

Gambling

102

The Best Strategies for All Casino Games

Second Edition

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Contents

Acknowledgments	ix
Foreword	xi
Introduction	1
A Word About the Bell Curve	2
House Edge and the Element of Risk	4
1 The Ten Commandments of Gambling.....	7
2 Casino Etiquette.....	9
3 Baccarat.....	11
Strategy.....	12
Alternate Pays	12
Commission-Free Baccarat	12
Egalités	13
Dragon Bonus.....	14
Other Side Bets.....	14
4 Blackjack	15
Game Selection.....	15
Basic Strategy	17
Wizard's Simple Strategy	19
Wizard Ace-Five Count	20
Side Bets	22

5	Craps	23
	Strategy.....	23
	Multi-Roll Bets	24
	Blended House Edge	25
	Single-Roll Bets	25
	Field	26
	Side Bets	27
	Crapless Craps	27
6	Crazy 4 Poker.....	29
	Analysis.....	29
	Strategy.....	30
	Queens Up	30
	6-Card Bonus/Millionaire Maker	31
7	Face Up Pai Gow Poker.....	33
	House Edge.....	33
	Strategy.....	34
	Side Bets	34
	Conclusion	35
8	High Card Flush.....	37
	Analysis.....	37
	Strategy.....	38
	Flush Side Bet.....	39
	Straight Flush Side Bet.....	39
9	Mississippi Stud	41
	Odds	41
	Strategy.....	41
	2 Cards.....	42
	3 Cards.....	42
	4 Cards.....	43

10	Pai Gow	45
	Rules	45
	House Edge.....	48
	Prepaying the Commission	48
	Banking an Extra 10%	49
	Banking Against Other Players	49
	Strategy.....	49
	The Basic Strategy.....	50
	A Unique Game	51
11	Pai Gow Poker	53
	House Edge.....	53
	Simple Strategy	54
	Side Bets	56
	Variants	57
12	Roulette.....	59
	Side Bets	61
	Dealer Signature	61
	Biased Wheels	61
13	Slots	63
	House Edge.....	63
	Advice.....	65
	Advantage Plays	65
	Final Thought	67
14	Sports Betting.....	69
	NFL	70
	MLB.....	72
	NBA	73
	Parlays	75
	Teasers	76
	Proposition Bets	76

	Shopping.....	77
	Strategy.....	77
15	Texas Hold 'Em Bonus	79
	Analysis.....	79
	Atlantic City Variant	80
	Strategy.....	80
	Bonus Bet	81
	Other Side Bets.....	81
16	Three Card Poker	83
	Ante.....	83
	Pair Plus	84
	Other Side Bets.....	85
	Strategy.....	86
	Hole-Carding.....	86
17	Ultimate Texas Hold 'Em.....	87
	Ante, Blind, and Play Bets	87
	Trips Bet	90
	Progressive.....	91
18	Video Keno.....	93
19	Video Poker.....	119
	Bet Max Coins	120
	Shopping for Paytables.....	121
	Playing Strategy	130
	Types of Three to a Straight Flush	132
	Player-Reward Programs	134
20	Gambling FAQ.....	137
	Index of Tables	141
	About the Author.....	143

Foreword

The dictionary tells us that a *wizard* is: “A very clever or skillful person who manages to do something that is extremely difficult; a person worthy of the highest praise.”

This is the perfect description of Michael Shackelford, the self-proclaimed “Wizard of Odds.” It has been my privilege to know Mike for many years, and his reputation in the gaming industry is impeccable. Quite simply, when you want the most reliable, accurate, and complete analyses of the mathematics of virtually any gambling game in today’s ever-expanding market, Shackelford has to be your first, go-to, and most authoritative source.

With the new and original material in this second edition of *Gambling 102*, Mike brings up to date his first effort to explain, in his typical straightforward no-nonsense style, the intricacies of today’s most popular casino games. As he writes in the Introduction, this is not a beginner’s reference to the rules or a general orientation to how the games are played. Instead, the current volume provides detailed expositions on the odds and house edges of nearly 20 casino offerings, often with a variety of versions and variations within the main game. The result is the most trustworthy compendium of gaming odds to be found anywhere in print.

To this already impressive scholarship, Mike brings a new metric, the “Element of Risk,” designed to measure and

compare not simply the traditional house edges, but those expectations adjusted for the amount of “action” per resolved bet. The result is a more accurate, and completely original, approach to determining which games are truly the “best” to play.

Too many gambling books rehash the standard Gambling 101 materials that are all too familiar. With *Gambling 102*, we enjoy a completely novel methodology applied to these same games, which permits us to consider them in a different, more meaningful, manner. Mike “The Wizard of Odds” Shackleford is simply the very best at what he does. Enjoy this delightful new work from a true master of the craft.

