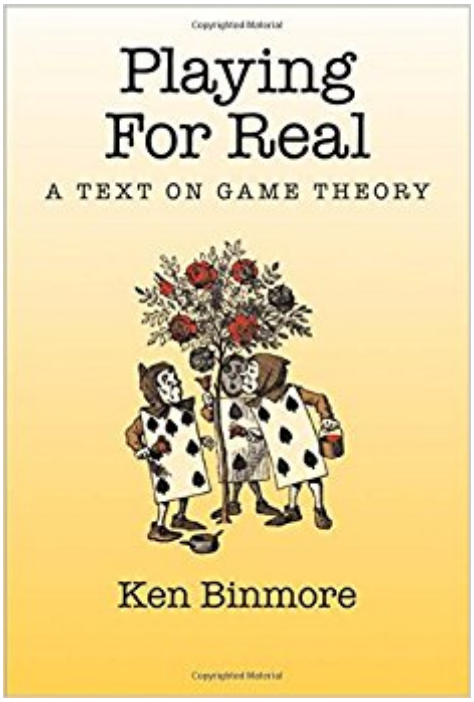
Playing For Real: A Text On Game Theory



Synopsis

Ken Binmore’s previous game theory textbook, Fun and Games (D.C. Heath, 1991), carved out a significant niche in the advanced undergraduate market; it was intellectually serious and more up-to-date than its competitors, but also accessibly written. Its central thesis was that game theory allows us to understand many kinds of interactions between people, a point that Binmore amply demonstrated through a rich range of examples and applications. This replacement for the now out-of-date 1991 textbook retains the entertaining examples, but changes the organization to match how game theory courses are actually taught, making Playing for Real a more versatile text that almost all possible course designs will find easier to use, with less jumping about than before. In addition, the problem sections, already used as a reference by many teachers, have become even more clever and varied, without becoming too technical. Playing for Real will sell into advanced undergraduate courses in game theory, primarily those in economics, but also courses in the social sciences, and serve as a reference for economists.

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Customer Reviews

"Ken Binmore is an outstanding exponent of game theory. His many books are written in a delightfully fresh and engaging style, as is this one. Enjoy!"--Robert Aumann, Center for the Study of Rationality, The Hebrew University of Jerusalem, Nobel Laureate in Economic Sciences, 2005"Delightfully written and thoroughly revised, this long-awaited intellectual child of Ken Binmore’s Fun and Games retains the solid foundation of the original while expanding to cover an impressive array of new ideas. It stands out among game theory texts in explaining not only how to

do game theory, but when and why to do it. It is the ideal place to learn game theory for the first time or to gain a fresh perspective on ideas that a career's work have made familiar." --Larry Samuelson, University of Wisconsin"One of the world's leading game theorists explains the subject with sparkle and wit. He challenges the reader to think deeply about strategic rationality without becoming esoteric, and shows how the theory illuminates down-to-earth topics like gambling, auctions, business competition, and game show contests. A gem of a book written by a master." --Peyton Young, Scott and Barbara Black Professor of Economics, Johns Hopkins University, and Professor of Economics, University of Oxford

Ken Binmore is a mathematician-turned-economist who has devoted his life to the theory of games and its applications in economics, evolutionary biology, psychology, and moral philosophy. He is well known for his part in designing the telecom auction that raised $35 billion for the British taxpayer, but his major research contributions are to the theory of bargaining and its testing in the laboratory. He is a Fellow of the British Academy and of the American Academy of Arts and Sciences. He is the author of 12 books and some 90 research papers. He is Emeritus Professor of Economics at University College London.

