

issues underpinning their use that need to be thought about on a case-by-case basis. We hope that our paper continues to stimulate discussion of the circumstances under which monitoring is justified in a cost-constrained world.

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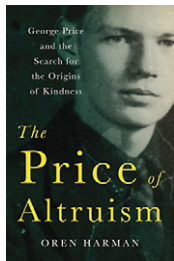
### Book Review

## Tortured genius

**The Price of Altruism: George Price and the Search for the Origins of Kindness** by Oren Harman. The Bodley Head, 2010. £20.00, hbk (464 pages) ISBN 978 1847920621

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Recent years have seen growing interest in the evolutionary theorist George Price. His life, work and death have been touched upon in academic papers, works of popular science, a BBC television series and even a murder/horror film. Despite this interest, Price has generally played only walk-on parts in the story of sociobiology, and aficionados of his story have had to piece together scraps of information from a range of sources. In answer to this neglect, Oren Harman's *The Price of Altruism* provides the first book-length biography of this enigmatic character.

Harman opens Price's story with his parents, William and Alice, and the home they made in 1920 s New York. Following William's death, Alice battled to raise her sons while keeping the family business afloat through the Great Depression. Price showed this same tenacity through his adolescence and adulthood, in his pursuit of girls and academic fame. His degree in Chemistry at Chicago led to work on the Manhattan Project, where he met his wife Julia, and from there to Bell Labs. During this time, Price pursued a bewildering range of interests: electronics, neurobiology, challenging the claims of ESP research [1,2] and apparently inventing computer-aided design. However, in his restlessness, he failed to capitalize on any of these achievements, and his marriage soon fell apart. A generous insurance settlement following a botched operation to remove a thyroid tumour offered him a fresh start and, during his late forties, Price relocated to London to pursue a new interest in evolutionary theory.

Working in public libraries, he derived what is now known as the Price equation [3,4], a completely general encapsulation of evolutionary change that applies to all species and all modes of inheritance, and now underpins whole disciplines, such as social evolution. This work led

Price to befriend W.D. Hamilton, who was laying the foundations of inclusive-fitness theory. A second contribution followed: the application of game theory to animal combat. Although Price's manuscript was initially declined, the reviewer (John Maynard Smith) saw promise in the approach, and the two men later collaborated on the seminal *Logic of Animal Conflict* [5], which launched evolutionary game theory. Finally, Price proved a central result of evolutionary theory: R.A. Fisher's fundamental theorem of natural selection. In a charming article [6], he catalogued with mild exasperation the "astonishing number of lesser obscurities, infelicities of expression, typographical errors, omissions of crucial explanations, and contradictions between different passages" in Fisher's 'exposition' that had caused the theorem to languish, misunderstood, for decades.

This period of discovery did not last. Even while developing the evolutionary theory that would make his name, Price was increasingly consumed by religious mania. Giving away his money, possessions and home to London paupers, he placed his own fate in God's hands. However, providence failed to materialize and, reduced to poverty, he finally committed suicide in a squatters' tenement, in the grip of painful, unrequited love for a young woman with whom he had become infatuated.

*The Price of Altruism* is a well-researched biography that has brought George Price, the man, into sharp focus for the first time. Harman paints a picture of a brilliant mind, obsessive and restless in equal measure, blessed with an ability to scrutinize the world and make it yield its secrets, but cursed with an aversion to commitment that sabotaged any prospect of a fulfilling academic career or a happy personal life. Curiously, I am still left with little impression of what made the man tick: the reasons for his eclectic interests and weird behaviour remain obscure. However, Price appears to have been just as distant from those who knew him personally. Harman's great achievement is to make the reader feel as though they were part of this inner circle.

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Sadly, the book does Price's work somewhat less justice, forcing it into a narrative about altruism that borrows heavily from Lee Dugatkin's book *The Altruism Equation* [7]. Price's equation, and his treatment of the fundamental theorem, transcends individual traits, such as altruism, to reveal the inner workings of natural selection itself. Even with respect to his forays into social evolution, his game-theoretic treatment of animal conflicts concerns mutually beneficial cooperation, which increases the fitness of the actor, rather than true altruism. Instead of the emphasis upon altruism, more space could have been dedicated to critical evaluation of his contributions, especially those beyond evolutionary genetics. Here, Harman has unearthed some real gems, but is strangely incurious of their value. Have neuroscientists confirmed Price's ideas about the role of the glial cell in vision? What would New Testament scholars make of his biblical exegesis on *The Twelve Days of Easter*? An opportunity for proper appraisal of Price's work has been missed.

For those who want to understand Price's scientific achievements, Steven Frank's article 'George Price's con-

tributions to evolutionary genetics' [8] remains the quintessential text. However, Harman's book is a must for anyone who is curious to learn about the man behind the Price equation. George Price's gruesome death might be the draw for many of Harman's readers, but it is his fascinating life and bizarre personality that will remain with them long afterward.

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