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What's Luck Got To Do With It? The History, Mathematics, and Psychology of the Gambler's Illusion

N. Will Shead, Ph.D.[aff1](#)

Role: Assistant Professor

Department of Psychology, Mount Saint Vincent University

By Joseph Mazur. (2010). Princeton, NJ: Princeton University Press. xvii, 277 pp. ISBN978-0-691-13890-9; U.S. \$29.95 (hardcover edition).

In the introduction to *What's Luck Got To Do With It?*, author Joseph Mazur provides a brief account of his early indoctrination into the gambling world. Mazur's recollection of conversations on luck and odds with his uncles suggests he had a precocious fascination in understanding why people gamble despite the inherent mathematical disadvantage. Later in life, the question still lingered as he watched patrons at local convenience stores buying fistfuls of lottery tickets. This book is the result of his long-held interest in gambling, which aims to explore the gambler's illusion (or “gambler's fallacy”) that deviations from average outcomes of random events should correct themselves in the short term. Although it might seem ambitious to write an entire volume on a gambling-related cognition, Mazur nevertheless demonstrates in three sections the incredibly deep historical, mathematical, and psychological significance of this human fallacy.

The first section of the book is less an historical recap of the gambler's illusion *per se*, and more a brief history of gambling in general. Mazur takes on the lofty challenge of trying to sum up gambling activity from the Ice Age onward in a few short chapters. Unfortunately, the outcome is largely a narrative of disjointed tidbits of gambling lore. On a positive note, a description of the evolution of probability theory and its application to gambling provides useful context for the second section, which covers mathematics.

The standout chapter in this first section covers the 2008 world economic crisis, describing how the catastrophic effect of the housing and loan crisis in the United States led to the ultimate crash of the global economy. He provides salient

examples illustrating how many of the calamitous financial decisions that contributed to the crash were, in fact, based on the gambler's illusion. For instance, he delineates how some individuals overestimated the likelihood that a market downswing would inevitably be followed by an upswing. Mazur does an admirable job of presenting the complicated aspects of financial markets. He aims his discussion at a lay audience, but many aspects would still be difficult to grasp without a background in finance or economics. Regardless, one can glean his main point, which is that the market is chaotic and does not act in a rational way, even though individuals will try to spot patterns that simply do not exist.

The second section of the book examines the mathematics behind the gambler's fallacy. Mazur—a professor emeritus of mathematics at Marlboro College—has an enthusiasm for numbers that shines through in his writing. His discussion of the law of large numbers is punctuated with exclamation marks, and his excitement over the eloquence of this theorem is palpable.

A logical succession of formulae and examples together lay out a cogent argument for how a slight mathematical advantage for the casino ultimately translates into a nearly impossible win for the individual gambler in the long term. Using the example of betting red in roulette compared to betting heads with a fair coin, Mazur is able to demonstrate the insidiousness of the slight mathematical disadvantage inherent in casino games, and how this disadvantage is compounded with an increasing number of trials. He also patiently explains how the law of large numbers does not apply to individual, independent events. His presentation is convincing and should provide *eureka* moments for those who have struggled to understand the math behind what is known as “the house advantage.” The math is quite dense at times, and portions may be inaccessible to individuals without a background in statistics. Consequently, some parts of the book may be found lacking by clinicians and educators who are in need of ways to elucidate the gambler's fallacy to a lay audience.

The final section of the book seeks to explore the psychology behind gambling addiction. Curiously, Mazur spends a significant portion of this section examining early psychodynamic explanations that center on gambling as a self-destructive impulse. At one point, he even uses the archaic term “neurotic gamblers” (p. 193). These theories are not only outdated in terms of our current understanding of the etiology of problem gambling, but they have little to do with the main subject of the book. Mazur ultimately falters in his attempt to synthesize the history and mathematics of gambling with the psychology of the gambler's illusion. While some interesting discussion can be found concerning faulty cognitions such as the “house money effect” and the “hot hand fallacy,” the final section would have been significantly strengthened with further exploration of current psychological theories that seek to integrate cognitive distortions with the gambler's illusion.

On the whole, this volume is a thoroughly fascinating and well researched book. Mazur's passion for the topic is contagious, and he has a keen ability to involve readers who may not share his background in mathematics. The second section should be required reading for anyone interested in understanding the math behind gambling. Although this book may not add much to our understanding of the psychology behind gambling, it compellingly demonstrates the fallacy that a string of losses is likely to be followed by a win. The approach Mazur uses to establish this point is, at times, bogged down by complex mathematical details; however, the overall message is clear and powerful.

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