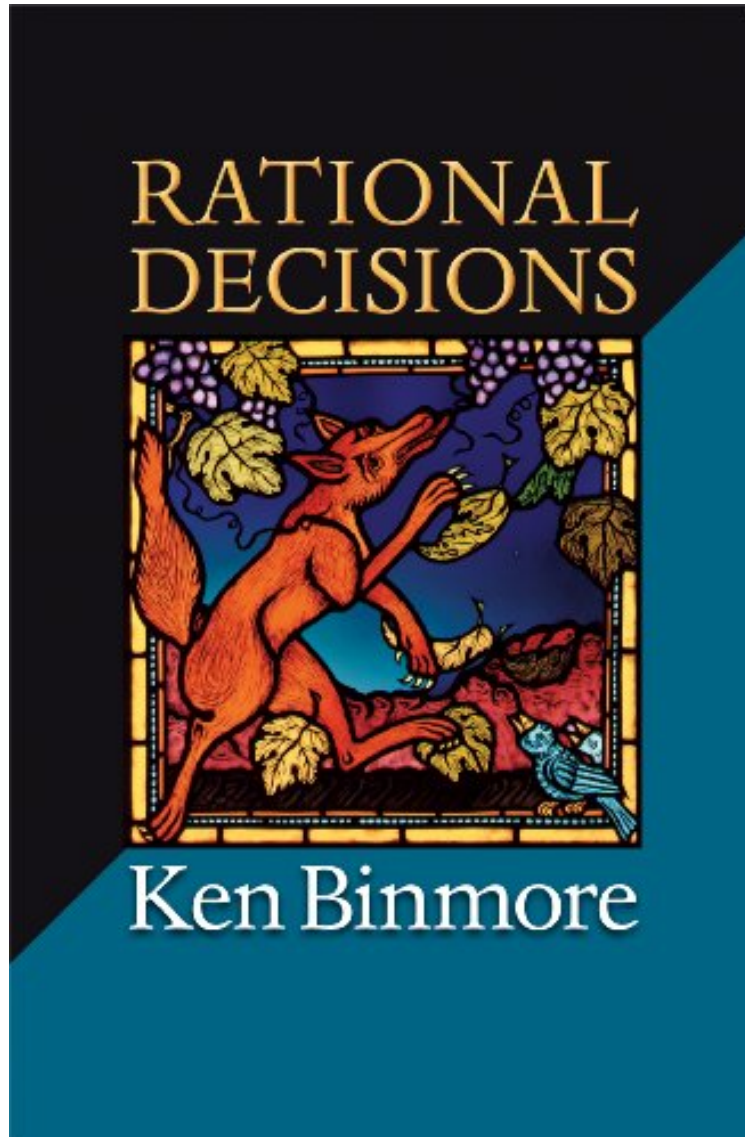


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Rational Decisions (The Gorman Lectures in Economics)

Ken Binmore

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Ken Binmore : Rational Decisions (The Gorman Lectures in Economics) before purchasing it in order to gage whether or not it would be worth my time, and all praised Rational Decisions (The Gorman Lectures in Economics):

18 of 18 people found the following review helpful. Must read for the foundations, back to the source, with surprisesBy N N TalebThis is a must read as it presents a comprehensive set of the principles and axioms behind neo-classical economics. Binmore is a mathematician, hence everything is mapped properly, clearly, and thoroughly.I spent several days in a seminar with Binmore and was surprised to discover, from his arguments, that much of the criticism against the foundations of decision theory are strawman. For the theory doesn't say what people think it says.

