PROFESSOR: So today's reading is kind of there for two reasons. One, the David Parlett reading is to introduce to you this book which is called *The History Of Board Games.* How many of you read the version from Stellar OK. Anyone get the book from the library? Because I think it's on reserve if you really want to read a hardback, paper book, you could just go to a library and you should be able to check it out, probably from the humanities library. So I'm just letting you know that that option is out there.

So one of the reasons is; one, just to introduce to you a bit of what historical research looks like in game studies. There are people who have careers, like David Parlett, who basically go deep into the history of how some kind of game evolved. One of our old alums, Jason Begy? He looks at railroad games. I'm pretty sure he hasn't changed his thesis topic yet? Again, he's been looking at that for like three years, four ?

AUDIENCE: Yeah. Three years now.

PROFESSOR: And so they'll go to museums. They'll talk to archaeologists. In the case of railroad games, obviously, there are no archaeologists involved. But you talk to people who worked on classic game designs. You talk to retailers. You talk to people who actually owned or played some of these games. And I'm wondering if a lot of the games that are written in today's reading were kind of ancient-- really, really ancient-- games. But how many of you feel like you've actually played a game that sounded like one of those that were written up?

AUDIENCE: Well especially they had dreidel in there.

PROFESSOR: Yeah, they had the dreidel in there. And that's Purim and Hanukkah? Those are the two--

AUDIENCE: Just Hanukkah.

PROFESSOR: That was pretty much just Hanukkah. OK. It's funny because when I was reading about the dreidel I was actually; like the initials-- a great miracle happened there-- I didn't realize that there was a different version if you played dreidel in Jerusalem, where a great thing happened there. Which makes sense for Hanukkah but I don't think-- that doesn't quite make sense for Purim because--

AUDIENCE: No, it's only Hanukkah.

PROFESSOR: That's just to do with Jerusalem. All right what else? The other games, the State Board games or-- a lot of these games border on someone setting up shop on the street and then if the cops come they run away, one of those kinds of games, right?

Let's see, what were some of the other things? They had a lot of lots. And one of the traditional Roman implements was the knuckle bone. I'm not quite sure if they mention what type of animal it was? I think was--

AUDIENCE: Sheep.

PROFESSOR: Sheep or goat, yeah. But that's where the idea comes from. And the idea comes up quite a bit in game studies, at least since Holsinger's time, since I think the 60s, where it's introduced as a generic term to describe games of chance. I think the word earlier might also have been used like in traditional Latin scholarship to describe games of chance.

But that's where you get phrases like *alea iacta est.* Does anyone know what that means? The die is cast. It is what Julius Caesar-- Julias Caesar says when he was about to cross the Rubicon, famously. And originally there was some confusion about whether that meant that the die, like dice, has thrown? Or whether that means that the die; as in the mold for something that you put liquid iron in, and then you cast it. But that still has the same sort of sense of, all right, It's out of our hands, right? It's already been done. So I get the same point across. But actually look at Latin, specifically talking about these knuckle bones. These knuckle bones that you are throwing which are called alea.

So now it's up to date. But Parlett makes an interesting point that we are trying to simulate something that seems realistic. That even with your best efforts or with your worst efforts, sometimes certain things are out of your control. And simply just describing them as games of chance might be doing them a disservice. Because you see the same sort of randomization that comes up in computer games and things like combat.

Especially strategy games, where there's a chance that something may fail, a chance that something may succeed. And when you think about games like war games simulations, they are obviously not trying to create this fantastic sort of fantasy element, unless you are talking about things like RPG fire games. But we're talking about World War II games and things like that, that are trying very hard to simulate something that's real. And one of the things that they're trying to simulate is sometimes you just don't have control over everything.

And that's where randomisation elements-- this particular chapter is about dice and other physical things that you use. We included spinners. We included things that were basically binary. And that's actually a cute idea, if anybody wants to think about trying to introduce the Bell Curve to any of your results without having to be having people roll a whole bunch of dice. Or if rolling two dice gives you numbers 2 to 12, but you wanted a different range, you could just have them roll a whole bunch of flat sticks and then it lands one, zero, one zero, and you still get a nice bell curve.

So that's an idea you can use in your game as well or you can use things like spinners, which pretty much just give you the equal chance no matter which side you land. And you can make a spinner of arbitrary complexity. You could make a 20-sided spinner. It will look basically like a circle but you could. So one thing that Parlett introduces is this idea that games of chance are also some of games of imperfect information.

