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6/10/04 This is the fourth draft of the Introduction chapter in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page.

Hold'em Brain: Introduction
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The Evolution of the Hold'em Brain
The steps that a Hold'em player takes to learn the game resembles the process of human evolution. Players must master the previous steps in order to develop to the next step. Most players get stuck along the evolutionary path and fail to adapt. Others learn the use of necessary tools, adapt to their environment and move onto the next stage.

Here are the basic steps taken during the evolution of the Hold'em Brain.

Step 1: Hold'em Habilis. The player has just learned the mechanics of the game and the rules. He plays many hands because he thinks the winning hand can be any two cards. Although most players will think they know more than just the rules and the basics of the game, a large majority of the players never move past this step. These players are fed to the more developed players.

Step 2: Hold'em Erectus. To develop to this step, the player has to realize that although any two cards can win any given hand, certain starting hands are more profitable. He learns through experience after constantly getting his K8 beaten by AK. Although many players will develop to this step, most do not develop further. They may know that AQ is a better starting hand than QT, but their understanding is lacking as they play both hands indiscriminately. In order to develop further, the player must learn how to be more selective. He must learn how to play tight.

Step 3: Hold'em Sapien. The player has learned the advantages and disadvantages of different positions. When he has the best of it, the player plays aggressively. The player understands how to treat each opponent differently and adjusts according to their differences. He avoids confronting the better players, and takes advantage of the weaker players. Many players never get to this point. They develop into Hold'em Neanderthals instead, a species that cannot adapt to different surroundings, a species prime for extinction. The Hold'em Sapien is constantly thinking of ways to get better, learning more about the game and developing toward the Hold'em Brain.

Step 4: Hold'em Brain. The player understands how others think of him, how they may adjust to him and he adjusts to them accordingly. He understands Hold'em is dynamic. The player uses his knowledge of the differences in situations, the odds, the relative positions, and how others play to his advantage. The player understands that winning pots is not as important as winning money. The player is sharp.

Developing your Hold'em Brain through this evolutionary process would take a long time in a vacuum. Fortunately there are many ways to speed up this process. Reading this book is one of those ways. Instead of inventing the wheel yourself, you can see how the wheel is constructed and learn from that, maybe even use that knowledge to make a better wheel. As important as reading this book is developing your own thought process. Think through the hands you have played and

what would happen if you had played them differently. Analyze the hands you were involved in to see if you could have saved or gained an extra bet. Talk to some friends that you trust in poker and share thoughts. Get involved reading and posting on internet poker forums to get ideas and thoughts from other players. Keep reading and rereading the good books and continue to think. Following these steps is not easy, it is a difficult process. Most players veer off the path and head toward extinction as lifelong poker losers. Working hard and thinking about the game is the path toward success. In Hold'em, there are no easy steps to become a winner.

The Purpose of this book
This book is for anybody who is willing to think about the game of Limit Hold'em. Players with some experience and who are willing to think will be able to follow the book. If they have to think about the mechanics of the game, like most beginners do, then they will have a more difficult time understanding. If a reader has to think about whether the small blind acts before or after the big blind, then it will be tough to follow along.

The gist of the book is to give the reader the tools to succeed at Hold'em. The idea is to show the reader how to fish, not to give the reader a fish by simply telling them exactly how to act in each individual situation. Why would you want to buy a fish from a bookstore anyway?

This book will introduce the concept of expected value and how it pertains to Hold'em. Strategies will be shown to be correct or incorrect in different situations. Numerous examples are used to illustrate these concepts. Many questions in poker are answered with the phrase "It depends." This book will show how the best strategy in any particular situation will depend on how other players play, the size of the pot, the relative position of each player and other issues. A strategy may be correct against one type of player, but incorrect against another. A strategy may be correct in a certain position, but not in another. A strategy may be correct with a certain pot size, but incorrect when the pot size is different. This book will discuss the many moving parts and different aspects of Hold'em.

Mathematical concepts are discussed in this book, but everyone should be able to understand the concepts without completely understanding the mathematics behind them. These concepts are displayed in such a way that the reader who wants to examine the mathematics closely can do so. While the reader who would rather not muddle through it can still understand. This book shows how the understanding of the mathematical aspects of Hold'em by itself is not enough to make a player a winner. A player needs to understand how his opponents' play and how they will respond to his actions in order to use the concepts correctly. This skill is less of a science and more of an art. Any formula is only as good as its plugged-in variables. As the old phrase says, "garbage in, garbage out."

Who this book is written for
This book is written for the player that thinks analytically about the game of Limit Hold'em. This could mean a player who is fairly new to the game but understands the rules and the mechanics of the game. This could mean an experienced player who wants to add to his game. This could also mean a sharp player who already employs many of the concepts in this book but wants to examine them more closely. A relative beginner who can think critically will get more out of this book than an experienced player who cannot. An experienced player who can think critically will benefit

most.

How to use this book
Make sure you read the chapters in the Foundation (Players, Expected Value, Outs, Pot Odds and Position) before moving onto the rest of the book. The concepts presented in those chapters are crucial for the understanding of the other chapters. After that, the chapters in the Strategies, Hand Development and Extra Topics can be read in any order.

When reading a topic that may be confusing or involved, take some time to think about the issues. When there are mathematical results presented, I would suggest accepting the results at face value first, in order to understand the concept. Afterwards, you can examine the mathematics more closely (the results and the computation are usually listed separately so you can see the results without having to follow the calculations). Think critically about whether you agree or disagree. If you disagree, think about the reasons why (and feel free to send me an email at KingYao@HoldemBrain.com.) Read and think, think and read.

Terminology, Acronyms and Conventions used in this book
Here are some of the terminology, acronyms and conventions used in this book. A glossary is provided in the appendices.

A, K, Q, J, T - Aces, Kings, Queens, Jacks and Tens are denoted with just their first letter. Cards 2 thru 9 are denoted with their number.
A's, K's, 5's - the plural of any card is shown with a 's. For example, a pair of 6's.
Overcards - when your two hole cards are both higher than any card on the board
Overpair - when you have a pocket pair whose rank is higher than any card on the board
Split Pair - when you have a pair using one of your hole cards and one on the board
Top Pair - a split pair with the highest card on the board
Outs - describes the number of cards that improves your hand to the best hand. An open-ended straight draw would have eight outs
Open-raise - the act of raising in the pre-Flop round when all other players before have already folded
AKo - the "o" after the two cards denotes that the two cards are of different suits
AKs - the "s" after the two cards denotes that the two cards are of the same suit.
A♣K♠ - when there is a suit after both cards, it denotes the actual suit of the card. A♣K♠ would denote the Ace of Clubs and the King of Spades
J♣T♦9♣ - this would show a board of Jack of Clubs, Ten of Diamonds, Nine of Clubs
J-T-9 rainbow - the cards have different suits and the suits are not relevant to the hand.
K-J-x - when this notation is used to describe the board, it means that the third card, the "x" is a smaller card and is not important to the discussion. In this case, it means the "x" card is not a A, K, Q, J, T or 9 because any of those cards would be relevant.

6/5/04 This is the fourth draft of the chapter on Expected Value in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page

Hold'em Brain: Expected Value
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You are in a restaurant looking at a menu. You see two entrees that you like equally, but one is cheaper than the other. You decide to order the cheaper one because you will be just as happy with it. You have just made a decision based on the comparison of the expected value of the two entrees.

You are driving on a highway during rush hour. Your lane seems to be going slower than the lane to your left. The first chance you get, you switch over to the left lane so you can get home faster. You have just made a decision based on the comparison of the expected value of the two lanes.

You are playing poker. The pot is very big, but your hand is mediocre. On the last round of betting, you say "ah, what the heck, I'm going to call, the pot is just too big." You have just made a decision based on the perceived expected value using information about the size of the pot and the strength of your hand.

Expected value is a concept that everybody uses in their daily lives, although they may not realize it. Whenever we have a choice, we use expected value to guide us on our decision. Sometimes the value of the choices are not purely monetary as it could be based on happiness, a term that academics like to call utility. Usually there is no need to use a formula to calculate the expected value of a decision, but there are some cases where the use of calculating expected value will show us something that is counterintuitive or simply show us why a certain idea is correct or incorrect. It can also help us to pinpoint what factors we need to consider when we are playing poker.

Expected value (EV) is a term used to describe the value of an event over the course of all possibilities. It is an easy way to describe situations that can have many different results, and shows the average result over all the probabilities. A simple example involves a basketball player at the free throw line. If the basketball player has made 750 free throws out of 1000 free throw attempts, you could estimate that he has a 75% chance of making a free throw attempt. Then you can say the EV of the number of points that he will score on one free throw attempt is 0.75. He will either make the free throw and score one point or miss the free throw and not score a point, but on average, he is expected to score 0.75 points with one free throw. The concept of EV is used throughout this book to demonstrate the values of certain poker plays and ideas. This section shows how EV can be calculated and demonstrates how it can be used, in preparation for its usage throughout this book.

The way to calculate the EV of an event is to take all possible events and assign a probability and a result to them. The sum of the probabilities will equal 100%, and the sum of each individual result multiplied by its probability will equal the EV. If the EV of the event is a positive number, we can say the event has a positive expectation or positive value. If the EV of the even is a

negative number, we can say the event has a negative expectation or negative value.

Here's an example with a roll of a single die.
A game is played where a fair die is rolled. This means each of the six numbers on the die have an equal chance of coming up. If the die comes up 1 or 2, the result is -$2, if the die comes up 3 or 4, the result is +$3, if it comes up 5 or 6, the result is -$1. Here is a table with the probabilities of each roll and the results.

Result of Die	Probability	Result in $	Prob. x Result
1	1/6	- $2	- $0.333
2	1/6	- $2	- $0.333
3	1/6	+ $3	+$0.500
4	1/6	+ $3	+$0.500
5	1/6	- $1	- $0.167
6	1/6	- $1	- $0.167
Total	**6/6**	**N/A**	**$0.000**

The column that is labeled Probability x Result is the multiplication of the Probability and the Result column. If we add up all the numbers in that column, we would get the EV of a roll. In this case, it adds up to $0. This means that on average, the person who plays this game has no expectations as to winning or losing from a dollars perspective. Since they lose when the die comes up 1, 2, 5 or 6, they will lose more often than they win. However when they do win, they will win more money during those times, enough to compensate for the greater frequency of losses, since each loss is a smaller amount. The numbers add up in this case so that the player does not expect to profit or lose, however, he will win or lose a certain amount on any given roll.

Instead of writing out this whole table, we can write it in one algebraic equation. Here is the equation:

EV of rolling one die = 1/6 x (-$2) + 1/6 x (-$2) + 1/6 x (+$3) + 1/6 x (+$3) + 1/6 x (-$1) +1/6 x (-$1) = $0.00

Throughout this book, the EV equations will be put into a box. This will make it easier for those that would prefer to only look at the Result. Meanwhile, the Computation will be shown as well. For example, the above equation would look like this:

Action	Computation	Result
EV of rolling one die	1/6 x (-$2) + 1/6 x (-$2) + 1/6 x (+$3) + 1/6 x	$0.00

	(+$3) + 1/6 x (-$1) +1/6 x (-$1)	

Remember that in algebra, the order of operations is to first do everything within parenthesis (in this case there is none, but I wanted to mention it for future equations), then we multiply and divide, then we add or subtract. In the EV of rolling one die formula, we would multiply 1/6 x (-$2) to get -$0.333, and do the same for each term before adding all the terms together.

Now imagine the distribution was different. Instead of the payoff table that is shown above, change it so if the roll is a 1, the player gets $100, and with any other number the player will lose $1. It should be clear that this is a great game for the player, provided there is no cheating going on. Instead of writing out each term, we can simplify it to this shorter equation:

Action	Computation	Result
EV of new game	(1/6 x $100) + (5/6 x $-1)	$15.83

In the computation, we do not need to write out each of the rolls from 2 thru 6, because we know they all have the same result, losing $1. The solution for that equation is $15.83. The player expects to make $15.83 on average per roll of the die, although he will lose more often than win. On average, the player will lose 5 out of every 6 rolls, but when he does win, the winning amount overwhelms the losing amount so much that the player has a positive expectation of $15.83 average per roll.

Here's an example in Hold'em
You are playing $10-$20 Hold'em and the pot is currently $80 after the Turn card.. You have an open-ended straight draw and you are 100% sure your opponent has a hand that you will not beat unless you make a straight. But if you do hit your straight, you will win the hand. You believe there is a 17% chance that you will make your straight and a 83% chance that you will not. (In the chapters on Outs and Pot Odds, I will go into further detail on how to estimate your chances of winning and losing.)

Your opponent bets $20 and you must decide to call or fold. You only have $20 left in your stack, and if you call, you cannot lose more or win more on the River as you are considered all-in. If you call and win, you will win $100. If you call and lose, you will lose $20. You have to figure out if calling has a positive expectation.

Action	Computation	Result
EV of 10/20 problem	(17% x $100) + (83% x -20)	+$0.40

So you expect to make $0.40 by calling, which means it is better to call than fold. Sometimes you will win $100, more often you will lose $20. However on average, you expect to make $0.40. Calculations like this are difficult for most players to do in their heads while at the poker table. In the chapter on Pot Odds, a simpler way to make the determination of calling or folding is shown.

It is practical and much easier to implement, and yet it will be consistent with the EV equations. It is still useful to understand and apply the EV equations when studying the game and thinking about certain situations when not at the poker table. That is its purpose in this book, using it to study the game as opposed to using the equations directly at the table. There are simpler ways to make those calculations and not give up any accuracy.

In poker, whether they know it or not, players are always trying to put themselves into situations where they have positive EV. Good players are able to distinguish between situations that have positive EV and negative EV. When they have positive EV, they will decide to get involved in the hand. When they do not have positive EV, they will get out of the hand. Meanwhile, bad players are not able to distinguish between positive and negative EV. Thus they will often get involved in hands that have negative EV. Sometimes they will get out of hands that have positive EV. The crux of this book is to help the reader identify the difference between positive EV situations and negative EV situations. Once the positive EV situations are identified, the goal is identify the best play that will maximize the EV.

Expected Value Quiz and Answer
1. You have a fair coin, one that is expected to come up heads 50% of the time and tails the other 50% of the time. You are told that you will win $5 if you flip two tails in row, but if either of the flips comes up head, you will lose $2. What is the EV of this game?

Answer
To get two tails in a row = 50% x 50% = 25%
This means you will not get two tails in a row 75% of the time (100% - 25%)
So the EV equation is:
EV = 25% x $5 + 75% x -$2 = $1.25 - $1.50 = -$0.25

Action	Computation	Result
EV for Quiz 1	(25% x $5) + (75% x -$2)	-$0.25

On average, you will lose playing this game, to the tune of -$0.25 per game.

2. You roll a fair die and you receive the equivalent dollar amount as your roll. If you did not have to pay anything to roll the die, what is the EV of your roll?

Answer

Action	Computation	Result
EV for Quiz 2	(1/6 x $1) + (1/6 x $2) + (1/6 x $3) + (1/6 x $4) + (1/6 x $5) + (1/6 x $6)	+$3.50

3. You are the owner and the coach of a NBA team and you only care about winning this current game. Your team is down by 2 points and there is only 5 seconds to go in the game. You know that if the game goes to overtime that you have a 55% chance of winning since the your team is

slightly better than the other team (you really feel this way, its not your ego talking). You know your team can get either a two point shot off or a three point shot off, but your team will need to take about 4 seconds to get a shot off, so you are assuming there is no chance you can get an offensive rebound and get a second chance. You expect your team has a 30% chance of making a three point shot (which would win the game if they made it) and a 51% chance of making a two point shot (which would tie the game and send it to overtime if they made it). You have a choice of drawing up one play, do you go for a three point shot or a two point shot?

Answer
To solve this problem, you want to compare the EV of taking a two point shot and taking a three point shot. As for the value of the results, assign winning the game as worth 1 and losing the game as worth 0, since you have no ulterior motive other than winning the game.

EV of going for Three = (Probability you make the Three x 1) + (Probability you do not make the Three x 0)

If you decide to go for a three point shot, there is no need for an overtime. Your team will either win the game or lose the game on the last shot. However, if you decide to go for a two point shot, you will go to overtime if you do make it since the game will be tied. This means you will need to multiply the probability of making the two point shot by the probability of winning the game in overtime to find out the total probability that your team will win the game.

EV of going for Two = (Probability you make the Two x Probability you win in OT x 1) + (Probability you make the Two x Probability you lose in OT x 0) + (Probability you do not make the Two x 0)

Action	Computation	Result
EV of going for Three	(30% x 1) + (70% x 0)	+0.30
EV of going for Two	(51% x 55% x 1) + (51% x 45% x 0) + (49% x 0)	+0.28

The EV analysis says you should go for three because the EV of going for three is 0.30 which is higher than the EV of going for two which is only 0.28. Notice that in reality, if you are a basketball head coach (and not concurrently the owner), and you feel you will get ridiculed by the media and fans if you choose to go for the three and miss, you may actually decide to go for two even though the EV of going for two is lower than the EV of going for three. This is because the value of the results may be different for you personally, as you may get fired if it looks like you made a controversial decision and it does not work. Instead of using 0 as the value of the result when you go for three and lose, you may decide that the value is actually negative, such as -1, since if the three point shot is missed, you may get fired and lose your job.

4. You are playing 10-20 Hold'em. On the Turn you have four cards to a flush draw. Here are the facts:

a. You know with certainty that if you do not make your flush draw you will lose the hand.

b. You know with certainty that if you do make the flush draw that you will win.
c. There are 46 unknown cards left in the deck (you have two in your hand and you can see four on the board). 9 of those cards will give you the flush, the other 37 will not.
d. After your opponent makes a bet, the pot contains $100.
e. It is $20 to you and coincidentally, that is all you have left. This means there will be no more betting on the River as you will be all-in if you call.

Should you call or should you fold?

Answer
There are 46 cards that are unknown left in the deck. 9 of these cards will give you a flush, the other 37 cards will not. This means you have a 9/46 chance of winning and a 37/46 chance of losing. If you win, you win $100, if you lose, you lose $20. Now we have everything we need to know to set up the EV equation.

Action	Computation	Result
EV for Quiz 4	(9/46 x $100) + (37/46 x -$20)	+$3.48

This shows there is a positive EV in calling.

Hold'em Brain: Outs
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In order to understand pot odds, you must know the expected pot size and the number of outs you have. Knowing how your opponent plays will help you determine the expected pot size and the number of expected outs you have. Without knowing each of these factors, you would not be able to figure out proper pot odds, and thus have a difficult time making the correct decision at the poker table. This section is on outs; how to identify them and how to count them. It is important that you develop a thorough understanding of outs before you read the next chapter on pot odds.

What is an out?
An out usually refers to a card that could come in a future round to improve a hand to the best hand. For the hand that is behind, the number of outs is the sum of all cards that can make the hand that is behind improve to the best hand. If you were behind in the previous round, and you receive an out on the next card, then you are now ahead. A non-out is the opposite of an out. A non-out is a card that will not turn your hand from a loser into a winner, instead, a non-out keeps your hand in the same relative rankings as the previous round. If you were behind in the previous round, and you receive a non-out on the next card, you are still behind.

For the purposes of this book, outs will be considered as all cards that help a hand, whether it means improving your hand or keeping your hand ahead of other hands. If you are behind, an out will improve your hand from a losing hand to a winning hand. If your hand was already ahead, an out will not hinder the hand. Non-outs will be considered all cards that are bad for your hand, whether your hand is ahead or behind. If you are behind and you receive a non-out on the next card, it means you did not improve relative to the other hands. Your hand could actually improve in ranking, but if the other hands improve at the same time, then you are still behind. In situations like that, the card would still be a non-out, not an out. The concept of outs and non-outs is helpful in that it helps you figure out the chances of winning a hand. When you know the expected pot size, how our opponents play, and the number of outs you have, then you would have enough information to make a proper decision.

Here is an example of the concept of outs. You have four cards to the nut flush on the Turn. You have two suited cards in your hand and there are two cards of the same suit on the board.

Your hand: A♠K♠

Board: Q♠7♠3♣2♦

If you make your flush, it would be the nut hand provided someone does not have a full house (there are no straight flush possibilities since the gap between the Q♠ and the 7♠ is too wide). In this case, the 9 remaining spades would give you the nut flush, but not necessarily the nut hand. Out of the 9 flush cards, 7 of them will not pair the board (thus giving you the nut hand). Two of

the flush cards will pair the board (3♠ and 2♠). For the 7 flush cards that do not pair the board, you know those cards are definitely outs as it makes your hand the nut flush because there are no possibilities of a full house or four-of-a-kind. If the flush card that comes on the River does pair the board, you may be in a dangerous position if any player held three-of-a-kind or two pair going in, because that player could then make a full house or four-of-a-kind when you make your flush.

In this example, you know 6 cards before the River card is dealt, 2 cards in your hand and 4 on the board. Since there are 52 cards in a deck, this means you do not know the other 46 cards. If you did have 9 outs that means the other 37 (46-9 = 37) cards in the deck would be non-outs.

The concept of the number of unknown cards may be confusing since there are actually less than 46 cards left in the dealer's hand after the Turn. If he has dealt in 10 players, it means he has dealt 20 cards to the players. With 4 cards on the board after the Turn, this would mean the dealer would only have 28 cards left in the deck in his hand (actually 26 since he has burned two cards, one before the Flop and one before the Turn). However since we do not know what the other players' holdings are, it is usually correct to assume 46 unknown cards after the Turn. For any particular card, there is a chance it was dealt to another player or still left in the deck. Since we do not know which cards were dealt to the players or are still in the deck, we cannot make any assumptions about what is left in the deck. Sometimes we can be quite sure of an opponent's two hole cards based on the play of the hand thus far, in these cases, we can be sure there are only 44 unknown cards. But these are rare cases, it is usually correct to assume 47 unknown cards after the Flop and 46 unknown cards after the Turn.

Counting Outs
The process of counting outs is a combination of art and science. If we knew exactly what our opponent's cards are, then it would be a science, as we would be able to calculate our outs and non-outs. But poker is a game of imperfect information. It is an unusual circumstance when we know the exact two cards our opponent holds but we can often have a good idea of what the other players may hold based on their play so far. A player who has the ability to read the hands of his opponents with precision will be able to pinpoint his opponents' cards with a greater degree of accuracy than those players who cannot read hands well. But even for the great hand readers, there is usually a level of uncertainty.

Here are some guidelines to counting outs
1. Try to get a general idea of the cards that your opponents hold. This can be done by observing your opponents' playing styles as well as their actions up to the particular point in the hand.

2. If you are ahead, it is not necessarily to count your outs in a Limit Hold'em game. This is because if you are ahead and your opponent needs to improve, you will definitely have enough pot odds to stay in the hand. It is only when you are behind and need to improve that you need to know the chances of bettering your hand to one that outranks his. However, there are times when you are not sure if you are ahead or behind. In those cases, you will need to know how many outs you have if you are behind and how many outs you have if you are ahead and have a way to estimate the chances you are ahead or behind.

3. If you are behind, then you need to have an idea of which cards can improve your hand to one that is better than your opponents.

4. Once you have identified the exact cards that can improve your hand, you need to count them. For example, if you have a flush draw and you know it is a winner if you catch it, then you have to find out how many cards are left that are of the same suit as your flush draw. If you have a flush draw, it means you have four cards of the same suit, either two in your hand and two on the board or one in your hand and three on the board. Since there are thirteen cards of the same suit in a deck, there would be nine cards left that are of the suit that you need.

5. Once you have an idea of how many outs you have, you will need to know how many non-outs you have. The non-outs will simply be the number of unknown cards minus the number of outs. Since you can usually assume there are 47 unknown cards on the Flop and 46 unknown cards on the Turn, you can just subtract the number of outs from the number of unknown cards on the appropriate round to figure out how many non-outs there are.

Round	Unknown cards
Flop	47
Turn	46

Examples of Outs, Unknown Cards and Non-Outs

Round	Outs	Unknown Cards	Non-Outs
Flop	9	47	38
Flop	6	47	41
Turn	8	46	38
Turn	3	46	43

Before the Flop
With starting hands there are normally too many possibilities and too little information to tell exactly how many outs you may have to make a winning hand. There are some hands that make it relatively easy to figure out, such as when you have a small pocket pair against many other players. In that case, players will usually think they have 2 outs to hit on the Flop, because they will not be willing to continue with the hand unless they Flop a set (a three-of-a-kind). But even with a small pocket pair, there is more than one way to win. If the board comes with three straight cards and your pair is smack in the middle of it, such as when you hold 55 and the Flop is 6-4-3, you have a playable hand to see if a 7 or 2 comes later to make a straight. Also if the board contains a small pair with another low card, such as when you hold 55 and the Flop is 4-4-2, you

may have a playable hand unless you really think someone else has a bigger pair or a 4.

After the Flop
Once the Flop comes, you will have a better idea of how many outs you have, but you still will not know with too much certainty until you get more information about the other players' hands. For example:

Your hand: ATo

Flop: T-7-4 rainbow

In this situation, you know that you are ahead unless someone has a set, two pair or a big pocket pair. Here is a table on the number of outs and non-outs that AT has against other hands with a board of T-7-4.

Your hand is AT with a board of T-7-4

Opponent's Hand	Your Outs	Your Non-Outs
KT	42	3
QJ	39	6
87	40	5
98	37	8

Although normally the assumption is 47 unknown cards on the Flop, the tables above reflect 45 unknown cards. This is because we are comparing two hands, thus we actually know 7 cards (3 cards on the board and 2 separate cards in each of the two player's hands), which means there are 45 unknown cards left in a 52 card deck.

Taking a look at the first opponent's hand of KT, he must hit a K in order to beat your AT. If he does not improve to K's and T's, he cannot beat your AT since you will have a higher kicker, remember, the best 5 cards play in Hold'em. Since there are only 3 K's left in the deck, he would only have 3 outs, and those outs for him would be non-outs for you. The remaining 42 cards are non-outs for him and outs for you.

If you think you are ahead, it is not as necessary to know your outs. When you find other players playing aggressively, it may be a hint that you are not ahead. In the above example, an opponent could have an overpair with AA, KK, QQ, or JJ, in which case, you could have as many as 5 outs (when he has KK, QQ or JJ) or as few as 2 outs (when he has AA).

On the Flop, unless you are drawing to the ultimate nut hand, it is possible to catch your out on the Turn only to be redrawn and have your opponent catch his out on the River. In such a case, when you are behind on the Flop, you may actually have fewer effective outs than you think because you

can catch on the Turn and still lose on the River. In general, is usually a good idea to be conservative about the number of outs you have.

After the Turn card
When there is only one card left to come, and you can read the opponents well, it becomes much easier to figure out how many outs you have. If you have a hard time reading your opponent's hand, then it makes it tougher to know your outs. At this point, you would not need to be concerned with getting redrawn if you catch your out, since there is only one card left to come. All you would need to be concerned about is how many outs and non-outs you actually have. This is easier said than done. It will take experience and studying the game to become skilled in this area.

After the River card
Once all the cards are out, no player has any outs left. There is no need to count outs at this point. The only decision is to approximate your chances of having the winning hand and understanding the pot size.

Drawing dead
A player that is drawing dead refers to a hand that is behind and has zero chance of becoming a winner by the River, a hand that has no outs. For example

Player 1: Q♠9♠

Player 2: A♣A♥

Board: A♠A♦K♠K♦

Player 1 cannot improve his hand to a hand better than four-of-a-kind, which is what the Player 2 has. Player 1 is drawing dead as there are no cards that can come on the River to make him a winner. A more common occurrence happens when a player has overcards to the board on the Turn, while another player already has two pair. In that case the best the River card can do for the player with overcards is to improve his no-pair hand to one pair, which still will not beat two pair. For example:

Player 1: AKo

Player 2: 87o

Board: T-8-7-3 rainbow

Player 1 is drawing dead, there are no cards that can come on the River to give him a winning hand over Player 2. The only way Player 1 can win this hand is if Player 2 folds to a bluff bet or raise by Player 1.

Drawing thin
Drawing thin refers to the situation when there are very few cards that are outs. The number of

outs may only be 1 or 2. For exmmple:

Player 1: Q♣J♣

Player 2: A♠A♥

Board: A♣A♦K♣K♦

In this situation, Player 1 can make a royal flush, which would be better than Player 2's four A's.
There is only one card that can give Player 1 a royal flush, that card is the T♣. So Player 1 is
drawing to only 1 out, and that means he is drawing thin.

Great Draw
Sometimes you can have a hand that is a favorite to win but is not leading at the moment. For
example:

Player 1: Q♥J♥

Player 2: 2♣2♦

Board: K♥T♠T♥3♣

Player 1 has 25 outs and only 19 non-outs even though Player 2 has a pair already while Player 1
does not. The pair of 2's that Player 2 holds is the better hand at the moment, but Player 1 is
actually favored to win this match-up. Specifically, any Q or J gives Player 1 a better two pair (6
outs), any K or 3 will give Player 1 a better two pair with a higher kicker (6 outs), any heart will
give Player 1 a flush (7 outs, the 2h is not an out since it gives your opponent a full house and we
have already counted the 3h), and any A or 9 that is not a heart will give Player 1 a straight (6 outs).
 In practice, it will be difficult to know when you are in such a great situation like this. If you held
Player 1's card, you cannot be sure your opponent has 2♣ 2♦, but you should know that unless he
has a full house or a chance to hit a full house when you hit one of your draws, that you have a nice
chance of winning this hand.

When your outs are not actually outs, and when a blank is actually an out
In Hold'em, the situation will come up often when a card that improves your hand will also
improve an opponent's hand. In such a case, you may think the card is an out for you when it may
not be at all. For example:

Your hand: A♠K♣

Board: Q♣8♦7♠2♥

If your opponent has a pair, then it is possible that you have 6 outs, as any A or K could turn your
hand from a loser to a winner. But if your opponent holds a card that matches the board and one
of your hole cards (in this case, an A or K), then you actually only have 3 outs. For example, in the
above hand, if he had A♣2♦, then your only outs are the three other K's in the deck. Although any

A will improve your hand to a pair of A's, it improves his hand from a pair of 2's to two pair.

Another frequent occurrence is when a card that gives you a pair actually gives the other player a straight. In a case like that, it may be that a card that you thought was an out for you is actually an out for him, and he was the one chasing. For example:

Your hand: A♣9♦

Board: K♣T♠2♦2♥

If your opponent holds Q♣ J♠, then an A is actually an out for him, not for you, as it gives him a straight. You are actually ahead on the Turn and more cards can come on the River to give you the winning hand, but from the play of the hand, it may not necessarily look like that.

Assume we have perfect information
Assume we have perfect information and we know our opponent's cards. This will make it easier to figure out how many outs we have. It is also easiest to use the situation on the Turn as there will be only one more card to come on the River. This means we will not be worried about catching our hand only to get redrawn at a later round as might be the case on the Flop when there are still two cards to come. We also do not need to worry about what happens if we miss on the Turn and catch on the River.

Here are some hands, the boards, the specific cards that are outs and the number of outs and non-outs for your hand.

Your hand	Opp.'s hand	Board	Cards that are outs for your hand	Number of Outs	Number of Non-Outs
J♥T♥	K♣K♦	K♥8♠6♥4♠	A♥, Q♥, 9♥, 8♥, 7♥, 5♥, 4♥, 3♥, 2♥	9	35
J♥ T♥	K♣K♦	K♥Q♠7♣3♦	A♣, A♦, A♥, A♠, 9♣, 9♦, 9♥, 9♠	8	36
A♣A♦	K♠Q♠	K♣Q♣J♠7♠	A♥, J♣, J♦, J♥, T♣, T♦, T♥, 7♣, 7♦, 7♥	10	34
9♠8♠	J♠J♣	A♣9♣7♦6♦	T♣, T♦, T♥, T♠, 9♦, 9♥, 8♣, 8♦, 8♥, 5♣, 5♦, 5♥, 5♠	13	31
A♣K♦	Q♣Q♦	J♣8♦3♠2♥	A♦, A♥, A♠, K♣, K♥, K♠	6	38
T♠9♠	A♠K♠	Q♠J♠T♣9♣	8♠, T♥, T♦, 9♥, 9♦	5	39

Note that the total number of unknown cards for each hand in this table is 44. Normally the

assumption is 46 for the number of unknown cards on the Turn, but in this table, the assumption is that the opponent's hand is known, so that cuts down 46 unknown cards to 44 unknown cards.

As a general rule of thumb, if you think your hand becomes the best hand if you hit your draw, you can assume the following number of outs:

Type of Draw	Rule of thumb for outs with 1 card to come
Flush draw	9
Open ended or double inside straight draw	8
Overpair versus two pair	6
Two overcards versus one pair	6
Middle pair versus Top pair where the kickers are different	5
Inside straight draw	4
One overcard versus one pair	3
Pocket pair versus a higher pair	2

Sometimes we have a combination of more than one of these type of draws. We could have a flush draw and a straight draw at the same time, which could increase the number of outs up to 15. For example:

Your hand: J♣T♣

Board: Q♣-9♣-x-x

In this case, any club would make you a flush and any K or 8 would make you a straight. There are 9 clubs left in the deck, and 8 straight cards left in the deck (4 K's and 4 8's). However, the K♣ and the 8♣ are already counted as one of the 9 clubs, so there really is only 6 other cards that would give your hand a straight. In total 15 cards would make either the straight or flush.

Counting the outs for a straight draw and a flush draw
Counting the outs when you have a nut straight draw or a nut flush draw (the best possible straight and flush that can be made, thus giving you the best hand possible if you hit your draw) is straightforward.

With an open-ended straight draw, there are 8 outs, since you will have two different rank of hands to make your straight and each rank has 4 cards. For example, if you hold JT, and the board shows Q9, any K or 8 will give you the straight. Since there are 4 cards of each rank, that means there are 8 cards that are left in the deck that would give you the straight, thus 8 outs. With an inside straight

draw, there are only 4 outs, as there is only one rank that can make your hand. A flush draw when you have four cards to a flush has 9 outs. There are 13 cards of the same suit in the deck, and if you have 4 of them, that means there are 9 cards of the same suit left. As an example, lets say you have two hearts.

Your hand: A♥3♥

Board: T♥9♠8♠2♥

From the betting thus far and the composition of the players, you are sure that someone else already has a straight, so you must hit your flush draw in order to win the hand. Any heart will give you the flush, and since you have the A♥, it will give you the nut flush. There is a total of 13 hearts in a deck, you have 2 in your hand and there is 2 on the board, that means there are 9 hearts left in the rest of the deck. There is a total of 46 cards left in the deck. There is a total of 52 cards in a deck, and you know 6 of them, 2 in your hand and 4 on the board, so that leaves 46 cards you have not seen. With 46 cards left in the deck and 9 cards that are outs, that means the remaining 37 cards are non-outs. (The 9 and the 37 are the crucial numbers for the method we are going to use when we compare the number of outs we have versus the expected pot size.)

Counting the outs when you have overcards to the board
If you have two overcards to the board, pairing either of them may be an out for your hand. For example:

Your hand: AKo

Your opponent's hand: QJo

Board: J-8-3-2 rainbow

With this setup, you would have 6 outs. There are three A's and three K's left in the deck, and if any of them come on the River, your hand will be best. Sometimes the opponent will have one of your outs counterfeited, where if you hit that card, it would improve his hand as well. For example, if the opponent's hand is changed from QJ to AJ, the remaining two A's (there are only two A's left now because he has one and you have one) are no longer outs for your AK hand. The only outs left are the three K's.

In the heat of the battle at the poker table, we do not have perfect information and we do not know our opponent's exact hand. It is possible we are actually ahead and the opponent has a hand like T9, going for a straight draw. If we know the opponent well, his actions will give us a good idea of his holdings. Say we know he would not raise with only a straight draw, but would raise with the top pair and a good kicker. In that case, he could have a hand like AJ, KJ or QJ. If he has QJ, then the AK hand has 6 outs. If he has either AJ or KJ, then the AK hand has only 3 outs. At the table, we could estimate the expected number of outs to be 5 in that case.

Counting the outs when you have a split pair versus an opponent's higher split pair
A split pair means when you make a pair with one card in your hand and one card on the board.

For example:

Your hand: ATo

Flop: J-T-3 rainbow

In this case, you have a split pair of T's, one in your hand and the other on the board. If you suspect your opponent has a split pair of J's, then you may think you have 5 outs (three A's and two T's). However, if your opponent's kicker matches your kicker, then you would only have 2 outs (two T's). For example, if he had JT, he would already have two pair, and you would have 3 outs (three A's). But if he had AJ with only one pair, and you hit your A for two pair, then he would simultaneously hit his two pair as well, and his two pair would be better than your two pair since he would have A's and J's while you have A's and T's. In this case, you would only have the two remaining T's as outs. This may seem counterintuitive at first because in this situation, you would actually prefer he had JT for two pair than AJ for one pair. You prefer your opponent to have what would appear to be a stronger hand because you would actually have a better chance of drawing out against his two pair of J's and T's than you do of drawing out against his one pair with the same kicker as yours. When you improve by hitting an A, you are counterfeited because your improvement is fake.

Counting the outs when you may have more outs than you think
This can occur if you are on a straight draw or a flush draw, but have another chance of winning, such as pairing one of your cards. If you are not sure, it would be helpful to estimate the probability one of these overcards as an out. For example:

Your hand: A♠T♠

Board: K♠9♠7♣2♥

If you do not think your opponent has a draw to a full house, then you have 9 outs for the flush. If your opponent only has a pair and does not have an A or T as his kicker, then you may have up to 6 additional outs. If he has KQ, then any A is an out for you, giving you 3 additional outs with your flush draw, although the a T would not be an out for your hand. If he has AK, then an A is not an out for you, and you only have 9 outs. If he has 98 for a pair of 9's, then both the A and the T would be outs for you, giving you 6 additional outs with your flush draw for a total of 15 outs. As a rule of thumb, normally assume half of the overcard(s) that you may have to the board are outs because pairing your overcard may or may not give you the winning hand. In the case above, with A♠T♠ as your hand, assume there are 1.5 additional outs along with the flush draw. This is because only an A is a true overcard to the board. So consider yourself to have 10.5 outs, 9 outs for the flushes and 1.5 outs for the A, which is half of the three remaining A's. This is a shot in the dark method, but it is better than assuming 3 A's are outs as well as assuming none of them are outs. Of course, the betting of the hand in particular may tell you otherwise. If the betting has been strong from decent players from the beginning, it makes it more likely someone has AA or AK, in which case there are no additional outs to the flush draw outs. Also, the number of players will make a difference. With more players, the likelihood of any overcard being an out decreases. If

one opponent has KQ, another opponent could have A9, in which case neither the A nor the T would be additional outs.

Counting the outs when there is a chance you are drawing dead
There are times when you are not sure if you are drawing dead or drawing live. For example:

Your hand: Q♣J♠

Flop: K♥T♣T♦

It may look like you likely have 8 outs since there are 8 cards that can make your straight. But if your opponent already has a full house or four-of-a-kind, then you are drawing dead. It will be rare when your opponent has two perfect cards for a full house or better, but it can happen. Even if he does not currently have it, you could make your straight on the Turn only to see him draw a full house on the River to beat you. In a case like this, it would be best to assume you have fewer outs since you may be drawing dead and if not could get redrawn. In an example like the one above, I would tend to subtract one out from the 8 outs for a straight, and assume 7 outs.

Counting the outs when there is a chance you are actually ahead
Sometimes you will have a hand that you are not sure is currently ahead or behind. If you are behind, you may still have a chance to improve. For example:

Your hand: J♠T♣

Board: Q♠J♣9♥3♦

If you are behind and your opponent has a Q, you could have as many as 13 outs (8 outs for the straight, 2 J's and 3 T's would make two pair). But you may actually be ahead if your opponent has T9, in which case you only have 2 non-outs to lose (2 9's), and 8 non-outs to push the hand when you both make a straight. There is also a chance your opponent already has a straight with KT, in which case you only have 3 outs to push the hand. These situations make it difficult to know exactly how many outs and non-outs you have. Being able to read your opponents well will certainly make the estimations of the number of outs you have a lot easier, as you will be able to pinpoint his hand with more accuracy.

When you have a pocket overpair, a pair on the board may decrease your opponent's outs
Assume you have an overpair in your hand to the board and you think your opponent has one pair with a distinct kicker from your hand. He would then have 5 outs. For example:

Your hand: AA

Your opponent's hand: JT

Flop: T-6-3 rainbow.

Your opponent's outs are 3 J's and 2 T's, for a total of 5 outs. However if the Turn pairs the board

with a card that your opponent does not have, then that reduces his outs to only two, the 2 T's. In the above example, if the Turn is a 6, and then the River is a J, then the board is:

Board: T-6-3-6-J

Your opponent will have two pair of J's and T's with his JT (he has three pairs with the pair of 6's on the board, but there is no such poker hand). You have two pair as well, A's and 6's, and your two pair would be a better two pair. In real play, it may be difficult to tell if your opponent had his outs reduced or if he caught three-of-a-kind with a 6. This is where reading your opponent's hand becomes helpful. Most players are more likely to play a hand that contains a T than a 6, so your opponents would usually be a major underdog to have caught trip 6's, but it is still possible.

Counting outs on the Flop: Runner-runner straights and flushes
A runner-runner straight draw or flush draw can occur if you have three to a flush or straight on the Flop, and catch two perfect cards on the Turn and the River to turn your hand into a flush or straight. For example:

Your hand: A♠3♠

Flop: A♣9♠8♣

You have three cards to a spade flush. If the suit of both cards on the Turn and the River are spades, then you will have hit a runner-runner flush. Hitting a runner-runner draw does not happen often but it should not be completely discounted when counting outs. If you assume the runner-runner flush draw is the best hand, you can figure out the probability of it occurring, then convert it into its equivalent in terms of outs.

One way to look at it is to say that 10/47 of the time, a fourth flush card will come on the Turn, thus giving you 9 flush outs on the River. The other 37/47 of the time, a fourth flush card will not come on the Turn, and you will have no flush outs on the River. So you can say that 10/47 x 9 is the expected value of the number of flush outs that you will have on the River.

Action	Computation	Result
EV of the number flush outs on the River	10/47 x 9 outs	1.91 outs going into the Turn

Another way to look at it is to compute the probability of hitting a runner-runner flush draw, and then multiplying that by the number of unknown cards to get the number of outs. Here is a table that shows the results. Notice that the answers are the same.

Action	Computation	Result
The probability of hitting a runner-runner flush draw	10/47 x 9/46	4.16%

Converting 4.16% into the equivalent of outs	4.16% x 46	1.91 outs

As a rule of thumb, I would count the number of outs for runner-runner flush draws depending on how high the runner-runner flush draw is. This is because there is a chance that a player may catch the runner-runner flush draw but still may not have the best hand if someone else had a higher flush draw at the same time.

Here is a table of estimated outs to use for runner-runner flush draws

How high is the flush draw?	Estimated Number of Outs
Ace-high	2
King/Queen high	1.5
All others	1

For runner-runner straight draws, there are a much wider variety of ways to catch them.

1. When you need one perfect card, then one of two cards

Your hand: JT
Flop: K-T-3

In this case, you need to catch a Q on the Turn, then either a A or a 9 on the River. You could also first catch the A or 9 on the Turn and then catch the Q on the River. In either case, you need to have the Q to make your straight.

The probability of hitting a runner-runner straight draw with one perfect card needed:

Action	Computation	Result
The probability of hitting a runner-runner straight draw with one perfect card needed	(4/47 x 8/46) + (8/47 x 4/46)	2.96%
Converting 2.96% into the equivalent of outs	2.96% x 47	1.39 outs

In a hand like this, if you believe your opponent has a hand like AK, you would consider 3 J's and 2 T's as outs. With the runner-runner straight draw possibility, you can add another 1 out for a total of 6 outs. I adjust 1.39 outs and turn it into only 1 out because of the chance you can hit your hand on the Turn, but your opponent draws an even higher hand on the River.

2. When you need two cards, but you have more options

Your hand: T9
Flop: J-T-6 rainbow

In this case, you can make a runner-runner straight with any of these card combinations on the Turn and then River: KQ, QK, Q8, 8Q, 87, 78. Each of these combinations has a 0.74% chance of happening or 4/47 x 4/46. Since there are 6 combinations, then the total chance of hitting the runner-runner straight is 6 x 0.74% = 4.44%. The equivalent in terms of outs is 2.09. Here is the table.

Action	Computation	Result
The probability of hitting a runner-runner straight draw when there are more ways	4/47 x 4/46 x 6	4.44%
Converting 4.44% into the equivalent of outs	4.44% x 47	2.09 outs

But these combinations are dangerous too, in that you when you catch, someone else may have a higher straight. For example, using the above hole cards and Flop, if you catch a K on the Turn and a Q on the River, you would make a K-Q-J-T-9 straight. But a player with just an A would have a higher straight. So as a rule of thumb, count these runner-runner straight possibilities as only one out instead of two. It may be a bit on the conservative side, but it makes it easier to count outs on all runner-runner straight draws the same. There are already a lot of things to consider when playing a poker hand at the table. This tiny difference is small enough to ignore. In summary, count all runner-runner straight draws as 1 out.

KQ with a Flop of J-8-3 may be better than AK
Since many players like to play hands that contain an A,

If you have AK and do not hit a pair on the Flop, you may actually have fewer outs than compared to the times when you have two overcards without an A, such as with a hand like KQ. This is because you are more likely to get counterfeited with an A since so many players like to play hands that contain an A. Let's take a look at a specific situation.

Flop: J-8-3 rainbow

It is more likely for players to play hands like AJ or KJ than they would with QJ. It is more likely for them to have A8 than Q8 since A8 is perceived to be a better hand. So if your opponent has made a split pair on the Flop, you could still have 6 outs with KQ, but it will be less likely you have 6 outs with AK since hitting a A will more likely improve your opponent's hand as well, thus counterfeiting your hand.

Counting Outs Quiz
1. You are last to act on the Turn.

Your hand: 3♠2♠
Board: A♠5♣K♦ [turn] 9♥

There are three other players in the hand on the Turn. How many outs do you think you have?

Answer
With three other players, it is almost impossible for a 3 or a 2 to be an out for you, as you should be confident someone else has a pair if not better. You should count this as hand as having four outs, the four 4's will give you the nut straight and there will not be a flush possible.

2. You have checked and your opponent has bet on the Turn.

Your hand: Q♠8♣
Board: J♣T♦3♠ [turn] 4♣

You suspect your opponent has a J but you are not sure of his kicker. How man outs would you estimate?

Answer
You can make a straight with a 9, that would be four outs. If he does not have QJ, then 3 Q's become outs for you, but there is a chance he does have a Q, and it would be conservative to assume 2/3 of the time a Q will be an out. In that case, you can count it as two outs instead of three. When added to the four outs for the straight, it means you have a total of six outs.

3. You are in the big blind. There is only one limper, the small blind calls and you check.

Your hand: T♣3♣
Flop: J♣6♦2♠

Everyone checks on the Flop.

Turn: 4♣

The Turn gives you a flush draw and an inside straight draw. The small blind bets out and you are sure it means he is not bluffing because you know how he plays. You are sure he has at least a pair of J's. How many outs would you estimate you have?

Answer
You have 9 clubs to make the flush and 3 other 5's to make the straight (one of the 5 is a club, which was already counted as one of the 9 clubs). It looks like you have 12 outs. In the Pot Odds chapter, it will be shown how to use this information, along with the information on the expected pot size in order to make a decision on calling or folding.

This is the third draft of the chapter on Pot Odds in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page.

Hold'em Brain: Pot Odds
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The ratio of the size of the pot compared to the amount you have to put into the pot to stay in the hand is called the pot odds. For example, if the pot is seven big bets, and you must call one big bet in order to stay in the hand, it means you are getting pot odds of 7:1. If the pot is eight big bets and you have to call two big bets in order to stay, then you are getting pot odds of 8:2, which is the equivalent of 4:1.

Notation on Odds
When discussing odds, ratios will be used as well as the words. For example, 7 to 1 and 7:1 are the same thing and should be read the same way. When there is a decimal involved, I prefer using the word "to" instead of the symbol ":" because it will alleviate confusion. For example, 3.5 to 1 is easier to see than 3.5:1.

The amount that can be won is on the left side, while the amount that is risked is on the right side. If the odds are 6:1, then 6 is the amount that the player will win if he wins, and 1 is the amount he will lose if he loses.

It is usually easiest to have the lowest number in the ratio to be equal to 1. For example, if winning is worth 10, and losing is worth -2, then the odds would be 10:2, but this can be reduced to 5:1 (by dividing both sides by 2).

When the odds of the even occurring is a favorite, then the number on the right side will be larger. For example, if you win only 1, but lose 2, the odds are 1:2.

Converting odds to fractions - X to Y is the equivalent of Y / (X+Y). Examples: 7:1 is the equivalent of 1 / (7+1) = 1/8. 8:2 is the equivalent of 2 / (8 + 2) = 2/10 = 1/5.

Converting fractions to odds - A/B is the equivalent of (B-A) to A. Example: 1/5 is the equivalent of (5-1) to 1 or 4 to 1 or 4:1.

Casinos will sometimes use the term "for" when discussing odds. For example, they may offer 9 for 1 to the public on a wager. This is commonly seen at the craps table or on parlay cards in the sportsbooks. If the odds offered are 9 for 1, then the casino will pay a total of 9 if the player wins, but included in that 9 is the 1 that they had taken from the player already. Thus the player's winnings is only 8, and 9 for 1 is really the same as 8 to 1. It is phrased this way by the casino so it seems like the payoff is bigger. In this book, there is no need to fool anyone, so I stick with the "to" form.

In order to compute the winning percentage that is needed for a breakeven decision, one needs to convert the pot odds into percentages. The way to convert pot odds to percentages is to take the number of bets you need to put in to call divided by the sum of the pot size and the number of bets you need to put in to call. If we define the pot size as PS, and the bet you must put into call as BET, then the formulas are:

Pot Odds = PS / BET
Winning percentage needed for a breakeven decision = BET / (PS + BET)

Here's a short table on pot odds and winning percentages

Pot Size	Amount of Bet to Call	Winning Percentage needed for a breakeven decision
4	1	20.0%
7	1	12.5%
8	2	20.0%
10	1	9.1%

If the expected winning percentage of your hand is greater than the winning percentage needed for a breakeven decision, then you would have positive expectancy to stay in the hand. If the expected winning percentage of your hand is less than the winning percentage needed for a breakeven decision, then you would have negative expectancy to stay in the hand.

Outs and Pot Odds
The main reason we want to count the number of outs we have is to relate it to the pot odds. If the number of outs and non-outs are known, then we can compare it to the pot odds to see if we should be staying in the hand. For example, we know we have 10 outs and 30 non-outs, and the pot is 5 big bets. We only need to put in 1 big bet to see the last card, at which point we will know if we are a winner or not. We want to compare the pot odds versus the ratio of non-outs to outs. If the ratio of non-outs to outs is smaller than the pot odds, then it is a positive expectancy play to stay in the hand.

In that example, the pot odds would be 5:1, the ratio of non-outs to outs would be 30:10 or 3:1. Since the pot is offering us greater odds than the chance that we do not hit our hand, it means we have a positive expectancy play to stay in the hand.

These numbers can be compared to percentages as well. With the pot odds of 5:1, it means the winning percentage that is needed for a breakeven decision is 16.7% (1/6). If we have 30 non-outs and 10 outs, then we have a 25% (10/40) chance of hitting an out. Looking at the percentages gives us the same result.

