

Example of card counting in blackjack research paper

[Literature](#), [Russian Literature](#)



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Blackjack is one of the oldest games in the history of man - no one really knows how the game started or where it originated, and tales of its existence go back centuries. Regardless of its history, it remains one of the most popular card games played today, with millions of dollars being gambled at casinos around the world. Despite the game being one of ultimate chance, there is a strategy that has been cropping up in the past few decades that allows smart, calculating minds to anticipate what cards they might get - card counting. This strategy takes substantial skill, bravery, and intelligence, as it is considered undesirable in most casinos. In this essay, we will examine the history of blackjack, the way in which card sharks count cards to get ahead, and the steps casinos are taking to prevent card counters from utilizing their unfair advantage at the tables.

The History of Blackjack

The History of the game of blackjack predates the 17th century - its first mention was in a book written by Miguel de Cervantes, the Spanish author who wrote Don Quixote. In a short story written around 1601 called

Rinconete y Cortadillo, his characters play and cheat at the game ventiuana, which is Spanish for the number 21. This game plays just like regular blackjack - there is a deck of cards, and a player must keep drawing cards until they reach 21 points, without going over. The closer you get to 21, or blackjack, the more likely it is you win. Cervantes' mention of the game is the earliest mention of blackjack known to recorded history; however, he does not invent the game, meaning that the game itself has existed since before the 17th century (Fontbana, p. 89).

The game continued to exist in Spain and France, soon becoming popular throughout the world at casinos and other places where games of chance were played. However, the name 'blackjack' comes from its introduction to America. Gambling houses, in order to draw new players in, would provide bonus payouts to these players. For example, a ten to one payout would be given to the player if they had an ace of spades and a black jack in their hand. Naming this hand the 'blackjack,' the name soon stuck to the game as a whole, and it is now known by that name throughout the world.

In the modern version of blackjack as it is known and commonly played in casinos, there is a dealer and about five to seven players. Several decks of standard playing cards are shuffled together - anywhere from one to eight. Each player is dealt two open-faced cards to begin with - each card is valued at their numerical value, while face cards (jacks, queens and kings) are valued at ten. Aces are valued at either 1 or 11, depending on which one is more convenient for the player. The dealer, meanwhile, representing the house, deals one open-faced card and one face-down card. Depending on

the player's perception of whether or not they should ask the dealer to 'hit' them (ask for another card) or 'stand' (stick with the cards they have), the player may force the dealer to 'bust' (keep hitting until they reach a total over 21). However, if the dealer or other player stands with a number closer to 21 than the player, they lose (Snyder, 2006).

Counting Cards and Card Counters

Much of the difficulty in blackjack is not knowing what card the player may have next - their next card might bring them closer to blackjack (21), or it may take them over that number and bust them. With that in mind, there are strategies that are often used to determine the probability of one's advantage in taking the next card. This is known as card counting, and the people who count cards are known as advantage players. Card counting was started by Edward O. Thorpe, who popularized it in his book *Beat the Dealer* (Kendall & Smith, 2003).

What does it mean to count cards? In essence, advantage players maintain a tally of the different high and low valued cards that are already out on the table, using the process of elimination to figure out what options could possibly be given to them in their next card. They use this information to make their playing decisions and diminish their risk. In essence, they are no longer relying on absolute luck to determine whether or not the next card will help or harm them; they are using math and statistics to make predictions about what card will actually be given to them. Card counters can use this strategy to make sure they come out ahead of the house, and lessen the chances that they will lose money.

The primary way in which card counting occurs is by making statistical predictions based on the already-played cards. In essence, there is statistical evidence that high cards will help the player more than they would the dealer, and vice versa for low cards. Cards that are valued at 4, 5 and 6 are discouraged, while card counters often work toward aces and face cards as much as possible. If there are a lot of aces and face cards in the deck, the player has a much higher chance of getting a blackjack. In most casinos, blackjacks pay out 3 to 2, making them the most profitable hand to get. Therefore, card counters do their best to increase the chances that they will get that particular hand - if there are a lot of tens in the shoe (the card dispenser at the table), the player has a much bigger chance of winning when they double down. Conversely, dealers benefit from low value cards, since dealers are supposed to hit on stiff hands (which have totals of 12 to 16) when the player can still hit or stand on their hand. As a result, when a dealer holds, they will bust if they draw a ten; this happens to the card counter's advantage, and is considered heavily in their strategy (.

Card counting as a basic strategy involves assigning a value to every card value you have - this can be positive, negative, or with no value. Once the dealer deals a card of one particular value, the card counter adjusts the overall count by the value of that card, constantly changing the overall tally. The count is increased with low cards, since the chances are now higher that they will get a high card from the shoe, and the opposite is true with high cards (they lower the chances of a good hand). When assigning values to a card, a card counter is meant to estimate the EOR, or Effect of Removal - this

is the true effect of one card to the house advantage of the game. By constantly calculating the EOR after each card, the card counter can gain an appropriate level of insight into his or her chances for getting a blackjack or just winning the hand (Griffin, 1979).