—Don Schlesinger, author of
Blackjack Attack: Playing the Pros’ Way

Introduction

On my website WizardOfOdds.com, I've analyzed approximately 400 casino games, 160 video poker games, 50 blackjack side bets, 40 baccarat side bets, hundreds of side bets in other games, and so many rule variations of popular games that I've lost count. This is all the product of 22 years of analyzing and writing about casino games.

However, not every recreational gambler needs or wants to know about a game that crashed and burned in a field trial more than a decade ago.

For advanced recreational gamblers who already know the rules to the games and want to know the house edge they face and the proper strategy to play, this book is for you.

There's a reason the title is *Gambling 102*, as opposed to *Gambling 101*. Plenty of books on gambling for beginners already exist. This book, by contrast, endeavors to build on a foundation of the basics by presenting a more rigorous look at the odds. As such, the rules of the games are rarely explained within. If you don't know the difference between blackjack and baccarat, the information here will probably be too advanced. If you're already a skilled advantage player in a range of games, you probably already know most of what's presented. I wrote this book for those of you who are somewhere in the middle.

The first edition of *Gambling 102* was published in 2005. The casino floor is always changing. Old games die out and new ones come along. Gone from this edition are chapters on Caribbean Stud Poker, Casino War, big six, racetrack betting, and Texas Hold 'em.

Added to this edition are popular new table games that have come along since 2005: Crazy 4 Poker, High Card Flush, Mississippi Stud, Texas Hold 'em Bonus, and Ultimate Texas Hold 'em.

One of the new chapters of which I'm most proud is on pai gow tiles, which has been around for hundreds of years in China. I just didn't know enough about it in 2005 to include a proper chapter. This second edition also includes a more general chapter on sports betting, including coverage of the NFL, MLB, and NBA, and a big section on video keno.

It is my goal that this book not only helps you win, or lose less, in the casinos, but also conveys an appreciation of the math behind the games.

If you play for the other side, I also hope you learn about the math behind the games you're dealing or supervising.

I view every casino game as a math question and *Gambling 102* is the answer book. As long as my readers are learning something, I'm happy, and it doesn't matter which side of the table you're on.

A Word About the Bell Curve

I've always struggled with what to do in situations where most people say, "Good luck." I don't believe in luck, at least as defined as some kind of mystical force that causes good and bad things to happen.

In the casino, as well as life in general, what happens to

us is a function of the decisions we make and random chance. If you smoke (preferably not next to me at the pai gow table), the earlier you can expect to die. Likewise, if you play slot machines and make sucker bets at the tables, the more money you can expect to lose. Both are based on averages, not guarantees on an individual basis.

However, neither are certainties. In the casino, how much money you win or lose depends on three factors:

- game and bet selection
- for games of skill, the decisions made playing
- randomness

In the short run, randomness plays the biggest part. In the long run, the ups and down of randomness mostly cancel out, rendering game selection and skill the greatest factors of how well you do.

After the dust clears from all the math, the net win or loss from a number of bets can be very closely approximated by throwing a dart at a “bell curve.” The shape of a bell curve has just two factors, the mean and variance. In other words, where is it centered and how wide is it? To be specific, the following equation shows the probability of any outcome, x , given mean μ and standard deviation σ , on the bell curve:

$$\frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$$

What most people call luck comes down to the formula above. Note how it beautifully captures both transcendental numbers e and e , much like Euler’s equation, $e^{\pi i} + 1 = 0$.

While no book can help where that dart lands on the bell curve, this one strives to make the mean result μ , as high as possible. It also advises on the σ , depending on whether the player is seeking a low- or high-volatility game. In other words, you won't win every bet based on the advice in this book, but if you follow it, you can expect to lose much less, or even win, over the long run, depending on which game you play and how well you play it.

Getting back to my dilemma of what to say in lieu of "good luck," I prefer Effie Trinket's line from *The Hunger Games*, "May the odds be ever in your favor."

House Edge and the Element of Risk

A common statistic bandied around for casino games is the house edge. It's an important number for players, in that it tells them how much it costs to play a game. For example, over time, you'll lose \$5.26 for every \$100 wagered at double-zero roulette, compared to just \$1.41 per \$100 on the pass line in craps. The house edge is equally important for the casinos, both to calculate the earn and to quantify the value of a gambler's play. The formula for the latter is simple: expected casino win = house edge x average initial bet x bets per hour x hours played.

All good. But where the waters get muddy is when players and other gambling writers use the house edge as an absolute measure of a game's value. Using the house edge is fine for simple games like roulette that have no pushes and no supplemental wagers. However, for games with supplemental wagering, the house edge is a bad measure of game value. Instead, I like to use a statistic that I call the "element of risk" (EOR).

