WILL MA: So today I promised I would play through the second half of the tournament that I started last time, so two times ago, but before Jennifer Shahade's guest lecture. But before I start, so remember last time we got to the final table. This is essentially the start of the final table.

And but before I get into the hands, I want to do a bit of theory first that I've been forgoing so far in this class. And it's essentially what's called the independent chip mode, or ICM theory.

And essentially what it's used for is in tournaments, essentially the value of chips is essentially nonlinear because you're not really trying to just get all the chips. You are trying to last as long as possible and move up the payouts.

So I want to now formally quantify what this means and how you calculate the EV of your game rules. So far I think I've just told you everything that's done so far in this class has been chip EV. And I've told you just play to maximize chip EV. Maximize your expected number of chips. And that's a pretty reasonable way to play.

In cash games, it's what you want to do. And in tournaments it's not a bad approximation. So I don't want everyone after this ICM lecture to think, you know, I've got to completely change my playing in tournaments because that's not the case.

Essentially, playing and maximizing expected number of chips is a pretty good approximation of how you actually should be playing. But there are some small differences in extreme situations, and I'd like to highlight some of that today.

So OK, yeah. So this is essentially-- so it's this idea of minimizing risk to stay alive and move up to the escalating payouts. So I want to make an important distinction, though. When I'm saying, we're still trying to maximize our expected amount of money. What I'm saying, you should be minimizing your risk in a tournament so that you can move up the payouts.

That's different than saying you should minimize your monetary risk because I'm still assuming we're trying to maximize our expected money without worrying about risk. But we're only minimizing tournament risk to maximize your expected amount of money.

But I'm not saying we should be overly conservative in a tournament and just trying to move up the money ladder slowly when you should be gambling because it's positive money

expectation.

If you find yourself in this situation, then if you're trying to play professionally and just maximize your expected amount of money in every situation, then you should probably play smaller tournaments, where this is not really the case-- where this doesn't occur too often.

I can understand in practice, if you play poker for fun and you made it far in a tournament and it's the top, let's say, 50K, and there's 55 left, I can understand why you might not want to make a positive money expectation play because you've played this tournament.

You're probably not going to be in the situation that many times in your lifetime. And you just really want to cash the World Series of Poker main event or something. And I think that's a reasonable life decision. I'm not criticizing that life decision.

But I'm going to talk about all of these decisions assuming we don't care about that. We're still trying to maximize expected amount of money. And if you are playing professionally, where you're getting into that situation very frequently, then it is very important to maximize risk in some cases and to maximize your dollar EV because in tournaments, you're losing most of the time. You really have to win a lot the times that you do win. You can't be content because we made $30,000 if we could have made $50,000.

So OK. So what is the exact formula for ICM/ So I'm just going to demonstrate how to calculate the value of chips in a tournament with an example. So ICM is essentially a formula to calculate how much your stack is worth in a tournament.

So let's suppose there's three players left and that payouts are 5, 3, 2. This is a common structure in sit-and-goes if you've played those, which are 10-player tournaments. So this is the statement is essentially your chances of winning the tournament is proportional to your percent of the total chips. And essentially we're assuming this is true, and we're going to derive from it all the formulas.

And this statement is approximately true. There are more advanced ICM calculators that also take into account your position if the stack sizes are rather shallow because there are some inaccuracies because this statement, it calculates only based on chips.

But if you're folding and then you're the button the next hand, which is the best position, then that's actually an entire big blind better almost than being under the gun the next hand. But

we're not going to worry about that. We're just going to assume your chances of winning the tournament is proportional to your percentage of chips.

So how do we calculate this? So you can't really do it by hand in practice. But for this example with three people, I'll show you how to do it by hand. So let's suppose the chips stacks are also 5, 3, 2. OK, so the payouts are 5, 3, 2. And the chip stacks are also 5, 3, 2 ratio.

If chip EV equals money EV, then the guy with 5,000, their equity from the tournament should be $5. And the guy in third place, their equity should be $2, right? But this is clearly not correct because the guy in third place is guaranteed $2. And clearly there's a nonzero chance of them winning the tournament. So clearly their equity is actually more than $2.

And then similarly if you're player A, your equity is clearly not $5 because you're not guaranteed to win the tournament. So it's clear from this example why if you just do chip EV equals money EV, that's clearly wrong. Is that clear to everyone?

So how do we calculate it? So let's calculate it for player C. So essentially what it's saying, your chances of winning, your chances of coming first is 2,000 over 10,000, which is 20%. And then to calculate your chances of coming second, you just condition on each of the other player's way.

So conditioned on A winning, which would happen 50% of the time, we assume that our chances of coming second is 2,000 divided by 5,000, which is the remaining number of chips besides player A. Does that make sense?

So player A has 5,000 chips. So between you who's player C and player D, there's 5,000 chips in total, and you got 2,000 of those. So it's 2,000 over 5,000, so it's 0.4. And then if player B wins, then your chances of coming second is 2,000 over 7,000. So overall, your chances of coming second is 0.4--

So it says, 50% times 0.4 plus 30% times 2/7, which equals 2/7. So then you can calculate your equity is-- you're guaranteed $2. And you have a 20% chance of winning, which would give you three additional dollars. And then a 29% chance of coming second, which would give you an additional dollar.

So your equity is actually 2.89 in this case. is actually closer to second place than third place. Does that calculation make sense to everyone? So if there's five players, you just have to recursively condition. You have to condition on player A winning and then go through all the

possibilities of who can come second. Then go through all the possibilities of who could comes third, et cetera, et cetera.

So it's not a calculation you can really do in your head. But that it's quite easy to find a calculator to do it for you. You just Google ICM calculator, and you punch it in. And even though it's not-- it grows exponentially. But there's only going to be nine players. So it's still fine. It won't take that-- the computer can do it instantly, even for 9-10 players.

OK, so what are some cases where ICM is easy to calculate? So like I said, in cash games, there is no such thing as ICM. You're just playing to maximize expected number of chips. And your goal is essentially, you're sitting out at the cash game looking to get into all-ins, looking to get into favorable all-ins, hopefully winning the person who you're targeting's money.

And in winner-takes-all tournaments, it's also the same because you're just looking at your chances of winning the tournament. And that's always just your number of chips. So you're just trying to maximize expected number of chips.

So as a corollary, once it gets down to two players, there's no more such thing as ICM. Three is the minimum number of players you need for ICM to be relevant. Once it's two players, it's just maximize your chip EV because there's no sense of trying to survive in hopes that someone else busts first.

Because with only two people, for the other guy to bust, you have to take all their chips. OK, so what are some mathematical corollaries of ICM formula? So big stacks have money EV less than chip EV. Small stacks have money EV greater than chip EV.

Small stacks also tend to have positive chip EV in general. This is something I didn't mention to you much. But in general-- so you might have seen this if you guys have been to a casino and played cash games.

So let's say you sit down at a table in a cash game and everyone buys in for 100 big blinds. At some tables, usually they'll allow you to buy in for as low as 20 big blinds. And if you do this, in general, that's going to be positive EV for the guy with 20 big blinds because there's situations where they have to--

Where, let's say, they have to essentially sometimes one guy will raise. One guy will call. And then you can go all in. And one guy will go all in on top of you. And the other guy will fold. And

then you have dead money.

