EEP100 Lecture 28 (Dec 8, 2009)

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Is everybody ready to go? Yeah? Okay so…

Once again…course teaching and course evaluation up there when you're done, and the course learning over here.

Thanks for surviving the course; I hope you enjoyed it so far. Today is a review day.

I'll get into some logistical stuff when I talk about extra credit. But first I'm going to give you your bribes. And this is a lesson.

Anybody who has a peanut allergy; do not touch these things. They're cookies.

You should have brought those out before we did evaluations.

That's the lesson. So these are the peanut butter raisin things.

And there's two trays of those.

And on top of them I'm going to put (in foil) the walnut cranberry date things. And there are fewer of the walnut cranberry date. We will see if there is actually an exchange and trading later going on.   I will let you guys decide the market price. Of course it's based on demand, which is based on tastes.

And there should be enough for one for everybody. So take one, and if there's extra, then the gluttons can go to town. And try and pry them out. I actually left them in the trays. I hope you like it. And pass these around.

And if you don't want…feel free to not eat. I ate them, and I'm still alive, so they're good.

I made them; what are you taking about! I ground the flour that went in these things! My landlord's like, "You ground the flour? Woah."

It's Berkeley.

So I did not give you your bribes before you did the evaluations for an obvious reason. I don't want to influence you unduly, but there is the notion that I could've passed it out and said, "No, this should not influence you."

That definitely is cheap talk. So I put my cookies where my mouth is, and I excluded this from your contemplation in terms of my course evaluation, which is not on my baking skills, but on my learning skills. So hopefully that will be something good to eat, and the evals will be happy for everybody who reads them.

Is Jing here yet? Jing? Here's your regrade.

Somebody gave me a pen, but I don't know who the owner is. If they don't claim it right now, I'm keeping it because it's kind of nice. ASUC? Anybody? No? Pen? Okay, my property.

So you've got your bribes…extra credit, just for clarification sake, everybody who's working on these projects. Number one: everything has to be done before the final. Number two: if you do an extra credit project of any variety, I want it printed out and handed in on the final.

There was one person that said,"I'm going to send you an audio recording file on e-mail". That is acceptable. PowerPoint is…someone had some PowerPoint…I don't want to have 50 PowerPoint slides. So that's probably acceptable. But everything else should be printed out and turned in before the final. If you're contacting representatives…just as a clarification. You can contact (on the ethanol question)…you can contact up to 2 representatives and 2 senators. You shall not contact 52 of them and then write down the 2 that respond to you. So you put your stick in the sand and you say, "I'm contacting these two." And that is your good or your bad luck as far as them coming back to you. And you should put it on the sheet yourself. Don't send me the names and say I should put it in the sheet. I understand that you're sending the names as confirmation just in case some idiot decides to edit away your property rights, but you should add your name to the spreadsheet. Any questions on…

So if they don't reply, you have to…

If they don't reply, it doesn't count. If they send you a form letter, it doesn't count. If they say, "I love penguins." That's not a form letter, but it still doesn't count. So I will look at the replies that you get, and I will decide if you get between 1 and 5 points. If Senator Diane Feinstein says, "That's a great idea…I'm introducing legislation next week." then I will give you five points for saving the world. And you'll be world famous moreover. Not just that. So intrinsic and extrinsic motivation. Any other questions on the extra credit?

No? That's peanut butter. You guys can't talk with peanut butter in your mouths.

So they have to reply before the final?

Yeah. There's a deadline, unfortunately. If they reply the day after the final, and it's something awesome, send it to me. Let's say it this way…I'm not guaranteeing any extra points for anything that happens after 5 pm on the what…the 14th? 15th? 15th. Okay? 15th is when we're taking the final.

Everybody knows the final's at 50 Birge? Right?

How did the public goods games go in discussion last week? Somebody? Did it happen?

Yes.

Cookies left. Okay, seconds!

Do I have to lead this discussion here? Okay, yes?

I have an interesting observation. So…my group was really stingy during first round, but during the second round, everybody was putting their money into the group bid, so everyone would get their share of 200. But our group decided that we would rather have someone in our group win over anyone else, so we were allowing who had the most points from the previous round to keep their 50 and their individual ones to get their share of the 150, and it was funny because I had

been stingy the entire time first round. First I was into it; I never put any points into the group pot, thinking everyone else would do that? And then they still let me do that.

Okay, so what happened is...in two…in phase one, and phase two.

Phase one is where…I want to go with your comment.

Phase one was…remind me…everybody was in a group, but you didn't know who was in your group. It's anonymous

And you had been free riding the whole time. So you had the most points.

Yes.

