

No Limit and the Fundamental Theorem of Poker

In David's book *The Theory of Poker*, he introduces a concept he calls the "Fundamental Theorem of Poker:"

Every time you play a hand differently from the way you would have played it if you could see all your opponents' cards, they gain; and every time you play your hand the same way you would have played it if you could see all their cards, they lose. Conversely, every time opponents play their hands differently from the way they would have if they could see all your cards, you gain; and every time they play their hands the same way they would have played if they could see all your cards, you lose.²

The basic idea is that, if you could see your opponent's cards, you'd always choose the "ideal" play, the play that serves you best. You'd never pay off with a second-best hand, and you'd never fail to bet when you should. Every time you make a play other than the "ideal" play, you have made a "mistake," and you've cost yourself some money.

Note that we use the term "mistake" in a specific and somewhat peculiar sense. We don't mean that you played badly, or that a more skillful player would have played differently. We just mean that you played differently than you would have if you could have seen your opponent's hand. For instance, say you have \$500 left in a tournament with \$100-\$200 blinds. You're on the button with pocket kings, and you move in. Your opponent in the big blind calls and shows pocket aces. Raising all-in there with kings is clearly correct. But your raise was a "mistake" in our

² *The Theory of Poker* by David Sklansky, pages 17-18.

terminology because you wouldn't have moved in had the big blind shown you the aces first.

Throughout the book, we will use the term "mistake" in this sense; a mistake is a play other than the play you would make if you knew your opponent's cards, but it's not necessarily a bad play.

The Fundamental Theorem of Poker highlights the value of hand reading and deception. One of your goals when you play no limit hold 'em is to try to deduce your opponent's holding while disguising your own. You try to make few mistakes, while you encourage your opponent to make lots of them. If you do a good job, you will be winning the "battle of mistakes," and over time money will flow from your opponent to you.

Indeed, the format of no limit hold 'em allows the Fundamental Theorem of Poker to blossom fully. In limit poker, many situations arise where you simply cannot entice your opponent to make a mistake no matter what you do. Say you are limited to a \$20 bet, and you know that your opponent has a flush draw. If the pot is \$200, there's absolutely nothing you can do to encourage your opponent to make a mistake. You can bet \$20, and he will call, just as he would do if he saw your cards. The 11-to-1 pot odds make the bet and call automatic plays, and neither player has any real opportunity to make a mistake.

In no limit, however, you can choose whatever bet size you want. That ability allows you to deceive your opponents more fully and to encourage them to make mistakes. You could bet \$150 into the \$200 pot, and the player with the flush draw might no longer be correct to call. If your opponent likes to draw to flushes, and he isn't so concerned about the exact odds he's getting, he may be willing to call your \$150 bet even though it's a mistake.

Say you know your opponent well enough to know that he will call a \$100 bet correctly, and he will fold to a \$200 bet correctly, but he'll mistakenly call bets in between. You can target your opponent's weakness by betting the exact right amount to encourage his mistakes.

No limit hold 'em permits you to exploit the weaknesses in your opponents' playing styles by betting just the right amounts to induce them to make mistakes.

Manipulate your opponents and create situations where they are likely to make mistakes. Don't let them off easy. Place them in situations where their natural tendencies lead them astray.

For instance, some players (and we'll talk about these players more later in the book) are particularly suspicious (especially if you've given them even the slightest reason to be suspicious in the past). They seem to always be worried that every bet is a bluff. Consequently, they tend to call bets (particularly some big ones) that they shouldn't call. These players make for very profitable opponents in no limit hold 'em, and the reason is that they are very likely to pay off with second-best hands when they shouldn't. That is, they systematically tend to make one certain type of mistake.

If you were playing limit hold 'em, there would be only so much you could do to exploit this weakness. You could bet for value somewhat more often against these players, but your bet size would be fixed (and small relative to the pot size). And you'd play many hands exactly the same way, whether your opponent was suspicious or not.

In no limit, however, you can exploit this weakness to its fullest. You can vary your bet size on the river to make it the largest you think your suspicious opponent is likely to call. By betting more against suspicious opponents than against unsuspecting ones, you tailor your play to exploit your opponents' weaknesses and set up situations where their natural tendencies will be their downfall.

And betting more on the river isn't the only thing you can do to exploit this weakness. You can also manipulate the betting and pot size on earlier betting rounds to encourage them to make big river calls even more often than they already do. We'll learn more about this idea in later chapters.

In any event, you should set up pots where your opponents will make mistakes without even thinking about it. Likewise, you

The Fundamental Theorem of Poker

There is a Fundamental Theorem of Algebra and a Fundamental Theorem of Calculus. So it's about time to introduce the Fundamental Theorem of Poker. Poker, like all card games, is a game of incomplete information, which distinguishes it from board games like chess, backgammon, and checkers, where you can always see what your opponent is doing. If everybody's cards were showing at all times, there would always be a precise, mathematically correct play for each player. Any player who deviated from his correct play would be reducing his mathematical expectation and increasing the expectation of his opponents.

Of course, if all cards were exposed at all times, there wouldn't be a game of poker. The art of poker is filling the gaps in the incomplete information provided by your opponent's betting and the exposed cards in open-handed games, and at the same time preventing your opponents from discovering any more than what you want them to know about your hand.

That leads us to the Fundamental Theorem of Poker:

Every time you play a hand differently from the way you would have played it if you could see all your opponents' cards, they gain; and every time you play your hand the same way you would have played it if you could see all their cards, they lose. Conversely, every time opponents play their hands differently from the way they would have if they could see all your cards, you gain; and every time they play their

hands the same way they would have played if they could see all your cards, you lose.

