



# **The First Winning Strategy in Black Jack**

**Lindsey Smith**

**Historical Perspectives in Mathematics** 

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# Outline of Presentation

The image features two playing cards from a standard deck, positioned diagonally against a solid black background. The card in the foreground is the Ace of Spades, showing its characteristic large spade symbol and the number '1' in the corners. Behind it, the Jack of Spades is partially visible, showing the figure of a man in a blue and red outfit. The cards are slightly offset, creating a sense of depth.

- **Black Jack Rules and Game Play**
- **The Father of Card Counting**
- **Technology**
- **The Strategy and Four Basic Questions**
- **The Test**

# Black Jack Rules

- Object
- Number of Players
- The Pack
- The Deal
- Betting
- Card Value

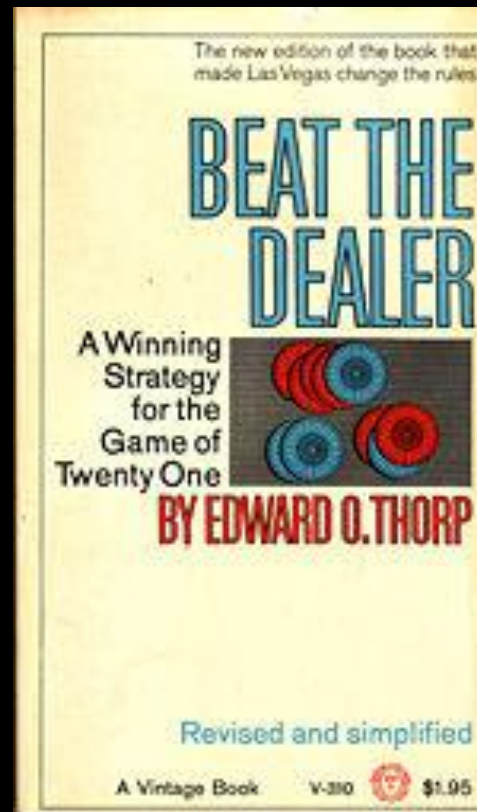
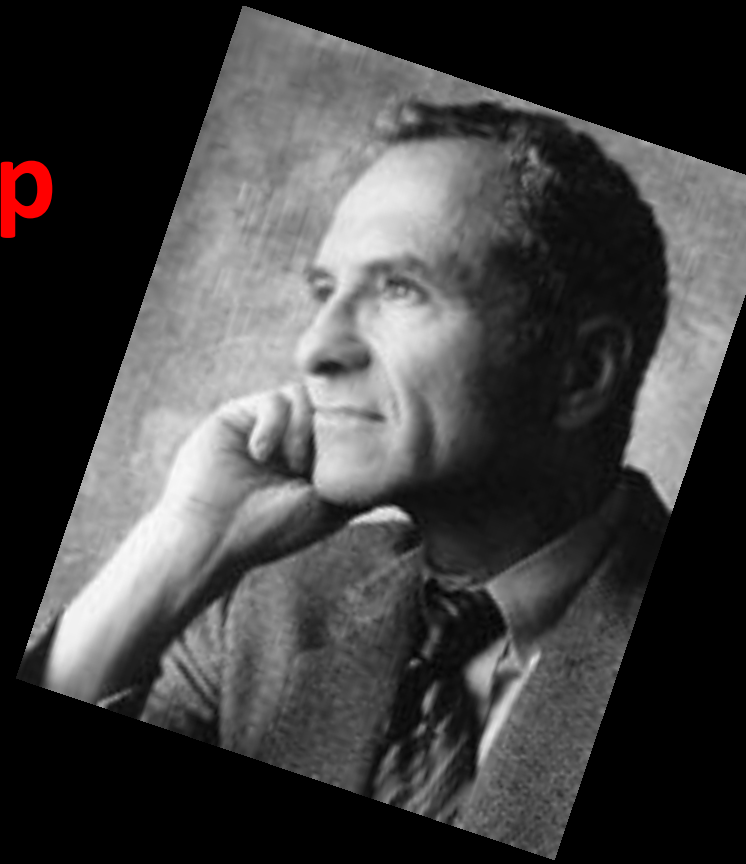


# Game Play

- **Naturals**
- **The Draw**
- **The Settlement**
- **Customs and Practices**



# Edward O. Thorp



# Technology

- **IBM 704 Computer**
- **First with Floating Point Hardware**





# The First Winning Strategy: Counting Fives

- Removing 5s creates a 3.29% advantage
- Method for winning:
  1. Make small bets, keeping track of 5s
  2. Once gone, check deck
  3. Knowing advantage, place large bet
- 4 Questions to complete instruction →

