

“The Art of the Probe”

Slade: How the hell did you know I didn't have the king or the ace?

Lancey Howard: I recollect a young man putting the same question to Eddie the Dude. "Son," Eddie told him, "all you paid was the looking price. Lessons are extra."

— *“The Cincinnati Kid” (1965)*



There are only two great movies about poker — *Rounders*, which everyone knows, and *The Cincinnati Kid*, which no one knows. Steve McQueen is the Kid and Edward G. Robinson is the Old Pro, Lancey. When I was a younger man, I rooted for the Kid. Today ... I'm pulling for Lancey all the way.

Slade: Six stacks, is that right, Shooter?

Shooter: Six.

Slade: Well, we've been playing 30 hours... uh, that rate, six thousand, that makes roughly, uh, \$200 an hour. Thank you for the entertainment, gentlemen. I am particularly grateful to Lancey, here; it's been a rewarding experience to watch a great artist at work. Thank you for the privilege, sir.

Lancey Howard: Well now, you're quite welcome, son. It's a pleasure to meet someone who understands that to the true gambler, money is never an end in itself, it's simply a tool, as a language is to thought.

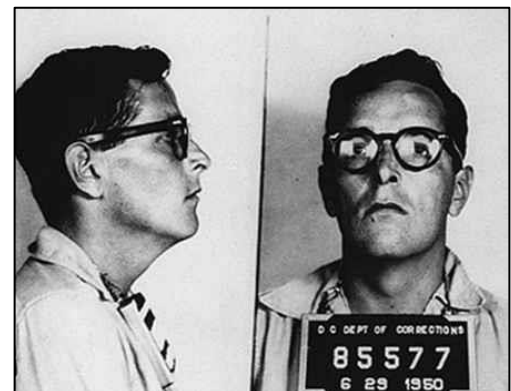
— *“The Cincinnati Kid” (1965)*

Money is to gambling as a language is to thought. What a line!

Screenplay by Ring Lardner, Jr., one of the Hollywood 10 who refused to be rats for the House Un-American Activities Committee in McCarthy days. Lardner was blacklisted and sentenced to a year in prison for contempt of Congress.

True courage comes at a heavy price. Some will be willing to pay that price over the next four years.

And some won't.



[Shooter's wife Melba is altering a jigsaw puzzle piece with a nail file]

Shooter: Melba, why do you do that?
Melba: So it'll fit, stupid.
Shooter: No, I'm not talking about that. What I'm asking is ... do you, uh, have to cheat at everything?
Melba: At everything?
Shooter: Yes. At ... solitaire. I've yet to see you play one game of solitaire without cheating.
Melba: So what?
Shooter: Look, you're just cheating yourself, don't you understand? You'll be the loser, no one else but yourself! ... You've ruined the puzzle, now, that doesn't go in there.

[She forces the altered piece into place]

Melba: Does now.
— *"The Cincinnati Kid" (1965)*



I've known more than a few economists who had more than a little Melba in them. Quants, too. That's Ann-Margret as Bad Girl Melba, by the way, and Karl Malden as the cuckolded Shooter. 'Nuff said.



Daring ideas are like chessmen moved forward. They may be beaten, but they may start a winning game.

— *Johann Wolfgang von Goethe (1749 – 1832)*

A gambit risks a pawn for advantage later in the game. The word is derived from the Italian *gamba* (leg), from a wrestling move with a similar sacrifice.

In chess as in life — the only way to defeat a gambit is to accept it.

Berlin is the testicles of the West. Every time I want the West to scream, I squeeze on Berlin.

— *Nikita Khrushchev, 1963*

Without wishing to trade hyperbole with the Chairman, I do suggest that he reminds me of the tiger hunter who has picked a place on the wall to hang the tiger's skin long before he has caught the tiger. This tiger has other ideas.

— *John F. Kennedy, 1961*

Sieges and blockades are game theory in practice, on both sides of the wall.



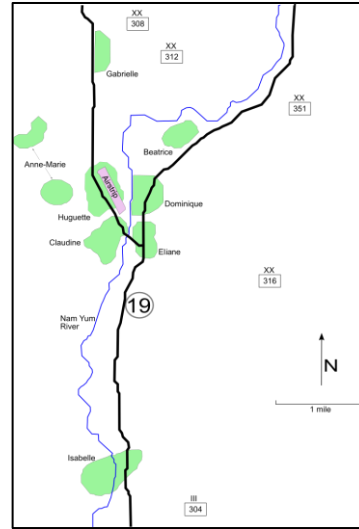


Photo of North Vietnamese General Giap, taken during the siege of Dien Bien Phu in 1954. In anticipation of a full-scale assault, the French took up positions (marked in green on the map) on a series of fortified hills. Rather than attack en masse, however, Giap set up artillery positions east and north of the French fortifications and wore the French down with artillery fire combined with constant probing skirmishes. In investing, I always try to think: WWGGD?