So another thing is early on in the tournament, ICM is irrelevant. You just want to accumulate chips. So if you try to do this formula early on in a tournament, what you'll find is essentially you're so far away from the money that none of the things really matter to maximize your chances of even getting to the money. You just want to maximize your number of chips.

So where is ICM most relevant? It's most relevant on the exact payout bubble and on the final table. So roughly speaking, in every poker tournament I've seen other than strange ones that are winner-takes-all or satellites, the payout looks roughly like this.

So it's 0. You go in, and once you hit about top 20% is the bubble. And then there's a jump here where suddenly you get paid. This is about 80% get 0. So here there's a jump, and then it escalates slowly until you get to the final table. Final-- sorry, I'll actually switched to color-- final table. And then it escalates really fast.

So essentially basically ICM is most relevant at the points where essentially, the derivative, or the rate of change the payout, is highest. And those points, as you can see, are here and here. So essentially it matters most at the exact money bubble and in the final table.

OK, let me clear this. OK, so yeah, so some more extreme examples of ICM you have one chip left late in the tournament when everyone else has thousands of chips. So clearly this ship is worth a lot more than its value as a fraction of the chips. And you're just trying to survive with this one chip essentially instead of trying to win more chips.

Maybe I'll calculate this in a bit. So in satellites-- what satellites are are there are tournaments where you're trying to qualify for a bigger tournament. So essentially the important thing is there will be maybe 100 players.

And there will be 10 seats, which means the top 10 get an invite to the bigger tournament. And then everyone else gets nothing. So I guess the qualifiers for the MIT Series of Poker Main Event are kind of like this. I guess there's other prizes, to. But you're essentially trying to come top 10. So this is how that works.

And in that case, the payout is essentially this. So there's not really much incentive to win. You're just trying to be one of this top 10% that gets paid. So that's another case where ICM has extreme importance.

And you often find-- well, not often-- but you can often make a case for folding pocket aces preflop even though you know it's going to have positive chip EV if you call because it's the best possible hand. But because you just really don't want to bust, then just you want to fold aces.

OK, we'll talk about this a bit more later. OK, so let's get back to the tournament. So this is the final table. So ICM is going to be quite relevant here. As I'm talking through my decisions in the hands, I'll talk about the ICM decisions as well.

This is the first hand, or I think maybe one orbit passed. We're at the final table. We're the second biggest stack. We should maybe look at the stack sizes. So we look around at the stack sizes. So what do you notice about the stack sizes? Or specifically, how are we doing? How many chips do we have?

AUDIENCE: [INAUDIBLE]

WILL MA: Real. Right. We have quite a lot, right?

AUDIENCE: Yeah.

WILL MA: We have quite a lot, but we're not in first place. There's this one guy who covers us. So this Panpancrisy guy who covers us. So specifically, the thing I'm trying to avoid is getting in a big pot with Panpancrisy.

Let's say he goes all in, and I have pocket kings. I'm going to call. But I'm not going to be that happy about calling in a situation where otherwise I should be very unhappy. Just because chances are he's going to have an ace. He's going to have 30% equity. It's still going to be positive money EV call, but it's so bad if I basically bust right now in eighth place against Panpancrisy.

So essentially I'm really incentivized to avoid getting in big pots with him. And I'm essentially hoping for some of these smaller stacks to bust so that then, even if I lose a big pot to him, I don't get the low eighth place payout.

So OK, so it's folded of us. We raise here. I think this is one of the weakest hands I am raising from the button. But so far players have seemed to be reasonably tight, so I'm going to raise. And then I get the blinds.

OK, so I'll skip some hands at the beginning. Near the end, I'll play every hand. This hand we don't play, but I'll try to show the hands were someone busts. So this hand small blind goes all in. Big blind calls.

And so small blind wins with 10-2 suited against ace-4, which is basically great for everyone at the table. Because someone busted, you're always cheering for people who bust essentially. And I think also both of their plays are fine.

So I think small blinds play-- it looks a bit silly. But realistically not only does 10-2 suited have reasonable equity when you're called, it's also-- the ICM is very, very relevant. This Gerardocks guy, he's not the shortest. He is one of the shortest, so he does need to take some risk, but he's still really very much would like to bust after I show to Heap78.

So he can't call with anything. With ace-4, I think that's definitely good enough to call. But let's say they have king-2 offsuit. I think that's the situation I'd normally call if it was not a final table in a tournament. But at the final table, where I'm not the shortest and there's someone shorter than me, I would consider folding 10-2-- sorry, king-2 offsuit here just because of ICM essentially.

All right, so the next hand-- so the big blind busts. And then there's no small blind in this hand, which is great because people are less incentivized to steal. And indeed we get our big blind back.

AUDIENCE: That works.

WILL MA: Very nice. OK, so not much happens here. I'll skip forward a bit. OK, this hand-- I guess it's quite convenient for us. But this still illustrates a point. So this guy, who dealt a bit earlier, now he goes all in for quite a lot. This is quite a big shove.

And if you play by my recommendations, I would never recommend shoving this many bets. It's 24. That's quite a lot-- actually, 23, sorry. It's 23 big blinds, which is way too much to shove. There's no need to risk this much.

But once again, I think his play is justifiable because of ICM. So let's see what he had. So we call. Here it's a bit different because even if I call and lose, I'm not out of the tournament. Even if I would be out, even if he had 200,000, I'd probably still call with queens. It's just too good to fold.

So we need ace-queen here, which is great for us. But if you look at the play from his perspective again, it actually seems quite reasonable if you think about it because for him, ace-queen is a great hand from this position.

It's definitely good enough where if it was between folding and shoving for 23 big blinds, you would definitely rather shove for 23 big blinds. So the main reason why normally one would criticize his play is because why doesn't he just raise small with ace-queen?

Well, understandably, he doesn't really want to incentivize me to reraise or Panpancrisy to make a reraise. He essentially wants to minimize the chances that he has to play for his stack in this hand.

And the way he does that is essentially by going all in. Looking at back at it, I think his play is fine. The only weakness of his play, I think, is it is a bit predictable what his hand is in this situation because I think if he had a hand as good as pocket aces, then he shouldn't be doing this. He should just be raising small because it's good enough where he's happy getting it in against me or Panpancrisy.

Whereas also if his hand was slightly worse, like ace-jack offsuit I think is a good example, I think ace-jack offsuit is not strong enough to make this all-in play with. But you still want to be raising. So I think there's a small range of hands that you want to be making this all-in play is.

I think it's basically exactly he's queen offsuit, may ace-king, maybe ace-queen, ace-king. And then middle pairs, let's say between like pocket 8s and pocket 10s or something.

So the only downside of this play I think is essentially his range here is very predictable it's going to be ace-jack suited plus ace-queen and pocket 8s through 10s or something like that.

But nonetheless, I think, because it's a final table, because of ICM, it's fine. He gets unlucky, though. He runs into queens. All right, here we've got to walk. OK, so let's see this hand.

So I showed to-- raises goes all in. So we call here. We're deep enough where I want to give myself the opportunity to fold if Panpancrisy he goes all-in. And we call. And we win.

So OK, so I guess I've been running pretty good in this tournament. But I just want to point out, there is a lot of selection bias here because I'm not going to play through a tournament where I get all-in on the first hand and lose. So I mean I'm going to pick a tournament that I [INAUDIBLE].