Games of perfect and imperfect information, what's the difference between the two of them? It's the first time we're encountering these terms in this class. But I wouldn't want to hazard a guess. What's an example of a game of perfect information?

AUDIENCE: Chess.

PROFESSOR: Chess. That Is a game of perfect information because?

AUDIENCE: Because all of the information you are going to be using in that game is right there in front of you.

PROFESSOR: Right. Players see all the games state, although Parlett says, but they don't know and one of them got out on the wrong side of bed that morning. They don't necessarily know how experienced each other is, and that's kind of weird is that part of the game was the outside of the game, right? And other examples of games of perfect or imperfect information?

AUDIENCE: Go is imperfect information.

PROFESSOR: Imperfect, which would--

AUDIENCE: Poker would be imperfect.

PROFESSOR: Poker would be imperfect because you--

AUDIENCE: You don't know the deck, you don't know what's in your opponent's hand, stuff like that.

PROFESSOR: Does poker always have to be played with a single deck? All 52 cards?

AUDIENCE: You could even not know how many cards, how many decks there are.

PROFESSOR: OK, you may not know. So that's a question too. When typically we play it at home, it's just one deck of cards of 52. You know that you're holding the King of spades. There's no other King of spades out there. But you play in some casinos, and they've got a five deck mix, there could be two kings in spades. Yeah? Poker is all about trying to figure out what other people have, and what's the chances. Actually, you already know what other people have, but it's all trying to read what's the chances that they've got something, plus what's the chances of your hand beating that? Because it's all the variance in poker, like Texas hold'em and everything, which have other kinds of cards that nobody gets to see, that everyone gets to see.

So perfect and imperfect information is kind of like a sledge hammer to deal with this, because you're not quite sure. Like random numbers or random cards that you're drawing from the five card stack, or random numbers that you're rolling out of a die is a very, very different quality to that piece of information than a card that somebody is holding and not revealing to everybody else, because it that's a fixed quantity. It's something that was dealt in the past, and Parlett describes it as sort of past imperfect information. And then there's future imperfect information, you're going to roll it and then and only then is that information generated even though no one knew it. No one knows that number.

So there's a scholar called Celia Pearce over in Georgia Tech, and she came up with a taxonomy just to help her discuss this with her design teams, and I thought it was really, really useful. So instead of saying imperfect and perfect information, we start off with what the obvious one, which is public information. Games of perfect information and games of-- all information is public, everything is public information. The state of a board in chess or in checkers, or probably fun computer games where this is the case as well, although multiplayer computer games-- but nothing comes to mind-- a of computer games take advantage of the fact that everyone has their own screen to do imperfect information. So when you start jumping into the realm of imperfect information that's private, which is the stuff that one person, at least one person knows for sure, possibly, if you're playing a team game, there's more than one person who knows this information for sure. If you're playing a game like bridge, where you're sort of communicating, but in codes-- if you've been playing with someone for a long time, you can get to the situation where even though I can't see your cards, I pretty much know what cards you have because you're my teammate and you're trying to communicate with me in a way that I understand.

There's random information which is stuff that you get from, say, drawing from the top of five stack deck of poker cards, or something that you get from rolling a die. Stuff that you can't really intuit, what Parlett calls future imperfect. Things that will be thought of, for all intents and purposes, that information introduced the moment you trigger that rendering-- that randomizing method. The moment you throw the dreidel, spin the dreidel, roll the dreidel? It spins, OK. The moment you throw the knucklebones, whatever it is, that's the moment when the information gets generated. There may be some probability in how you expect this to work out. Like if you're rolling two dice, you expect number 7 to be the most likely outcome, and number 2 and number 12 could be the least likely outcomes. But that information doesn't really exist until the moment it's generated. So what's missing?

AUDIENCE: There's information that's computable out there, so, for instance, when you're playing cards or something like that. I know technically that the rules are you can't see the round that's in play, but there's information which, if you were at a computer you would remember this information, but oftentimes it's a fact that you can't actually remember it.

PROFESSOR: The stuff that's hard to remember, the stuff that like-- let me see if I'm hearing you right. So for instance, the game off blackjack to a card counter is a very different game of blackjack for someone who sits down and plays for one round. Right? Because the game of blackjack for a card counter is aware that this five stack deck of cards has had a certain number of cards played out of it. And knowing, being able to remember how much has he played out of it has changed the actual percentage of what could come out. So what's been played before is technically public information. So previous rounds that were played out in the open, if you were really, really paying attention you could have seen that information. It's hard to remember, but you could have if you were a computer, if you're a video tape recorder, you would to be able to see that information.