A tougher example

These numbers are easy to compare because I have purposely given numbers that are easily divisible by each other. But what if the numbers are such: the pot is 7 big bets, but there was a raise so you have to put in 2 big bets to call. You have 37 non-outs and 9 outs. Should you call or not?

Now the decision is tougher because the numbers are not as simple as the previous example. We would have to compare the ratios and see if 7:2 (the pot odds) is greater than 37:9 (ratio of non-outs to outs). It turns out it is easiest to compare these numbers if we break them down. 7:2 becomes 3.5:1 and 37:9 becomes 4 1/9 : 1. Since the pot is offering us smaller odds than we need, it is not worth a call. This method is not an easy mental exercise for most people.

Another way is to convert the ratios into percentages. The pot odds of 7:2 becomes 22.2% (2/9), while the chances of us hitting an out becomes 19.6% (9/46). We arrive at the same conclusion, the winning percentage needed for a breakeven decision is higher than the winning percentage that we have, so we should fold. This method is also not an easy mental exercise for most people.

Although both of these methods are correct, neither method is easy to put into action at the table. In fact, both are very difficult when we have so many other issues to think about at the poker table. In this chapter, a method will be shown to make these computations easier with the same degree of accuracy.

Implied Pot Odds and Expected Pot Size

Before we get onto that method, we have to introduce the concept of implied pot odds and expected pot size. David Sklansky introduced the term implied pot odds in his book Hold'em Poker. It is a term used to describe the total pot odds that you are expecting at the end of the hand, even though you are not there yet. For example, there may only be six big bets in the pot when you make a decision to call a bet on the Turn, but if you hit your card on the River, you may be comfortably expecting that your opponent will call your bet. Therefore you will win seven big bets if you win your hand, which is the expected pot size. The expected pot size does not include the bets that you have yet to put in, although it does count the bets that you had put in previously. So in that case, the current pot on the Turn is six big bets and the pot odds would be 6-1, but that information is not as relevant as the expected pot size. The expected pot size is seven big bets and the implied pot odds would be 7:1. This change in the size of the expected pot may make a difference in your decision.

The method that we will use in this book will rely more heavily on the expected pot size. Instead of converting into odds and looking at the implied pot odds, we will simply estimate the expected pot size and leave it at that. With that number, we can make simple calculations in our heads while at the table. This will help us make correct decisions.

Information needed

In order to apply pot odds analysis at the table, we need to know the following information:

1. The pot size and the expected pot size
2. The amount we need to risk

3. The number of outs we have
4. The number of non-outs we have

In the chapter on outs, we have already covered how to count the number of outs and the non-outs. Thus the focus here is on how to count the pot and the expected pot size, followed by an easy method to apply pot odds while at the table without being a mathematical genius or having a calculator.

Counting the pot in bets not dollars
It is easiest to think of the pot and the pot odds in terms of bets instead of actual dollars. There are two ways to do this. One way is to count in small bets on the pre-Flop and Flop round, and then convert it into big bets for the Turn and River rounds. For example, if there were 6 small bets in the pot after the Flop, then the conversion becomes 3 big bets (two small bets equals one big bet). Another way is to count every round in terms of big bets, so there is no need to convert small bets to big bets at any point. In that case, each small bet would be counted as half of a big bet. Either way will achieve the same goal. It is easy to show that counting in terms of bets is easier than counting in terms of actual dollars for most people. For example, if there are six big bets in the pot on the River, and your lone opponent has bet, making the pot seven big bets, you are faced with a decision to call or fold. If you call, you will be risking one big bet in order to win seven big bets. The pot odds would be 7:1 and you would have to win this hand 12.5% (1/8) of the time in order for your call to be a breakeven decision. But if you were counting in terms of dollars, and it was a 30-60 game, then you would have counted $360 in the pot on the River, another $60 from your opponent, making the pot $420. Your call is $60, so to convert that to pot odds, you would have to divide $420 by $60 to get 7:1. Counting the pot in terms of bets will save one step.

The Mechanics of Counting the Pot
The key to understanding your pot odds is simply to know how big the pot is relative to the bet that you must make. You must know the size of the pot and thus you must count the pot. It will take a little practice but is not too involved, and anyone who practices it a little should have no problem. You could always back-count the pot when you need to know the pot size by replaying the action in your mind, but that would cause three problems. First, it will slow down the game and your concentration will not be on the play of the hand. Second, other people may catch onto what you are doing as it is easy to give a visual clue that you are counting the pot. Third, you may be too lazy to count the pot when you are not in the hand. Thus, you will not know if another player has made a mistake on pot odds or is even taking pot odds into consideration. Counting the pot in progress takes some discipline, but it is worth the effort to gain any extra edge you can over the other players.

One way is to count the bets as they go into the pot. Since we want to count the bets in terms of big bets, the small bet on the Flop should be counted as half of a big bet. When the blinds have been posted, that would mean there are 0.75 big bets in the pot. If the next player calls, then the pot is now 1.25 big bets. If there is a raise, then that is two small bets that the raiser is putting into the pot, which is one big bet.

An easier way to count the bets in the pre-Flop round is to count the number of players that see the Flop and adjust it depending on the number of raises. If four players are in the hand and there is

one raise, then that means there is now four big bets in the pot if both blinds are in the hand, since each of the four players would have put in one big bet. If both blinds have actually folded, but there are still four players who see the Flop for one raise, then there would be 4.75 big bets in the pot, since the blinds are 0.75 big bets. It would be simpler to round it off to 5 big bets. The small decrease in accuracy is offset by the larger increase in ease of counting the bets.

On the Flop, both ways to add to the size of the pot can be used with ease. On the Turn it would be advisable to count the bets as they enter into the pot, since it at this time where the pot odds comes into play most often. On the River, there are fewer reasons to count the pot. You may still want to keep track of the pot in order to make a decision to call or fold, but the additional bets that go into the pot on the River normally should not affect your decision of whether to call or fold.

The "Do I have Pot Odds?" Method or DIPO
Once you know the size of the pot, the amount you need to risk to stay in the hand, and the number of outs and non-outs that you have, you will now have enough information to figure out whether you have enough pot odds to stay in. Instead of using a complicated algebraic formula that most people can solve only with a pen and a piece of paper or a calculator, I will describe a way to make this calculation in your head with relative ease, which I will call the "Do I have Pot Odds?"method or simply DIPO. The DIPO method is best used directly during the betting on the Turn. Later on, there will be examinations on how to use it during the betting on the Flop.

In this method, we want to compare two numbers which we will call the Good Number and the Bad Number.

The first number is the Good Number, the number of outs times the expected pot size.
The second number is Bad Number, the number of non-Outs.

If the Good Number is greater than the Bad Number, then we have enough pot odds to stay in the hand. If the Good Number is less than the Bad Number, then we do not and it would be advisable to fold.

It is easy to see the advantages of using DIPO. You are able to put yourself in a position where you no longer have to guess and size up the pot compared to the strength of your hand. You also do not need to backtrack and count the pot after the fact, which could take your concentration on other factors of the game. If you count the pot size at a later point, you may unknowingly give a tell away by letting other players know you are counting the pot. The observant players may convey your tell into thinking you do not have a made hand and are on a draw, which is valuable information that you do not want to give away. DIPO is easier to implement than counting the pot in terms of dollars and calculating the pot odds relative to the odds you win the hand. The drawback of DIPO is that it takes some discipline and practice. Fortunately, most poker players do not have this discipline to think at the table. If you can use it, you will have one advantage over most of your competition.
Now I will go into detail on the math behind the method. This method is easier for most people to apply than comparing pot odds to the ratio of non-outs to outs because multiplication is easier for most to apply quickly than division. Feel free to skip to the next section if the math bores you. The section after the math section will into further detail about using the DIPO method with examples

and in different situations.

The Math behind DIPO
I am not a mathematician so this proof may not look like what it should in a mathematics textbook, but it makes sense and is correct. Feel free to skip this section if you do not care about the proof.

EPS = Expected Pot Size (not counting any bets you will put into the pot in the future)
Outs = Outs
Non-Outs = NOuts
Cards = Outs + NOuts (all the unknown cards to you)
Bet = The Bet we are facing

Assumptions: It is on the Turn and there is only one card left to come. Someone has bet and it is up to you to call or fold (lets disregard raising at this point). You are sure that if you hit any of your outs, you will have the winning hand. You are also sure that if you do not hit any of your outs, you will have a losing hand.

The equation for the expected value of calling the bet is:

EV of calling = EPS x Outs/Cards - Bet x NOuts/Cards

If this number is positive, then we have a positive expected value of calling the bet and we should. If it is negative, then we have a negative expected value of calling the bet and we should fold.

All of this is fairly simple algebra, but it is still too complicated to do in our heads when we are sitting at the poker table. So instead, we can simplify it even further to a comparison.

We want to compare the term [EPS x Outs/Cards] versus the term [Bet x NOuts/Cards]

When the first term [EPS x Outs/Cards] is greater than the second term [Bet x NOuts/Cards], the answer to the EV of calling equation is positive. Conversely, when the second term is greater than the first term, the answer to the EV of calling equation is negative. We only want to call if the EV of calling is positive, so we only want to call if the first term [EPS x Outs/Cards] is greater than the second term [Bet x NOuts/Cards].

In comparing these terms, we can eliminate the common variable Cards. So we are left with comparing [EPS x Outs] versus [Bet x NOuts]. When there is only one bet to you and you close the action on the Turn (meaning there are no players left to act after your call, thus you cannot be raised), then we know the variable Bet equals 1, and so that is how we get the comparison of EPS x Outs versus NOuts . We do not care how large the difference is between the two terms, all we care about whether the first term is greater than the second term. When there is more than one bet, then instead of comparing the first term to NOuts, it would be correct to compare it to NOuts x the Number of Bets. This is discussed with an example in a later section.

I learned about a method similar to this in an online post by Abdul Jalib. On HoldemBrain.com, links to some of his posts and articles can be found. I put the acronym of DIPO on it so I could

refer to it more easily. Both the DIPO method and Abdul's method provide the same answer when the caller is faced with only one bet. When the caller is faced with two bets or more, it is easier to adjust DIPO to make the correct comparison than Abdul's method. In one of Abdul Jalib's online posts, he simplifies the method when the bet that is needed to call is only one bet. He compares the term Outs x (1+Expected Pot Size) to the Number of Unknown Cards. This is useful when there is only one bet because there is no need to use subtraction to adjust for the number of non-outs, and the second term is always constant when the bet size is 1. However, when there are two or more bets, it is more difficult to make the conversion. I prefer comparing the outs and non-outs because it is useful in every circumstance. When there is more than one bet to call, Abdul's formula can be adjusted to the comparison of [Outs x (Number of Bets x Expected Pot Size) / Number of Bets] compared to the Number of Unknown Cards. The computations for the first term in this case is difficult to do at the poker table. So I choose DIPO rather than his method because I believe it is easier in all cases.

Examples and Issues of Using DIPO on the Turn
To is easiest to illustrate the use of DIPO on the Turn, when there is only one more card to come and your action closes the betting. This means you are certain no one will raise behind you, which would increase the amount you would need to risk and change the calculations.

Example 1
You are in the big blind and find yourself holding A♠T♣ on the Turn with a board of K♣Q♠4♥3♦. Any J will give you the nut hand, as there are no flush possibilities and if a J comes on the River, there are no full house or four-of-a-kind possibilities. There has been enough betting that you suspect someone has a hand like AK, AQ, KK or QQ, so an A would not be an out for you, you are confident you only have 4 outs. Before the Turn, there was 9 big bets in the pot and two other players in the hand. The first player to act on the Turn bets, and the second player calls, which brings the pot up to 11 big bets. If you call, you will close the betting and the dealer will deal the River card. You suspect that if you hit your straight, you will get at least one more big bet out of them, and probably more.

Using a conservative Expected Pot Size of 12:
Good Number = Expected Pot Size x Outs = 12 x 4 = 48
Bad Number = Non-Outs = 46 - 4 = 42

The Good Number is greater than the Bad Number, so you can call knowing you are being offered the correct price to try to get lucky. We shall now move onto a more difficult hand.

Example 2
You have A♠K♠ against one lone opponent and the board is Q♦8♠3♣2♥. You are quite sure your opponent has a pair and may have an A or a K as a kicker. If both of your cards are indeed outs, then you would have 6 outs, but if one of them is your opponent's kicker, then you only have 3 outs. There is also a small chance he is semi-bluffing with a straight draw like JT or J9, in which case you would be ahead and have more outs. Taking everything into consideration, including how the player plays, you estimate that on average, you have 5 outs. Figuring out how many outs you have is as much science as art. You have to know your opponents well to get an idea of how they play. If your opponent is a maniac, then you likely have more outs since he would be bluffing

or semi-bluffing more often. If he plays like a rock, then you may have fewer outs since he would enter the pot only with premium hands. Sometimes you will have more, sometimes you will have less, but on average, if you were in this situation many times over, you would expect an average of 5 outs. Since there are 46 unknown cards on the turn, when you have 5 outs, it means you have 41 non-outs (46 - 5).

If the expected pot size is 8 bets, then:
Good Number = Number of Outs x Expected Pot Size = 5 x 8 = 40
Bad Number = Number of Non-Outs = 41

So it is close, but it is not worth a call if your estimates are correct. Poor players will repeatedly put themselves in a position where they are getting the worst of it, by calling in spots like this. During a session where these type of decisions may come up a few times, the loss in edge may seem negligible if the player gets lucky and hits a couple of these draws. But in the long run, playing hands in situations like this hundreds and thousands of times, the poor player will definitely lose to it.

If the expected pot size is 9 big bets, then:
Good Number = 5 x 9 = 45
Bad Number = 41

Now a call is correct as there is positive value to it. The correct estimation of the number of outs is crucial. If the number of outs was only 4, then even with an expected pot size of 9, it would not be a good call. If the number of outs was 6 instead of 5, then even if the expected pot size was only 8, it would be worth a call. To make a good decision in a situation like this, you will have to be able to read your opponents' hands well so you can evaluate the number of outs you actually have, as well as knowing your opponent's playing habits so you can pinpoint the expected pot size better. To add even more complexity, lets go to the next example.

Example 3
You are in the cutoff with A♠K♠. Two players limp in front of you and you raise. Both blinds fold, but both limpers call. Going into the Flop, there are three players and 4 big bets (I round up the blinds which consist of only 0.75 big bets to one full bet for ease, the calculations will be a little bit off, but it makes it easier to calculate and less chance of a computational error)

Flop: Q♠7♣3♦

The first player checks, the second player bets (1 small bet which is 0.5 big bets), you decide to call with your overcards, and the first player folds. Going into the Turn, there are now two players and 5 big bets.

Turn: 2♦

You are quite sure you are beat. The player who had bet on the Flop is known to bet his hand and hardly every bluff. You know him to be a player who may limp in with hands such as AQ, KQ, QJ, QT (the latter two especially after another player has already limped) and since there were no

straight draws or flush draws on the Flop, there is no chance he is betting on one of those. You suspect you will need at least an A or a K to win the pot, and maybe that is not even good enough. With the chance he has AQ or KQ, an A or a K may give him two pair. This means you have 6 outs if he does not hold an A or K kicker, or 3 outs if he does have one of those cards. He could also have a set (three-of-a-kind with a pocket pair in his hand and the third card on the board), which would mean you would have no outs and be drawing dead. Having already thought about situations like this previously, you estimate your expected number of outs is 4.5 (more on this estimate below).

Your opponent bets on the Turn, making the pot 6 big bets. If you hit your hand and win, you expect to win another big bet on the River for a total of 7 big bets. In this case, the Good Number is 31.5 (7 x 4.5), which is less than the Bad Number, 41.5 (you estimate 41.5 for the Bad Number because there are 46 unknown cards, and 4.5 expected outs, so the 41.5 remaining cards are non-outs). You decide to fold because you do not have enough pot odds to call. If you were aggressive and estimated that you had 6 outs, then the Good Number would be greater than the Bad Number (7 x 6 = 42 versus 46-6 = 40) and you would think you had enough pot odds to call. This shows how critical it is to be able to count the number of expected outs correctly. Doing so in this spot would allow you to make the correct decision.

Why did I estimate 4.5 outs on average? The reason is I expected the opponent has about a 40% chance to have AQ or KQ, 55% chance he has QJ or QT and a 5% chance he has a set. Given you have AK and there is a Q on the board, it means there are 3 A's left and 3 Q's unaccounted for, which means there are 9 ways for him to have AQ. Since you have the A♠ in your hand and the Q♠ is on the board, which leaves the A♣, A♦, A♥, Q♣, Q♦, Q♥. There are 9 ways to get AQ with these cards, and they are A♣Q♣, A♣Q♦, A♣Q♥, A♦Q♣, A♦Q♦, A♦Q♥, A♥Q♣, A♥Q♦, A♥Q♥. The same analysis can be used for KQ, and it results in 9 ways for KQ as well. He has a higher chance of having QJ or QT because you do not hold either the J or T. There are 3 Q's left and 4 J's and 4 T's left. This means there are 12 ways for him to have QJ or QT. For him to have a set, he would have to have 77 or 33, which would only be 2 ways each.

Possible Hands	Ways to make it	Fraction	Percentage
AQ	9	9/46	19.6%
KQ	9	9/46	19.6%
QJ	12	12/46	26.1%
QT	12	12/46	26.1%
77	2	2/46	4.3%
33	2	2/46	4.3%

With those numbers, it turns out he would have a 39.2% chance to have AQ or KQ (19.6% + 19.6%), a 52.2% chance to have QJ or QT (26.1% + 26.1%) and an 8.6% chance to have 77 or 33

(4.3% + 4.3%). However with a set, most players would check-raise, or wait until the Turn to raise, rather than bet into the field, as they are looking to trap other players, especially a late position pre-Flop raiser. Therefore, I bump my estimate up to 40% for AQ or KQ, 55% for QJ or QT and 5% for 77 or 33. In order to make these estimates, I had to assume that this player was equally likely to play AQ, KQ by limping in as he would with QJ and QT. Some players are not, especially the tighter players. Thus against those players, you would have to give them greater credit for having AQ or KQ than QJ or QT.

If he has AQ or KQ, then your AK hand would have 3 outs. With QJ or QT, you would have 6 outs. Versus a set, you would have zero outs. We can use an Expected Value formula to calculate the number of outs we have.

Action	Computation	Result
Expected Outs	(40% x 3) + (55% x 6) + (5% x 0)	4.50 outs

On average, I expect the number of outs to be 4.5 against the normal player. Coincidentally, if we ignore the chance of being up against a set, 4.5 is exactly halfway between the optimistic view (6 outs) and the pessimistic view (3 outs). This is useful because in situations like this, we can simply use the halfway point to estimate the number of outs we have, which is an easy process and yet should be quite accurate as well. Keep in mind that against tighter early position players, the expected number of outs should be lower since they are less likely to limp in with QJ and QT than the average player. Also if the player check-raises, then we need to bump up the chances that he had a set. In both of these situations (a tight early position player and a check-raiser), instead of estimating 4.5 outs, I would estimate 4 outs instead.

Using DIPO on the Flop
So far, we have only discussed using DIPO on the Turn with only one card left to come. Applying DIPO on the Flop is useful as well, although it will not be as accurate. However, the small losses in accuracy are minuscule compared to the increased effectiveness of using DIPO compared to any other method. The only times when DIPO might be slightly less accurate than the Expected Value equations are when the solutions are very close to breakeven, zero expectation either way. If we understand the issues and pitfalls of using DIPO on the Flop, its benefits will far outweigh its small loss in accuracy compared to the Expected Value method.

When we use DIPO on the Turn, we look at the Turn/River dynamic. We consider the additional bets we can expect to win on the River if we do hit our hand, and we consider the outs and non-outs with one card left to come. To use DIPO on the Flop, we should only look at the Flop/Turn dynamic, in the same way that we looked at the Turn/River dynamic on the Turn. Without thinking further ahead to the River at this point, we keep the ease of use of DIPO without sacrificing much accuracy.

A few issues to consider when using DIPO on the Flop:
1. Be careful when you count the number of outs. You could in fact hit your out on the Turn and get redrawn on the River. For example, you could complete a flush draw on the Turn only to see

your opponent hit a full house on the River. This possibility means you should veer toward the conservative side when counting outs.

2. Do not go further than the Turn when counting the expected pot size. It is too easy to get carried away and count too many bets in the expected pot size if you extrapolate the hand all the way out to the River. If you catch your hand on the Turn and you bet accordingly, other players may fold, thus not paying you off on the River, and possibly not paying you off on the Turn either. To count all the bets through to the River will sometimes lead to decisions that are too aggressive.

3. If you use DIPO on the Flop and miss, do not be worried about using DIPO again on the Turn. Think of the chips you put into the pot on the Flop as a sunk cost, that money no longer belongs to you, but belongs to the pot, of which you have a certain equity in.

Here's an example:
There are three players in a hand that sees an unraised Flop. You are on the button and you have 8♥7♥.

Flop: A♥9♥2♠.

The first player bets and the other two players fold. You have a flush draw, should you call?

If we use the DIPO method and consider only the Flop/Turn dynamic (and leave out the River), we get the following:

Outs: 9 outs for the flush (we want to err on the side of cautiousness, so do not add in the other possible outs such as runner-runner straights or two pair)

Non-Outs: 38 (on the Flop, there are 47 unknown cards as opposed to 46 on the Turn. 47-9 = 38. If we assume the other player has an A, then the number of non-outs would be lower, but lets keep it at 38 for now to stay on the conservative side)

Expected Pot Size: On the Flop there are 4 small bets. You would expect to gain another 2 small bets on the Turn

Bet you must call: 1 small bet

Good Number = Outs x Expected Pot Size = 9 outs x 6 small bets = 54
Bad Number = Non-Outs x Bet size = 38 x 1 small bet = 38

The Good Number is greater than the Bad Number, so it is worth a call. Notice that we are using small bets in both the Good Number and the Bad Number, so they are comparable. On the Turn, if our flush does not come, we will have to go through the same analysis for the Turn/River dynamic.

This may be a bit confusing to some, as it seems if we miss the flush on the Turn, that we are basically putting in a total of 3 small bets (1 on the Flop and 2 on the Turn) to see an expected pot

size of 8 small bets (4 on the Flop, another 2 on the Turn and 2 on the River). If we use these numbers, then it may seem that the Good Number is lower than the Bad Number. The Good Number would be 9 x 8 = 72. The Bad Number would have to be multiplied by 3 small bets, making it 114. So from this perspective, it looks like it is not worth a call. The confusion here is that if we want to use that analysis, instead of having only 9 outs, we in fact have much more. This is because even if we do not hit the flush on the Turn, we could still hit it on the River. In that case, we would have the equivalent of about 16 outs, because we have two chances to hit. The way I get the equivalent of 16 outs is that we have a 9/47 chance of hitting the flush on the River, but if we miss, which we will 38/47 times, we still have a 9/46 chance of hitting it on the River. The math shows that we would have a 35% chance of catching the Flush either on the Turn or the River, and that translates to about 16 outs (35% x 46 = 16.1). If we substituted 16 outs for 9 outs in the Good Number, the Good Number will be 16 x 8 = 128, which is now bigger than the Bad Number, and still shows it is worth a call. But doing it this way is a bit more complicated, thus I recommend looking at the Flop/Turn dynamic first before going on to think about the River. Using the DIPO method for the Flop/Turn dynamic by itself is easier and is correct also.

Comparing this to an expected value formula where we think through the Turn and River rounds, we would get:

Action	Computation	Result
EV of calling (words)	(Prob hit on Flush on Turn x EPS) + (Prob hit on Flush on River x EPS) + (Prob of not Flush at all x 3 small bets)	N/A
EV of calling (numbers)	(9/47 x 8) + (38/47 x 9/46 x 8) + (38/47 x 37/46 x -3)	+0.85

There are some rare cases when using DIPO on the Flop compared to using the Expected Value formulas would result in two slightly different solutions. One method may say a call is worthwhile while the other may say it is not. However, when this does occur, it is only when the Expected Value is very close to zero. Thus if a mistake is made because DIPO was slightly off, it is only a very minor mistake. These occurrences should not happen often but is the reason I recommend being conservative when counting outs on the Flop. The bottom line is that the ease of using DIPO on the Flop is a far greater advantage than these small concerns.

DIPO on Flop, DIPO on Turn, two different decisions
You have AKo (an Ace and a King of different suits) on the button, everyone folds to you and you raise. Both blinds call. There are three players seeing the Flop for 3 big bets.

Flop: Q-8-2 rainbow

It is checked to you and you bet. The small blind check-raises and the big blind folds. The decision is whether or not to call if you expect to have 4.5 outs on average. You expect that if you catch an A or K, your opponent will bet once, but if you call or raise, he will fold after that. So the expected pot size is 5.5 big bets or 11 small bets (there were 3 big bets before the Flop, your bet

on the Flop made it 3.5 big bets, the check-raise made it 4.5 big bets, and you expect to make another big bet on the Turn if you catch).

Good Number = 4.5 x 11
Bad Number = 47 - 4.5 = 42.5

The Good Number is greater than the Bad Number (notice we do not actually need to multiply out the Good Number, we just need to be able to see that it is greater than the Bad Number), so calling is a good decision.

Turn: 6

A total blank. Your opponent bets again. Now he has made it 5.5 big bets. You suspect that if you catch your out on the River, you will win another big bet, so the expected pot size is 6.5. Now you want to use big bets instead of small bets, because now it takes one big bet to call his bet rather than one small bet like it did on the Flop.

Good Number = 4.5 x 6.5
Bad Number = 46 - 4.5 = 41.5

Again, you do not need to do the calculations if you can see that the Bad Number in this case is greater than the Good Number. So now you want to fold. Put in another way, the bet got expensive, too expensive compared to the pot size, and now it is not worth pursuing.

Myth Buster: Never Draw to an Inside Straight
The common wisdom of "Never Draw to an Inside Straight" may not be so wise all the time. Here is an example to demonstrate a situation when drawing to an inside straight is correct.

You are in the big blind and you have J♠T♠. The pot gets raised in early position and many other players cold call the raise. You call the raise also when it gets to you. A total of 7 players see the Flop for 2 small bets each.

Flop: 8♣7♦3♠

You check, the pre-Flop raiser bets and three players call. You call as well. Five players see the Turn with a total of 9.5 big bets in the pot.

Turn: A♥

You are quite sure that someone has either an A or a higher pair than J's, so you know the only card you can win on is a 9 to give you the nut straight. Since there are no flush possibilities, you do not need to be worried about hitting your straight and still losing. You have 4 outs, as any 9 will give you the nut hand. You check and the pre-Flop raise bets. Everyone else folds. At this point, there are 10.5 big bets in the pot, and if you hit the straight, you will likely win another bet or maybe more if you check-raise and get called. To be conservative, you estimate the expected pot size to

be 11.5 big bets. There are 4 cards that will give you the winner and a total of 42 unknown cards that will make you muck on the River.

Good Number = 4 x 11.5 = 46
Bad Number = 46 -4 = 42

Using the DIPO method, the Good Number is greater than the Bad Number, so it is worth a call. The general advice to never draw to an inside straight is bad advice in this case. It is profitable to call and hope you draw out.

When there is a raise and more than 1 bet to call
Instead of having to call one bet, sometimes there will be two bets to call on the Turn. This can happen if there is a bet from one player, and then a raise from another player, and two bets need to be called in order to stay in the hand. Notice that it is possible it may wind up to be even more bets as other players can still raise, but lets focus on the situation when we know it is only two bets.

The assumption spelled out in the DIPO method is that the player only has to call one bet. If there are two bets, then an adjustment needs to be made. The simple adjustment is to double the Bad Number. The Bad Number would now equal NonOuts x 2 big bets. If the Good Number is still greater than the Bad Number, then the pot odds are enough to call. If the Good Number is now less than the Bad Number, then the pot odds are not enough to call. If there are three bets, then multiply the Bad Number by three and make the same comparison versus the Good Number. Keep in mind that if there is a bet and a raise, it may be prudent to adjust the number of possible outs you may have as two players are indicating they have strong hands.

Lets take a look at an example. You are on the button with A♠T♣. A decent player raises in early position and two players call. You decide to call, and the two blinds call as well. Six players see the Flop with 6 big bets in the pot already.

Your hand: A♠T♣
Flop: J♠6♠2♠
There are three spades on the Flop, and you have the nut flush draw with your A♠. It is checked to the pre-Flop raiser who bets. The two players between you and the pre-Flop raiser both call, and you decide to raise. Both blinds fold and the pre-Flop raise re-raises to make it three bets. One of the players between you and the pre-Flop raiser calls, the other player folds. You call. There are three players going into the Turn and 11 big bets in the pot now (5 big bets went into the Flop round).

Turn: 3♣

You did not complete your flush draw yet, and you are pretty convinced you will need to catch it in order to win the hand. You are quite sure the pre-Flop raiser has a set or AA, otherwise he would not be betting so aggressively. You are also worried that the other player already has a flush or is on a draw himself, in which case he either has taken away two of your outs or one of your outs.

The pre-Flop raiser bets and the other player raises. Now you are quite sure the other player has a flush, any other hand simply would not make sense. You are also quite sure the pre-Flop raiser will not re-raise since it is unlikely he is on the flush, and in any case, he would not have the nut flush. There are now 14 big bets in the pot. You expect the pre-Flop raiser to call the raise. You expect to only gain one additional big bet on the River if you catch your flush as it will be obvious to the other players that you hold the A♠. With this information, you calculate the expected pot size will be 16 big bets if you win. Normally you would think you had 9 outs since there are 9 flush cards left, but with the raise on the Turn, you suspect the raiser already has a flush, so you only have 7 outs left since he holds two spades. However you highly suspect the pre-Flop raise has a set of Jacks, which means a 3♠ will not be an out for you since it would make him a full house. This reduces your outs to only 6. There are normally 46 unknown cards on the Turn, but given your ability to pinpoint the other two players hands, you believe there are only 42 unknown cards. Now we have all the information to apply DIPO.

Good Number = 16 x 6 = 96
Bad Number = NonOuts x Number of bets to call = (46-2-2) x 2 = 42 x 2 = 84

The Good Number is still larger than the Bad Number. It is still worthwhile to call and hope a non-pairing spade comes on the River.

Observing other players while counting the pot
Example 1
Pre-flop action
The under the gun player raises. It is folded to the cutoff player who re-raises. Both blinds fold and the under the gun player calls. There are two players in for three bets each, so that is three big bets between the two of them. Add in the two blinds and we can approximate it as four big bets in the pot.

Action on the Flop
The under the gun player checks, the cutoff player bets and the under the gun player calls. That is an additional one big bet going into the pot, so now there are five big bets in the pot.

Action on the Turn
The under the gun player checks, the cutoff player bets and the under the gun player calls. That is an additional two big bets going into the pot, so now there are seven big bets in the pot.

Action on the River
The under the gun player bets and the cutoff player calls. The under the gun player turns over a straight which he caught on the River and wins the pot. You realize that with the pot being six big bets on the Turn, and possibly one more future bet to win on the River, the under the gun player should have expected to win seven big bets if he won the pot. With a straight draw, he should expect 8 cards as outs. 7 x 8 = 56, and since that is bigger than the number of non-outs, his call was a good decision.

Example 2

Pre Flop action
A passive player limps in middle position, the small blind completes and the big blind checks. Only three players see the flop for one bet each.   The pot is 1.5 big bets.

Flop action
Flop: K♣8♠5♦
Everybody checks.

Turn action
Turn: 2♥
Both blinds check and the passive player bets. The small blind folds and the big blind calls.

River action
River: A♦
The big blind bets and the passive player calls.

The big blind turns over 4♠3♠ for a straight. He had picked up an open-ended straight draw on the Turn. It is obvious he needed to hit the straight to have any chance of winning, because it is very unlikely that the passive player would bet without a pair. The big blind should expect that he has 8 outs going into the River and 38 non-outs. There were only 1.5 big bets going into the Turn, and the bet by the passive player made it 2.5 big bets. If the big blind was expecting that the passive player would call a bet on the River, then he could expect 3.5 big bets as the expected pot size. This means the Good Number was 8 x 3.5 = 28, which is smaller than the Bad Number, 38. Even though he made his straight on the River, the call had a negative expectation. If he played this hand over and over again, he would wind up a loser to the passive player. You should use this hand to add to your opinion of the player in the big blind.

Read my lips and eyes: This player gave himself away
I was playing in a friendly 20-40 game in Lucky Chances in the San Francisco area when this situation came up. I was involved in a pot with a player who was fairly tight and decent. I was in last position without a pair and I was a little bit worried that the tight player had a pair. I knew that he thought I played fairly solidly and tight as well. This piece of information was crucial to the way I played the hand.

I held Q♠J♠. On the Turn, the pot was relatively small and the betting was relatively tame. On the Turn, the board was:

K♣T♠7♣2♥

My opponent checked and I bet, hoping he would fold, and if not I still had a chance of hitting my straight. Then I saw something interesting. He was staring at the pot, then his eyes started to dance a little bit around the table, and his lips were moving! It was obvious at that moment that he was counting the pot size, by backtracking the previous action and counting every bet that had gone in up to this point. When he was done, he called. Right there I knew he could only be on a draw. It could be a club flush draw or it could be a straight draw. Maybe he had a hand like A♣J♥

or Q♣J♥. In either case I now knew that if he did not catch his draw on the River, I could easily steal the pot with a bet, even if I did not have anything.

A blank came on the River, he checked, I bet my no pair. He flashed me A♣J♦, grinned and said "I thought I had 7 outs, I can never hit against you" and mucked his hand. I smiled back at him, nodded my head and happily stacked my chips. If he had not given away the fact he was on a draw, maybe I would have still bet and stolen the pot or maybe I would have given up and checked thinking he was going to call a River bet anyway, I had not yet made up my mind. However, once he gave himself away, I was very confident the pot was mine. This hand is a good illustration of how counting the pot size at the time you need the information may hurt you if others can detect that is what you are doing.

More on Pot Odds
1. In lower limits, it is easier to play straight and flush draws, because the pot is usually bigger in terms of big bets since more players are seeing the Flop. This means it is almost always correct to go for the flush draws and open ended or double inside straight draws (inside straight draws still need to be careful). Even without knowing the size of the pot or the pot odds, most low limit players will make these decisions correctly simply because the pot almost always affords them enough to call with. They have not done the math, have not figured out the odds, but still have a sense that it is correct to chase. With overcards, or other hands that are behind, it is not always clear if chasing is a correct decision, and that is when these players normally fall into trouble. This is one of the reasons that most players get clobbered when they move up to a higher limit, where the pot is usually smaller and it is not correct to chase as often.

2. Going for a straight draw or flush draw regardless of pot size is not always correct. If you are counting the pot size and you notice a player hitting a draw on the River when they do not have correct odds, it could be a sign of a major leak in his game.

3. If there is another player behind you, and a player in front of you has bet, your pot odds calculations may be off because the player behind you may actually raise. If you are using DIPO, you are expecting to only put in one bet, but if a player behind you raises, then you would have to put in a total of two bets to see the next card. This is one of the advantages of "closing the betting," where you are the last to act on that specific round and no one can raise after you have called.

4. When the pot is large, the risk of raising and putting in more bets is compensated for by the increase in expectancy when an opponent who had outs actually folds. If the pot was smaller, the risk of putting in more bets may not be compensated for by the increased chance that others will fold, since the reward of the smaller pot is smaller.

When you are ahead
What about the situation when you are ahead and the opponent is on a flush draw? Then you would have 37 outs and 9 non-outs on the Turn, as any card that does not make a flush for your opponent keeps you ahead. Of course this information on the exact number of outs and pot odds are of little value in this situation since it is clear you should be involved in the pot with the hand that is ahead. This type of analysis of thinking in reverse may be useful when you can control how much your opponent has to put into the pot to see the River card. In Limit Hold'em, it is not

controllable to the degree where it usually makes a difference unless you get cooperation from another player (I do not mean collusion, but just from normal play). In games like No-Limit Hold'em and Pot-Limit Hold'em, players can manipulate the pot odds much more easily and effectively. For example, they could bet enough to force a flush draw to fold due to expectancy reasons, whereas it is rarer for a fold to be correct in a limit game since the pot would have to be very small.

When you are ahead on the Flop then fall behind on the Turn
There will be situations where you are ahead on the Flop, fall behind on the Turn, but with a chance to catch up on the River. A typical situation occurs when you Flop two pair, your opponent picks up a straight or flush on the Turn, but you still have a chance to pick up a full house on the River. Depending on how sure you are that your opponent has a straight or flush, you may actually need to fold on the Turn and forgo your draw for the full house.

If you have two pair against his straight or flush, then you have 4 outs. This means you need the expected pot size to be greater than 11 big bets in order for a call to be correct. (If you do not get this, work out the Good Number and the Bad Number, and you will see that 11 is right around the breakeven point). Almost every player will still call in this spot in the hopes of catching a full house. With this simple analysis when we are 100% sure he has a straight or flush, a fold is correct if the expected pot size is less than 11. However, what if we are only 90% sure he has a straight or a flush. What if there is a chance he only has top pair or a lower two pair than ours? In that case, we are ahead the other 10% of the time, and maybe he only has 4 outs against us, which would mean we have 40 outs. Using those probabilities, that would mean the expected outs we have would actually be 7.6 as seen in the equation below.

Expected Outs = (Number of Outs when we are ahead x Percentage we are ahead) + (Number of Outs when we are behind x Percentage we are behind)
Expected Outs = (40 x 10%) + (4 x 90%) = 7.6

So we would only need the expected pot size to be greater than 5 for a call to be correct (again, work out the Good Number and Bad Number to check that the breakeven point is around 5). It would not be unusual for pots to be greater than 5 big bets and less than 11 big bets, so this decision can come up with regularity. Although most people probably do not think in these terms, their call when they have two pair against a possible straight may be correct if in fact there is a chance the other player is bluffing, semi-bluffing or actually has a worst hand without realizing it. So when they call, they may be making a correct decision without even knowing the reasons why.

Pot Odds Quiz

1. Exposed Hand
You are on the button and you hold A♠K♠. There is one limper in middle position, and when it comes to you, you raise. Both blinds call as does the limper. There are four players seeing the Flop and the pot is 4 big bets.

Your hand: A♠K♠
Flop: A♦J♥6♠

Everyone checks to you and you bet, two players call. There are three players seeing the Turn and the pot is 5.5 big bets.

Turn: 5♣

The first player to act bets out and says he is all-in. The second player folds. Right before it is your turn to act, the first player, who had bet on the Turn, exposes his cards and shows 6♣5♠ for two pair and says to you:

"Look, I know you have AK. I have two pair. I have you beat. I just put in all my chips and I don't want to suffer another bad beat, I'm having a bad night. Just fold and give me the pot."

Should you respectfully decline and call or should you acquiesce and fold?

Answer
Once the first player has bet out on the Turn, there are 6.5 Big Bets in the pot. You need to count your outs, which are any A, K, or J's (a J would give you two pair, A's and J's, which is better than your opponents two pair of J's and 6's as his pair of 5's no longer plays). There are two A's left, three K's left and three J's left, for a total of 8 cards. We can currently see 8 of the cards (your two cards, the first player's two cards and the board's four cards), which means there are 44 unknown cards left. 8 of those cards give you a winner, the other 36 gives you a loser.

Good Number = 8 x 6.5 = 52
Bad Number = 36

The Good Number is greater than the Bad Number, so there is value in calling. You should say to the first player: "Sorry buddy, but I gotta see the River", throw your chips in and hope for the best.

2. You have A♠2♠ in a four handed pot on the Turn. The board is K♠J♠4♣3♦. Before the Turn, there are 5 big bets in the pot. The first player to act bets, the second player raises, and the third player folds. You suspect neither of them are maniacs and they both hold hands that are legitimate. You see the first player's demeanor and it is clear to you that he is going to call and not re-raise. You are quite sure you will lose if a pair comes on the River as one of them will have a full house. You should expect to get at least one caller on the River, and if you are lucky, perhaps two callers for multiple bets. Should you call?

Answer
You have 7 outs for a flush (two of them will pair the board and give someone a full house, so those are not outs), and 3 outs to make a straight (only 3, because the 4th 5 is a spade which we have already counted), for a total of 10 outs. At the moment, there are 8 big bets and you fully expect the initial Turn bettor to call, making it 9 big bets before the River. If you hit your draw, you expect at least one more big bet. Using that as our conservative estimates, we can calculate the Good and Bad Numbers.

Good Number = 10 x 10 = 100

Bad Number = 36 x 2 = 72

The Good Number is higher than the Bad Number, so we can call.

3. You have K♠Q♣ in the big blind. On the Turn, there are four other players left. There are 5 big bets in the pot before the betting on the Turn, and the board shows A♣Q♠T♣3♠. The small blind bets and it is up to you to act. Should you call?

Answer
The most aggressive way to approach this problem is to assume you have up to 6 outs (two Q's for trips and four J's for straights). However there are many other ways you can lose even if you hit one of these cards. There are only 2 cards, J♦ and J♥, that would give you the nut hand. There are now 6 big bets and you can probably expect to get more bets if you hit your hand, however there are still two players left to act. If you call, one of them could raise thus making you put in two big bets to see the River. With the most aggressive numbers, using 6 outs, an expected pot size of 8 big bets and no raises behind you, DIPO looks like this:

Good Number = 6 x 8 = 48
Bad Number = 40

And it looks like you should call. However, the variables we put in are very aggressive. It would be wiser to adjust your outs down to a lower number and to raise the possibility you may have to put in more than one bet. A more conservative estimate of the variables may indicate only 4 outs, and having to put in 1.5 big bets on average, which would mean half the time a player behind you will raise. With these variables, we can actually increase the expected pot size since another player looks like he will be in for the ride if we do hit our hand. With these more cautious estimates, DIPO looks like this:

Good Number = 4 x 10 = 40
Bad Number = 40 x 1.5 = 60

Now it is a clear fold, and that would be the correct decision.

4. In the quiz section of the Outs chapter, the following problem was mentioned:
You have T♣3♣ in the big blind. There is only one limper and the small blind calls and you check.

Your hand: T♣3♣
Flop: J♣6♦2♠

Everyone checks on the Flop.

Turn: 4♣

You now have a flush draw and an inside straight draw. The small blind bets out and you are sure

it means he is not bluffing because you know how he plays. You are sure he has a J. How many outs would you estimate you have? And should you call?

Answer
The answer to the number of outs is 12 (see the answer in the quiz section of the previous section). There were 1.5 big bets in the pre-Flop round and no bets on the Flop. On the Turn, the small blind made one big bet. If we expected he will call on the River, then we can expect 3.5 big bets.

Good Number = 3.5 x 12 = 42
Bad Number = 46 -12 = 34

This may look like it is worth a call. However, if he is only 50% to make the call, then it becomes much closer.

Good Number = 3 x 12 = 36
Bad Number = 34

Add into the fact that the original pre-Flop limper may raise, now there is a problem. Instead of putting in 1 big bet to see the River, you may have to put in 2 big bets. If we estimate that the probability of the pre-Flop limper raising is 10%, then it no longer looks so good.

Good Number = 36
Bad Number = 34 * 1.1 = 37.4

Hold'em Brain: Position
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Hold'em is a fixed positional game. The early position players have to act first in every round, with the exception of the blinds in the pre-Flop round. Before the late position players have to act, they are able to see the actions of the players in early and middle position. This information is valuable, and good players will use it to their advantage. For example, say you have a mediocre hand. You are the second player to act and there are four players left in the hand. If the first player bets, it puts you in a bit of a bind. You do not know if one of the players after you will raise, call or fold. You will not be as sure of the expected pot size or how much you will have to put in to see the next card. You may think your hand is just strong enough to play against the first player and one bet, but not two bets. If you knew a player behind you was planning to raise, you may have preferred to fold since you do not want to commit two bets on the particular hand. Without knowing what the players after you are planning to do, you are forced to make a tough decision. On the other hand, if you were the fourth and last player to act in this hand, you would have a much better idea of how to proceed, because you would have seen the actions from the second and third players. Now if they both fold, you know that there cannot be a raise behind you as no one can act after you act since the bettor cannot raise himself. If either the second or third player raises, then you can fold since you would prefer not to see the next card for two bets. Being last to act gives you much more information than being one of the first to act.

Position can change from round to round
Positional advantage can change a bit on any single round. Let's say you are first to act on the Turn and there are three other players in the hand at the time. You decide to check a mediocre hand, and the next player bets. If there are no raises, it means when the action gets back to you, you have perfect information about that round as there cannot be a raise after you call the bet. In this particular instance, you have given yourself a bit of a positional advantage, the value of which depends on your cards, the board, the players and the situation. Nevertheless, your position on this round is stronger than the third player's position who must act without knowing what the fourth player or you will do. If you have a good idea that the player who acts after you will bet, then you may be able to use that information to your advantage by gaining positional advantage on that round. Of course, in this case you would revert back to early position in the next round.

Position can be relative
A player's position is always relative to the other players. If you raised in the under the gun position and everyone folded except the big blind, you are now in last position after the Flop. You would then have the same positional advantage as if you were on the button. If you raised in middle position and two players in late position called your raise, while everyone else folds, then all of a sudden you are in early position because you will have to act first on every round with two players to act after you. With the exception of the small blind and the button, all of the other players' relative position can change depending on which players are still in the hand.
Here is a chart of the relative positions of each player pre-Flop in 7-handed to 10-handed games.

The numbers in the table refer to the position of the players. 1 means the player is first to act, 2 means second to act, etc.

Number of Players	7 players	8 players	9 players	10 players
Blinds	1, 2	1, 2	1, 2	1, 2
Early Position (including under the gun)	3, 4	3, 4	3, 4, 5	3, 4, 5
Middle Position	5	5, 6	6, 7	6, 7, (8)
Late Position (including the cutoff and the button)	6, 7	7, 8	8, 9	(8), 9, 10

Note - The 8th player in a 10-handed game could be considered in middle position or late position depending on how aggressive and loose the 9th and 10th players play.

In the Starting Hands chapter, position with regards to the pre-Flop round is discussed in full detail. Here are some general thoughts on the different positions.

Early Position, the Small Blind, the Big Blind and the Under the Gun player
Players in early position are at a positional disadvantage, and they are likely to be at a positional disadvantage throughout the whole hand. For the non-blind hands, this means they must be more selective with starting hands than do the players in the later positions. For example, a hand like ATo on the button may look like a good hand to raise with if everyone else has folded. But in early position, the chance that another player may come with a raise or a cold call in is high. There is approximately a 91% chance that any random hand is worse than ATo (see the chapter on Starting Hands). A player who open raises with ATo on the button only has two other players to contend with, the small blind and the big blind. If 91% of all hands are worse than ATo, then there is an 82.8% (91% raised to the 2nd power) chance that ATo is the best hand between the button and the two blind hands. So this is a situation where a player with ATo would be happy to raise since it is likely that he has the best hand. However, if the same player had the same hand in the under the gun position (the first player to act after the blinds), and it was a 10 handed game, then there are 9 other players who could have a better hand. Using the same analysis, if each one of those players had a 91% chance to have a worse hand than ATo, then there is only a 42.8% (91% raised to the 9th power) chance that ATo is the best hand. Add in the positional disadvantage that ATo will have to contend with on the Flop, the Turn and the River, and now it becomes a hand worthy of being thrown into the muck. Also, when ATo is the best hand, it may not have a big advantage over any starting hand except a hand with an A and a lower kicker. But if it is not the best hand, it is in danger of being a big underdog to the likes of AK, KK and TT. So when another player calls or raises, the player with ATo is looking at a situation where he is usually a small favorite or a big underdog. These are not profitable situations in Hold'em.

The blinds have the benefit of seeing everyone act before they have to act in the pre-Flop round, but they have the disadvantage of having to act first in all subsequent rounds as well as having to involuntarily put money into the pot before the cards are even dealt. Many players will call a raise

from the blind position in the pre-Flop round because they believe they are already partially invested. Unfortunately for them, this thinking is flawed. The chips they have put up as their blinds are a sunk cost, and should be thought of as part of the pot. The old adages of "do not chase good money after bad" applies here. A player in the blinds should make his decisions based on the chips that are going to go from his stack into the pot, not the chips that he has already put into the pot.

The small blind is in the worst position of all, because he is always at a positional disadvantage to someone else. If everyone folds to the blinds, then the small blind is at a significant disadvantage to the big blind. There are many times when the big blind can call a raise with mediocre cards, but the small blind cannot. The reason is that the small blind will have to put in more money than the big blind, and the big blind is getting better odds. Since the big blind is already in for one small bet, when there is a raise, he is at least getting 3.5 to 1 to call (1 small bet is the big blind he put up himself, 2 small bets from the raiser, and a minimum of half of a small bet from the small blind). If there are other players involved in the hand, then the big blind would have even greater odds to call. However, the small blind has to act before the big blind. He would have to put in one and a half small bets to see a raise, and he would have to act without knowing what the big blind will do. If the big blind folds after the small blind calls, then the call by the small blind effectively gives him odds of 3.5 to 1.5 (2.33 to 1). These odds are worse then were shown for the big blind. If the big blind were to call after the small blind called, then the small blind would be getting odds of 3 to 1. These odds are still worse than the big blind's odds. Also note that if the small blind calls, he is now offering the big blind 5 to 1 to call and see the Flop. If there are many players who have invested two bets, then there is a smaller difference between the small blind and the big blind. It is when the hand looks like it will be contested by only two or three players that the small blind position becomes such a weak position compared to the big blind. This is more relevant in shorthanded games and is discussed in further detail in those chapters.

The big blind has better reasons to call a raise and see the Flop than the small blind does. As mentioned previously, if there is only one raise, the big blind at worst will be getting 3.5 to 1 to see the Flop, and usually better. This means he can play hands such as 98s or 76s that he may not in other positions. His poor position after the Flop can be enough to negate the advantage of only having to put in one more small bet to see the Flop when there is a raise. This can be seen when a tight early position player raises and the big blind holds a hand such as A9o. This is the type of hand that can easily be coordinated with an early position player's hand, since many players will raise with hands such as AK or AQ. If an A hits the board, the big blind cannot necessarily be happy. In such a case, it may be better to play a hand such as JTs, which has more drawing possibilities than a hand like A9o, so JTs would match up better against AK than A9o would.

Even though players in early position are at a positional disadvantage, there are still some strategies they can use due to their position that others cannot. One of those strategies is the check-raise. An early position player can check-raise to get more money into the pot or to try to knock out players if it is a late position player who makes the initial bet on the Flop. Since the check-raise is one of the few advantages that early position players enjoy, they should use it often when they think they have the best hand and there is evidence that a player in late position will bet when it is checked to him.

Another strategy that the first player to act can apply is the first chance to bluff. If there is a hand where all the other players have shown weakness, the first player to act has the first chance to bluff into the pot on a later round. For example, two limpers call, the small blind folds and you check in the big blind.

Your hand in the big blind: T3o

Flop: Q-5-2 rainbow

Everyone checks on the Flop.

Turn: 5

You now have a nice opportunity to be the first player to bluff into the pot. Unless one of the other players was slowplaying his hand on the pre-Flop round or the Flop, being the first to bluff has value.