So it's in some sense not the best pedagogical example because there is a lot of selection bias. You know that I'm going to run very good in the tournament I choose to show you guys. But if it's between that and having be over in five minutes because I lost--

[LAUGHTER]

--this is the lesser of two evils. All right, so here, yeah. So once again, this is a pretty-- it's not that big, but it's a 17 big blind shove. And once again, it's justified by ICM prefold.

OK, here, queen-7 off. Yeah, I shove. I think it's probably barely a-- I think it's pretty close if chip EV equals money EV. It would be a borderline shove with the smallish antes. But given ICM, I know he's less incentivized to call than usual. So all borderline hands I'm going to be shoving, so I do.

OK, so this hand we get king-10. So once again, I just shove. Once again, I think I-- basically it's hard for them to call if I just shove and because of ICM. So I'm essentially bullying him, bully them. So when you're the big stack, you can bully people at the final table because of ICM.

We do get lucked up here, though. And we get lucked up at ace-8. And so he wins. I'm not going to do an exact calculation because I'm going to do an exact ICM calculation later.

I would guess his call is very borderline. It's definitely positive chip expectancy, but the fact that there's this guy with only 57,000 and this guy with 70,000, I think it's a call. But I think ace-6 is definitely a fold. So I think it's probably one of the weakest hands he should be calling with.

I think ace-8 is probably too good. He has to call, but I think it's very borderline in either case because of ICM. So he does fold, though. So now ICM is a bit trickier because now we're smaller. We're getting it all in with any of these guys can really damage us. And there's still two short stacks that everyone is hoping will bust soon.

So In this situation, I could go all in and bully this Panpancrisy guy, but ICM isn't that relevant. He's not going to fold ace-queen if I go all in. So I just give this one to him.

Calling is probably bad anyway, but calling, I think, is especially bad because it just increases the chances of getting in a bigger pot. OK, we'll skip forward a bit. Let's see this hand. So ace-10 off here. So this guy makes it 12,000.

And I guess I've skipped a bunch of hands. So Nicholas Brody, I think, has been very active. And overall, I think people have become very active. Everyone's playing a lot of pots. So overall, I am going to put people on wider ranges than I normally do.

But nonetheless here, I still fold ace-10. I think it's ace-jack I would probably get it in. And ace-10 suited, I think I'd get it in. Ace-10 suited is borderline. Once again, when you're tied between getting in a smaller pot and getting in a bigger pot, you want to be folding.

Yeah, so I guess at a final table, I should make this clear. It's not like you want to fold more. It's you want to go all in more when you're first to act. But call other people's all-ins less. So that's exactly what's going on here.

He's already moved all in. And I'm going to fold to his all-in more often than in a normal game. But as you can see, I haven't really been tighter in every sense because when I get to go first, I think actually going all in more often and risking it more often because I know my opponents are highly incentivized to fold.

So they go all in. I fold here. So Nicholas Brody also folds, which I guess is fine. Definitely he had pretty odds he called there. But once again, ICM just makes-- it changes things up a bit.

Jack-7 suited, once again, is a pretty big shove, but jack-7 suited plenty good [INAUDIBLE]-- ICM relevant. Pocket 9s here. We make it 12,000 on the button. So here I think pocket 9s is good enough where I'm happy if one of them reraises all-in, and I call.

So essentially my strategy here is I'm going to shove all my medium strength hands and especially hands that don't play well postflop ace-2 offsuit. And then I'm going to raise small with some of my hands that are less good preflop but better postflop, let's say, 10-8 suited, and also my monster hands like pocket nines that are also reasonable to play postflop.

So Nicholas Brody calls here. And the flop is ace, jack, 7 with the hearts. So it's a bad flop for our hand, but it's a good flop for our range because I think, given the way the table was going, I was opening a lot. And Nicholas Brody is very aggressive.

I would guess unless he had like pocket aces, which he might slow play, he would reraise most. I wasn't 100% sure-confident, but I was reasonable-- I'd say maybe 85% confident that if he had an ace preflop, he would have just went all in preflop.

So overall, I'd still say it's a very good flop for my range because I think he's way less likely to

have an ace than me. There's a small chance maybe he would chicken out with ace-2 offsuit and just call. But given how aggressive he's been, I would be surprised if he did that.

So I decided to bet here. And I'm still not sure how good this bet is. So I think at the time I bet, because of my logic that it's really hard for him to have an ace, and so I think the best strategy for me on this flop and in this situation is to just bet 100% of my hands.

And he's just forced to fold basically very often because he can't really keep up with an ace. I can just continue betting. That being said, though, I do think if I do decide as part of my strategy to check any part of my range here, pocket 9s might actually be one of the best possible hands to check back.

So I think checking back would have been fine. I guess I'd bet here because I told myself, I want my strategy to be bet 100% of my hands, which I did. And he folds, which is reasonably smart because he knows that I can bet again. And he's going to have to make a decision for all his chips probably. And it's just going to be tough.

OK, this hand-- BeMySponsor goes all in, gets [INAUDIBLE]. Yeah?

AUDIENCE: Why would you say, pocket 9s is one of the best hands to check back here?

WILL MA: I very rarely get called by worse, and I get called by everything better. I think he's always calling a jack and usually folding a 7. Maybe he won't fold 7-8 with some back door draws, but I think he'll usually call a jack. And maybe he'll call a 7 sometimes.

But I still think mostly it's just he'll basically fold everything that beats me and call everything that-- sorry, he'll fold everything that I beat and call everything that beats me basically. Yeah, but I still decide to bet, nonetheless, just to win the pot there and not give him extra outs if he happens to have 10-6 suited or something.

So OK, so we'll go through this hand. So Panpancrisy raises. He doesn't go all in, which is curious. But LPMBox calls. He calls again. It's checked. And then LPMBox goes on in the river [INAUDIBLE].

OK, jack-7 here? Yes. I guess, so once again, Nicholas Brady raises. And then LPMBox goes on over him, wins a big pot. So I guess I do the same for Nicholas Brady. He's been raising a lot, so pockets 6s good enough to risk going all in there.

OK, this hand-- so we get ace-jack suited. And I raise from cutoff. So I've been raising to a fairly small size because the antes are smaller. So that's one thing to remember at a final table is the pots are actually a bit smaller because with only five players the ante, the sum of the antes, instead of normally the 6,000, is only 3,000 in this case. So the big blind has worse odds to call.

So Nicholas Brady goes all in. I look him up ace-jack suited-- definitely good enough. Also at this point, because a number of pots have gone my way, I'm big enough where even if I call and lose this, I won't be chip leader, but I'll still have a decent amount of chips.

So unfortunately we lose the ace-8 here. So now we're second place, but we're still doing reasonably well. I could just maybe gone all in here. I guess this guy has a lot of chips.

But I could've raised to a bigger size to disincentive Nicholas Brody from doing this with the right wide range of hands and then protecting my stack more from an ICM point of view. But I'm happy with-- I think ace-jack suited is just good enough where I'm happy calling his all-in, which I should have been in this case. I guess he had ace-6.

OK, so jack-10 suited here. So yeah, here I just decided to fold. I mean we could consider doing a crazy bluff all-in, but I don't think this guy's folding that often. They made a rather big reraise preflop from going three times the initial opening.

