

# Typicality and the Approach to Equilibrium in Boltzmannian Statistical Mechanics

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## Abstract

Systems prepared in a non-equilibrium state approach, and eventually reach, equilibrium. Why do they do so? An important contemporary version of the Boltzmannian approach to statistical mechanics answers this question in terms of typicality. The problem with this approach is that it comes in different versions, which are, however, not recognised as such and not clearly distinguished. The aim of this paper is to identify three different versions of typicality-based explanations of thermodynamic-like behaviour and evaluate their respective success. My conclusion is that the first two are unsuccessful because they fail to take the system's dynamics into account. The third, however, is promising. I give a precise formulation of the proposal and present an argument in support of its central contention.

**Keywords:** Typicality, probability, Boltzmann, approach to equilibrium, non-equilibrium

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