I would also like to point out, is the restriction imposed by the author by not noticing the subadditivity feature of entropy and constraining the discussion only to the case of independent evolution of joint systems seems a tailor-made case to suit the authors goal and lacks completeness. The incorporation of phase-space uncertainty although implies lack of information, it is however, to be noted that a classical observer is infinitely wise and hence such lack of information should not be a concern. In the same vein, if pure and mixed states are being discussed, one must clarify the clear context in which it is so. I assumed the context to be statistics only. The usage of “observer”, “knowledge”, “interaction”, “information” is somewhat vague. I mean, if an observer makes an observation, it requires some kind of interaction, so how much the observer can be made isolated from the observed while gaining knowledge about a system is not clear. The statistical nature of the second law of thermodynamics again incorporates the ignorance of the observer concept, which is not a settled fact. Besides this, this article takes most of the space to build up the background with filling with already established results (maybe the author wants to re-present those results to make a point, and I may have missed it), and spends comparatively less amount of time in actually discussing the main objective. I recommend shortening of the article-length and removal of unnecessary derivations while making the main objective and arguments clearer so that the message is sent across in a more compact manner. It must be born in mind, too many words beget too many arguments. This version therefore requires careful renovation/modification by considering removal of vague meaning terms and possible compactification.