Ken Binmore is the broadest thinker working within the classical game theory tradition. Unlike most technicians, he has read widely in philosophy, history, and anthropology, combining a passion for analytical detail with a deep feeling for the broad strokes of human behavior. These characteristics are reflected in this textbook on game theory, which is light-years more sophisticated than the standard fare, yet never sacrifices clarity or expositional elegance on the alter of mathematical or notational rigor. While I would urge anyone who is not math phobic and can recall a bit of high school algebra to tackle this book as an introduction to game theory, I am afraid it will not be widely used in courses because most instructors simply will not have the personal intellectual resources to teach this material. This is because Binmore tackles some of the deepest issues in game theory, whereas most instructors will have had the standard graduate course in which these issues are totally ignored. Moreover, in the interest of clarity, Binmore does not supply the full analytical frameworks in which these deep issues are normally cast, so the instructor will have few resources to deal with the material in a classroom setting. On the other hand, each chapter has plenty of problems that an instructor could use to illuminate the text, say by assigning half to the students and solving some of the remaining problems in class.Like every textbook writer before him, Binmore treats the Nash equilibrium with great reverence as a solution concept. I consider this a significant

error, but at least Binmore tries to explain why (p. 18-19). His answer is sufficiently weak that the critical reader might decide to explore the issue himself. Binmore does not present a set of sufficient conditions under which agents will play a Nash equilibrium (for instance, as presented in the famous paper by Aumann and Brandenburger, 1995). Had he done that, the student might have a better idea of why the Nash equilibrium criterion is of limited value. Binmore's defense of the Nash concept draws on evolutionary game theory, but a notable absence from the book is a treatment of evolutionary game theory. A possible reason for this omission is that the math involved is fairly advanced (dynamical systems theory), but there are versions that avoid these technicalities for beginners (evolutionary stable strategies and stochastic dynamical systems a la Thomas Schelling, Robert Axtell, and Peyton Young).Among the refreshing positions taken by Binmore in this text is that equilibrium refinements are generally not worth much, except for subgame perfection, and even that is highly suspect except in special situations. Whereas backward induction (a.k.a. finding subgame perfect equilibria) is treated with great reverence in most text books, the technique has been under constant attack theoretically, and it is well known that individuals generally do not use more than a few rounds of backward induction. Binmore actually presents "The Surprise Test" (pp. 45-46) which I believe reveals the deepest contradictions of backward induction, although Binmore believes that the example shows nothing and has a simple non-paradoxical resolution. I believe he is wrong. Binmore's answer is that the teacher makes two statements (you will be tested on day next week, and when the test occurs, you will be surprised). Backward induction shows that the teacher's statement is false, but the student is mistaken by inferring that he will not be tested, since it could be the other half of the teacher's statement that is false. However, in fact, the test is given on Monday, and the student is surprised. So, the teacher was correct, contrary to the backward induction reasoning. Binmore is wrong, because the student was indeed surprised.Binmore does not particularly care for the concept of rationalizability (it isn't mentioned until p. 424) because it assumes nothing but Bayesian rationality with arbitrary priors. I think this is an error, because it leads him away from an investigation of when even rationalizability is violated. Thus, on p. 153, he confidently asserts "a rational player will never use a strongly dominated strategy." Yet, there are many games of strategic complementarity (e.g., Carlsson and van Damme, 1993), not to mention Basu's Traveler's Dilemma, in which the iterated elimination of strong dominated strategies leads to a unique Nash equilibrium that no collection of reasonable players would ever play. Binmore presents Basu's game in the problems on p. 174, and shows that if players don't care about small amounts of money, there is a plausible Nash equilibrium. This is an interesting idea that is pursued in different ways throughout the book, but is not systematically developed.One of the most

embarrassing questions for classical game theory is why anyone would ever play a mixed strategy in a one-shot game. There are a couple of important attempts at answering this in the literature, and Binmore presents them uncritically. This is uncharacteristic of him. The attempt to define an equilibrium in "conjectures" solves the problem, but says nothing about how people actually play. Binmore presents the usual example of the plausibility of this approach, which uses Throwing Pennies, in which each player "conjectures" the other will use heads or tails with equal probability. But, what if the equilibrium probabilities are 99/100 and 1/100? Why shouldn't the players still play 1/2 and 1/2, in fact? The alternative, Harsanyi's purification theorem (p. 445) deals with this issue better, but it has its own serious limitations, which Binmore does not mention.Binmore's chapter on game theory and ethics is a gem, and his put-down of Kant in the introductory paragraph is just choice. Since Binmore has written at least three books on this subject, I would have expected more, but this book gives a foundational treatment. Binmore is a noted critique of behavioral economics, which he takes as being an enemy of game theory. However, behavioral economics is bare mentioned in this text, and never in a disparaging way. I think one of the major contributions of game theory is to the methodology of empirical economics, but this aspect of classical game theory is slighted in Binmore's text.There is much excellent material in this book that I have not had the space to mention, including bargaining and auctions, to which Binmore has personally contributed so much. This book is way beyond virtually all others in exposing the reader to the nitty-gritty issues of classical game theory. Whether that speaks for or against it's being a commercial success remains to be seen.