Middle Position
Middle position players have some of the disadvantages of the early position players and some of the advantages of the late position players. Middle position players can see the actions of the early position players, but they still have a few players behind them yet to act. In the pre-Flop round, middle position players can open raise with a few more hands than early position players can since there is a smaller chance that a player in a later position will have a better hand (because there are fewer players in a later position to the middle position player). But their list of raisable hands cannot be expanded by too much beyond that of the early position players.

After the Flop, the relative position of the middle position player is the most prone to change. If a middle position player raised pre-Flop and everybody behind him folded, but one or both of the blinds call, then the middle position player is now a late position player since he will be last to act in all subsequent rounds. On the other hand, if the only player to stay in the hand with the middle position player is a late position player, then the middle position player would be in early position as he is the first to act after the Flop. A player's position may not be static throughout a hand, and it is the middle position player's position that is the most prone to change after the Flop.

Late Position, the Cutoff and the Button
The button is the last to act on all rounds with the exception of deferring to the blinds in the pre-Flop round. The button has the greatest positional advantage of any player on the table as he can see how everyone has acted before he has to act. The cutoff player is to the right of the button, and if the button folds, then the cutoff becomes the "button", in the sense that he will be the last to act on all subsequent rounds. In fact, any player who becomes last to act on the Flop and beyond becomes the de facto button.

Players in late position have the best chance to apply the strategy of raising for free cards, since they have the option to check on the Turn when acting last. If a player in early position tried that strategy, it would not have the same effect since they have to act first on the next round. Thus, a late position player would see the early position player's action on the next round before the late

position player has to act. Players in late position can also apply the free showdown semi-bluff raise. This strategy is a raise on the Turn with the intention of checking on the River and showing down their hand if they do not improve, but betting if they do improve. These strategies are discussed in other chapters of this book.

The Importance of Position when dealing with Pot Odds
In the chapter on Pot Odds, it was shown why there is value to being the player to close the action, meaning there are no other players left to act. The advantage of this is the number of bets you have to put into the pot cannot increase after you have acted. For example, if there are 10 big bets in the pot and you are last to act on that round with a bet facing you, you can decide to call or fold. If you call and you are the last to act, then you know you are getting 10:1 pot odds to call. However if there was another player who has yet to act, it is possible he may raise, and now if you want to continue with the hand, you will have to put in an additional bet into the pot. This means your estimation of the number of bets you have to put into the pot was incorrect and your estimations of whether or not you have enough pot odds to call were completely thrown off. For a player who is in a relative late position to the bettor, his late position provides a nice advantage since he would be sure of the pot odds. However for a player who is in a relative early position, he may be surprised that the pot odds are lower than he had thought since there may be a raise after he has called.

6/11/04 This is the fifth draft of the chapter Raising for Free Cards in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page.

Hold'em Brain: Raising for Free Cards
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Raising for a free card is a strategy used by a late position player on the Flop to show strength when he is on a draw. (To EDITOR: please put this in a footnote - The assumption in this book is that the bet doubles on the Turn. In games where the bet on the Turn remains the same, the strategy of raising for a free card is not applicable.) When the strategy works, the early position player(s) will check to the late position player on the Turn. Then the late position player can choose to bet if he has made his draw or check if he has not, thereby gaining a free card (he may choose to bet again if he has not made his draw, but that bet on the Turn would be considered a semi-bluff). There is also the added value of the possibility, albeit usually small, that early position player(s) will fold to a raise on the Flop.

Here is an example of raising for a free card on the Flop with a flush draw.

Your hand: 4♦3♦
Your opponent's hand: T♥9♥

Flop: K♦9♦5♣

There are only two players left on the Flop. Your opponent acts first and he bets with his middle pair of 9's. You raise with a diamond flush draw and your opponent calls. You have 9 outs to make a flush.

Turn: 8♠

Your opponent checks because he is worried his middle pair is not the best hand after he got raised on the Flop. You do not have anything yet and are still hoping to catch the flush, so you decide to check also (if your opponent is weak and you think there is a chance he will fold middle pair in this spot, you should bet again as a semi-bluff). The Turn is your "free card" since you do not have to put in a bet on the Turn even though you are behind. By raising on the Flop, you used a small bet to convince your opponent to check on the Turn. If your opponent had bet on the Turn, it would have forced you to put in a big bet to see if you can catch a flush on the River. Not having to put in a bet on the Turn is helpful if the flush does not come. If the flush does come on the Turn, you can bet after your opponent checks.

If there is a chance your opponent will fold, then there is added value in raising for a free card. But if your opponent will not fold on the Flop when you raise, then raising for a free card does not change the probability of you winning the hand. It just changes the amount that you win or lose. Assuming your free card raising strategy goes as planned and your opponent does not fold (although it would be nice if he did), you will win more (one small bet) if a flush card comes on the

Turn. If the flush comes on the River instead, then you win less (one small bet less). If it doesn't come at all, then you lose less (one small bet less). If your opponent cooperates by checking the Turn after you raise the Flop, then the EV of raising is greater than the EV of calling when you have a flush draw.

Here is a chart showing the results of raising or calling on the Flop depending on when the flush comes. The amount won or lost is in terms of big bets. This chart assumes:

- ■   If you raise, your opponent will call your raise on the Flop and check to you on the Turn.
- ■   If you call, your opponent will keep betting until a third flush card comes, then he will check with the intention of calling if you bet.

When does the Flush Come	Probability	Expected W/L if you <u>Raised</u> on the Flop	Expected W/L if you <u>Called</u> on the Flop
Turn	19.15%	+3[a]	+2.5[d]
River	15.82%	+2[b]	+2.5[d]
Never	65.03%	-1[c]	-1.5[e]
EV		**+0.24[f] big bets**	**-0.10[g] big bets**

[To the Editor - please put these notes in the Footnote]
[a] 2 small bets on the Flop, 1 big bet on the Turn, 1 big bet on the River - total 3 big bets
[b] 2 small bets on the Flop, 0 big bet on the Turn, 1 big bet on the River - total 2 big bets
[c] 2 small bets on the Flop, 0 big bet on the Turn, 0 big bet on the River - total 1 big bet
[d] 2 small bets on the Flop, 1 big bet on the Turn, 1 big bet on the River - total 2.5 big bets
[e] 2 small bets on the Flop, 1 big bet on the Turn, 0 big bet on the River - total 1.5 big bets
[f] EV of Raising = (19.15% x 3 + 15.82% x 2 + 65.03% x -1) = 0.24
[g] EV of Raising = (19.15% x 2.5 + 15.82% x 2.5 + 65.03% x -1.5) = -0.10

Against this opponent, your EV of raising on the Flop is +0.24 big bets ($9.60 in a $20-$40 game). And the EV of calling is -0.10 big bets (-$4.00 in a $20-$40 game), 0.34 big bets less than the EV of raising. The negative EV of calling does not tell the whole story though. Only the amount won or lost <u>after</u> the Flop bet by your opponent was counted in this chart. If the previous bets were added in, then calling and raising would have positive EV. If the pot size after your opponent has bet on the Flop was 5 big bets, then the EV difference is still +0.34 big bets (+1.99 for raising vs +1.65 for calling). See the Appendix on Free Card Stats for more information. Comparing the EV of raising and the EV of calling, the pot size previous to the bets on the Flop are not relevant. The EV of raising with a flush draw if the opponent plays the same way regardless of the pot size is always exactly +0.34 big bets greater than the EV of calling. If it was 100 big bets, then the EV difference is also still +.34 big bets (+35.21 and +34.87). The pot size is not the key variable to this strategy. The key variable is how your opponent acts.

If your opponent is passive, as this example describes, then he will give you the free card on the Turn all the time. If he is more aggressive, then he may re-raise on the Flop or bet out on the Turn, and that is the variable that could change the value of raising for a free card. These counter strategies to the free card raise are discussed in the next section.

Counter Strategies to the Free Card Raise
Although raising for a free card is a powerful strategy, there are counter strategies available. A sharp player who can detect his opponent's free card raise can use these counter strategies to thwart his opponent's plan. Here are some counter strategies against the free card raise. The late position player is denoted as LP and the early position player is denoted as EP.

1. Re-raising on the Flop
If there is a draw on the Flop and you are sure the LP is a player who would definitely raise for a free card if he had a draw, then you may consider re-raising on the Flop. This thwarts the free card strategy as it makes the free card raiser put in more bets rather than fewer bets. Instead of getting a card for "free", you have made it expensive for him.

2. Betting out on the Turn
After the LP had raised on the Flop, the EP can bet out on the Turn and force the LP to put in more chips than the LP was hoping for. There is value in waiting until the Turn for the EP to bet (compared to re-raising on the Flop), as the EP can see if a dangerous card has come on the Turn.

There can still be value for the LP to raise for a free card, depending on how likely the EP is to employ the counter strategy of betting on the Turn. The value of raising for a free card by the LP is determined by the percentage of time the EP will bet out on the Turn (when he has a better hand) even after the EP was raised on the Flop. If the EP bets out on the Turn all the time, then the strategy of the free card raise by the LP has backfired. If the EP never bets out on the Turn, then the strategy of the free card raise by the LP has worked. This chart shows that percentage in the Breakeven Point column. The Breakeven Point is determined by the number of outs the LP is drawing to. The fewer outs the LP has, the lower the Breakeven Point will be. The chart assumes the pot size was 5 big bets before the LP raised on the Flop.

Type of Draw by LP	Outs	EV of <u>free card raise</u> when EP		EV of <u>calling</u> on the Flop	Breakeven Point[a] for raising
		always <u>checks</u> on the Turn	always <u>bets</u> on the Turn		
Flush	9	+1.99	+1.50	+1.65	69.5%
Straight	8	+1.69	+1.15	+1.33	65.7%
Overcards	6	+1.06	+0.41	+0.67	59.9%
Lower Split Pair	5	+0.73	+0.04	+0.33	57.6%

[a] Probability of the EP betting on the Turn with a better hand after the LP raises on the Flop that would make the EV of a free card raise the same as the EV of just calling.

The EV of the free card raise is dependent on the frequency that the EP will bet on the Turn when he has the better hand. In the chart above, it shows that if the EP always checks on the Turn when the LP raises for a free card on the Flop, then the EV of raising for a free card is significantly higher than the EV of calling. (For example, if the LP has a straight draw with 8 outs, the EV of a free card raise if the EP always <u>checks</u> on the Turn is +1.69. If the LP just calls on the Flop, then his EV is +1.33. In that case, a free card raise has gained the LP +0.36.) This is true in all

situations no matter the type of draw by the LP, although the value of raising for a free card will vary depending on the number of outs the LP has.

However, if the EP can play back and bets out on the Turn all the time when he does have the better hand, then the EV of the free card raise for the LP is lower than the EV of calling on the Flop. (For example, if the LP has a flush draw with 9 outs, the EV of a free card raise if the EP always <u>bets</u> on the Turn is +1.50. If the LP just calls on the Flop, then his EV is +1.65. In that case, a free card raise has lost the LP -0.15.) This shows that the value of the strategy of raising for a free card is partially based on the EP's aggressiveness.

The EP's aggressiveness can be expressed as the probability that he will bet on the Turn with the better hand after he is raised on the Flop. The breakeven point is shown on the chart above. For example, if the LP raised on the Flop for a free card with a flush draw, the EP has to be willing to bet on the Turn with a better hand less than 69.5% of the time for the free card raise by the LP to be a better option than just calling on the Flop. On the chart, it shows that the fewer outs there are, the lower that breakeven point needs to be. This means with fewer outs, the aggressive level of the opponent becomes a bigger factor in the value of raising for a free card.

Here are a few key points to consider regarding raising for a free card:
A. You should use the free card raise less often against aggressive players and more often against passive players. Passive players will check on the Turn more often, thus giving you the benefits of raising for a free card. Aggressive players will bet on the Turn more often and make your free card raise backfire. However, for "advertising" value, it can still be useful to raise for a free card against observant aggressive players if you play against them on a constant basis. If your observant aggressive opponent thinks you will raise for a free card against him, then he will play back against you as he would against anybody else in that situation. You should use that information to raise him when you have a made hand but it looks like your raise was a free card raise (such as when there are two cards of the same suit on the Flop). If you never raise for a free card against him, then he may not play back at you when you have a made hand, because he may think your raise is more likely to be with a made hand instead of a draw. Against an observant opponent like this, your free card raises could be termed as "advertising" plays or loss leaders. You may be giving up a bit of edge when you are raising for a free card, but you will be able to gain it that edge back (and hopefully more) against the opponent during the hands when you are raising with a made hand.

B. If your opponent is <u>passive</u>, you should use the free card raise more often when you have <u>fewer</u> outs (see column below titled "Increased EV of raising vs calling when EP always checks"). When your opponent is <u>aggressive</u>, you should use it more often when you have <u>more</u> outs (see column below titled "Decreased EV of raising vs calling when EP always bets"). So you should attempt your "advertising" free card raises against aggressive players when you have more outs.

This chart assumes your opponent has middle pair and cannot be bluffed out of the pot.

Type of Draw by LP	EV of <u>raising for a free card</u> ...		EV of <u>calling</u>	Increased EV of raising vs calling when EP always	Decreased EV of raising vs calling when EP always
	...when EP always <u>checks</u> on the Turn	...when EP always <u>bets</u> on the Turn			

				checks	bets
Flush	+1.99	+1.50	+1.65	+0.34 (1.99-1.65)	-0.15 (1.50-1.65)
Straight	+1.69	+1.15	+1.33	+0.36	-0.18
Overcards	+1.06	+0.41	+0.67	+0.39	-0.26
Lower Split Pair	+0.73	+0.04	+0.33	+0.40	-0.29

C. Against aggressive players in EP who may think you are raising on the Flop on a draw, you should play even more aggressively when you have a made hand in LP. The aggressive EP will play back at you thinking you are on a draw, this means when you have a made hand, you can win more bets from them due to their own aggressiveness.

D. Against players in LP who are constantly raising for free cards on the Flop and then checking on the Turn when they have not made it yet, you should be betting out on the Turn.

E. Against aggressive players in LP who are not only raising for free cards on the Flop but continuing with semi-bluffs on the Turn, you can wait for the Turn to check-raise them.

3. Betting on the River after the free card raiser has checked on the Turn.
If the LP checks on the Turn when he does not catch his draw, then it is easy for the EP to see that the LP was on a draw when he raised on the Flop. A counter strategy for the EP to use at this stage is to bet out on the River if the River card does not look dangerous. The EP can bet out even with nothing and still win the pot because the LP has a busted draw. On the other hand, if it looks like the River completes a draw, then the EP can have more confidence that he is beat and check with the intention of folding.

Straight draw free card raises
With open-ended or double inside straight draws on the Flop, a raise in late position has the same benefits as a raise for a free card with a flush draw. But it has the added benefit of deception because straight draws are more difficult to read than flush draws (see the section titled Reading Straight Draws in the Reading Hands chapter). This play is especially useful when there are two cards to a flush on the Flop. If a flush card comes on the Turn or River, it may scare your opponents since your actions up to that point were consistent with a player holding a flush draw. Thus you may have an easier time in bluffing. Here is an example.

Your hand: J♠T♠

Flop: 9♥8♥2♣

You have an open-ended straight draw, but there are two hearts on the board. A raise in late position will look like a raise for a free card with a flush draw. If a straight card that is not a heart comes on the Turn or the River, it will be more difficult for your opponents to see that you have made your draw. You may win an extra bet that you may not have if the flush draw possibility was not present. If you do not catch the straight but a third flush card comes on the Turn or the River,

you may have an easier time bluffing against perceptive players since they are more likely to give you credit for catching the flush draw given your play up to that point.

Overcard free card raises
There are two reasons to raise with overcards on the Flop. The first reason is if there is a chance that you can win the pot with a raise on the Flop. Most players will not fold to a raise on the Flop after they have bet, so do not count on this happening often. The second reason is if the pot is relatively big, then a raise to get a free card may have value. With overcards to the board, there are at most 6 outs against a player who has a pair. If the other player has two pair or better than the player with overcards would have 0 outs. With 9 or 8 outs, the pot odds usually are high enough to justify staying to the River to see if the draw was made, but with only 6 outs, it may not be so. This is why the pot needs to be bigger for a free card raise with overcards.

For example, you have A♣K♣ in last position and two players limp. You raise, both blinds call as well as both limpers. Five players see the Flop for 5 big bets.

Your Hand: A♣K♣

Flop: J♦8♠3♥

The first player checks and surprisingly the second player bets. It gets folded to you. You may consider raising since the pot is relatively big. It would be worthwhile to stay in the hand and see if an A or K comes on the Turn. A raise may give you a chance for a free card and see the Turn and River for just one more small bet. Since you had raised pre-Flop and have now raised on the Flop, you are telling the rest of the table you have a premium hand such as AA or KK. If you get re-raised, it usually means your opponent is not worried about playing against an overpair. This means he is likely to have a hand such as two pair or trips.

More flush draw free card game theory
If your early position opponents can play back at you when you raise for a free card, then it may be useful to raise in situations where it looks like you may be going for a free card when you are not. This can be set up when there are two cards to a flush on the board and you have a made hand such as top pair, two pair or an overpair. You may decide to raise on the Flop instead of waiting to raise on the Turn. This may cause some sharp opponents to think you are raising for a free card. When they try to use counter strategies (such as re-raising on the Flop or betting out on the Turn if a third flush card does not come), then you can raise them again.
Here is an example. You hold top pair and are in late position (relative to the other players still in the hand).

Your hand: A♣T♥

Flop: T♠5♠3♣

If you are against an early position opponent who may think your raise on the Flop means a free card raise with a flush draw, then you should not slowplay this hand on the Flop (even if there were

flush draws on the Flop, you should probably play the hand strong since there are three possible overcards to your hand). You should raise on the Flop and hope that a non-flush card hits the Turn. Your opponent may then feel comfortable betting out on the Turn, since he does not want to give you a free card. Now you can raise him again on the Turn. You have gained an extra small bet compared to not raising on the Flop and waiting for the Turn to raise. Most opponents will not bet out on the Turn with a hand like JT after you raise them on the Flop, fearing a higher kicker. You have to decide which opponents will bet out on the Turn with a weaker T (or lower pair) as a counter strategy against a free card raiser, and which opponents will only bet out with a set or two pair. In this case, you are not trying for a free card, but you can still use your opponent's knowledge of the strategy to your advantage.

This is the first draft of the chapter Bluffing in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page.

Hold'em Brain: Bluffing
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Bluffing
A bluff is a bet or raise that if called has very little chance of winning. Bluffing is an important part of Limit Hold'em but it is not nearly as important as most people think. In fact, people who do not play poker very much often think bluffing is the most important concept to the game. This would be a mis-characterization of the game. People probably overestimate the importance of bluffing in poker because bluffing as a strategy is fairly unique to the game of poker. Bluffing cannot be used in many other competitive games. The concept of bluffing does not exist in craps, billiards or chess. Often people will refer to poker when they discuss bluffing in other aspects of life. For example, during the 2004 NFL Draft, Chris Mortensen of ESPN described the discussions of the trade between the New York Giants and the San Diego Chargers for Eli Manning as a game of poker in that they were both trying to bluff and not show their hand.

To use the bluff successfully, one needs to know the right time to use it. In many low limit games, bluffing is often pointless since most players will call with weak hands. In the middle and high limit games, where players are more willing to fold hands, bluffing becomes an effective tool and can be used strategically at times. The value of bluffing will change depending on the players and the situation. For some opponents, they will not care about how you play because they have already predetermined whether they will call or fold based on their own holdings, they have not made the second step of trying to analyze what you have. Against those opponents, your decision to bluff or not should be based solely on what you think they have. Against other opponents who play better and who will try to deduce your cards given the play of the hand up to that point, it becomes a little more difficult. Not only do you need a good handle on the cards that they hold, but you also need to have a good idea of what they think you have.

A bluff does not need to be successful a majority of the time for it to be a worthwhile venture. It only needs to be successful more often than the pot odds provide for it to be a winning strategy. If the pot holds ten big bets, risking one big bet to try to win the pot is worthwhile even if the chance of a bluff being successful is only 15%. In that case, the expected value of a bluff would be

Expected Value of bluffing = (15% x 10 big bets) + (85% x -1 big bet) = +.65 big bets

If your opponent calls 85% of the time, you will be showing down a bluff bet and look foolish during those times. It is the 15% of the time when he folds a better hand than yours that you will take the money and no one else will know what you just did. An activity like bluffing can be quantified, even if much of the time, it is a skill of "feel" or intuition.

Bluffing against one opponent
Lets examine the less complex situation of bluffing on the river against one opponent. You are in last position and your opponent has checked to you. Here are the scenarios that you will be facing:

A. You have a good to strong hand
B. You have a mediocre hand
C. You have a below average hand
D. You have a very poor hand

Situation A is a simple situation. You should be betting and hoping your opponent calls and loses more chips to you. This is not a bluff.

Situation B is a little more complex. This is the type of situation that comes up where you have to think if it is worthwhile to make what is called a "value bet". This is defined as a bet when your cards are not that great, but you still think there is value in making a bet because you believe your hand is stronger than your opponents with a decent degree of certainty.

Situation C & D are the situations where the decision of whether or not to bluff comes into play.

In each Situations B, C and D, the size of the pot needs to be considered as well as the opponent's thoughts on the size of the pot. In Situation B, if the pot size is large, you should be more inclined to make a wager, because your opponent will be more inclined to call with a worse hand since he believes he is getting relatively large pot odds in case you were bluffing. In Situation C & D, a bigger pot will reward you more handsomely for a successful bluff than a smaller pot would. But keep in mind that your opponent may be aware of the relative pot size as well, and thus may be more inclined to call your bet when the pot is bigger.

Here are some examples of Situation C&D

Example of Situation C
Assumptions:
1. You have a 25% chance of having the best hand
2. If you bet and your opponent has a better hand than yours, he will fold 40% of the time and call 60% of the time.
3. If you bet and your opponent has a worse hand than yours, he will fold 100% of the time.
4. The pot size is 5 big bets
5. Your lone opponent has checked on the River and you are last to act.

Expected Value of checking:
The pot size is 5 big bets. If you do not bet, you have a 25% chance of winning the hand and a 75% chance of losing the hand. The expected value of checking in this hand is:

Expected Value of checking = (25% x 5 big bets) + (75% x 0 big bets) = +1.25 big bets

It is important to forget about the chips that you have put in the pot yourself in previous rounds. Those chips are now a sunk cost, it is no longer your chips as it currently belongs to the pot.

Expected Value of betting:
In the assumptions, it states that if you bet and your opponent has a better hand, he will fold 40%

of the time and call 60% of the time, but if he has a worse hand, he will fold 100% of the time.

In the assumptions, it was stated that when you have the best hand (25% of the time in this example), your opponent will not call a bet. When you have the worst hand (75% of the time in this example), your opponent will fold 40% of the time and call 60% of the time.

The expected values individual situations are:
You have the best hand = 25% x 5 = 1.25
He has the best hand and he folds when you bet = 75% x 40% x 5 = 1.50
He has the best hand and he calls when you bet = 75% x 60% x -1 = -0.45

Since there is no increased value to betting when you have the best hand (since we have assumed he will fold 100% of the time when he has a worse hand), the only possible extra value that is gained by a bet is due to bluffing, when you bluff him out of a better hand. In this example, we are not sure if we have the best hand or not, so it is unclear if we are actually bluffing.

Expected Value of betting/bluffing = (25% x 5 big bets) + (75% x 40% x 5 big bets) + (75% x 60% x -1 big bet) = +2.3 big bets

When we bet, we have an expected value of +2.30 big bets. In this example, it is clear that betting is better than checking, as an expected value of +2.30 big bets is better than an expected value of +1.25 big bets in checking.

If the numbers were slightly changed, then it could make the bluff an incorrect move. Lets change the assumptions and assume that instead of folding 40% of the time when he has the best hand, your opponent is only going to fold 10% of the time when he has the best hand, and call 90% of the time. Then the expected value equation becomes:

Expected Value of betting/bluffing with adjusted numbers = (25% x 5 big bets) + (75% x 10% x 5 big bets) + (75% x 90% x -1 big bet) = +0.95 big bets

In this case, the expected value of bluffing is +0.95 big bets, which is worse than the expected value of checking +1.25 big bets. So your decision to bluff or not is dependent on how likely your opponent is going to call.

Example of Situation D
In cases like Situation D, where we have a very poor hand, with almost no chance of winning the pot outright, the calculations would be similar. We could assume we had 0% of winning if we checked, but a 20% chance of our opponent folding if we bet. If we also assumed the pot contained 5 big bets, then the expected value formula is:

Expected Value of checking in Situation D = 0% x 5 big bets = +0.00 big bets
Expected Value of bluffing in Situation D = (20% x 5 big bets) + (80% x -1 big bet) = +0.20 big bets

With these numbers, it is clear that a bluff bet is the best option as we gain +0.20 big bets compared

to 0, but if we changed the percentage of your opponent folding down to 10%, then bluffing would be a worse option than just giving up the pot without a fight. The expected value formula is:

Expected Value of bluffing in Situation D with adjusted numbers = (10% x 5 big bets) + (90% x -1 big bet) = -0.40 big bets

Now we have the math, but we still need to learn the skill of pinpointing the percentage that our opponents will fold. If we were able to obtain their folding frequency number, then poker would be very easy for those who are adept at math, we could just plug the numbers into an expected value formula like the ones above and it will tell us the right move to make. Alas, in real life, it is difficult to make these assessments. Putting a percentage on whether a player will call or fold is not the easiest skill in the world to learn. You need to be paying attention to the players and see how they play to try to pick up on their tendencies. Whether they call with mediocre hands or if it seems they are calling a lot even though there are not any draws available. The reason why that is important is because it will show that they are calling with a low pair instead of just folding on a missed draw. The main way to gain this skill is through experience, observing your opponents and thinking about the game.

Another example of a bluff attempt against one opponent
You are in the big blind holding Ad8c. Everybody folds to a player one to the right of the cutoff seat who raises. Everybody else folds and you call, there are two players and 2.25 big bets in the pot.

Flop: 8s-7s-6c

You check, the pre-Flop raiser bets and you check-raise. He re-raises and you decide to call. Going into the turn, there is 5.25 big bets.

Turn: 2c

You check hoping that your opponent was only on a spade draw and checks as well. However he does not, he bets. You are afraid that he has an overpair and has you down to just 5 outs (if he has KK you have 5 outs, 3 A's and 2 8's) or 2 outs (if he has AA, you only have 2 outs, the 2 8's). There is also the distinct possibility that he holds a hand like AsKs or AsQs which may seem to him like he has many outs, thus raising on the flop and betting on the turn as a semi-bluff may seem reasonable to him. With two overcards and a flush draw, you can see that maybe he thinks he has as many as 15 outs, so he did not mind re-raising on the flop. Many times these players will also continue to bet on the turn too with the hopes that you fold, and if you do not fold, at least they still have outs. It is unclear exactly what hand he has, you may be the favorite or you could be the underdog. You decide to call his bet.

But that is not the important decision. The important decision is wondering what to do on the River. There is an opportunity to bet out if a T, 9 or 5 hits the board, whether or not it is a spade. In fact, if it is a spade, it actually helps your bluff attempt even more. That is because if he is on spades, he will raise you and you can fold knowing that you are beat, thus losing the same amount as a check and call. If he is not on spades and has an overpair, the 9s is going to look like a very

dangerous card to him. You may have been in the hand with a spade draw, a straight draw or hit two pairs. If he views you as a good player, he may be afraid that a bet on the river by you is a bet that is trying to save the hand from being checked down on the river. It will look like you got there with a draw. Whether a bluff is correct or not will depend on your thoughts about the chances that your opponent can fold with an overpair.

There are two important points to take here. One is that you do not have to succeed all the time with your bluff to make it profitable. All you need is to win it the same percentage of the time that the pot odds reflect that you need to win it by. So if you get called once or twice making a bluff like this, it does not necessarily make it a bad bluff. On the other hand, if you are bluffing into players who are incapable of folding a big pocket pair even into a scary board of 8s-7s-6c-2c-9s, then you are just throwing your money away. Bluffing depends heavily on the ability of your opponent to fold a better hand. If they are incapable of that, then it is a foolhardy experiment.

Bluffing in context of recent plays
The decision to bluff or not to bluff should not be made in isolation of just one hand. It should be made within the context of recent plays that you have made. If other players pick up on your play and think you are more likely to be bluffing than most players are, they will increase their frequency of calling you down. If that happens, then you need to consider bluffing less. This can happen if you just made an unsuccessful bluff and had to show down the losing hand. As other players pick up on your move, they may feel more comfortable calling you in other hands as they may believe you are more likely to be bluffing again.

Other players may get the same type of feeling about your play if you have recently won a few hands that you did not need to show your cards. Whether you had legitimate hands or you were bluffing may be inconsequential. If other players simply see you scooping in a few pots without showing your hand, they may automatically think you may have been bluffing, which may lead them to calling you down more in the future. Even if you were not bluffing, you may need to reduce your frequency of bluffing in a case like this. On the other hand, if you have not been involved in many hands recently, or have shown down good hands when you did win pots, you may be able to take advantage of that by bluffing at a slightly higher frequency now. If you have not played many hands recently, other players will give you more credit when you do enter a pot, and think you are less likely to be bluffing since they judge you to be a tight player.

You want to have balance when you bluff. You want to bluff just the right amount that your opponents think you are not bluffing when you are, so they will be more likely to fold. This means that in order for your bluffs to be successful, you cannot bluff too frequently. If you do bluff too frequently, the observant players will pick up on it, and your bluffs will no longer be as successful.

Bluffing against multiple opponents
Generally it is very difficult to bluff successfully against more than one opponent. Usually, the chances of at least one player calling your bluff is higher when there is more than one opponent. This is because the pot will usually be bigger since there were more players in previous rounds, so larger pot size will make it more worthwhile for opponents to call. Also, with more opponents, the probability that one of them has a legitimate calling hand increases. With that said, there are still certain situations where a bluff against multiple opponents may work with a high enough

percentage relative to the pot odds, to make it worthwhile.

Situations where it may be profitable to chance a bluff against more than one opponent usually occurs when there is a straight draw or a flush draw on board. If you believe one of your opponents has a busted draw on the river, bluffing into two players now is the same as bluffing into one player, since the player with the busted draw can be discounted. Also, if there is a draw on the board and a possible card that look like it has completed a possible draw on the river, then a raise may make it look like you were the one on the draw. In a case like that, you would have to hope that neither of the players were on a draw themselves as they would probably call.

Example:
Pre-Flop: You are in middle position with AsTs. An early position player limps in, and you do as well. Another limper calls behind you, and both the blinds stay in the hand. There are five players in the hand with five small bets in the pot. You think the early position player is a solid player and the fact he did not open raise, but instead limped into the pot, makes you think he does not have one of the strongest hands, like AA, AK, KK, QQ. You think the player behind you who called is a loose player who likes to play many hands and would be willing to play any hand containing an A in an unraised pot.

Flop: Ac-9s-6c

Both blinds check and the solid player in early position bets out. You raise with your pair of A's. The late position player calls your bet. You expect he has either an A, a flush draw (two clubs) or a straight draw (87). Both blinds fold and the solid player in early position calls. There are now three players and 5.5 big bets in the pot.

Turn: 7d

This card gives you an extra four outs. If an 8 hits you have a straight, likely the best hand. Once again the original bettor bets. That makes for 6.5 big bets in the pot, and you may have as many as seven outs (three Tens and four Eights) to win the pot, this means you have enough pot odds to continue with the hand if there are no raises on this round (see the section on Pot Odds for more details about how to determine this). You consider a raise, but you are a bit worried about the limper behind you. He may have a worse A, but he may have two pairs already. If you just call, you expect the loose player behind you to just call if he had a worse A, in which case you don't mind just calling since the 3 outs you expect him to have is not so bad. At the same time you are worried about the player behind you raising with a better hand, thus forcing you to put in another bet just to see the River. You decide to just call. The loose player behind you calls as well. There are still three players and the pot is now 8.5 big bets.

It is very important to note the action of the early position player. Since you know he would not limp in early position with a hand like A9, A7 or A6, unless they were suited, you are not as afraid of two pairs. But there are a few hands that he could have limped in with and still be in the hand by the turn, those hands are AQ, AJ, 99, 66. With hands like 99 and 66 that flopped a set, and with two opponents on the flop, you would have expected the solid player to put in three bets on the flop and bet out again. Since he did not do that, you expect he probably has AQ, AJ or the same hand

as yours, ATs. The fact that the solid player bet out on the Turn when the third spade did not hit means there is a high chance that he has put you on a flush draw and hope that you raised on the flop trying to buy a free card on the turn. As I mentioned previously, many players will make this move on the turn to foil the attempt of the free card.

The River: Jc

The Board is now: Ac-9s-6c-7d-Jc

The club flush is now possible. Surprising to you, the solid player still bets out. Oftentimes this is a move where a solid player does not want to lose a bet. If he had the best hand at this point, he still wants to extract a bet or two. However, the solid player should be smart enough to realize that if you held two clubs, you would have hit your flush draw. This may mean that he would be willing to muck his hand if he is shown a raise. The solid player thinks to himself that this is better strategy than to check and call, because if there is a flush made against him, he would lose the same amount, but if his hand was the best hand, he would lose the chance of winning a bet if he just checked. He is trying to escape the chances of losing a bet if he loses, but not gaining a bet if he wins.

This is the point where you can think about raising as a pure bluff. You are definitely well aware that the solid player likely has you beat. He had either AQ or AJ, with an outside chance of 99, 66, A9, A7, A6 or AT. You know that he thinks there is a good chance that you held a flush draw so you should know that he is going to be afraid of a raise. You also know that the solid player thinks that you are less likely to be bluffing because of the existence of a third player since you would need two players to fold for the bluff to succeed. If the late position player folds, there is a nice chance that the solid player will also fold with AQ and maybe with two pairs as well. On the turn, there were 8.5 big bets. The solid player's bet on the river made it 9.5 Big Bets. Your raise would contain 2 big bets, so you need to be successful 17.4% of the time on this bluff to make it a breakeven bluff (more on how I got 17.4% is listed below.) Here's the expected value formula assuming we have a 17.4% chance of winning a bluff:

Expected value of bluffing if it is successful 17.4% of the time = (17.4% x 9.5 big bets) + (82.6% x -2 big bets) = 0.00 big bets

The way I got to 17.4% is because I am risking 2 bets into a pot of 9.5 bets, so the formula for the breakeven analysis is
Breakeven bluffing rate = Bets risked / (Bets risked + pot size)

Plugging in the numbers in this case, we get 2 / (2+9.5) = 17.4%

You need to take into consideration the solid player's willingness to fold a better hand (likely AQ, AJ), his opinion of your play (if he thinks you are a solid player, he is more likely to fold than if he thinks you are an over-aggressive player). The player behind you is almost an afterthought. If he was tagging along with a flush draw, he will likely be in the hand and you will lose it to him. If he had two pairs, he will likely stay in the hand, and there is a chance he may even call with an A but a worse kicker.

There is a word of caution here. You have to have the "right" opponents to make this play. If your opponents are calling stations, you are likely throwing your money away. Also, you cannot use this play too many times against the same opponents, especially over a short time span. If and when they get a twinge of suspiciousness, they will become much more likely to call you. Keep this strategy in your back pocket, but use it rarely. In shorthanded games, especially the online shorthanded games, this type of play will be successful less often than in brick and mortar poker rooms. The reason is because the average player in the online shorthanded games plays more aggressively and bluffs more often. So many players have learned not to fold too often, which means they are going to be more likely to call in a shorthanded online game, and which would make this play less successful.

Bluffing on the Flop while on the Button
Sometimes you will call in late position after several other players have already limped in. Whether or not you are on the button is unimportant, so long as all the players to your left have folded, which in effect makes you the button as you will be last to act after the Flop. If the Flop comes with one high card and two low cards, such as Q32, and everyone checks to you, this is a nice opportunity to make a bluff regardless of the cards you hold. The reason is that a player with a Q would likely have made a bet along the way, so if it is checked to you, there is now a higher chance that no one has a Q. This is a better flop than a flop with three low cards, because in those flops, loose players may be willing to call with any two overcards, such as K9 and A8 with a flop of 732. But with the Q out there, players with hands like K9 and A8 may think they only have one overcard, and those with JT will think they have no overcards, so they are more likely to fold to a bet with the Q on the board. If anyone calls, they would likely have a hand such as a straight draw with a hand like 54, A5, A4, which means you may now have to keep betting if they check and no other low card or A comes.

Bluffing on the Turn with a ragged board
There will be times when you get a free play on the big blind and find a strange looking board where no one seems interested in betting. If it is still checked to you on the turn, you now need to consider betting and steal the pot regardless of your own holdings. A check on the flop by a player who had willingly entered the pot after the blinds have checked usually implies two things. Either he has a monster hand and is slowplaying the hand or he does not have anything and is willing to give up the pot to a bet. For example, you are in the big blind with 7s-2c, known to be the worst Hold'em hand there is. A poor player limps in from middle position, everyone folds to the small blind who completes and you check.
Flop: 8c-5s-3d

This is a very ragged flop and yet you still do not have anything, no pair, no straight draw. You are pretty much ready to give up on the hand, but to your surprise everyone checks on the flop.

Turn: 5h

Now is an optimal time to bet if the small blind checks. Since you were in the big blind and involuntarily in the hand, the other players will give you more credit to having cards that match with a ragged board like that. With the pair of 5s on the board, it is unlikely for the limper to have

a 5 since he would likely have bet with a pair of 5s on the Flop. A steal bet in this situation, by either you or the small blind, is often a worthwhile venture.

How often should you bluff?
This is a tough question and cannot be answered by a simple percentage. Say you know that you bluff 10% of the time. This information does not really tell us anything. You could be bluffing at the wrong time and thus all your bluffs were worthless and 10% would actually be too high. Or you could be bluffing at the exact perfect times, in which case 10% would not look too low. Instead of looking at percentage of times that a player bluffs, I like to look at it as the times when your bluffs are called or not called.

If your bluff is never called, that may seem great as it seems like you are bluffing at opportune times and getting the best of your opponent when you do bluff. However, since the success rate for bluffing does not need to be very high for it to be profitable, it may be the case that you are not bluffing enough if you never get your bluffs called. It may mean that you are missing out on some bluffing opportunities and only choosing the times when the chances of bluffing successfully are the highest. Similarly, if you never see any busted bluffs after you called, it may mean you are folding too much.

Inducing a Bluff
David Sklansky was the first to write about this concept in Hold'em Poker. When the application of this concept works, opponents will bluff when they otherwise would not have even called a bet. Usually, the opponent's bluff bet follows a check by you, either on the same round or on the previous round of betting.

For example, if you have K9 with a board of A-K-8-5 and are last to act. You are afraid that only a better hand will call your bet, but a worse hand would fold if you bet. You may decide to check on the Turn in the hopes that your opponent will bet on the River with a bluff. Sometimes they may not think they are bluffing, they may genuinely think they have a better hand and be making a value bet. But they may be thinking they are making a value bet only because you checked to them on the Turn. In this example, if your opponent had a hand like QQ, he may fold if you bet again on the Turn since he is worried with two overcards on the board. Once you check on the Turn, now he is willing to bet for value hoping you have a hand like JJ or TT. Notice that if you check on the Turn, he may also come out betting on the River with an A or a K, and you will still lose the same amount if you had bet on the Turn.

Another useful application of this concept is to check on the River if you are the first to act and think your opponent was on a draw that missed. You know that he would not call any bet with a busted draw, but once you check, he may hope that he can win the pot by bluffing. This way you get a bet out of him that you would not have if you had bet your hand in a straightforward way. One way this situation occurs is if there are two cards of the same suit on the Flop and your opponent raises you. On the Turn, he checks when you check, implying he was on a flush draw. On the River, if the flush card does not come, you may decide a check and call (or check-raise) is best to try to induce a bluff from what seems like a busted draw.

Example:

Assume you are 100% sure you have the best hand, say you have top set and there are no possible straights or flushes on the board. You are headsup on the River and you are first to act. You estimate that your opponent has a missed draw and probably will not call if you bet. You estimate his calling percentage to only be 10%. However you know he is a wily player and if you check, there is a chance that he may bet hoping to steal the pot. You estimate the chances of him betting if you check to be 20%. Since you are sure you have the best hand, you will raise if he bets, at which time he will most likely fold.

Expected Value of Betting = 10% x 1 big bet = +0.10 big bets

Expected Value of Checking = 20% x 1 big bet = +0.20 big bets

If your perception of the situation is correct and these probabilities are right, then it is best to check and try to induce a bluff. In practice, instead of plugging in numbers into an equation, you will often have to rely on your "feel" of your opponent and the situation.

Inducing a Bluff: Chapter 20
In the early 90s, I was an options trader for a proprietary trading firm. Often some of the traders would hold home games after work. Here's a story that I thought was funny at the time, and I still chuckle to this day thinking about it.

I had just received my copy of The Theory of Poker by David Sklansky the night before. I had gobbled up the book and read it cover to cover all in one night. The next day, I used one of the lessons I learned from the book and put it into play. I managed to induce a bluff from my opponent, who was a talented young trader named Ian. I knew he would have folded if I had bet as I pegged him on a missed draw. I also thought he would attempt a bluff if I checked as it would look like my hand was weak. The plan worked to perfection, I checked, he bet and I called and won the pot as he showed a missed straight draw. As I was scooping the pot, I looked over at Ian and said "Chapter 20". He looked puzzled and asked me what I meant. I said "Chapter 20, Inducing a Bluff," and pointed to the Theory of Poker which I had on the table next to me. Boy did he look perturbed! He was able to get his revenge on me a couple of days later as he induced a bluff out of me, and he was quick to say "Chapter 20 back to me." This story serves as nice fond memories for those games, along with the story of another friend who nicknamed his couch "King's sofa" because he used the money he won from me one session to buy the couch. I'm not sure how his wife feels about that though.

To Bluff or To Induce a Bluff
Situations will come up when you are not sure if you have the best hand or not. In that case, you are not sure if you are in the position to bluff or to induce a bluff. If you are behind, then you would consider bluffing, but you are not sure you are behind. If you are ahead, then you may consider inducing a bluff, but you are not sure you are ahead. These situations are incredibly complex and your play will probably depend on your opponent. If your opponent is a calling station type of player and is passive, tend to bet when you have a hand instead of inducing a bluff because he will be more likely to call your bet than to bet once you check. But if he raises after you bet, you should seriously consider folding. You should also bluff less against this type of players since they are tougher to bluff out of a pot. If your opponent is tough and sharp, tend to check and

call when you have a hand, as you are less likely to get him to call with a second best hand, but may have a better chance to induce a bluff from a sharp player who understands he may not have any other way to win the pot. This is one of the occasions when the personality of the player will help you decide how to proceed.

Calling a bluff
There are two ways to catch and call a bluff. One way is to look at the physical behavior of the players and see if there is a sign that tells you they may be bluffing. Another way is to deduce from the board and their actions to see if there is a chance your opponent may be bluffing.

A great skill to have in poker is picking up tells. These tells can show a player whether or not to call another player's bet. That is beyond the scope of this book, although there is a book that is perfect for this issue, and it is The Book of Tells, the Body Language of Poker by Mike Caro. In that book, he has a chapter titled "Strong Means Weak," in which he describes how players will sometimes act strong when in fact they are weak. This may be a sign that they have a higher chance of bluffing than normal. For example, they may stare right at you and look confrontational or they may throw their chips out like they are strong. Of course many players will do this when they actually are strong indeed, so it may not work with some players. I find it useful to keep an eye out for these types of actions when it is out of the norm for the player and see how the hand proceeds.

The other way to catch a bluff is to deduce from the board and the opponent's previous actions to see if there is a chance that he may be bluffing. The opponent may be one that likes to raise with draws, in which case seeing a draw on the board that missed may tell you that there is a chance that he was raising on previous rounds with a draw and now betting on the river hoping he wins with a bluff.

This is the first draft of the chapter Semi-Bluffing in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page.

Hold'em Brain: Semi-Bluffing
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Although the term semi-bluff or semi-bluffing is now used universally in the poker world, it was first used by David Sklansky. The idea is that you bet or a raise with the hopes that your opponent will fold, but if they do not, you still have a chance to win the hand with other cards to come. This allows you two ways to win, via a fold by your opponent or getting lucky on a future round. If there is no chance that the opponent will fold, then it is just a bluff, not a semi-bluff.

Semi-Bluff Raising on the Turn
There are times when you should raise even if you do not have the best cards at the moment. You are hoping that your opponent will fold a better hand, but even if he calls, you will still have a chance of improving to beat him.

Example:
You hold AsKs

On the Turn, the board is Js-5c-6d-Qs

Lets assume you know your opponent has Jc-9c, and he is currently ahead of you with a pair, but you have many outs. Any A, K, T or spade gives you the winning hand. There are a total of 44 unknown cards (52 cards in the deck, minus 2 in your hand, minus 2 in your opponents hand, minus 4 on the board), and 18 cards will win the pot for you (3 A's, 3 K's, 4 T's, and 8 remaining spades, note that a ninth Spade has already been counted). This means you will win 18 out of 44 times. Normally we would use 46 unknown cards on the Turn, but in this case we are assuming we know our opponents hand.

To make this demonstration simpler, lets assume that if you do not make your hand on the River, you will simply fold, and that if you do hit your hand on the River, your opponent will call your bet half the time.

On the Turn, the pot contains 5 big bets, and your opponent bets into you, thus making it 6 big bets in the pot.

If you call here, you expect to hit your hand 18 out of 44 times, and make 6.5 big bets when you do win (remember we assumed that if you hit your hand on the River that your opponent will call you half the time but will not pay you off the other half of the time). You also expect to lose 1 big bet 26 out of 44 times. The expected value in this case would be 2.07 big bets to make this call, so it is worthwhile to at least play and stay in the hand to see the River card.

Expected Value of Calling = (18/44 x 6.5 big bets) + (26/44 x -1 big bet) = 2.07 big bets

Instead of calling, you could consider raising. Suppose if you raise, there is a 20% chance that your opponent folds right there on the spot, with the Q on the Turn, that is not altogether unlikely. If he calls you on the Turn, you realize he is definitely going to call again on the River if you do not hit your hand (so you cannot bluff on the River), but he will not call if you do hit your hand since the combination of your raise on the Turn and the scary board will now be too much for him. Now is it better to raise or just call?

Expected Value of Semi-Bluff Raising = (20% x 6 big bets) + (80% x 18/44 x 7 big bets) + (80% x 26/44 x -2 big bets) = 2.55 big bets

The EV of the semi-bluff raising play is greater than the EV of calling with these numbers that we used, which means we should raise instead of just call.

But what if you had estimated his folding percentage incorrectly? What if instead of having a 20% chance that he folds on the Turn, this guy will actually never fold. Well now you have cost yourself money with a raise in this spot, because you are more likely to lose than win and you have put more money in the pot.

Expected Value of Semi-Bluff Raising if your opponent will never fold on the Turn = (0% x 6 big bets) + (100% x 18/44 x 7 big bets) + (100% x 26/44 x -2 big bets) = +1.68 big bets

With that adjustment, it is clear that a semi-bluff raise against this opponent is not a good idea, as it lowers your expectancy from 2.07 from calling down to 1.68. This is the main reason why the semi-bluff can sometimes be a useless concept in the lower limit games. Since the players in the low limit games are much more likely to call than players in the middle or higher limit games, players who use the semi-bluff raise too often in the low limit games will find that they are costing themselves money by making this play.

The math shows the breakeven point of the semi-bluff is for your opponent to fold 9% of the time. At that rate, your expected value of the semi-bluff raise would be 2.07, which was the same as just calling.

EV against a player who folds 9% of the time: (9% x 6) + (91% x 18/44 x 7) + (91% x 26/44 x -2) = 2.07

As you can see by this demonstration, whether a semi-bluff raise is correct or not depends on the frequency that your opponent will fold a made hand. This is a nice example of how combining the mathematical side of the brain with the social side of the brain can result in a correct analysis. If we just used the math side, we are still at a loss as to whether or not a raise is correct since we do not have an accurate assessment of his folding percentages. If we just used the social side, we are at a loss as to whether or not a raise is correct since we do not have an accurate assessment of the value of a possible fold compared to the negative value of a call by the opponent and losing more money when we lose. It is only when we combine both sides of the brain that we can make it all work.

Unless you are very good with math, or an idiot savant like the character that Dustin Hoffman played in Rain Man, you will not be able to do the math in your head. Even if you understand the

concept, it is completely irrational to think anyone can do these calculations in the heat of the battle. But it is still useful to play with the spreadsheet and the math so you can have some idea of certain situations when you are at the table. In this case, you will notice that it takes the opponent's folding rate to be only 9% of the time for a semi-bluff to be a breakeven play when you have a 18 out of 44 chance of winning and an EV of 2.07 big bets when calling. Anything higher than a 9% folding rate makes the semi-bluff a positive expectancy play. Since most players will fold more than 9% of the time in a situation like this, you can keep in mind the strategy of the semi-bluff Turn raise when you have so many outs, and the opponent may only have second pair.

Raising on the Turn for a free showdown
Another way to semi-bluff is when you have a decent hand on the Turn and raise for a "free" showdown. Actually, the showdown is not free at all since you are committing the two bets on the Turn, but in the spirit of the free card raise on the Flop that really saves a half a bet, lets call this a free showdown raise.

Here are the issues to consider regarding a free showdown raise.
1. Your hand has a chance to win a showdown on the River
2. If you are behind, you have some possible outs
3. There is a chance that your opponent will fold
4. The chance that your opponent will re-raise you on the Turn is low

Lets take a look at each issue closely
1. Your hand has a chance to win a showdown on the River
The reason this factor is important is because you do not want to be putting in any extra bets if you are an underdog and your opponent is likely to call. If you had called the Turn and would not have called the River if your opponent had bet on the River, then you should not consider raising here unless the other factors are very extreme towards raising. You want to have a hand that you would have been willing to call a Turn bet and a River bet anyway. Thus if you do lose this hand, you do not lose any more. In the previous section, I described a semi-bluff raise on the Turn, but that example is a bit different in that your hand has almost no chance of winning a showdown if it is unimproved on the River.

2. If you are behind, you have some possible outs
Having a chance that you are ahead is important, but sometimes you are wrong and you are actually behind. In those cases, you want to have as many outs as possible so that if you are behind you still have a chance of catching up and giving your opponent a bad beat. For example, if you have KQ and the board on the Turn is K983, you may have the best hand, but you are not so sure. Your opponent could have KJ or KT and you are raising for value, or your opponent could have AA, AK or K9 and be ahead, in which case you have 3 outs to catch up. With KQ you would have been willing to call the Turn and River anyway, so you do not mind committing those bets on the Turn. If your opponent calls, you may decide to exercise the option of betting the River only if a Q or K comes.

3. There is a chance that your opponent will fold
Whether or not your opponent has a better hand, if he folds to your raise on the Turn, it is normally a good thing. If he is ahead, you win a hand that you were an underdog to win. If he is behind, you

win a hand right there on the Turn and do not give him a chance to give you a bad beat on the River. The only time when it would be bad for your opponent to fold if you raised is if he was drawing dead or drawing relatively thin. For example, maybe he only has two outs, in which case you are hoping he calls. But notice that even in a case like that you would prefer to raise because you would not want to give him a free look at the River if you did not think he was planning on betting or calling the River unless he caught. Typically, the higher the chances of your opponent folding when he has outs, the better a Turn raise will be.

