

The Thermodynamical Arrow of Time: Reinterpreting the Boltzmann-Schuetz Argument

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Abstract

The recent surge of interest in the origin of the temporal asymmetry of thermodynamical systems (including the accessible part of the universe itself) put forward two possible explanatory approaches to this age-old problem. Hereby we show that there is a third possible alternative, based on the generalization of the classical ("Boltzmann-Schuetz") anthropic fluctuation picture of the origin of the perceived entropy gradient. This alternative (which we dub the Acausal-Anthropic approach) is based on accepting Boltzmann's statistical measure at its face value, and accomodating it within the quantum cosmological concept of the multiverse. We argue that conventional objections raised against the Boltzmann-Schuetz view are less forceful and serious than it is usually assumed. A fortiori, they are incapable of rendering the generalized theory untenable. On the contrary, this analysis highlights some of the other advantages of the multiverse approach to the thermodynamical arrow of time.

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