I've written a lot about **The Common Knowledge Game** — [here](#), [here](#), and [here](#) — because it's the game of markets, i.e., it's the central contribution of game theory to understanding how markets work. I've also written a lot about new technologies and new perspectives — [here](#), [here](#), and [here](#) — that help us see The Common Knowledge Game in action. Today I want to take a different cut at this topic: how can you be a better game-player? What are some specific strategies one can adopt to play the game of markets more effectively?

There's a concept in poker that's a useful introduction to what I want to talk about. It goes by lots of different names, but I'll call it **The Probing Bet**. The idea is that you make a raise or otherwise take the initiative in a signaling interaction because, as you'll hear time after time if you talk to good poker players, you need to find out "where you stand" in that particular hand. The betting behavior of the other poker players sitting around the table from you is like the betting behavior of the other investors sitting around the market from you: it's over-determined, which is a \$10 word that means there are far more possible explanations of what actual cards might be driving that betting behavior than are required to explain the behavior fully (see "[The Unbearable Over-Determination of Oil](#)" for an investment example).

In other words, there might be six different basic card combination categories that an opponent might hold, each of which — if you were playing that hand — has some percentage likelihood of prompting you

to duplicate that opponent's betting behavior. But if you add up those percentage likelihoods across the six different categories, you get a number way higher than 100%. As a result, if you're trying to reverse engineer in your mind what cards your opponent might be holding, it's really difficult to come up with anything interesting or informative. It's difficult and not terribly fun, so most poker players don't even try. **Most poker players only play their own hand. Period.** They know their own hand's strength in an absolute or non-strategic sense, and they know what cards need to show up for them to have a really killer hand. But that's all they really know, so their betting behavior is directly connected to the non-strategic strength of their hand, coupled with some loose sense of whether they want to play "tight" (bet per the book odds of hitting that killer hand) or "loose" (bet more than the cards justify in an absolute sense in order to set up a bluff or maybe just get lucky).

The average poker player is *fascinated* by his own cards. Every deal unlocks a world of seemingly endless potential, and almost all of the mental energy at a typical poker game is consumed by thoughts of "how am I going to represent my hand to my opponent?" In sharp contrast, precious little mental energy is spent asking "how can I learn more about how my opponent is representing his hand?", even though the latter question is FAR more useful to answer. Why more useful? Because just as you are fascinated by your cards, so is your opponent fascinated by his cards. In a game of ubiquitous self-absorption, even a little bit of other-awareness goes a really long way.

What you need to whittle down an over-determined behavior is The Probing Bet, something out of the ordinary that intentionally puts capital at risk in order to narrow down the likely range of hands your opponent might hold. The Probing Bet isn't designed to represent or signal anything about your hand (which right there makes it a foreign concept to the vast majority of players). It's a bet designed to get more information about your opponent's hand and the way he plays it, and it's something you might do regardless of what cards you have in your hand. **Importantly, The Probing Bet in and of itself has a negative expected return.** There's no such thing as a free lunch, and that's as true in poker as anywhere else. If you want more information, you have to pay for it, and the cost is the potential loss of The Probing Bet. You should gladly pay that cost, however, if the additional information garnered from The Probing Bet increases the expected return of the entire deal (or future deals!) by an even greater amount.

You can find the concept of The Probing Bet in every classic game. In chess, it's the gambit, the intentional risking of a pawn that accepts a limited loss in the short term to win a more valuable positional advantage over the entire course of the game. When offered a gambit, you're damned if you do and damned if you don't. If you don't accept the offered pawn, you don't get the piece and you lose the positional advantage

anyway. But if you do accept the pawn, your degrees of freedom going forward are sorely limited. On balance, when offered a gambit you have to take it. Chess is a game of informational initiative, and playing a gambit grabs that initiative with both hands. At a cost.