4. The chance that your opponent will re-raise you on the Turn is low
If your opponent re-raises you, then he has completely foiled your strategy if he is ahead. If you still plan to call the River, now you have cost yourself two full bets with the free showdown raise strategy. It would be best to put yourself in the position where you know a re-raise on the Turn is a sign that he has a great hand and is very unlikely to be a bluff. This way you could safely fold a marginal hand. For example, you have AT and on the Turn, the board is AKJT of four different suits, any Q would make a straight. You decide to raise for a free showdown, but your opponent, normally a passive player re-raises. If the pot odds warrant it, you may still want to call this raise and see if the River brings you a full house. If the pot odds are not there, then you can safely fold without fearing you folded to a bluff.

An Expected Value analysis on whether or not to raise on the Turn for a free showdown could be used, but the problem is that there are too many variables to show with one example and often when this play is made, the raiser does not even know if he is ahead or behind.

When the opponent's semi-bluff or free card draw has hit
There are times when you think the other player is bluffing or semi-bluffing and you do not mind letting him bet as you are likely ahead. However, there are situations when you have to rearrange your thoughts based on cards that hit the board. This can happen when a dangerous card comes and if your opponent was betting or raising with a semi-bluff, he would have gotten there. If he was not semi-bluffing to begin with, he may already have been ahead. In either case, you are much more likely to be behind now and should seriously consider giving up on the hand.

Here's an example:
You are in late position with KTs. It is folded to you and you raise. The small blind and the big blind call. There are three players and 3 big bets in the pot.

Flop: JT3 rainbow

Both blinds check to you and you bet. The small blind folds and the big blind check-raises. You know the big blind is a good aggressive player. You also know that the big blind knows that you are a good player that have the ability to lay down a hand like A5. There are a myriad of hands that the big blind could be raising with, they include: any J, any T, JT, Q9, KQ, 98, A3, 33. Many of these hands you can beat, and you do not mind calling his raise and you do. There are now two players and 5 big bets in the pot.

The Turn is a 5

The big blind bets and you call. The 5 should not change anything except the unlikely case that the big blind has T5, 53 or 55, which all seem unlikely compared to the other possible hands. Your call should make it clear that you have a legitimate hand, either made or drawing. There are still two players and 7 big bets in the pot.

The River is a Q

If your opponent was on a straight draw, he has either hit a pair of Queens on the River or caught his straight draw. With straight draws of Q9 and KQ, he now has the top pair. With 98, K9, he has now caught his straight. This Q is a very dangerous card for you. Since the opponent is a good player, you should know that he knows the Q is a dangerous card for him too. If all he had was a J or a T, he would be afraid that the Q filled your straight or made you a higher pair. If your opponent still bets on the River, you have to readjust your previous thoughts that he may have been semi-bluffing and has now likely hit a higher pair than yours or filled a straight, or had you beat to begin with. Even with 8-1 odds, your chances look very dim based on the way this hand has developed. The only hand you can beat now are an unlikely worse Ten still betting into you (you must realize he should be afraid of the Q even more than you if he just had a T) or a stone cold bluff on the River with a hand like A3. You should fold.

Another situation that comes up often, especially in shorthanded games where players will semi-bluff often, is when a Turn or River card comes that is right in the middle of a possible straight draw. For example, with a Flop of J73, a T, 9 or 8 are all very dangerous cards especially if you have a pair of 7s or lower. This is because any straight draw has either made their straight or now has a higher pair than you. You may be comfortable calling down an opponent that you think may be semi-bluffing when you have middle pair, but when one of these danger cards come, it may be time to bail on the hand.

Hold'em Brain: Slowplaying and Check-Raising
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Slowplaying
Slowplaying is the act of playing a hand that is strong in a manner that would indicate that it is not so strong. The slowplay is used with the intent of trapping other players into the hand and trying to get more chips out of them. Although it is a useful concept, it is often misused and abused. Slowplaying is useful if you have a hand that is so strong that you need other players to catch up just so they can call with an improved, but losing hand. It is not a useful strategy if those players that catch up have a decent chance of making stronger hand than your hand. Slowplaying is also not a useful strategy if your opponents were willing to call your bets or raises anyway. Here are some situations to think about.

1. You have Q♦J♦ and 5 players see the Flop for one raise.

Your hand: Q♦J♦

Flop: Q♠J♠J♣

You have a full house. This is a great Flop for your hand. There are all sorts of possible hands that other players may be drawing to with a Flop like this. They could have two spades for a flush draw, they could have a straight draw with AK, AT, KT, K9, T9, T8, they could even have trips with the fourth J. This is a time to ram and jam and try to get more money into the pot as there are many ways that other players will call anyway. If you wait until the Turn to make the raise, other players will naturally be afraid that you have a monster, but being aggressive on the Flop could be read by other players as a strong drawing hand or a Q with an A or K kicker. When one of the draws gets their card on the Turn or River, they may think they have drawn out and even raise you at that point.

2. You have Q♦J♦ and raise in late position. Only the big blind calls.

Your hand: Q♦J♦
Flop: Q♠J♠J♣

You have flopped a monster, a full house. Now you may think about slowplaying and hope he catches up. If the player is aware though, you may have to put in a bet on the Flop and hope that he calls. Most players will expect you to bet on the Flop with anything, so if you do not bet, they may get a strange feeling wondering why you did not bet, and think you are slowplaying a monster hand. Against players who are less aware, a check may get some bets from them on the Turn or River if they pair up one of their hole cards.

3. You have A♣A♥.

Flop: A♠2♣3♦

If you had raised before the Flop, it is usually difficult not to bet on the Flop. It is usually best to bet with the hopes that another player has the case A or is drawing to a straight with a 4 or 5. In order to make a successful slowplay here, you would need a player to catch a pair with a hand like KJ on the Turn. But players who are aware will usually be very careful with an A on the board.

4. You have 55 in a three way pot.

Your hand: 55
Flop #1: A-5-5

This is a monster hand that has almost no chance of losing. Many players will play with an A in their hand, so even if there are only two other players in the pot, they may be willing to call or even raise. Slowplaying here will probably just reduce the amount of your win. If you bet and everyone folds, it is likely that they had no piece of the Flop and would not have put in much after that anyway. If the Flop had a J instead of an A, then the situation is different.

Your hand: 55
Flop #2: J-5-5

This is a situation where a slowplay may be useful. A player with A7 may not call a bet when there is a J on the board since he may figure you for a J and think he only has 3 outs. But if he senses weakness when you check to him, it may get him to play on. All players are more likely to play a hand containing an A than a hand containing a J. So it is less likely any given player has a pair of J's when the Flop is J-5-5 than has a pair of A's when the Flop is A-5-5.

5. You are in the big blind with J♠T♠ and call a late position player's open-raise.

Your hand: J♠T♠
Flop: 9♣8♦7♠

You have the nut straight. In this case you need to determine the looseness of the pre-Flop raiser. If you think he is willing to call all the way to the River with a hand like AK, you may want to check-raise on the Flop and take the lead. If he is willing to play hard with a hand like AT, then you do not mind betting and raising at every opportunity. If there is a greater probability that he will give you more credit and fold to your aggressive play on the Flop and Turn, then it may be best to just check and call his bets, until an A or K show up, then a check-raise may get more money into the pot if he indeed has a pair. The correct usage of slowplaying will depend on how you think your opponent will play.

6. You have AK in early position and raise pre-Flop. A couple of decent players call behind you.

Flop: A-8-4

You bet out and get called by one player.

Turn: 4

Now you may want to put the slowplay into gear. Since your opponent did not re-raise before the Flop, it is likely that he did not have a big pocket pair and instead has a hand like AQ, AJ, AT. If you check, it should give him the idea that you have a big pocket pair and are afraid of the A. You can now check with the intention of check-raising on the Turn, or wait until the River to pull off your check-raise. This slowplay will work best against decent players who respect your play yet are willing to get all the edge they can get. You do not want to try this slowplay against opponents who are loose enough that they could have called your pre-Flop raise with a hand like 98, because then they will likely not bet after you have checked. You also would not want to try this slowplay against opponents who are very timid and may be afraid to bet a weaker pair of A's even after you check to him.

Check-Raising
A check-raise is a form of slowplay. A check-raiser cannot be the last player to act, because he needs to rely on an opponent betting after he checks so he can raise. The check-raiser usually thinks he has the best hand at the moment, but sometimes he is check-raising to make it expensive for other players to stay in the hand.

A check-raise is a strategy that is often frowned upon in social home games. Oftentimes they are not even allowed, or if they are allowed, your friends or family may get perturbed when you make the play against them. It feels deceitful and cunning. If there are no exogenous negative impacts on your personal relationships with the other players when you check-raise, then you will need to have it in your Hold'em weaponry.

There are three ways to use a check-raise successfully. The first way is where you think you have the best hand and would like to get more money in the pot. The second way is where you think you can semi-bluff or bluff successfully with a check-raise. The third way is where you think you can increase your expectancy by check-raising and forcing others to fold even if you do not have the best had at the time. They all rely on the fact that you are comfortable that someone behind you is willing to bet, because without a bet by another player after you, there cannot be a check-raise.

The most common scenario for a check-raise is when you think you have the best hand and would like to get more money in the pot. Often this occurs when you are in the big blind and call a late position open-raiser. The reason this play should work better against a late position open-raiser than an early position open-raiser is that the late position open-raiser is likely to have a worse hand than an early position open-raiser. Any pre-Flop raiser is likely to bet on the Flop when it is check to him, especially when there are not many players left.

For example, you are in the big blind with KJ and call an aggressive player's open-raise from the cutoff seat.

Your hand: KJo
Flop: J-7-3 rainbow

You should go for the check-raise on this Flop for two reasons. First, you probably have the best hand so you want to get more money into the pot. Second, you can count on the cutoff player to bet since most players will bet on the Flop when it is checked to them after they have raised pre-Flop. Most players will bet in this situation regardless of the quality of their hand. A check-raise will either get more money in the pot or could force a hand with outs to fold. Getting a hand with outs to fold on the Flop is key. For example, you would be happy to see a fold from a hand like A5. It would be an effective free card if you did not check-raise because he has already made his wager, and if you just call, you are not charging him any more to see the Turn. If you just call the bet on the Flop, planning to check-raise on the Turn, your opponent may check along with you on the Turn after he sees you call him on the Flop. This would allow him to see both the Turn and River without any additional bets. Check-raising is more successful when the other player is an aggressive player. Aggressive players will raise with weaker hands overall in late position, and they are almost guaranteed to bet if checked to on the Flop especially if the hand is now heads-up.

A semi-bluff check-raise or bluff check-raise can only work against opponents who are willing to fold. It will not work as often against those that will automatically call you down with a hand like AK even without a pair. For example, you have T9 in the big blind and call an aggressive late position raiser from the cutoff.

Your hand: T9o
Flop: J-7-3 rainbow

You have an inside straight draw. You should consider check-raising the original raiser with this semi-bluff because he will be forced to fold a hand like A5 or KT. This is a more interesting problem because if he calls your semi-bluff check-raise, you have to consider what to do on the Turn. Normally a bet on the Turn is best in the hopes that he folds, but if he raises you on the Turn and you do not catch the straight or a pair, you will be put into a tough decision and will likely have to fold. But if your opponent is a calling station, willing to call down thru the river with AK and no pair, then a semi-bluff check-raise will have no bluff value. Also note that if you check-raise with both types of hands (top pair and inside straight draw) when it is heads-up, you have become a bit more unpredictable to your opponent, which is good for you and bad for him.

Another time when a check-raise is useful is in a multi-way pot when your hand may be the best hand but is vulnerable to overcards. In this situation, one bet from you in early position may not be enough to get players with overcards to fold, however two bets may do the trick. For example, you are in the big blind with TT. Two players limp and a very aggressive player on the button raises. You call as do the two limpers. Four of you see the Flop which contains no cards higher than a 9. If you bet, any one of the players could call with correct odds as they are getting 8:1 odds on two overcards (they have pot odds to call, see the section on the DIPO method in the Pot Odds chapter). However, if you can count on the aggressive late position player to bet when it is checked to him, now you have an opportunity to check-raise and make it two bets to the limpers. With only overcards and two bets to them on the Flop, they will now be faced with a negative

expectancy call and will be more likely to fold. This strategy has its pitfalls in that you may be costing yourself even more chips if the button actually has a higher pair or has hit a set.

How often should you check-raise in a heads-up situation when you have the best hand?
Here is a common Hold'em situation. Everyone folds to a late position player who raises and the only player who calls is the big blind. The Flop is a good one for the big blind, and he thinks he has the best hand. The big blind checks with the intention of check-raising. If the big blind is actually ahead at this point, and the late position player bets after the big blind checks, the big blind gains an advantage by check-raising which forces the late position player to put in more chips in order to see the next card. However if the late position player checks after the big blind has checked, now the big blind has given the late position player a free card. We can compare the two different scenarios to see how often the late position player has to bet in order for the big blind's check-raise strategy to have positive value.

Assumptions:
1. Before the Flop, there are 2.25 big bets in the pot.
2. The big blind has an 80% chance of winning the hand and he is ahead on the Flop.
3. There are no more bets in on the Turn or River to make the equations manageable.
4. Your opponent will not raise if you bet nor re-raise if you raise.

Action	Computation	Result
EV of checking if the LP checks as well	(80% x 2.25) + (20% x 0)	+1.80
EV of a successful checkraise	(80% x 3.25) + (20% x -1)	+2.40
EV of betting out and the LP calls	(80% x 2.75) + (20% x -0.5)	+2.10

With these assumptions, if the big blind bets out, he has an EV of +2.10 big bets. If he is able to check-raise, then he increases his EV up to +2.40 for a gain of +0.30 ($12 in a $20-$40 game), but if the late position player checks behind him, then he has decreased his EV to +1.80 for a loss of -0.30. Using these numbers, it can be shown that if the big blind expects the late position player to bet more than half the time after the big blind has checked, then going for the check-raise is the better strategy. For example if we assumed the late position player would bet half the time after the big blind checks, then the EV of checking would be the same as the EV of betting.

Action	Computation	Result
EV of checking if the LP bets 50% of the time	(1.80 x 50%) + (2.40 x 50%)	+2.10

If the late position player is expected to bet 60% of the time, then checking is the better option.

Action	Computation	Result

EV of checking if the LP bets 60% of the time	(1.80 x 40%) + (2.40 x 60%)	+2.16

Conversely, if the late position player is expected to bet less than 50% of the time, then betting instead of checking would be the better play. Here's the expected value equation using 40%.

Action	Computation	Result
EV of checking if the LP bets 40% of the time	(1.80 x 60%) + (2.40 x 40%)	+2.04

If a player has raised in the pre-Flop round and only the big blind calls, the pre-Flop raiser is highly likely to bet when the big blind checks, no matter what the Flop is. This is why it is usually correct strategy to go for the check-raise when you are first to act in a raised heads-up pot and you think you have the better hand. If you believe the pre-Flop raiser is less likely to bet than check, then you should think about betting out.

This type of situation comes up fairly often in Hold'em. Not only does it come up on the Flop as described here, but it comes up on the Turn or the River as well. It is more useful to apply the check-raise when you think you are ahead if you believe your opponent is more likely to bet than check if you check. Knowing how your opponent plays is crucial. If your opponent is passive and a scare card that hits your hand comes on the Turn or River, you may have to bet because you cannot count on him betting after you check. However if your opponent is aggressive, then you can have more confidence that he will bet after you check.

Defending against the check-raise
When a player check-raises you on the Flop, it is usually because they have made a pair. How you play will depend on the opponent. If you are quite sure he will not check-raise with a semi-bluff draw, such as an inside straight draw, then you need to be aware of the number of outs you may have. Let's say you raised in late position with ATo and only the big blind calls.

Your hand: ATo
Flop: Q-9-3 rainbow

Your opponent checks, you bet and he check-raises. You are getting 7.25-1 odds (4.25 small bets before the Flop, and so far 3 more small bets on the Flop). If your opponent has a split pair of 9's (without an A or T kicker), then you will have 6 outs which is enough to continue and call to see the Turn. However if your opponent has A9 or a split pair of Q's, then you will only have 3 outs. If the Flop gave you two overcards to the board rather than one, you can usually expect more outs.

If you have a strong hand (such as AQ) and get check-raised, then you can usually expect the check-raiser to bet again on the Turn. In that case, you should wait until the Turn to raise him. Re-raising on the Flop may lose you an extra small bet, effectively making it the reverse of the free

card raise.

If a player check-raises you on the Turn, and the Turn card is the second card of that suit to hit the board, then there is a chance that the player is making a semi-bluff check-raise. He may now have four cards to a flush and realize he has added 9 more outs to his hand. Semi-bluff check-raises with a newly formed flush draw are easier to see than semi-bluff check-raises with a newly formed straight draw. If you think the check-raiser is capable of semi-bluffing in this spot, and you have a good hand, such as top pair with a good kicker, then you will have to call him. Not only is there a chance that he does not hit his draw if he was semi-bluffing with a draw, but if he has a pair, your top pair may still be good. It becomes more difficult if you have a worse hand, such as middle pair. In this case, you may still want to call if a flush draw appears on the Turn, but when the third flush card comes, you should seriously consider folding on the River. If he was semi-bluffing with a flush draw, he would now have his flush. If he was not semi-bluffing with a flush draw, he probably had a made hand better than yours.

Fancy Play Syndrome
This is a phrase coined by Mike Caro. Fancy Play Syndrome describes the overuse or misuse of plays like semi-bluffs, free card raises, check-raises and slowplays. These plays may seem very advanced and often look cool when they work, however they are not always the best way to increase your expected value on a particular hand. For example if your opponent is a calling station, then the use of a semi-bluff has little value since the bluff factor is not worth much against a calling station who is not going to fold. The use of a free card raise against an over-aggressive opponent may not work if he decides to re-raise you or bet out on the Turn if you did not hit your draw. A check-raise may not work against passive opponents who are less willing to bet, thus not allowing you the chance for the check-raise. Each of these plays has their merits, but they only have their merits within the context of the right opponents and/or the right situations. Players who learn about these types of plays feel empowered by the knowledge and sometimes they feel they must put it into play as often as they can. But that would defeat the purpose of using these plays, which is to increase expected value.

Strategy	Works best against this player	Works worst against this player
Free Card Raise	Passive	Aggressive
Check-Raise	Aggressive	Passive
Semi-Bluffs	Weak / Tight	Calling Station
Slowplays	Aggressive	Calling station

This is the third draft of the chapter on Reading Hands in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page

Hold'em Brain: Reading Hands
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Reading a hand is the act of deducing the two hole cards that your opponents may hold based on the board cards, their previous actions in the hand and their previous actions in previous hands. The skill of reading hands is difficult to learn without experience at the poker table but experience alone will not do the trick. With experience, a player will be exposed to different situations and be more comfortable analyzing them since he has seen it before. But the player must think about each situation and know what is relevant. This chapter will help any player to identify what they need to focus on when trying to read an opponent's hand.

In Hold'em the last card is dealt face up and is a community card, just like the other four cards on the board. Players can know with certainty whether or not there is a flush possibility, a straight possibility or a full house possibility. Without three cards of the same suit on the board, no player can have a flush. Without three different cards within five cards of each other, there can be no straight. Without a pair on the board, there can be no full house or four-of-a-kind possible. This means hands will have a relative value based on the board. Although a royal flush is the best possible poker hand, in Hold'em it is usually not possible for a royal flush to exist since there needs to be at least three cards to the royal flush on the board for any player to have a royal flush. A three-of-a-kind could be the best hand depending on the board. Other times a three-of-a-kind is not a playable hand if there are other possibilities on the board and other players are playing strongly.

Reading Flushes and Flush Draws
By the River, it is easy to see if a flush is possible. If there are three cards of the same suit on the board, then any player would need both of his hole cards to be of the same suit to make a flush. If there are four cards of the same suit on the board, then any player would have a flush with just one card of that suit. If all five cards on the board are of the same suit, then all players have a flush, it is just a matter of how high their flush is depending on whether or not they held a card of the same suit in their hand.

If a player's starting cards are of the same suit, he has three ways of making a flush. The first way is for all three cards on the Flop to be of the same suit as the player's two hole cards. The player would have a flush right on the Flop. The second way is for two cards on the Flop to be of the same suit as the player's two hole cards, but then he needs a third card of the same suit to come on the board on either the Turn or the River. The third way is for only one card on the Flop to be of the same suit as the player's two hole cards, but then he needs both the Turn card and the River card to be of that same suit as well. The second way is the most common way.

If your cards are suited, how often will you flop a flush? How often will you flop a flush draw with two cards of the same suit on the Flop? Here is a table with the percentage of times you will see 3, 2, 1 and 0 cards of the same suit as your two suited hole cards.

Number of cards that will come on the Flop that are the same suit as your hole cards	Computation	Percentage of time it will happen
3	11/50 x 10/49 x 9/48	0.8%
2	11/50 x 10/49 x 39/48 x 3	10.9%
1	11/50 x 39/49 x 38/48 x 3	41.6%
0	39/50 x 38/49 x 37/48	46.6%
Total		100%

* the percentages do not add up to 100% due to rounding error

It is very rare to hit a flush right on the Flop, it happens less than 1% of the time. However this does not mean that if all three cards on the board are of the same suit, that less than 1% of the time someone has a flush. In fact, when all three cards on the Flop are of the same suit, any random hand would have a 3.8% (10/49 x 9/48) chance of having a flush. These numbers may seem contradictory, but they are not. In the first scenario, we start off knowing two of our cards are of the same suit, and we need all three cards on the Flop to be of the same suit. In the second scenario, we start off knowing that the Flop is all of the same suit. Then we need to calculate the chances that the two cards in any one hand are of that same suit. It is the difference in the starting point. In the first situation, we know two cards and we need three more. In the second situation, we know three cards and we only need two more.

If you flop a flush draw with two cards of the same suit as your two hole cards, how often will you make the Flush on the Turn, the River or neither?

When will you make your flush if you have four cards to a flush on the Flop?	Computation	Percentage
Turn	9/47	19.1%
River	38/47 x 9/46	15.8%
Total	9/47 + (38/47 x 9/46)	35.0%
Never	38/47 x 37/46	65.0%

* the percentages on the Turn and River do not add up to the Total percentage due to rounding error

The reason why there is a significantly lower percentage of hitting the flush on the River than the Turn is that there is a chance that you hit the flush on the Turn and hit a sixth card of the same suit on the River. But in that situation, you already have the flush, so getting another flush card on the River is meaningless. If the Turn card does not make your flush, then there is a 19.6% chance that

you will get the flush on the River (9/46). These percentages are interesting, but you will not need them if you use DIPO (see the chapter on Pot Odds) when you are on a draw and you read hands well.

The most common way a player will make a flush occurs when he has two cards of the same suit in his hand and two cards of that suit comes on the Flop. Then the player can get his flush on either the Turn or the River by hitting a fifth card of his suit. Many players like to play suited cards for this reason. Having suited cards is useful because it adds another way of winning a hand, but it is often overrated by many players who are willing to play any suited cards, no matter the rank or the ability to make a straight with the two cards.

If a player makes a raise in late position when there are two cards to a flush on board, it could signify he is on a flush draw and is raising to try to get a free card on the Turn. If an opponent makes this play when you are in early position, you may want to think about betting on the Turn if you think your made hand is good at the moment. The free card raise is a useful strategy, as is the counter strategy of betting into the raiser if a flush card does not come. This is discussed in greater detail in the Free Cards chapter. If there are two or more players in the hand, a raise by a nut flush draw has value even on that round by itself. In the chart above, it shows there is a total of 34.9% chance that a player will catch a flush if he has four to a flush on the Flop. If there are two or more players in, then the player on the nut flush draw is getting 2:1 odds (equivalent to 33%) when he bets and raises. It is important to note the nut flush draw aspect since other players maybe on flush draws themselves. It would be a travesty to catch a flush draw only to be beaten by a higher flush.

Another way for player to make a flush is when he starts with two suited cards, flops one card of the same suit as his hole cards, and then catch a runner-runner flush. A runner-runner flush means catching a card of the same suit on both the Turn and the River. Typically catching a flush this way comes almost by accident. The player would not be correct to draw to the runner-runner flush unless he had something else going for him, such as a split pair on the Flop. It would not be until the Turn that a player who catches a flush should use it as a primary reason to stay in the hand.

If you flop a runner-runner flush draw, how often will you have a four flush on the Turn and how often will you actually make it on the River?

Runner-runner flush draw possibilities, assuming the two hole cards are of the same suit	Computation	Percentage
Pick up a flush draw on the Turn (the Turn makes two cards of the same suit on the board along with your two hole cards are of that same suit)	10/47	21.3%
No flush draw on the Turn	37/47	78.7%
Catch the flush on the River (both the Turn and the River are of the same suit, thus giving three cards of the same suit on the board, along with your two hole cards that are of the same suit)	10/47 x 9/46	4.2%
Pick up a flush draw on the Turn but do not catch the flush		

on the River (the Turn makes two cards of the same suit on the board along with your two hole cards of the same suit, but the River does not make the flush)	10/47 x 37/46	17.1%

In the case where there are four cards of the same suit on the board, it becomes much easier for any player to have a flush. In fact, any player with the A of that suit when there are three cards of the same suit on the Flop or Turn, will likely have enough pot odds to see the hand to the River to see if he makes the nut flush. The player(s) with the K or the Q of that suit needs to be aware that they are not drawing to the nut flush.

By the River, if there are not three cards of the same suit on the board and if you think your opponent was on a flush draw, you will not need to worry about a flush. This may allow you to bluff if your opponent indeed had a flush draw while you do not have much of a hand yourself.

Reading Straights and Straight Draws
Straights are a lot tougher to read than flushes and it can be more difficult to determine if someone has received the card he needs to make his straight. After the River card is on the board, it is simple to determine when a flush is possible. If there are three or more cards of the same suit on the board, then there is always the chance that someone may have a flush. With straights, it is a lot more difficult because it is not nearly as obvious when someone has filled up on their straight draw as opposed to when someone has filled up on their flush draw. A large percentage of boards will have straight possibilities, especially those that do not contain a pair. As with flush draws, it is important to determine the possibility of a player going for a straight by seeing the sequence of the board. Since straights are tougher to read than flushes, this is a little bit more tricky with reading straight draws.

Board #1
Flop : K-J-5 rainbow Turn : 9 River : 7

With Board #1, there are three different two-card combinations that could make a straight. They are: QT, T8, 86.

This does not mean that these two card holdings are equally likely to be held by any player. Of course, all those two card holdings are just as likely to be initially dealt to any player, but since most players will not view those three combinations as equal in value, it means they will more likely play one hand than another. The hand players will play most out of those three hands is QT, since it is a hand that consists of two relatively high cards, many players are willing to play this hand, especially if it is suited. Some players are more selective and will only play it only in certain situations, other players are not very selective and will play QT in any position. Those same players who are not very selective may also play T8 and 86 as well, but not as often as they will

with QT. Even terrible players would understand that high cards are better than lower cards.

It is also important to note the texture and sequence of the board. Even if someone did play T8 and 86 and saw the Flop, it would be the rare player and/or the rare situation that allowed him to continue with the hand and see the Turn. On the Turn he would pick up either an open-ended straight draw (with T8) or an inside straight draw (with 86), and would have more reason to continue to the River. With a Flop like K-J-5, anyone holding QT would likely play the hand out to see the River, but those holding T8 and 86 would have to find a special reason to stay in the hand, and thus would not be in the hand to see their straight completed on the River.

If we change the sequence of the board cards, we can see how those three hands would be played differently.

Board #2
Flop : K-9-7 rainbow Turn : J River: 5

With a flop of K-9-7, both T8 and 86 would have an open-ended straight draw. Players holding these hands will continue with the hand until the River, and probably rightfully so since they will have eight outs to make their straight. If flush cards or the board pairs up and there is strength in betting, it may change the odds a bit, but that would not concern most players. QT would also likely stay in on the Flop as well since QT holds an inside straight draw. A hand like QT can be bullied out of the hand more easily than T8 and 86 since the holder of QT quickly recognizes they only have the four J's to make the straight, whereas the holders of T8 and 86 each have a total of eight cards that can make their straight, twice as many chances as QT. So if there are two bets to the holder of QT, the pot odds may dictate a fold to be in order, even though there is a chance to hit the nut hand. Not everyone will fold this hand of course, but the better players will fold it if the bet size relative to the expected pot size does not hold value.

The key idea to note between the two boards is the sequence of the arrival of the cards. When the board develops in the fashion of Board #2, there are a greater variety of straights that someone could turn over on the showdown than in Board #1, even though the board cards are identical after the river. With Board #2, even with three K's, you cannot be too comfortable given the development of the board. After the Turn or River, you may have to back off and just call if the other player(s) gets aggressive.

Here is another board sequence. The five cards on the board are the same as in Boards #1 & #2, but the sequence is changed again.

Board #3
Flop : J-7-5 rainbow Turn : K

Now it would be much more surprising to see someone turn over QT on the showdown. On this Flop, there is not nearly as many reasons for a holder of QT to stay in the hand compared to the previous two Flops. It is still possible of course, depending on the player, the betting on the Flop, and how the other players play. Once the holder of QT does get to see the Turn, he will usually see it to the River since he now has eight outs to make the nut straight. As in most cases, there are exceptions. If there is already a flush possibility out on the Turn, there is lots of betting on the Turn and the holder of QT understands that even if he fills up his straight he may lose to a flush, then maybe the holder of QT will fold. With Board #3, if you hold a set of K's against a solid player who was not playing out of the blinds, then you can be sure you have him beat.

One needs to be aware of the texture of the Flop, to see what possible straight cards could fill up someone's straight draw. This does not mean that when one of these cards hits, that you should slow down and hit the brakes. Flops with two relatively high cards could easily have someone chasing the straight draw, because players will play high cards more often, from all positions. Sometimes the texture of the hand and the sequence of the board will tell you whether you need to be concerned about a possible straight, and when you don't need to be concerned at all. Here are two examples, one showing you need not fear a straight, the other showing that you need to be aware of the possibility of a straight.

Example 1: No need to fear a straight
You hold KK in middle position and raise. A solid player in the cutoff seat re-raises you, making it three bets. The big blind, an average player, calls the two bets. You decide to simply call and see the Flop.

Flop: K-5-7 rainbow

The big blind checks, as do you. The solid player bets, the big blind folds and you decide to check-raise. The solid player calls

Turn: 9

You bet out and the solid player calls.

River: J

There are no flush possibilities. You bet out again, and now the solid player raises. What should you do? Given the sequence of betting, it should be obvious that you have the best hand. The only hand that can beat your top set of three K's is a straight. A player with 86 would have flopped a straight draw and T8 and QT would have turned a straight draw. However, knowing the solid player as you do, you realize it would be very unusual for him to three bet you pre-Flop with 86, so you can safely rule that hand out. It would also have been unlikely for him to three bet pre-Flop with either T8 or QT as well, but even more unlikely would be the pre-Flop raises combined with calling your check-raise on the flop when the chances of a straight are low, and his cards are not overcards to the board. So it is safe to rule out his hand as T8 or QT.

It should be obvious then that the most likely hand that he has is JJ, with an outside chance of 99 or AA. With JJ, he is worried that you have a K in your hand to make a pair of K's (there is a K on the board). With 99, maybe he was just waiting to spring the surprise on you on the river rather than on the turn. Since you have top set, you should be very comfortable knowing you have the best hand and re-raise the solid player. There is no need to worry about a straight beating your set in this example.

Now lets take a look at the same type of hand, but with a different sequence of cards.

Example 2: Possibly up against a straight
You hold KK in middle position and raise. A solid player in the cutoff seat re-raises you, making it three bets. An average player in the big blind calls the two bets. You decide to simply call and see the Flop.

Flop: K-J-5 rainbow

The big blind checks, as do you. The solid player bets, the big blind calls and you decide to check-raise. Both players call your raise. (The difference between Example 1 and Example 2 up to this point is that the big blind has called the Flop bet and raise.)

Turn: 7

The big blind checks, you bet and both the solid player and the big blind calls your bet.

River: 9

There are no flush possibilities. The average player in the big blind checks, you bet out again. The solid player folds, but now the big blind check-raises. What should you think and do?

Given the sequence of betting, you need to consider the possibility that the big blind has hit a straight with QT in his hand. It is safe to rule out T8 and 86. Even if the big blind found the courage to call two bets pre-Flop with either of those hands, it would be very unlikely for him to continue with the hand on the Flop when he does not have anything resembling a decent hand. It is possible that he has a hand that your trip K's can beat. He could have a set of 5's and waited until the very end to raise, hoping you had AK. He could have two pair such as K9, hitting his two pair on the River and thinking that he can beat you now. All of those hands you can beat, the only hand you cannot beat is QT, which is the nut hand. The option to re-raise at this point depends on exactly how comfortable you feel about how the big blind played his hand and on your opinion about his actions. It also depends on a pre-planned attack on what to do if he raises you again. It may actually be a very good re-raise since the big blind could easily have gone for a check raise with a lower set or hitting two pair on the river, but it is also important to keep the straight possibility in mind.

The difference between these two hands is the sequence of cards that hits the board. In the first sequence, the big blind would not even have been in the hand past the flop with a hand like QT.

In the second sequence, it is obvious that he should be playing it until the river once he sees the Flop. In the hand in Example 1, you can be very confident of having the better hand. In the hand in Example 2, you are less sure.

Dangerous Flops for Straight Draws
Not all straight draws are built alike. Most players are more willing to play cards that are connected without any gaps, such as QJ, JT, T9, more so than they would be willing to play cards with one gap, such as QT, J9. Here are some Flops that are dangerous because with these Flops, there would be a higher chance of a player holding a straight draw. Keep in mind that not only could players flop straight draws with these Flops, they could also flop two pair since the Flop contains two relatively high cards that are connected with no gaps, the type that does best for straight draw possibilities.

Flop	Two card combinations that allow for straight draws
K-Q-x	AJ, AT, JT, J9, T9 (total of 5 possible hands)
Q-J-x	AK, AT, KT, K9, T9, T8, 98 (total of 7 possible hands)
J-T-x	AK, AQ, KQ, K9, Q9, 98, 97, 87 (total of 8 possible hands)
T-9-x	KQ, KJ, QJ, Q8, J8, 87, 86, 76 (total of 8 possible hands)

In comparing a Flop like J-T-x versus a Flop like T-9-x, you can see that both Flops have the same number of two card hands that may have straight possibilities. However, it is important to note the hands that correspond to J-T-x are hands that more players would play than the hands that correspond to T-9-x. This is simply because the hands that correspond to J-T-x have higher cards than the hands that correspond to T-9-x.

Playing a Pair of Aces versus a possible straight draw
Consider these two flops/possible starting hand combinations

Flop	Starting hands that have a straight draw with this Flop
A-6-5	98, 97, 87, 74, 43, 42, 32
A-9-8	QJ, QT, JT, T7, 76, 75, 65

Which Flop will allow more players to continue with a straight draw? If we assume every player always sees every flop, then of course it would be equal. Both Flops have the same amount of possible two card combinations that would make a straight draw. However, the hands that would have a straight draw when the Flop is A-9-8 are hands that will be played more often by all players. For example, JT will be played more often than 87, and 76 will be more playable than 43. If you have a hand such as AK, you would need to be more aware of the straight potentials on a flop of A-9-8 compared to a flop of A-6-5. It would be important to determine the position of the players

that are left in the hand after the Flop. If the opponent(s) is in late position and had called your middle position raise, he would have a much better chance of having a straight draw with a Flop of A-9-8 than A-6-5 (possibly with a hand like JT or QJ). While the blinds may still have a higher chance of having a straight draw with a Flop of A-9-8 than A-6-5, the blinds would be more likely to have a straight draw than a late position caller of a raise when the Flop is A-6-5.

Double Inside Straight Draws
There are a few types of hand/flop combinations that are a bit confusing to the novice player. These hands allow for two different ranks of cards filling up a straight draw. However, they are not open-ended straight draws, as that term is typically reserved for straight draws where you already have four consecutive cards and need one higher or one lower to complete the straight. An example would be having JT in your hand with 9-8-x on the board. Double inside straight draws also have two possible cards that could fill up the straight, but they are a little bit more difficult for the novice to identify. In order to have a double inside straight draw, three cards on the board will have to work for you in that regards. Here is an example:

Your hand: J9o

Flop: K-T-7 rainbow

Both a Q or an 8 on the Turn or River would give you the straight. The most common thought upon reading this Flop when it comes to possible straight draws is someone holding QJ (an open-ended straight draw) or AQ / AJ (inside straight draws). The double inside straight draw is more deceptive. Double inside straight draws are sometimes confusing even to the holder of the hand. Take a look at all the possible double inside straight draw hand/Flop combinations to familiarize yourself with these types of hands so you don't surprise yourself at the table. A list is shown in the next section.

Double Inside Straight Draw Hand/Flop Combinations
I do not recommend memorizing these hand/flop combinations. That is not the reason why they are listed. There are just too many situations in Limit Hold'em, and to memorize everything would defeat the purpose. What is important is that you get in the habit of recognizing these types of hands and Flops so that when you do encounter them in a game, you do not have to start from scratch. Preparation is a huge key to winning Hold'em, and this is one of the situations that calls for it.

Both inside straight cards make you the nut straight

Hand	Flop	Card that fills the straight
QJ	A-T-8	K (nut) / 9 (nut)
QT	A-J-8	K (nut) / 9 (nut)

One gap hands.
When you have two hole cards with one gap in between them, only the low inside straight card

makes you the nut straight. The higher card gives you a straight but gives another possible hand the nut straight.

Hand	Flop	Higher inside straight: Card that fills the non-nut straight (with the hand that would have the nut straight)	Lower inside straight: Card that fills the nut straight
J9	K-T-7	Q (AJ is nut hand)	8
T8	Q-9-6	J (KT)	7
97	J-8-5	T (Q9)	6
86	T-7-4	9 (J8)	5
75	9-6-3	8 (T7)	4
64	8-5-2	7 (96)	3
53	7-4-A	6 (85)	2

Connector Hands
Hands that can flop a double inside straight draw with two different flops

Hand	Flop 1	Cards that make the nut straight with Flop 1	Flop 2	Cards that make the straight with Flop 2
JT	K-9-7	Q, 8	A-Q-8	K, 9 - both makes the nuts
T9	Q-8-6	J, 7	K-J-7	Q (AT is nut), 8 (nut)
98	J-7-5	T, 6	Q-T-6	J (AK is nut), 7 (nut)
87	T-6-4	9, 5	J-9-5	T (KQ is nut, Q8 is also higher), 6 (nut)
76	9-5-3	8, 4	T-8-4	9 (QJ is nut, J7 is also higher), 5 (nut)
65	8-4-2	7, 3	9-7-3	8 (JT is nut, T6 is also higher), 4 (nut)
54	7-3-A	6, 2	8-6-2	7 (T9 is nut, 95 is also higher), 3 (nut)

These double inside straight draws are even more confusing for other players to read your hand. With a hand like J9 and a Flop of K-T-7, it allows you to raise and bet aggressively since you have 8 different outs, similar to holding an open-ended straight draw such as 98 and QJ. This means raising on the flop for a free card on the turn is a strategy to consider. This strategy can be useful against players who understand what it means to raise for a free card. These opponents may be looking hard for the A or 9 (since it would fill an open-ended straight draw for anyone that held QJ) if they thought your raise on the flop signified an attempt at getting a free card on the turn. If a Q or 8 hits on the Turn, they are much less aware that the card could make you a straight. The

reason is that it is much easier for him to identify the straight draw by putting you on QJ (or even on 98), since that gives a more visible KQJT (T987) straight draw. Understanding that a J9 gives one a double inside straight draw with as much chance of catching the straight as having QJ is tough for the mind to see by just looking at the Flop. It is possible that a Q would be a danger sign for them, since AJ is a hand that is typically playable, but that would mean your free card raise on the flop was for a gutshot and an overcard (the A), which is a rarer move since there are probably only seven outs (3 A's are overcards to the board and 4 Q's for the straight), and possibly fewer if the opponent has a hand like AK, AT. The Q is a little deceptive as far as the straight is concerned, but the 8 is even more deceptive, as it is very difficult to identify that as a card that fills up a straight.

The deceptive nature of these types of hands begs for the holder of these hands to use them to their advantage. These situations allow one to bluff if an A or 9 hits the board against the better players that may think you were raising on the flop to get a free card for your straight draw on the turn. In fact that very well may have been your strategy, but you were looking for other cards to fill you up. The A and the 9 simply allows you to put more pressure against your opponents. Note that the A and 9 would not be a useful card to bluff against a player that is a calling station, who will call you down anyway and won't even think about folding. Unlike the better players, the calling station would not be concerned that you may have caught your straight draw. He is concerned about his hand only. This should show the importance of understanding how to read the board, as well as the importance of knowing your opponents well enough that you understand how well they can read the board.

Also note that if there are two cards of the same suit on the Flop, then other players may put you on a flush draw rather than a straight draw. This is because your raise on the Flop will look like a raise for a free card. This can work for you in a couple of ways, as it does when you have an open ended straight draw and raised for a free card. Many opponents have an easier time of putting you on a flush draw when you are in the position of possibly raising for a free card. This means the better opponents may be inclined to fold if they do see a third flush card hit the board, since they may have put you on the flush draw due to your free card raise. It also may allow your opponents to pay you off when you do hit the straight while no third flush card hits the board. They may think you have missed your flush, and call your bet, without knowing that you actually did catch the card you were looking for. Not only is this thought process important to understand when you have an open ended straight draw, it applies the same way when you have a double inside straight draw.

With a double inside straight draw with two cards of the same suit on the flop, keep in mind that you have 8 cards that actually help you (to actually make your straight), another 8 cards that are straight scare cards, and another 7 cards that are scare flush cards (there are 11 flush cards, but 4 of them have already been counted as the possible straight cards). In a hand like that, of the 47 unknown cards, 23 of them will either make your hand or put a little fear into your opponent. That is almost half of the cards that are possible, and you have both the turn and river to try to hit it. It is a situation like this which makes it important to have an understanding of how your opponent thinks. The weaker opponents may be scared off by the scare cards and the way you have bet, but for the ones who are willing to call you down to the showdown or who are simply less perceptive, the scare cards will not affect them.

Reading a danger card on the Turn
You are in the big blind with AT. A decent player raises in the cutoff seat and you call.

Flop: T-9-3 rainbow

You decide to check-raise. You get re-raised and you call. You think there is a chance the opponent is on a draw, with a hand like QJ or KQ. He could also have a higher pocket pair with AA, KK, QQ or JJ. He could have a pair of T like you, but with a weaker kicker such as QT or JT. He could have a set of T's or 9's or two pair with T9. Other hands that he could have that would be a nice draw for him are J8 and 87, both open ended straight draws. In a case like this, you could be ahead or you could be behind, it would be correct to keep playing with your top pair, top kicker.

In a case like this, it is useful to know what the most dangerous card can be on the Turn. In this case, the Q or J is the most dangerous card. Even if you were actually ahead on the Flop, a Q or J can easily put you in the position where you need to get lucky on the River to win the hand. If your opponent raised for a free card, he will have either hit the straight or hit a higher pair than your pair of T's. Even if he did not hit two pair or a straight, he could have picked up a straight draw, thus adding 8 outs to his hand. If the Q or J did not help your opponent, it is likely that he was either ahead already or completely bluffing on the Flop.

Reading a danger card on the River
You are on the button with AJ. You decide to re-raise the cutoff's open-raise. The two of you see the Flop heads-up for 2.75 big bets as both blinds folded.

Flop: A-9-6 rainbow

He checks, you bet and he calls.

Turn: 8

He checks, you bet and he calls.

River: 7

He checks, what should you do? The decision to bet or check depends on what you think he will do with a big pocket pair such as KK, QQ, JJ. If he will not call with those hands, then you should consider checking. If he will call, then you can bet with more confidence. Since he raised pre-Flop and had no problems calling you down, there is a good chance he has an A. With a board like this, most hands with an A can beat you. Those with higher kickers are AK, AQ. Those that can make a straight with this board are AT and A5. Those that can make two pair with this board are A9, A8, A7 and A6. The only hands with an A that you can beat are A4, A3 & A2, against AJ, you would split the pot. So AJ in this case would be a vulnerable hand against a player with an A.

Reading a player based on his thoughts instead of your own
Different poker players will play the same hands in different ways. A tight player may fold AQo

to an early position raiser if it came from a good player. An aggressive player may re-raise with the same hand, while an average player may just call. This is a situation where three different players would take a different action with the same exact hand in the same exact situation. Since players will act differently, it is important to try to think what your opponents are thinking when you try to read their hand and evaluate their holdings rather than put yourself in their shoes. You may play the hand completely differently than they do if you were in their place, in which case if you put yourself in their shoes, you may completely misread the situation since they may not have played the hand the same way you would have.

In his book Psychology of Poker, Alan Schoonmaker calls this Subjective Rationality and Egoistic Fallacy (page 48-50). Subjective Rationality is the idea that even if we think the other player is making an irrational play, the play is rational to them. When we impose our set of rational thinking on other players, it looks like they are crazy, but when we try to think like them, we see the rationality behind their play. Egoistic Fallacy is a way to describe players trying to read their opponents' hands based on how they would play the hand themselves. For example they may raise only with the best hands, so when they see another player raise, they assume the other player would raise only with the best hands as well. Players will project their own poker styles on their opponents when they are thinking about what their opponents are doing. Instead, players should be thinking about what their opponents are thinking instead of what they would do themselves in the same situation. Schoonmaker says these two concepts are closely related, and I think it is an interesting way to think about reading hands, in the sense that we want to try to think about what the other player is thinking and why he is doing what he is doing. We want to get into their heads and see why a certain play is rational to him. When we can do that, we will have a much easier time reading and evaluating his probable hands instead of projecting ourselves and our own rationale and principles on them.

Reading skills in Low Limit games
There are some players who play very poorly and are unreadable. This means that it is impossible to figure out what they have since they are likely playing with any two cards and calling bets on the Flop in the hopes they get a miracle card on the Turn. The low limit games have a higher percentage of these type of players than the middle limit or high limit games, although they may exist in any game. The advantages of having these types of players in your game far outweigh the disadvantages of the difficult time that you may have in reading their hand. What is important is that you do not read them incorrectly. It is difficult to read the hand of a player who sees every Flop, since he could have any two cards in his hand. Of course his actions such as betting or raising may help you narrow down his holdings somewhat, his expected holdings are still going to be a wider variety than other players who are not playing every hand.

Counter-Intuition
Most people start to play games like Draw Poker before they play Hold'em. In those games, each player's hand is distinct from other players' hands, so every player would always want the higher ranking hand over a lower one. But in games where there are community cards, that is not always the case. Here are some situations where players would rather have a lower ranking hand over a higher ranking hand since the lower ranking hand it is more likely to be the winning hand.

When would you rather have a Straight than a Flush?

A flush is a higher ranking hand than a straight, but it is not always preferable to have a flush than a straight. This occurs when you already have a nut straight, but also have a draw to a non-nut flush. You would rather have the lower ranking hand that is a nut hand rather than a higher ranking hand that is not the nut hand. This can also occur when you have both a straight draw and a flush draw, where the straight draw is a draw to the nuts, while the flush draw is not.

Examples:
1. You hold 9♣8♣, the Board is T♣-7♦-2♣-6♠. Currently you have the nut straight. If a club hits the river, the ranking of your hand improves from a straight to a flush, but then you no longer have the nut hand as you could lose to a higher flush.

2. You hold 9♣8♣, the Board is T♣-7♦-2♣-2♠. You have both a straight draw and a flush draw. You would prefer to hit a J or a 6 for the nut straight rather than a club for a non-nut flush. Either hand could lose to a full house, but at least with a straight, it would be the highest possible non-full house hand.

When is Trips better than a Full House?
There are certain situations where you may be happier to have three-of-a-kind than a full house. The reason is because sometimes your opponents actually have more outs when you have a full house than when you have trips. It does not matter how badly you beat him by, just as long as your cards really are better, be it by an inch or by a mile.

Example:
Your opponent has AK. The board is T-T-9-K

Which hand would you rather have?
(a) 99
(b) T8

With hand (a), you have a full house. 999TT is your hand. With hand (b), you only have three-of-a-kind, TTTK9 is your hand, and you are only using one of your cards, as the 8 does not play. In both cases you are ahead of your opponent. What is important here is not the fact that a full house is a higher ranking hand than a three-of-a-kind, what is important here is what the chances are that your opponent can come back and beat you on the River.

With hand (a), your opponent can catch a K or a T to beat you. If he catches a T, he has a full house of TTTKK, while your full house of TTT99 is second best. It is a strange hand because you actually have two full houses, TTT99 and TT999, but alas, that does not help. There are two K's left in the deck and two T's left in the deck. So your opponents has four outs.

With hand (b), your opponent can catch a K to beat you, but not a T. A T would give you four-of-a-kind which would allow you to beat his full house. If he catches a K, then you will both make a full house on the River, but his full house will be higher. There are two K's left in the deck, so he only has two outs.

Any player would rather have only two cards left in the deck to beat him than four cards. So in this

case, you would actually prefer hand (b), three-of-a-kind over hand (a), a full house, because you have a greater chance of winning after the River card comes. These two hands shows that not everything is cut and dry. You must be able to think in terms of outs and your chances of winning the hand, as opposed to the actual ranking of your hand.

When is QJ better than AK?
AK is a better starting hand than QJ, that is obvious to everyone including the worst players. But there are some situations after the Flop with no pair when these cards are equal in value and QJ may even be a better hand.

For example, you raise in mid to late position. Only the big blind calls, the big blind is an average player who will do his fair share of blind defending, but not with trash hands.

Flop: 7-5-2

You bet and you get check-raised. It is possible he could have a pair with a 7 or a 5 in his hand, or he could be check-raising with a straight draw such as 86 or 98 if he has a little bit of imagination. In any of those cases, having QJ is just as good as having AK. But when he has a hand such as A7 or A5, the QJ will have a higher chance of winning since it still has 6 outs while the AK only has 3 outs since hitting a pair of A's would make two pair for the opponent. Players are more likely to defend their blind with a hand like A7 or A5 than they would with a hand like Q7, Q5. Since the K is higher than the Q and J, if the players is a bit looser, he will be more likely to defend with K7, K5 than he would with Q7, Q5, J7, J5. So in a case like this, it is important to be aware that the AK may be a weaker hand to have than QJ given the Flop and the circumstances.

6/6/04 This is the third draft of the chapter on Starting Hands in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page.

Hold'em Brain: Starting Hands
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The first step to winning Limit Hold'em is to choose good starting hands to play. The quality of a starting hand is not static. Some hands may be good or bad in different situations. It depends on the other players' actions and your position. This chapter will explain what to look for when deciding what to do with your starting hand.

1326 different combination of hands, but only 169 different quality of hands
There are 1326 different starting hands. This counts K♣T♥ and K♠T♦ as two separate hands. If we did care about the order that we received the two cards in, then there are 2652 different combinations of two card starting hands (52 x 51). For the first card, we can get any of 52 different cards. For the second card, we can get any of the remaining 51 cards. This method would count 8♣7♣ as a different hand than 7♣8♣. However, in Hold'em we do not care about the order that the cards are dealt to us. Since every combination is represented exactly twice, this means we can divide 2652 by 2 to get the number of different combination of hands, and that equals 1326.

These 1326 different starting hands can be separated into three main categories. Pairs (9♠9♥), suited hands (A♦5♦) and unsuited hands (A♣5♠).