And then in the second phase, it was a known group. I can't remember. Was it everybody scrambled up again? You were in new groups? Okay, that was good, obviously. Otherwise people would've said, "No way, Jose."

No, you were in the same group as the first time.

You were?

[student chatter]

Hold on. Say again?

In my section, they were in the same group as phase I.

That was a mistake.

Ah.

They should've been scrambled and started again.

It should've been…in phase I, you should've been in an anonymous group…you don't know who's there. In phase II, you should've been sorted into new groups. Maybe I made a mistake in designing it.

It wouldn't really matter…

It can create what's called a path dependency. If everybody's been defecting in phase one, and they say…no you know everybody who you've been working with, and they all defected last time, then what happened in phase I would influence what happened in phase II.

But we weren't supposed to show what happened in phase I.

But everybody saw the group totals.

It was on the opposite side of the page. So no one knew what your individual contributions were.

But you know how your group did.

Yeah.

Oh, okay. So let's say it this way. Maybe that was helpful. But then, on your group, they basically said, whoever has the most points, we're going to let free ride, while we contribute, so they can get the most points at the end of the session. So they're basically saying, "We knew you were free riding from before, and now we're going to reward you for it."

Yeah.

Which is very laudable, I would say, in terms of sacrifice. On the other hand…it was more like… at least somebody in our group is going to get the three points compared to someone else. So in that sense, I guess it kind of does work in terms of travel survival.

So Fei nailed it. He was thinking exactly the right thing. It's okay, you can do it either way. Doesn't matter. I wasn't thinking that way.

But what would happen…generally speaking; was there more free riding in phase I or phase II?

One

One. Mostly because…not the incentives would change, but the mechanisms of negotiation had changed in a sense. You're looking at who's in your group, and saying…either you're talking to each other and it could be cheap talk, because you could say, "Let's do this." And the decisions in phase II were still anonymous, as in people in your group did not see what you did.   Correct? Yeah?

But you could actually talk with either other and say, "can you please do this?"

And usually, people will say what they're going to do. Lying is much more difficult when it's face to face. This is just important. It's a human thing. I put this on my blog last week. Academic research that is so obvious that…why are we doing it?

Harvard Business School, surprisingly, or not, we're doing research showing that when people negotiate face to face, they tend to be more cooperative. So then you go from anonymous to known, and cooperation should go up. And generally speaking, that the way generically what happened on average.

Till the last one.

Until I the last one. That was even more interesting. So everybody was cooperating all the way to the end, and bang it became a one shot game. And apparently sometimes it was not even spoken that it became a one shot game. Right? So that was interesting in terms of peoples' strategy.

Any other observations from that?

It seemed like to be a winner, it was really arbitrary, because it really depended on the other teammates. If they were more generous then we would win, and if they weren't generous, then like…it wouldn't have worked out anyway. Because like…I mean, for me…I never contributed

to the pool…I always kept my 50 points, and I'm sure the other winner did that as well, but she still ended up with like 80 points more than me because her group was probably more generous.

Yes, but I'm not sure…that was in some ways a little bit arbitrary…I think…I don't know if the word you use was arbitrary. But on the other hand it was not nearly as arbitrary as the distribution of valuations on the auction game, right? Where some people literally came out the gate with a high valuation. And it made it easier for them to win. The mix of naughty versus nice or cooperators versus free riders that you were working with is not something that we can control or hope to control, right?

But it could determine the outcomes. But it was much more endogenous. There was much more endogeneity…especially in round two.

In these public goods games, as I mentioned before, the economic prediction does not come true. The economic prediction is that everybody free rides. If you get a group of economists, that's what happens. But when you get a group of regular folks, or people that are in econ…like you guys, that understand the pay off and the trade off, then there tends to be a lot more cooperation than zero. Right? And one of the best versions of this game, which has been played hundreds, if not thousands, of times by academics, is when they took a bunch of folks…just say…a group of everybody here, identified a group of freeriders, put all the freeriders in a group with each other, or groups with each other, and identified that you're in groups with freeriders, and then what happened?

They cooperated?

They cooperated. They knew that they…their strategy depended on having cooperators around them to make money, right? But they all knew…they were all playing this strategy.

That's one thing that we know from these public goods games. Yes?

I wondered actually…in phase I…there was sort of a hump…if you got above that hump as a group, you would go and put in more as a group, and the next time it would be lowered. So I was in a group where I was the only one putting in something in the beginning, and nobody else did, and I thought…well maybe the next time it will actually…and all the other groups already had more…

Yes.

But then actually my group, instead of going up, got less and less. Because I guess everybody figured, well nobody's put stuff in so…

And that's because, in the end, a whole bunch of people end up being reciprocators. They look at what other people do. Not just in their group, but also what the other…

Did anybody look at what the other groups were doing and change their behavior? Or just look? Did they change their behavior?