It may have some problems (such as knowledge of probability and understanding of future payoffs) but not the problems discussed in the behavioral and heterodox literature that appear to be violated by people in their experiments. Binmore writes the following gem: "Nor does the theory [Revealed Preferences] insist that people are selfish, as its critics mischievously maintain. It has no difficulty in modeling the kind of saintly folk who would sell the shirt off their back rather than see a baby cry". Binmore doesn't say it explicitly, but hints that even the highly influential critiques of Amartya Sen in "Rational Fools" and elsewhere appear to be a bit strawmannish. The book is short and dense enough to be a reference. 0 of 6 people found the following review helpful. Academic Writing at Its Worst By LVZee If I were better at making rational decisions, I would neither have purchased this book, nor wasted my time reading it. Ken Binmore and his heroine Pandora manage to delve into some sort of quest for the hair-splitting mathematical minutiae underlying decision making, especially Bayesian decision making, without coming remotely close to discussing important issues of how one should make rational decisions in the real world. Unless you are a desperate PhD candidate in search of an obscure topic on which you can pontificate, avoid this book. 41 of 43 people found the following review helpful. An Inimitable and Exhilarating Tour of Decision Theory By Herbert Gintis Modern decision theory was founded by Frank Ramsey and Bruno de Finetti in the 1930's, but the definitive exposition is due to Leonard (Jimmie) Savage in the late 1950's. Bayesian decision theory has both ardent supporters and petulant detractors, but like Binmore, I believe it is about the best thing going, despite its limitations. Binmore sets himself the task of both expounding and defending theory, while stressing the limited domain over which it applies. His assessment is insightful and balanced, basically embracing Savage's own assessment of the theory. Ken Binmore has always been a brilliant thinker, but he used to be an awful writer, combining the worst of repetitiveness and opaqueness. He has, however, become an excellent writer, as this slim volume attests. Binmore refuses to "stick to the facts," but rather offers his personal opinions at every turn. This can be extremely refreshing. Daniel Ellsberg, he tells us, "made a number of important contributions to decision theory before he heroically blew the whistle on Richard Nixon's cynical attitude to the loss of American lives in the Vietnam War by leaking what became known as the Pentagon Papers" (p. 89). Concerning the excesses of Bayesianism, he writes that "the ghost of the Reverend Thomas Bayes must be in a constant state of astonishment that our culture has embraced a philosophical doctrine called Bayesianism that treats the trivial manipulation of conditional probabilities that he discovered sometime before 1764 as the solution to the problem of scientific induction." (p. 126) Commenting on the Harsanyi Doctrine, Binmore writes: "John Harsanyi...advocated using a mind experiment to determine the one-and-only rational prior. If Pandora imagines that a veil of ignorance conceals all the information she has ever received, she will supposedly select the same prior as all other ideally rational folk in the same state of sublime ignorance. But when I try this trick, no ideas about a suitable prior come to me at all." (p. 128) There are more expansive critiques of the Harsanyi Doctrine, but none so disarmingly accurate. Binmore follows Savage in defending the "small world" application of the rational actor model. In "small world" decision theory, decision-makers know the payoffs and probabilities, and decisions come down to a simple choice among an array of clear alternatives. In the "large world" in which we live, Binmore asserts that Bayesian decision-making is virtually useless, or at least highly compromised. Indeed, human decision-makers share the capacity for rational choice with many other species, but only humans can make creative, insightful, and personally enhancing decisions under conditions of extreme uncertainty and partial ignorance. Similarly, new information in the small world context entails Bayesian updating using conditional probabilities, but in the large world, new information can lead to wholesale rejection of a mental framework in favor of an alternative. Binmore spends several short chapters developing a "muddling through" alternative that he believes might apply to the large world context. His exposition is creative and enlightening, although purely mathematical. There is a whole school of cognitive psychology currently working on this issue, including Alison Gopnik at UC Berkeley and Joshua Tenenbaum at MIT, who believe Bayesian insights apply to understanding the human brain, who might learn from Binmore's exposition (and conversely, Binmore might gain from the study of such cognitive research). Instead of heaping more praise on this book, some alternative insights might serve the reader better. I can supply several. For one, Binmore follows the crowd in holding that the Nash equilibrium concept is the centerpiece of game theory. He writes: "There are two reasons why game theorists care about Nash equilibria. The first reason is that a game theory book can't authoritatively point to a pair of strategies (a,b) as the rational solution of a game unless it is a Nash equilibrium." (p. 26) In fact, in many games, we can authoritatively point to a range of non-Nash strategies that are routinely played by rational players, and have higher payoff than Nash strategies. For instance, in the finitely repeated Prisoner's Dilemma, the only Nash equilibrium is mutual defection on every round. However, real-life individuals often cooperate for many plays of the game, until the final period of play looms large on the horizon. Moreover, rational individuals rarely have an incentive to play a mixed strategy because all the underlying pure strategies have equal payoff. Binmore gives as the second reason for stressing Nash equilibrium that all stable equilibria of evolutionary games are Nash equilibria of the underlying stage game. This is true, but only if errors take particular forms. Low levels of random mutation in such systems can maintain the evolutionary system far, far from a Nash equilibrium. Binmore moreover strenuously supports the position that the only rational move in the Prisoner's Dilemma is to defect. Now, his argument is mainly directed against implausible philosophical arguments that are highly