Pairs
There are 13 different pairs, ranging from AA down to 22. There are six different possible combinations for each pair. The six different combinations for AA are:

A♥A♦	A♦A♣
A♥A♣	A♦A♠
A♥A♠	A♣A♠

Since there are 6 different combinations for each pair, and there are 13 different pairs, that means 78 out of the 1326 different hands are pairs or 5.9% of all hands.

Suited Hands
There are 78 different suited hands. Some examples are A♥K♥, A♥5♥ and Q♥J♥. How did I get 78 different hands? One way is to look at the number of suited combinations with each card. If we take the A♥ first, there can be 12 different suited hands with the A♥, ranging from A♥K♥ down to A♥2♥ (there are 13 cards of each suit, but since AA can not be a suited hand, there are only 12 suited hands with the A♥). With the K♥, there are also 12 different combinations, but one of them is already counted for with the A♥. This means there are only 11 additional different

suited cards with the K♥. Subsequently, the Q♥ has 10 different new combinations, and so on until we get to the 3♥, which only has one new combination, 3♥2♥. Adding them up (12 +11+10+9+8+7+6+5+4+3+2+1), the total number is 78 different hands with each suit. There are four different suits, so that means there are 312 different suited hands (78 x 4). This reflects 23.5% of all hands.

Unsuited Hands
There are 78 different hands of each combination of unsuited hands. But instead of 4 different suits, there are 12 different suit combinations. For example, AK can come in 12 different unsuited ways:

A♥K♣	A♥K♠	A♥K♦
A♦K♣	A♦K♠	A♦K♥
A♣K♦	A♣K♠	A♣K♥
A♠K♣	A♠K♥	A♠K♦

This means there are 936 different unsuited hands (78 x 12) or 70.6% of all hands.

Overall, there are 78 different combinations of pairs, 312 different combinations of suited hands and 936 different combinations of unsuited hands. These add up to 1326 total different hands. Here is a table with the full breakdown.

Type of Starting Hand	Different Quality	Different Combinations	Total Number of Hands	Percentage of all Hands
Pair	13	6 possible combinations	78	5.9%
Suited Hand	78	4 different suits	312	23.5%
Unsuited Hand	78	12 different suit combinations	936	70.6%
Total	**169**		**1326**	**100.0%**

In Hold'em, we do not care about the particular suits until after the Flop. For example, before the Flop, A♣J♣ is the same as A♦J♦, and 9♦8♣ is the same as 9♠8♥. It is only after the Flop that these hands may start to diverge in strength, although sometimes they stay the same if flush factors are non-existent after the Flop. This means there are only 169 different hands that can be dealt. You can see this by looking at the above table and add up the "Different Quality" category. When we look at it in terms of 169 different hands, it is important to keep in mind that the different hands have varying weights. A pair has 6 different combinations, a suited hand has 4 different combinations and an unsuited hand has 12 different combinations.

Understanding these factors becomes useful if we can narrow our opponent's hand down to just a few quality hands. For example, it is possible that a tight pre-Flop player will only raise with six different hands from the under the gun position: AA, KK, QQ, AKs, AKo and AQs. With all other hands, it is possible he would either fold or call. Here are the possible combinations these hands could have.

Hand	Possible Combinations	Percentage of the time the under the gun player holds this hand
AA	6	15.8%
KK	6	15.8%
QQ	6	15.8%
AKs	4	10.5%
AKo	12	31.6%
AQs	4	10.5%
Total	38	100%

Since this player will only raise under the gun with those hands, it means he will only be raising under the gun 2.9% of the time (38/1326). If you have played against this player often, it should come as a surprise to you when he does raise under the gun since he does it so seldom.

If you held JJ, you would know that you are in a dangerous position against this specific player. Against AA, KK, QQ, your hand of JJ is a major underdog. Against AKs, AKo, and AQs, it is only a slight favorite. Here is a chart that shows how often you should win if you were all-in before the Flop.

Hand	Possible Combinations	Percentage of the time under the gun holds this hand	Your winning percentage with JJ	JJ's Equity (Third Column x Fourth Column)
AA	6	15.8%	19%	3.0%
KK	6	15.8%	19%	3.0%
QQ	6	15.8%	19%	3.0%
AKs	4	10.5%	54%	5.7%
AKo	12	31.6%	57%	18.0%
AQs	4	10.5%	54%	5.7%
Total	38	100%		38.4%

Note - the information from the fourth column, and all subsequent winning percentage numbers, are from the Texas Hold'em Calculator on Cardplayer.com.

If you assume no other players are going to play and the blinds will fold, then calling this tight pre-Flop raiser is a losing play even with a strong hand like JJ! Assume you are going all-in at this point (meaning you only have three big bets left in your stack), then you are risking three small bets to win four and a half small bets (three from the pre-Flop raiser, one from the big blind and a half from the small blind). This means you would need to win 40% of the time to break even. With these assumptions, the table above shows that JJ only wins 38.4% of the time on average, so in this instance playing JJ is slightly below the goal of 40%.

In practice, JJ is a playable hand even against a tight pre-Flop raiser. Most players will raise with more hands than the ones listed in the previous table and you will have positional advantage. Let's add in AQo, JJ and TT as two other raising hands by this player, and see how JJ fares in that case.

Hand	Possible Combinations	Percentage of the time under the gun holds this hand	Your winning percentage with JJ	JJ's Equity (Third Column x Fourth Column)
AA	6	10.5%	19%	2.0%
KK	6	10.5%	19%	2.0%
QQ	6	10.5%	19%	2.0%
AKs	4	7.0%	54%	3.8%
AKo	12	21.1%	57%	12.0%
AQs	4	7.0%	54%	3.8%
AQo	12	21.1%	57%	12.0%
JJ	1	1.8%	50%	0.9%
TT	6	10.5%	19%	8.5%
Total	**57**	**100%**		**47.0%**

Note - There is only 1 possible combination that your opponent has JJ because you have JJ as well.

Now the average winning percentage for JJ is much higher, jumping from 38.4% up to 47.0%. With the assumptions listed above, JJ now has a high enough of a winning percentage to play the hand. The under the gun raiser is now raising with 4.3% of his hands (57/1326) rather than 2.9%, and this makes a big difference to JJ.

The AQo debate
AQo is an interesting starting hand. Normally it is a high quality hand, and most players will open-raise pre-Flop with it. In some situations, it is a hand that is worthy of re-raising. However, in the same situation as we just discussed in the previous section, the correct decision is to fold! This issue was brought up in John Feeney's book "Inside the Poker Mind" (page 33-34). After his

book was published, this issue was hotly debated on some internet forums.

Here are the assumptions. An early position player open-raises. You know that he plays very tight and will only raise with high quality hands. You know he would raise with AA, KK, QQ, JJ, TT, AKs, AKo, AQs, AQo, JJ and TT (in Feeney's book, he makes different assumptions on possible hands that the open-raiser may have). Your target is to win at least 40% of the time on average against this player. That would be the target for an all-in player. You do have positional advantage but there is also a chance another player holds a strong hand behind you. So using 40% as the target should get you close to the cutoff point.

Hand	Possible Combinations	Percentage of the time under the gun holds this hand	Your winning percentage with AQo	AQo's Equity (Third Column x Fourth Column)
AA	3	6.25%	7%	0.4%
KK	6	12.5%	28%	3.5%
QQ	6	12.5%	30%	3.8%
AKs	3	6.25%	24%	1.5%
AKo	9	18.75%	26%	4.9%
AQs	2	4.17%	48%	2.0%
AQo	7	14.58%	50%	7.3%
JJ	6	12.5%	43%	5.4%
TT	6	12.5%	43%	5.4%
Total	**48**	**100%**		**34.1%**

Note - Because you have AQo, it means there are only 2 other ways to make AQs and 7 other ways to make AQo.

On average, you expect to win 34.1% of the time. This does not meet the 40% threshold in the all-in situation. There is a chance AQo is playable at a level below 40% because of positional advantage and possible poor post-Flop play by the opponent, but 34.1% is so far lower than 40% that playing AQo in this situation just does not make sense.

But what if the same player who raised was in middle position rather than early position? This change in position means that he would add to his list of open-raising hands. Or we could keep the player in the same under the gun position and assume he would raise with more hands. In either case, the key is that the player is also willing to raise with hands that are worse than the hands listed above. Let's say the player adds five other hands to his open-raising hands, and let's say those five hands are 99, 88, AJs, ATs and KQs. The same analysis can be done with these hands included to see how it changes your decision when you hold AQo. Here is the table.

Hand	Possible Combinations	Percentage of the time under the gun holds this hand	Your winning percentage with AQo	AQo's Equity (Third Column x Fourth Column)
AA	3	4.35%	7%	0.3%
KK	6	8.70%	28%	2.4%
QQ	6	8.70%	30%	2.6%
AKs	3	4.35%	24%	1.0%
AKo	9	13.04%	26%	3.4%
AQs	2	2.9%	48%	1.4%
AQo	7	10.14%	50%	5.1%
JJ	6	8.70%	43%	3.7%
TT	6	8.70%	43%	3.7%
99	6	8.70%	44%	3.8%
88	6	8.70%	45%	3.9%
AJs	3	4.35%	69%	3.0%
ATs	3	4.35%	69%	3.0%
KQs	3	4.35%	70%	3.0%
Total	**48**	**100%**		**40.5%**

Now you can beat your opponent's average hand 40.5% of the time and barely meets the 40% threshold. Playing AQo in this situation is clearly better than in the previous situation.

Starting Hands can Change in Value
There are some hands that you are happy to play in a certain situation but not in another situation. The variables that can change your decision include your position, previous players' actions and the characteristics of players yet to act. One of the keys to the changing values of hands is whether it is a drawing hand or not. Here are a few examples of hands that you would play differently on certain situations.

AQo
As shown in the previous section, although AQo is usually a re-raisable hand, it should be thrown away if a tight pre-Flop player open-raises in an early position. If the early position player open-raised from middle or late position instead, then you would feel comfortable re-raising. If the early position player who open-raised was not as tight as originally described, then it means he could be raising with worse hands, and thus a re-raise with your AQo is fine.

ATo
In late position when no other player has come in yet, this is a fine hand to steal the blinds with.

Even if any of the blind hands call, ATo is likely the best hand. If the blinds do not call, then you would be happy to win the pot right there. If there is a limper or two, ATo may still be the best hand depending on who the limpers are and what position they are limping in from. However, if there are a lot of limpers, then ATo goes way down in value and becomes a marginal hand. Other players may be limping in with hands such as AQo and AJo, which would dominate ATo. If there is a raise and a couple of callers, ATo is a hand to throw away.

JTs
In early position, some players feel JTs is a good enough of a hand to limp in with and hope to encourage other players to limp in along behind them. Their idea is that their limp may help build the pot as other players are willing to limp along. If that happens, then the player with JTs has put himself in a multiple player pot, a good situation for JTs. In late position, JTs is a hand that has enough value to open-raise to steal the blinds. However if there is just one raise from a reasonable opponent in early or middle position and no other player has called, then it is best to throw this hand away as it does not perform as well in a heads-up pot.

A7o vs 76s
In a heads-up situation, A7o is a better hand than 76s. The first reason is that A7o has the advantage of having the high card. The second reason is that A7o dominates 76s in that when a 7 hits the board, the kicker will usually mean the difference in the hand. However, if there are many other players involved in the hand, then the value of A7o decreases dramatically relative to 76s. In a multiple player pot, A7o will likely be dominated by another hand with an A and a higher kicker. The advantages that A7o enjoyed over 76s in a heads-up situation are have vanished in a multiple player pot. A7o no longer has the high card equity nor is it assured of being the dominating hand. Instead, it is the hand that is more likely to be dominated. On the other hand, in a multiple player pot, 76s does not need to worry about being dominated because it is looking to make a draw with 76s, not a pair. 76s and A7o have changed spots on the relative strength ladder when the situation is changed from a heads-up scenario to a multiple player scenario. With fewer players, A7o is the better hand, with more players 76s is the better hand. Thus A7o is a good open-raising hand from late position to steal the blinds, while 76s is a good hand to play in a cheap multiple player pot.

ATo vs T9s
This match-up is similar to the previous one. In a direct heads-up situation, ATo is far superior to T9s. However, when these hands are in the big blind against an tight early position raiser, T9s is a better hand. In the section on the AQo debate, it is clear that AQo does not play well against a tight early position player. The same reason holds true for ATo in the big blind against a tight early position raiser, even though it only costs one small bet to see the Flop. Also, the problem of being out of position in all future rounds makes it tough to play ATo under these circumstances. On the other hand, T9s has a chance of being a playable hand since it is not dominated by most hands that a tight early position player would raise with. If other players call, T9s will gain even more equity compared to ATo because T9s has drawing qualities and is more likely to be independent from the other callers' hands. Hands that dominate ATo (AK, AQ, AJ) are hands that most players will play most of the time. The same cannot be said for hands that dominate T9s. Here is a table comparing ATo and T9s versus a tight early position player. It shows that T9s is a better hand in this situation and the difference is big enough that calling a raise with T9s is

correct but not with ATo.

	ATo	ATo	ATo	ATo		T9s	T9s	T9s	T9s
Opp.'s hand	Poss. Combos	% Opp has this hand	% ATo wins	ATo Equity	Poss. Combos	% Opp has this hand	% T9s wins	T9s Equity
AA	3	6.5%	8.8%	0.6%	6	10.2%	22.7%	2.3%
KK	6	13.0%	29.1%	3.8%	6	10.2%	21.7%	2.2%
QQ	6	13.0%	29.1%	3.8%	6	10.2%	20.4%	2.1%
AKs	3	6.5%	25.0%	1.6%	4	6.8%	38.7%	2.6%
AKo	9	19.6%	26.6%	5.2%	12	20.3%	41.0%	8.3%
AQs	3	6.5%	25.1%	1.6%	4	6.8%	38.8%	2.6%
AQo	9	19.6%	27.1%	5.3%	12	20.3%	41.4%	8.4%
JJ	6	13.0%	28.8%	3.8%	6	10.2%	19.0%	1.9%
TT	1	2.2%	30.9%	0.7%	3	5.1%	17.6%	0.9%
Total	46	100%		26.4%	59	100%		31.4%

When you are in the big blind against a tight early position raiser, you would prefer a suited connector like T9s or 76s over two high cards like ATo or A9o. In this case, T9s wins 31.4% on average, while ATo only wins 26.4% on average.

Now let's change the position of the open-raiser. Instead of raising from an early position, let's say the tight player was open-raising from the button. In late position, he would be raising with many more hands. He may raise with hands such as A7, KT, Q9, and JT if it is folded to him. Do you see what is happening here? Against these hands, ATo is a much better hand than T9s. ATo is the dominating hand against some of the hands that the button would raise with. On the other hand, T9s now has a much greater chance of being dominated. Also, hands like KJ and QJ (hands that the player on the button would raise, but would not if he was in early position) are favorites over T9s, but are slight underdogs to ATo. ATo is now a better hand than T9s against a raise from the button.

Starting Hands Qualifications
The charts below reflect the recommended action for different starting hands under different situations. Each of these situations are cross-referenced with three different positions, early, middle and late position. This is a guideline only, and the player needs to adapt the strategies on this chart to his specific environment at the time. This is not analogous to a blackjack basic strategy chart where it is crucial to memorize the table. Instead, the importance is on the understanding of the reasoning behind each situation. When you are at the table you can use the same logic to make your decisions.

The hands are categorized in three different general categories: pairs, suited cards and unsuited

cards. Hands that are not included should be folded with rare exceptions. This chart is for a typical 9-handed game, with a distribution of 2 good players, 3 decent players and 3 bad players. You will have to adjust this chart if there are more good players or more bad players at the table. Against more tough, aggressive players, refrain from getting involved in a pot with drawing hands unless you are quite sure it will be a multiple player pot. Against more passive players, you can take more chances with drawing hands in early position since you will be more confident that the pot will be played by multiple players.

You should also differentiate between passive and aggressive players who act before you or after you. You can see the actions of those that act before you, but you will not know the actions of the players behind you until after you have acted. If the players behind you are generally loose, it means you can be a bit looser and call with some drawing hands. If the players behind you are generally tight, it means you can be a bit more aggressive with the high cards as you won't have to worry about them calling your raise and making it a multiple player pot (a call by any player may encourage other players to call as well). It also means your drawing hands are worth less since you cannot count on the tight players behind you to follow your limp by limping themselves.

The correct strategy for some hands fall in a gray area between two or three decisions. With those hands, all the choices are listed, although my preferred action is listed first. You must choose for yourself based on your own style and how your opponents play. For example, if you do not feel comfortable being the aggressor all the time, especially in early position, you may choose to limp instead of raise if the recommended action on the chart is "Raise / Limp". JJ is such a hand. If you do not feel like mixing it up against tricky players, you may decide to limp in early position (the second option listed for JJ) rather than raise.

Most hands have four rows attached to it. For those with only one row, it means the same strategy should be used in all situations. The four rows fall under the following situations:

1. No one has yet called
2. There are limpers but no raises
3. There is a raise and no other players yet involved
4. There is a raise and at least two other callers

Pair	Early Position	Middle Position	Late Position
AA, KK, QQ	Re-raise	Re-raise	Re-raise
JJ / TT	Raise / Limp	Raise	Raise
	Raise	Raise	Raise
	Re-Raise	Re-Raise	Re-Raise
	N/A	Call	Call
99	Raise/Limp	Raise	Raise
	Limp	Raise	Raise

	Fold	Re-Raise / Call	Re-Raise / Call
	N/A	Call	Call
88 / 77	Raise / Limp	Raise	Raise
	Limp	Limp	Raise
	Fold	Call / Fold	Re-Raise against mid/late position raiser / Fold against earlier raisers
	N/A	Call	Call
66 / 55	Fold / Limp	Fold / Limp	Raise
	Fold / Limp	Limp	Raise / Call
	Fold	Fold	Re-Raise against late position raiser / Fold against earlier raisers
	N/A	Call with 3 or more players already in / Fold	Call with 3 or more players / Fold
44 / 33 / 22	Fold	Fold	Raise
	Fold	Limp	Raise / Call / Fold
	Fold	Fold	Re-Raise/Fold against late position raisers / Fold against earlier raisers
	N/A	Call with 4 or more players already in / Fold	Call with 4 or more players / Fold

Suited Cards	Early Position	Middle Position	Late Position
AKs	Re-Raise	Re-Raise	Re-Raise
AQs	Raise	Raise	Raise
	Raise	Raise	Raise
	Call / Re-Raise	Call / Re-Raise	Re-Raise / Call
	N/A	Call	Call / Re-Raise
AJs	Raise / Limp	Raise	Raise
	Raise / Call	Raise / Call	Raise
	Call / Fold	Call / Fold	Re-Raise / Call / Fold

	N/A	Call	Call
ATs	Limp	Raise	Raise
	Limp	Raise / Call	Raise
	Fold	Fold	Re-Rase / Fold
	N/A	Fold / Call	Call / Fold
A9s / A8s / A7s	Limp / Fold	Raise / Limp	Raise
	Limp	Limp	Limp / Raise
	Fold	Fold	Fold / Re-Raise (re-raise a late position player you think is stealing)
	N/A	Call / Fold	Call
A6s - A2s	Fold	Limp / Fold	Raise
	Fold	Limp	Limp
	Fold	Fold	Fold
	N/A	Fold	Fold / Call
KQs	Limp / Raise	Raise	Raise
	Call / Raise	Raise	Raise
	Call / Fold	Fold / Call	Re-Raise / Call
	N/A	Call	Call
KJs	Limp	Raise / Limp	Raise
	Limp	Limp / Raise	Raise
	Fold	Fold	Fold / Re-Raise (re-raise a late position player you think is stealing)
	N/A	Fold	Fold
KTs	Fold	Fold	Raise
	Limp	Limp	Limp
	Fold	Fold	Fold
	N/A	Fold	Fold
K9s - K6s	Fold	Fold	Raise
	Fold	Fold	Limp / Fold
	Fold	Fold	Fold
	N/A	Fold	Fold

QJs	Fold / Limp	Raise / Limp	Raise
	Limp	Limp	Limp / Raise
	Fold	Fold	Fold
	N/A	Call	Call
JTs	Limp	Limp / Raise	Raise
	Limp	Limp	Limp / Raise (consider raising against 3 or more limpers, although a limp is fine as well)
	Fold	Fold	Fold
	N/A	Call	Call
QTs / T9s	Fold / Limp	Limp / Fold	Raise
	Limp	Limp	Limp
	Fold	Fold	Fold
	N/A	Fold	Call / Fold
98s / 87s / 76s	Fold	Fold	Fold
	Fold	Limp	Limp if there are 2 or more limpers
	Fold	Fold	Fold
	N/A	Fold	Fold
Q9s	Fold	Fold	Raise
	Fold	Fold	Fold
	Fold	Fold	Fold
	N/A	Fold	Fold
J9s / T8s	Fold	Fold	Fold
	Fold	Fold	Limp if there are 2 or more limpers
	Fold	Fold	Fold
	N/A	Fold	Fold
Q8s	Fold	Fold	Raise
	Fold	Fold	Limp if there are 2 or more limpers
	Fold	Fold	Fold
	N/A	Fold	Fold

Unsuited Cards	Early Position	Middle Position	Late Position
AK	Re-Raise	Re-Raise	Re-Raise
AQ	Raise	Raise	Raise
	Raise / Limp	Raise / Limp	Raise if only a couple of limpers / Call against more limpers
	Fold against a tight early position raiser / Re-Raise	Fold against a tight early position raiser / Re-Raise	Fold against a tight early position raiser / Re-Raise
	N/A	Call	Call
AJ	Limp	Raise	Raise
	Limp	Limp	Limp / Raise
	Fold	Fold	Fold / Re-Raise (re-raise a late position player you think is stealing)
	N/A	Fold / Call	Fold / Call
AT	Fold	Raise / Limp	Raise
	Fold	Limp	Limp / Raise against only 1 or 2 weak limpers
	Fold	Fold	Fold / Re-Raise (re-raise a late position player you think is stealing)
	N/A	Fold	Fold
A9	Fold	Fold / Raise	Raise
	Fold	Fold	Limp with only 3 limpers / Raise against 1 limper / Fold against 4 or more limpers
	Fold	Fold	Fold
	N/A	Fold	Fold
A8 / A7	Fold	Fold	Raise
	Fold	Fold	Limp with only 2 limpers/ Raise against 1 limper / Fold against 3 or more limpers
	Fold	Fold	Fold
	N/A	Fold	Fold
A6 - A2	Fold	Fold	In the cutoff, raise with A6, A5, Fold with A4 - A2. On the button, raise with A6 - A2
	Fold	Fold	Fold

	Fold	Fold	Fold
	N/A	Fold	Fold
KQ	Fold / Limp	Raise	Raise
	Limp	Raise / Limp	Raise
	Fold	Fold	Fold / Call / Re-raise against a late position blind stealer
	N/A	Fold	Fold / Call in a loose game
KJ	Fold	Fold / Raise	Raise
	Fold	Limp / Fold	Limp
	Fold	Fold	Fold
	N/A	Fold	Fold
KT - K8	Fold	Fold	In the cutoff, Raise with KT and Fold K9 and K8. On the button, raise with KT-K8
	Fold	Fold	Limp with KT, fold K9 and K8
	Fold	Fold	Fold
	N/A	Fold	Fold
QJ	Fold	Fold	Raise
	Fold	Fold / Limp	Limp
	Fold	Fold	Fold
	N/A	Fold	Fold
QT	Fold	Fold	Raise on button, otherwise fold
	Fold	Fold	Call
	Fold	Fold	Fold
	N/A	Fold	Fold
JT / T9	Fold	Fold	Raise on button, otherwise fold
	Fold	Fold	Limp against many limpers
	Fold	Fold	Fold
	N/A	Fold	Fold

Hare are charts summarizing the percentage of hands to call, raise and fold with in each position. Each box has four different situations, just like in the starting hands charts above.

	Previous Action	Early Position	Middle Position	Late Position
Call	No other callers	2.4%	2.4%	0.0%
	Limper but no raises	5.6%	11.0%	13.7%
	One raise, no other players yet	0.9%	1.5%	0.0%
	One raise, at least two other callers	N/A	9.2%	10.1%
Average	**Call**	**3.0%**	**6.0%**	**6.0%**

	Previous Action	Early Position	Middle Position	Late Position
Raise	No other callers	5.1%	11.2%	25.8%
	Limper but no raises	3.8%	6.9%	10.4%
	One raise, no other players yet	2.9%	3.9%	8.3%
	One raise, at least two other callers	N/A	1.2%	1.2%
Average	**Raise**	**3.9%**	**5.8%**	**11.4%**

	Previous Action	Early Position	Middle Position	Late Position
Fold	No other callers	92.5%	86.4%	74.2%
	Limper but no raises	90.6%	82.1%	75.9%
	One raise, no other players yet	96.2%	94.6%	91.7%
	One raise, at least two other callers	N/A	89.6%	88.7%
Average	**Fold**	**93.1%**	**88.2%**	**82.6%**

Notes - The Average row measures the average of the four different situations. It does not weight the probability of each situation occurring. In late position, it is more common to be faced with a raise (the 3rd and 4th situations) then the other two situations. The average numbers in this chart do not reflect this, but it is still a useful way to view the differences in the positions.

Calling in Late Position vs Calling in Middle Position
I advocate playing many more hands in late position compared to middle position. In late position, the chart shows to call or raise with 17.4% of all situations, while in middle position only call or raise with 11.8% of all situations. Raisable hands increase from 5.8% (middle position) to 11.4%

(late position), while callable hands stay the same at 6.0%. In fact, two of the calling categories decrease to 0% in late position. In the situations of "When there are no other callers" and "When there is just one raise and no other players yet", I suggest never calling in either case when in late position. In those situations, you should either fold or raise. Notice the big jump in the situation of "When there are no other callers" from raising with 11.2% of the hands in middle position to raising with 25.8% of the hands in late position. Hands such as K♦T♥ and Q♣J♥ are now raisable hands from the button if no one else has come in, but were hands that should be mucked in middle position.

Stealing the Blinds
When you are in late position and everyone has folded, you need to decide if you should raise or fold (do not call). Here are some factors to consider when trying to steal the blinds.

1. How likely are you to have the best hand?
When everyone else has folded and you are in late position, the better hands are the high card hands. As discussed in a previous section, this is the position where a high card hand like ATo is better than a drawing hand like T9s.

2. How loose are the blinds?
It is usually best to play against players that are loose. However, when you are trying to steal the blinds, it is not always the case. The tighter players may be more willing to give up and fold their blinds when you raise. When you are trying to steal the blinds, this makes you happy. But the looser players will call more often. Some of these loose players will give up so much edge after the Flop with poor play that you will not mind when they call pre-Flop. However, if they are loose pre-Flop but play decently after the Flop, then you would not be happy. Against this type of player, you should limit the hands that you try to steal the blinds with.

3. How aggressive are the blinds?
If the blinds are aggressive, then they may play back at you if they think are you are trying to steal their blinds. In particular, the small blind has more reason to re-raise since he will usually prefer to have the big blind fold. If they are aggressive, it means you will often have to put in three bets instead of two when you are stealing the blinds. Against the aggressive players, you will have to limit your blind stealing hands.

4. How well do the blinds play post-Flop?
If the blinds play well post-Flop, then there is less value in trying to steal blinds.

5. How tight do the blinds play on the Flop?
If the blinds play tight on the Flop, but call raises before the Flop liberally, then a blind stealing raise is worthwhile. Although they will fold pre-Flop less often, this type of player will be more willing to check and fold on the Flop.

6. How predictable are your opponents?
Predictable players are always better to play against. If your opponents are predictable, then you can be sure that if you are re-raised before the Flop or check-raised on the Flop that you are actually beat. If they are unpredictable, it is more difficult to play against them. Try to steal the

blinds of the predictable players more often than the blinds of the unpredictable players.

7. How often have you been raising the blinds in the last few rounds?
If you have been raising the blinds often in the last few rounds (whether or not those raises were legitimate raises or blind stealing raises), then you should be a bit more conservative when you are in the position to steal the blinds again. Your opponents will start to feel that you are taking advantage of them if you keep raising their blinds, and they will be more likely to call your raises.

Playing the Blinds: To Defend or Not to Defend
You will often be in the blinds when a late position player has open-raised. You have to decide whether or not to defend your blind hand by calling. Here are some factors to consider when a late position player raises in an apparent blind stealing opportunity

1. How likely are you to have the best hand?
If you think you have the best hand, you should consider re-raising, especially if you are in the small blind. By re-raising, you will put even more pressure on the big blind and take control of the pot. If the blind stealer's hand is weak, he may meekly fold on the Flop when you bet out.

2. How often will your opponent attempt to steal the blinds with unwarranted hands?
If your opponent is constantly open-raising in late position, then you need to loosen up and call with more hands. You will also need to play more aggressively and raise back when you have decent hands that you may not normally raise back with. You do not want anyone to push you around at the poker table, and in the blinds is a spot when other players are looking to push you around.

3. How well does your opponent play post-Flop?
If your opponent plays well after the Flop, then he will be more difficult to play against. When you are in a blind position, you will always be in a worse position than your opponent and you will have to act first. A good post-Flop player will be able to take advantage of his position, so you have to a bit more selective.

4. How predictable is your opponent?
As always, playing against predictable players is better than playing against unpredictable players. Given all else equal, tend to call raises against predictable players more than against unpredictable players.

Sunk Cost and the Blinds
Many people think they need to defend their blinds all the time because they have already partially called and are getting to see a Flop at a 50% discount compared to other players. This is an incorrect thought process. It is important to think of the blinds that you had put up as part of the pot, not part of your stack. The chips you put up for the blinds are a sunk cost. You had to put them up regardless of the strength of your hand. Of course you have equity in the pot as well as the other players, however, if your starting hand is poor, there is no reason to put in good money after bad money.
Varying your play
In games where you may be facing the same opponents routinely, it is useful to vary your play with

starting hands to some degree. In certain situations you won't have to adjust at all, such as when everyone has folded to you in late position. If your strategy is close to the chart suggested in this book, then you would be raising with about 25% of your hands in those situations. With that many different hands, it is no longer necessary to vary your play on purpose to throw off your opponents. When you are raising with 25% of your hands, your hand is already unpredictable to your opponent.

The times that you may want to vary your play is when the pot has yet to be raised and you have a drawing type of hand. It is important for the pot not to have been raised by another player because it means it is less likely for anyone else to have a premium hand. With a drawing type of hand, you can still make some nice hands and may surprise your opponents. For example, open-raising instead of calling in middle position with a hand like Q♣T♣ or T♠9♠ once in a while is useful. But you cannot do it too often. It is less worthwhile to do it from the early positions because there are so many more players yet to act when you are in early position. If one of the players behind you has a premium hand, then a raise in early position with a drawing hand is too costly.

Don't be worried about giving away info pre-Flop in Early Position
Don't be worried about giving away too much information by your pre-Flop play in early position. Since there are so many players to act behind you, it is too difficult to try to be deceptive without giving up too much edge. There are too many players you would need to fool one way or another. The players who know what a raise from a tight early position player means (hopefully this describes you), will fold, and you will not be able to extract value out of them. But in typical games, there should be enough players who are willing to call a raise with dominated hands such as AJo and KQo that it is still worthwhile to be raising in early position with your best hands.

In tougher games where there are more players who are willing to fold decent cards against a tight early position raiser, you may decide to limp in with some of your stronger hands. If there are many players who will fold AQo to a raise by you in the under the gun position (as you would), then when you raise with AA, you will not gain anything from them. But if you limp in with the intention to check-raise, then you would likely have trapped a player with a hand that he would not have played if he knew the real strength of your hand.

Common Mistakes made with Starting Hands in Different Positions
Early Position Play Common Mistake: Suited Connectors and Middle/Small Pairs
A common mistake that players make with suited connectors and middle to small pairs in early position is that they either always fold or always call with these hands. Instead of one fixed strategy, players should be more flexible and adjust to their environment. The decision to limp with these drawing hands should be dependent on how the other players play and the mood of the table. If you can count on other players limping along with you and the mood is a happy-go-lucky table, then that means you can be more confident that the pot will be contested by multiple players. When this happens, you will have enough pot odds to limp in and see the Flop. A problem occurs when you are not quite sure if others will limp along after you limp, so it is important to size up the other players before you are faced with a drawing hand in an early position. If it is a fairly tough table with a few professional players in it, these drawing hands may be completely unplayable. If you cannot expect to get many other callers then you are not going to be able to put yourself into

the position to get enough pot odds for your limp to be correct. On the other hand, typically in low limit games such as 2-4, 3-6 and 5-10, the atmosphere of the game and the general personality of the players will usually allow for a limp with a drawing hand to be correct. In those games, you will be more confident you can get into a multiple player pot.

Middle Position Play Common Mistake: Don't limp along with non-drawing hands
A common mistake many players make is to limp in middle position, without holding a drawing hand, after a horde of players have limped into the pot. If you are in middle position and three other players have limped, you can limp along with hands like 9♣8♣ and A♦5♦. But other hands that may be as strong or stronger in other situations will not play as well in multiple player pots like this. Such hands include A♣7♥ and K♠9♣, which should be thrown away in this spot. These are good hands to raise as a late position blind stealing hand, but they have major problems in multiple player pots. The problems include kicker problems (others may be limping with dominating hands like A♠9♦, K♥J♥) and drawing problems (if you make a straight with either A♣7♥ or K♠9♣, it is possible that someone has a better straight).

Late Position Play Common Mistake: Calling raises with high cards
In an earlier section of this chapter, I discussed the issue of calling with AQo against a tight early position raiser. The same concept applies to other hands in late position when a middle position player raises. Often, players will indiscriminately call raises with hands such as K♣Q♠ and A♦T♣. If the raiser is a reasonable player with reasonable raising standards and is raising from middle position, then typically these hands should be folded. Oftentimes a legitimate raiser will have dominating hand over K♣Q♠ and A♦T♣ with hands such as A♣K♠ and A♥Q♥. Calling a raise when there is a good chance you are either dominated or facing a big pair is not a pleasant way to play poker.

On the other hand if you are on the button and an aggressive player open-raises in the cutoff seat, you can consider re-raising with K♣Q♠ and A♦T♣. The difference is that the player in the cutoff is raising with a wide variety of hands. Calling a raise gives the blinds too much equity to call and see the Flop. It would be better to re-raise and play the hand heads-up because you likely have the best hand and these hands play better in heads-up situations.

General Common Mistake: Not being careful with pre-Flop calling standards
It is easy to loosen up and add to the hands you play. If you often limp with T9s, it is easy to take a step back and also limp in with similar hands, such as T8s and 98s. Once you have made that move, it becomes easy to also limp in with hands that resemble 98s, such as 98o. This is dangerous. You have gone from limping with a borderline hand such as T9s to limping with an unwarranted hand such as 98o. This is one of the dangers of playing marginal or borderline hands. It is may not be the hands themselves that are dangerous, but what they can represent when you get a hand that may look similar in quality but is not.

This is the first draft of the chapter on the Flop in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page.

Hold'em Brain: The Flop
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The Flop is a critical point in Hold'em. Players get to see three cards on the Flop, which is more cards than in any other round in the game. Along with the two starting cards, it means each player will now know five out of the seven total cards that can be part of their hand. There is enough information that most players should know how to proceed from this point forward with some degree of certainty. Since the betting on the Flop is still on the cheap side, it means many players will use this round to pose and to jostle for positioning. This means aggressive play is not as meaningful as it may be on the Turn or River.

Thinking on the Flop
There are two main steps to analyzing the Flop. The first step is to analyze what the Flop means for your hand. The second step is to see what it may do for other player's hands. The third step is to see how other players may analyze the Flop in relation to your hand.

Step 1: Analyze what the Flop means for your hand
If you started with a drawing hand pre-Flop, you need to see if the Flop keeps your draw alive. For example, if you started with 9♥8♥ and the Flop is three completely unrelated cards, such as A♣T♦3♦, then it is usually best to give up at this point. The only time you may want to try a play on the Flop is if you had raised pre-Flop with only one or two callers and it is checked to you on the Flop. A bet on the Flop may win you the hand right there. On the other hand, if you picked up a draw with your 9♥8♥, then you may continue depending on the strength of the betting. With a Flop of T♥7♥3♣, where you have a straight flush draw, you will be able to stay around until the River to see if you have caught your hand. However, not all draws are worthwhile to continue with on the Flop. For example, with the 9♥8♥, if the Flop is T♦6♠3♠, you should always fold if there is a bet and a raise, and you should consider folding to just one bet.

If you started with a made hand, such as a big pocket pair, the first step is to see if any overcards or pairs have hit the board. If either of these happens, then it means any player would only need one card in their hand to have a better hand than yours. For example, if you hold Q♣Q♥, and the Flop is A♥9♣3♣, then any player with an A would have a better hand. Also, a Flop of J♣J♥3♠ would mean any player with a lone J in their hand would have a better hand.

If there are no cards higher than your pair and no pairs on the board, then usually it is a good sign. But you will need to be aware of flush draws and straight draws. For example, with Q♣Q♥, a Flop of J♦T♣3♦ is much more dangerous than a Flop of J♥6♣3♦. This is because in the first Flop of J♦T♣3♦, there are possible straight draws (a player with KQ, Q9 or 98 would have an open-ended straight draw) and flush draws (a player with two diamonds would have a flush draw). Meanwhile, in the second Flop of J♥6♣3♦, draws are less likely, thus it is a less dangerous Flop.

When you have a big pocket pair, you are normally worried about an overcard hitting the board. The only pocket pair that does not have to be worried about overcards is AA. The following table shows the percentage of Flops that will have at least one overcard to your pocket pair, and the percentage of Flops that will not have any overcards to your pocket pair.

Pocket Pair	Percentage of Flops that will have at least one overcard to your Pocket Pair	Percentage of Flops that will NOT have any overcards to your Pocket Pair
AA	0%	100%
KK	22.6%	77.4%
QQ	41.4%	58.6%
JJ	57.0%	43.0%
TT	69.5%	30.5%
99	79.3%	20.7%
88	86.7%	13.3%
77	92.1%	7.9%
66	95.8%	4.2%
55	98.1%	1.9%

If you started with two big cards and caught a pair, then it is usually a good sign. If you did not catch a pair, you may still have a chance to win the hand depending on the number of players left in the hand and the quality of the Flop.

Step 2: Analyze what the Flop may mean for other players' hands
Whether or not you have a possible straight draw or flush draw, you need to watch out for any and all possible draws. Flush draws are the easiest to see on the Flop, as any Flop with three or two cards of the same suit means there is a chance someone is on a flush draw. Straight draws are a bit tougher to see. If there is a two gap or less with any two cards on the Flop, then it means there is a chance there is an open-ended straight draw.

Here are some Flops that would give a possible open-ended straight draw

Flop	Hands that would have an open-ended straight draw
Q-J-3	KT, T9

Q-T-3	KJ, J9
Q-9-3	JT
Q-9-7	JT, T8, 86

If there is a three gap with any two cards on the Flop, then it means there is a possible inside straight draw. These are less worrisome since it would be tougher for an opponent to catch them.

If a player has shown aggression pre-Flop, with a raise or a re-raise, it usually means a pair or two big cards. This means Flops that contain an A are very dangerous, and those with a K or Q may be dangerous as well. For example, if a reasonable player raised in middle position, he likely has a pair or two high cards. If you call with a drawing type of hand such as 87s, and the Flop comes A-7-3, there are very few hands your opponent could have that would allow your hand to be ahead. Although you may have 5 outs, it will still be likely you do not have pot odds to continue with a hand like this. However, if the Flop comes 7-3-2, now you are ahead unless he had a bigger pair, a set or a 7 with a higher kicker.

Step 3: Analyze what your opponent(s) may think about your hand based on the Flop
Usually when you Flop a middle or low set, it is tough for your opponents to see what you have made. For example, if the Flop is A-T-8 and you held 88, any player with an A may feel fairly strong, especially if they have a strong kicker. Your three 8's will be difficult for any opponents to see or read. With a disguised hand like this, and a possible strong hand from your opponent, you can play aggressively on the Flop. This is because you know your aggressive play will likely not lose any customers on the Turn since you are assuming he has a split pair of A's.

If you had raised pre-Flop, then other players will usually put you on a pair or two big cards (and for the most part, they would be correct). The sharp players will also notice if the Flop comes without any big cards. If you do have a big pair, this is good for you as they will be willing to give you more action. For example, if you have AA, and the Flop is 8-3-2, you will get paid off more than when the Flop is A-3-2.

Betting on the Flop
The Flop is the time to try the strategy of raising for a free card. You should do it against opponents who will check to you on the Turn when you do raise on the Flop, thus allowing you to see a free card. You should also be aware of other opponents who may be trying this, because you may want to re-raise them on the Flop or bet into them on the Turn if it looks like their draw did not make it yet. See the chapter on Free Cards for more on free card raising strategy.

Raising for a free card twice may also be useful. This happens when you get re-raised by a player after you raised for the free card. For example, your opponent bets, you raise with a flush draw, but instead of just calling, he re-raises. You believe he is re-raising because he thinks you are on a free card flush draw. You may consider raising again to finally get that free card. In order for it to be useful, you have to be sure that he will now believe you have a legitimate made hand and that he will not bet out on the Turn to thwart your double free card raises.

If you are in early position, a check-raise is a plausible strategy. This strategy is best suited for the Flop because it is easier to count on the pre-Flop raiser to bet on the Flop than on any other round. There are two reasons for a check-raise on the Flop. The first is to get more money in the pot against just one or two players because you think you have the best hand. The second is to check-raise and make it expensive for any other player to stick around to see the Turn. If you are in early position and have a probably best hand, but you think it is vulnerable to overcards, you may decide to check with the intention of raising if you can count on a late position player to bet. For example, if you have A9 in early position, and the Flop is 9-6-3, there are numerous overcards to your pair of 9's. If you bet out into a field, any player with two overcards likely has pot odds to call and see the Turn. However, if you check and get the opportunity to raise a late position player's bet, then you can make it too expensive for a player to call with just two overcards. Then they would not have proper pot odds to call. If they do, they would be making a mistake which can benefit you, so now you would not mind if they did call.

Raising with the Nut Flush Draw on the Flop and Turn
There are times when you actually want to raise with a nut flush draw on the Flop without pot odds considerations. This is when you believe there are enough players who are going to call bets that you are being offered the correct odds on that round alone to keep raising.

When you have the nut flush draw on the Flop, there will be 9 outs to make your flush and 38 non-outs. If there are 4 other players in and you have the nut flush draw on the Flop, it is sound strategy to keep raising even if you do not have position because you have plenty of chances to hit your nut flush. In this case, you are not even worried about the pot odds as it concerns the whole pot, you are only concerned with the pot odds on this round alone.

On the Turn, this idea may work as well. If you can get 4-1 odds, you are usually happy to keep raising. Sometimes another player may have two pair or a set, in which case your odds may be reduced down to 37-7, in which case you would need at least 5-1 to keep raising. The reason you can be safe with 5-1 odds is because if someone has a good hand like a set or two pair, you can usually expect to gain more bets from them on the River when you do get your flush. Of course, having five players calling on the Turn is quite unusual, and when these situations occur, sometimes some of the players may actually be on a flush draw as well, which will hurt your chances of making the flush.

Playing AK on the Flop
AK is a nice starting hand in Hold'em, but once the Flop comes, AK could turn into a poor hand very quickly. AK is a tough hand to play if neither an A or a K comes on the Flop. Sometimes AK turns into a drawing hand as you are fairly comfortable that if an A or a K comes on the Turn or River, that your hand may be good. Other times, AK can still be a decent hand even without a pair, this can happen when no one else has a pair. Here are some scenarios of how to play AK when the Flop is not favorable.

When to check with AK on the Flop
If there are several opponents and the Flop completely misses your AK, do not think you are obligated to bet if it is checked to you. Too many players think since they raised pre-Flop with this

hand that they are forced to bet it on the Flop even if it misses them and there are numerous players. This is incorrect. It is ok to check with AK on the Flop when the situation calls for it.

Example:
You are on the Button in an 8 handed game and two players have limped in front of you. You raise with A♣K♦, a legitimate raising hand even with the two limpers in front of you. Both blinds call as do the two limpers. Five players see the Flop.

Flop: Q♠9♠3♣

If all players check to you, it is all right to check along and see a free card on the Turn. With two relatively high cards (Q and 9) and two cards of the same suit, many players likely would have interest to continue with the hand. In fact it is possible one of the blinds has checked with plans to check-raise when you bet. The best card that can come out for you is an A or a K, but even then, those cards are dangerous as someone could very well have two pair when an A hits. Also someone could easily have a straight with JT if a K hits. Checking in a spot like this is not a weakness, it is simply a smart play.

When to bet with AK on the Flop
If it is checked to you and there are not many opponents (3 at most, hopefully 1 or 2 only), then you should always bet. The first reason is that you may still have the best hand and pick up the pot right there. The second reason is that even if you do not currently have the best hand, it is very possible you could catch the best hand on the Turn or River. For example, you raised pre-Flop in late position and both blinds call. The Flop comes 8-6-3 rainbow, and it is checked to you. You should bet and hope they both fold. If you get check-raised, you can call because you will usually have enough pot odds unless he has two pair or has one of your cards counterfeited.

When you have AK with a Flop of K-8-8
This is a great Flop if none of your opponents has an 8 but one or more has a K. Any other player with a K is in danger of losing to your pair of K's with the best kicker. There are two K's left in the deck as well as two 8's left. Since players are much more likely to play a starting hand that contains a K than an 8, it means you should be a big favorite in this hand. You should be betting this hand aggressively on the Flop.

When you have AK and the Flop is Q-J-x rainbow
When you have AK and the Flop comes with a Q and a J, then a T will give you a straight, although an A or a K may not be an out. For example, you could be up against one player with AQ and another player with T9. But if your opponent(s) do have a pair, but without an A or K, then either of those cards could be an out for you as well. Sometimes either the A or the K will be an out, but you cannot be sure which one is an out. A Flop of Q-J-x is a dangerous Flop for AK. If there is too much pressure, you may need to dump this hand on the Flop (if there is a bet and a raise) or on the Turn (if a player you think has AQ, KQ, AJ, KJ has bet).

When there is a three Flush on the Flop
When three cards of the same suit come on the Flop, many players will hang around with just one card of that suit. The very loose players will hang around with any card of that suit, including just

the deuce. More reasonable players will hang around with the T or higher of that suit. This means that if you have a pair, you may be correct to be betting until you do see a fourth card of that suit or you get raised. If you have a hand like Q♠J♣ and the Flop is Q♣T♣3♣, you should bet strongly. The A♣ and the K♣ will definitely stay in the hand if not doing some raising themselves. If someone has a pair of Q's with a better kicker, then you have outs. The hand you would be most scared of is K♣Q♥ or A♣Q♥ as those hands would have a better kicker along with a better flush draw.

The importance of betting on the Flop after you have raised pre-Flop even when you do not have anything
There are a couple of important reasons to bet on the Flop even if the Flop is not favorable to you. If you have raised pre-Flop, then oftentimes the other players will check it to you. Even if you have nothing, the other players may have nothing too, so a bet from you may actually win the pot right there. A bet here is best when there is a limited number of opponents. You want there to be a chance that all of them will fold when you bet. Also if you check, you would allow someone to possibly bluff you on the Turn as they sensed your weakness on the Flop. For example, if you have AJ and you had raised pre-Flop in late position, you should bet if the Flop comes K-3-2. It will be tough for anyone who does not have a K or a pocket pair or a pair to call you. You may actually have the best hand so you would prefer to take the pot right now instead of giving free cards to any of your opponents.

You have AA. Would you rather be up against a draw or nothing?
If you have pocket A's, you have the best starting hand in Hold'em. If you are up against only one opponent on the Flop, would you prefer that he has a flush draw or that he has absolutely nothing? If he has a flush draw, then he will call on both the Flop and Turn. On the River, if he has made his flush, he will bet out and you will lose an additional bet. If he has nothing, he will simply check and fold to your bet on the Flop. Let's go through an example.

You have A♠A♦ and you open-raised in the cutoff position. The big blind is a loose, passive player, and he calls your raise with 3♣2♣. There are two players with 2.25 big bets in the pot. Let's compare the situation with two different Flops.

Your hand: A♠A♦
Your opponent's hand: 3♣2♣

Flop A: K♦9♠8♦
Flop B: K♣9♣8♦

With Flop A, your opponent will check and fold when you bet. Thus you are guaranteed to win the 2.25 big bet pot 100% of the time.

With Flop B, your opponent will call until the River with his flush draw. If he has not hit his flush by the River, then he will fold. Let's assume he will fold even if he hits a pair or two pair to make the calculations a bit simpler. Thus if he does not hit his flush, then you will win an additional 1.5 big bets. If he does hit his flush, you will lose 2.5 big bets to him as he will bet when he makes it,

and you will call. In this case, there are 45 unknown cards, and 9 cards will give him a flush. This means there is a 63.6% chance that he does not make his flush and a 36.4% chance that he will. Now we can compare the expected values of the two different Flops.

Action	Computations	Result
EV of Flop A (when he has nothing)	100% x 2.25	+2.25
EV of Flop B (when he has a flush draw)	(63.6% x 3.75) + (36.4% x -2.5)	+1.48

The expected value of Flop A is higher by a fairly big margin.

Instead of a flush draw, if your opponent had a split pair, then you would want him to call. With a split pair, he would have 5 outs. It is easier to do the calculations if we assume that when he catches trips or two pair that he will win the hand. In that case, he has a 21.2% chance to win the hand, and your expected value of him calling you down to the River has gone up to +2.42.

Your hand: A♠A♦
Your opponent's hand: Q♣J♣

Flop A: K♦8♠7♦
Flop B: K♠Q♦2♥

Action	Computations	Result
EV of Flop A (when he has nothing)	100% x 2.25	+2.25
EV of Flop B (when he has a split pair)	(78.8% x 3.75) + (21.2% x -2.5)	+2.42

Your expected value with Flop B is actually even higher than this. This is because he could catch two pair and still lose to you if you catch two pair or trips. For example, if the Turn is a J♠ (giving him two pair), the River could be a 2♣, thus giving you a better two pair (A's and 2's compared to his Q's and J's). So your chances of winning is even higher than 78.8%, and that means your expected value with Flop B is even higher than +2.42.

Of course, you run the risk of getting beat. With Flop A, it is almost impossible for him to win the hand, in fact, it is likely he will just fold on the Flop. With Flop B, you have a higher expected value, but now you can get hit with a bad beat and lose the hand. So the next time you lose on a bad beat, you should solace yourself with the fact that you actually preferred your opponent to be calling you hoping to catch a miracle card, because what that means in the long run is that your expected value should increase.

Top Pair with your lower card is better than with your higher card
Hold'em is a game where the kicker is important in many hands. This is one reason why AK is such a good hand compared to a hand with an A but a lower kicker. Often both of your cards will play, and it is the card that is not paired with the board that will make the difference between winning or losing the hand. This means that if you have a hand like AT, you would prefer that the Flop comes with a T-high board rather than a Flop with a A-high board. This may not sound right intuitively since a pair of A's is better than a pair of T's. However, the fact is that this is a community card game, and it does not matter how good your hand is except compared to other player's hands. If the board is an A-high board, that means you can be beat by many other hands that has just a pair of A's, such as AK, AQ and AJ. Meanwhile, if the board comes with a T-high board, you cannot be beaten with another hand that is just a split pair. Of course, an A-high board is beneficial to AT when your opponent has an overpair such as KK, QQ or JJ, so it has its benefits too. This is one reason that AK is such a good hand. Because if you Flop a pair with this hand, you will always have the best pair with the best kicker, and rarely will there be an overpair.