So Nicholas Brody goes all in here, and they do fold. So Nicholas Brody picking up a bunch of chips. So he just takes it down again. He's been raising quite a lot.

Here we get a raise and a call. So LPMBox has been raising over other people's-- opens quite a lot. So he gets called here, but he holds and wins, which is definitely bad news for everyone.

If I could pay 10,000 chips into the pot to have this all-in go the other way, it almost certainly would be profitable. The amount actually we'd be willing to pay you make this all-in go the other way is probably 25,000. It's a ridiculous amount because just the value of having people bust and moving up the payouts is so significant, especially when I'm not such a big stack anymore.

OK, so now this guy, he just doubled up. So I guess we were running pretty good. But I'd say in the last two or three orbits, as you can see, a lot of things haven't been that favorable. We've lost some all-ins. And also people haven't really busted. The chips are just being passed around the table, which is basically not what you're hoping for.

So king-10 offsuit. We get a walk. So walk just means that everyone folds to you, and the big blind. I think we've actually gotten quite a lot of walks at this final table. So something we can keep in mind if we're trying to play exploitatively later, queen-jack, go all in. He folds.

So at 8-7 I guess, LPMBox, after winning that, so as you notice, the big stacks are the ones who win most of the pots. And this is expected. So whenever ICM is relevant, you would expect that-- so although the small stacks had a higher chip EV, then-- sorry, had a higher money EV than chip EV, usually the chips get transferred from the small stack to the big stacks because the big stacks have more license to go all in first and bully people around.

So he takes this one down. Next hand, we get jacks here. So Panpancrisy is actually short now even though he started the final table as the chip leader because he's lost a bunch of all-ins. He gets an all-in here, and we hold against a 6.

So there's actually an interesting play here. I don't think he should have done it. But this is actually often a good ICM play. So normally I would say in this situation, if you have a good hand, just go all in because he knows I'm going to call. So when ace-6, he just went all in.

But often there's this play called the stop-and-go, which is in practice not very good. I don't think it would have been here, but it's an interesting theoretical concept, which is instead of going on, he just calls, OK?

He calls, and then he basically blindly goes all in on the flop. He doesn't actually have to, but this is what players used to do. And you can do this in live poker. What you would do in this situation is you would say, call, and before the dealer even deals the flop, you would just say, all in. And this is a legal play.

The point is essentially-- it's an ICM. The justification, which I think is mostly wrong but still interesting, is he wants to maximize the chances that I fold. So essentially, OK, this is strictly better, right?

Sorry, the fact that he would call, let me see the flop, and then I get to decide whether to put the remaining chips in sounds like it should be better for me than me having to put all the chips in preflop.

But the main reason why he does this is because he wants me to have an opportunity to fold my cards and avoid getting in a situation where both of us are playing for our entire stack. So

this is the justification for it. So even though you're giving your opponent more information, you're also decreasing the chances that they decide to call to the river card and have more chances of beating you.

So that justification is correct, but it's just that if you've crunched the numbers, usually this situation won't be favorable enough. And usually you don't want to be giving your opponent that extra information.

OK, so finally someone busts. We get jacks off again. So here normally I think I would often consider calling this, but I think just avoid-- so now the stacks are even-- we're the chip leader but not by a ton-- and I don't really want to get in a big pot here. So I decide to give it to them, even though normally I would definitely call this.

King-7 suited. I make a pretty big all-in for 21 and 1/2 bets from the small blind. And take it down. All right, we'll see all the hands. We fold 6-3 suited here. BeMySponsor decided to raise small, which is, once again, a bit unusual. You usually just want to go all in in a situation where ICM is so relevant. And then Nicholas goes all in. And he folds.

Jack-5 offsuit. Here we fold. So once again, this guy raises small. So maybe he doesn't really want to do this ICM thing and just he wants to play pots. He takes that one down, though.

Nicholas Brody-- so as you can see, it's a bit boring. There's not too many hands here. That's what happens with there's ICM because you don't really want to splash around. You just want to survive in the tournament by risking all your chips once in a while instead of slowly bleeding your chips in a variety of pots.

So once again, queen-9 suited, big all in. Plenty good enough. Queen-7 suited, I decide to raise it up. But unfortunately, I guess, even if just one guy went all in, I'm clearly folding.

So they both go all in. And ace-king beats kings, which is really bad news for everyone essentially because if kings held, then he would have busted. But unfortunately he doesn't.

So pocket 8s, I'm raising here. This would have been a gross spot, by the way. I think if BeMySponsor went on here, I don't know what it would have done. it would have been very gross because on one hand, I definitely don't want to be folding a hand as good as pocket 8s. But on the other hand, ICM is just so relevant, I think I probably have to fold.

So yeah, this is a case where I could've made an extreme, a hero fold essentially. I folded a

very good hand if BeMySponsor went all in. So king-jack off-- you get another walk.

OK, jack-10 off. I'll tell you what happened, and then we'll take a break. And then I'll analyze it after. This hand I want to analyze in a bit more depth because I was actually surprised going through the replays looking at how I played this.

So LPMBox makes it 16,000. And I reraise to 44,444, so essentially I think this-- I don't have a great hand. But I think this hand is too good not to make a bluff with. So I do that.

And then he goes all in. And then I think this is a very tough spot because my hand isn't good. But when I reraise, I definitely had the-- if this guy had fewer chips, I would have just went all in myself. I definitely didn't reraise to this size thinking I would even consider folding if he moved on.

So yeah, the reason I made this size is so that if this guy went all in, I could fold. But as it turns out, he folded, and he went all in. So let's analyze this hand after the break. We'll take a short two-three minute break.

OK, I'll get started again. So OK, so let's calculate this hand. So I actually decided to go back and calculate this hand from an ICM perspective because ICM is basically very relevant here.

OK, so let's see exactly how to do this in practice. OK, so let's first do the chip EV calculation, OK? Let me first do the chip EV calculation. You can trust that I copied the numbers correctly.

So essentially there's three possibilities, OK? There is if I fold, this is the amount of chips. This is the amount of chips I'll have. OK, so right now I'm only caring about chips. So if I fold, this is the amount of chips I'll have. If I call and win, this is the number of chips I'll have. And if I call and lose, this is the amount of chips I'll have.

So we could basically do a calculation here where I do essentially it's-- so let's say my chances of winning is x. So it's x times how many chips I have if I call and lose, which is 107-- I'm going to not write the last three zeros-- plus 1 minus x times 402.

Sorry, I did this in reverse. OK, x is my chances of losing. So again, I'm basically comparing this number versus how many chips I have if I fold, OK? And then essentially I'm just solving for x. So the way I do it is I set these to be equal, and then I calculate x. And that's the breakeven x, which tells me what's the minimum equity I need against his range to call.

So we can do that. So I think it turns out to be-- so this formula is equal to fold minus call over-- hang on-- I did it before. OK, so this is easy. OK, so I Ctrl+Z, so essentially I had 2 to 1 odds, right? I had 2 to 1 odds, so it makes sense that I needed a 33% equity call.

OK, so how do we do this side? These are essentially the ICM numbers. So essentially the way you calculate this is you Google ICM calculator, and then you just go to the first one. It's usually quite easy to find.

