Playing the Small Blind

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Recently, Jeff Stanzel of Thunder Bay wrote me with the following question: If I am in the small blind holding 4-8 offsuit and it costs me just another $1 to call the bet,what are the chances that I will flop: 1) a straight; 2) trips; 3) two pairs; 4) open-ended straight draw; or 5) gutshot straight draw?

Even though Jeff's question is rather specific, it is typical of the situation one frequently faces in the small blind. Namely, there have been no raises with only the big blind yet to act, the pot odds are big, and the small blind has a less than sterling hand. So let's go ahead and work out the answer to his question keeping in mind that the answer provides a rough answer to many similar situations.

The total number of flops is $C(50,3) = 19,600$. All we need to do is calculate the number of flops that satisfy the five categories mentioned above. We first consider flopped straights. In order for 4-8 to flop a straight, the three cards comprising the flop must have ranks 5-6-7. There are four choices of suit for each rank so that exactly 64 flops give the player a straight. This means the chance of flopping a straight is about 1 in 306—not something to count on.

In order to flop trips, the flop must have either two 4s or two 8s and the third card cannot be an 8 or 4, respectively, because we are excluding full houses in this count. There are three ways to choose two 4s from the three left in the deck. There are 44 choices for the third card giving us 132 ways to flop trip 4s. The same analysis applies to two 8s. Altogether there are 264 ways to flop trips. So the chance of flopping trips is about 1 in 74.

In order to flop two pairs, the flop must have one 4, one 8 and one card of a different rank. There are three ways to choose each of the cards of ranks 4 and 8 and there are 44 ways to choose the other card. Multiplying gives us 396 ways to flop two pairs. This means the chance of flopping two pairs is approximately 1 in 49.5.

When counting open-ended straight draws, we are going to include double gutters as well because both types give the player eight cards to make a straight. In order to produce a straight draw of the types we are discussing, the flop must have three distinct ranks because the player's hand is 4-8. The rank sets that work are {2,3,5}, {2,5,6}, {3,5,6}, {6,7,9}, {6,7,10}, {7,9,10}, and {9,10,J}. There are four choices for the suit of each card in a given rank set. This yields 64 choices for each rank set. There are seven rank sets giving 448 flops that allow the player eight cards to make a straight. The chance for such a flop to occur is about 1 in 44.

Jeff's original question asked only for a flop producing a gutshot draw to a wheel (A-2-3-4-5). The rank sets that work for that are {A,2,3}, {A,2,5}, and {A,3,5}. As in the preceding paragraph, there are 192 flops arising from these rank sets. The chance for this kind of flop to occur is about 1 in 102.

The total number of flops in Jeff's list is 1,364. The overall probability of such a flop is about 1 in 14.4. Thus, the odds against one of these flops occurring are about 13.4-to-1. In a loose 3-6 game the small blind often will be offered pot odds better than 13.4-to-1.

The motivation behind Jeff's question was not mentioned in his message but let's suppose the reason is to answer the question: When is it worth paying another dollar in the small blind with a hand like 4-8? With that question in mind, should we have any misgivings about the list? Some readers surely are going to quibble over the inclusion of a gutshot draw to a wheel. There are only 192 flops for this situation. In addition, the list does not include flops producing either quads or full houses. The latter flops are good because the player almost always will win with such a flop.

There are 18 flops that give the player a full house and there are two flops that give quads. So if we modify the original list by removing flops that give the player a gutshot draw to wheel, and add the flops that give the player either a full house or quads, we then have a total of 1,192 flops for the modified list. The odds against catching a flop for the modified list then are about 15.4-to-1.

There is not much point in considering flops that give the player a one-card flush draw because with enough players seeing the flop so that the small blind has the pot odds to call in the first place, there is a very high probability that another player has a better flush draw or a made flush. On the other hand, since we have come this far, let'see what happens for flops that give the player a gutshot straight draw.

Gutshot draws come in two flavours: Those consisting of three distinct ranks and those consisting of two distinct ranks. Consider the latter type first. The flop must contain either the ranks 5-6, 5-7 or 6-7 with a pair on board. There are 144 flops of this type so that they are rare. They also are dangerous for a player contemplating playing on with a gutshot draw to a straight. Not only is the player facing odds of about 5.1-to-1 against making the straight by the river, the pair on board means the player likely is facing a strong hand already and/or facing players drawing to hands better than a straight with more favourable odds. This normally is a time to wait for a better situation and fold.

Gutshot straight draws with three ranks in the flop are far more common but the odds against making the straight by the river are still 5.1-to-1. There are 2,208 flops of this type to occur about one in every nine flops.