

Coin Flips and Bridge

I've often felt like bridge would be easier to understand if we could somehow use what we already know from the real world in a bridge context. Recently, the idea of coin flips has bubbled to the surface of my consciousness and I want to use them to help explain bridge probabilities.

Let's start by flipping a coin 5 times. Here are the possible outcomes:

- 5 Heads
- 4 Heads and 1 Tail
- 3 Heads and 2 Tails
- 2 Heads and 3 Tails
- 1 Head and 4 Tails
- 5 Tails

Of these, which is the most likely outcome?

Now let's go a step further and say that each coin can only be flipped once. So if you are going to make 5 flips you need 5 coins. Sometimes all of the coins will be of equal value, say they are all pennies. Then it doesn't really matter whether a given penny ends up being a head or a tail. They're all basically worthless!

However, what if one of the coins was a silver dollar? Then we would want to keep track of that coin in particular. If we only got to pick one of the stacks (either heads or tails) we'd want to select the one with the most # of coins in it to look for that silver dollar. After all the stack with the most coins is the one that's most likely to have that valuable coin. If I knew that the flips had gone 4 heads and 1 tail, I'd choose the heads since I'd want 4 chances at finding the coin rather than only 1.

Now how does this apply to bridge? Well whether we're the declarer or a defender there are always two hidden hands. We know our cards and the dummy's so any missing card is either in one of the hidden hands or the other. Since each of these hidden hands has 13 cards in it, the chance of any missing card is fifty-fifty that it's in one hand or the other. Just like a coin flip.

Much of advanced bridge play is simply trying to improve on this fifty-fifty initial chance. We have many clues in order to help us, the biggest of which is usually the auction and the second of which is the opening lead and any subsequent cards played.

As an example of this, consider trying to make 4♠ on this hand:

♠AQ54
♥32
♦A2
♣KJ432

♠KJT98
♥A4
♦43
♣AT98

After the lead of the ♦K, you draw trump in two rounds and need to figure out how to play the club suit. There are 4 missing clubs and one of them is the queen. This is just like the 3 pennies and 1 silver dollar.

If you flip 4 coins, you can have the following outcomes:

- 4 Heads
- 3 Heads, 1 Tail
- 2 Heads, 2 Tails
- 1 Head, 3 Tails
- 4 Tails

Which is the most likely?

That's right 2-2 is the most likely split. In the absence of any other information you should cash the AK and hope for the drop.

But what about if one of the opponents had opened 3♦? Does that change things?

Yes. Once we have information about a side suit length, we should change our thinking as follows: West started with 7 diamonds and we now know they had 2 spades. That only leaves them with 4 potential clubs and hearts. East started with 2 diamonds and 2 spades. That leaves them with 9 potential clubs and hearts. When we're flipping coins, the odds of any club going to East are 9 to 4 in favor of East. That means that East is a heavy favorite to hold the club queen because they have more chances to hold any given coins than West does.