

Imitator 28

Chapter 28: The Probability of Card Combinations

Wang Yongxin paused slightly and continued, "In this world, visa time is life.

"Quantifying life's value to earn visa time is essentially trading life for life.

"As for whether this exchange is worthwhile, we must consider specific risks, benefits, and probabilities.

"Of course, this brings up another trap in this game, which is the 'chip exchange machine.'

"Players are thrown into a gambling match with the chip exchange machine from the start, and the rules clearly state that this is an unfair gambling match.

"The chip exchange machine can draw an additional card, selecting the best three cards from four to form the highest hand. Moreover, it's always the dealer and always raises first.

"Generally speaking, raising first is more passive, but since the chip exchange machine can draw an extra card, its hand is naturally stronger, which increases our cost to call and show cards. Anyone wanting to show cards must bear an additional loss of 500 chips.

"Most players who played two rounds basically lost everything.

"Either they didn't dare to call and folded, or they called and still lost, suffering even greater losses.

"The severe negative feedback made most people naturally assume that playing against the chip exchange machine had no chance of winning and was purely wasting chips.

"This is the biggest information barrier in the game.

"This barrier even blocked out smart people like Cai Zhiyuan and Officer Cao."

Fu Chen pondered for a moment and nodded, "Yes, the four of us gambled against the chip exchange machine for a total of twenty-four rounds.

"In the first few rounds, we lost everything.

"The chip exchange machine had almost a fifty percent chance of getting a pair, and even when it didn't get a pair, it would definitely get high cards with J or above.

"Later I gave up, folding without looking at cards, since looking at cards would cost another 500 chips."

He looked at Cai Zhiyuan, "However, we did discuss the relevant probabilities at the time, and Cai Zhiyuan roughly calculated them.

"But whether from calculated probabilities or probabilities experienced in the game, the win rate was very low."

As a programmer, Cai Zhiyuan was most proficient in probability.

And this type of poker game was strongly correlated with probability.

Because the probability of each hand type could be precisely calculated, and the probability difference between two hand types naturally determined the win rate.

Originally, many people thought Cai Zhiyuan would definitely be best at this type of game.

Unexpectedly, his performance wasn't particularly outstanding.

Wang Yongxin, a boss who didn't understand probability much, and Lin Sizhi, a liberal arts student, became the only two people in Community 17 to discover the chip exchange machine's loophole.

Cai Zhiyuan silently sighed, "I did calculate the relevant probabilities.

"But the more I calculated, the more I misled myself."

Wang Yongxin suggested, "Why don't we take this opportunity to calculate all the relevant probabilities clearly? Although the game is over, at least everyone can understand clearly, win or lose."

Cai Zhiyuan nodded, "Alright."

He took paper and pen and calculated rapidly.

The initial calculations weren't too complex, but when calculating the probability changes for choosing three from four cards, the calculation volume suddenly increased.

Although Cai Zhiyuan calculated quickly, he still used several sheets of paper before giving the final answer.

"This should be roughly correct."

Cai Zhiyuan handed the paper filled with numbers to Wang Yongxin.

Wang Yongxin read through it from beginning to end, showing quite surprised expressions from time to time.

Then he looked at everyone, "Let me keep you in suspense first. What kind of hand do you think is worth heavy betting in this game?"

Everyone looked at each other and began guessing.

"A straight? A straight is a medium-strength hand."

"It shouldn't need to be that high. A straight is already a very low-probability hand, right? I think a pair would work."

"A pair of 10s or higher? That should be about right."

"Wait, let's first clarify what 'heavy betting' means? If you're going all-in with remaining chips, would you dare bet everything on a pair? I think it should be at least a flush."

Obviously, even in this situation, everyone still couldn't reach consensus.

Because each person had different risk tolerance and different probability estimates for various hand types. When these two factors combined, the decisions made were naturally vastly different.

Wang Yongxin gave the answer, "Drawing any three cards from 52 cards, there are a total of 22,100 possible combinations.