But then there's all the other cards left in this stack that's already been shuffled, and it's kind of in a fixed order. It was randomized before they shuffled it, so then not it's been shuffled and it's just sitting on a stack. That's what Pearce calls hidden information. It doesn't even have to be like a five stack deck, it could be just the three cards that were dealt face down at the beginning-- is it three cards for Texas hold'em? Two? OK, the two cards that are dealt face down in the center, nobody gets to see that until right at the end. But they're dealt at the beginning of the game, like in the second hand or--

AUDIENCE: The public? The public cards? Oh, that's three.

PROFESSOR: Three, right. And they're down, right?

AUDIENCE: After the first round, they're face up.

PROFESSOR: After the first round they-- Yeah, that's right. It's a long time since I played hold 'em. So three cards, they're face down, but they've been dealt. So the randomizing, they have been triggered, the information is there, but no one knows it yet.

AUDIENCE: In other words, not really different from random information. Like the difference between like, I haven't actually dealt the card yet, and I've dealt the card and no one's sees it. It seems like hidden information that no one knows is equivalent to random, like it's hidden information that's equivalent to random information.

PROFESSOR: Not quite. There is a different quality with it, because that variable can no longer change in the rest of the game. Maybe the Texas Hold em one starts to get a little blurry, and it's--

AUDIENCE: But random information, like-- it's like players can treat-- like you can't treat it any different. Just because like if for some reason we've decided that we were, let's say I had a die-rolling-- let's say I wrote a die-rolling program and the random seed, and you are right-- no one knows what the next random seed was until what the next die-roll showed them. And you could say this is hidden information and not random information because the random seed i-- it already knows the--

PROFESSOR: Yeah, if you knew the seed and you knew the randomisation algorithm, then I would argue that information is no longer random. That's why they call it pseudo-random. It's not actually random anymore.

AUDIENCE: But it's random in the sense that no-one-- it's random with regards to players so that players can treat it as random information, because they don't know how--

PROFESSOR: You can treat it as random information.

AUDIENCE: So if you deal two cards out, face down in the deck, then at the time when you're dealing the first one, it's random?

AUDIENCE: Yeah.

AUDIENCE: But then the card that's the first one is a card that's already in play, and so when you take the second one, that card has a smaller phase of possibility. There is a specific card that that second one can't beat, the first one.

AUDIENCE: But we don't have to see it that way, we can just--

AUDIENCE: What I'm saying is that if you want to-- if you deal one card and you want to reproduce the exact same situation elsewhere and then continue dealing from the deck, then maybe you're going to shuffle the deck before you deal a second card, and then that new card is random-- the second card-- except it's random out of a smaller possibility. And it's not just random because there is hidden information that the--

PROFESSOR: That's one other thing that you're not taking into consideration, and that's the fact that before-- after these three cards in Texas hold'em are dealt out face down, there was no a chance to look at it, but everyone's gotten a chance to see some of the cards that already have been dealt. And that has already changed the likelihood of what that card could be down, because--

AUDIENCE: Just because something isn't perfectly uniformly random, chosen from the distribution of everything, doesn't mean it's not still random. So what I'm saying is just because like-- so if I deal a face down cards, and then I throw a face up card that's the five of diamonds, even though I know it's a face down card, it's not the five of diamond, it's still random because it's now drawn from an equivalent of random information, yeah.

AUDIENCE: I mean, this is perfect Schrodinger's cat, isn't it?

PROFESSOR: No, it's not, because what happens is that you keep getting new cards throughout the entire game, right? And these cards slowly get revealed.

AUDIENCE: I see that there is a distinction made between random and hidden for the purposes of the classification of games. There's probably a useful reason for it. I mean, sure, you can think of it as like now there's pendence between different cards and things like that, was probably just there for a useful way of thinking about games.

AUDIENCE: What I'm saying is I don't think it's useful, and I think it's a kind of predicament. I think that there's different relationships.

PROFESSOR: I'm not talking about statistical difference. I'm talking about what the players think about these three cards. They know the three cards are not being re-dealt every single hand. They know that no one can say, for instance, like someone can take the deck and shuffle it in the middle of a poker game. No one complains about that. You're allowed to do that. You can't re-deal another three cards. You're not allowed to.

AUDIENCE: It doesn't change the probability distribution.