Another way to compare a T-high board versus an A-high board is to count the possible hands that your opponent could have. Let's assume that your opponent raised in middle to late position, and you think he raised with a legitimate hand. These hands would include AK, AQ, AJ, AT, KK, QQ, JJ, TT, 99, 88, KQ, KJs, QJs. Everyone folds to you in the big blind and you just call with ATo. If your opponent will raise with any of those hands listed, then we can compare how good an A-high Flop is compared to a T-high Flop. Let's compare two Flops, one with A-3-3 and the other with T-3-3 to illustrate this concept. At this point, we only care about the hands that may switch positions with one Flop compared to another. For example, if your opponent has JJ, he is ahead of your AT when the Flop is T-3-3, but behind you when the Flop is A-3-3. But if your opponent has 88, then you would be ahead on both Flops of A-3-3 and T-3-3. So we need not compare 88 in this situation. Specifically, the hands we care about are AK, AQ, AJ, KK, QQ, JJ, TT.

With a Flop of A-3-3, the hands that your opponent could have that would be ahead are AK, AQ and AJ. The ones he loses to you are KK, QQ, JJ and TT. Given that there is a board with an A, that you have AT in your hand and that your opponent would have raised with any of those hands mentioned above, then there are 24 ways your opponent could have an A with a better kicker than you, while only 21 ways your opponent would have a lower pair than A's. The way to figure this out is that because you have an A and the board contains an A, then that means there are only two A's left in the deck. Those two A's can combine to have AK in 8 different ways, as well as AQ and AJ in 8 different ways each. So that makes 24 possible ways your opponent could have a pair of A's with a better kicker. Counting the pairs that your opponent could have works in the same way, with 6 possible combinations each for KK, QQ and JJ, but only 3 possible combinations for TT since you have a T. Notice that I am not counting AA, KQ or lower pairs because a Flop of A-3-3 is just as good (or bad in the case of AA) as a Flop of T-3-3 with the exception of overcards coming on the Turn or River in the case when T-3-3 is the board and your opponent has overcards. So overall, you expect to be ahead of your opponent 21 times while behind 24 times on the Flop. Of course things may change on the Turn and River, but we are only concerned about the Flop comparison right now.

Flop of A-3-3 and your hand is AT

Your Opponent's possible hand	Number of ways he can have this hand	Percentage of the time he has this hand
AK	8	17.8%
AQ	8	17.8%
AJ	8	17.8%
KK	6	13.3%
QQ	6	13.3%
JJ	6	13.3%
TT	3	6.7%
Total hands that your AT is ahead against (KK, QQ, JJ, TT)	21	46.7%
Total hands that your AT is behind against (AK, AQ, AJ)	24	53.3%

In this situation against this opponent, when you have AT with a Flop of A-3-3, you will be ahead 46.7% of the time and behind 53.3% of the time.

With a board of T-3-3, the hands that your opponent beats you are the overpairs. KK, QQ, JJ and TT now account for 19 possible combinations. 6 each for KK, QQ and JJ, but only one possible combination now for TT, since you have one in your hand and the board has one as well. Meanwhile, the AK, AQ, AJ hands has now increased to 36 possible combinations. There is so many more possible combinations for these hands compared to the previous Flop because no A has flopped, which means there are three A's unaccounted for. Since your opponent was equally likely to raise with AK, AQ and AJ as he was with the big pairs, that means the probability that he had one of those A-high hands has increased since we do not see one on the Flop. This is analogous to the Monte Hall problem that we discussed in the Introduction chapter. This is because your opponent would raise with any of those hands, so the information on the Flop gives you information on his hand.

Flop of T-3-3 and your hand is AT

Your Opponent's possible hand	Number of ways he can have this hand	Percentage of the time he has this hand
AK	12	21.8%
AQ	12	21.8%

AJ	12	21.8%
KK	6	10.9%
QQ	6	10.9%
JJ	6	10.9%
TT	1	1.8%
Total hands that your AT is ahead against (AK, AQ, AJ)	36	65.5%
Total hands that your AT is behind against (KK, QQ, JJ, TT)	19	34.5%

In this situation against this opponent, when you have AT with a Flop of T-3-3, you will be ahead 65.5% of the time and behind 34.5% of the time.

This may not seem intuitive to some. One way to think about it is to randomly deal any one of those raisable hands to your opponent. Give him either AK, AQ, AJ, KK, QQ, JJ or TT. Now give the rest of the deck to a third person and tell him to tell you what cards you gave your opponent. If the third person is allowed to flip over every single card in the rest of the deck, then it is obvious what the answer is, since whatever is not there is what your opponent has. Even if the third person is only allowed to flip over half of the remaining deck, he should be able to narrow down the choices a bit based on the cards that he can see. He would be able to give a decent estimate of your opponent's holdings since he has some information of the cards that your opponent does not have. Now instead of allowing him to flip over half the deck, only allow him to flip over three cards, and then call it the Flop. Well, now it should also be obvious that while these three cards do not give you nearly as much information as turning over half the deck, it should still give you some information.

So, back to the situation where the Flop is T-3-3. In that situation, your opponent has 36 ways to have AK, AQ, AJ, these are hands that you are ahead against (of course, you can still get a bad beat on a later card, but that is not our concern right now). Meanwhile, your opponent only has 19 ways to have KK, QQ, JJ, TT, hands that would beat you. Keep in mind that if your opponent has AA, both Flops will be ugly for you. So there is no reason to count in that possible hand. It should be clear now that given a situation like this, you would prefer a lower ranking hand over a higher ranking hand, and that you would prefer a Flop of T-3-3 over a Flop of A-3-3. This is what is interesting about a game of community cards.

6/6/04 This is the third draft of the chapter on The Turn in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page

Hold'em Brian: The Turn
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Thinking on The Turn
The Turn is a crucial time in a Hold'em hand. The bet size has doubled and the pot is bigger too. Possible draws that were present on the Flop may have gotten there on the Turn. New possible draws may have developed. You should think about what you want to do on the Turn, and you should also think about the impact that your decision on the Turn will have on the play of the River. Here are some of the issues to watch out for:

1. Did any draws on the Flop get there on the Turn?
If there were two cards to a flush on the Flop and the Turn is a third card of the same suit, then someone with a flush draw on the Flop would already have a flush. This could mean you are drawing dead already. The same issue can happen to straight draws. But against straight draws, a hand can improve to a flush to beat them, so there may be more chances for other players to win. You should not automatically fold when it looks like a draw may have gotten there on the Turn, but you should still be aware of that possibility.

2. Did the Turn card provide any possible draws?
If the Flop was a rainbow Flop, the Turn card may give someone a flush draw if it is the same suit as one of the cards on the Flop. There will now be two cards of the same suit on the board, and if the River is a third card of the same suit, then anyone holding two cards of that suit would have a flush. A player may have picked up 9 outs in addition to the other outs he had. Similarly, new straight draws can be picked up on the Turn.

3. Did the Turn card pair the board?
If the Turn card pairs the board, it could change a lot of things. A player with a set or two pair on the Flop could now have a full house, which means anyone with a flush draw or straight draw would be drawing dead (unless they have a straight flush draw). It does not necessarily mean someone definitely has a full house, so draws can usually still continue with the hand. If the Turn card pairs the top card on the Flop, then anyone with a split middle or bottom pair would be drawing dead against another player who had trips. Pocket pairs may have two outs if the opponent has trips. However, if a player is concerned about his opponent being on a draw (flush draw, straight draw or overcards to the board), the pairing of the board on the Turn is good news because it means no draws have yet been made. For example:

Your hand: T♦9♦

Flop: 9♠8♠3♣

Turn: 3♥
The only hand that was trailing your hand on the Flop that has improved over your hand is a hand

that contained a 3. If you were up against any other two cards, then the status quo holds. If you were ahead on the Flop, you would still be ahead. If you were behind on the Flop, then you are still behind. Any draws are still drawing to beat your made hand of top pair. Thus you can be comfortable that you are still ahead against draws or lower pairs. The 3♥ on the Turn is almost as good as a 2♥.

4. What if you still only have two overcards on the Turn?
If you only have overcards to the board on the Turn, the pot will usually not be big enough to continue with the hand. If someone has a pair, at most, you will have 6 outs. But someone could have two pair or better, which would mean you would be drawing dead with your overcards. If another player has a pair, and his kicker is the same rank as one of your cards, then you would only have 3 outs. In order for a call by a hand with two overcards on the Turn to be correct against a player who has a pair, the expected pot size has to be at least 7 big bets. But that is only if you are sure you really do have 6 outs, sometimes you will have fewer outs, so you need to adjust your expected outs to a lower number (see the Outs and Pot Odds chapters). On the bright side, there are some cases when you are actually ahead even with no pair. You could be up against a player who has no pair but is on a draw. In that case, he could have as many as 15 outs, but that would mean you have more outs than him to win the hand. If you can identify these situations correctly, then you would be able to call a Turn bet with just two overcards. This is where the ability to read hands well is a nice advantage.

5. What if you are still drawing to a straight or a flush on the Turn?
Typically when this happens, you want to see the River as cheaply as possible. On the Flop, you may be willing to fire away if there are two or more opponents. Against two other players, you are getting 2:1 odds while there is a 35% chance you will hit the flush by the River. But on the Turn, if you have not made your flush yet, you would only have a 19.6% (9/46) chance of getting it on the River. Unless there are still a lot of players left, it would be worth it to put in as few chips as possible on the Turn. This applies to straight draws as well. If a player is aggressive on the Flop but slows down on the Turn, it may be a sign that he was and still is on a flush draw.

6. Did an A come on the Turn?
Many players will play any starting hand if it has an A in it, but not necessarily any hand that contains a K or Q. This is why the focus here is on the A coming on the Turn rather than other high cards. Many players will go one step further and call bets on the Flop just to see if they can hit a pair of A's on the Turn whereas they would be less apt to "take a card off" with a K or Q. Normally these players are calling stations. Or it could be a shorthanded game where that strategy would not be as egregiously incorrect. If you are up against a player with this characteristic, you have to be aware when an A comes on the Turn. If an A does come on the Turn while you are in early position, and your opponent is an aggressive player who will play any hand that contains an A, then you may decide to check and let him bet. Aggressive players may be willing to bet whether or not they have an A, because they think it is worth a try to buy the pot, especially given that you have shown weakness with a check. If you are in last position against an aggressive player, and he checks to you when an A comes on the Turn, you may simply check back and try to induce him to bluff on the River. It should be clear to him that you are afraid of the A, and he may think a bluff can actually work. When there are more opponents, it is more likely that one of them now has a pair of A's.

7. Position is key

Players who have raised in late position on the Flop may now check on the Turn if they were raising on a draw. Sometimes the action on the Flop is just posing. Think of it like peacocks flashing their bright and colorful tails. Players are betting and raising, sometimes with very little, as they jostle for an image and positioning on the Turn. When the Turn comes and the bet size has doubled, many players will now play out the hand to its real strength. This means draws and overcards that have not gotten there will slow down and the made hands are the ones doing the betting and raising. Having a good position to watch the action before it gets to you is mighty useful on the Turn.

Betting on the Turn Part I

If you have a hand that you believe is the current best hand, you should seriously consider betting on the Turn rather than trying for a check-raise. Going for a check-raise on the Turn is more dangerous because a free card has more value to players who are behind because the bet size on the Turn has doubled. Often players on a draw can call on the Flop with correct pot odds, but when the bet doubles on the Turn, they no longer have correct pot odds to call. If you bet on the Turn and they call when they are drawing without correct odds, then they are making a mistake. If you check and they get a free card to see the River, then you are the one making a mistake.

In late position, if other players have checked, you should bet even with a mediocre hand. Their check has signified they have weaker hands than you (although they could also be springing a trap with a check-raise if they suspect you will bet when checked to). If you get called on the Turn and you are worried you do not have the best hand, you will often be able to check it down on the River and show your hand.

In early position, if you think a late position player is on the draw, and you are likely to have the best hand at the moment, you should bet instead of trying for a check-raise. You can bet out on the Turn even if they had raised on the Flop as they may have been raising to get a free card on the Turn. This may be easier said than done, because in practice, you may not be sure if he has a draw or a made hand. In these spots, knowing your opponents and reading hands well will be a big advantage to you.

Raising on the Turn for a free showdown

This issue was discussed in the Semi-Bluffing chapter. Here is an example of raising on the Turn to get free showdown.

You are in late position with A♣9♣. You open raise pre-Flop and both blinds call.

Flop: A♦K♣8♥

Both blinds check to you and you bet with your pair of A's and middle kicker. The small blind check-raises and the big blind folds. You call.
Turn: 2♣

You have added a flush draw to your pair of A's (two clubs on the board, two clubs in your hand).

The small blind bets. The small blind is a loose and aggressive player and you think he may have a pair of A's with a weaker kicker than yours. A check-raise on the Flop would be consistent with that. But he could also have a hand that is better than yours, such as AJ, AT, A8, K8, 88. It is important that you get to the showdown in this hand because you may have the best hand. However the 2♣ on the Turn has given you some extra outs. You now have a flush draw and have an additional 9 outs to your hand if you were behind on the Turn. You may decide to raise on the Turn with the idea of checking on the river if you do not improve. Your opponent will likely just call with an A and a good kicker (AJ, AT) as he would be afraid you held AK, a common holding for tight pre-Flop raises such as yourself. But even if he did re-raise you on the Turn with a better hand, you probably still have at least 9 outs.

Now if all goes as planned, your opponent will call the raise and check on the River. Your plan if you do not hit your flush is to check and show down your hand. If the flush comes on the River, you should bet of course. Typically your opponent will be surprised to see you with the backdoor flush and mumble something about a bad beat, even if they were already beaten by your kicker. If you lose, you would have lost the same amount if you had just called the Turn and then called his bet on the River. If you win without making the flush, you win the same amount as you would have anyway. If you win with the flush or with a 9 on the River (for two pair), then you would win an extra bet that you would not have otherwise.

The deceptive nature of the flush draw that you picked up on the Turn adds to the complexity of this hand. It also shows the extra value that suited starting hands have over non-suited starting hands (but do not go crazy with this concept, it only adds a little bit of value).

Betting on the Turn Part II
Sometimes you will want to bet on the Turn with the intention of checking on the River. This is similar to the strategy of raising for a free showdown, except that instead of raising, you are betting. This strategy requires that you are last to act and you are the aggressor. If you have raised pre-Flop, bet on the Flop and on the Turn as well, you are clearly saying you have a strong hand. If your opponent check-raises on the Turn after all of your aggression, then it is usually clear he has an even stronger hand. But if your opponent has a mediocre hand and/or is passive, then he may simply call your bet on the Turn and check to you on the River. If you had a mediocre hand and he had outs, t would be even better if he folded. This is useful when you are not sure if you have the better hand or not, as you are not giving him any free cards when you are ahead.

If you had decided to check on the Turn, you may still be willing to call a bet on the River since he may be bluffing, and you could win with just high cards. In that case, checking on the Turn with the intention of calling on the River would yield the same result as betting on the Turn with the intention of checking on the River. If you checked on the Turn and called a bet on the River, you would win one bet if you won, and lose one bet if you lost. If you had bet the Turn and checked on the River, then you would win one bet if you won and lost one bet if you lost. However, if you bet on the Turn, and you catch on the River, you now have the option to bet again on the River and win two bets. This can happen too if you checked the Turn and then raised on the River. However, a raise on the River will seem stronger to most opponents, and you may be less likely to get called in that scenario. Also, if you checked the Turn, you would not have received the possible benefit of your opponent folding on the Turn after you bet.

Here is an example. You are in late position and you open raise.

Your hand: AQo

A loose player in the big blind calls. The two of you see the Flop heads-up.

Flop: K-7-6 rainbow

Your loose opponent checks and you bet. He calls.

Turn: 2

Your loose opponent checks. Even though you do not have a pair, you should consider betting again. You know that he will call with any pair, but if he does not, then you are ahead and you would not want him to get a free card on the River.

The key to this hand is that he may fold hands like T9 and T8 when you bet. With these exact hands, it would be a mistake for your opponent to fold. With T9 or T8, he would have 10 outs, 4 for the inside straight and 6 for a pair. The pot is small (only 4.25 big bets), but he would have enough pot odds to call. From his perspective, if he knew he had 10 outs, then this is the analysis he should be making:

DIPO method with 10 outs	Computation	Result
Good Number	10 x 4.25	42.5
Bad Number	46 -10	36

The pot is offering him enough odds to call. But he does not know he has 10 outs. He may think he only has 4 outs or he may estimate he has 7 outs on average (4 outs for the straight and a 50% chance to have an additional 6 outs). With those assumptions, it would look like a call is a poor play.

DIPO method with 4 outs	Computation	Result
Good Number	7 x 4.25	29.75
Bad Number	46 - 7	39

If you bet your AQo, and he folds an inside straight draw, he is making a mistake. That is a great benefit of your bet because it gives him a chance to make an incorrect decision.

If he does call you on the Turn, you can check on the River. If he was on a draw, he will not call now unless he made the draw or a pair. If he had a pair, he is more likely to call again. If you bet, you are likely to be putting yourself in a situation where you will lose one bet if you have the worst

hand and win nothing if you have the best hand.

Betting or Raising on the Turn with A-high if you think your opponent is on a draw
If you think your opponent is on a draw, then you may have the best hand with A-high even though you may not have a pair. You should consider betting or raising (assuming it is heads-up) to make sure your opponent puts in the most number of bets possible on the Turn. If he is on a draw and you wait until the River to bet, it will be too late as he will either fold without putting in any more bets or raise you when he does catch his draw. Given these hands, if you just call his bet, or check after he checks, you are letting him see the River too cheaply. You want to make him pay his River fee on the Turn when he is still willing to pay it. Here is a look at this issue with expected values.

Assumptions:
1. Your opponent is on a flush draw with Q♦J♦
2. You have A♣K♣ without a pair
3. He will call any bets on the Turn
4. If you do not show strength on the Turn, then he will bluff 50% of the time with nothing
5. He has 15 outs (9 for the flush and 6 for a pair) and there are 44 unknown cards
6. You will fold when you see a flush card, but you will call if you see a Q or J
7. The pot is 6 big bets
8. It is heads-up now, he is first to act and has checked

Action	Computation	Result
EV of checking	(9/44 x 0) + (6/44 x -1) + (39/44 x 50% x 7) + (39/44 x 50% x 6)	+5.63
EV of betting	(9/44 x -1) + (6/44 x -1) + (39/44 x 7)	+5.86

With those assumptions, it is better to bet since the EV of betting (+5.86) is higher than the EV checking (+5.63). As usual, the EVs of the different decisions are dependent on the opponent. If your opponent is guaranteed to bet 100% of the time on the River if you check on the Turn (whether or not he hit his flush, a pair or nothing at all), then the EV for checking looks like this:

Action	Computation	Result
EV of checking when he bets 100% on the River	(9/44 x 0) + (6/44 x -1) + (39/44 x 100% x 7)	+6.07

So against a habitual bluffer, a check is better than a bet (this assumes he will not bluff on the River if you had bet on the Turn since you have shown him you have a made hand).

If the opponent is so passive that he will never bluff on the River even after you check, then the EV of checking goes even lower.

Action	Computation	Result
EV of checking when he bluffs 0% on the River	(9/44 x 0) + (6/44 x -1) + (39/44 x 100% x 6)	+5.18

It turns out that the breakeven point between checking and betting in this scenario is when he bluffs 76.5% of the time. If he bluffs 76.5% of the time after you check, you should be indifferent between checking and betting. If he bluffs greater than 76.5% after you check, then checking is the better play. If he bluffs less than 76.5% after you check, then betting is the better play. There are many players that would bluff higher than 76.5% of the time and many players that would bluff less than 76.5% of the time in a situation like this. If you can identify your opponent's bluffing frequencies, you will have a much better idea of whether to bet or not.

Action	Computation	Result
EV of checking when a player bluffs 76.5% on the River	(9/44 x 0) + (6/44 x -1) + (39/44 x 76.5% x 7) + (39/44 x 23.5% x 6)	+5.86 (the same as the EV of betting)

As in many poker situations, this is a situation where just knowing the math and the equations in isolation is not helpful. The variables that the user inputs into the equations will change the answer. If a player is misinformed on his opponent's playing style, the equations will give him a bad answer. There is a nice advantage to combine the understanding of the equations and the understanding of the players. Of course, plugging these numbers into the formula at the poker table is completely unrealistic. The key is to understand this analysis away from the table, and then use it as a guideline while at the table. Here is the guideline in this situation.

If you have a A-high hand, and you think your opponent is on a draw, you should check on the Turn and induce a bluff on the River if you think there is a high chance your opponent will bluff. If you think there is a low to medium chance your opponent will bluff, then you should bet.

Countering a possible Semi-Bluffer on the Turn
Usually when you have a made hand and you think your opponent is on a draw, it is best to bet or raise on the Turn to make him put in his chips on the Turn. This is because most players will not commit any more chips on the River if they do not hit. But as shown in the previous section, if an opponent is a habitual bluffer, it may be best not to bet. Whether to raise or not works in much the same way.

Let's say you are in a heads-up spot against a very aggressive bettor. He is in early position and you are in late position. You have top two pair, and you are confident you have the best hand. However, you suspect your opponent is on a draw so he has outs. Your opponent had limped in middle position before the Flop, and you had raised on the button. The two of you saw the Flop heads-up. On the Flop, he check-raised you and you called. Here is the situation on the Turn.

Your hand: K♠J♦

Board: K♣J♣4♦ [turn] 3♠

You decide that he is definitely on a flush draw. He cannot beat you unless he catches a club on the River. He is an aggressive player, so you think that if you show weakness by just calling his bet on the Turn that he will bet out on the River even if he has nothing. If you just call and you win, you will win two bets (one on Turn, one on River). If he catches, then you will lose two bets as well.

If you raise, you are telling him you have a made hand, at which point he will now back off on the River and check and fold if he does not hit his flush. If he does not catch a flush on the River, then you will win two bets (two bets from him on the Turn, none on the River). But if he does catch his flush on the River, he will bet out and then you will lose three bets (two bets on the Turn since you raised, and one on the River after you call his bet).

This is a situation where you can win or lose two bets if you just call on the Turn. But if you raised on the Turn, you can win two bets if you win, but lose three bets if you lose. Even though you believe you are ahead, calling against this player who will bluff 100% of the time. The EV formulas are as follows:

Action	Computation	Result
EV of calling	(35/44 x 2 bets) + (9/44 x -2 bets)	+1.18
EV of raising	(35/44 x 2 bets) + (9/44 x -3 bets)	+0.98

This demonstrations shows a situation where you may not want to raise an aggressive player who is on a draw. However, in the real world, it is rarely as simple as this as it will be difficult to know exactly what he has. Possibly he has a set (then you would have few outs) or he has top pair with a lower kicker than yours (then he would have few outs). Here is an example that will more accurately reflect a real situation at the poker table.

Assumptions:
1. Your hand: K♠J♦
2. Board: K♣J♣4♦3♠
3. Your opponent has a set of 4's or 3's 10% of the time. If he does, you have 4 outs.
4. Your opponent has KT 20% of the time. If he does, he is drawing dead
5. Your opponent has a flush draw 70% of the time. If he does, he has 9 outs.
6. There are 44 unknown cards. Normally the assumption is 46, but we are assuming we have an idea of the two cards he has.
7. There were 4 big bets in the pot before the Turn. Your opponent is first to act and he has bet, making it 5 big bets in the pot.
8. If you call, your opponent will bet on the River regardless of the card that comes. You will raise if you make a full house, but just call if you do not improve.
9. If you raise, you will be convincing your opponent that you have a made hand and he will just call on the Turn no matter what. If he has a set on the River, he will bet and you will call, unless

you pick up a full house in which case you will raise and he will call. If he has KT, he will bet on the River and you will call, if you raise with a full house, he will fold. If he has a busted draw, he will check and fold on the River. If he makes his draw, he will bet and you will call.

Expected Value of Calling

Your opponent's hand and the probability he has that hand	Computation	Result
Set, 10%	(4/44 x 7) + (40/44 x -2)	-1.18
KT, 20%	(44/44 x 6)	+6.00
Flush draw, 70%	(35/44 x 6) + (9/44 x -2)	+4.36
Total, 100%	(10% x -1.18) + (20% x 6.00) + (70% x 4.36)	+4.13

Expected Value of Raising

Your opponent's hand and the probability he has that hand	Computation	Result
Set, 10%	(4/44 x 8) + (40/44 x -3)	-2.00
KT, 20%	(44/44 x 7)	+7.00
Flush draw, 70%	(35/44 x 6) + (9/44 x -3)	+4.16
Total, 100%	(10% x -2.00) + (20% x 7.00) + (70% x 4.16)	+4.11

The EV of calling is almost identical to the EV of raising. It turns out in this more realistic example, there is virtually no difference between calling or raising. This is because you cannot assume there is a 100% chance he is on a draw, you should assume the opponent has a wider spectrum of possible hands.

Betting when everyone else is weak
If there are no raises pre-Flop and every player shows weakness on the Flop, then you should consider betting on the Turn, even with absolutely nothing. For example, you are in small blind, a weak player limps in, you call and the big blind checks.

Your hand: JT

Flop: K-8-6 rainbow

Everyone checks.

Turn: K

The K on the Turn pairs the board and you should consider betting. Any player that had a pair on the Flop would have probably bet. But since no one bet on the Flop, then when the Turn pairs the board, it probably means no one has anything. Since you were in the small blind and first to act on the Flop, it may look like you were trying for a check-raise. Now that no one has bet the Flop, a bet from you would be consistent with the strategy of trying for a check-raise on the Flop.

When you are Raised on the Turn
Getting raised on the Turn is not fun when you do not have a quality hand. It means someone either has a better hand already or is trying to make a move on you.

If you are raised by a late position player on the Turn, it could mean several things, amongst them are:

1. He has the better hand
2. He has a hand that may or not be better than yours, he is raising for a "free showdown"
3. He is semi-bluffing with a worse hand, but he has outs
4. He is bluffing or he has the worst hand without realizing it

These are difficult situations to analyze. The analysis will depend on the characteristics of your opponent. If he is a passive player, then a raise will almost always mean he has the better hand, and you should probably fold. If he is an aggressive, tricky player, then he could have any of the four possible hands listed. Against the passive, predictable player, the decision is easy, against the unpredictable player it is not. This is one of the reasons why it is better to have the unpredictable players to your right, where they will usually have to act before you act.

If an early position player has check-raised, it is more likely that he has the better hand. He is committing himself not only to a raise, but also to a bet on the River. An early position player does not have the advantages of being able to get a free showdown with a raise on the Turn.

Bad Turn/River Cards when you have middle Pair and your Opponent has a possible straight draw
When you think there is a chance your opponent is on a straight draw, there are some cards that are disastrous to your hand. If you have middle pair, a player that has a straight draw could have as many as 14 outs to win.

Example
A loose player limps in and you raise on the Button with A♠9♠. Everyone else folds except the looser player who calls.

Your hand: A♠9♠

Flop: Q♠9♣3♦

The loose player checks, you bet and he calls. Even a loose player is likely calling with something as opposed to absolutely nothing. Perhaps he has a straight draw with KJ, KT, JT, J8, T8. Of

course he could have top pair or middle pair, but let's concentrate on the straight draw possibility in this example.

Turn: J or T

With a Turn like that, you have to be very careful. If he was on a straight draw, even an inside straight draw, such as KJ, J8, T8, a J or T will either make the straight for him and give him a higher pair than you. If he checks, it is probably worthwhile to bet again on the Turn if he is a passive type of player. This way you know that if he raises you can fold with confidence that you are beaten. But if he calls, you can check behind him on the River, assuming he does check the River. The Turn is a better time to make a bet (rather than waiting to bet on the River) because he may call to see the River with hands such as A3 or K9, whereas on the River, he may not call if he has not improved.

The same type of situation can come up when the cards are lower, such as when the Flop is T♠7♣3♦. In that case a 8 or 9 would be dangerous. Since all players, including the loose ones, are more likely to play higher cards, an 8 or 9 is less dangerous than in the first example because there is a smaller chance he played a hand like 98 or 96 than JT or J8.

Large Pots on the Turn
When you are ahead in a large pot on the Turn, you should be betting and raising if you think you have the best hand. This is the time to charge the draws as much as possible to see the River. If they do not hit their draw on the River, they will not pay you off on the River. If they do hit, then you will be the one donating to them. So you have to figure out the best way to extract bets out of them. If no one is betting, then you won't have any other option except to bet yourself. If a player to your right bets, then you can raise and make it two bets to the players behind you. When the pot is large, do not play in a tricky way with check-raises or slowplays. If you checked with the intention to check-raise, but no one bets, then you would have given a free card to the other players.

Hold'em Brain: The River
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The River Paradox
On the River, you want to avoid two types of mistakes:

1. Folding with the best hand
2. Calling too often with the worst hand

These two mistakes run counter to each other, I call it the River Paradox. You do not want to make the mistake of folding a winning hand, but you also do not want to make the mistake of calling too often when you are beat. Folding on the River when you have the best hand is a costly mistake. Pots are usually of substantial size by the River. When a pot is stolen from you on the River, it is difficult to make up for the loss. These mistakes do not have to happen often for it to be costly. Calling on the River too often without the best hand does not cost as much, but it will occur more often. This is a small mistake on any individual hand and only costs one big bet. But the opportunities to make this mistake will occur frequently. When this mistake is repeatedly made, the cost adds up quickly. It is difficult to balance the play on the River to avoid both mistakes.

How does one solve the River Paradox? By figuring out the tendencies of opponents, reading hands well and being prepared for situations before they happen. This chapter will give you the tools to solve the problems on the River.

Heads-up play on the River is more interesting than when there are more players. With 3 or more players, the pot is usually large enough that manyt players will call with legitimate hands that have any chance of winning. The discussion here will start with heads-up play then go on to some interesting multiple player River situations.

Thinking on the River: Heads-up
There are four variables that you need to think about on the River when heads-up (down to just two players). These issues are reflected in the "General Table for Heads-Up River Play".

1. Are you the first to act or the last to act? (Shown in the column headings on the table)
2. You have to estimate the probability that you have the best hand. You have been thinking about this issue since the first two cards. The River is the culmination of this thought process. (Shown in the row headings in the table.)
3. You have to know how your opponent plays. Is he passive or aggressive? Will he value bet or check it down? Will he bluff or not? (Shown in the 2nd and 3rd columns)
4. Given you know the answer to the first three variables, you have to come up with the best plan to maximize profits and/or minimize losses.

General Table for Heads-Up River Play

Your chance of having the best hand	You are first to act & he is <u>Aggressive</u>	You are first to act & he is <u>Passive</u>	You are last to act against a <u>check</u>	You are last to act against a <u>bet</u>
0%	Check or Bluff	Check	Check or Bluff	Fold or Bluff
25%	Check-Call	Check-Call	Check	Call
50%	Check-Call	Bet, unless he was on a draw, then Check-call	Check	Call
75%	Check-Call / Bet if it looks like a draw made it	Bet, unless he was on a draw, then Check-call	Bet	Raise / Call
100%	Bet / Check-Raise	Bet	Bet	Raise

% of having the best hand: A Note
It is difficult to estimate your probability of having the best hand. You need to be able to think critically about the development of the hand as well as have a good idea of how your opponents play. After reading this chapter, the usefulness of being able to pinpoint your probability of winning should be clear.

You can have the same probability of having the best hand in a variety of ways. It is not as static as this table shows. You can think you have a 50% chance of winning while your opponent knows whether he has a 0% or a 100% chance of winning. This can happen if he was on a draw. For example, if there is a possible straight draw and a possible flush draw on the board, and a card comes that completes a possible straight draw, you will not know if he has a straight or a busted flush, but he will know. You can also think you have a 50% chance of winning while your opponent thinks the same. For example, you could have a split middle pair of T's with a A kicker, thinking your opponent either has top pair or middle pair with a worse kicker. Meanwhile, your opponent could have top pair with a bad kicker and think you have a top pair with a better kicker or middle pair. In that case, both of you will think you are close to having a 50% chance of winning.

Difference scenarios may provide you with the same probabilities of having the best hand. You need to act according to the situation instead of just the probability. These issues are discussed in the sections of "50% of having the best hand" and "75% of having the best hand".

0% of having the best hand: First to act
If you have no chance of winning, then your decision is whether to bluff or to fold.

Here are some ways you may be able to bluff successfully:
1. If you think your opponent is weak too, a bet may win the pot. If your late position opponent checked on the Turn after you checked, then he may be weak. It may be he is inducing a bluff, but it could be because he does not have much of a hand himself. The strength of your hand is no longer relevant, what is relevant is the probability he folds.

2. A scare card comes on the River (an overcard, especially an A, and a third flush card are the most common forms of scare cards). If it looks to your opponent like you may have been on a draw, then one of these cards may help you bluff successfully. For example, if you had AK and were drawing to a pair when the Flop came with two cards to a flush, you should consider betting on the River if the River card would complete a possible flush. Your opponent may have thought that was the reason you were calling and make the mistake of folding when you bet on the River. Of course, you will need to choose to make this bluff against an opponent that can fold. You would not want to bet into a calling station since they are unlikely to fold.

0% of having the best hand: Last to act
Aggressive players may bet on the River when they are first to act because they do not want to miss a bet if they are ahead. Against the players who may bet for value with little edge, a raise as a bluff has a greater chance of succeeding. If they bet with little edge, your raise may convince them that their original evaluation was wrong. Against passive players who are less likely to bet for value, a raise will not work as often, because they are usually in the mode of checking and calling. When passive players check they are not giving you any information about the strength of their hand. But passive players can bluff too. When they have a legitimate hand, some passive players are more likely to check with the intention of calling. They are less likely to bet for value. So when they do bet, it means either they have a great hand or they are bluffing. If you know your opponents well, then you will have a good idea of when and how often they like to bluff.

25% of having the best hand: First to act
If you only have a 25% chance of winning, you should typically check with the intention of calling. Most of the time, you will have enough pot odds to showdown your hand, so the question is to bet or check with the intention of calling.

Here are the different possibilities involving betting and checking.
1. If you bet and your opponent does have a better hand, he will call or raise and you will have lost one bet.
2. If you bet and your opponent has a worse hand, he will fold so you do not gain anything.
3. If you check and your opponent has a better hand, he will bet and you will lose one bet.
4. If you check and he has a worse hand, your check may induce him to bluff.

Here is a table assuming he always bets when you check to him (either because he has the better hand or because you induced him to bluff). The table also assumes if you bet, he will call with a better hand, but fold with a worse one.

Your Action	You have best hand	You have worst hand
Bet	0	-1
Check with intention of calling	+1	-1

Checking with the intention of calling as a strategy dominates betting in this case. If you have the best hand, then you win one big bet if you check but none if you bet. If you have the worst hand, you will lose 1 big bet either way. Against this simple opponent, you should always check with the intention to call a bet.

Here is an EV table with a more realistic passive opponent. The pot size is 6 big bets. If you bet, your opponent will always call. So if you bet and have the best hand, you will win 7 big bets. If you check, your opponent will only bet with his best hands. He will bet 25% of the time and check 75% of the time. When he bets, it is when he is absolutely sure he has the best hand (if you knew this, then you would fold, but let's assume you don't know that).

Action vs passive player	Computation	Result
EV when you bet	(25% x 7) + (75% x -1)	+1.00
EV when you check	(25% x 6) + (25% x -1) + (50% x 0)	+1.25

The table shows that you should check when you are the underdog and your opponent is passive. If you bet, you are basically betting his hand for him, even when he is too scared to bet it himself.

Let's take a bit of a tangent here and compare this scenario to the scenario when you have a 50% chance of having the best hand. It is important to discuss this now is so you can see that the choice of checking or betting against the passive player is dependent on the probability you have the best hand. You should not be checking against a passive player in all situations.

Action vs passive player when you have a 50% of having the best hand	Computation	Result
EV when you bet	(50% x 7) + (50% x -1)	+3.00
EV when you check	(50% x 6) + (25% x -1) + (25% x 0)	+2.75

When the probability of you having the best hand increases up to 50%, then you have a greater EV when you bet than when you check. The point where the EV of betting and the EV of checking (against this passive player) are equal is when you have a 37.5% chance of winning. This is the case when your opponent acts as described, and the pot size is irrelevant (you can put in 100 for the pot size and get the same difference for the EV of betting and checking). Figuring out the probability that you have the best hand is difficult. It takes skill in reading the other player's hand as well as experience in understanding different situations in Hold'em. But if you can do it well, you will have an easier time choosing whether to bet or check.

Let's go back to when you have a 25% chance of having the best hand. Let's switch the opponent to a sharp, aggressive player. Because he is sharp, he will fold when you bet the best hand, but call when you bet the worst hand. Consider two different levels of aggressive players when you check.

Those that will bet 100% of the time when you check and those that will only bet 50% of his best hands when you check (compare this to the passive player who bets 25% of his best hands when you check).

Action vs different aggressive players	Computation	Result
EV when you bet	(25% x 6) + (75% x -1)	+0.75
EV when you check and he bets 100% of the time	(25% x 7) + (75% x -1)	+1.00
EV when you check and he bets 50% of the time	(25% x 6) + (50% x -1) + (25% x 0)	+1.00

Against either player, it is also better to check with the intention of calling rather than betting. Although not listed, against the opponent who will bet with 75% of the time, your EV is the same as when you bet because he is not betting when you have the best hand, just like he was not calling when you bet and you had the best hand.

25% of having the best hand: Last to act
If you are last to act with a 25% chance of winning, you should check. A better hand will usually call when you bet, but a worse hand likely will not. This means you are not getting value when you have the best hand but are giving away value when you have the worst hand. The only advantage to betting is if you can pull off a successful bluff. But you have a hand that can win 25% of the time. That means you need to convince your opponent to fold with a relatively strong hand (which is rare), in order for a bluff to work. Remember, if he folds a worse hand, you did not gain anything by betting.

The only time you may want to bet is if your opponent is loose and aggressive. The fact that he did not bet when he is first to act may mean that he does not have a good hand. In that case he has given you new information by his actions (as opposed to the passive player who always checks so his action does not give you new information). Thus you can upgrade your opinion of your own hand, possibly to 75%. If he is loose, he will call (this is not the same as when your opponent thinks you may have made a possible draw on the River, in that case, the aggressive player's check may simply reflect his fear that you were on a draw, and you should check as well).

If he bets, you will usually have pot odds to call (just 3 big bets would do). A bluff is not a good idea for the same reason listed when your opponent has checked.

50% of having the best hand: First to act
Against passive players who were not on a draw, you should bet when you have a 50% chance of having the best hand. They will call your bet often, but if you check, they will bet only with their best hands. Let's take a look at an expected value equation for a situation like this. Your opponent is a passive player who plays straightforward. If you bet, your opponent will always call.

Since you believe you have a 50% chance of winning and he will always call, the expectancy for betting is zero. However, if you check, your opponent has the option of betting or checking. Like most passive players, he will not bet unless he is confident he has the best hand. Let's say he only bets 20% of the time, but during those times, he has an 80% chance of having the best hand. The other 80% of time that he checks, he has a 42.5% chance of having the best hand. On average, these numbers are consistent with your assumption that you have a 50% chance of winning (20% x 80% + 80% x 42.5% = 50%). Let's also assume there is already 5 big bets in the pot. This assumption is important, because if there were no bets in the pot at all, then you could simply fold once he bets since he is more likely to have you beat when he does bet.

Action vs passive	Computation	Result
EV when you bet	(50% x 6) + (50% x -1)	+2.50
EV when you check	(20% x 80% x -1) + (20% x 20% x 6) + (80% x 42.5% x 0) + (80% x 57.5% x 5)	+2.38

The EV of betting is greater than the EV of checking (2.50 vs 2.38). So you should bet against a passive player who was not on a draw.

Against passive players who may be on a draw, you will have to check and call. For example, there are both straight draws and flush draws (and you are not sure which one he was drawing to). One of the draws gets there on the end. You still do not know if you have the best hand or not, but your opponent knows. If he has a busted draw, you cannot bet since he will not call. The best plan would be to check in order to induce him to bluff. If he has made his draw, then he will call or raise when you bet.

A table previously shown when you have a 25% chance of having the best hand and are first to act applies here too.

Your Action	You have best hand	You have worst hand
Bet	0	-1
Check with intention of calling	+1	-1

Here is an example.

Your hand: A♣A♠

Board: J♥T♥2♣ [turn] 3♠ [river] 9♣

Your opponent raised you on the Flop and checked on the Turn which makes you think he is on a

draw. The 9♣ could have made a straight draw, but not a flush draw. If your opponent had two hearts for a busted flush draw, then he will not call if you bet. But if he was on a straight draw with KQ, then he will raise you. If you check and he was on a busted flush draw, then he may try to bluff to win the pot. You think your chances of having the best hand is close to 50% but your opponent has more information than you, he knows if he has made his draw or not, he knows if he has a 0% a 100% chance of having the best hand. It is better for you to check and call rather than bet. In this situation, the passive player has unwittingly turned into an aggressive player due to his hand.

In this EV chart, assume the passive opponent was on a draw. You do not know if he has made it or not, as far as you know, there is a 50% he made it and a 50% he missed. But he knows whether he has made it or not. If he did not make it, he will bluff 10% of the time and give up and muck his hand 90% of the time.

Action vs when your passive opponent is on a draw	Computation	Result
EV when you bet	(50% x 6) + (50% x -1)	+2.50
EV when you check	(50% x 10% x 7) + (50% x 90% x 6) + (50% x -1)	+2.55

You do not gain that much by checking compared to calling, but you still gain. Passive opponents will not bluff that often, but given the chance, they may bluff once in a while with nothing. The key here is that if you bet, you cannot win any bets. But if you check, you will either win the same amount or more if they decide to bluff. If he will never bluff, then the EV of betting is the same as the EV of checking if you are willing to call when he bets. But if he never bluffs, then you would actually fold when he bets, so checking is still better than betting.

If you are against an aggressive player who will bluff when you check (whether or not he was on a draw), then you should check and let him bet. Here is the EV table against an aggressive opponent who will bluff 40% of the time he has the worst hand when you check.

Action vs aggressive	Computation	Result
EV when you bet	(50% x 6) + (50% x -1)	+2.50
EV when you check	(50% x 40% x 7) + (50% x 60% x 6) + (50% x -1)	+2.70

Against an aggressive opponent, you should check and call because he is willing to bet more often than he will call.
In summary, the key is the opponent and what the type of hand he is playing. You want to bet against passive opponents who are not on a draw (this is because they are likely to call you when

they have a worse hand if they were not on a draw, but if they had a busted draw, they are not going to call you). You want to check with the intention of calling against aggressive opponents who are willing to bluff with hands that they may not call with if you had bet. You want to check with the intention of calling against passive opponents who were on a draw and you are not sure if they made it or not.

50% of having the best hand: Last to act
Before the early position player acted, you thought you had a 50% chance of having the best hand. Once the early position player acts, he may or may not have given you information. If the early position is a passive player, then he will usually check even if you would bet in his place. This means he has not given you any extra information when he does check. So you should lean towards checking because he may fold with his worst hands, but will always call when he has the best hand. If you bet, he may call 95% of the time. 50% of the time, he has a better hand, 45% of the time he has a worst hand and 5% of the time he will fold with the worst hand. A bet has negative value in that case.

However, against sharp and aggressive players, their check may give you useful information. Their check may signify they do not have anything (otherwise they would have bet as they are afraid to miss a bet), but it could be trying to induce you to bluff too. If you are not sure, lean towards checking as well. If you know your opponent's tendencies, then you can use that information to decide to check, bet with the intention of calling a check-raise or bet with the intention of folding to a check-raise. For example, against a loose and aggressive player who likes to bet, you should consider betting when he checks.

If the opponent bets, you should call if his bet has not changed your opinion about the probability you have the best hand.

75% of having the best hand: First to act
If you are heads-up against a passive opponent and you have a 75% chance of winning, the strategy is to bet. You cannot count on the passive player to bet if you check, so you should bet and hope he calls. But if you think your opponent may have been on a draw, you should check with the intention of calling, as discussed previously.

If your opponent is aggressive then you have more options. You can bet or you can check with the intention of calling or raising. It will depend on how loose the aggressive player is. If you are check-raising, you want a player to call with a worse hand than yours. If you think the aggressive player will bet but not call when you check-raise, then you might as well bet. Instead of taking the chance that he checks with a worse hand, you want to bet to make sure he does pay you off.

An aggressive player can turn into a passive player if he thinks you were on a draw and the draw comes on the River. In that case, you should no longer think of the player as an aggressive player if he is going to act like a passive player in this situation. You should now definitely bet because he is less likely to bet if you check. An aggressive player is more likely to check if he thought there was a chance you were on a draw and it looks like the draw made it. In that case, the aggressive player will no longer play aggressively but has turned temporarily into a passive player. For example, you have top pair with top kicker. The board contained two cards of the same suit and

the River card is at third card of that suit. If you are planning to call after you have checked anyway, you might as well bet. This is because it will be hard for any hand that you can beat to bet after you have checked, even from an aggressive player. For example, the aggressive player would not bet one pair with a lower kicker if he thought there was a chance you were on a draw and the draw made it. But he may call thinking you are trying to use the scare card to bluff.

75% of having the best hand: Last to act
If it is checked to you, you should bet against any player. If a player has bet, you can consider calling or raising. If you decide to raise, you need to have a back up plan in case you get re-raised. Against certain players, a re-raise can only mean they have the nuts, so you have to be aware that you are willing to fold if you get re-raised against this player even before you raise him in the first place. Against some sharp players, they may not call with a worse hand if you raise on the River, so that means a raise has no value (against these players, you should throw in a bluff now and then). When you do have the best hand, he is not going to call, when he has the best hand, he'll call or re-raise.

100% of having the best hand: First to act
If you think you are guaranteed to have the best hand, then you have the nuts. Against passive players, you have to bet since they will not. Against aggressive players, you may decide to bet or try a check-raise. Here are the reasons to check-raise against an aggressive player.

1. You are quite sure he will bet based on the play of the hand. Check-raise to get more money into the pot (although sometimes you may want to bet and let him raise so you can re-raise - this depends on how aggressive the aggressive player is, and the texture of the board).

2. You want to check-raise for future value. You want to be able to check-raise on the River with a bluff, so if you try for a check-raise with the nuts, your opponent may remember it and fold to you in the future when you try it again.

3. You want to check-raise so that he gets the message that he should not bet for value against you. You want to convince him that a check by you in first position does not necessarily mean you are weak.

100% of having the best hand: Last to act
This is the easiest situation. Bet, raise and re-raise. Have fun!

Thinking on the River: multiple player pots
Three players or more on the River
If there are three or more players on the River, you should play straightforward. Bet if you think you have a high chance of having the best hand, check if you are not that confident. Call if you have a reasonable chance of having the best hand relative to the pot size. When you consider bluffing, you need to consider the possibility that all players will fold, not just one.

When not to raise even you have the best hand
If there are more than two players, you may not want to raise if you can make more by just calling.

Here are a couple of examples.

Example: When you have the nuts
There are three players in the hand and you are second to act. You have the nuts. The second player bets. You are absolutely sure that both players will fold if you raise. But the third player may call if you just call. You do not gain anything by raising, but if you call, you may be able to get the third player's chips too.

Example: When you probably have the best hand, but not the nuts
You have a 60% chance of having the best hand, and you are the second player to act in a 4-way pot. You think the first player has 40% chance of winning. Both the third player and the fourth player are calling stations with 0% chance of having the best hand. If you raise, both calling stations will fold. If you call, there is a 50% chance that exactly one of them will call. If the first player bets, you should not raise even though you are a favorite to win the hand.

Action	Computation	Result
EV when you call	(60% x 50% x 7) + (60% x 50% x 6) + (40% x -1)	+3.50
EV when you raise	(60% x 7) + (40% x -2)	+3.40

The EV of raising (+3.40) is lower than the EV of calling by 0.10 big bets. You should call when you are not that confident you have the best hand and hope a bad player calls also.

Large Pots on the River
When the pot is large, it does not take a high winning percentage for a bet or a raise to be correct. Say the pot contains 10 big bets and you have a 15% chance of winning and there are two other players in the hand. If you can successfully bluff 10% of the time with a raise, then a raise could increase your winning percentage up to 25%. We can compare the expected values of calling and raising to see which one is a better play.

Action	Computation	Result
EV of calling	(15% x 10) + (85% x -1)	+0.65
EV of raising if you can steal the pot 10% of the time	(25% x 10) + (75% x 2)	+1.00

Raising is worthwhile in a situation like this, but only if you have actually corrected estimated the percentages that all the players will fold. Your raise has to make both players fold which is obviously more difficult than getting one player to fold. For example, if both of your opponents will only fold 5% of the time when one of them has a better hand, then the chance of you winning has only gone up to 20% from 15%. Here is the expected value of raising against these opponents.

Action	Computation	Result
EV of raising if you can steal the pot 5% of the time (added to the 15% of the time when you have the best hand)	(20% x 10) + (80% x -2)	+0.40

If both of these opponents only fold 20% of the time, then a raise will be a losing play compared to calling. As usual, the equations show that knowing the players and how they play is crucial to the game. The equations by themselves do not provide an answer, it is the user input that is the key to the equations.

Why is it correct to call on the River with zero EV or slightly negative EV
If you play against the same opponents all the time, there is value to calling on the River even if the call has slightly negative EV. This is because your calls on the River will reduce the chances that other players will try to bluff you on the River and induce you to make the monumental mistake of folding a winner on the River. Since that is the biggest mistake you can make, there may be value in giving up a small amount of edge to prevent those mistakes from happening. Of course, this concept can be taken too far. You would not want to call when the pot odds is offering you 5:1 when you have only a 10% chance of winning.

Example
It is the River and your opponent has bet. You estimate you have a 25% chance of having the best hand. After your opponent's bet, there is 3 big bets in the pot. Calling would be a zero expectancy play (75% of the time you lose 1 big bet for a net of -0.75 big bets, 25% of the time you win 3 big bets for a net of +0.75 big bets, adding these two together gets an expectancy of 0 big bets). If you played this hand 1000 times, it wouldn't matter if you always called or always folded. However, if you fold on the River too often, your opponents may think you play weakly. They may be tempted to bluff or semi-bluff against you more often in the future in order to run you off the best hand. You do not want players to be taking potshots at you.

If you are seen as a player who folds when the going gets tough, other players will soon start to notice this and take advantage of you. You need to pick and choose to pay off on the river even with zero EV or slightly negative EV for future considerations. If the percentages seem close, even if it is slightly the worst of it, lean toward calling rather than folding. This should reduce other players taking advantage of you if they can assume you will fold to a raise or semi-bluff.

