

Preface

How did a physicist like me get involved with blackjack? I skied in. As a young doctoral candidate at the University of California, Berkeley, I would occasionally join my friends on ski trips to the Lake Tahoe area. Always on a student's tight budget, we found that we could stay inexpensively in Reno motels and that the cheapest meals were at the coffee shops astutely placed at the back of the town's casinos. I found it hard to pass all the gambling frenzy without joining it. Fortunately for that budget and my financial peace of mind, I was usually lucky in winning a few dollars. Once, I paid for my entire trip with an unlikely hit at roulette.

When I learned that an optimized method for playing blackjack (what is now called Basic Strategy) had been published in a scholarly statistics journal, I quickly looked it up in the university library. Blackjack became my game of choice for subsequent Tahoe excursions and, in later years after skiing and I had parted company, for trips to other destinations with casinos. But my real recreation of choice became blackjack analysis!

My original motive for exploring its mathematics was to see if the articles and books I had chanced upon were correct, or if I could find a better way to win. Visions of big money danced in my head! Later, as I came to appreciate the realities involved, my interest shifted to the mathematics for its own sake, complex enough to be a challenge even for a professional scientist yet easy enough to yield to a sustained effort on almost every issue. Also, I wanted to verify (or, as sometimes happened, falsify) claims about the best way to play, asserted in the literature with little or no proof.

When I had finally addressed all the questions that occurred to me, my first instinct as a scientist was to write up the results and publish them in a suitable scholarly journal: an archival record for other practitioners of applied math. Yet I came to realize that the results were sufficiently insightful about playing actual blackjack in the real world that they would be even more valuable to the wider casino-going public. To reconcile my internal debate between these two readerships, I decided to serve both at once. The outcome is this single two-part book, which first describes all its conclusions in completely non-mathematical terms for the many that enjoy gambling, and then also provides detailed derivations of those conclusions so that

they can be followed and checked by the more mathematically inclined. Some of the derivations rely only on algebra; others take varying levels of calculus and/or probability theory.

When talking to friends about my blackjack project, they invariably ask whether I have “tested my theories in a casino.” I respond that the conclusions drawn from a mathematical proof are intrinsically true, and do not need field testing to be valid. I suggest that they should rather be asking whether I have “applied” the theories; and I add that analyzing blackjack is at least as entertaining for me as playing it. I also point out that the cash outcome of playing several hundred hands at an actual blackjack table, which would occupy a full evening, is little more than an unpredictable statistical fluctuation rather than a test of the methods. Many millions of hands, simulated on a computer, are needed to approach significant conclusions. I am happy to have examined the game in comprehensive detail, without having risked a single dime - even though I have not won one, either!

Several leading authorities on blackjack have been generous in sharing their time and knowledge with me. Stanford Wong and Anthony Curtis were encouraging, and introduced me to several other prominent figures. One of them, Don Schlesinger, intensively reviewed more than one earlier draft of my manuscript, thereby prompting major revisions and expansions. More recently, Stewart Ethier graciously did the same, with similar results. It is a pleasure to acknowledge their help and support. Additionally, I have benefited from communications with Sergei Maslov, Kim Lee, Steve Jacobs, Michael Canjar, and Norm Wattenberger.

I am also indebted to staff members of Wolfram Research for their active help and guidance with *Mathematica*, the software tool for much of the numerical computation and all of the figure production in this book. I am similarly grateful for the dedicated efforts of editorial and production personnel at Springer.

New York, NY

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<http://www.springer.com/978-1-4419-0252-8>

Risk and Reward

The Science of Casino Blackjack

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2009, XVIII, 131 p., Hardcover

ISBN: 978-1-4419-0252-8