PROFESSOR: It doesn't the probability distribution but you're not allowed to. The rules do not allow you to re-deal those three cards. There is a different weight that the rules have placed on those three cards that have been dealt saying those things are now fixed, whereas everything in that deck can be re-ordered. Your hand and your hand.

AUDIENCE: For a different example, is the game Clue, where you have like this one item, the one person and the one room, and that is the way to getting it. In some senses it's random, but it determines who wins the game, and so in that sense it's like you wouldn't think if it as random necessarily, and while your rolling to move around and discover these things would be random.

PROFESSOR: And that is actually also statistically different example, but a much clearer example of hidden information. Because that one, as you play the game, you are getting more and more and more information about what those cards could be. In fact, that's the whole point of the game, right, is trying to figure out what's in there. So in that particular case, that's hidden information that's random at the point when it was generated, but after that it is-- but as soon as people start playing, start making accusations, it's no longer random, it's just hidden information. So yeah, Clue is a much better example of that. Maybe the three cards and the Texas hold 'em are different. I still maintain that the quality of these-- they may not be statistically different but they are qualitatively different, because you can never re-randomize those cards according to the rules.

AUDIENCE: It's something players think about, not because they're-- I think the reason different players think about them differently is that--

PROFESSOR: Well, that's--

AUDIENCE: That's not true. That's just not true. The cards are down and they're down. You cannot un-put them down. So qualitatively, they are completely different.

AUDIENCE: When they're exactly the same, did you re-deal--

[INTERPOSING VOICES]

PROFESSOR: OK, he had his hand up first, so let me get with him first and then we'll get back to you.

AUDIENCE: It's actually also statistically different, because let me just simplify the poker example a lot. Let's say that we take one card from the deck and put it face-down, and then we flip a second card so that everyone sees it. And then, let's say someone gets it into their head to take that one card that was hidden, and shuffle it back in and deal a new one, that actually does-- The two situations where you do that and where you don't are different, because in the first situation, the card that was hidden had a equal probability over all 52 cards and followed-- and when you get one piece, the extra piece of information, after that your adjusted probability distribution is equal over the 51 cards. However, if you reveal that one card and then take it back, then if someone-- you don't necessarily have that card visible to everyone, for example--

PROFESSOR: But it's true that the example--

AUDIENCE: Two or three cards, it would be the same.

PROFESSOR: Yeah, you are describing a situation where someone's actually had a chance to actually look at that card, face-down, yeah. And that does change things because that becomes private information to someone else. So that takes it kind of outside of the realm of example, but yeah, I do agree that statistically there's not actually a huge amount of difference between the cards that are face-down and the cards that you're drawing off the top of the deck. And then get your hand and then your hand.

AUDIENCE: So the problem I have is first of all, statistically, there's no difference. Not a little difference, there's no difference. And so as a player, you sort of think about cards that are faced a little bit differently than cards that are in the deck. But if I'm playing to win, ultimately I have to think of them as mostly random.

PROFESSOR: Sure.

AUDIENCE: Like I have to think of them as what would probably be distributions of the cards.

PROFESSOR: Strategically, you could, it's probably advantageous for you to think that they're the same statistical, difference because they are. And I'm not disagreeing that statistically they have the same likelihood there. I'm saying that in terms of how the rules are worded, they are very different.

AUDIENCE: OK, so does the use of this definition come in when you're like just writing the rules?

PROFESSOR: When you're designing a game. Not necessarily when you're playing the game, but when you're designing the game.

AUDIENCE: One thing to think about is is when we were talking about that clear example, when you have something that's hidden, you can possibly gain information about it that will be useful, right? You gain information about what that Clue card is. There's no way you're ever going to gain information about what the next roll of the die is going to be, unless you're doing some kind of major statistical analysis.

AUDIENCE: But that's possible.

PROFESSOR: For roll of a die, yeah, I mean--

AUDIENCE: But it's still random, there's still a probability distribution over what it is?

AUDIENCE: Not really.

AUDIENCE: No, if you're rolling the die--

AUDIENCE: I'm not going through that. It's just theoretically possible that you could compute what the die roll is going to be before I roll it.

PROFESSOR: There's one very clear example when you can compute it, right? Because you know those dice are loaded. Yeah, you know those dice are loaded, and in that particular case you've got private information just in the same way that if you're using, say a pseudo random number generator.

AUDIENCE: But if you flip a Clue card more than once, it doesn't change. And if you get information about what that is, it stays the same, right?

AUDIENCE: Do you think that the Clue example is an example of private information?

