

What the Monty Hall Problem Can Tell us (Which it Hasn't Already)

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Abstract:

The Monty Hall Problem is a well-known probabilistic brainteaser that gave rise to a huge amount of academic debate. This paper presents methodologies to discuss two lesser-known versions of the problem, displaying unexpected results. In the first variant, knowledge of the participants, and knowledge about knowledge of other participants impacts on the assessment of probability. In the second variant, different players receive the same information and reach different results, in another scenario they receive different information reaching the same result. In those variants it is unclear what factors probability depends on and what are its determinants. If probability's determinants are unclear, ontic ex-post probability itself can be deemed scarcely reliable. The findings of this paper follow the footprint of Bruno de Finetti (1906-1985) who, quite provocatively, stated that "probability does not exist". This anomaly is likely to invest other fields of human knowledge, especially those that more heavily rely on probability calculus. The dismaying conclusion of this paper is that probability, in its ex-post version, may not be an adequate tool for interpreting the world we live in and for understanding the complexity of reality and the provisional nature of our knowledge.