# 1. How can you tell whether the remaining cards will be adequate for play in the next round?

- Count the cards

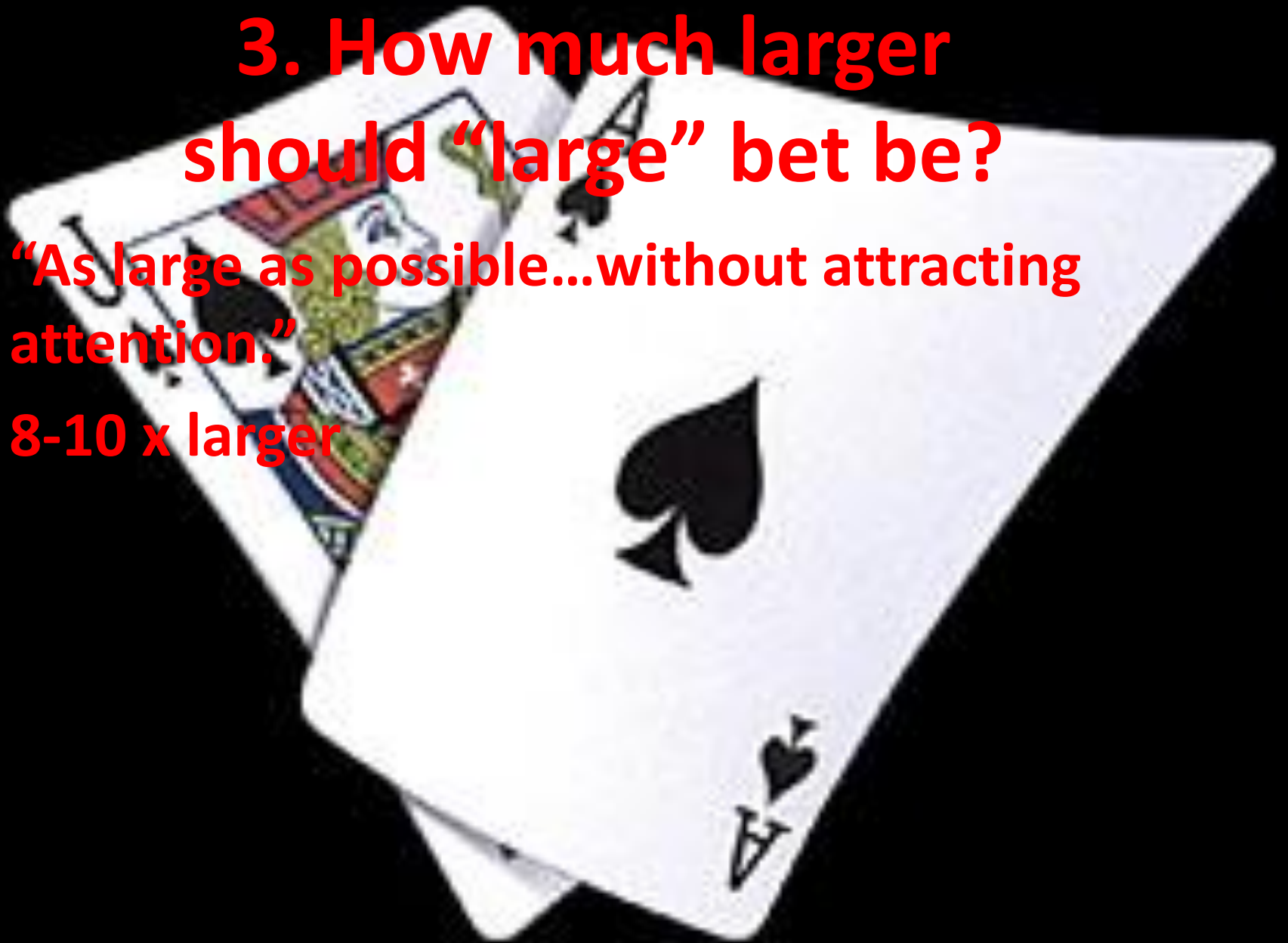
# of players	Cards	Counted
1		45
2		41
3		38
4		34
5		31
6		27
7		24

## 2. How often do favorable situations occur?

# of players	Frequency
1	9.8%
2	5.9%
3	6.5%
4	3.5%
5	6.0%
6	0.9%
7	1.7%

### 3. How much larger should “large” bet be?

- “As large as possible...without attracting attention.”
- 8-10 x larger



## 4. How fast will you make money?

- \$50 small bet:  $.005 \times 90 \times \$50 = \$22.50$
- \$500 large bet:  $.033 \times 10 \times \$500 = \$165$
- Net Gain: \$142.50

# American Mathematical Society



- “Fortune’s Formula: A Winning Strategy for Blackjack”
- Boston Globe
- Presentation Aftermath
- Mr. X and Mr. Y

# Testing in Nevada

- **Bet maximum**
- **“Conservative Play”**
- **A hundred one hundred dollar bills**



