
Will Simpson's Paradox and the Sure Thing Principle Resolve the Fitness Wars?

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Abstract

The ontological status of organismal or trait fitness has been a topic of heated debate in the philosophy of biology. On one side of the issue there are those who claim that fitness is a causally efficacious, probabilistic dispositional property (i.e., a propensity) of the individual organisms comprising a population. For ease of future reference, let us refer to this position as "the orthodox view" regarding natural selection explanation. In stark contrast, opponents of the propensity interpretation contend that fitness is a mere statistical, noncausal property of trait types; explanatorily but not causally efficacious. Dennis Walsh, one of the architects of the statistical interpretation, has recently (2010) argued that the causal commitments of the orthodox view *entail* a probabilistically non-benign version of Simpson's paradox and ultimately the violation of a principle in decision theory known as the "Sure Thing Principle." If correct, this would constitute a fatal result for the orthodox view since causal claims must conform to the directive of the aforementioned principle. In this paper I argue that Walsh has overstated the case against the orthodox view. I begin by sketching out the relevant differences between the two competing positions with respect to the concept of fitness and its explanatory role in theoretical population biology. This is followed by a brief review of the pivotal distinction between probabilistically "pathological" and "benign" instances of Simpson's paradox, and a careful examination of the problem case that supposedly stymies the orthodox view. I shall conclude by contending that it is only via a conflation of conditional probability and logical implication that Walsh's critique can be construed as decisive.

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