Before I get into the EOR, let's clarify that my definition of the house edge is the expected player loss relative to the original bet made. This includes pushes. Some older gambling books define the house edge as the expected player loss per resolved bet. This makes a difference in bets like the don't pass in craps and the banker bet in baccarat. Most modern gambling writers, including me, count a tie as a resolved bet. The only possible exceptions worth mentioning are multi-roll bets that can be taken down in craps, e.g., place and hardway bets. Some argue that if a single roll does not resolve such bets, then the outcome is a push. I don't. I assume the bet stays up until resolved for all crap bets, except the don't pass and don't come, where I consider a push to be a resolved bet. The two different ways of defining a resolved bet account for some slight differences you may see in house-edge numbers from different credible sources.

That said, where applicable, in my opinion, the element of risk is the superior gauge. I define element of risk as the expected player loss divided by the average amount bet by the end of the hand. A good example of a game where this is significant is Three Card Poker. The traditionally calculated house edge in that game is 3.37%, measured as the ratio of the expected player loss to the Ante bet. However, the player raises 67.42% of the time, for an average final bet of 1.6742 units. The element of risk is thus $3.37\% / 1.6742 = 2.01\%$. In other words, the player can expect to lose 2.01% of all money bet, if he avoids all the side bets and plays under the usual 1-4-5 Ante Bonus payable.

In this book, for games where there's supplemental wagering, I provide both the house edge and element of risk. In games where there isn't, I list the house edge only, because the element of risk is the same.

I hope this wasn't too confusing, but there's already much confusion about the definition of the house edge and I'm trying to clear up the problem by introducing this new statistic.

1

The Ten Commandments of Gambling

Thou shalt not cheat.
No explanation necessary.

Thou shalt honor thy gambling debts.

A true gentleman honors his debts, especially gambling debts. When making a bet with another person, you're putting your honor on the line. If you lose, you pay. No excuses!

Thou shalt expect to lose.

The Las Vegas Strip wasn't built because people usually win in the casinos. Even with good rules and strategies, the odds are still usually in the casino's favor. So don't get mad if you lose. Think of it as the price you pay for entertainment.

Thou shalt trust the odds, not hunches.

If you want to maximize your odds, believe in mathematically proven strategies, such as those in this book, rather than hunches.

Thou shalt not over-bet thy bankroll.

Before you start playing, set a gambling budget for yourself and stick to it. Don't gamble with money you need for necessities.

Thou shalt not believe in betting systems.

For every one legitimate gambling writer, 100 charlatans are trying to sell worthless betting systems that promise an easy way to beat the casinos. I know it's a cliché, but if it sounds too good to be true, it probably is.

Thou shalt not hedge thy bets.

Hedge bets usually carry a high house edge. For example, never take insurance in blackjack and never bet the any craps or any seven in craps. Exceptions can be made for insuring life-changing amounts of money.

Thou shalt covet good rules.

Rules vary from casino to casino. To improve your odds, know the good rules from the bad, then seek out the best rules possible.

Thou shalt not make side bets.

Side bets are sucker bets. Period.

Thou shalt have good gambling etiquette.

Gambling is a lot more fun when people are polite and respect one another. It's also proper etiquette to tip for good service.

2

Casino Etiquette

The same standards for etiquette outside the casino also apply inside. Emotions can run the whole gamut in a casino, but regardless of whether you're on an extreme high, extreme low, or anywhere in between, you should still exercise common sense, restraint, and respect for others.

That said, here are some etiquette tips that are specific to casinos.

- Don't correct or critique another player's play unless he's receptive to suggestions. In particular, don't harass the last player to act in blackjack. It's a myth that a bad player, particularly at third base, causes the entire table to lose.
- Be courteous to the dealers. It isn't their fault when you lose. If you can't take losing, don't play at all.
- Tip the dealers. Dealers usually make minimum wage and rely on tips to make a decent living. Losing is not an excuse not to tip. Dealers should be tipped according to the level of service they provide.
- Tip the cocktail waitresses. One dollar per drink is the minimum. Ordering water does not excuse you from tipping.
- Tip slot personnel when you receive a hand-pay jack-

pot. The amount is touchy. My personal opinion, which I admit is on the low side, is 0.5% to 2%, depending on the size of the jackpot; the larger the jackpot, the lower the percentage. Tipping more seems to be expected at small (non-casino) bars.

- Do your best to understand rules and strategy before you play. Try not to slow down a game because you don't know how to play, unless you're the only one playing.
- If you make a bet using different chip denominations on a table game, put the higher denominations on the bottom of the stack.
- Once you make a bet at a table game, never touch it unless you win or push.
- Don't drink past the point where it annoys other people.
- I recognize that smokers, unfortunately, have a right to smoke in casinos. However, if you must, try to be respectful of non-smokers, especially if they were at the table first. Ideally, if there are non-smokers at the table, it would be nice if you stepped away from the table to smoke.
- If you enter a blackjack game in the middle of the shoe, ask the other players if you may join mid-shoe and do so only if there are no objections. In a single- or double-deck game, I would just wait for the shuffle, which is often required anyway.
- Don't hog multiple betting spots if other players are waiting to play.