Last to act: Inducing a bet or call on the River with a check on the Turn
If you are last to act, there are times when you want to check on the Turn with a hand that you think is a favorite to be the best hand, but you are not sure. If you are ahead, you think your opponent may be sufficiently weak that he will not call a bet anyway. This means that when you do have a hand, it may be best to check on the Turn in last position, thus possibly inducing a bluff from a weaker hand on the River. If you are behind, you do not want to get check-raised. So if you check on the Turn and your opponent bets on the River, you will only lose one bet, which is the same amount you would lose if you had bet on the Turn. This type of play works best if a free card you are letting your opponent see on the River (it is a free card because you have chosen to check the

Turn, which means if he is behind, he is seeing the River for free to get a shot at beating you), has a low chance of coming on the River to beat you.

Example
You have K♠9♠ on the button and you open-raise pre-Flop. Only the big blind calls your raise.

Your hand: K♠9♠
Flop: K♣8♠3♦

You bet and the big blind calls.

Turn: A♥

At this point you may want to check. It would be tough for your opponent to call another bet unless he had an A or a K. If he had a lower pair, the presence of the A on the Turn is going to be a very big scare card for him. Thus you are in a position where your bet may only be called by a better hand. Of course, your opponent may call with a worse K, but your kicker is fairly weak. Your opponent will now have a hard time calling with just a pair of 8's since there are two scary cards on the board. If the A did not show up, he may just hope you had AQ or something like that and keep calling you. When you check on the Turn, you hope he will make a bet on the River with a pair of 8's to try to get a hand like JJ or QQ to fold. But even if he checks to you on the River, he will be more likely to call a bet by you on the River with just a pair of 8's than he would have if you had bet on the Turn. If your opponent has a weak A, he will likely call on the Turn, at which point you may choose to check on the River and lose the same amount as if you had checked on the Turn and called his bet on the River. However, he could choose to check-raise which means you now have to pay an extra bet in order to see the River.

When a player raises on the River into two other players, it is rarely a bluff
When two or more players have already committed chips into the pot on the River, it is difficult to bluff. The probability that one of them will call a raise is high. By betting or calling, they have announced they have a hand that can win a showdown. So when a player does raise into two or more players, it is rarely a bluff and likely means a strong hand, oftentimes the nuts.

Here is an example. On the River there are three players left in the hand.

Board: A♥K♥5♣ [turn] 3♠ [river] J♥

The first player bets, the second player calls. If the third player raises, then it is unlikely that it is a bluff. With this board, it is probable that he has a flush or a straight. In order for a bluff to be successful, the raiser would have to induce both of the other players to fold after he raised. Since two players have already committed chips into the pot, and the pot is relatively large, it is highly likely that at least one of them will call and be the "sheriff".

Getting counterfeited
One of the worst feelings in Hold'em is to get a made hand counterfeited. This can happen when you already have a made hand using both of your hole cards, but the Turn or River allows for

someone with just one card to have the same hand or better. Every time this happens to me, I weep a little inside.

Here are several ways to get counterfeited.

1. Two pairs getting counterfeited by a higher pair on the board.
Your hand: 65
Board: T-6-5 [turn] Q [river] Q

You flopped two pair (6's and 5's). When the Q's show up on the Turn and the River, your five card poker hand is now Q-Q-6-6-T, the 5 in your hand no longer plays and is useless. This means that a player with a pocket pair 7's or higher, a T, a Q or a 6 with a 7 or greater, now has a better hand than your two pair.

2. Pocket pair getting counterfeited by two higher pair on the board.
Your hand: 22
Board: 5-4-4 [turn] 3 [river] 3

On the Flop, you had two pair, 4's and 2's. By the River, you are playing the board. This means you have the worst possible hand because any player with any other card either has a better two pair, a straight or a higher kicker than a 5.

3. Flush using both of your hole cards counterfeited by four flush cards on the board.
Your hand: 3♣2♣
Board: A♣8♣7♣ [turn] 4♣

You flopped a flush using both of your hole cards. But with the fourth club on the Turn, anyone would have a higher flush with just one club in their hand. It doesn't seem fair that they can use one card to make their hand when you can use two cards, but this is Hold'em, not Omaha.

4. Straight using both of your hole cards counterfeited by four cards to a straight on the board.
Your hand: 76
Board: T-9-8 [turn] J

You flopped a straight using both of your hole cards. But the Turn makes four to a straight on the board. This means any player with a 7 has the same hand you have, and any player with a Q would have a better hand.

6/10/04 This is the fifth draft of the chapter on Shorthanded Limit Hold'em in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page.

Hold'em Brain: Shorthanded Limit Hold'em
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Introduction to Shorthanded Limit Hold'em
Shorthanded Hold'em games are hard to find in brick and mortar poker rooms. In the middle and lower limits, it is played at times, but never with any regularity. Sometimes players are willing to start a game shorthanded in the hopes that it fills up, but if it stays shorthanded, they quickly move to another limit or leave. The exact opposite would happen late at night or early in the morning. During these times, players would leave to go home, thus leaving the game shorthanded. The players who still wanted to play would have no choice but to play shorthanded or go home. These games are often good games because the players still playing are usually the ones that are stuck and are not playing their best game.

The internet has changed the world in many different ways. In the poker universe, the internet has brought online poker to many players, and it has brought more interest to shorthanded games. Many online casinos have tables set up specifically for shorthanded games. They may have a 6-player maximum table, a 5-player maximum table or heads-up tables.

Shorthanded Hold'em may be right for you if any of these describe you:

■   you can tolerate the wilder fluctuations in the shorthanded games
■   you are willing to play more aggressively
■   you get bored waiting for hands in full games
■   you like action and would like to get involved in more pots without giving up edge
■   you do not mind getting heads-up in many situations after the Flop
■   your strength is in reading hands and playing the players

If any of these descriptions pertain to you, then shorthanded games may be right for you. These are games that loose-aggressive players prefer. In fact, the loose-aggressive players can often perform better in the shorthanded game by just playing the same way that they do in full games. The shorthanded games suit their style better than full games do. The loose-aggressive players' natural play now becomes closer to the winning formula in shorthanded games. This is not necessarily because those players understand the differences between shorthanded and full games. They are playing the game the same way that they know how, and it just so happens that their strategy is closer to the correct strategy when there are fewer players than when there are more. Meanwhile, the tight-passive players will have trouble in the shorthanded games if they do not change their strategy from a full game. Playing tight and waiting for high quality hands means giving up a lot of edge to the aggressive players in the shorthanded games.

The Spectrum of tables with different number of players
Shorthanded Limit Hold'em is a very different game than a full 10-handed or 9-handed game. It

looks like the same game, the rules are the same, but there are many differences. Even within the realm of shorthanded games, there are distinctions between those that are semi-shorthanded (like a 6-handed game) versus those that are extremely shorthanded (like a 3-handed game).

Here are comments on games with different number of players and how they may be different.

10-8 players: Full Game. Most poker literature assumes the game is played with a full complement of players. Some casinos have ten seats at the table, making a table of ten players a full table, while other casinos only have nine seats.

7 players: There are two distinct types of 7-handed games. A 7-handed game can play very much like a full game. This can happen when a couple of players have just left the table and the new players have not arrived at their seat yet, or when a couple of the players are taking a break from the game. If this is the case, then for the most part, it will play very much like a full game. Most players will not adjust their mentality toward the game. The other type of 7-handed game is one that looks like it is a permanent 7-handed game. The game has been played 7-handed for a while, and there is no real expectation that the game will fill up anytime soon. In that case, the game will usually be just a bit more aggressive, as the mentalities of the players are focused on 7 players in the game rather than 9 or 10. In this case, the players are now used to the fact that the game is a 7-handed game and will not revert back into a full game anytime soon. However, in general, most 7-handed games will still resemble a full game. Each hand can be viewed like a full 9-handed game where the first two players have already folded, thus leaving 7 players in the game.

6 players: Some online poker sites have tables with only 6 seats. This game has a few interesting aspects in that the under the gun player should play close to the same strategy as in a full game, but the later position players can play much more aggressively. The reason the under the gun player needs to play fairly tight is due to the increased aggressiveness of the late position players. This means the early position players will get raised more often and it is more difficult to create a multiple player pot since there are fewer players. With 6 players and fewer, it is usually incorrect to limp into the pot with a call if no one else is in the pot yet. Any hand that is playable should be a hand that is raisable when no other player has entered the pot. This is not true when there are more players at the table because there is a chance that other players may limp in after you, thus making the pot size bigger. In 9-handed games, when you limp into the pot in an early position with a hand such as JTs or 77, you may be able to expect a pot large enough to make it a profitable play. Once it gets down to 6 players, this possibility becomes too slim to consider limping in. You will not be happy if you get raised and have to play the pot heads-up and in poor position when you hold a drawing hand like JTs.

5 players: In a 5-handed game, many players will be ultra aggressive. The under the gun position still needs to be somewhat selective, but a hand like A8s is now strong enough to raise all the time in that position. Some players will take it too far and raise under the gun with a hand like K9o. Those players will get punished since they will often get re-raised by players in a later position who may hold hands such as AJo and KQs.

The cutoff and the button can be even more liberal. The button can arguably open-raise more often (when he actually has the chance to) in 5-handed games compared to 3-handed games. In

3-handed games, it is almost guaranteed that at least one of the blinds will see the Flop. In 5-handed games, there is a slightly higher chance that the blinds will fold to a button open-raise. Even if they call the pre-Flop raise, they will fold more liberally on the Flop than if it was 3-handed games.

4 players: The under the gun player is the same as the cutoff player in 4-handed games. This player should align himself with cutoff strategy more so than under the gun strategy. It is probably fair to say that this player should not even think of himself as the player that is first to act anymore, but rather, this player should focus on the fact that he is the second to last to act. In 5-handed games, the button needs to be somewhat selective in re-raising the under the gun's pre-Flop raise. However, in 4-handed games, the button can widen his range of re-raising hands a bit because the button knows that the under the gun player will open-raise with more hands when it is only 4-handed compared to 5-handed.

The small blind still needs to be aggressive and three bet when he actually holds a legitimate hand, but fold most of the time due to the expected ultra aggressiveness of all the other players in the later rounds. Since the small blind will always be in a horrible position on all streets, it is important to force the big blind to fold since that player also has a nice positional advantage over the small blind.

The big blind should be calling one raise with a wide variety of hands, but be very selective when there are two bets to him. With two bets, it means at least one of the raisers probably has a legitimate hand. So the big blind must also have a legitimate hand in order to continue with the hand.

3 players: There is only one non-blind hand in this game. The button must be very aggressive because any chance that any of the blinds fold is a nice bonus. But the button must keep in mind that if the blinds are constantly calling him, he must throw away some hands as well. The key to raising on the button is how likely the blinds are going to call pre-Flop raises and how they play post-Flop. If the big blind folds most of his hands, then this is a fantastic game for the player on the button. Typically, in 3-handed games, the blinds will call more often when the button raises than when the button open-raises in 5-handed games. In 3-handed games, the blinds will be constantly pounded with pre-Flop raises (and raising pre-Flop themselves when they are on the button) that calling a raise in the blinds becomes almost automatic with any hand. This aggressive play can especially happen online. Online games are also much faster as there is no need to wait for a human dealer to shuffle the cards. If the online players are playing quickly and using the automatic buttons, the game may seem more like a video game than poker.

In 3-handed games, the small blind must be very aggressive when he has a good hand and re-raise with them. The range of hands that the small blind can three bet with should increase compared to that in 4-handed games when the cutoff player raises, but it should stay the same as when the button in a 4-handed game is the open-raiser. As in most cases, calling a lone raiser when you are in the small blind position is a poor strategy because it gives the big blind, another player with position over you, a cheap way to play the pot.

If the button is open-raising with many hands, as should be expected, then the big blind should be

calling with many hands. The big blind should also often re-raise pre-Flop depending on how the button plays on the Turn. The reason the big blind should think all the way out to the Turn is due to the differences in how opponents will act on the Turn when they do not have anything.

Against opponents that will keep betting until someone raises, it is better to just call the pre-Flop raise and wait until the Turn to put in a check-raise with a good hand. You want the players who are ultra-aggressive to hang themselves with their own aggressiveness, so do not stop them from playing aggressively too early in the hand. If you suspect these players will slow down and play more reasonably if you re-raise pre-Flop or check-raise on the Flop, then you should not reveal the strength of your hand until the Turn and let them do the betting for you instead.

Against opponents that may slow down on the Turn when they do not have much, it is best to do the raising pre-Flop. You would not be able to count on these players to bet when you check to them on the Turn. Against opponents like these, you would prefer to get their money in early since they are less likely to give it to you later. Clearly, understanding how your opponents play is important. With fewer players, it becomes even more important.

An interesting aspect in 3-handed games is the difference in seat selection strategy compared to games with more players. Typically you would want the aggressive and better players to sit on your right and act before you have to act. This way you can see their actions before it is necessary for you to act. However, the players that play well in shorthanded games will often play the small blind correctly, that is, they will usually re-raise or fold in that position. Compare that to a bad player that will often call a raise while in the small blind. His call in the small blind would give the big blind 5:1 odds to see the Flop (there are 5 small bets in the pot - 2 small bets from the button, 1 small bet from the small blind and 1 small bet posted by the big blind). The bad player in the 3-handed game may also make the mistake of limping while on the button. This allows the small blind 5:1 odds to see the Flop (there are 2.5 small bets in the pot and the small blind only needs to put in a half of a small bet). So if the bad player sits to your right, you can benefit most from his mistakes when he is on the button and in the small blind. If the bad player sits to your left, the player that will benefit most by the bad player's mistakes is not you, but the third player.

Assume you are in 3-handed game with one good player and one bad player. The first chart is when the bad player is sitting to your right. The second chart is when the bad player is sitting to your left.

Bad Player on your right

Your position	Bad Player's position (on your right)	Mistakes by Bad Player	Who benefits most by the mistakes by the bad player
Small Blind	Button	Limps in too often on the Button. This is great news for the Small Blind as he gets 5:1 odds to see the Flop.	Small Blind (You)

Big Blind	Small Blind	Calls raises from the Button. This is great news for the Big Blind as he gets 5:1 odds to see the Flop.	Big Blind (You)
Button	Big Blind	Calls raises from the Button. This is not good or bad news because many players will call anyway.	Nobody

Bad Player on your Left

Your position	Bad Player's position (on your left)	Mistakes by Bad Player	Who benefits most by the mistakes by the bad player
Small Blind	Big Blind	Calls raises from the Button. This is not good or bad news because many players will call anyway.	Nobody
Big Blind	Button	Limps in too often on the Button. This is great news for the Small Blind as he gets 5:1 odds to see the Flop.	Small Blind (not you)
Button	Small Blind	Calls raises from the Button. This is great news for the Big Blind as he gets 5:1 odds to see the Flop.	Big Blind (not you)

Since you are in the blinds/button dynamic in every single hand in 3-handed games, the advantage of having the bad player on your right becomes very useful in the pre-Flop round.

These issues are why it is better to have the better player to your left and the worse player to your right in 3-handed games. Most of the good players have it ingrained in their head that they want other good players to sit to their right. While this is true in most cases, they may not understand the change that occurs when the game is exactly 3-handed. Thus the good player will often comply with your wishes by deliberately choosing a seat to your left (if they consider you a good player). Typically one would also care about having position post-Flop against good players. Players want to act after the good players have already acted rather than before. However, when in 3-handed games, many players will call with hands that they would not in a full game, and the hands play a little bit more on "cruise control", since it is difficult to get anyone who has a piece of the board to fold. This means that having position post-Flop is a bit less meaningful in 3-handed games compared to games with more players. I believe the edge gained pre-Flop by having the good player to your immediate left in a three-handed game is greater than the edge lost by having

that same good player to your left during post-Flop rounds.

One time when I was playing 3-handed at an online site, this exact same dynamic presented itself. I was playing in a heads-up game against a poor player. Soon after, a very good player joined us and he sat to my immediate right. Right before my big blind came up, I left the table, but I came back in to sit to his right. The player played a few hands and I thought I was home free. But lo and behold right before his big blind came up the next time around, he left and rejoined the table in exactly one to the left of the poor player, thus leaving me no space to squeeze in between them.

2 players (heads-up): It is important to know where the small blind is located in a heads-up game. There are some online sites that will place the small blind on the button, with the small blind first to act before the Flop, and last to act after the Flop. Other sites will place the big blind on the button with the small blind in the other position. In that case, the small blind is the first to act in all rounds. There is a big difference between these two blind/button positioning. If you are in the small blind and do not have the button, then that means you must act first on every round. This gives you more of a disadvantage than if you are in the small blind with the button, because you only have to act first pre-Flop, after that you have positional advantage in three other rounds. This means that in a game with the small blind on the button, you can play many more hands than if the small blind was not on the button. In brick and mortar rooms, the positioning of the blinds is often determined by the players since the dealers do not usually know the rules as they do not deal heads-up games often.

Playing the Players in a Shorthanded Game
Understanding your opponents and how they play and think are crucial parts of the game in a full game. It is even more important in a shorthanded game. In a full table, it is important to understand how your opponents play certain types of hand. Unfortunately since there are so many players and you cannot play too many hands without being reckless to your own bankroll, you will not be able to take advantage of their weaknesses as often as you would like to without getting run over by other players when they have legitimate hands. One of the fundamentals of Limit Hold'em is to be selective with the hands that you decide to play from the very beginning. Since selectiveness is crucial, you will not be playing all that many hands over the course of an hour, and that means you will not get many opportunity to take advantage of the weaker players.

Let's compare that to the situation in a shorthanded game. In a shorthanded game, you will get many opportunities to butt heads against each and every one of the other players because you will be playing a higher percentage of your hands and typically more hands are played per hour. The hands play a lot faster because the dealer has to wait for fewer players to make decisions, and that means more hands are dealt per hour. Since there are fewer players in each hand, that means the relative strength of some hands increases tremendously. Combining these two factors, we can see that each player will be involved in many more pots and play more hands in a shorthanded game than in a full game. Not only do you play a higher percentage of hands, but you also see more hands dealt to you per hour. This means that if you have an advantage over some of the players, instead of being able to apply that advantage once or twice in an hour, you can now apply that same advantage five or six times in an hour. That should show a tremendous increase in your expected profits if you know how to take advantage of this difference. That is the reason why shorthanded play can be so profitable for an expert player. He can expose the weaknesses of his

opponents more often per hand and with more hands per hour. BINGO!

Knowing the Pot Odds is less useful in Shorthanded Games
Knowing if you have correct odds to continue with a hand is crucial in a full game. It is important as well in shorthanded games but it is not as important. Usually you will have more outs than you expect in a shorthanded game without knowing exactly what your outs are. If you have an open-ended straight draw in a shorthanded game, you are more likely to have additional outs than in a full game. Pairing one of your hole cards has a higher chance of being an out in a shorthanded game than in a full game. Also, since players will bluff and semi-bluff more in shorthanded games, there is a chance you are actually ahead and have more outs than non-outs.

Free cards in Shorthanded Games
It is less dangerous to give a free card in shorthanded games because it is likely that the pot is smaller than in a full game, or your opponent has fewer chances of drawing out (i.e. your opponent may only have one overcard in a shorthanded game, but your opponent may have two in a full game). Also showing weakness in shorthanded games is more likely to induce your opponent to make a bluff bet that he may not otherwise make since there is more of an aggressive culture in shorthanded games.

Example :
You raised pre-Flop and the big blind calls.

Your hand: KQo
Flop: K-8-3 rainbow

You bet and your opponent calls. It is useful to note that your bet is mandatory on the Flop because the bet on the Flop does not give any information to the other player. You had raised pre-Flop, so he is expecting you to bet on the Flop no matter what you have. It is the same situation as explained in the Monte Hall section of the Extra Topics chapter of this book. You would have also bet with a hand like QT, hoping that he folds on the Flop. It is the Turn that makes this hand interesting in a shorthanded game. If an Ace comes on the Turn, and your opponent checks to you, you must decide if you want to bet or check. The Ace is a scare card, it will scare both you and your opponent. If you bet on the Turn, and your opponent does not have an Ace or King, it makes it very difficult for him to call. Even with a split pair of 8's, he may not call. The reason is that you are likely to have an A, a K or a pocket pair between K's and 8's. You do not want him to fold if he doesn't have a pair, since you are only giving him a free card when he is on a gutshot straight draw.

A check in this case may be the best play. If he has an Ace, he will bet out on the river, and you will call and lose, but this is better than possibly getting check-raised on the turn. If he only has a split pair of 8's, he may very well bet on the River thinking you are going to call with a Q-high, or hoping you will incorrectly fold a pair of K's. If he checks and you bet, then he is more likely to call on the River than if you had bet both on the Turn and River. You want to check on the Turn against the better players and bet on the Turn against the calling stations. Against players who can fold a pair of 8's on the Turn when you bet, you should check. Against players who will call with just a pair 8's, you would want to keep betting.

Bigger wins and bigger losses in Shorthanded games
In shorthanded play, all players play more hands than in a full game. They will be raising pre-Flop, defending blinds much more often. They may be betting and raising with middle pair and semi-bluffing with straight and flush draws more often. Not only is it correct to raise more and be more aggressive, it is also correct to call down hands more often due to other players' increased aggression. What this means is that the good days will bring higher profits while the bad days will bring worse losses. Be prepared for this in shorthanded play. It may be correct to play a notch or two lower compared to the typical limits you play in a full game, in order to keep the wins and losses roughly the same amount. This may help with your sanity and keep you in the game.

Shorthanded games vs Full games: When it is folded to the Cutoff
Many people compare shorthanded play to the times in full games when it is folded to the late position players. I do not agree with this, I think these two situations are very different although they may look very similar. The difference is due to the mood of the table. In shorthanded games, players are playing more aggressively. They are constantly raising, re-raising, bluffing, semi-bluffing, and consequently calling down with hands that may look unwarranted. This atmosphere makes shorthanded games different than full games. If this atmosphere did not exist, it means a raise or a semi-bluff will appear stronger than it does when this atmosphere does exist. This means that in full games, when it is folded to the cutoff, a raise will be given slightly more respect by most players than in a raise in the same position in shorthanded games. In the higher limit full games, the comparison may be more valid because many players in those games play aggressively and know these type of tricky plays.

Drawing Hands
Drawing hands, such as suited connectors are still playable in shorthanded games, but they are worth less since these hands play best in pots with many players. In shorthanded games, you can raise with these hands on the button or call one raise when in the big blind, but they cannot stand to cold call a raise from another player or to call raises in the small blind. One of the reasons this type of hand can still be playable when it is shorthanded is through the use of the semi bluff bet or raise.

Example:
You are in a 4-handed game and open-raise on the button with 9♥8♥. The small blind folds and the big blind calls.

Your hand: 9♥8♥
Flop: A♥6♠5♦

You have an inside straight draw and a runner-runner flush draw. Also you can use the scare card on the board, the Ace, to your advantage. Most players will check to you and you should bet. The Ace on the board will scare off most players from calling without a pair or a draw, and they will fold hands such as K3 and J8. On the other hand, if they call, you still have a few possible outs. You can hit the 7 for your inside straight draw, you can hit a 9 or an 8 for a pair and that would beat any other split pair other than a split pair of A's. How you continue with the hand on the Turn depends on how your opponent plays. If he is a decent player, one that you do not think would

throw in a call on the Flop with no pair, no draw, and no overcards to the board, then you need to watch out as you could very well be beat (he may be letting you bet his hand for him). If you are against calling stations who are loose and passive enough to throw in a call with QJ, then you need to bet again when checked to on the Turn and hope he folds at that time (assuming you have not hit your straight). The fact is that he will miss the Flop often, and even if you are behind, as long as you have some outs that may save you, you are happy with it. He may fold now, or he may fold on the Turn, or you may hit your draw on a later round if he does not fold. The problem arises when he re-raises you and tells you he actually has a pair. In that case, you need to see if your hand has any chance of winning. Some players will raise religiously with middle pair when it is shorthanded, so with 98, you may have two overcards plus a gutshot straight draw for a possible total of 10 outs. A hand like that is worthwhile to continue with, even against a check-raise.

The main strength with a drawing hand in a steal position is that it can make many possibilities to continue with the hand. That means you can appear to be strong and semi-bluff bet or raise. When you combine it with the same type of play when you have a stronger hand, such as AK or a big pair, then your opponents will be off kilter as to what to do against you when you are raising. If they regularly call you on the Flop with a hand like QT when the board is A-9-3, then that is OK too since you will be able to pound them and extract more from them when you do have an Ace.

Having an Ace is more useful in Shorthanded games than Full games
Having an A is more useful in shorthanded games because there will be plenty of hands where no player has a pair. Also, because players are playing more hands, it is less likely to run into a player with two pair (like A's and 6's) when you only have a split pair of A's.

Let's take a look at a Flop like 8-6-3 when you have AK. In full games, some players may be willing to play hands such as A8, A6, and A3. In shorthanded games, the same players are willing to add these hands: K8, Q8, 98, 76,87, T8, and 65. They are less likely to hold an A in shorthanded games, so you will not have to be as worried about the A making someone else two pair (when you make a pair) as you would in a full game. Also, AK has an increased value as a showdown hand. In shorthanded games, players may be willing to call down to the River with any A, but no pair. In such a case, AK is a strong hand since it is the nut no-pair.

Calling a bet instead of raising
Sometimes it is useful to just call your opponent instead of raising. This is a situation where you are not sure your opponent has a worse hand than you or has a better hand than you. If his hand is worse than yours, but you do not show strength by raising him, he may keep betting in the hopes of getting you to fold. However if you do raise when his hand is worse than yours, his hand may be bad enough that he would fold and you lose the possibility of winning additional bets in later rounds. This passive strategy has a little bit of risk to it because if he has a worse hand, he may be able to catch up and hit a 3 or 4 outer. In order for this strategy to work, you have to be playing against a player that is aggressive enough to keep betting when you do not show strength. If you are playing against a calling station or an otherwise weak player, you would not expect him to keep betting on future rounds with bad hands. If you do raise against an aggressive player, you put yourself in the position of a semi-bluff re-raise that you may not be able to call if you raised him with a marginally good hand. On the other hand, if his hand is better than yours, you do not want to raise because he is going to call or raise you back.

Example 1:
You are in a 5-handed game, on the button with A7o and you open-raise. The small blind folds and an aggressive player in the big blind calls.

Your hand: A7o
Flop: A-9-8 rainbow

The aggressive player in the big blind checks and you bet. Then the aggressive player check-raises. Your decision is whether to re-raise or call. If you re-raise, you are giving him the message that you have a pair of A's (if not better). The aggressive player can check-raise with many hands, including a pair of A's, a straight draw, a pair of 9's or 8's. He knows that if you do not have an A and raised with two non-Ace high cards, such as KQ, KJ, it will be a tough decision for you to call both a Flop check raise and a Turn bet.

You would prefer that your opponent have an A with a lower kicker. Then you could re-raise on the Flop or raise on the Turn and win more than if you just called him down.

If he has a better hand than yours, such as AK, AQ, AJ, AT or two pair then you will lose more money by being aggressive. If he is on a straight draw and catches it, then your raise will lose you more money in the hand. Basically, if you show aggression after you get check-raised, you may be putting yourself in a situation where you will lose more bets when if he is already ahead or he catches his draw. Not only will you lose more bets when you are the loser, you will also win fewer bets when you are the winner. Compare the following situations:

Situation A: Your opponent is on a straight draw, you call his check-raise on the Flop and you raise him on the Turn.

If he catches the straight, he will bet out on the River. If he does not, he will check on the River, and then fold to your bet. You have shown him that you have a made hand on the River, so he will no longer think about bluffing on the River. So if you raise on the Turn, and he catches on the River, then you will lose 3 bets (2 bets on the Turn and 1 bet on the River). Meanwhile, if he does not catch on the River, then you will win 2 bets (2 on the Turn and none on the River).
Situation B: Your opponent is on a straight draw, you call his check-raise on the Flop and you call him on the Turn.
If he catches the straight, he will bet out on the River. If he does not, he will also bet out on the River because he will think he has a chance of winning the pot with another bet since you have not shown him anymore aggression. So if you just call on the Turn, you lose 2 bets (1 on the Turn and 1 on the River) if he catches his straight. Meanwhile, if he does not catch a straight, then you will win 2 bets (1 on the Turn and 1 on the River).

In Situation A, you lose 3 bets when you lose and win 2 bets when you win. In Situation B, you lose 2 bets when you lose and win 2 bets when you win. This occurs because your opponent is very aggressive and you can count on him to bluff on the River if he does not catch his hand.

Shorthanded side games versus Shorthanded Tournament situations

This is a book written for Limit Hold'em side games not tournaments. Shorthanded side games and shorthanded situations in tournaments are not the same. The all-in situations and prize structure in tournaments add a unique dimension to the game. In tournaments, players have much fewer chips to battle with than they would have in ring games. There may be a huge disparity in 5th place prize money compared to 4th place prize money. This payout structure changes the EV and therefor the analysis and calculations. So don't think of this section when you are in the shorthanded situation in a tournament. Shorthanded ring games and shorthanded tournaments are two different worlds.

Be careful when the table becomes full again
In a shorthanded game, you will be playing more aggressively and playing more hands than at a full game. You will be calling down more hands, bluffing and semi-bluffing more yourself as well. This is a good mentality to have in a shorthanded game, but not necessarily in a full game. Often a game will start shorthanded, but as more players sit down, it slowly turns into a full game. These are the times when some players find it tough to adjust quickly. They are still in the mindset of raising aggressively and calling down bluffs. If they keep up that mentality in a full game, it is clear that they will be in big trouble.

It is necessary to always keep in mind how many players are being dealt in the hand. Raising with KJo under the gun is fine in a 4-handed game, but it is not a good strategy in a 7-handed game. You need to change gears quickly when the table fills up and becomes a full game. The opposite is true too when people start leaving and it goes from a full game to a shorthanded game. You need to adjust and adapt to the changing environment.

A Cold Caller is not as dangerous in a shorthanded game
Here are two situations that may look similar but are very different.

Situation A
It is a 9-handed game and a player in middle position has raised. Immediately after him, a decent, player (who plays a few too many hands) cold calls. You are in the small blind with KJo. In this case, not only do you have to be concerned about the raiser, but you also have to be concerned about the cold caller. You have to be worried that one of those hands has your hand out-kicked, with a hand such as AK, AJ, AT, KQ. Those are all reasonable hands that normal players may raise and cold call with. Although you may expect a cold caller to re-raise with AK, it should not be a surprise to see the player call with hands like AJ, AT, KQ, and KJs. If the cold caller held any of these hands, it would reduce your chance to win. Folding with KJo in the small blind would be prudent in a situation where it is likely you are being dominated by at least one of the hands you are up against.

Situation B
It is a 5-handed game and the under the gun player has raised. The cutoff player is the same player as the cold caller that was written about in Situation A. He cold calls in this situation as well. You are in the small blind with a hand like KJo.

The nature of a 5-handed game is usually much more aggressive and loose than a 9-handed game. You will often see a re-raise rather than a cold call in this shorthanded game. Most players would definitely re-raise with a high quality hand such as AK, AJ, KQ, KJs in the shorthanded game

whereas they would just call in a full game. Since the cold caller did not raise and only called, it now makes it less likely he holds one of these hands compared to the same situation in a 9-handed game. In the 9-handed game, it was much more likely that he held one of these stronger hands if he cold called because of the fact that a full game is a more passive game. Raising with those hands are more dangerous because a middle position raiser in a 9 player game probably has a better hand than an under the gun raiser in a 5-handed game. So in a 5-handed game, you can read this player's cold call as telling you that his hand is not as worrisome as it would be in a full game. Also, the under the gun player in a 5-handed game can raise with a much wider variety of hands, so a call with KJo in the small blind when there is a raiser and a caller, is a better play in a shorthanded game than in a full game.

Turn or River card pairs the Top card on the Board
Shorthanded players are more likely to play aggressively when they have a piece of the Flop than they would in full games. They will often raise on the Flop with hands that are worse than top pair. These hands include middle pair, bottom pair, overcards, flush draws and straight draws. If they are super-aggressive, they will continue betting with those hands through the River. If you have middle pair, you will have to call down your opponents more often in shorthanded games. Since you are likely to be ahead when you have middle pair, when the Turn or the River pairs the top card, generally you should be happy. If you were ahead, you are still ahead.

Here is an example.

Your hand: AT

Flop: Q-T-3 rainbow

Let's say you bet and your late position opponent raises. You know your opponent is aggressive in shorthanded games, thus you are quite sure he is just as likely to raise with a split pair of Q's as a split pair of T's. You are also quite sure he would be raising with bottom pair as well as a straight draw. Here is a chart of the type of hands he could have and the corresponding outs.

Type of Hand	Estimated Outs for your opponent
Top Pair with a Q	40
Middle Pair with a T	3
Bottom Pair with a 3	5
Open-ended Straight Draw with KJ, J9	13 or 11
Inside Straight Draw with AJ, K9, J8	7

If he has a Q, you are drawing only to 5 outs or less (there are only 2 T's and 3 A's unaccounted for). If he has any of the other hands, then you are the favorite. If you think he would raise with

all of these hands, then on average, you will be the favorite with your AT.

Turn: Q

When the Q comes on the Turn and pairs the board, you can be more confident that your hand is the better hand if you thought you were the favorite on the Flop. If your opponent had a worse hand than you, then the Q does not improve his hand. If your opponent had a better hand, then you may be drawing dead (except when your opponent has T3 as the second Q counterfeits his two pair). Look at the chart above and you will see that against every type of hand on that chart, the relative strength of your hand has stayed the same.

If you estimated you were the favorite on the Flop, then when the Q comes on the Turn, you are still the favorite. No hand that was behind you on the Flop could have improved past your hand. In fact your hand is even better now because your opponent would only have one more card to see if he can improve. You are happy to see the Turn pair the board.

Making all the betting round decisions on the Flop
Sometimes the decision point for the whole hand comes on the Flop. The decision on whether to call or fold on the Turn and River is made along with the decision to call or fold on the Flop. This can occur if your opponent is steaming and you think there is a high probability that he is bluffing. Since he is on tilt, he is going to keep betting hoping that you will fold. This will happen more often in shorthanded games because players generally think they can bully their way through because there are fewer players that need to fold for them to win the pot. When the card that comes next is a scare card, such as an A, it usually only increases the chances that he will keep betting, since he wants to use it as a scare card against you. This means that against steamers, you should not let a scare card frighten you into folding as often.

Normally on the Flop, you would make your decision as to whether or not to call one bet into a pot of six bets without thinking too much about the Turn or River yet. However, if you have decided he is steaming and he is going to bet through the River no matter what comes, then your effective odds are much lower. In this case, the effective odds would be 9.5 to 5 or 1.9 to 1. If you win the hand, then you win 4.5 small bets pre-Flop (assuming you were in the big blind and the small blind had folded), 1 small bet on the Flop, 2 small bets on the Turn and 2 small bets on the River, for a total of 9.5 small bets. If you lose the hand, then you lose 1 small bet on the Flop, 2 small bets on the Turn and 2 small bets on the River.

You do not want to raise because you want him to keep bluffing. A raise may scare him off and force him to fold instead of bluffing. Meanwhile if he actually has a strong hand, a raise will cost you more money. Of course, the tradeoff of not raising is the risk of giving away a free card and having him actually catch a pair to beat you.

Hold'em Brain: Shorthanded Common Mistakes
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Common Mistakes in Shorthanded Hold'em
Players often have misconceived ideas about playing in shorthanded Hold'em games. Some players play the same way in shorthanded games as they would in full games. If they are playing correctly in full games, then sticking with the same strategy when playing in shorthanded games would be a mistake. Although playing more hands in shorthanded games is correct, many players will adjust too radically and play too many hands, especially in early position and in the small blind. In shorthanded games, players should also play more aggressively, but this concept should be applied strategically instead of generally. Here are some common mistakes committed by players in shorthanded Hold'em.

Shorthanded Common Mistake #1: Playing too many hands in the wrong spots
Many players think they need to play more hands in shorthanded games. This is true, but the key is to play more hands more aggressively in the right spots. Here are some situations where some players mistakenly believe they can loosen up in shorthanded games. Instead, hands in these spots should be played similarly to full game situations.

1. Under the gun with KTo in a 6-handed game. Some players believe they can raise here, but it would be too loose and too aggressive. The fact is that many players will re-raise you with hands such as AJo, ATo, 77, KQo, KJs. Your KTo would not play well against those re-raising hands. You can open-raise with KTo in a later position since there will be a lesser chance that another player has a hand worthy of re-raising you.

2. Calling a raise in the small blind with JTo. This is too loose. This is discussed in fuller detail in Shorthanded Common Mistake #11.

3. Calling a raise on the button with A3o. Normally calling raises is a bad strategy in shorthanded games, except in the big blind. But calling a raise with a hand such as A3o is an especially poor decision. The first problem is that it will often be dominated by any other hand with an A (which many players will open-raise with in shorthanded games). The second problem is that even if there are no other A's in the other player's hands, when an A comes on the Flop, A3o will not get a lot of action.

Shorthanded Common Mistake #2: Throwing away too many hands away in shorthanded games
Players who are new to shorthanded games sometimes play the shorthanded games in the same manner that they play in the full games. This is too tight. Here are hands that are playable in shorthanded games but may not be in full games.
1. You should call a raise with QTo in the big blind against an early position raiser in a 5 handed

game or less. In full games, QTo will often be dominated by an early position raiser. But not so in shorthanded games since players are usually raising with more hands.

2. You should be re-raising on the button with AJo against an early position raiser in a 6-handed game. In full games, an early position raiser often means a hand stronger than AJo. In fact, it would be correct to fold AQo against a tight early position raiser. But the players in shorthanded games are more aggressive and will open-raise with a wider variety of hands. Your AJo has a good chance of dominating the original raiser.

Shorthanded Common Mistake #3: Being too predictable
In any poker game, you would prefer to be unpredictable to your opponents, and have your opponents be predictable to you. When there are 9 or 10 players at the table, sometimes this is tough to control, because play unpredictably often means playing sub-optimally, especially when in early position. In shorthanded games, there are more chances to be unpredictable and still play correctly. But there are two specific seat positions where you still have to play predictably pre-Flop.

The first position is the under the gun position in a 5-handed (or less) game. You should play predictably in this position. There are still two more non-blind hands yet to act, so there is a good chance at least one of them has a quality hand. When they do play the hand, they will not be afraid to re-raise you in shorthanded games. This is similar to raising in an early position in full games. You cannot raise too often from this position nor can you raise without quality cards. Being unpredictable in this spot will cost too much because it would mean playing too many hands in a bad position.

The second position is in the small blind. When there is a raise, the small blind should either re-raise or fold most of the time (see Shorthanded Common Mistake #11). The small blind is in such a bad position that if he plays too unpredictably, it will mean playing too many hands. Playing too many hands from the worst position on the table would cost more than unpredictability may gain.

The other seat positions can gain more from playing unpredictably in shorthanded games.

■   The big blind can call a raise with more hands in shorthanded games than in full games. This means he will be more unpredictable after the Flop. If there is only one raise, and everyone else folds to the big blind, the big blind can choose to re-raise or just call. He can mix it up with hands such as AK, AQ and pocket pairs.

■   The button can raise with more hands since it will be folded to him more often than in full games. The button can raise more often especially if the small blind is playing correctly and folding often. Also if the big blind is too passive after the Flop or folds too often pre-Flop, then the button can raise with more hands.

The problems of being too predictable extends to post-Flop play as well. Here is a situation when you are in early position and you can make the same play with many different hands, thus being less predictable to your opponents.

Flop: J♥7♠6♠

Here are some hands you should consider check-raising with:

♦   any hand with a J, such as JT, J8
♦   any hand with a 7, such as A7, A7, 75
♦   any straight draw, such as T8, 98
♦   any flush draw, such as K♠3♠

Check-raising with any of these hands will make your play much less predictable to your opponents. If he was raising pre-Flop with a hand such as A5 or KT, he will have a tough time calling you even though he may be ahead. If he does call on the Flop, he may fold to a bet on the Turn if he does not improve.

Another situation occurs when you have a flush draw, a straight draw or top pair on the Flop and are in late position. You should be raising with any of those hands so that your opponent will not have a good handle on the way you play.

Shorthanded Common Mistake #4: Calling when you should be folding or raising
Habitually limping in the pre-Flop round in shorthanded games is a strategy for losers. That is a strong statement, but it is true. If it is a 5-handed game and you are under the gun with a hand that you are not sure how to play, you should either fold it or raise it. There are not many hands that you should limp with in an early position in full games. That small number of hands gets reduced in shorthanded games. Some of the hands that players have trouble with in this situation are: A3o, JTo, 87s. I see players often limping in with these hands in early position. Their thought process goes something like this: "I have seen other players raising with these hands and winning so that means it's a playable hand. But these cards are not that great, I really need to hit the Flop in order to keep playing with them. The cards are too good to fold and they are not good enough to raise with, so I'll just call."

Let's take a look at T9s. Limping in early position with this drawing hand may be justifiable in full games if you expect others to call as well, thus making it a multiple player pot. In shorthanded games, usually what will happen is that someone will raise behind, or they will all fold to the blinds. In either scenario, the hand will be played with few players, and you will not have correct pot odds to be playing. This is a hand that should be folded. A raise is incorrect because the hand is not strong enough. A call is incorrect because you cannot expect to get into a multiple player pot.

Let's take a look at ATo. ATo is not a great hand and can be dominated by AK, AQ and AJ. However, it is strong enough to play when the game is 6-handed or less. ATo is best played with as few players as possible since it is not a drawing hand. This means raising is better than calling.

Shorthanded Common Mistake #5: Folding too often
Tight players who wait for the right hand often have an advantage in full games. They are able to fold their mediocre blind hands to early position raisers, they have the ability to throw away QQ

when there is an A on board and a solid player bets, they can see when a player may have hit a flush draw and fold their top pair. All of these abilities are useful in full games. They are useful in the shorthanded games as well, but the circumstances are not the same. Adjustment is the key word, and sometimes the tighter players in the full game cannot adjust correctly. In shorthanded games, you cannot throw away medium to high pocket pairs without a good reason. Just one or even two overcards on the board are not a good reason in itself.

Example 1:
You are in the big blind in a 4-handed game..

Your hand: T8o

The button open raises and the small blind folds. Do not automatically fold this hand as many may in full games. It is very possible you are behind, but if you play well post-Flop, you are getting enough pot odds to at least see the Flop. If you were up against a hand such as Q7 (which many players will raise with on the button in shorthanded games), you are pretty much in a breakeven situation or close enough that it is worth 3.5 to 1 to make the call. In shorthanded games, players often feel they can raise with any two cards on the button. The same concept can extend to hands such as K4s when the cutoff raises.

Example 2:
You are in early position and hold a pair of J's in a 5 player game. You raise pre-Flop. An average player on the button calls as does another player in the big blind. The player in the big blind seems to be comfortable in shorthanded games.

Your hand: J♦J♠
Flop: A♣T♠7♥

The big blind checks to you and you bet. The button folds and the big blind calls.

Turn: 3♥

The button checks and you bet. All of a sudden the big blind check raises you. It would be incorrect to automatically assume you are up against an Ace here and fold. In fact, you could easily be up against a hand like J♥T♥ who picked up a flush draw along with his middle pair of T's. There are many players who do not have the creativity to make this play, but there are many who can, especially in the shorthanded games. Your decision to play on or to fold is dependent upon your opinion of the aggressiveness and the trickiness of this player. Keep in mind that players tend to play more aggressive in shorthanded games, so there are more reasons to call in this spot in shorthanded games than in full games.

Shorthanded Common Mistake #6: Being too passive in the wrong spots
Shorthanded play calls for playing more aggressively because the average hand here is not as strong as the average hand in full games since there are fewer players. This means some hands get bumped up in relative value, and can be played more aggressively in the shorthanded games. Here are some reasons for playing aggressively.

1. You want to get more money in the pot if you have a good hand so you can win more. Since players are looser and more aggressive in shorthanded games, it means many players have learned to call bets and raises with lesser holdings. So you should not be afraid to be betting or raising when you have the best hand, since your opponents are more likely to stick around in shorthanded games. This means you should tend to avoid slowplaying since you will get paid off more often in shorthanded games.

2. You have a good hand, but it is vulnerable. You would be happy if your opponents folded in this situation. For example, if you have top pair when the board is T-8-3, you may have the best hand, but your hand is vulnerable to overcards. You need to charge overcards a fee to see if they can draw out on you.

3. You need the other players to fear your raises so you have credibility when you are bluffing or semi-bluffing. This credibility is important because you will have more chances to bluff and semi-bluff in shorthanded games. You need to make it so that your opponent cannot deduce whether or not you have a made hand. When your opponents are uncertain of our hand, it can easily lead them to make mistakes.

Example:
You hold A3o on the button in a 4-handed game. You open-raise and both blind hands call.

Your hand: A3o
Flop: A-7-6 rainbow

They both check and you bet. Both of them call.

Turn: 8

They both check again. At this point it is important not to be afraid of a check-raise by one of the players and keep on betting. You do not want to allow a lone 5 or 9 to see if they can make a straight on the River for free. Although you are not all that happy being up against a hand like 98 (a pair of 8's with a straight draw would give him 13 outs against your pair of A's), it would not be a good idea to allow a hand like that to see the River without putting in a bet, thus getting "infinite" odds (when you do not have to put in any bets and yet have a chance to win the pot). This situation is different from that of checking on the Turn with the intention of calling a bluff bet on the River. There are so many possible outs that your opponent can have. The strategy of inducing bluffs is best deployed when your opponent has fewer outs and he would likely fold if you bet on the Turn. In those cases, your check on the Turn is a ploy to lure him into betting a worse hand on the River after you had shown weakness on the Turn. This is not the case in this example. Here, most opponents with a straight draw will call. The looser players may call with an inside straight draw (with just a T or a 4) as well. So you want to bet on the Turn since you are likely to get called.

Shorthanded Common Mistake #7: Being too aggressive in the wrong spots
The strategy of semi-bluffing is a powerful one when it is used at a proper time and against the

right opponent. The proper times are times when there is a scary board for your opponent. The right opponent means a player who is willing to fold at least once in a while with a made hand when you raise. If there is no chance that your opponent will fold, then a semi-bluff is a poor strategy. Many players in shorthanded games have learned to play aggressively, and typically this is the correct strategy against normal players. But there are some players who will not lay down a hand. They are willing to call even with A-high or bottom pair, no matter how scary the board is. Against these calling stations, semi-bluffing or bluffing is a self-defeating strategy since the opponent will not fold a better hand than the bettor's. You should still be aggressive against calling stations, but it should be at times when you think you are ahead and should bet for value. Although the mistake of being too aggressive against a calling station can also be made in full games as well, it is listed as a common mistake in shorthanded games because players tend to semi-bluff more often in shorthanded games. Thus you could make the mistake of semi-bluffing against calling stations more often in shorthanded games than in full games.

Shorthanded Common Mistake #8: Not using the option of Checking
Many decisions in poker boil down to raising or folding. Using the extreme strategies of raising or folding is often a correct decision, but the act of checking can be a useful weapon too. It becomes even more useful in shorthanded games when other players may be playing too aggressively. There will be situations where neither folding nor raising is the best play, but a check or call is. In these situations, a fold may be incorrect because you may have the best hand. Meanwhile, a raise may be incorrect because if you do have the best hand, you do not want to drive out the other player with a raise when he is sure to bet into you again on the next round with the worst hand. Here's an example.

Example 1:
You hold KJ and open raise in the cutoff in a 5-handed game. The button folds, but both blinds call.

Your hand: KJ
Flop: A-K-4 rainbow

Both blinds check to you and you bet. The small blind folds and the big blind calls. Since the big blind called, you note that he could have an A with a bad kicker, QJ or JT for an inside straight draw, or a K with a worse kicker than you.

Turn: 6

The big blind checks. There are now 4 big bets in the pot. If the big blind is on a straight draw with a hand like QJ, then he only has 4 outs. If you bet and he calls, you know that he would be making a bad call since he does not have pot odds. There are some players that will automatically call with just an inside straight draw even without pot odds (they may not actually realize they do not have pot odds). Against those calling stations, you should bet again to get his bet in. However, there are other opponents that would now be willing to dump their straight draw on the Turn since they know they do not have enough outs to make a call worthwhile. Against a player who is willing to fold in this spot, it is now correct to check on the Turn after his check. You want to give him an opportunity to think he can win the hand even if he does not hit his straight on the River.

By showing him weakness with the check on the Turn, you have said to him that you do not have a strong hand and that you may be willing to fold on the River if he bets. Meanwhile if you had bet on the Turn, he would just fold. Thus if he does not have an A and does not hit his straight, you have a good chance of inducing him to bluff on the River and win a bet that you would not have won if you had bet on the Turn.

Now consider the situation when your opponent has an A with a good kicker. Maybe his hand is A6 and made two pair on the Turn. When he hit his two pair, he is no longer worried about his kicker problems. Maybe he actually flopped two pair or a pair of A's with a decent kicker. In any of those cases, he knows there is a good chance that you will bet on the Turn after raising pre-Flop and betting on the Flop. Many players will now set you up for a check-raise on the Turn. If your opponent has one of these hands, you do not want to bet and get check-raised, because you would be forced to fold your own hand (a correct play at that point). Instead, you would much rather check and hope that you give him a bad beat on the River with trip K's.

If your opponent has very little, your check may win an extra bet if he bluffs on the River. Whereas if you had bet on the Turn, he would have folded. If your opponent is way ahead of you, then your check has given you a chance to catch up on the River. Compare this to betting against a better hand - you are likely to get check-raised on the Turn and be forced to fold without seeing the River. Checking should be part of your arsenal, used as a stealth weapon against solid players who can steal if they see weakness. Do not use it against calling stations as you may be preventing them from calling when you have the best hand (against those players, lean towards betting on the Turn and checking on the River). The players that are super aggressive in shorthanded games, and keep betting until someone raises them, will miss out on terrific opportunities in hands like this.

Shorthanded Common Mistake #9: Calling all the way to the river with just A-high on a tough board
Sometimes it is correct to call down an opponent with just A-high, but sometimes it is not. Some players who are not used to shorthanded poker take an A and play it until the river indiscriminately. There are occasions when this is the right play, but there are occasions when it is not. They see so many poor quality hands win, and see some A-high hands win, that they automatically think they should call down to the River with any A without regard to the board or the actions from the other players.

Here are a couple of examples where calling down with an Ace high may be incorrect.
Example 1:

Your hand: A6
Board: K-Q-9 [turn] 8 [river] 3
There really is no reason for you to assume the other player is bluffing. Trying to call him down on a bluff with a board like this will quickly dwindle your stack. In fact, you should not even have bothered to call on the Flop.

Example 2:
You are in the big blind, and there are two other players.

Your hand: A6
Board: 3-4-5 [turn] K [river] J

There are two other players, the small blind and the button. The small blind checks to you on the River and you check as well. The button bets and the small blind calls. This is a must fold. The only way you can hope to win this hand is in the unlikely case that the button made a bluff bet and at the same time the small blind actually called with a hand that cannot beat A6. That would be very unlikely. Maybe you could have beat a bluff from the button, but you cannot beat the call from the small blind.

Here are a couple of examples where calling down with an Ace high may be <u>correct</u>.
Example 1:

Your hand: A6o
Board: 3-4-5 [turn] T [river] 8

It is a 5-handed game. Your opponent is on the cutoff and raised pre-Flop. When the board has no high cards, your opponent is less likely to have a pair than on a board that contains some high cards. Also, it was correct for you to be in the hand on the Flop or the Turn since you had a straight draw and an A, although you could have chosen to have put in a raise on the Flop or Turn. The main question is whether your opponent would try to make a value bet with AK or AQ on the River. If he held a hand like KQ, K9, QJ, he may keep on betting hoping you fold an A. A call may be correct against aggressive opponents.