deserving of criticism. But in the real world, subjects often prefer to cooperate, provided their partner's cooperate, and there is certainly nothing irrational about such other-regarding or morally-influenced behavior. Binmore makes his point by arguing that if Alice and Bob prefer to cooperate in the Prisoner's Dilemma, then it really isn't a Prisoner's Dilemma at all, but rather a new "Reciprocator Game. This is just false. The Prisoner's Dilemma is defined by a set of available actions and a payoff matrix, independent of whether the players are self-regarding or other-regarding. I think is counterproductive to defend the principle that rationality implies defection in the Prisoner's Dilemma by redefining the game when rational players prefer not to defect. One of the more controversial of Binmore's choices is to develop a measure-theoretic approach to probability theory. I am sure this is useful in some cases (e.g., when dealing with diffusion processes), but most of game theory and decision theory gets by very well by assuming finite probability measures. Moreover, the Axiom of Choice is a key assumption in justifying the Lebesgue measure/Kolmogorov probability approach, and the Axiom of Choice forces the analysis to be non-constructive. This feeds the economist's tendency to shy away from constructive approaches to model-building. My prejudice is to use non-constructive approaches only where absolutely necessary, and then to apologize that we cannot do better. Binmore's treatment of epistemic game theory is very exciting and insightful, but probably too breezy for all but the most knowledgeable readers. Gouml;del's contributions are taken for granted, as well as Turing's and Church's. Binmore makes an argument inspired by the Turing halting problem that "seeks to discredit the use of Bayesian epistemology in worlds in which...self-reference cannot be avoided." (p. 146) The argument is quite sophisticated, but it is not complete (it assumes a certain Turing machine L "sometimes answers NO when asked suitable coded questions" without suggesting why, or when, this might be the case). In fact, as Binmore notes, there is an argument due to Kaplan and Montague (Mind 1960) that makes such an argument based on Gouml;del's constructions. The whole self-referencing literature is important and critical for game theory. It is wonderful to see even a brief treatment in this book. I have found in several of Binmore's writings what seems to me to be a confusion of rationality and common knowledge of rationality (CKR). This occurs clearly in Rational Decisions. Referring to Robert Aumann's famous proof that CKR implies backward induction in extensive form games, Binmore says "But rational players stay on the equilibrium path because of what would happen if they were to deviate. In the counterfactual world that would be created by such a deviation, the players would have to live with the fact that their knowledge that nobody will play irrational has proved fallible." (p. 149) In fact, it is not rational players, but players who accept CKR, who stay on the equilibrium path, and counterfactuals have nothing whatever to do with it. Moreover, it is not a violation of rationality to move off the equilibrium path, but rather a violation of CKR. Indeed, as both Aumann and Binmore understand, and as I explain at length in my book, The Bounds of Reason (Princeton, 2009), CKR is precisely the sort of self-referencing condition that should be avoided. Indeed, I argue that CKR is not a "higher form" of rationality, but rather a technical condition that has no epistemic justification. Just to check my memory, I went back to an article Binmore wrote in 1996, "A Note on Backward Induction," Games and Economic Behavior 17, 135-137. In this paper, Binmore objects to Aumann's proof (1995) that CKR necessarily implies backward induction. Here are three examples of Binmore equating rationality with CKR. First, Binmore writes "According to Aumann (1995), common knowledge of rationality in the Centipede makes it irrational for player I to choose across at his opening move." In fact, of course, it does not make choosing across irrational; rather choosing across violates CKR. Second, Binmore writes "If down is the only Bayesian-rational action at the opening, then $p > \frac{1}{2}$;" In fact, down is not the only Bayesian-rational action; rather it is the only action compatible with CKR. Finally, a rather long but important argument: "if nothing can be said about what would happen off the backward-induction path, then it seems obvious that nothing can be said about the rationality of remaining on the backward-induction path. How else do we assess the cleverness of taking an action than by considering what would have happened if one of the alternative actions had been taken? But this is precisely what Aumann's (1995) definition of rationality fails to do." In fact, Aumann's proof says nothing about what happens off the backward induction path, and certainly does not deny that agents are rational off the backward induction path. He denies that there are nodes off the backward induction path at which CKR holds. This is, of course, correct. This book will energize those working in the field (as it did me), and it can serve as an introduction to some deep issues for the average reader. I would pay close attention to the bibliographical references, which are excellent and extensive.