The aforementioned system is just one simple kind of card counting - there are many different levels and systems of card counting, with classes moving from Level 1 to Level 4 on a scale of complexity. The High-Low system could be classified as a Level 1 count, due to the predetermined number that the EOR is changed per card. There are also multilevel counts, which rank cards per their value in a more regimented way (with values that go beyond plus or minus 1). There are also card strategies that involve side counts of specific cards, so that the counter may know how best to bet in instances where those odds are different from the odds of playing accurately. In side counts, there are other special-purpose counts used for over/under side bets and other unconventional ways of getting paid for the system (Modern Blackjack, p. 68).

One other method of card counting occurs through back-counting, or Wonging. This strategy was developed by gambling author Stanford Wong, and it primarily involves watching a blackjack table from behind the dealer and counting cards as the shoe is dealt. When the shoe is determined to be at its highest advantage for the player according to the count, the player will "Wong in," or enter the game, and as such will have a better chance of winning big. Because they already have a running count of the cards that have been played, but did not play every hand, they avoid hands where they

are at a disadvantage and do not risk their pool. Once a player "Wongs in," they can keep playing until their advantage is lost, at which point they "Wong out," or they can wait until the deck is reshuffled, at which point they have totally lost the count and can exit (Schlesinger, 2005).

The concept of card counting has become a widely publicized topic in pop culture due to the popularity of the book *Bringing Down the House: The Inside Story of Six MIT Students Who Took Vegas for Millions* by Ben Mezrich. In this book, a highly fictionalized version of a real team of card counters from MIT was depicted - the MIT Blackjack Team consisted of several genius-level MIT students who learned card counting tricks and went to Las Vegas in order to make millions off the casinos there. This team in particular utilized group counting in its strategy; basically, the advantage is maximized by spotters who keep an eye on the table they are playing in for a statistical advantage. Once the count favors the player, a 'big player' from the group is Wonged in, wagering the table maximum as they play until the advantage is lost (Mezrich, 2003). While the events of the book itself were heavily fictionalized, they were still based on the exploits of the real MIT Blackjack team. This book's success, along with the film adaptation *21* starring Kevin Spacey and Jim Sturgess, helped to catapult the profile of the card-counting game immensely.

Casino Prevention to Stop Card Counters

There are many different methods casinos are using to discourage card counting. The primary problem with deterring card counters is the legal status and the ultimately legitimate usage of card counting - furthermore, it

can be nearly impossible to detect whether or not someone is card counting. As a result, many countermeasures are used by casino staff in order to stop card counters from earning an inordinate amount of money at blackjack. For instance, casino staff will often harass people suspected of card counting by striking up conversations with them. As card counters are often in deep states of concentration to count cards, the goal is to break that concentration and make them lose count.

Other strategies for minimizing the effect of card counting includes lowering the level of penetration into a shoe - in essence, the dealers deal out fewer cards before they shuffle. This has the effect of limiting card counters' ability to take advantage of higher card counts (Rose, 2002).

Technology is also being used to help casinos track down card counters and prevent them from playing or earning too much. Card counter identification is being implemented through the use of photo books, which include pictures of known card counters in order to keep staff aware of who to 'blacklist.' Card counters are also barred from these casinos with the use of facial recognition systems tied into closed-circuit cameras covering the entire casino (Aventura Technologies, 2011). When the high-definition cameras pick up a face recognized as belonging to a card counter, casino staff are notified and action is taken.

The MindPlay tabletop system is a piece of technology that permits casinos to monitor the actions of the players playing, and is used to look for behavior consistent with card counting. This table scans cards, coins or RFID chips that are coded appropriately and checks for dramatically changing bets

consistent with card counting (Gilbert, 2005). These integrated computer scanners are used to electronically anticipate card counters and alert casino staff when card counting behavior is detected. Other examples of technological countermeasures to card counting involves systems which track the bets each player is making, in order to track patterns that might also be consistent with a high or low count (Rose, 2002).

Despite all of these advances in technology, the detection and elimination of card counting is left largely to "pit bosses," who are the on site personnel working for the casino, and the "eye in the sky," which is the name given to the network of surveillance cameras placed throughout any given casino. Early detection of card counting behavior is paramount to finding a card counter, including when a buy in is large, or when bets become very substantial. Table hopping, changing bets dramatically and playing several hands are also behavior conducive to card counters, and pit bosses are trained to look for these signposts (Rose, 2002).

In conclusion, card counting is a very complex and involved method of increasing one's chances to win at blackjack. Due to the many different systems in place, one's ability to count cards is often a determinant on how much you bet to win. When counting cards, one is statistically assessing one's chances of getting a winning hand at any given time. While this is not an illegal exercise, it is considered by casinos to be a dishonest one, and one that allows far too many winnings to be profitable for them. Given the danger that card counting presents, and the popularity and prevalence of card counting that comes from movies like 21 and the book Bringing Down

the House, casinos are forced to take measures of their own to prevent card counting. While there are traditional methods such as shuffling and watching for behavior, technological advances such as tabletop tracking computers and facial recognition software are being invested in by casinos throughout America to try and eliminate the trend of card counting from the gambling world.

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