

## Luck, Logic, and White Lies: The Mathematics of Games

*David Kramer (Translator) Jorg Bewersdorff*  
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### **David Kramer (Translator) Jorg Bewersdorff : Luck, Logic, and White Lies: The Mathematics of Games**

before purchasing it in order to gauge whether or not it would be worth my time, and all praised Luck, Logic, and White Lies: The Mathematics of Games:

3 of 3 people found the following review helpful. Panoramic overview of the mathematics of gamesBy David J. AldousOne third concerns probability and games of chance, another third concerns "combinatorial games" (from Nim to Go and Chess) and the final third concerns "game-theoretic", i.e. strategy, games like rock-paper-scissors. Perhaps because the author is an actual game designer, this book has an interesting and unusual style that straddles several more familiar genres. The book is ``about the mathematics'', so demands more concentration than many ``popular science" style books that just talk about math instead of engaging it. On the other hand it differs from textbooks in that the chapters (45 chapters averaging 10 pages) are somewhat independent, a wide cross-section of math ideas are mentioned and the math level varies between chapters. The reader should be willing to engage lower division level college math but is not required to have specific prior knowledge. Another non-standard feature is that there is some careful history -- the author has read some original works, not just copied textbook accounts of the history of the subject. The first third (on probability and games of chance, my own main interest) discusses mostly standard topics from textbooks and popular science (Binomial distribution, expectation and standard deviation; law of large numbers and Normal approximation; Poisson approximation; Monte Carlo simulations, chi-square test, Monty Hall, Buffon's needle, nontransitive dice) with some specific "games" applications (snakes-ladders and Monopoly as Markov chains; dice-races and Risk probabilities). But the enjoyably readable style makes this book more friendly than a typical

textbook while more sophisticated than a typical popular science account such as *Struck by Lightning: The Curious World of Probabilities*. The final third treats (mostly) two-person zero-sum game theory, presented as literal games. It goes through the minimax theory and details of math in concrete examples such as bluffing in poker. This is fine but seems curiously old-fashioned -- most could have been written 40 years ago. A more modern angle on game theory, exemplified by the popular book *Rock, Paper, Scissors: Game Theory in Everyday Life* would be to emphasize Nash equilibria and the interplay of cooperation and competition in non-zero-sum economic settings. The middle third ("combinatorial games", with which I am least familiar) strikes me as the book's most distinctive contribution -- there is less existing literature at this level, and anyway there are so many such games that no two books should overlap much. These 15 chapters cover a lot of ground -- for instance Hex and "concentration" and Mastermind, as well as those mentioned earlier. Summary: for the intellectually curious reader interested in "the mathematics of games" and not afraid of some actual math, this book has the rare virtue of being both wide-ranging and concrete -- concrete in the sense of dealing with real games. And the style makes it amenable to browsing rather than reading cover to cover. On the other hand I find it hard to judge the practical usefulness of the 26 pages of analysis of Go or the 13 pages on Blackjack. For the reader who has never played the game it is surely too much to take in, whereas the reader who has played and wants more mathematical analysis would surely prefer a dedicated book? The real theme of the book is how to start thinking mathematically about games in general, and I think it is as successful in tackling this theme as any book could be.

1 of 1 people found the following review helpful. Superb presenter of mathematics  
By Kaz Darzinskis  
This is a 500 page mathematical investigation of games using probability theory, game theory, and a variety of mathematical methods. The author finds winning strategies for many games, some of them surprisingly simple. For most games, the point is less to find a trick to win but to clearly explain how the game works and to answer some interesting questions. The author's ability to present mathematics in an understandable manner is possibly unsurpassed by any other writer. In Chapter 16, entitled, "Games of Chance", the author presents an explanation of Markov chains and how they can be applied to Monopoly and to Chutes and Ladders. The explanation is clearer here than I have found elsewhere. The result of the calculation for Monopoly is two charts detailing the best investments in Monopoly. One chart ranks the monopolies according to how much rent income they will generate for the owner. The second chart ranks monopolies according to their return on investment or ROI, expected rent divided by cost. Thus we see, for example, that the highest rent comes from the green color group, Pennsylvania, and the best monopoly measured by ROI is the orange color group, New York. The author suggests these charts may be useful for deciding what properties to buy and where to buy houses. The problem is that the results of the Markov chain calculation are not really useful for the important decisions Monopoly players must make. Players must buy nearly every ordinary property they land on in order to advance their chances of getting a monopoly and to block opponents from getting monopolies, so properties' ROIs and rents are almost completely irrelevant to the property buying decisions. After players trade properties, almost every player has one monopoly, not two or three or four, so the problem of deciding where to build the next house is not an issue...the player must put the house on his (lone) monopoly. Only after reaching the later stages of the game, usually after one of the players has been eliminated, do players have a choice about which monopoly to build out. Even in this regard, the chart is not useful. There is too much data to memorize and Monopoly culture discourages players from consulting charts in the middle of a game. Monopoly players bring snacks and drinks, but not charts. The truly important decisions Monopoly players must make involve trading--which monopoly to take and which monopoly to allow an opponent to take. The data from a Markov chain calculation simply do not help much. What Monopoly players need to help them make this decision is the Monte Carlo method, which the book describes but does not apply toward Monopoly. A Monte Carlo simulation involves programming a computer to play the game, play the game thousands of times, and study what happened. This is exactly what I did for my *Winning Monopoly* book in 1987. A more detailed review of this book--at least, the portion dedicated to Monopoly--is posted on my web site, [...]

11 of 13 people found the following review helpful. A great introduction to the mathematics of games  
By madlibrarian  
So many books about the mathematics of games are either long out of print, hard to find, or fairly esoteric and not something I'd recommend to just anyone. The best book I've found for someone new to game math is *Luck, Logic and White Lies* by Jrg Bewersdorff. It introduces the reader to a vast mathematical literature, and does so in an enormously clear manner, which never takes one very far away from either the math or the games behind them. I love *Winning Ways* and *On Numbers and Games*, but they're definitely not for the faint of heart. LLWL is the perfect book for gamers who are interested in the mathematics that underlie the choices they face and decisions they make. Just great stuff.