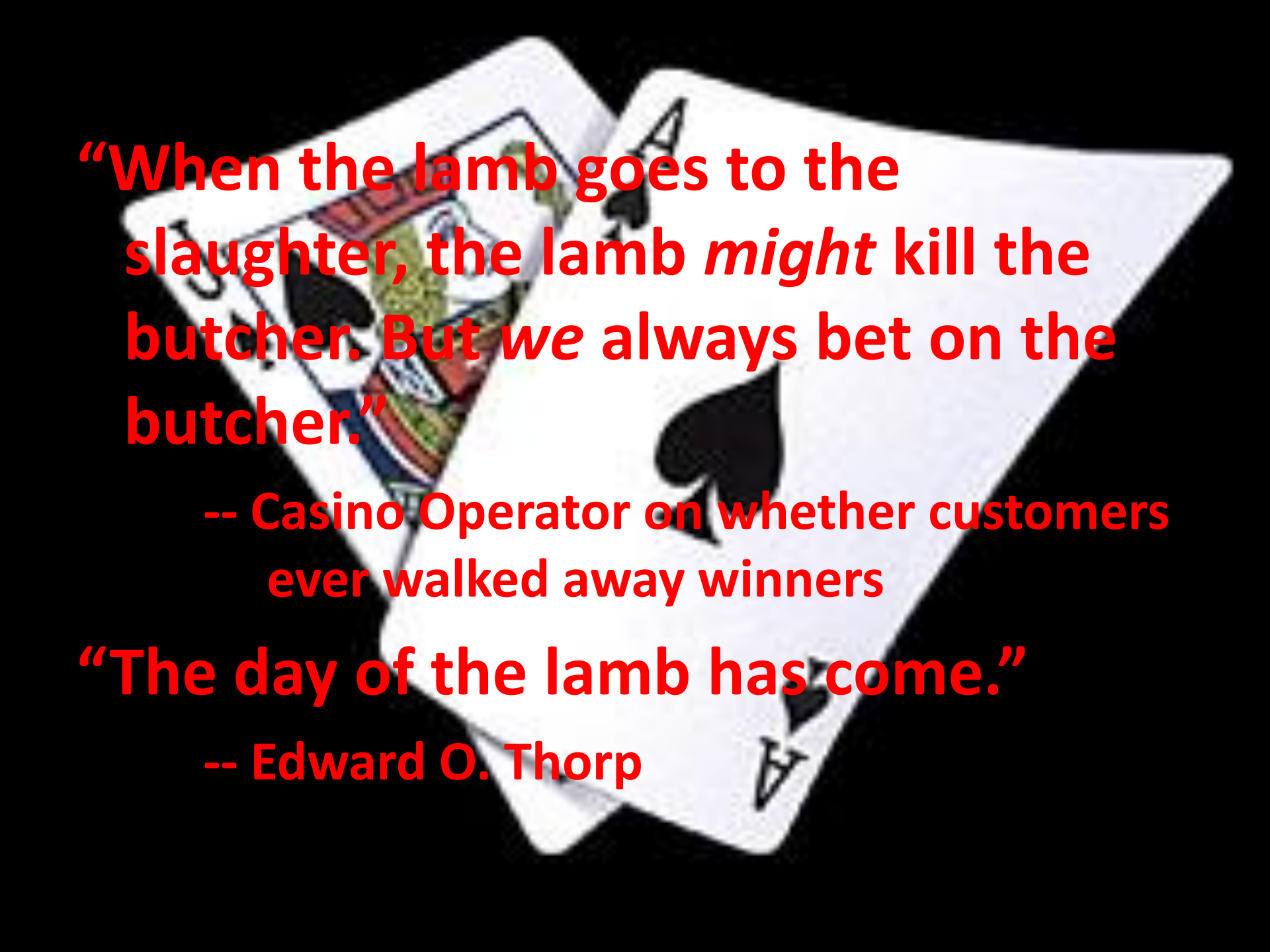
# The Play



- Saturday AM: \$650
- Saturday PM: 15 minutes = \$500
- Next Casino: -\$1700
- Sunday evening: \$2000
- 30 hours of play time throughout the week transformed \$10,000 into...

Two playing cards are shown against a black background. The top card is the Jack of Spades, featuring a king's face and a spade symbol. The bottom card is the Ace of Spades, featuring a large spade symbol and the letter 'A'.

**\$21,000**



**“When the lamb goes to the slaughter, the lamb *might* kill the butcher. But *we* always bet on the butcher.”**

**-- Casino Operator on whether customers ever walked away winners**

**“The day of the lamb has come.”**

**-- Edward O. Thorp**



# References

- “Beat the Dealer” by Edward O. Thorp
- “Chance, Luck, and Statistics” by Horace Levinson
- “Go with the Odds” a Chancellor Hall book
- <http://edwardothorp.com/>
- <http://www.blackjackhero.com/blackjack/players/edward-thorp/>

Two playing cards are shown against a black background. The card on the left is the Jack of Spades, featuring a detailed illustration of a man's face. The card on the right is the Ace of Spades, showing a large black spade symbol in the center. Both cards are slightly tilted and overlap each other.

**Thank You!**

**Are There any Questions**