AUDIENCE: No.

AUDIENCE: Is it an example of private and random information, it's not really like--

PROFESSOR: No, it's important to remember, to know that isn't information because no player actually gets to see what that card is when it is inserted into the envelope. For those people who haven't played Clue, what happens is that you've got a whole stack, you have three different stacks of people, places, and things that you can kill people with from the 1950s or something. And then you get one-- three-deck card shuffle, you pick up one card for each, and those three cards go into an envelope that nobody gets to see until pretty late in the game. And that those cards will never change. That's a very clear example of hidden information because at the point when they were generated, you're right, that was random. But then it gets turned to this piece of hidden information that everyone is trying to find out during the game. The whole point of Clue is that you're trying to figure this out. And there are rules governing who gets to see that hidden information, when, there's rules governing how you generate that information, and there are mechanics for you to be able to figure out what's inside there.

Let me see. There was another point that I was going to make about that. And it's true that if you, say we implemented that on a computer or any game that has some sort of randomizing thing in a computer, and you could figure out how the randomizing was being done because very few things in a computer are truly random. Then you will be able to, say figure out OK, the next die roll should be a certain number. The other day I talked about how when you play certain strategy games, and you had like a 50% chance of succeeding at something, then technically if you save the game right behind-- right before you did it, and you kept doing it, then you will eventually have 100% chance of succeeding, because you just keep playing it until you win. Unless, of course, it's a pseudo random number generator that is saving the seed, and so the outcome always turns out to be the same each time.

And if you have that information, that's actually private information. The question is, is that actually going to be something that you're designing into your game, or something that you just choose to live with? And as a designer, you get to make that decision. You get to decide things like, I'm going to save the random number seed when I save the same game. You can decide to reveal what you're randomizing scheme is to the rest of the world, and to a hardcore computer hacker, it wouldn't it be that hard to figure out what kind of method they're using. You can choose to say no, this is a very closely guarded secret. I'm actually generating it by analyzing this Geiger counter, and seeing when certain ticks come, I mean that's as close to random as we can get.

You can choose to do all of that as a designer, and the question is where do you want to set those limits for your own game? Things like, for instance, yeah theoretically, a pair of dice can generate any number between two and 12. But anyone who has played games for a certain amount of time realizes that 2 and 12 are really rare compared to 7. And there are games that take advantage of that, and there are games who don't take advantage of that. There are some games that basically treat a roll of 12 and a roll of two exactly the same as a roll of 7, especially like the race games. You move that number of steps but they're not like balanced so that 2 and 12 are expected to come up less often or more often. That's why you-- I've seen versions of things like Candy Land, where they replace the spinner with dice. And it's like, wait a minute, that completely throws off the likelihood that-- the way how the pace of the game works. But for Candy Land it doesn't matter. So you're kind of equally likely to win.

So for that game, that's something where you can do those types of substitutions. I think it is actually very, very useful to be able to talk about this when it comes to the design of your own rules. It's useful to be able to talk about it with other designers. Say he has this piece of information that we're storing early on, maybe because we got cards that are flipped down, maybe you got cards we're putting it an envelope. Maybe just a quantity of things in a bag or something, and then you have to reach into it and pull things out, like the bag in Scrabble. Things that sort of randomize in a bag, the actual which one you're going to draw next from it is somewhat random, based on some sort of probability. But the possibility of that could be public information. It could be hidden information. You might not know what the distribution of stuff inside that bag to begin with. And that's why I want you to be able to use these words in describing how things are working in your own game, to your own teammates, and especially to us. Because we want to understand what it is that you're trying to achieve with this bit of information. Hidden information typically is something that you're going to try to allow people to figure out over time. And that's a lot of that's a lot of stake over what that hidden piece of information is. Whereas that's not a whole lot of-- and it's kind of like shared among everybody who's looking at a piece of information. Whereas something that's random is usually, kind of at that moment it's really important, and after that it's not so important anymore. It has some sort of consequence that might be recorded in the score, but it's not like from turn to turn that particular role or that particular spin was all that important. Private information and public information tend to be pretty easy to talk about, so they're just useful terms to get people to discuss with each other.

And so I just want to introduce these terms, this is the taxonomy that was provided by Celia Pearce. It sort of expands on the perfect and the imperfect information because imperfect information gets kind of fuzzy because it has all these different versions. And now that I everybody who's planning on showing up today has shown up, we should probably start setting up for play tests. So is everyone sitting in teams? I think everyone's more or less sitting where you were, right ? Any questions so far on other questions based on what are we talking about? Like to clarify why I think these should be used differently. How many of you have changed your game mechanic by the way? What would you describe it as now?