No…just maybe?

Let's say that it had some influence. Potentially, not on the margin. It's maybe a curiosity.

I did some research on public goods games that was…a public goods game very similar to what you guys played, and the computer screen...this was all computer.

It showed what you gave, what the group gave, and then…on one version of it, it showed the average for not you. What everybody, but you, gave.

If you know these two pieces information, you can calculate this third thing here. I actually did a version with only these two pieces of information, and how you do it? You take the group, you subtract yourself, and you divide by the group number minus one. Then you can find that average.

On one version I showed the average, and on one version I did not show the average. And the thing that was interesting on this is that the massive switch in terms of the shares of freeriders, reciprocators, and cooperators…

When that information was shown, the number of reciprocators went up by a lot. It went up by almost 20 points in terms of the share in the population. So the reciprocators, I think, was something like 60% of the population, and it went to 80%. And, essentially, reciprocators are the people that look at this kind of information, right?

The information was implied in the first one, but here it was explicit. And so when it was explicit, the number of reciprocators went up. Now here's 2, I thought, pretty interesting footnotes. Number one is that the average profits were identical. Like…withina point. And what that means, in a sense, is that if you have these two groups, and they were actually competing, to me, what it means…this is called…something along the lines of evolutionary stability. Evolutionary stable strategy. ESS. Anybody in ecology? Is that what it is? Evolutionary stable…anyway…these two groups were almost identical in terms of their payoffs. And if you thought of that in terms of two tribes that were competing with each other in terms of who is going to survive, you could not pick a winner because their payoffs were almost identical. Does everybody understand that? The payoffs as a group. Here's the thing that blew my mind. That changed. That swap was almost entirely driven by women who were changing their behavior.

And if you wanted to be generous with your explanation, you would say that women are the ones that balance out in different situations to keep the tribe alive…in a sense that they are changing their behavior to keep the payoffs.

They didn't even know what the other groups were doing. But they were much more responsive to the change in the dynamic in the environment.

I looked into the idea that girls can't do math, which is another idea. That gets rejected, by the way. Literally, there's a branch of experimental economics called gender. And so I wrote this paper…this paper is a nightmare in terms of not getting published, but the result is very interesting, and it was the girls that were switching their behavior and essentially keeping an even keel for their tribe. So that's more information on how these public goods games are played out. It's a very, very fertile area for research in terms of how we get along as folks.

Any other comments or questions on that discussion section experience? Yes?

It's just interesting because if you're playing for something like 3 points…I guess you want to just assume that everybody values that the same way, or like wants the 3 points. Because I don't know…it's like…my strategy…if you call it that…like I don't know…it's just like…I know I'm not supposed to put in 50 points each time to the group, so I guess I was probably really beneficial to my group members, but in terms of like...my returns, I guess I got a happy feeling of…

Right, warm fuzzies.

But I guess the second time through…but our group, just as a general…for the first round was like significantly higher than any of the other groups in terms of giving, and then the second time around, I guess we did something similar to that…like we just gave it to whoever was going to win…that kind of thing? So I don't know…I guess it's like…I just thought that was interesting.

No, it is interesting. The whole point is to think about…you're interacting with other people. This is the whole group dynamic. And some people think that experiments are not necessarily useful. It's called external validity. Can you do stuff in a lab and then go apply that outside. And they've actually done these lab experiments with civil servants in Indonesia and students in Indonesia on corruption.

It turns out that the students were more corrupt than the civil servants. They said…maybe it's just cheap talk…you're just doing it because it feels good. There's no real money at stake. They've played these games when you have a week or a month of wages on the table. And people, in especially things like the trust game, people will leave a month of wages on the table rather than do the wrong thing. So these intrinsic motivations of people are very strong, even when you put a wall of money as a motivation to defect.

In a sense, the behavior that you exhibit in these experiments tends to be behavior, which is very similar to how you would work out in the real world. It's an ongoing fight between experimental economists and what are called field experimenters. But one way or the other, we're getting insight into how people interact and act, and those experimental results are influencing the academic…the theoretical stuff that is presented in econ 1. Or it should. A lot of econ textbooks don't reflect this stuff, and they give you this kind of autistic homoeconomicus, who actually doesn't cooperate, ever. That's one of the things…the points I've been making in this class.