It is widely held that Bayesian decision theory is the final word on how a rational person should make decisions. However, Leonard Savage--the inventor of Bayesian decision theory--argued that it would be ridiculous to use his theory outside the kind of small world in which it is always possible to "look before you leap." If taken seriously, this view makes Bayesian decision theory inappropriate for the large worlds of scientific discovery and macroeconomic enterprise. When is it correct to use Bayesian decision theory--and when does it need to be modified? Using a minimum of mathematics, Rational Decisions clearly explains the foundations of Bayesian decision theory and shows why Savage restricted the theory's application to small worlds. The book is a wide-ranging exploration of standard theories of choice and belief under risk and uncertainty. Ken Binmore discusses the various philosophical attitudes related to the nature of probability and offers resolutions to paradoxes believed to hinder further progress. In arguing that the Bayesian approach to knowledge is inadequate in a large world, Binmore proposes an extension to Bayesian

decision theory--allowing the idea of a mixed strategy in game theory to be expanded to a larger set of what Binmore refers to as "muddled" strategies. Written by one of the world's leading game theorists, *Rational Decisions* is the touchstone for anyone needing a concise, accessible, and expert view on Bayesian decision making.

Rational Decisions contains a wealth of stimulating arguments and thought-provoking claims. It would be an excellent text for an advanced seminar in decision theory, particularly for students with a solid technical background. And no economist, philosopher or political scientist seriously interested in theories of rational decision-making can afford to ignore Binmore's controversial and iconoclastic claims. From the Inside Flap "Ken Binmore is one of our deepest thinkers on the foundations of economics and game theory. Here he gives us his personal take on standard decision theory and his own extension of the theory to the case in which decision makers cannot assign unambiguous probabilities to future events. This book will be of considerable interest to economists and philosophers alike."--Eric Maskin, Nobel Prize-winning economist "Strong on ideas and opinions but low on jargon, this is one of the most lively discussions of the strengths and limitations of the Bayesian approach to decision making that I have ever come across. Clearly and strongly argued, controversial, and a pleasure to read."--Riccardo Rebonato, author of *The Plight of the Fortune Tellers* "Ken Binmore's new book on rational decisions is a superb up-to-date introduction to the now large and complex literature of this subject. The touch is light, but the examples and theorems are precise. The references are more than ample to lead the reader to more details on those parts of the subject that are of most interest. Although the author is an economist, the content will appeal to philosophers, psychologists, and statisticians as well."--Patrick Suppes, Stanford University "Well-written, with many nice illustrative examples, this book contributes to the ongoing debate on whether the Bayesian method is the proper normative framework for making decisions and updating beliefs. The book is extremely impressive in its breadth of cited references: historical, mathematical, philosophical, and statistical."--Mark Machina, University of California, San Diego "This book takes the reader from the very beginnings of decision theory through innovative new work, and it is written concisely and clearly enough to make the journey seem effortless. It will be essential reading for decision theorists and economists in general, whether new to the field or old hands."--Larry Samuelson, Yale University From the Back Cover "Ken Binmore is one of our deepest thinkers on the foundations of economics and game theory. Here he gives us his personal take on standard decision theory and his own extension of the theory to the case in which decision makers cannot assign unambiguous probabilities to future events. This book will be of considerable interest to economists and philosophers alike."--Eric Maskin, Nobel Prize-winning economist "Strong on ideas and opinions but low on jargon, this is one of the most lively discussions of the strengths and limitations of the Bayesian approach to decision making that I have ever come across. Clearly and strongly argued, controversial, and a pleasure to read."--Riccardo Rebonato, author of *The Plight of the Fortune Tellers* "Ken Binmore's new book on rational decisions is a superb up-to-date introduction to the now large and complex literature of this subject. The touch is light, but the examples and theorems are precise. The references are more than ample to lead the reader to more details on those parts of the subject that are of most interest. Although the author is an economist, the content will appeal to philosophers, psychologists, and statisticians as well."--Patrick Suppes, Stanford University "Well-written, with many nice illustrative examples, this book contributes to the ongoing debate on whether the Bayesian method is the proper normative framework for making decisions and updating beliefs. The book is extremely impressive in its breadth of cited references: historical, mathematical, philosophical, and statistical."--Mark Machina, University of California, San Diego "This book takes the reader from the very beginnings of decision theory through innovative new work, and it is written concisely and clearly enough to make the journey seem effortless. It will be essential reading for decision theorists and economists in general, whether new to the field or old hands."--Larry Samuelson, Yale University