



Game Theory: A Nontechnical Introduction

Morton D. Davis

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"A lucid and penetrating development of game theory that will appeal to the intuition . . . a most valuable contribution." — Douglas R. Hofstadter, author of *Gödel, Escher, Bach*

The foundations of game theory were laid by John von Neumann, who in 1928 proved the basic minimax theorem, and with the 1944 publication of the *Theory of Games and Economic Behavior*, the field was established. Since then, game theory has become an enormously important discipline because of its novel mathematical properties and its many applications to social, economic, and political problems.

Game theory has been used to make investment decisions, pick jurors, commit tanks to battle, allocate business expenses equitably — even to measure a senator's power, among many other uses. In this revised edition of his highly regarded work, Morton Davis begins with an overview of game theory, then discusses the two-person zero-sum game with equilibrium points; the general, two-person zero-sum game; utility theory; the two-person, non-zero-sum game; and the n-person game.

A number of problems are posed at the start of each chapter and readers are given a chance to solve them before moving on. (Unlike most mathematical problems, many problems in game theory are easily understood by the lay reader.) At the end of the chapter, where solutions are discussed, readers can compare their "common sense" solutions with those of the author. Brimming with applications to an enormous variety of everyday situations, this book offers readers a fascinating, accessible introduction to one of the most fruitful and interesting intellectual systems of our time.

Game Theory: A Nontechnical Introduction Details

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From Reader Review Game Theory: A Nontechnical Introduction for online ebook

Robert B says

Pretty much as advertised. Nontechnical in the sense that there is very little math. Written in 1970 with a 1983 revision, so a more recent text might be preferred. Davis covers introductory topics in game theory, including two-person zero-sum games, two-person non-zero-sum games, n-person games, and applications of game theory to biology and voting. The examples are good for the most part, and while the writing does not sparkle, it's a reasonable introduction to the topic.

Tom Schulte says

When I read that Douglas R. Hofstadter called this work a “lucid and penetrating development of game theory that will appeal to the intuition,” I knew I wanted to read this overview of “the study of mathematical models of conflict and cooperation between intelligent rational decision-makers”, as Roger B. Myerson defined game theory. Published originally in 1970, the reprinted classic looks back to the foundations of game theory laid by John von Neumann. Von Neumann’s basic minimax theorem, proved in 1928, is core to Chapter 2 on two-person, zero-sum games. Being a nontechnical introduction, proof and a good detail of mathematical mechanics are foregone to get a high-level view of the properties of this technique as an applied art and its many applications to social, economic, and political problems...

[Look for my entire review up at MAA Reviews]

Peter Gelfan says

Hard science is the study of measurable, quantifiable, predictable results. A falling object will accelerate at the same calculable rate every time, and given quantities of oxygen and hydrogen will combust to form an exact amount of water every time. Soft science deals with ingredients that do not always react the same way no matter how hard you try to keep the situation uniform. The difference between these ingredients and those studied by hard science is that the loose cannons are life forms. Put five cats, two dogs, and a ten-year-old boy in a room, and you have no idea what’s going to happen. And if you put the same bunch in the same room again (assuming they all survived the first time), something different will happen.

Game theory started as a mathematical study of how certain types of games play out. But the math only worked in theory because it assumed that each player would play predictably—for his or her own maximum benefit in the most efficient way. However, human beings often, even usually, don’t play that way. Whim, stupidity, vengefulness, other emotions and motives, carelessness, and the whole range of human complication play a role in games large and small.

When hard math didn’t fit real life, game theory became more of a soft science that probed, with experiments, how people played games. There’s plenty of math involved, and astute game players of all

kinds—military strategists, politicians, businesspeople, lawyers, spouses, lovers, parents, criminals—can improve their odds by studying it. This isn't a math that says two plus two always equals four and parallel lines never meet. It's a math that penetrates the house of mirrors that springs up when people in negotiation and competition second-, third-, and fourth-guess one another's motives and plans. It describes what might happen, what should happen but probably won't, how to avoid worst outcomes if not always how to attain the best, and how to plot the likeliest strategies—but rarely about what predictably will happen in any particular game.

We're all used to the unpredictability of real life. I found it fascinating that there is, however, an underlying math that can be methodically applied to life games to improve the odds of success, reduce those of failure, and for the spectator, to understand better why people do what they do.

Davis generally writes clearly and organizes the material logically. I suppose by necessity for nontechnical readers, he didn't explain what lay behind some of the calculations, and by the end it got rather complicated, but still, it was a short, engrossing read. One of his most interesting approaches was to begin each chapter with a set of real-world problems designed to get readers thinking and speculating. Often in the middle of the chapter I'd suddenly see what I had missed in my first stab at a problem. At the end of the chapter, he explains the solutions, and it was refreshing, in a math book, that sometimes there was no clear-cut answer but just guidelines to possibilities.