You similarly find the concept of The Probing Bet in every game of nations, and it's here that we can start making the connection (please!) to the game of markets. I know this sounds weird, but I've always found international maritime law to be a place where the game of nations gets crystalized in really interesting ways. Why? Because international law in general is just a short cut to equilibrium outcomes that you'd otherwise need to fight a war to arrive at — which is to say that international law is, in a very real way, MADE of game theory — and maritime law in particular has seen thousands of years of every imaginable strategic interaction in a clean and ordered way. So bear with me as I shift the metaphor from poker to naval blockades and the role of non-belligerent neutral parties. Trust me, there's a decent payoff here.

Let's say you're Neutral Nation and you want to send a ship full of wheat across the ocean to Market Nation and sell it there. You're one of many neutral nations and you don't have a huge combatant navy, just lots of cargo ships and lots of wheat to sell. Unfortunately, Market Nation is at war with Banker Nation. Now you don't have a dog in that fight; all you want to do is make money. But before you send your ship on its merry way, you are informed by Banker Nation's ambassador that they have declared a blockade on Market Nation, that the list of contraband materials includes wheat, and that they are asserting the right to stop, search, and seize any neutral ships headed for Market Nation carrying such contraband. What do you do?

For a blockade to be valid under international law, two conditions must be fulfilled. First, it must be communicated to you, which in this case it clearly was (interestingly, it doesn't have to be communicated directly, but can be understood to have been communicated "through the notoriety of the fact", which is a fancy way of saying Common Knowledge). **Second — and this is the important part — it must be an effective blockade for it to be legally binding on you, the neutral party.** In other words, Croatia can't declare a neutral party-binding blockade on Italy because it doesn't have enough warships to cover all of the Italian ports and make that blockade effective. So if Banker Nation is some weakling, you have every right to say that you don't recognize their blockade as effective, and any action they might take against your ships will be treated as an illegal seizure and a potential act of war. In game theory we would call this a trivial case, in that the game play is obvious — you and every other neutral country ignore the "blockade" and it collapses immediately.

But let's say that Banker Nation has a decent-sized navy, maybe even a large navy. Let's say that Banker Nation is able to put a warship or two around most of Market Nation's ports most of the time. Is that an effective blockade? Banker Nation will represent that it is. Banker Nation and its ambassadors will tell you that they have an impenetrable wall of warships covering every square inch of Market Nation's coastline. You know that this isn't true, but you don't know how true it is. When they say that they have an effective blockade, are they covering 100% of the ports 80% of the time? 60% of the ports 60% of the time? Does their coverage ratio go up over time? Down? Whatever the port coverage ratio might be, is that enough for you to consider the blockade "effective" and keep your cargo ships at home? The problem you face as Neutral Nation is the same problem faced by The Cincinnati Kid: the statement "my blockade is effective" is as over-determined as an opening bet in a game of Five Card Stud. *You don't know what cards Banker Nation is really holding.*

So here's what you don't do as Neutral Nation. You don't send cargo ship after cargo ship sailing blindly to Market Nation in the hopes that a few of them will slip through. You don't fight ~~the Fed~~ Banker Nation! But what's also a mistake is to accept the efficacy of Banker Nation's blockade as a permanent state of the world or just on their word, even though that's what most neutral countries will do.

So what DO you do? Let's put this (finally!) in the context of an actual investment scenario. The ECB has famously said that they will do "whatever it takes" to keep the euro system intact. They have proclaimed unlimited resolve to purchase government and corporate debt to accomplish their goals. They have, to stick with the naval warfare metaphor, announced an effective blockade of fundamental market pressures associated with the common currency and the sovereign debt of currency bloc members. Would the Spanish 10-year bond trade 90 basis points tighter than the U.S. 10-year bond if the ECB weren't patrolling the waters of sovereign rates markets? Please.

But at the same time, the ECB is facing extraordinary and escalating pressure on the home front — the politics of member states and their willingness to participate in a common currency system that clearly has big winners (Germany) and big losers (Italy). 2016 was rocky enough from a political perspective, but 2017 shapes up to be a real doozy, with elections in France and Germany and probably Italy ... the three *sine qua non* countries of the eurozone. As the home front deteriorates, the ECB is going to be hard-pressed to maintain its fleet of announced balance sheet expansion programs, much less the mythical dreadnaughts of the OMT program and other super-warships that are supposedly waiting in the wings should the blockade start to fail. Draghi and the rest of Banker Nation will never admit the deterioration in the cards that they hold, but we know it's happening. What we don't know is how bad the deterioration

actually is. What we don't know is what has to happen before Common Knowledge shifts from "yes, the blockade is effective so don't even try to act against the ECB" to "no, the blockade is no longer effective so let's go do what we've gotta do to protect our capital and make some money if the euro isn't going to make it."