Would that somewhat change if you…let's say this game is played with individuals who each have feelings about…feelings that they want to be accepted or what if you play it with big companies or corporations where the name of the company...nobody really feels that's "me". And so like…say you have four power companies each putting into the public good…would they act differently? Because there's…

This is a point that a lot of people miss, I think, that companies are also people, right? Now, you could have…what I mentioned last week is that when you have 2 people that are monitoring on a punishment game, that they will actually say it's someone else's…it's his responsibility…oh, it's his responsibility. So you could have that effect; you could recreate that effect very easily in the game with companies. Companies being people. But if you put people in there and say you, individually, represent Exxon, or whatever, then that person will take that personally, right? And

in the real world, of course, they aren't an individual, so you do see this kind of…passing the buck. Placing the blame on someone else. But that doesn't mean that you can't…

You have to take that into account when you go back into the real world. And if you want to put individual responsibility on big people in corporations, then you say, "You are the face of this country." The way that they did with Sarbanes-Oxley legislation…where the CEO and the CFO would have to sign the financial documents personally guaranteeing that they were valid, or they would go to jail, personally. This is the kind of thing that does make a difference. Another thing is that when all of the investment banks…they went from a partnership structure to a corporate structure…so Goldman Sachs went from partnerships to…which means…in a partnership structure, if a company goes broke, you all lose your money.

But corporate, they had…it's like…now I'm Goldman Sachs, and you're my shareholders, and don't worry, I'll take care of you guys.

But when Goldman or Lehman (more importantly) goes bankrupt, then I keep my bonus, and you guys are broke, and that creates a principle agent problem. Partnerships don't have that particular issue. Other stuff on this? Right. Questions and answers on anything.

Sorry, I had…like a fourth point…with the game…

Public goods game discussion. Go ahead.

I've been reading articles about…because my research has been on like…India tribes and how they should like use their money, and it took more time than I thought it would because…I guess…it's…one of the authors wrote about how like…culture influences how people will give money…there's like research done on culture and how that influences economic behavior at all…like 2 different ways of analyzing it…because the thesis was that culture…like within the culture of the tribe legitimizes like the tribal council or whoever the government body is… [inaudible]

Well it depends on…culture…economists have avoided the word culture for a long time. Mostly, because you can't put it into the math. But you know…when you have your utility function, and you could say it's a function of the stuff you consume as reflected through this alpha parameter called culture, then…you might…

Alpha might…let's just say…this is what you consume, this is "I", and then you could actually say, "What about everybody else consumes?" and then let that reflect on a parameter called Alpha.

If you're a collective type of culture, then this "not I"…this weight on "not I" is actually very strong. If you're in an individualistic culture, then your weight on "not I" is weak. And this is well-understood.

The problem is that in homoeconomicus, we can ignore that, and that means we can do very simple math. But as soon as you bring in the idea that you might actually start to worry about other people, then the math falls apart. And so... "let's ignore that" has been the solution for a long time, but that's wrong. You have to pay attention to peoples' attitudes towards other people.

It's not necessarily altruism either. There's a certain warm fuzziness…how I feel personally. I don't even care about that other person.

The way that people will donate money to international aid…I think I mentioned this before… they put the check in the envelope, and then they're happy. They don't care if the check goes into the toilet, or if it's used for corrupt ends…sex for food scandal type of things. So that's the kind of stuff that really does matter when you're doing research about how people interact.

Yes? Good?

I had a question…I was reading Schelling and…can you clarify…

 You were reading Schelling?

I was.

Wow…oh hold on. I want to do a survey question. Hold on to your question.

Who here read Frank? This is like…we're all past evaluations, your course…you can be honest; I want to know. Who here liked Frank?

Was Frank the green one?

The green one. *The Economic Naturalist.* The green book! Who read…oh!

What was the second book called?

Was that Hazlitt?

Hazlitt…who read *Economics in One Lesson?* Okay, let's do it the other way around. Who didn't read the *Economics in One Lesson?* Okay. That's okay; I just want to know.

Who read and liked it? Who read it and didn't like it? Okay, good.

And then Olson. Who read Olson? Who didn't read Olson?

Who read Olson and liked it? Who made it to the end? Who read Olson and didn't like it? Okay. So you're still…you had read it, of course.

Schelling. Who read Schelling? Reading it? Who intends to read Schelling? Who intends to ace the final? Alright.

Sorry. So Schelling?

I just wondering if you could clarify what he meant by conservative quantities as opposed to…

Oh, of course. What the hell. Let me see. *He's talking about ski lifts…*

Ski lifts? So the idea of having a closed system…and he has a ski lift example in this. This is my…I'm going to give you my brief idea, but I could be wrong.

So you have a ski lift, and the people are going to go up. Let's say A are going to go up and B are going to come down. A will equal B on a ski lift system. That is a closed loop.

If you have people helicoptering in, or people going off on some other trail, then A will not equal B.

So you have to worry about accounting for where people go, and I'm not sure exactly what his point is…it might be that there's noise in the system?