OK, so it's a bit tricky because you have to put in the exact payouts. So I think at the time they were 18.5. This is all as a percentage of the total pot. So I forget exactly the numbers, but it was something like this.

OK, and then you type in the four-- you type in the stack sizes. So it takes a bit of time and even if you're fast at this, if you conserve your entire time bank from the whole tournament for this one calculation, you'd probably have enough time to do it because you'll probably have like two or three minutes of time bank saved up. So you probably can do it. You have to essentially, right?

So there's three possibilities. I have to calculate if I fold, not only how many chips I have but how many chips everyone else has. And then I take them in, and then I can essentially calculate the value of my stack in terms of as a fraction of the total money in the pot.

And then similarly, I do it for the other two cases. And then I calculate the ICM numbers. And roughly speaking, this is my-- this is all normalized. This is roughly my dollar EV in each of these three scenarios.

If I do the same calculation, I'll find that I actually need 39.6 equity. So far does the calculation make sense to everyone? I didn't do all the steps in practice, but I explained how to do all the steps. Yeah, if you're fast, it still takes like a minute-a minute and 1/2.

But the last part is now we have to open Poker [INAUDIBLE]. And now we have to type in jack-10 offsuit. And then we have to put him on the range. So OK, let's just put him on a-- OK, I suspect that I'm probably going to have to fold because 39.6% is quite a lot.

I'm going to put him on the loosest range and see a 539.6. So let's say he's pretty loose. So he's willing to gamble with, let's say, pocket 4s plus-- I mean, another thing that's relevant here is I think it looks like he doesn't have fold equity. I don't think when he's going all in here he suspects that I'm ever folding. Or at least he probably thinks I'm calling him the overwhelming

majority of the time.

So I think he's rarely going to turn up a stone bluff like 8-7 suited because of this. I would be very surprised if he ever had 8-7 suited unless he read into this and realized that I could actually fold some hands here, which maybe he did. I should give him enough credit.

OK, let's just do something somewhat quick. Let's say he gets ace-8 offsuit, ace-5 suited plus, king-jack suited, king-queen off, and pocket 4s plus. So that's 14.6% of hands. So let's do this.

So against this we have 36% equity. So that's not enough. We need 39. Let's see how wide his range has to be for us to have 39. All right, let's say he gets in with 20% of hands, which is quite a lot, which is, I think, way too much. Let's say 18.6 percent of hands.

Oh, we actually have worse against this range because it has-- oops-- because it has more hands that dominate us because I put in a lot of hands like king-10 and removed a lot of the hands like ace-4.

So basically OK, you can play with it however you want. But I think it's hard to play with it in a way to give yourself 39% equity unless you were very optimistic about how wide his range was.

So in either case, so at the time I did fold. And it looks weird to me at first, but after analyzing it, I think this is definitely the right play if you take into account ICM. So I think it's a good example of ICM because if you remember when we were playing with it, our equity was always essentially between 33 and 39.

If we put them on a looser range, our equity would be 37. And if we put them on a tighter ranger, our equity would be 34. But basically it's a situation where I would always call if ICM was not relevant and always fold if ICM was relevant.

And this isn't even a case where it looks like ICM should be that relevant. Yeah, so we do fold. So with hindsight, maybe my initial strategy was wrong. Maybe I should have should not have even bluffed here. Maybe I should have just folded in the first place. That's a different story.

But given that I did bluff, I think the best thing I can do here is fold. OK, let me just jump back to the PowerPoint for a bit. So I just want to talk about a bit more about this theory of satellites and going all in first.

So in game theory, this is called the traffic intersection game. So ICM does not say, play tighter. It allows you to play looser if you can go all in first. So this is where I actually think it's very interesting because in satellites, you want to be under the gun.

So normally in poker, that's the worst position because you've got to act first. Everyone else gets to act after you. But in satellites, basically you just want to be the first person to be able to threaten, say, look, I'm putting all my chips in. You pretty much have to fold.

So in satellites, let's say there's 11 people left, and 10 people get a seat. If you go on, no one can call you even if they have aces because to call you, they essentially need to be more than 10/11 sure that they're going to win the hand. And even if they have pocket aces, they're not going to be 10/11 sure that they're going to win the hand.

So basically going all in first is very, very good. So it's called the traffic interception game because you can imagine the situation where there's two cars trying to pass each other at an intersection. And you want to save time, get there first. But you're worried that the other guy might crash. Both players really want to avoid disaster, but both players really want to be the guy to get through first.

Well, if you can act first, and if you just tell the guy, look, I'm closing my eyes. I'm tying up my hands. I cannot stop my car, OK? I'm just going to go through the intersection no matter what. If you're the first person to be able to do this, then the other guy, he's like, OK, I guess I've got to stop my car now and let you go first. That's essentially what it's like.

If you're the first person to go all in and you've already said, look, I'm all in, and there's nothing I can do to take my chips back, then the other guy is like, all right, I guess I'll follow. And you can win the blinds. So it's sort of how it works.

Of course, some opponents are not rational. If you do this enough times, they might be like, OK, screw this. I'm just going to kill this guy and speed up. So it's a bit weird, and in practice, this happens a lot, too.

I've definitely had very bad situations where I'm going all in with any two cards, and I know this is a game theoretically optimal strategy. But my opponents are sped up. And then he calls me with ace-jack or something. And then I'll have jack-2 offsuited. And he looks like a genius, and he beats me when his play is just terrible basically. Yeah?

AUDIENCE: Yeah, so interesting. So does it matter if, say, you're under the gun, and you're in the low

stack. Can you do this?

WILL MA: Right. So the stack size does matter. So I'm assuming if everyone had the same stack size in that extreme example, where I said other people should fold aces, I'm assuming everyone has the same stack size.

AUDIENCE: I guess where's the balance between knocking you out versus the chips differential?

WILL MA: Right, exactly. So the reason, in that case where it's correct to fold aces, is because let's say they call and knock me out. It doesn't help them that much because first place in a satellite does not get paid any more than 10th place.

But in real tournaments, you basically never fold aces because even if you're risking losing all your money, just first place will be hire than second place by enough. And winning with those aces will increases your chances of coming first by so much that you should just gamble anyway.

So this is only in satellites. Yeah, please don't fold aces in like a normal poker tournament. Yeah?

AUDIENCE: If you're a short stack in a satellite or one of the shorter stacks, does going all in still make sense? Because people can call you without risking a tournament.

WILL MA: Right, exactly. So in that case, you actually need a good had to go all in. You actually need to have positive chip EV as well to go all in. Yeah, so that's why when ICM is relevant, the small stacks win. And the big-- sorry, the small stacks lose. And the big stacks win.

Because the big stacks have more license to bully small sacks around, whereas the small stacks can't because the big stacks can call at them more often.

AUDIENCE: And also does it matter if other people have raised behind you? Does it just matter who goes all in first?

WILL MA: So if someone's already raised, then it's more likely you going all in-- it's more likely they are already committed so that if you go all in, they won't fold. So that is relevant, yeah. OK, and cool. Right, so exactly.

So in practice, it's very tricky. And in fact, it can be beneficial if you can somehow convince your opponents that you're not rational. I've never personally done this, but I've heard of

people making a bad call sometimes in a satellite just so people know not to mess with him essentially. But I mean it's a bit weird.

