

What Ockham's Razor Cuts: Quantifying simplicity in explanation choice

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Abstract: Observations from everyday life, the history of science, and well-controlled laboratory experiments suggest that when it comes to choosing between competing causal explanations, simplicity is an important factor. Less examined is the metric or metrics by which simplicity is quantified. Generally, it is assumed that simplicity can be described by counting the number of elements in an explanation, e.g. the number of causes, and this approach has been taken by fields as diverse as philosophy, psychology, and statistics. One alternative is that in the case of causal reasoning, one might consider the simpler explanation to be the one that includes the fewest unexplained causes, i.e. the fewest root nodes in the language of Bayesian causal-nets. We present two experiments supporting the hypothesis that this metric for simplicity is sometimes used in choosing between explanations, and can outweigh the total number of causes invoked in an explanation.