Because he mentioned that people can making the lifts go faster would actually make everything to slower…

It's like this crazy…it's like it hurts your head to think about that, yeah. If you make the lifts go faster, then everybody's going to show up here at once, but they all have to come back down again. So you can never run faster than people are coming and going down the hill. So in that sense…speeding up the ski lifts…oh, that's right…so if you're speeding up the ski lift, you still have to get everybody back up again before they can get on the ski lift. And there might be a line here. If you slow down the ski lift, there'll be a line. If you speed it up, there won't be anybody. So that's kind of what I think is going on.

The book is essentially a discussion of dynamics though, right? There was a lot of rambling…

He's a rambling guy. He's one of those non-math guys who's not concise, but he discusses a lot of stuff, and he makes you think about it. And this is the kind of stuff that you can't do with Schelling. You can't mathematize Schelling, right? He was very famous for coming up with the concept of "focal point" right?

A focal point, for example, is that…if I sell you guys…we're going to have the final somewhere on campus, not 50…whatever…and not this classroom. And it's going to be at 5 o'clock on the 15th. But I'm not going to tell you where it is, but it's going to be where we all are going to meet.

Where…if you had to meet somebody….this is the generic idea…if you had to meet someone on campus, but you didn't know where you were going to meet them, but you know when, and you knew that they knew that you you were trying to figure out where they're going, and you're trying to figure out where they're going, because they know that you…they're both from UC Berkeley. Where would you meet? Where would you have the final exam? Now think about it for a second. And I want 5 hands up before I…

Can I ask a question?

You can ask question, yea.

 So we can't meet here.

No. Not here, and not the official here. There's a hand, hold on.

I need five opinions

I have a question. Can we communicate?

No, no you can't. You don't have cell phones anymore.

So, where?

Sproul.

Sproul.

Outside this building.

Outside this building…nice try.

Sproul

Sproul.

Outside this building.

Sather Gate.

Sather Gate.

I was thinking in the middle.

What middle? What's the middle?

So this is actually…there is no focal point. There's a coordination problem. I was actually thinking the Campinile. The tower.

Me too.

Me too. See? You guys are right. A.

But a focal point…and he gave the example…you've got to meet somebody on New Years Day in New York City. Where would you go?

A focal point in that instance was…people would say Time Square, which is a mess, or the clock at Grand Central Station. These tend to be focal points. It's not 42nd and Broadway. I don't even know if those two cross. So focal points are kind of a place where people…you think… where would I go, and where would you go, and if you know that I'm going there…you see what I'm saying? And it can be very imperfect, given that we would have had a problem with the final.

But that's the idea that Schelling came up with. Now…the reason I gave this example is… number one: you should pay attention to the idea of a focal point, but number two: you can't do math to figure out a focal point. It's just this huge mess called…trying to think of what everybody's thinking. There's no math involved. And this is the thing Schelling specializes in…these social dynamics, right? So, thinking…the book is to have you think about things. It might make your head hurt, but that's the idea.

It's just like the whole 50 people move here, and 80 people move there…like the whole back and forth thing…

Yeah, it is a little bit of rambling because it's just…the problem with the book is you can just keep typing away. But…sometimes it does deserve a longer discussion. Sometimes a discussion is too long. Sometime's it's too short. Other questions?

Can I ask a question about that…rival…what is the difference between a club and a pub? And why is one…

Club good, public good.

Oh, public.

Free as in beer. Any other questions?

Do we have essay questions on the final?

No. The final exam is 16 true/false questions (none of which have been written by me). And 7 or 8…or 6 or 8 long questions that are similar to your homework questions. Calculating, writing down…mathematical type of stuff. Very similar to the midterm.

No blue books; we're going to give you the paper. And you'll have plenty of time because it's three hours. This class session is 80 minutes. That's 180 minutes, and it's only going to be 50% longer.

Other questions?

What's in the top left box?

This is a private good. An apple, a can of Coke.

So Schelling…is that behavioral economics? Or what would you classify that as…

Behavioral economics is essentially psychology relabeled as economics. And it has to do with… experimental economics means doing experiments, which is using the experimental method—the scientific method. You can reproduce the experiment over and over again.

Behavioral economics has to do with…it's kind of strange just to say it's just like psychology, but you know…

Kahnemann…I think that's the right spelling…and Tueusky; these guys won the Nobel Prize. Well…I think Tueusky was dead. You can't win it when you're dead. But Kahnemann supposedly did research on what was called "risk aversion". That is something that I've mentioned to you guys before, right? There's risk neutrality, there's risk aversion, and there's risk seeking.

But what they found is that...when you're looking at a win, you had, essentially, a typical utility function in terms of your utility from a payoff of X.