There is this weird metagame with this traffic intersection-type game, although this is only relevant in the most extreme ICM situations, which are satellites. Actually, I should say, one scenario where I think you could consider folding aces preflop in a normal tournament is actually this.

Let's say there's 55 until-- let's say 54 get paid. And there's 55 left. And you've got one chip, and everyone else has thousands of chips. And you know that someone else has already gotten eliminated that hand.

So if you fold, you're guaranteed to get in the money. Then I would definitely fold aces because even if you win in double up, congratulations, you now have 10 chips instead of one chip. Everyone still has thousands of chips. There are cases where you could construct an extreme case where you should fold aces preflop in a tournament, in a normal tournament as well.

OK, so let's get back to the tournament now. OK, where were we? So we lost a bunch of chips here. So the next hand we get king-8 offsuit. I raise from the button.

So we are committed here. It sucks because our hand sucks, but it's way too good odds to call. And ICM is nowhere near that relevant when it's against the small stack. It's the guy you're trying to eliminate.

So we call. We get pretty lucky here. Good redemption for that terrible jack-10 hand played by me. OK, so there's three players left. So ICM is still very relevant. We're the second stack. So we're trying not to get in a big all-in with this guy, although it's less significant because this guy still has a decent amount of chips.

If this guy only had 50,000 chips, then I would try a lot harder to avoid getting in a big pot with BeMySponsor. So-- oops. So yeah, so he raises, and LPMBox goes all in, takes it down.

So this hand, he makes it 3x. And I decide to call it here with queen-6 suited, which is gutsy I think. But I think it's in position, and it's fairly deep. And being able to put ICM pressure on him is reasonable. I think it could have gone either way.

Folding is definitely the safer play, but queen-6 suited is plenty good enough here. So I call.

He just checks. He might just be giving up on this board where there's a decent amount of-- it's fairly dry, right?

So from what I said last class, if the board is fairly dry, where every hand has something, if you've got absolutely nothing, then there's not even much point to make a bluff like if he's got ace-2 offsuit here.

So he just checks in, and I bet, and he folds. So he probably had ace-2 offsuit some hand like that. Next hand we get ace-king. I decide to raise small here once again. So I guess this protects that jack-10 hand. If I'm doing this with jack-10, I do need to do it with good hands as well to protect the times I do have jack-10.

Unfortunately, he guesses correctly. He doesn't fold, and I have jack-10 and folds. And I have ace-king. So he still take that one downs. And we win the blinds the next hand again. So suddenly we're worried chip leader by a decent margin after those three hands. 9-4 off-- I'm not going to call, so fold to him.

So jack-7, so once again, because of ICM, this guy just goes all in knowing we can't call that much. Takes it down. 7-6 offsuit, I decide to fold. I think that's very reasonable considering they can just go all in on top of that.

Queen-9, queen-9 off, get a walk. So one thing I should pay attention is I do think these guys-- by now I've collected enough data points of getting a walk way more often than I should, where I think it's not just a coincidence. I'm statistically confident enough that they're actually just giving me too many walks.

So when they don't give me a walk, I should put them on a stronger range of hands than I normally do. Pocket 10s, we three-bet this guy again. He gets away again. So 6-2 off, so we've gotten dealt good cards even though we haven't gotten too much action from them. We're still winning by two chips from getting good cards.

So jack-4 off, I'm going to fold to this guy. So as you can see, it's fairly boring, but I think this is what essentially should happen in the final couple of people left in the tournament. Ace-10 off, so I decide to not go all in here. I guess that would be 27 big-- 26 and a 1/2 big blinds, which is a bit much. So I decided to just raise small.

If he three-bets, if he reraises to, say, 60,000, I'm always going all in here. If he goes all in

himself, I'm basically not folding even though it sucks from an ICM point of view. I think ace-10 offsuit is just way too good. So I'm essentially just raising small looking for action here. He folds. 7-2 offsuit, we raise-- no.

[LAUGHTER]

So LPMBox gets a walk. Queen-3 off, we get another walk, which is nice. Jack-5 off, I raise here, which is definitely an exploitative play. It's definitely not-- definitely from a Nash equilibrium optimal play point of view, there's no way the optimal strategy is to raise a fraction of hand so big that it includes jack-5 offsuit.

But I think at the time, I probably told myself, this guy was being overly scared. Even though he was playing somewhat aggressive earlier on, he is maybe overadjusting for ICM and is respecting me too much in the presence of this short stack.

I can look at the HUD stats at the time, although they won't be that accurate because they're going to include all the hands. So normally I do play with all these numbers on. So we can see that his-- yeah, but it's going to be biased because this includes the hands with six or seven people at the table.

But it says that he calls from the big blind only 20% of the time. But that's not a great-- yeah, that's going to biased. So it doesn't tell us too much. But I guess at the time, I must have told myself I'm going to try to exploit this guy. That's the only way I can see why I decided to raise jack-5 offsuit here.

So we get a call. But I'm going to continuation bet. We do have a backdoor heart draw, and this is our best chance of just winning the pot. And I could maybe barrel on-- by barrel, I mean bet again as a bluff on a bunch of turns. So I just bet here. He does fold.

Next hand with queen-9, we open the button, but we get shoved on. And I guess we have to fold. Queen-4, we get another walk. Yes, so this is actually getting ridiculous. It seems like we've literally gotten five or six walks in a row.

And I would guess probably we should be getting a walk less-- I guess at a three-handed table, it's more often but still less than like 30% of the time. Yeah?

AUDIENCE: Is it possible you're getting walks because someone has raised your big blind and you defended a lot? And so they're scared to raise your big blind?

WILL MA: Maybe. I have been fairly active. But I did fold a bunch of-- I did fold some borderline situations, though, like this jack-- I think it was a different jack-7. But yeah, maybe. That's possibly. Yeah, very good point.

But that's good, right? It's good that we're like-- I'm not complaining that we're getting a lot of stuff. And we are the big stack, so in general, it is harder for them to bully us around than us to bully them around. So it does make sense from that point of view, too.

I saw that it was just too many. Anyway, so I just continue trying to raise a lot, especially against this guy. So jack-8 offsuit, we take it down. Jack-2, maybe we could have folded.

But by now this guy was getting short enough. He's blinded down from 15 and 1/2 big blinds, I think, to 13 and 1/2. He might have had more before, like 17. So he might be looking for a spot to shove now. BeMySponsor actually raises a small here and gets him to fold.

And jack-6 off here. We get another walk. I should just skip the hands on big blinds since nothing ever happens, which is great for us. So pocket 3s here, I just go all in. So I talked about this before. What's a problem with what this play in some sense?

AUDIENCE: Reverse implied odds?

WILL MA: Right, good. So yeah, so if I don't do this, if I just raise small, I have bad reverse implied odds, right? But one particular issue is every other time we've made it 25,000.

And really nothing's changed, and suddenly we go all in. So it is a bit suspicious where he basically knows we have a hand that has very bad reverse implied odds. He basically knows we have pocket 3s or ace-4 offsuit or something like that. But it's still hard for him to exploit.

I mean sure, you can call ace-9 and exploit us, but ace-9 is already a great hand. Or you can call pocket 4s and exploit us, but it's not that easy to get dealt pocket 4s or a better pair than pocket 4s.