AUDIENCE: Yeah, maybe deception.

PROFESSOR: Deception.

AUDIENCE: It's not built.

PROFESSOR: OK, something like laughing, something like faking out your opponent. Everyone else still pretty much sticking with what you've got? Is that still building?

AUDIENCE: You're building like a board.

PROFESSOR: You're building a board. I haven't see that part of the game yet.

AUDIENCE: Well, not building-- you're building on the board.

PROFESSOR: I think I need to just play our game to get it. Because it looks like [INAUDIBLE]. All right, so again, can I see which group has two-player games? 1, 2, 3, OK. And the rest? Who has four-player games? And you all have the be three-player games? OK, all right. So, wait, hold on, both of you are two-player games and then you played each other's games last time? Oh, you didn't? OK, all right then. Then that's easy, the two of you should be playing each other's games. Again, there should be observers who have recording material to be able to--

AUDIENCE: Is there a team of two playing the game, though?

PROFESSOR: No, don't play simultaneously.

AUDIENCE: OK, got it.

PROFESSOR: So that team comes over here, plays this game, then everybody here goes over there, plays that game. There's probably enough time for that.

AUDIENCE: Would it make sense if it all had two-player games on one set of tables?

PROFESSOR: I think it would help if just the two of you just came up here and brought your game with you. And then you can just like hang out here because-- we're only going to end up playing one of, either you're team's game or their team at one time. They're not going to play both games simultaneously. The rest of you, let's see. How many of you have your game ready to go?

AUDIENCE: What was your question?

PROFESSOR: How many of you have had a game ready to go? All right. I've played your game recently, you haven't.

AUDIENCE: I've not played this one. I've played an old version of that one, and I've played the one in the corner yesterday. I haven't played those two.

PROFESSOR: OK. [INAUDIBLE] Have these two groups played each other's games yet?

AUDIENCE: Probably.

PROFESSOR: You have? Then what I'm going to suggest is that three people from this group come over here and play this game first, all right? And then Rick and I will join these two to play the middle game, and then the four of you will play that game.

AUDIENCE: I've played that game already, though.

PROFESSOR: Oh, you have?

AUDIENCE: Yeah.

PROFESSOR: I think we can-- all four of you have played the same game?

AUDIENCE: Yeah.

PROFESSOR: Has it changed dramatically since the last time you played the game?

AUDIENCE: Not really.

AUDIENCE: How many tests of each game are we trying to get to? At least 2 play threws for each game?

PROFESSOR: Just one, actually. I'm pretty sure that after one they'll be things to change. And if we have time, maybe we can get one more.

AUDIENCE: Let me do a quick scan to see what other staff are available, and we can get--

PROFESSOR: Let's see if we can get a few more people to play that game over there. All right, so let me just change this up then. Three of you come over here and bring this game right now. OK? For the presentation at the end of assignment one, I do want you to talk a little bit about the game but don't explain the rules of your game before doing your presentation. That will use up all the time that you've got. Talk about a process, talk about what you started with, what you tried, what didn't work and what kind of changes that make you make. You know, what worked and how you rolled with it. I want to hear more about the story of how you got to where you are, because right after you do the presentation, we'll actually sit down and play each other's games just like today, only it's not a playtest so you don't have to do like recording or anything, everyone just plays games.

AUDIENCE: How is the presentation?

PROFESSOR: I think only five minutes. It should be in the syllabus. I thought I wrote five minutes. It's pretty fast. It doesn't have to be one of those like every single person on the team has to say something kind of thing, but if you want to organize it that way you totally can. I just want to hear about what is the story of the game. The other thing is that I actually did look up the situation with Texas hold 'em, but I am going to reverse my position. That is, I think, not hidden information. And two things swayed me. One is I started discussing it with a bunch of other game designers online, and I discovered that there are a couple of variants of Texas hold 'em, where you never deal what they call the flop face down. You just play it face up one at a time. At this point, it's just a random view from the top of the deck and that makes it-- it started to be the same either way, only just because they're listed, right, that it's basically a random deal. So yes, that is in fact random. That's a very bad example to use for hidden information, whereas the Clue thing is because the whole point of that game is that it gives you all these tools to be able to reveal this information. At that point in time where you put your cards inside it is random but then once it's inside and a person starts that's hidden information. Thank you very much.