But then when you're looking at a loss, it tended to be much more dramatic. The whole…in a sense…

Risk aversion is driven by loss aversion. So your utility from…this is the loss here. Minus x. And let's say it's an equal win, here. Or…let's be really dramatic. This minus X here. And you have an equal win; so the utility of X compared to the disutility of minus X…the disutility of minus X is much greater, right? If you have this kind of shape of preferences, you are risk averse because you have a heavier weight at disutility on losses.

This is the kind of thing I would have a final because this is the risk aversion…what it means in terms of the definition.

Do we need to be able to identify like…which situations are complete information and which one is incomplete information?

Yeah, sure. That's a good question.

The incomplete one is when the player doesn't know the other person's action, or the other person's payoff?

Let's see…help me out… I don't even remember…complete information….complete versus perfect. I think…complete…you know the payoffs. Is that right? Yeah. And then perfect, you know the moves. Is that right? yeah.

Do you know the payoffs too, in perfect information?

Not necessarily. You can have incomplete and perfect.

Would you know your own payoffs in perfect information?

No, you only know your moves. You may not know your payoffs. That's another 2x2.

For like…a poker game, would that be like incomplete because you know…like the pot that's in the middle, like…you know how much you're going to give out? Or is it also…

You have to know the payoffs from a given action in order to know the complete payoffs. Oh, but you're right. You don't know what the moves are…no, but it's not complete, because you don't know what hands people hold either. I'm not quite sure what poker would be. It probably is incomplete and imperfect. It's probably bad in that sense.

Is prisoner's dilemma complete and perfect?

The prisoner's dilemma is complete and imperfect because you don't know what the other person does as a move.

In the example you gave with The Princess Bride, the short man had complete information, but he didn't have perfect information?

Yeah, he didn't have perfect, and also didn't have complete. He thought he was playing a game where there was one poison and one not.

He knows that if he doesn't drink the poison, he's going to get off with the girl…and if he does, then he's going to die.

In that sense…yeah, do you have an opinion?

He doesn't know the payoff of the other guy. Because for the other guy, he thinks that if he drinks the poison, he dies…if he doesn't, then he doesn't. But…

That's true. He doesn't know the payoffs for the other guy either.

He thinks that if the other guy drinks the poison, he's also going to die.

He doesn't know that, right? He thanks that if he drinks the poison, he'll die. So he thought there was one set of payoffs. That was not true. It was incomplete. And even worse, he didn't know…he thought he had perfect information because he thought he only put the poison in one flask, and he put it in both. So…Sicilians shouldn't play these games…incomplete and imperfect.

Anyone else?

Can you go over the actual definition of risk aversion?

The actual definition of risk aversion is that…

Or explain that over?

Explain this over? Okay. Essentially…yes. Risk aversion…I'll give you the math and I'll talk about it.

It means that the utility from a loss, or the disutility from a loss, is greater than a disutilityfrom a win from the same amount, X. So, essentially, if you have a chance of winning a dollar…if I have a coin here, and I'm flipping a coin. And you have a chance of winning a dollar or losing a dollar…if you're risk averse, you're not going to want to make that bet relative to not playing the game at all.

Not playing the game at all, you have a payoff of zero. If it's a 50/50 chance, the expected payoff under the coin flip is zero. 50%, a dollar, 50%, not a dollar.

So…because your disutility from loss is greater than your utility from winning, the expected win is zero, but your expected utility is less than zero. If you're risk neutral, your expected utility is equal to zero because these are equal to each other.

That would mean that you would have this shape. That they're symmetric. You could draw a straight line if you want to. But they would be symmetric. That's the key. Does that answer your question? Other things? Other questions? Hold on. Anybody else? You had 12. You had 12 too. Anybody else have a question?

I just wanted to say…about the poker game?

Yea.

I think that would be incomplete because there are a lot of odds when you play poker, like if you really get into it…like everybody knows…

I think poker is incomplete, imperfect. I think…I mean… I'm ready to be persuaded otherwise, but I think that you don't know the payoffs because you don't know where you are in the game. You could calculate everything, but you don't know what the hands are.

Most professionals know all the odds.

Yeah. those are the payoffs, in a sense.

Like expected payoffs.

That would make it complete.

They know their own odds, but they don't know…what they do is that they guess the cards of the other person…

That's the perfect…that's imperfect, but complete.

Wouldn't that be incomplete though? Because they're not sure what the other guy has…

They know what the tree is; they just don't know where they are on the tree. So this is complete. They know what the tree is, but they don't know where they are on the tree. Complete, but imperfect. Let's just take that as my opinion right now, but I think it's right. I'm willing to be persuaded otherwise. Other hand, yeah?

I think it would have to be incomplete for this scenario.

Why?