So here yeah, even though against a good player, he knows my range is a very small specific number of hands. It's still hard for him to-- he can't really just call jack-10 suited here. Maybe he can, but probably jack-9 suited or queen-7 suited he can't call because there's still an off chance we have queen-9 offsuit or something.

Oops. So anyway, so he does fold. But it definitely raises suspicion. Jack-10 off, so jack-10 off,

we just go all in here. So this is actually important. So normally I would just raise from the button, but by now, the big blind has gotten so short that I'm willing to just go all in because the big blind is short enough where even if he picks up a hand and calls and beats me, I'm still the chip leader, even if that happens.

So the ICM doesn't hurt me that much because-- yeah, and also just the fact that I'm risking less. The other important thing of the big blind getting short is now the small blind is much less incentivized to gamble than before.

Before, when the big blind had 180K, he was incentivizing gambling against me because it's not that easy to wait for the big blind to bust. But now that the big blind only has 10K, it's easier to just wait and hope that he busts.

So basically ICM becomes a lot more favorable in both cases. And shoving, I think, is very good now with the stack sizes. So we do shove, and we take it down. 9-2 off, so no one usually wants our blinds, but then they both want our blinds. LPMBox takes it down.

So ace-2, I just go all in here. Basically same justification as the pocket 3s. 8-7 off, I think I probably should have raised this. Even going all in honestly might not be that bad. I'd have to do an exact calculation, but I think probably-- it's a pretty bad hand. But I think probably I shouldn't be folding given that I'm the big stack and given that they've both been giving me lots of respect.

But I fold, which can be a big mistake. But I think probably I shouldn't have folded. The next hand, LPMBox goes all in, and we fold. Next hand, we 8-7 suited, so by now, this guy, BeMySponsor, so we've just won enough pots where this guy is also short now. So it's a pretty good situation for us from an ICM perspective.

They're both short enough where we can just go all in preflop very often and they have to fold quite often. 10-7 off is a bit too weak, but I decide to raise. But yeah, this is a bit inconsistent play from my part because I think for most purposes, 8-7 off is a better hand than 10-7 off. But for some reason I raise 10-7 off and fold 8-7 off.

He's 5-suited. We get a walk again. Queen-5 off, yeah, so I just go all in here. So this is definitely not a plus chip EV all-in, but once again I think ICM by now is relevant enough where it's fine because he just has to fold, weakening it down.

10-6 off, I decide to fold. Big blind gets a walk. Get a walk with 6-deuce pretty good. Ace-2 off,

once again, we go all in. They fold. Pocket kings, so I basically--

AUDIENCE: Wow.

WILL MA: Yeah, so this is a bit suspicious again. Normally I've been going all in. He raises small. Obviously yes, pocket kings. So yeah, that's basically true. But I mean also I think I will do this with some of the weakest hands that I'm not willing to gamble all in with but still want to raise maybe something like 9-7 offsuit maybe.

But we don't play it, so we take it down. So he goes all in. We fold jack-2 offsuit. Queen-3 suited, go all in. So I'm going to go through this fairly fast. There's a lot of same stuff. 6-5 off, we fold because yeah, by now they're short enough where they might actually just call us pretty often.

So I fold 6-5 off. So here, pocket 3s holds against queen-jack. So this is an extreme ICM spot. So he calls here, and he does double up. So the next hand, we do have an extreme ICM spot because this guy only has one big blind.

So essentially their correct strategy is going to be I'm supposed to shove any two cards. And he's only supposed to call, I would guess, maybe the top 7% or 8% of hands in a situation. He normally should be calling top 30 or something. So I just go all in.

Even if he has ace-2 offsuit, I'm certain he has to fold. Even if he has, say, king-queen, and I turn up my hand and show him jack-8, he probably still has to fold just because he really can't bust.

I haven't done the exact math, but I wouldn't be that surprised if he told me pocket 9s is a fold for him. I wouldn't be that surprised, so yeah. So once again, I go all in because this guy probably can't call.

Oh, OK, so yeah. We win against ace-queen, which is crazy that they picked up ace-queen with one big blind, right? Anyway.

[LAUGHTER]

Some players like to do this thing called cooperative play to get that big blind to bust. In the history of poker, it's what was almost customary for the players who have chips in here to basically just all agree to just call and not raise each other and to maximize their chances of

busting the big blind.

It's a form of cheating in some sense. It's collusion in some sense. But it's customary maybe five-six years ago for everyone to do this because it benefits everyone else. It benefits all of these guys if they all agree to do this. And it just maximizes the chances that the big blind is eliminated.

But the issue with this is unfortunately there is an option to be selfish. Unfortunately, if we both trusted each other completely, we could collude and be like, OK, we're just going to call, check down every flop turn and river no matter what to match so that we can both see the river with any two cards and maximize the chances of busting this guy.

The issue with this is when you play a game, you're selfish. If there is an opportunity to bet because you have a good hand, you're going to want to bet. If there's a draw and you have a good hand, you want to bet to get the other guy to fold.

And basically from a game theoretic perspective, since we have these options, there's no way for us to essentially agree that we're going to just check down and see the river, which is why I consider collusion of players actually do this.

So nonetheless, I do the most selfish line, which is just go all in. But yeah, if this guy was my best friend and I wanted to cheat, then I could just call and let him call and then just check it down even if I flopped the nut flush.

OK, so now it's heads up. OK, I'll try to show every hand. OK, so now ICM doesn't matter. But it would be good to show a little heads up play because I don't think we've done too much heads up play in this class.

So we call here. And we check. He makes it 32. And I just have to check-raise bluff this flop. I think it's close. I think I probably shouldn't be folding. I think jack-6 suited just has too many backdoor draws on this flop to ever fold just as part of my strategy.

I think I decided that I wanted my strategy to be I'm going to raise good hands, like 8s and 4s. And then I'm going to also raise hands with lots of backdoor draws like jack-6 of hearts. So I decide to do this. So unfortunately he goes all in, so we fold. It doesn't quite work.

So queen-10 off, we raise. Oh, so one thing I should say is-- I think most of you know this-- but once a tournament gets heads up and it's just a small blind and the big blind, the small blind is

actually has position.

So normally when it's small blind against big blind, the bid blind has position postflop. But when it's heads up as a small blind, you actually have position. So you're very strongly incentivized to play from this small blind. It's just by far the better position because you have position, and you have to put in less of a blind.

So another cheat that-- so I'm teaching you guys all these different cheats. Another cheat that people used to do-- it's not really a cheat. But another angle shoot people used to do back in the day is there would be people who normally play pretty low stakes, let's say, $0.25, $0.50.

They would set up these $25, $50 tables. So where the blinds are $25, $50, which is really high stakes for them. They really don't have the bankroll to gamble that.

But their strategy basically is if you're the first to sit down, you get to be the dealer on the first hand. So their strategy is basically just sit there and then wait for someone else to sit down. And then play the first hand as the dealer, where they have a huge advantage. They can just raise, and usually the other guy will fold, and they'll win 50 bucks, which is a huge deal to them.

And then they'll just leave after the first hand. So this is something that happened quite a lot. So my friends and I, we've talked about playing a crazy strategy, where you would sit down knowing this is what the other guy's going to do. And then sit down with him.