Example 2:

Your hand: A♠6♠
Board: 9♠9♣5♠ [turn] T♦ [river] T♥

There was a late position pre-Flop raiser and you called in the big blind with A♠6♠. This is not a tough decision to call. You are beat only if your opponent has a 9, a T or a pair of J's or higher. You are tied if he has just an A, and you win the hand if he doesn't have any of those cards. You would beat a hand that was a pair lower than 9's, such as 88 or 77. You will lose your fair share of hands in this situation, but you will split the pot or win the pot outright often enough to make it worthwhile to call on the River against most opponents.

Shorthanded Common Mistake #10: Calling too often
In shorthanded games you will often get raised, semi-bluffed, check-raised and bluffed. There are situations where it is right to call them down for two reasons. The first is that you may have the best hand. The second is that you want to make them aware that you will not easily fold and will call their semi-bluffs. This is so that they will think it is not worthwhile to semi-bluff against you. However, there are many situations when it is right to fold because the chance of you having the best hand at the moment, combined with the chances that you may fall behind at some point, are too high. Here are a couple of examples.

Example 1: <u>When you should fold to a raise from a player in late position</u>

You raised before the Flop from the cutoff in a 5-handed game with A♠6♠. An average player cold calls you on the button as does the big blind.

Your hand: A♠6♠
Flop: K♣Q♦4♥

The big blind checks, and you bet hoping to win the pot. The player on the button raises and the big blind calls. This is an easy decision to fold. It should be fairly obvious that the possible hands that the two players have are a pair of K's, a pair of Q's or a straight draw. Given that there are two players who are in, it is unlikely that both of them are on a draw. Even if that were the case, in order for you to feel more comfortable with your hand, you would have to hit an A on the Turn. However, an A would complete a straight if one of them had JT, a hand that many players will play. So when two players are in on the Flop, it is a clear fold at this point, even though the pot is offering you 11:1 odds. The pot is not big enough to call.

Example 2: <u>When you should fold to a bet on the Flop after getting re-raised pre-Flop</u>
You are the button and try to steal the blinds against two weak players by open-raising with J♠9♠. A solid player in the small blind re-raises. The big blind folds and you call to see the Flop.

Your hand: J♠9♠
Flop: A♣3♦3♠

The small blind bets out. It is time to fold, even though you are getting 8:1 odds. You could be drawing dead, and at best you are drawing to 6 outs. That is not enough to keep playing.

Example 3: <u>When you should fold to a bet on the Flop when you were the raiser pre-Flop</u>

You are in the cutoff holding K♠J♥ and open-raise. Both blinds call.

Your hand: K♠J♥
Flop: A♣9♦9♣

The small blind bets and the big blind calls. Now you have to fold. The best scenario you can hope for is that they are both on club flush draws, which seems unlikely. You are likely beat right now in at least one spot and if you are not, you can still easily get outdrawn. If there was only one opponent in the hand, you may consider calling if he is prone to betting out on paired Flops as a bluff or bet out on a flush draw, but with two opponents, a fold would be correct.
Shorthanded Common Mistake #11: Frequently calling raises in the small blind
Calling raises in the small blind is a mistake when there is a raise and no other callers before the small blind has to act. When there is just one raiser, the small blind's decision should usually be a binary one, re-raise or fold. The first and main reason the small blind should only re-raise or fold is due to its relative position compared to the big blind. If the small blind only calls, then he is allowing the big blind 5:1 pot odds to call. That means the big blind is not making a mistake by calling with almost any hand. By calling, the small blind will be in a horrible position for the rest of the hand, with two players behind him. With this large disadvantage, the small blind should be

folding many hands, including hands such as J9s, A2s and KTo. With playable hands, the small blind should be re-raising. A re-raise by the small blind would only give the big blind 7:2 pot odds to call, which will force him to fold most of the time. The second reason is that a re-raise will make the small blind look strong going into the Flop. This is useful when the button was on a steal, since a re-raise pre-Flop and a bet on the Flop will often force the button to fold. With premium hands such as AA and KK, a re-raise is correct too. If the big blind calls, he will be making a big mistake, of which you will be the primary beneficiary with your premium hand.

You should not call raises often in the small blind if there is only one raiser and no other callers yet. If you see players habitually calling in spots like this, you know you have an opponent who is giving away a lot of edge to the big blind. Try to move your seat to this player's left (see the 3 player game in the Shorthanded Overview chapter for more on this concept). If there are more than one player in the game who habitually calls raises in the small blind, then the game is even better. It does not matter as much where you sit in that case as you will be getting the best of it often.

Shorthanded Common Mistake #12: Not adjusting to the tempo/mood of the game
Shorthanded games have different styles. Sometimes they will play much like full games. This can happen when most of the players are taking it easy, trying to play solidly, and no one is trying to be a bully too often. The players may in fact be mostly used to full games, so as a group, they are not as aggressive as most shorthanded players can be. However, there are other times when the game will play much faster, with many raises and re-raises. In these wilder games, it is not rare to see half of the pre-Flop rounds being three bet by one of the players. This means the pot will get big even before the Flop, so raising and semi-bluffing in the later rounds becomes a more important strategy. A fold by any of the players will add equity to any of the remaining players. In a slower tempo game with a more passive mood, semi-bluffs will need to work at a higher rate for them to have value since the pots will typically be smaller.

Generally, when the tempo of the game is faster and the mood is aggressive, semi-bluffing and raising are more useful strategies because the pots will be bigger. When the tempo is slower and the mood is passive, the correct strategy is generally to play more conservatively (of course you can still selectively steal). Some great players have an ability to mold the tempo and the mood of the game in the direction they want. For example, if they want a faster tempo, they may try to trash talk the players they think are susceptible to being manipulated, get them on tilt, and all of a sudden, the game is played faster and more aggressively. It is important to adjust to the tempo and the mood of the game, and useful to control and manipulate it.

Shorthanded Common Mistake #13: Playing 3-handed games the same way as 6-handed games
Shorthanded games come in different sizes. 6-handed games will play differently than a 4-handed or 3-handed games. In fact, 6-handed games play more like 9-handed games than it does 3-handed games. There are more similarities between 6-handed games and 9-handed games than 6-handed games and 3-handed games. Not only is there a positional difference in the games (the under the gun player is also the button on the same hand in 3-handed games), but every player is in essence involved in every hand. This means any weakness by any of the players is extremely magnified if one of the other players is skilled enough to take advantage of it. It also means any player can win

big or lose big due to good or bad luck.

6/10/04 This is the third draft of the chapter on Extra Topics in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page.

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Monte Hall Problem in Hold'em
The Monte Hall Problem is a very popular problem that is confusing to many people. The problem is often misrepresented or misinterpreted by the one presenting the question. Many times, the confusion is due to the person asking the question not phrasing the question correctly or not providing all of the pertinent information. Here is my attempt to explain it succinctly, and apply it to a Hold'em situation.

The setup to the Monte Hall problem is that you are a contestant in a game show and Monte Hall is the show host. He will give you a product (like an electronic device), but then offer you a choice to exchange the product. Usually the result of the deal that he offers you is unclear. You have to make a decision with uncertainty. If you choose to make the deal, then you will have to play a game (it could be as simple as choosing between what is behind door A or door B). If you get lucky, you may wind up with a much better product or nothing at all. What makes the show interesting is that the contestants are sometimes asked to make decisions that are tough and counterintuitive. The famous Monte Hall problem is one of those that are counterintuitive.

In the problem, there are three doors. Behind one of the doors is a brand new car, behind the other two doors are goats. The contestant does not know which objects are behind each door, but presumably the contestant would prefer to win the new car over a goat. The contestant is asked to choose a door, and the object behind the chosen door now belongs to him. The game is not over though. Before Monte Hall reveals what is behind the contestant's door, he now opens one of the other doors to reveal a goat. Then he says to the contestant "You may choose to switch to the other unopened door if you wish." If the contestant switches, does he increase his chances of winning a car?

As is often the answer to the poker question of "How should I play this hand?", the answer to the Monte Hall problem as it is presented above is "It depends." If it was presented slightly differently, the answer would be clearer. The difference is whether you knew ahead of time that Monte Hall would <u>always</u> open up a door with a goat behind it and offer you to switch to the third door. This is an important fact and makes a big difference in the problem. Oftentimes, when others present the problem, they do not make it clear if this is true or not.

If you knew in advance that Monte Hall is 100% guaranteed to open up a door and show you a goat and offer you to switch after you have already picked a door, then the answer is yes, you should switch.

If you were not sure in advance if Monte Hall would offer you a deal, then you simply don't know. Is he bluffing by offering you to switch because he knows you have picked the car? Did he

already plan to show you a goat behind one door and offer you the contents behind the other door even before you made the first choice? What is your opinion of Monte Hall as a person, is he nefarious and wants you to get the goat, or is he generous and wants you to increase your chances of winning the car? What is your opinion of the intelligence of Monte Hall? Is he smart enough to realize that if he always shows you a goat and offers you to switch doors that he is increasing your chances of winning the car or does he think that the choice does not matter?

Let's assume the scenario where it is 100% guaranteed that Monte Hall knows what is behind each door and will always show you a goat behind one of the doors whether or not you picked the door with the car behind it. Then he will offer you to switch to the third door that is not yet open. Given that this is the case, then Monte Hall will always show you a door with a goat behind it, whether or not the door you have chosen has a car or a goat behind it. 1/3 of the time, the first door you chose will have a car behind it. That means 2/3 of the time, the car is behind one of the other doors. Since you knew that Monte will always open up one of the doors with a goat behind it that means if you switch, you will go from a 1/3 chance to a 2/3 chance.

One of the problems with this answer is that many people confuse this issue and think the chances are ½ for both the door that you originally picked and the remaining door since there are only two unopened doors left. They neglect the fact that if the car was behind one of the doors that you did not originally choose, then Monte Hall would not open that door because he knows that the car is behind it, and he is not going to show you the car. Monte would only open the door with the goat behind it if the other door had the car behind it. Thus 2/3 of the time (because 2/3 of the time you have picked the incorrect door, and the car is behind one of the other two doors), Monte has no choice but to open the one door that has the goat behind it. The other 1/3 of the time, he can randomly decide which door he wants to open. This means that 2/3 of the time, the door that Monte did not open will have the car behind it, and the other 1/3 of the time there will be a goat behind the other door because you already picked the correct door with the car behind it. So if we knew with 100% certainty that Monte Hall would open up a door with a goat behind it and offer us to switch cars, whether we chose a door with the goat behind it or we chose a door with the car behind it, then we will increase our chances of winning the car from 1/3 to 2/3, a very significant improvement.

Here is an illustration of the Monte Hall problem.

Door / Contents	If you chose door A, Monte will show you:	If you chose door B, Monte will show you:	If you chose door C, Monte will show you:
A - Car			
B - Goat	either B or C		B
C - Goat	either B or C	C	
If you switch to the 3rd door	You will get a goat	You will get the car	You will get the car

However, what happens if Monte Hall sometimes does not offer you the choice of switching? What if sometimes Monte will simply open up the door that you chose? If that is the case, then you need to know that if he offers you to switch doors, then maybe he is trying to bait you to switch to a worse door and away from the door with the car behind it. Maybe Monte does not want you to win the car and will only ask if you would like to switch doors if you actually chose the door with the car behind it. In order to actually take Monte's offer and switch doors and think you are going from a 1/3 chance to a 2/3 chance, you have to be incredibly confident that he will always ask if you want to switch no matter what you chose, and that he does not have a nefarious reason to ask you if you want to switch. This is incredibly important and pertinent information to the problem, and yet many people who present the problem fail to make the facts crystal clear. The problem is already a difficult one to understand conceptually, and the omission of this important fact merely makes it even more confusing to many.

How does the understanding of this problem apply to Limit Hold'em? Well, there are some situations where your opponent is guaranteed to bet. Given certain opponents and certain situations, you may be 100% certain that your opponent will bet. If you know that your opponent is 100% to bet, then that means his bet has no bearings on the quality of his hand. You cannot base any of your reasoning of why your opponent has bet on the latest new piece of information. Of course, you may need to readjust the value of your own holdings based on the new information. The key is that you cannot adjust the value of your opponents holdings based on the new information since he would have acted identically no matter what the new piece of information was. This situation typically presents itself more often in shorthanded games than in full games. Just like in the Monte Hall problem, where you knew Monte would show you a door with a goat behind it and ask if you wanted to switch, you knew that the chances you picked the correct door was 1/3, and it is still 1/3 even after Monte opened one of the doors for you.

Applying the Monte Hall problem to Hold'em
It is a 4-handed game. You are in the big blind and the player on the button open-raises. For the purposes of this example, your cards are not pertinent. The player on the button is a very aggressive raiser when he is on the button in this game, and you are very sure that he will raise with a wide range of hands. The small blind folds and you decide to call.

Flop: 9♣-9♥-2♦

You check, and your opponent bets.

This is the point where you knew that your opponent would bet 100% of the time, regardless of the strength of his holdings and the quality of the Flop. He is an aggressive player, you have played many hours of shorthanded play with this guy and you have always seen him make this bet. This is a situation where your aggressive opponent is 100% guaranteed to bet, no matter what two cards he holds. So his bet gives you absolutely no new information about his possible holdings. Your estimate of the hand that your opponent holds should stay the same as before the Flop. Similarly in the Monte Hall problem, your estimate of the chances that you had picked the door with the car behind it stays the same even after Monte Hall showed you the goat behind one of the other doors

and asked if you wanted to switch, because you knew he would make those actions.

ALL-IN SITUATIONS
When one of the players is out of chips in the middle of a hand, he is considered all-in, and he gets to see the rest of the hand played out through the River. If there is just one other player left in the hand, then the dealer simply deals out the rest of the hand and then asks for the winner to reveal his hand. If there are more than one player still in the hand, and one of them is all-in, then a side pot is created. The player who is all-in cannot win the side pot, but can only win the main pot. The other players can win both the side pot and the main pot.

It is important when betting to consider when someone is already all-in or is close to going all-in. Sometimes a player closer to being all-in is frustrated, because they are in that situation because they are in the midst of a losing session. If they raise, sometimes they are raising just to get all-in and get the betting over with so they can see if they have won. It is useful to understand the type of player that may do this so that you do not misinterpret their aggressiveness for anything else other than the fact that they just want to get to that point as soon as possible.

Playing against a player who is almost all-in
It is important to be aware when one of the players at the table is almost all-in. Many times these players will play more aggressively especially when there are already a lot of players in the pot. They want to get maximum value for their money and they figure that going all-in early when other players are already committed to seeing the Flop will accomplish this feat. A typical example occurs when several players have already limped in, and a player in late position or in the blinds raises and goes all-in. They may be raising with a hand that they would not normally raise with. They may normally just call with this hand. The thought process here is that since they are going to go all-in pretty soon anyway, it is better to go all-in now to get maximum value for their hand. When this happens, you do not want to be folding a hand thinking he really is on a legitimate raise. If you knew that he was raising just to go all-in, then you have more incentive to call. Even if you think he has a legitimate raising hand, you know this player will not be able to pressure you further on future rounds.

Even if you do not believe a lone opponent who is almost all-in is playing differently, you still need to know that he is almost all-in. The reason is that the expected pot size will be different which of course may affect your pot odds calculations and affect your decision. You need to think your way through the hand as different situations may come up. Here's an example when you wind up heads-up against a player who is almost all-in and you flop a great hand.

You raise pre-Flop with AK in a $20-$40 limit Hold'em game. The only caller is the big blind who only started the hand with $65. After putting in his big blind and calling your bet, he only has $25 left.
Your hand: AKo
Flop: K-9-7 rainbow

He checks. Normally it would be correct to bet, but it may not be so when your opponent is almost all-in. You want to increase the chance that he will put in all his chips. Giving him free cards is not as dangerous since there are no overcards to your hand. Almost any hand that he could have

that would benefit from getting a free card is a hand that he would have called on the Flop anyway and will almost always call on the Turn as well.

For example, assume he had T9, and has a pair of 9's on the Flop. If you bet on the Flop, he would call or raise and be all-in. If you check, you will still get him to put his chips in on the Turn anyway regardless of what card comes (the only card that may deter him from calling may be an A, in which case, you may wait until the River to bet). If he had a draw with QT, he would probably call if you bet on the Flop or if you bet on the Turn as well, with or without correct pot odds. If you catch a bad beat and a J comes on the Turn or River, you should comfort yourself knowing that he would have gone all-in on the Flop if you had bet anyway. So with these two hands, it makes no difference if you bet on the Flop or wait for the Turn to bet.

The hands that he could have that can matter are hands such as A3 and J8. These are hands that he is likely to fold if you bet on the Flop. If you check on the Flop, he may bet out on the Turn hoping to buy the pot even if he does not catch a pair. If he is a bit more conservative, he may not bet out with nothing, but he will if he catches a pair. Since you have a pair of K's with the A kicker, you only need to worry about your opponent catching runner-runner trips or two pair. The tradeoff between that unlikely event and getting your opponent to risk his remaining chips when he is a major underdog should make you lean towards checking on the Flop.

Players who are almost all-in are unlikely to fold after they have bet or raised
If a player only has one bet or less left in their stack after they have made a bet, it becomes very difficult to bluff them out of the pot. They may or may not have a good hand, but typically they already have the mentality that they are going to go all-in. Even if they feel they are behind, they will often just throw in the rest of the chips when someone raises and start digging into their pockets expecting to lose. Of course this is a generality, and not all players are alike, but it is useful to be aware of it.

In order to take advantage of this phenomenon, you need to bet with all marginal hands into a player who is close to going all-in, and forgo semi-bluffing or bluffing. If it is down to just you and the player who is almost all-in, don't be afraid to raise him all-in with a top pair/weak kicker or middle pair. However, don't raise him all-in if you only have an inside straight.

Here's a typical situation where you should have no fear of making the extra raise to put him all-in.

Your hand: T9o
Flop: K-T-8 rainbow

Your opponent had raised in late position, and you had called in the big blind. You check to him and he bets, leaving him with only one more small bet left. Even though you only have middle pair, you should feel comfortable raising and making him go all-in at this point. If you do check-raise here on the Flop, many opponents will simply throw in their last chips with a hand like A7.

Here's a typical situation where you may semi-bluff against normal players, but you should think twice against a player who is almost all-in.

Your hand: 98o
Flop: J-7-3 rainbow

If your opponent has bet, you should not make a semi-bluff raise because the value of bluffing is very low. The player who is almost all-in is more likely to call with a hand like A4 or KT than he would in a normal situation. The value of the bluff portion of the semi-bluff is non-existent when a player is all-in or almost all-in.

How an All-In Player Protects the Pot from a bluffer
Once one of the players is all-in, and there are at least two other players in the hand, a side pot is created. The other players in the hand can win both the side pot and the main pot, but the all-in player can only win the main pot, the part of the pot that he had contribute to. If the main pot is relatively big compared to the side pot, the all-in player protects the other players from bluffing against each other. Even if a bluff is successful in that it gets the third player to fold, the bluffer still has to show down his cards against the all-in player to win the main pot. If the bluffer cannot beat the player who is all-in, then there is no value in getting the other player out. The objective of bluffing is to win the pot with a weaker hand than the opponent, by having the opponent fold his stronger hand. But since the all-in player can not fold his hand, this means that a bluff, by definition, cannot work. A successful bluff in this situation will not benefit the bluffer nearly as much. He will only win the side pot when the third player folds, but he still must show down his hand against the all-in player in order to win the main pot. Of course, if the side pot is bigger than the main pot (and this can happen if the all-in player goes all-in in the early stages of the hand), then a bluff may be worthwhile.

Here is an example when you hold a busted flush draw or a busted straight draw on the River.

Your hand: 87o

Board: 6-5-T-Q-K rainbow

You believe the opponent who is not all-in (the third player) holds a weak hand. Since the Turn and the River were both overcards to the Flop, you believe there is a good chance the third player will fold if you bet. If the all-in player had just gone all-in on the Turn, and there is no side pot created yet, then there is no reason for you to think about betting in this case because it is almost inconceivable that you could win the main pot. The all-in player will have your hand beaten unless he miraculously has a hand like 43. In a case like this, the pot is said to be a protected pot because there is no benefit in bluffing. The pot is protected from a steal.
Here is a less extreme case. Say you have A5 with the same board, you have a pair of 5's. The all-in player went all-in on the Turn, and on the River, there is still you and a third player. Now the third player bets to start the side pot. You had hoped he was on a busted straight draw, but if your opponent understands that the pot is protected, then it is likely he has a strong hand.

Home Casino Advantage
In sports, the home team has a slight advantage, even if the talent levels between the two teams are equal. There are two main reasons for this advantage. The first is that the home team is used to

their environment and is sleeping in their own homes and beds while the road team is not. The visitors have travel weariness and are sleeping in hotels that may not have all the comforts of home. The second reason is that the home crowd will cheer on the home team and support them, which is a nice emotional boost to the home team players. At the same time, the crowd will scream and swear at the opposing team, which is not enjoyable for any player.

In poker, many players enjoy this type of home field advantage also, which I will call the home casino advantage. The players that enjoy the home casino advantage live in the surrounding area and they can go home to their own comforts and beds after playing. They go to the local poker room on a regular basis, so they are comfortable with their environment. They know the dealers, either by face or by name, they know the floormen and they know the waiters and waitresses. They know the specific rules of the poker room, which are not always universal. This whole environment feels almost like a work place and is familiar to them.

Most important, players who enjoy a home casino advantage will know a higher percentage of the other players and their tendencies. When the observant player approaches his seat at a new table, he will already know the characteristics of many of the other players and how they play different hands. If it is a smaller poker room or if the player has played in the room for a relatively long period of time, the skilled player should be able to identify the characteristics of his opponents to a much finer degree than the stereotypes listed in this book. The skilled player with home casino advantage may know a raise from Joe can only mean that player has the nuts, whereas a raise from Bob can mean a bluff or semi-bluff. It usually takes many hands to get to know how others play, so it is a nice advantage to know the players before sitting down. It also allows the player to concentrate more on the one or two players who are unknown to him.

Even the less observant players enjoy home casino advantage to a certain extent. It is amazing how even the worst players still have a decent idea of who the good players are and who the bad players are. And yet, even though they can make this identification, many of them cannot identify that they themselves are bad players! That is truly amazing. The important point here is that even the lesser skilled players have a home casino advantage, whether or not they use it to their fullest advantage is a matter of skill and concentration, or lack thereof.

When I was brand new to casino poker, I sat into a Hold'em tournament in Reno, Nevada in a casino that I had never been to before. I had seen the tournament schedule in a copy of Card Player magazine and thought it would be fun to play in it. The tournament started at 11am on a weekday, and it was cheap, only $10. That buy-in was just right for me at that time. After almost an hour, I was doing pretty well with a decent chip position. All of a sudden, the dealer says "This is it" as he dealt the cards. The first player shoved all his chips in, and the next two players called, going all-in themselves. I was amazed, they all put in their chips so fast that I thought I was dreaming. I looked down and saw 72o and threw in my hand. The player to my left immediately put his chips all-in and said to me "What are you doing?" I was puzzled. I thought I should have been the one asking that question.

As it turned out, the tournament was not a regular tournament. It was only supposed to last an hour and end at noon, at which point the player with the most chips would win. I was shocked when I found out and rather upset. I thought I had a good chance of winning based on my chip position,

but mostly I was upset at myself for not knowing the exact rules before I sat down. I was disappointed and grumpy for the next few hours. So let my mistake be a lesson to you!

A Road Game
When a player is traveling, they need more time than the home players to identify the skill level of other players. Players will often travel to casinos when major tournaments are being held, such as the big tournaments in Las Vegas, Atlantic City, Los Angeles, Biloxi and Connecticut. Many players go during the major tournaments not only to play in the tournaments but also to play in the side action as well. Not only do these tournaments attract players from across the country, but these tournaments also entice those who live nearby that may not play as often. Just check out the hotel room availabilities when these tournaments are in place, they are usually sold out.

If you are on the road, you must be even more observant than when you are playing in your home poker room. You must watch each player carefully and gather enough information so you can act accordingly when you are mixed up in a hand with them. It makes it all the tougher when on the road since the surroundings are not nearly as comfortable to you as it would be in your home poker room. You don't know the dealers, the floormen, the waiters and waitresses. You aren't entirely sure where the restrooms are located. Once you get situated after a few hours, everything will become more comfortable. But it takes time. Recognize this when you are playing on the road and make the necessary adjustments. Try to get plenty of sleep and to avoid being tired from the traveling.

One year right before the World Series of Poker, I was playing at my local card room when I asked a professional poker player at the 20-40 limit if he was going to go Las Vegas for the World Series of Poker. He said he had no plans to go and was not interested. He said that he would lose his home court advantage since he would not know any of the players there. In the local poker rooms he plays in, he knows just about every player and has studied them for quite some time. Without this knowledge, he felt his winning rate would be significantly lower, plus he would have to pay for the travel expenses, hotel expenses and meals. He did mention that one day he plans on going, but if he does, it would be as a vacation rather than a business trip.

Tells, Feel, Vibes and Image
There are three different kinds of players when it comes to tells. The clueless, the liar and the vault. The clueless player will let you know exactly what he is thinking by his actions. The liar tries to lie to you and fool you with their actions. The vault tries to keep it quiet and act the same no matter what.
The poker players that everyone wants as their opponents are the ones that are clueless. These players are not even aware that people are observing them, and they act the way they feel. If their hand is bad, they will shake their head in disbelief. If their hand is good, all of a sudden they will be at full attention to see when it is their turn to act so they can raise. These players are mostly found in the low limit games or in home games. They would not last very long in the middle and high limit games as their bankroll would quickly shrivel up. The clueless player should stay at home and play poker online since their physical actions often give themselves away. If they played online, this type of disadvantage would not show up. Although if they do act this way when playing poker, it is likely they are not good poker players anyway, so they would likely lose their money sooner or later at online poker as well.

Liars are players that show strength when they are weak and show weakness when they are strong. Aside from their physical actions, liars like to check-raise and slowplay. Check-raises and slowplays can be construed as strategies of feigning weakness when actually strong. They also like to bluff and semi-bluff, which are actions that can be construed as strategies of feigning strength when actually weak. These attributes are sometimes seen through their physical actions as they throw their chips into the pot strongly when they have a weak hand and bet meekly when they have a strong hand. Although some players will actually bet strongly whether they are strong or weak, there are still players who can be counted on to act as liars. This tell may also be available online through the automatic buttons. When players use the automatic buttons, it may reveal the strength of their hand.

Vaults are players that try to act the exact same way without regard to the strength of their hand. It is difficult to tell if they are bluffing or have the nuts because their expression remains the same. We should all aspire to be as far as giving off few signals to the good players. Against the bad players we can try to lie to them and fool them. Against the better players who may understand the "strong means weak," "weak means strong" ideas, it may be best to switch it around and act to our correct strength, and let them fool themselves. For the most part, it is better to keep the same demeanor and not let subconscious actions and reactions reveal the strength of the hand.

There is a good book called Caro's Book of Tells by Mike Caro. I first read this book back in 1992. By that time it was already in print for a few years, but it is still a must read. If you would like to examine tells in more detail, I highly recommend this book. It features many photographs of people and what their demeanor and expressions may mean.

Tells are great if you can spot them, but often it is difficult to spot or there are no tells to spot at all. Even without tells, one can still get a feel or a vibe from their opponents. Sometimes a well-known opponent will do something that just feels wrong. If you have experience playing against this opponent, you probably have a decent feel or vibe for his game, so if something is off kilter, you may be able to sense it. This is not a skill that can be taught by reading a book. Rather, it is a skill that is learned through experience playing the game and playing against the specific opponent. This is one of the reasons why studying the opponents is crucial, as this feel or vibe that you pick up can only mean something if you know the normal behavior of your opponents.

There has been poker advice from authors who said you should sometimes act like a crazy man at the table so that other players think you are a maniac. This way when you actually have a strong hand, you will have no problem getting paid off. As this theory goes, one short spat of craziness can lead to getting called down many times over in future hands, thus increasing the expected profits overall. This may work for some who have the personality for it, but for most players this act would be difficult to pull off. It may be best to simply play correctly and solidly. Although playing tight may encourage some players to fold against you more often when you are betting, thus possibly costing you money when you have a strong hand, the corollary to that is you can successfully bluff more often. If you do not use the tight image to bluff or semi-bluff more often, then you are not taking advantage of all the tools available to you.

Other players who play looser can get the calls from other players when they have a strong hand,

but they cannot rely on others folding when they are bluffing or semi-bluffing as much as you can. Since you will be stuck with some disadvantages of a tight image, it is important to take all the advantages that this image affords you. For example, if you decide to semi-bluff on the Turn with a newly formed flush draw, your opponent may be more willing to fold and give you the pot at that time. Against other players who play less solid or more loose than you, your opponent may call since he believes those players are capable of bluffing more often.

Treating each session as part of one big session
Poker is not like sports. In sports, winning or losing is all that is important, it does not matter how much you win by. If the Yankees won a game by a score of 12 to 3, they have won one game, the same as if they had won by a score of 2 to 1. In poker, winning or losing is important of course, but more importantly is how much you win or lose by. If you play five times in one week and have three winning sessions and two losing sessions, that does not say much about the results in that week. It could be that you lost twice as much when you lost as when you won, thus giving you a losing week.

You should think of every session as part of one very long session that you play during your lifetime. It is sometimes difficult to think that way when the cards are running cold and it feels like you are getting bad beat after bad beat. Without thinking in terms of one long session, you will be tempted to try to get back to even during that losing session. This may lead to playing too many hands, calling too many raises, and bluffing in unwarranted spots.

Oftentimes players on the table will say that they are "stuck," meaning they are losing. But it is all relative. I have heard a player complain that he was stuck $100 in a 40/80 game, when $100 is an invisible blip in a game of that limit. Thinking that he was stuck gave him a negative mentality, and he started to play more aggressively at incorrect times to try to get back to even. He left 10 hours later really stuck, with a loss of $5000. So do not worry about trying to get back to even for the night, the week or the trip. Just think in terms of playing each hand correctly and think of your wins and losses as a whole for your entire life if you are a long term winner. If you are a winning player, this will also make the inevitable losing streaks a little easier to handle psychologically. If you have not shown as much success in the past, you can think of today as the first day of the rest of your Hold'em life.

Emotions at the Table
For many players, playing poker is an emotional experience. When one wins, there is a feeling of elation and a natural high. One feels on top of the world, like an Olympic Champion. This is great, but the reverse is also possible. When the eventual losing session happens, some players will feel depressed. Poker can be an emotional roller coaster. It is how one handles these situations that differentiates the winning player from the losing player.

Here is how a losing player would handle a losing session:
1. Go on tilt. This means playing a lot more hands than the player knows is best and playing them very aggressively. There are different levels of tilt. It's more obvious to witness a player going on tilt at the blackjack table than at the poker table. We've all seen it, and many of us probably have experienced it too. When one is losing, one all of a sudden gets the idea to bet it all to try to win it all back in one hand. Without the advantage of counting at the blackjack table, these players

will all of a sudden put out a $200 bet on the next hand even though they have been playing $25 bets. This attitude is clearly not a good idea at the poker table and may cause a player to play hands that have negative expectation even if the player knows how to play better than that. It may mean as little as calling raises a touch too liberally in the big blind, to open-raising with J5s in the cutoff, to three betting pre-Flop with ATo against an early position raise from a good player. It's important to handle one's own emotions and not adjust negatively due to a losing session.

2. Being upset at the dealer. Some players don't go on tilt, but instead they blame all their problems on the dealer. Calling the dealer names, throwing cards hard into the muck, throwing cards at the dealer, stuff like that. It can become ugly, and it is something we should all refrain from. The dealers are just there to make a living. As for cheating dealers, the casino cameras generally catch everything, and the casinos have even more incentive than you to assure everything is on the up and up. For the most part, angry players that get upset at the dealer are not even accusing them of cheating, they are simply accusing the dealer of treating them poorly by not putting the right card on the board. Obviously this is just ridiculous, but in the heat of the battle, it may be difficult for some players to handle themselves. Not only is it important for every player to try to control their own emotions, but also for other players to protect the dealer if it gets too far. This may mean standing up to the other player or calling a floorperson. No one likes to play when there are angry players at the table, in the long run, and it could drive some recreational players away from the game. This is bad for the game, which means it is bad for the wallets of the good players.

3. Being upset at a lucky player. Even worse than blaming the dealer is when a player who gets a bad beat starts to rag on the player that gave him the bad beat. The supposed good player starts telling the bad player how bad a player he actually is. Of course, this is horrible for the game, as we would all like the worse players to stay in the game for as long as possible. No one wants the bad players to get an education, and that is what some of the good players try to do by demeaning the bad players. Sometimes it is useful to take the good player aside and simply let him know how you feel in a non-confrontational way with statements such as "Hey, I know he really gave you a bad beat, but you know he'll give it back to you in the long run, don't scare him away, please!"

Here is how a winning player would handle a losing session:
1. Analyze what went wrong. It is important to think about what went wrong. Maybe you did not make a mistake and the cards just landed the way they did. Maybe you lost due to random bad luck or maybe you lost because you made some mistakes. It is important to think about what happened to see if you actually made a mistake and can correct those mistakes in future sessions or if it was something that was completely uncontrollable.

2. Learn from your mistakes. The times that a player learns the most is when they lose. After a winning session, it is very easy to walk away happy and feeling complacent, thinking that everything went just as planned. With all the positive thoughts, it is difficult to even think back to see what mistakes you made at the table that day. It is when you have a losing session that your mind starts to think about the mistakes you made. This is a great exercise, as you will learn from these mistakes and learn not to make the same mistakes in the future. The winning players use their losing sessions as a stepping stone to future winning sessions by learning from their mistakes.

3. Learn from the volatility of the game. Limit Hold'em is a volatile game. It is possible that a very good player may expect to make $30 per hour in a $20/$40 game, but on any given hour, they would not be surprised to win or lose $400. On the worst days, a string of six bad hours may mean a $2000 loss for even the best players. Of course, the winning players will see more good days than bad, but the bad days are inevitable. If Limit Hold'em was a game of only skill and no luck or randomness, then it would be a game more like chess rather than poker. In chess, the grandmasters of the game do not have the opportunity to win money from the novices and the bad players. Even stubborn chess players would not be willing to bet against a grandmaster, as they know they have no chance. In poker, everyone has a chance in the short run, but not everyone has a chance in the long run. The short run is easy to see, that is what we bring to the cashier's cage to cash out at the end of the session. But the long run is difficult for many to see, especially the bad players. Without this luck factor and without the bad players having their share of winning sessions, poker would not be profitable at all, and there would not be any opportunities for the winning players. The good players will learn from the volatility of the game and try to chalk it up as "one of those days," and move on to the next day.

Observing the play of the game when out of a hand
It is easy to concentrate on other things outside of the game when you have already folded your hand. There are many distractions that may be available. Many poker rooms have television sets set up within easy eyesight of the players. When there is a sporting event on, it is easy to pay attention to it on television instead of the poker game, especially if you have a wager on the event. It is also easy to read the current edition of CardPlayer magazine, Poker Digest or a newspaper while waiting for the next hand. With cell phones these days, it seems making a phone call is a useful thing to do to fill up the time in between hands. Clearly this can not be a good idea for our poker game, but we still do it, I admit I do it myself more often than I should.

When you are busy paying attention to something away from the table, you will miss the play of the hand and possibly the emotional state of different players. If one of the players just got dealt two bad beats in a row, that may change the way he plays from that point forward. If you were not paying attention to the hand, you would have completely missed it. It may be just as difficult to concentrate in online poker. At home, there may be even more distractions, including talking to other people, surfing the internet and reading a book (hey, if you are reading this book while playing poker, STOP!! Do one at a time, not both.)

Eavesdropping at the Table
Society usually looks down on people who eavesdrop. People want their business and conversations to be private, otherwise, they would be talking to you about it. Most people have been taught as children to avoid eavesdropping and hindering someone else's privacy. But at the poker table, eavesdropping is fair game, and you should use it to your advantage. When you listen to two other players having a conversation, you may gather some useful information about them. When they start talking about how they play, what they folded, the opinions they have of other players, and information that pertain to poker, that is when you should be listening carefully. You should be keeping your eyes open to see what other players are doing, you should also be keeping your ears open to hear if the other players are giving you clues about their own play or other player's play.

Book knowledge versus execution and experience
Learning poker by reading good books is a great exercise. If you are reading the right books, you will be able to help your own game. Reading good books will give you new ideas that you may not have thought about. It may also clarify your own ideas. However reading cannot replace actual experience and it may not improve your execution of the hand. You will know how to play a hand correctly after thinking about it for a few minutes, but that will not help you during the hand if you do not execute correctly. Two things are needed in order to execute the correct play. The first is to identify the situation when the play can be used profitably. The second is to actually put it in play without giving your intentions away. The game of poker goes quite fast, so you will have to identify the correct situations very quickly and then execute properly. Thinking about certain situations and reading up on the ones that this book has covered will help you get to that point a lot faster once you are playing at the tables, but experience cannot be replaced. You still have to go out there and play, and execute the correct plays, and that is easier said than done for some people.

When is it time to leave?
A lot of players will think about leaving a game when they are up big, but usually stay longer when they are down big. This phenomenon is most common in home games, as the losers are always the ones that want to keep playing. Meanwhile the winners are the ones who claim they need to rush home for various reasons.

A friend of mine named Dean used to talk about this phenomenon and say how it should be the exact opposite. He would say that the players who are winning are playing their best game, are in control of the game and are feared at the table at that time. While the players who are losing may be on tilt, are often out of control and have a tougher time bluffing successfully. So it should be the winners that want to stay because they should expect to be winning more than usual, while the losers are the ones that should want to leave as they have the expectation of losing more than usual. Of course if you are a good player and can control your emotions even when you are losing, you should be playing if you still think you have positive expectation. But often players cannot tell when their emotions are getting the best of them. When the negative emotions hit them, they are not usually thinking rationally, they are simply focused on trying to get unstuck and get back to even.

If you have lost to several bad beats recently, you may find yourself paralyzed to bet or raise when you normally would. The recent bad beats may have clouded your mind and make you afraid to take the chance and get hit by another one. If this is the case, it is probably better to leave or at least take a long walk to shake the bad beats off. Come back and play when you can play at your best.

So the next time you are winning and feel the urge to run with the money, think again. Is the game still juicy? Are you playing well? If so, consider staying and playing some more. Try to complement this with reducing your hours when you are losing, when maybe you are not playing your best.

This is the fourth draft of the chapter on Appendix: Rules in Hold'em Brain by King Yao. Please email feedback, suggestions, comments, opinions, questions to KingYao@HoldemBrain.com or you could use the Feedback Form to email me at the bottom of the page.

Hold'em Brain: Appendix: Rules
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The Rules and Mechanics of Limit Hold'em
It is expected that the reader of this book has some experience playing Limit Hold'em and is not a complete novice. For completeness, the rules of the game along with some poker terminology is included. Limit Texas Hold'em is a form of poker with community cards.

The rankings of the hands are in order:

Rank	Example
Royal Flush	A♠-K♠-Q♠-J♠-T♠
Straight Flush	K♣-Q♣-J♣-T♣-9♣
Four-of-a-kind	J♣-J♦-J♥-J♠-2♣
Full House	J♣-J♦-J♥-3♣-3♠
Flush	K♦-J♦-T♦-3♦-2♦
Straight	9♥-8♣-7♠-6♥-5♠
Three-of-a-kind	T♣-T♦-T♥-x-x
Two pair	T♣-T♦-9♣-9♦-x
One Pair	8♥-8♠-x-x-x
High Card	A♣-K♣-Q♦-J♣-9♦

How a hand is made
Every player gets two cards face down. These are the two cards that are distinct to their hand only. At the end of the hand, five cards will be shown face up in the middle of the table. These five cards compose the board and are community cards. Each player mentally takes his two cards and combines it with the five cards on the board, and makes the best five card poker hand he can make. They could use both cards from their hand and three from the board. Or they could use one card from their hand and four from the board. In extreme cases, they could use none from their hand and all five on the board. The purpose is to make the best poker hand from the combination of the starting hand and the board, without regard to how many cards are used from the starting hand. Here are some examples of a few hands. The bold cards in the Final Poker Hand column are the cards form the Starting Hand column that are used to compose the poker hand.

Starting Hand	Board	Final Poker Hand
J ♠-T ♠	A ♣-Q ♠-J ♣-4 ♣-3 ♠	**J ♠-J ♣-A ♣-Q ♠-T ♠**
J ♠-T ♠	A ♣-Q ♠-9 ♣-8 ♣-8 ♣	**Q ♠-J ♠-T ♠-9 ♣-8 ♣**
J ♠-T ♠	A ♣-A ♥-A ♠-K ♣-J ♦	A ♣-A ♥-A ♠-J ♦-J ♠
J ♠-T ♠	8 ♣-7 ♠-6 ♦-5 ♠-4 ♣	8 ♣-7 ♠-6 ♦-5 ♠-4 ♣

The Cards
There are four rounds of card distribution and betting in Hold'em: the pre-Flop, the Flop, the Turn and the River. After the cards are dealt on each round, there is a round of betting.

Pre-Flop: Each player is dealt two cards face down. These cards pertain to only the hands of the individual. There is a round of betting after these two cards are dealt.

The Flop: Three cards are dealt face up in middle of the table, this is called the Flop. These cards are community cards that everyone uses in their hand and are collectively called the board. After the Flop, there is another round of betting. The term "the Flop" can refer to the three cards or the betting round.

The Turn: A fourth card is dealt face up in the middle of the table. This fourth card is called the Turn and is part of the board. After the Turn card is dealt, there is another round of betting. The term "the Turn" can refer to the card itself or the betting round.

The River: A fifth and final card is dealt face up in the middle of the table. This fifth card is called the River and is part of the board as well. After the River card is dealt, there is one final round of betting. The term "the River" can refer to the last card itself or the betting round.

The Showdown: After the betting round on the River, each player still in the hand at this point exposes their cards. Each player's full poker hand consists of the best fiver card poker hand possible from the combination of his two cards and the five cards on the board. The highest five card poker hand wins the pot. If there is a tie, then the pot is split among the players that tied for the best hand.

The Betting
Before any cards are dealt, three things happen. One player will get the dealer button, called the Button, he is the de facto dealer in the hand. Casinos will provide an employee to deal the cards. In a home game, the dealer usually rotates from player to player, and an actual button would not be necessary.

The action always starts to the left of the Button and it goes around clockwise. The player to the immediate left of the Button is called the small blind. He is required to put up half of a small bet, and he is already partially in the hand. If the game is $10-$20 Hold'em, then the small blind puts

up $5, if the game is $20-$40 Hold'em, then the Small Blind puts up $10. The player to the left of the small blind is called the big blind. The big blind must post the amount of a small bet. If the game is $10-$20, the big blind must put up $10. The two blinds act similarly to the combination of an ante and the bring-in in Seven Card Stud except it is only two players who puts up the "ante" rather than all the players putting up an equal amount.

The blinds are called such because they are in the hand blindly. The action is clockwise, and the dealer deals one card to each of the players starting with the small blind. He then deals another card to each of the players in the same fashion. After both cards are dealt, the pre-Flop stage starts.

Since the blinds are considered already active in the hand, the action starts with the player to the left of the big blind, called the under the gun player. He can choose to fold, call or raise. If he calls, he must put in the amount of the small bet, if he raises, he must put in two small bets. Calling in the pre-Flop round is sometimes referred to as limping. After the under the gun player has acted, it is the player to the left of him who acts next. He has the same options except if the under the gun player has raised, then he can fold, call the raise or re-raise. The action proceeds as such until it gets back to the small blind. At this point, the small blind is already in for half of a small bet. He has the same options as the other players, except that he needs to put in less money to call or raise since he already has half of a small bet in the pot. After the small blind acts, the big blind acts. If no one has raised, the big blind has the option to raise or check and see the Flop.   This is the only time that a player can be considered to raise himself. Once the action has gone around to the player to the right of the last player to raise (or if unraised, if the big blind checks), then the dealer can deal the Flop.

In the round of the Flop, the action starts with whoever is to the immediate left of the dealer. If the small blind stayed in the hand, then he is first to act. If the small blind had folded in the pre-Flop round and the big blind is still in, then he acts first on the Flop. The first player to act has the choice of betting one small bet or checking. In most casinos, players are allowed to check-raise, meaning they can check first, but if someone else bets, they still have the option of raising. In home games, sometimes the check-raise option is not allowed. If the first player bets, then the second player has the option to call, raise or fold. Since this is a limit game, a raise would just be one additional small bet in the pre-Flop and Flop round. The action continues until the player to the right of the last player to bet or raise has acted. If everyone checks and no one bets, then the action proceeds to the next round.

On the Turn, the bet size now doubles to one big bet. In a $10-$20 game, a big bet is $20. The bet size on the River is one big bet as well. The betting procedure on the Turn and River is the same as on the Flop. After the betting round on the River is over, the players expose their hands to see who has the best hand. Often the losing players will not even expose their hands. Once they see that their hand is beaten when they see the best player's hand exposed, they will typically just muck their hands face down.

The Positions
The players on the table are identified by their position relative to the button. The small blind and big blind are to the immediate left of the button (and are labeled 1 and 2 in the table below). The

player to the left of the big blind is called the under the gun player. Normally there are 9 or 10 available seats at the Hold'em table. If the game is filled up, then the first three players to act are considered in early position, this includes the under the gun player as well. The next two players are considered in middle position and the last three players are considered in late position. The player to the immediate right of the small blind is in last position, but is also called the dealer or the button. The player to the immediate right of the button is called the cutoff, and he is in late position as well. These names are just a conventional way to identify the players. Below is a table with the positioning of the players with different number of players from 7 to 10. Games with 6 or fewer players are generally considered shorthanded games, and those are covered in the shorthanded section of this book. The numbers in the table refer to the position of the players. 1 means the player is first to act, 2 means second to act, etc.

Number of Players	7 players	8 players	9 players	10 players
Blinds	1, 2	1, 2	1, 2	1, 2
Early Position (including under the gun)	3, 4	3, 4	3, 4, 5	3, 4, 5
Middle Position	5	5, 6	6, 7	6, 7
Late Position (including the cutoff and the button)	6, 7	7, 8	8, 9	8, 9, 10

After the end of a hand, the button will rotate to the left. The player who was the small blind is the button in the next hand. In Hold'em, the player on the button gets to see the other players act before he has to act, so he has a positional advantage. The blinds are disadvantageous positions because they must put money into the pot without even seeing their cards. So the button rotates, changing the advantage and disadvantage of different positions from one player to another.

The Nut Hand
The best possible hand in poker is referred to as the nut hand. In games such as Draw Poker, the nut hand is always the best poker hand, the Royal Flush. In Hold'em, after all the cards are out, the nut hand can be as low as three-of-a-kind (for example, with a board of A-K-9-8-3, the best hand is AA for three Aces). Knowing what the nut hand is and what your hand is in relation to that is key in Hold'em. There are situations where you have a three-of-a-kind and you are willing to bet and keep raising because you know no other player can beat your hand. This can happen when all five board cards are dealt and you have the best three-of-a-kind, and there is no possibility for a higher hand. This means there are no pairs on the board (if there is a pair, then full houses or a four-of-a-kind may be possible), no flush possibilities (for a flush to be possible, there must be three cards of the same suit on the board), and no straight possibilities (for a straight to be possible, there must be three cards that are within 5 cards of each other). But if the board is different, such as showing a pair or three to a flush, then the same three-of-a-kind will not give you as much comfort since potentially stronger hands are possible. To know the strength of any particular hand is to know its relative strength to the board.

Those that are experienced at Hold'em probably do not consciously think about these issues anymore. It is so ingrained with their thought process that there is no need to specifically note what the nut hand is. Think of it as the difference between a beginner driver and an experienced one. The experienced driver does not think about what he needs to do to make a left turn, he simply does it. Meanwhile the beginner driver needs to think about turning on the turn signal, see if there is a traffic light or a stop sign, maybe think about watching other vehicles and watch for people using the crosswalk. If you are a beginner, make sure you can figure out what the nut hands are in each of these situations before you proceed. If you are an experienced Hold'em player, just move on to the next section.

Below are several Texas Hold'em boards and their nut hands.

Hand #	Board	Nut Hand
1	A♠J♥T♠J♠A ♥	K♠-Q♠, Royal Flush
2	J♦9♦8♣7♣6♦	A♦ and any other ♦, nut flush
3	Q♣J♣4♥3d8♥	T-9, straight
4	A♥J♥6♥4♥4♠	4-4, four-of-a-kind
5	A♦A♥K♥K♦4♣	A♠-A♣, four-of-a-kind. AK, full house
6	Q♠J♠7♥6♥2♣	Q-Q, three-of-a-kind
7	K♣J♣T♥Q♠9♦	any A, straight
8	8♥7♥6♥A♦A♠	T♥9♥, 9♥5♥, straight flush
9	A♠K♦Q♦J♥T♥	any hand, straight
10	J ♥8♣T♥3♦7♦	Q-9, straight

A few notes:
2. Having the A♦ with any other diamond will give you the nut flush, it does not matter if the other diamond is K♦ or 2♦.
3. Since there are no flushes possible with this board, the suits of the T and 9 are irrelevant.
5. AA is the best hand, but AK can not be beaten, it can only be tied by the other AK. If you held both an A and a K, no other player could have four-of-a-kind.
7. Any A makes the highest straight possible, the other card is irrelevant.
8. T ♥ 9 ♥ gives you the best straight flush, but if you have 9 ♥ 5 ♥, no one can else can have a straight flush.
9. Every player in the hand has the nut straight by playing the board.

The Nut Draw
Knowing the nut hand is very important, and so is knowing what the nut draws are. A nut draw is

a hand that if the right card comes, it becomes the nut hand. Since a nut draw needs at least another card to come and needs some information on the board, it is usually referred to on the Flop or on the Turn. An example would be having A♠J♠ with two spades on the board on the Flop. With this hand, the player would have the nut flush draw since no one can make a higher flush without the A♠, although a straight flush may still be possible. Meanwhile a hand such as K♠-J♠ that has a flush draw could be referred to as the second nut draw, but if the A♠ hits the board, it would turn into the nut flush.

One of the reasons that JT is a popular starting hand is because if it makes a straight, it will always be the nut straight. That is the lowest two card combination we can make that statement about. The possible straights that JT could make are: AKQ(JT), KQ(JT)9, Q(JT)98, (JT)987. If it takes two cards to make a straight and the holder of JT has a straight, he can be comfortable he has the nut straight and possibly the nut hand if there are no pairs on the board and less than 3 cards of any one suit. Although other hands like AK will also be the nut straight whenever it takes two cards to make the straight, it does not have the full complement of different ways to make the straight that JT has. In particular, AK can only make a straight when three specific cards are on the board, QJT. JT has more ways to make a straight. But strange things can also happen to JT to make it not the nut straight. This can happen when a player no longer needs both a Jack and a Ten in their hand to make a straight, and there are 4 cards to a straight on the board, such as Q-J-9-8-3-2, in which case anyone holding just a KT would have a better straight (K-Q-J-T-9) than the JT's straight (Q-J-T-9-8).

It should be obvious that drawing to the nut hand is better than drawing to the second nut hand or the third nut hand.