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TITLE: Topology, Simplicity, and the Optimal Truth Conduciveness of Ockham's Razor

Here are some traditional questions concerning the nature and justification of scientific method. What is empirical simplicity? Given a definition of simplicity, what does Ockham's razor amount to? And given answers to the first two questions, how could Ockham's razor help one to arrive at universal truths better than alternative strategies, when the truth might be complex? We answer all three questions, in a systematic way, based on topological ideas. Simplicity is a natural topological order that emerges when one partitions one's original problem context in the right way into simplicity degrees. Ockham's razor has two dimensions. Ockham's horizontal razor demands that one's belief state be co-initial in the simplicity order over simplicity degrees compatible with current information. Ockham's vertical razor requires that one's belief state be closed downward with respect to the simplicity order over degrees compatible with current information. Finally, inductive truth conduciveness is a matter of pursuing the truth as directly as possible. We show that the horizontal razor minimizes course reversals en route to the true theory and the vertical razor minimizes cycles of opinion en route to the true theory. The cycle optimality of Ockham's vertical razor holds for every problem that has a simplicity concept, whereas the reversal optimality of Ockham's horizontal razor holds only for problems with particularly regular simplicity concepts. The distinction aligns, roughly, with that between normal and revolutionary science.