
100 Essential Things You Didn't Know You Didn't Know About Sport

by John D. Barrow

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REVIEWED BY MIKE NAYLOR

100 Essential Things You Didn't Know You Didn't Know About Sport is the follow-up to John D. Barrow's slightly shorter-titled book, *100 Essential Things You Didn't Know You Didn't Know*. In addition to being a skilled mathematician and entertaining writer, John D. Barrow is an avid sports fan. His book provides a delightful insight into what happens when a mathematician turns his analytical eye on his favorite pastimes.

First, I must confess that my sport is mathematics and I have only a passing interest in other kinds of sports. I do however enjoy seeing how mathematics connects ideas from all kinds of places, and so it was with enthusiasm that I dove into Barrow's book, eager to see what kind of ideas might be revealed from the world of sport and what kind of interests I might share with sports fans that I hadn't known before. What I found within the pages of Barrow's book took me entirely by surprise.

This collection of 100 snippets of mathematical reflection covers a vast array of sports, from javelin to skydiving to windsurfing to wheelchair racing. Barrow wastes few words; he jumps right into each topic, grabbing us from the start and taking us on a short exploration of how mathematics plays into the scoring or the execution or the analysis of the game or competition.

Barrow's audience is the educated layperson, and he hits the target with essays that are perfectly suitable for anyone who has an interest in mathematics or sports. The chapters are just 2 to 3 pages each, packing a lot of profound ideas

into a small space. Statistics, physics, probability, Bayesian theory, geometry, measurement, and plenty of ideas from physics fill these pages. Along with the mathematical ideas, Barrow includes plenty of anecdotes, trivia, and delightful facts. A few of my favorites:

- Chapter 29 tells of the history and lengths of marathons and the difficulties comparing results through the years. The 1904 marathon at the St. Louis Olympics, for example, "...was like something out of Keystone cops. The race was run on roads amongst traffic, which the runners had to dodge all the time, and one runner was chased off the course by dogs. The first competitor to finish was subsequently disqualified after it was revealed that he had traveled nearly half of the race by car."
- My desire to find winning gambling strategies was rekindled in Chapter 34 as Barrow explains how to calculate bets at the races based on odds, and how mathematics can be used to ascertain a win if a race is fixed so that one of the horses is guaranteed not to win.
- In Chapter 36 Barrow shows how to use moments of forces to optimize oar patterns in boats with 4 to 8 rowers. Barrow's published results attracted wide attention in the rowing world, resulting in some teams changing their patterns, with winning results!
- Chapter 73 shows how controlling the center of gravity and shape of the body during a leap gives basketball players and ballerinas the illusion of hang-time or floating, whereas Chapter 96 explains how trampolinists and falling cats can create rotation "out of thin air."

Many other essays in this book caught my attention, and not being a great sports fan in no way hampered my enjoyment or interest. I was captivated by Barrow's anecdotes, enchanted by the elegance of the mathematics, and surprised by the things that I didn't know that I didn't know about sport.

And you know what? I'm glad that now I do!

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