"Among these, three of a kind has 52 combinations, probability 0.24%;

"Straight flush has 48 combinations, probability 0.22%;

"Flush has 1,096 combinations, probability 4.96%;

"Straight has 720 combinations, probability 3.26%;

"Pair has 3,744 combinations, probability 16.94%;

"High card has 16,440 combinations, probability 74.39%."

Upon hearing this, everyone was very surprised.

"Ah? A pair only has 17% probability?"

"Straight flush has lower probability than three of a kind? Straight has lower probability than flush?"

"High card has 74.39% probability? Doesn't that mean as long as you get a pair, even the smallest pair, you'd have nearly 75% win rate in a heads-up?"

Obviously, these probabilities completely overturned conventional understanding to some extent.

Everyone knew high card was the weakest and straight through three of a kind were strong hands, but what were the specific win rates? Very few people had actually calculated them.

Most people estimated that high card might have around 50% win rate, and even pairs might not reach 60% win rate.

But in reality, even the smallest pair had a win rate as high as 75%, while hands starting from straights had win rates exceeding 90%.

Wang Yongxin continued, "What do you think the win rate is after the chip exchange machine draws one additional card and forms the best hand from four cards?"

"Never mind, I won't keep you in suspense. Let me give the results directly.

"Three of a kind probability is 1.02%, an increase of 325%;

"Straight flush probability is 0.78%, an increase of 255%;

"Flush probability is 9.84%, an increase of 98%;

"Straight probability is 7.15%, an increase of 119%;

"Pair probability is 27.61%, an increase of 63%;

"High card probability is 53.60%, a decrease of 28%.

"The advantage of drawing one extra card is indeed significant. Even if both sides have high cards, the chip exchange machine can most likely optimize to a higher high card.

"So in actually gambling against the chip exchange machine, losing is indeed a high-probability event."

Cai Zhiyuan nodded, "Yes, I only calculated to this step in the game, then stopped gambling against the chip exchange machine.

"But if you know that the 'chip exchange machine' won't fold, the strategy changes completely.

"Although the win rate looks low, in matches, once we get relatively strong hands, we can get doubled returns through continuous raising.

"Suppose we get a pair of Kings, then against the chip exchange machine, we'd actually have over 70% win rate.

"Suppose we get a flush, we'd have over 87% win rate."

Jiang He frowned slightly, "But such hands are hard to get, right?"

Wang Yongxin nodded, "They are hard to get, but the chip exchange machine actually provides many opportunities.

"For every 100ML of blood drawn, you can gamble against the chip exchange machine for 1 to 20 rounds. If you draw 600ML of blood, you can gamble up to 120 rounds at most.

"This number of rounds is actually enough to get strong hands many times. As long as you encounter one, your chips have a chance to double.

"Not only that, if you can think this through in advance, you can immediately fold with weak hands, minimizing game time to the greatest extent."

Jiang He thought for a moment and frowned, "But probability often doesn't make sense. Low-probability events aren't completely impossible either.

"What if you encounter bad luck? Wouldn't you still lose everything?"

Wang Yongxin shook his head dismissively, "You can't think like that!"

"If you're always worried about low-probability events, you'd fold every hand. How would you make money then?"

"Furthermore, gambling against the chip exchange machine has another advantage: as long as you choose to call, you can show cards anytime. Unlike gambling against players, if two people take turns raising, you can never show cards.

"So, set your own stop-loss limits and adjust bet amounts in real-time based on win rates.

"Just like doing business, this is a simple 'risk control' problem."

Everyone fell into silence. Obviously, this information needed proper digestion.

Fu Chen looked at the detailed rules on the large screen and sighed again.

This game didn't seem too complex, but when carefully analyzed, it had an unimaginable amount of detail.

"Alright, up to now, we should have completely analyzed this game, right?"

"So... do you think this game really achieved its screening purpose? In other words, do you think this method of allocating visa time is reasonable? Fair?"

Ding Wenqiang still had a dark expression, "Unfair."

The others continued to remain silent.

After a moment, Li Renshu said cautiously, "I think it's unfair, but reasonable."