Because you don't know when somebody's going to go all-in. I mean…you could guess where they're going to go. You're talking strictly payoffs? You can see what's in the pot, but…I mean…it might be that…you have no idea what the payoffs are going to be worth. That's why you're always go in when…

No, but that's imperfect. You don't know their moves.

But in terms of payoffs…you mean how much money are you going to win….when really, how much money you're going to in is in the pot, right?

Yeah…I mean…you know what the moves that are possible are. You just don't know where you areon that tree. So your uncertainty in poker comes from not knowing what people are doing. If you saw…everybody's cards are on the table. And you're paying poker, you would know exactly what to do and what they were doing, right? So I think the problem is not knowing their moves; which includes the cards they're given. Nature's playing in here too. Nature's throwing the random stuff out there. So you don't know nature moves, either.

But if you see the cards on the table; there is no doubt about what's going on. So you have complete information, but when your hands are in your…when you're holding your cards, you have imperfect information also. Okay sorry. Another hand?

Sorry. Going back to this graph…is it symmetrical for risk averse or risk neutral?

Risk neutral. It's asymmetric for risk averse, and with a heavier weight on losses. If you're risk seeking, there's a heavier weight on wins, right? Okay, now. Our popular two. You have a question still?

It was just answered.

Awesome.

For the risk aversion graph, which one is it because it has two tails on the negative side?

No, no, no. I just drew another tail. A different tail. It's not two tails.

Why doesn't that concave up when it's negative? Wouldn't it…because the rate of decrease would be greater…

It's just meant to be symmetric. Just like that. That's symmetric.

If you put a greater weight…if you have a shape like this…this is risk averse. And if you have a shape like this, that's risk seeking.

That's my point. Those are the three types.

So there is no inflection point?

The inflection point is at zero, but not here. This is risk neutral. Inflection point is when you change from one to the other.

For the seeking one…isn't it the same?

No…it's the opposite of risk adverse.

No, no. I mean the concavity.

I have no idea bout concavity. What?

Okay so the inflection point is when like…concavity changes.

Right.

But for seeking, it's the same from negative to positive.

No, this is meant to be like this. And if this is a smooth curve…oh wait, I see what you're saying. So you're saying it's actually just smooth like that?

Yeah.

Oh, do it against this point here. Think about it like that.

So this is actually…no…there is an inflection point going on here. I just drew it badly. Draw it again.

Utility. The expected payoff. So if you're risk averse…this is…

If you continue this line here, it would be like that. So there's an inflection point there. This is risk seeking. Downside risk is not as bad of a disutility as an upside…utility from win.

Other questions?

What are the actual definitions?

The actual definitions.

Like for risk seeking…how do you qualify as risk seeking?

You qualify as risk seeking…like I said with the utility function there.

Your utility of negative X (which is going to be negative) plus the utility of positive X is less than zero. That's risk averse.

So if you take a risk, and then you lose, and your satisfaction is greater than it would have gained from, that that's where you…

Yeah. That's what I said before about the coin flip. Your expected payoff from plus a dollar minus a dollar…your expected X is equal to zero. If you are risk averse, your expected utility of X is less than zero.

This would be…if it was equal to zero it would be what?

Risk neutral

Risk neutral.

And if it was greater than zero? Risk seeking. Awesome.

A different question besides poker and risks? Or not?

Whenyou're talking about incomplete concepts, what were you saying about the change in surplus? Like…destroying surplus from the initial deal…can you modify the contract…?

I don't know…what was I saying? I can start with incomplete contracts and we can see where I get to what you're talking about. Is that the idea?

Tell me about incomplete contracts. Okay. So…

We're talking about stranded assets? That kind of thing?

Yeah. I know what incomplete contracts are, but I don't know what the point was.

Well the point of incomplete contracts…if you have contract…you've got point one, point two, etc. Because of information problems (not action problems) you can never specify every action at every point in time. Let alone that you might have a problem with knowing what happens. But let's say you can't specify every action at every point in time.

So…you and I make a deal…I hire you to serve coffee at my restaurant. And you're serving coffee, and you're getting paid a wage. That's the contract. Then the restaurant catches on the

fire. And I say, "Take care of the fire; I'm leaving." That's not specified in the contract. There's an incomplete contract. You're going to be like, "Wait, I'm going to do whatever I feel is right because I have no…I have nothing to affect me in my contract in terms of my action in conditions of fire."

So you default back to…what would be in my best self-interest? That could mean: "I love putting out fires" because I'm a fire fighter. Or it could mean: "Get the fuck out of here".

So that would be a problem with incomplete contract. And we know, with contracts, we can never write complete contracts. I got into one that was a little bit…it was not an incomplete contract.

