Oddly Enough
by Simon Aronson

(from *Try the Impossible* (2001)

This is not a magic trick. It's a bet, or very simple game, to be played among three players. The odds are straightforward – each player apparently has an equal chance of winning and the payoff to whoever wins is suitably 2 to 1. Nevertheless, it is a scam because the odds are not what they seem.

One of the problems with many hustles and scam bets is that the proposed rules of the game often aren't quite "normal." The procedures may be roundabout, in that they get to their point somewhat indirectly. They may feel somewhat contrived, in the sense that they aren't as clean as what one would have expected had a few people really just sat down "merely to bet" among themselves. In short, hustles often lack naturalness. Indeed, these extra steps or additional twists frequently are the essential camouflage in making the apparent odds different from the true odds.

I've always been fascinated by how a hustler can manipulate the odds in his favor, but being of a skeptical frame of mind and being nurtured in the deceptive motives and schemes of magicians, I know I would have hesitated to play in most of the scams I've read about. I wondered whether one could devise an utterly simple game whose rules appear completely understandable, fair and above-board, and natural – and yet still manipulate the laws of chance. The following bet would have suckered me in, because of its minimalist trappings and its "obviously" logical, straightforward procedure. It's precisely what three innocent guys might do, perhaps in a bar, to see who gets a "pass" on his share of the bill.

The Game

The rules are minimal. The hustler and two innocent marks each place their bet, say $5 each, into the pot. One of the marks shuffles and cuts a deck of cards and then deals one card face up to each player. If all three cards happen to be of the same color (i.e., all red or all black) the result is a tie or a "push," and the dealer would deal another round. If the dealt cards are two of one color and one of the opposite color, whichever player receives the single "odd" color card wins the pot. It's that simple.

The players can either stop after the first round, or they could each toss another bet into the pot and deal the next three cards face up to play another round.

On any round, the odds against any individual player receiving the odd-color card are obviously 1 out of 3, and the winner gets paid 2 to 1, so chance should give each player an equal opportunity to win or lose. At no time does the hustler ever need to touch the cards, and the mark's shuffle and cuts are free and genuine. Indeed, if the mark wants, after the first round, he could give the deck another free cut so that the second round gets dealt from a different place in the shuffled pack. What could be more fair?

The Scam

The scam consists of three factors. First, there is an initial secret set-up of the deck. Second, the deck is given just one riffle shuffle. Third, the position of the hustler at the table as the cards are dealt is key. All three are easily controlled.

The deck is initially set up with the cards secretly arranged in alternating colors. The hustler positions himself so that he will receive the *second* card dealt in each round. All the hustler needs to do is to sit immediately to the *right* of the mark who will do the dealing. So long as the cards are dealt in traditional fashion, going around from left to right, this seating arrangement will insure that the hustler gets the second of the three cards dealt.

If the cards are handled according to the following procedure, the hustler will win significantly more money than he will lose – because the "true" odds are that the hustler will receive the odd-colored card a full 50% of the time (i.e., on average, once out of every two rounds).

The Procedure

Let's call the mark sitting on your immediate left Lefty and the other player Righty. Explain the simple rules and have each of the three players toss an equal amount into the pot.

You're going to want Lefty to be the dealer, so for "fairness" and to lull Righty into the action, we'll have him mix the cards as follows: with the deck secretly stacked (i.e., in alternating colors), cut the pack toward Righty and ask him to complete the cut. Then have him cut the deck approximately in half and riffle the halves together. Finally, have him cut the deck again, this time toward Lefty. Lefty now completes the cut, and he's ready to begin dealing. (These cutting instructions can be varied as you like, since the deck may be cut as many or as few times as you like, either before or after the shuffle. The important point is that the deck be given only one riffle shuffle.)

The deck has now been legitimately cut and shuffled, so we're ready to play. (And, if Lefty prefers, he could cut the deck and complete the cut again, so that the dealing would start from a random and unknown position; it makes no difference.) Lefty deals one round of three cards off the top, dealing each card face up, starting with Righty, then to you, and finally to himself. The seating arrangement assures that you receive the second, or middle, card dealt. Look at the results, and give the pot to the winner (i.e., whoever receives the odd color card). It's that simple. If you prefer, all three cards could be dealt face down, and then the players would then turn them over to see who wins. This may affect the "look" of the game, but obviously it has no effect on the outcome.

If you desire, you can immediately suggest an additional bet, and then have Lefty continue to deal one more round (i.e., three more cards). On such a second round you can offer Lefty the option of either dealing the three cards from the point he left off, or cutting into the middle and dealing from there. In either instance, it's to your advantage to make that bet.

What's Going on

If the deck had not been shuffled, it would be relatively easy to figure out how to win, because an *unshuffled* alternating color stack *guarantees* that, if three consecutive cards are dealt from anywhere, the middle card *must* be the opposite color from the surrounding two. It's the shuffle that disarms people. Indeed, even when you comprehend the underlying probabilities, it's still hard to believe it really works in practice.

The easiest way to convince yourself of the real odds is to go through the above procedure and deal out the full deck into 17 separate rounds; you'll find that, over time, the second card dealt in each round will win about 8 or 9 rounds, and the two other hands will win about 4 or 5 each. (Since this is based on probability, don't be surprised if you need to go through a few full decks, more than just 17 rounds, before these overall odds start to appear. But they will appear eventually).

The reason this occurs is because of a novel application of the Gilbreath principle. Magicians familiar with this seminal concept are, of course, aware that the above shuffling and cutting procedure results in the deck's being in successive pairs, with each pair containing one of each color (let's refer to this as a "Mixed Pair"). The red card might come first in some pairs and second in other pairs, but the deck will, after one riffle shuffle, consist of consecutive Mixed Pairs. This means that you can *never* actually get three cards in a row of the same color (but your explanation of the rules is designed to let the marks think that such a "push" is a real possibility).

