



Natural selection. IV. The Price equation

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The Price equation partitions total evolutionary change into two components. The first component provides an abstract expression of natural selection. The second component subsumes all other evolutionary processes, including changes during transmission. The natural selection component is often used in applications. Those applications attract widespread interest for their simplicity of expression and ease of interpretation. Those same applications attract widespread criticism by dropping the second component of evolutionary change and by leaving unspecified the detailed assumptions needed for a complete study of dynamics. Controversies over approximation and dynamics have nothing to do with the Price equation itself, which is simply a mathematical equivalence relation for total evolutionary change expressed in an alternative form. Disagreements about approach have to do with the tension between the relative valuation of abstract versus concrete analyses. The Price equation's greatest value has been on the abstract side, particularly the invariance relations that illuminate the understanding of natural selection. Those abstract insights lay the foundation for applications in terms of kin selection, information theory interpretations of natural selection, and partitions of causes by path analysis. I discuss recent critiques of the Price equation by Nowak and van Veelen.

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