What we do know, however, is [how the Common Knowledge Game works](#). We know that we need to watch for a Missionary statement — typically from a status quo-breaking politician — that creates new Common Knowledge in opposition to the old Common Knowledge. We know that we need to watch for how this Missionary statement is repeated and amplified (or not) by other Missionaries — other politicians, famous investors, prominent journalists, etc. We know that this war of beliefs and memes is every bit as fierce as a war of bullets, and that [it isn't just difficult, but it's impossible to predict the winning belief through traditional econometric analysis \(in the lingo, it's a multiple-equilibrium game\)](#).

Since we can't predict where we're going to end up in the Common Knowledge Game (and I really can't emphasize this point strongly enough ... the past is a *terrible* predictor of the future when it comes to multiple-equilibrium games), we have to constantly assess where we are as the game unfolds. How do we do that? By making occasional Probing Bets. By placing capital at risk to see "where we stand" in the strategic dynamic of the game of markets. By *experiencing* the reaction of the ECB and other investors, large and small, to a potential volatility catalyst like an Italian election.

Some investors make big Probing Bets. They're called Bond Vigilantes, and they've been covering in the tall grass since 2012 when Draghi proclaimed "whatever it takes". But they're still there, biding their time. Just wait. In 2017 they'll be back. Many of these game players are Missionaries themselves, and they pack an extra punch in the game-playing as a result.

But you don't need to be a hedge fund Master of the Universe to make a Probing Bet, although maybe we should take the capitalization off and call these probing bets. You just need to get in the game. I'd like to tell you that you can figure out where we are in the euro game by watching from the sidelines and letting others place Probing Bets, but I can't. My strong belief is that you have to *live* an investment before you can gain useful information from the experience. And it's got to be a high enough cost so that you pay attention. As Old Pro Lancey would say, you can't just pay the looking price. Does it have to be a cost in actual dollars and cents? No, although that's a really good attention-grabber. The real price you must pay for a probing bet is even more precious than money — *time*. That's the price that most of us find hardest to pay, which is why I think it makes all the behavioral sense in the world to couple it with real money. No

one uses the free gym in an apartment complex.

And now for the big finish. I've used a macro trade (the ECB and what's in store for the euro) as my example of the useful role of probing bets and the investment managers who play those cards, because that's the investment arena that I play in. **The exact same logic applies to ALL investment arenas and ALL active managers.** What's the big mistake that investors are making with their single-minded and headlong pursuit of passive investment strategies in the form of ETFs, index funds, and the like? **Passive strategies give you ZERO information about the strategic gameplay of markets.** Passive strategies, *by definition*, cannot make a Probing Bet. Passive strategies, *by definition*, will be the last to know when the state of the world has changed and will be the slowest to adapt. **A portfolio composed of passive strategies is like the average poker player who just plays his own hand in a strategic vacuum.** That can work out fine if you're dealt nothing but great cards, a lot less well if you're not.

That's not to say that all active managers are effective information-seekers or strategic game-players. **In fact, I think it's fair to say that many, if not most, active managers and active investors are so-so game-players because they confuse caution with wisdom.** It's one thing — a perfectly reasonable thing — to create a cautious portfolio through low gross exposure or high levels of cash if your belief is that markets are more likely to go down than up AND you are placing probing bets to see if the market dynamic is somewhere other than where you think it is, i.e., more positive than you believe. And it's also a perfectly reasonable thing to be all-in with your portfolio if your belief is that markets are likely to keep rocking AND you are placing probing bets to see if the market dynamic is somewhere other than where you think it is, i.e., more negative than you believe. What's not so reasonable, I think, but I see every day (and I recognize from time to time when I look in the mirror!) is to take a big risk with a portfolio ([and a high level of cash IS a big risk for a portfolio](#)), without allocating a commensurate portion of my risk budget towards *going the other way*, towards gaining more information about how competing players are playing *their* hand, towards challenging my beliefs with *real dollars and precious time*.

And that, in a nutshell, is the best advice I've got for any game, whether it's the game of poker, the game of chess, the game of nations, or the game of markets: *act strongly on your beliefs, but don't hold your beliefs strongly.* That's the cornerstone of Adaptive Investing.

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