I recall reading the earlier edition of this book (even though the author insists that this book is too different to be a second edition) in a game theory class in college. This book seems to be an improvement to me, though my recollections of the first book are a bit poor. The author claims that more important topics are discussed in greater detail, while less important topics are omitted entirely. This seems like it might be true. The book also seems to be reorganized.All I care about is that it has everything I need for the project I'm working on. It also has a bunch of other stuff that I don't care about. I recommend skipping parts of the book that are useless to you. Most of the exercises are interesting, and you can find the answers on the internet (not in the back of the back).There is one glaring problem with this book: there's so many typos. I'm pretty sure the typos from the first edition are still in there. There's one typo in particular that I recognize. There's also some repetition in the book, but not enough to be annoying. What usually happens is that a topic will be given a brief overview and then used in one section but then explained in fair more detail in a

later part of the book. This seems unnecessary to me, but there’s not so much of this.

As the author of an excellent and innovative text on game theory (Game Theory Evolving, Princeton University Press), Herbert Gintis is far better qualified than this reviewer to provide a substantive evaluation of Ken Binmore’s new book; I encourage all prospective buyers to read Gintis’ comprehensive review very carefully.I would, however, like to offer some additional information for the specific audience of mathematicians and students of mathematics who are searching for an introductory text on game theory.Ken Binmore studied mathematics before becoming an economist; thus, one might expect that this book would provide rigorous proofs for all the results used, and mathematically inclined readers will be happy to hear that this is indeed the case. The intended readership is quite broad, however, and so Binmore ensured that it is possible for those who are inclined to skip the proofs to do so without suffering serious loss of continuity.In determining whether this text is appropriate for one’s specific study or instructional needs, one encounters two problems: (1) the table of contents is not available on , and (2) even when the chapter titles are made available, they are written in somewhat whimsical language that makes it difficult to determine precisely how the book is organized and precisely what it contains. In order to provide a bit of help in this area, I have provided the prospective buyer with both the chapter titles AND the section headings at the end of this review; I sincerely hope this helps in the process of determining whether this book represents a worthwhile investment, based on the specific needs of the buyer.One cautionary note for university instructors, especially instructors of mathematics; in the Preface, Binmore states that his book contains enough material for at least two courses in game theory. He writes"I have tried to make things easy for teachers who want to design a course based on selection of topics from the whole book by including marginal notes to facilitate skipping."Thus, the instructor who is used to "possible course" charts, showing clear interdependence of chapters and identifying sections that might be skipped without penalty, will not find them in this book. The inclusion of this material would definitely have been a great kindness to university instructors; scouting one’s way through this 639-page text to find a realistic and effective one-semester course is not easy!Table of Contents1 Getting Locked In1.1 What is Game Theory?1.2 Toy Games1.3 The Prisoners’ Dilemma1.4 Private Provision of Public Goods1.5 Imperfect Competition1.6 Nash Equilibrium1.7 Collective Rationality1.8 Repeating the Prisoners’ Dilemma1.9 Which Equilibrium?1.10 Social Dilemmas1.11 Roundup2 Backing Up2.1 Where Next?2.2 Win-Or-Lose Games2.3 The Rules of the Game2.4 Pure Strategies2.5 Backward Induction2.6 Solving NIM2.7 Hex2.8 Chess2.9 Rational Play?2.10 Roundup3 Taking Chances3.1 Chance Moves3.2 Probability3.3 Conditional

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The book is an excellent text on Game Theory. If you are into Game Theory, then this is a must have on your bookshelf. It covers Game Theory concepts in great detail and clarity. On the downside, the language used in the book, can, cat times, be vague and may require re-reading sections of the book to tease out what was being said. Nevertheless, the re-read is definitely worth it because you will find gems of wisdom bubbling to the surface.

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