

The Effects of Prior Knowledge on Decisions about the Best Explanation: A Bayesian Account

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There is an ever-present need to make rational choices between competing explanations, both in everyday life and in science. This need calls for accounts of explanatory power (EP), which state in precise terms what does it mean for one explanation to be better than another. Several probabilistic accounts of EP have been proposed so far (Popper, 1959; Good, 1960; McGrew, 2003; Schupbach and Sprenger, 2011), and their descriptive accuracy has been tested by Schupbach (2011), using a modified version of an experimental design, originally proposed for testing confirmation measures (Phillips and Edwards, 1966; Tentori et al., 2007). A striking feature of the existing measures of EP is that all of them are only sensitive to the likelihood of the evaluated explanatory hypotheses, and to the probability of the explanandum. There are examples, however, which seem to show that prior knowledge, influencing the prior probabilities of the assessed hypotheses, sometimes plays a crucial role in deciding which one of them is the best explanatory hypothesis, i.e. the “best explanation”. This project’s aim is to provide a more descriptively adequate probabilistic measure of explanatory power, when compared to the existing likelihood-based measures. For this purpose, a new EP measure is introduced, which is sensitive to the influence of prior knowledge on the plausibility assessment of an explanatory hypothesis.

References

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