We would have the capital to take on risk. And then we would basically just play the first hand extremely aggressively. And knowing that the guy has been fold most of the time, because if he calls, that's all his money on the site. So yeah, it led to a lot of weird dynamics.

But OK, so here we have-- This is why I chose tournaments, not cash games. There's fewer ways to do these when you use cheats. So queen-10, we raise. We take it down. Next hand we get ace-queen suited. So unfortunately we get a walk.

So queen-8, we raise. We take it down-- sorry, he calls. And then it's checked to us. We continuation bet. And he raises, which is weird because it's a flop that's a lot better for my range than his because I can have ace-king and ace-queen.

And even ace-jack, I think, if he had ace-jack, he would have reraised preflop. So in some sense it's weird because it's really hard for him to have, I think, pocket aces or pocket 8s. Or

even pocket 3s, he probably would have reraised all on preflop.

So really it's like, what do you have? It's like, I don't have much. But really it's like, what do you have? So it's weird because I expect him to check-raise this flop so rarely that what he does, on the one hand, it's just strange. But on the other hand, he must know that. I'm assuming it's somewhat balanced, and he will occasionally turn up ace-3 or something here.

So I decide to call and see one more card. I don't know if that's great. Maybe I should have just folded and just believed him or just reraised if I didn't believe him. Reraise essentially is a bluff. Make it 100,000, and just hope he folds.

But I decide to call. The turn is a 9 putting out some straight draws but no flush draws. That's fairly big, and I fold. I don't really know how I feel about how I played that hand. I think I mostly played exploitatively. I just called the flop because I wanted to see what he did, and I folded the turn because maybe based on his bet sizing or his bet timing, I just felt like he had it.

So I'm not sure I'm extremely happy with how I played that hand. But probably just at the time, I decided to play exploitatively and try to play best against how I expect him to act. So here 10-7 off, I decide to reraise.

So the reason I reraise a hand as bad as 10-7 offsuit-- I talked a bit about this two classes ago about your preflop raising strategy. So essentially what I'm doing is I want to be reraising my good hands and also my hands that I'm not sad if he goes all in, and I have to fold, and I don't get to see a flop with.

So if I had 10-7 suited, that's too good of a hand. And I really don't want to reraise. And then if he goes all in, fold my pretty 10-7 suited and not even get to see a flop with it. But 10-7 offsuit is a bad enough hand where I'm not that sad if he just goes all in, and I have to fold. So that's why I'm raising my good hands and also my weakest possible hands that I'm OK if I don't get to see a flop with.

He does call unfortunately, but we do hit a great flop. So I'm just going to bet and get it all in. Heads up basically any top pair is, in general, just way more good enough to put all your money in with. He folds, though.

So ace-6, we raise. I'm going to go fairly quickly because I'm running a bit short of time. We continuation bet the flop and take it down. He raises here. I call with king-6, which is pretty

borderline. It's too good a hand to fold, but probably it's too bad a hand to call. Probably I should have just raised by the same logic as before.

But we call. And I decide to donk out on this flop because I figured there's a number of draws I can have. And here I do have a weak draw. A 7 gives me a bad streak but still a very good hand in the two-player pot.

He calls. And the turn is a jack, which I still have a straight draw because now a queen gives me a straight. So I continue bluffing. So he folds, which is good. 6-2 offsuit I just give one to them.

So yeah, I think you should be playing 90-95% percent of buttons. Maybe not that high when it's getting shallower, but at least 80% of buttons. But 2-3 offsuit is one of the hands I'm OK with folding. 8-5 suited, I'm just check-raising this flopping, getting it in. He folds-- yeah?

AUDIENCE: Let's say you had an opponent that from the big blind was very likely to three-bet you. How would you adjust your range opening from the button or the small blind?

WILL MA: Oh, OK. So if they're really loose, you would basically raise only your good hands that you're hoping they reraise all in with. And--

AUDIENCE: So would that be from maybe 60% of your hands down from 80?

WILL MA: Oh, yeah. You would basically raise less. So it'd just have more value essentially.

AUDIENCE: It's hard to calibrate that range, though, as what's a good hand.

WILL MA: Yeah, and also another thing you can do is call more. I don't think it gets relevant in this heads up match. But sometimes it gets shallow enough where you actually want to have a calling range preflop from the button.

OK, so king-10. OK, so I do call here. I think I essentially call, thinking I would call if he went all in but also just to make it so that I can also sometimes call a hand like 10-4 offsuit. And he can't just shove any 2 and expect me to fold.

So I decide to call here. We get a great flop, so I check it back as a slow play. He checks again on the turn. So I bet. He calls. The river he leads out quite big. And I just call because I think raising I'll usually only get called by better.

And he actually turns up a flush here. So it's a weird hand. It seems like we could have lost a lot more. But I'm not saying our opponent played the hand badly, but we were very lucky to lose this little when we have a two pair against a flush. And we only lost, essentially, four big blinds or something. I guess I'll be happy to get away with that.

OK, I'll probably run two or three minutes over time. I'll try to hurry. But I don't want to not finish the tournament today. So we fooled this. Maybe I'll skip forward a bit to some of the bigger pots.

So what happened here? So we raise jack-6. He goes all in. We fold. All right, let's go do this one. OK, so king-- so OK, so the match has gone on for a bit. He's won a bunch of pots. He catching up. He's catching up.

King-3 off, we raise. He calls. So here the flop I think is-- so once again it's a situation where I don't think he ever has an ace. So I'm basically betting at 100%. He calls. The turn's another ace, which is a bad card for us because now it's less likely we have an ace.

But normally, I still think it's a fine spot to bluff just because he essentially can't have an ace and we can. But I think king-high is good enough here where I am going to win the pot by checking it down with king-high often enough that bluffing is superfluous. So I just check. And it's checked down. And he was actually trapping with king-9 here. So he wins that one.

Yeah, and probably he wouldn't have folded. Let's say, I bet the turn and went all in on the river. Probably he has to call just because it's almost the best hand he can possibly have. It pretty much is the best hand you can possibly have other than maybe 7-6.

I think nothing happens there. So let me see. OK, so yeah, we lose a bunch of pots because we raise and he reraises and we fold. So things aren't looking too good. Oh, so I actually made a hero fold here.

I think, once again, this is an exploitative play. I would probably never fold this from an optimal strategy point of view. I think an ace in heads up with only 20 big blinds is way too good. But he did just reraise me two hands ago.

And I don't know. I think at the time I just felt like he almost certainly had it when he did this. I made an exploitative fold based on what I thought he had. So the next hand, he raises. We go all in with pocket 5s. And we've never [INAUDIBLE] the ace-jack which is pretty stupid.

Yeah, I was very surprised. I was basically ready to just leave. I was probably in some other tournaments. But I basically was ready to close the table and focus on the other tournaments. But somehow we get there.

And then the tournament just is easy from there. We get ace-9. We go all in. He folds. And then he goes all in into our pocket 6s. And we hit a straight, so we win. Right,

So I played through all the hands at a tournament. Once again, there's a lot of selection bias there. But hopefully you learned some stuff from that. So there's two classes left. Next class, I'll wrap up the theory and the exact poker example.

So I'll talk a bit more about cash games and show you how to play when you're really deep. I talked about postflop raising. And then Friday we have a guest lecture from Bill Chen, which should be really exciting. He always talks about very interesting stuff. So I'll see you guys around.