Game theory is no dry, arcane math but a realistic study of what people are likely to do in certain situations and how to predict and deal with their range of possible reactions.

Justin says

It certainly achieves its goal of giving a basic overview of game theory. At some points, though, I wish Davis had gone into more of the math. He also occasionally makes the error of confusing simplicity with brevity. If you read this, you won't be able to "do" game theory (if that's the word), but you will get a pretty good sense of what it's all about.

Tim says

I was hoping to read this with the kids as an introduction for myself and for them. It couldn't satisfy this purpose. It introduced some concepts and ideas but is not sufficiently clear or complete to provide a good introduction into the subject.

Charles says

I found this book at a used book store and while I generally need little prodding to purchase a math book, in this case a quick glance through the first few pages convinced me to purchase it. Although human emotions are powerful forces in our lives, many of our decisions are still made based on rational thought and perceived benefit. This is the realm of game theory, which is an analysis of decision-making based on the interpretation of rewards and punishment.

The first games examined in this book are the standard ones of two-person zero-sum games, first with and then without equilibrium points. A two-person zero-sum game is one where the winnings of one player must match the losses of the other. In other words, the sum total of value held by the two players is a constant. This is followed by an examination of utility theory, which is a determination of the true value of the rewards and punishments. It is here where emotions and personal preference are the strongest. Something as simple as bragging rights can often have more value than large monetary payments. The next chapter deals with two-person non-zero-sum games, where the total value held by the two players is not a constant. The last chapter deals with n-person games, which are difficult to analyze, but are the most interesting because they are closest to life. Success in n-person games almost always requires the formation of a cooperative, in the sense that there is the potential for a coalition that can dominate everyone else.

What I enjoyed the most about this book was the examples and the problems. At the start of the chapters, there is a set of questions that introduce the material, and they are answered at the end of the chapter. In between, the explanations are clear, with a minimum of formulas. I also enjoyed the sections on the various "games" of voting, such as how does a body of legislators decide how to fund projects when each has their pet project that they want to acquire the funding for. It explains some of the labyrinthine features of the congressional process and why it is possible for a deadlock state to develop.

This is one of the best general introductions to game theory that I have seen, the worked problems take you through the features of the games in a step-by-step manner that is very easy to understand.

This review also appears on Amazon

dead letter office says

i read this in the waiting room while my friend had surgery in some cambridge hospital. not really a good day for anyone.

this is too nontechnical to be of interest to anyone with more than a passing interest in game theory, and it's too boring to be of interest to anyone else. a useless book.

Vilém Zouhar says

It's been some time since I saw a well written popular science book. This is precisely what it says it is: a brief introduction to game theory (one of the most interesting branches of modern science). It is a bit old and sometimes the author is preoccupied with trifle details, though.

Star Shining Forever says

Well, as this book's title suggests, it is a fairly "nontechnical" introduction to game theory, which normally includes lots of math. I'm not a mathy person and I didn't know how much of it usually is in game theory when I signed up for my (elective) Thomas Edison State College course "Games People Play." It included recorded lectures as the primary teaching, so this book was supplemental. Thankfully the course wasn't too mathy either, and neither was this book. It does have good explanations of interesting situations in game theory. It has problems at the beginning of each chapter, and then explains the concepts that help solve them;

solutions are included. If this is your first introduction to game theory, or if you're not enthusiastic about math, you might need to go to the Internet for extra help in understanding concepts (I did), but it is a good book.

B says

Good intro to game theory (though a bit dry). The last chapter on n-person games got a bit technical in my opinion, but that could just be because there's no other way to do it. I would like to see something like an updated version of this. I'm sure there have been new ideas and new research in the years since 1973. Good read if you're at all interested in game theory though.

Thanh Do says

Not much to learn from but it has the basics

Pep Bonet says

Interesting reading, but I lost my ability to read about maths, even in its simplest form. And then, ebook format is not the most appropriate for mathematics...

Josh Paul says

Interesting introduction. Does not require a strong math background.

Kw Estes says

A decent introduction to game theory that does not require a ton of math. Good for those just trying to get a feel for what exactly game theory "is", but don't expect to be overly excited by this book. It's fairly old and almost outdated in some of its references. If possible, I recommend finding a newer introduction to game theory.

Rnicholson95 says

This book includes interesting and thought-provoking ideas as promised in a nontechnical way. However, the main problem with it is the huge number of examples used to explain the same point. It takes a lot of mental effort to repeatedly understand new games and scenarios. I'd say the vast majority of these were completely unnecessary and this flaw made the book very boring to read. It became quite a task getting through each chapter.

Certainly not an easy read for that reason