The Fundamental Theorem applies universally when a hand has been reduced to a contest between you and a single opponent. It nearly always applies to multi-way pots as well, but there are rare exceptions, which we will discuss at the end of the chapter.

What does the Fundamental Theorem mean? Realize that if somehow your opponent knew your hand, there would be a correct play for him to make. If, for instance, in a draw poker game your opponent saw that you had a pat flush before the draw, his correct play would be to throw away a pair of aces when you bet. Calling would be a mistake, but it is a special kind of mistake. We do not mean your opponent played the hand badly by calling with a pair of aces; we mean he played it differently from the way he would play it if he could see your cards.

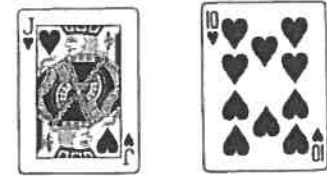
This flush example is very obvious. In fact, the whole theorem is obvious, which is its beauty; yet its applications are often not so obvious. Sometimes the amount of money in the pot makes it correct to call, even if you could see that your opponent's hand is better than yours. Let's look at several examples of the Fundamental Theorem of Poker in action.

Examples of The Fundamental Theorem of Poker

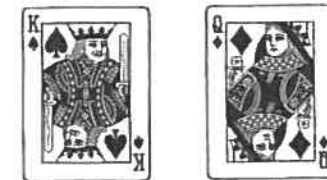
Example 1

Suppose your hand is not as good as your opponent's when you bet. Your opponent calls your bet, and you lose. But in fact you have not lost; you have gained! Why? Because obviously your opponent's correct play, if he knew what you had, would be to raise. Therefore, you have gained when he doesn't raise, and if he folds, you have gained a tremendous amount.

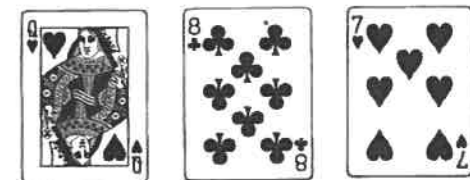
This example may also seem too obvious for a discussion, but it is a general statement of some sophisticated plays. Let's say in no-limit hold 'em you hold



and your opponent holds an *offsuit*



The flop comes:



You check, your opponent bets, and you call. Now the Ace of Diamonds comes on fourth street, and you bet, trying to represent aces. If your opponent knew what you had, his correct play would be to raise you so much it would cost too much to draw to a pair or a straight on the last card, and you would have to fold. Therefore, if your opponent only calls, you have gained. You have gained not just because you are getting a relatively cheap card but because your opponent did not make the correct play. Obviously if your opponent folds, you have gained tremendously since he has thrown away the best hand.

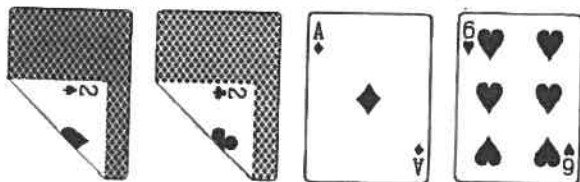
Example 2

Suppose there is \$80 in the pot, and you have two pair. You are playing draw poker, and you bet \$10, which we will assume is all you can bet. Your single opponent has a *four-flush* — that is, four cards to a flush. The question is — are you rooting for him to call or fold? Naturally you want him to do what is most profitable for you. The Fundamental Theorem of Poker states that what is most profitable for you is for your opponent to make the incorrect play based on complete information about both hands. Since your opponent is getting 9-to-1 odds (his \$10 call might win him \$90) and is only about a 5-to-1 underdog to make a flush, it is correct for him to call because a call has positive expectation. Since it is correct for him to call, following the Fundamental Theorem, you are therefore rooting for him to fold.

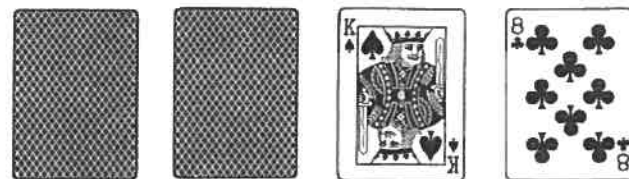
This sort of situation comes up frequently. You have the best hand, but your opponent is getting odds good enough to make it correct to call if he knew what you had. Therefore, you want your opponent to fold. By the same token, it is correct for you to chase when you are getting sufficient pot odds. If you don't chase, you are costing yourself money and, therefore, making money for your opponent.

Example 3

Since it is correct for your opponent to call when he is getting sufficient pot odds, you can sometimes make an opponent fold incorrectly by showing more strength than you actually have on an early betting round. Suppose in seven-card stud you bet with:



An opponent calls with:



You are fairly sure he has kings. You now proceed to make a pair of 6s on board, and you bet. Your opponent will almost certainly fold a pair of kings since he is afraid you have made aces up.

Some people might say, "Well, wait a second. Why don't you want my opponent to call as long as his pair of kings is worse than my two small pair?" The answer is that if there are cards to come and your opponent is getting proper odds, you do better to win the pot right there. A pair of kings versus two smaller pair needs very short odds to justify a call. Since your opponent would have been correct to call, you gain when you make him fold.

Example 4

In razz, a seven-card stud lowball game in which the lowest hand wins, we can see another example of showing more strength than you have to make an opponent fold incorrectly. Let's suppose your opponent has