Second, and more importantly, it means that no matter where the cards are dealt from, every three consecutive cards dealt will always consist of one consecutive Mixed Pair, plus one more card (the "Non-pair" card). This Non-pair card must always be either the first or the third card dealt (never the "middle" card of the three), because the Mixed Pair is always of two *consecutive* cards. The Mixed Pair thus must comprise either the first two cards dealt or the last two cards, and the Non-pair card will fill the remaining space. Moreover, this Non-pair card can never be the winning card among the three because its color will always match one of the two Mixed Pair cards. This means that the winner in each round must always be one of the two cards in the Mixed Pair – namely, the one whose color is opposite to that of the Non-pair card.

The result of the above is that, in any given round, each of the two cards comprising the Mixed Pair has a 50/50 chance of winning that round, and the Non-pair card has no chance of winning. Since the middle card dealt is *always* one of the two cards comprising the Mixed Pair (regardless of whether the Mixed Pair falls either at positions 1 and 2 or positions 2 and 3), the chance of the second dealt card's winning any particular round is 50%.

One fascinating aspect of this analysis is that it is counter-intuitive. It would seem at first impression (to me, anyway) that if the second card dealt in each round has a "higher" chance of winning, then if the deck had been cut just one card deeper or shallower, then such an alternative cut should move the "increased likely winner" to fall into the first (or the third) position. But, in actual fact, this is not the case – because the cut simply determines whether the Mixed Pair will fall either to positions 1 and 2, or 2 and 3. In either case the card dealt second from that point, as determined by that cut, will still be one of the Mixed Pair. It's always comforting, both in scams and in magic, when an underlying principle is counter-intuitive, because there's less chance that it can be re-constructed later on.

Comments

(1) ***Odds And Ends.*** The above scam is perhaps the simplest thing that can be accomplished with such a set-up, but there are other facets which I've played with. For instance, as you watch the cards being dealt, as soon as you see a "double" (two cards dealt consecutively of the same color) you can know both the color of the next card before it's dealt, and also know the division points between each Mixed Pair from there on, as the deal continues. This allows you, in a more elaborate demonstration, to secretly count along for successive rounds and even predict the next winning color. If you were actually playing successive rounds, you might be able to vary the size of your bet, betting more when you knew you would win next and less when you saw you were going to lose.

Don't be tempted to deal too many successive rounds – because, frankly, it can look "too good." Unless Lefty is an erratic shuffler, it's quite possible for long runs of regularly alternating colors to appear over successive deals, and such a repeated pattern could enlighten Lefty and Righty that something's not quite random. It's better just to play a few rounds with the odds skewed in your favor, and call it quits. Tactically, if you know beforehand that someone habitually shuffles in odd clumps of twos and threes, select him to play Righty's shuffling role.

I have experimented with altering the set-up in minor ways, by varying the alternating color scheme in just a few areas of the deck. Such a modified set-up can creates the possibility of a round of three cards occasionally being all the same color. This minor variation does change the odds in a de minimus way, but heightens the sense that the outcome is actually determined by chance. It's something to consider if you're going to play more than a couple of rounds.

For analytic purposes, the text presents a "bare bones" procedure. You can easily make it more convincing if *you* start by giving the deck one or two simple false table riffle shuffles and then casually hand it to Righty, for his cuts and shuffle. Likewise I have omitted any discussion of the possibility of adding just a tiny bit of sleight-of-hand – but it's easy to see how the addition of "second dealing" can produce different results.

(2) ***Background and Credits.*** My starting point for "Oddly Enough" was Nick Trost's "Odd Man Wins" (Trost, *The Card Magic of Nick Trost*, 1997, p. 93). Trost's game procedure is quite different from the ideas outlined above since his purpose is to create an obviously controlled magic trick in which the "mark" *never* wins. To do this, he uses the Gilbreath principle in a fairly traditional manner, dealing out the entire deck into four piles. The victim then selects one pile, and depending on which pile the mark has chosen, the performer then discards one of the remaining three piles. Next the performer enlists the aid of a second spectator to play his confederate, and each takes one of the two remaining piles. Between the two of them, they always beat the mark because one or the other of them must always have the odd-color card.

Trost's procedure is acceptable in a magic context, but the illogicality of dealing out four piles just to discard one takes it out of the realm of creating a realistic betting situation. Likewise, Trost's magical goal of overtly demonstrating complete control despite a shuffle (so that the performer or his confederate always wins) is antithetical to the psychology of a valid scam, which generally lets the mark win just enough so that he doesn't ever realize he's being taken.

I wondered whether, by eliminating these two "magic trick" elements, I could make the

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conditions more closely resemble an uncontrolled, legitimate game. I didn't want to use a confederate, and I wanted my hand to be the winner (as opposed to Trost's procedure in which one single mark is the loser). So I explored the possibility of using the Gilbreath principle to secretly skew the odds if only three hands were dealt, and was delighted when my initial trials proved successful. I immediately went out dining with some of my lawyer friends, and the ensuing bets paid for the evening. The result is "Oddly Enough."

      (3) ***Exculpation.*** At the risk of being repetitive, please understand that this scam does skew the odds in your favor – but on any one or two rounds it doesn't *guarantee* a win. The bet is certainly worth making if you can afford the possible loss, but please don't bet your house on it.

This scam and the odds-skewing principles set forth are published for purposes of entertainment and amusement only. So is the preceding sentence.