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Book Review

Jeffrey Carpenter and Andrea Robbett: Game Theory and Behavior. (2022). Cambridge, Massachusetts: MIT Press, 768 pp. USD 125.00 (hardcover), ISBN: 9780262047296.

For many years, among books on game theory—be they popular or textbooks—one can make a peculiar observation: a book would rather focus on a very standard approach, if not ignoring, then mentioning very succinctly some experimental results of testing normative models. Alternatively, it might pay most attention to the laboratory behavior of the subjects, addressing positive theories as the only relevant ones. Jeffrey Carpenter, the James Jermain Professor of Political Economy at Middlebury College, and Andrea Robbett, the Associate Professor of Economics at Middlebury College, aim to blend both normative and positive approaches of game theory in their recent book Game Theory and Behavior, which has the potential to become a new standard reading for a game theory course.

Game Theory and Behavior consists of eight parts comprising twenty-eight chapters in total. Aimed as a primary text for students, the book covers basic concepts of games (such as the field itself, game representations, etc.) and their solutions, encompassing all the conventional fundamentals and touching upon issues such as payoff-based selection criteria, forward induction, and correlated equilibrium. The third section deals with three groups of topics: subgame perfection, finitely and (in)finitely repeated games. Simultaneous and sequential games with incomplete information are covered in the next section, as well as the basics of auctions. Section five introduces the reader to the field of (non-)cooperative bargaining and matching market design. Social dilemmas (trust, public good, and common-pool-resource games) are presented in the following section, creating a connection to section seven in which social choice and voting models are examined. Finally, the most prominent section of *Game Theory and Behavior* unites a number of topics relatively advanced for an introductory game theory course under the title *Behavioral Extensions of Standard Theory* in section eight. This part covers several miscellaneous yet crucial topics for contemporary game theorists: Belief-based Learning, Evolutionary Game Theory, Quantal Response Equilibrium, Level-*k* Reasoning, and Psychological Game Theory.

For researchers on social choice, two of the sections—the seventh and eighth—are of the main prominence. Section seven begins with an introduction to social dilemmas, focusing primarily on the trust game, and proceeds to cover the public goods game, common pool resources, and the tragedy of the commons. Using a good balance of formal modeling and intuitive explanation, Carpenter and Robbett discuss these foundational issues rigorously, provide a glimpse into more complex topics (e.g., dynamic common pool resource games) as well as present empirical evidence on participants' behavior in these games from key papers in experimental economics. Section eight—dedicated to social choice and voting—starts off with preference orders and counting rules. It provides a concise overview of Arrow's Impossibility Theorem and then moves on to related to public choice (such as candidate competition, participation, and jury) games. Special attention to information conditions is also given.

A standard chapter in *Game Theory and Behavior* proceeds as follows: Firstly, an illustrative example of a game (relevant for further discussion) is given, challenging students to consider how they would behave in such circumstances as one of the players. Then, a standard game-theoretical toolkit is provided for readers, followed by a discussion of experimental data regarding the typical behavior of subjects in a given game. This discussion highlights one of the important goals of the book: not to abstract and neglect one part of game theory (either standard or behavioral) but to bring both parts of the existing fields together, focusing on both rational and bounded features of human behavior. Finally, each chapter is followed by a number of exercises for students to practice.

There are several undoubted features that make *Game Theory and Behavior* special. Firstly, the large majority of concepts are presented in a very intuitive and step-by-step explanatory way, supported by a wealth of visually supportive material (graphs, diagrams, and tables). This makes the book self-sufficient even for those students who do not follow any course in game theory.

Many of the crucial terms—especially in the first chapters—are intentionally accompanied by rather natural questions, as if they were asked during in-class discussions. For example: What is the relationship between the Nash Equilibrium and the Minimax Solution? What is the relationship between the Nash Equilibrium and Dominance-Solvable Outcomes? Does the Nash Equilibrium always exist? This approach helps to address the emerging clarification questions and establishes a solid foundation for future advancements. Secondly, Carpenter and Robbett have incorporated instructions and protocols for classroom experiments to enable students to gain first-hand experience in how standard game theory applies to real-world behavior. Thirdly, the variety of topics covered in the book is impressive, ranging from very standard ones to social choice and voting, level-*k* reasoning, and quantal response equilibrium. Finally, *Game Theory and Behavior* pairs both standard and behavioral model implications with experimental data which demonstrates why theory matters, how it can be tested, and its relevance for real-world public policies.

However, there are several minor issues. The most evident is the absence of solutions to the presented exercises at the end of each chapter. However, they are available online on the publisher's page devoted to this book. Another issue is more subjective and concerns the choice of discussed topics. Perhaps, one great addition to the book could be introductory chapters on Social Networks.

Overall, *Game Theory and Behavior* will be of interest to both inexperienced in game theory and rather advanced readers. For the former, the book will provide an intuitive and smooth introduction, while for the latter, it will serve as a concise refresher to reconsider the overlap of normative and positive approaches. The book also serves as a perfect

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guide for instructors in game theory offering both classroom experiments and exercise databases. Whether the focus is general or specifically on public choice, readers should consider *Game Theory and Behavior* a worthwhile read. Personally, I believe the book has great potential to become a new standard in any introductory game theory class, a trend that can hopefully be witnessed in the upcoming years.

CRediT authorship contribution statement

Egor Bronnikov: Writing – original draft, Writing – review & editing.

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