I was on eBay selling something, someone bought it; you win. And then they didn't pay me. eBay says…go through the adjudication process. Wait for five days. Be really nice. Send it to our committee of not doing anything. I'm like…screw that. So I sent it off a second price offer to someone else who did not do anything. They didn't accept the offer. And I have a friend who wants to buy it. And I send her an e-mail. Do you want to buy it? Bang. Yes. Should have done that in the first place, right?

But now, eBay might come after me and say, "You said you promised you would sell it to so and so." And now we're getting into disputes, right?

So who knows where that's going to go? Personally, I'm just going to ignore it and move on. But that actually was a complete contract that actually I just went away from, thinking that a contract is BS. I don't want to deal with that. Because the contract defends eBay. It doesn't defend me. But you have to figure out what to do when people go, essentially, out of equilibrium behavior on what you would prefer.

Now, the whole idea of a stranded asset (in terms of a strategic game), is that you have the railroad track and it goes to the mine, which is otherwise known as a big hole in the ground. And you have the first step, which is that you have a mine and no track. And there's Mr. A and Mr. B. Mr. A says, "This mine is not worth very much unless I start shipping away my ore." And says to Mr. B, "I would like to make a deal with you; would you invest a huge amount of fixed cost and then have an operating marginal cost, so that I will pay you an average cost…" so…less than price (you get some profit) based on a certain specification of quantity.

So they make a deal. This, in fact, is a complete contract as far as…I build a railroad, I ship out your stuff, you pay me money. Now, the problem is, in terms of just…pure game theory, is that before the railroad is built, B has lots of negotiating power called: "I will take your deal or not".

After the railroad is built, B has incurred the fixed cost. That's a sunk cost now. And B has much less negotiating power. Does that make sense?

Yea.

This is a hold up problem. The railroad's built, and then Mr. A says, "Hey, you know what? I think we should renegotiate our contract. I will pay you p less than p*."

Now…there were some people in the class that said, "Wait a second; now B is screwed in terms of the track…or…sorry…A is screwed in terms of not having a mine that's running." But, as I mentioned, A can just leave the ore in the mine. It was already there. But B has gone into debt, let's say, to pay those fixed costs. So that's why B is more screwed than A in that ex-post renegotiation.

Okay.

Does that help?

Yeah. I just had another thing about the surplus then.

Surplus? About what?

When you're talking about the painting example, if you want someone to paint the first downstairs, you're saying that…

Paint? Oh yeah, painter, right, go ahead.

But you're saying that takes awaysome consumer surplus because they would've paid more for that downstairs?

Give me more about the example.

Well…that was it.

Okay, kind of changing the contract in the middle of it, and it takes away consumer surplus because of what?

Because you can charge more for the other room…in total…more services?

I don't know if that…throw out that example. Don't use that example, or whatever you think it is, because I not sure what it is

Didn't you talk about the mechanic too? Like…you bring the car to the mechanic, you say fix the light, and then he goes in and he says, "Alright, you also need a new engine, and I'll charge you this much"…

That's not an incomplete contract problem. That's an asymmetric information problem. Principle agent problem.

Okay.

Yeah, that's principle agent.

So we can never have a complete contract.

Basically, yes.

Do we need to know what was in the guest lecture by Ties?

Yes.

What?

Do we need to know what was in the guest lecture by Ties. The Dutch guy. Oh shit. Yeah, it's on video, don't worry. 30 hours of video, woo! I think you guys saw the transcription note. It's kind of…you can watch the lectures in Persian and Russian and all kinds of stuff. The transcription…not that it's Brynna's problem, but the technology is not exactly synchronized. The words kind of…they show up early, they show up late, whatever. But it is quite entertaining to watch the subtitles go by.

Any other questions?

That'd be funny if you like swear…

I don't know what happens to the swear words; it'd be interesting, yeah. Did you type in the swear words? Often, right? I said, hey, high fidelity. Any others?

Do you still have office hours this week?

Oh, yeah. Office hours. Not today. That was two questions. So my schedule is really horrible this week. Is Diana still here? Are you…you're not having any office hours…you're clear, right?

Right.

Between now and the final?

Yeah.

So Diana's not doing anything. Fei is doing what?

I'm doing my regular office hours Wednesday and Friday, and extra office hours on Monday.

Okay, so you guys know that? So extra office hours Monday…when?

2-4. I sent an e-mail to everyone.

You sent an e-mail; that's right. Just in case people aren't paying attention.

The day before the final.

 I have…I can do…either office hours…I can do office hours and a review session, or just office hours, or just a review session. And I don't…the timing is of interest. So you're doing this thing on Monday, right?

Right.

So I think a review session closer to the final is often better. Do people want to do a review session? Number one: a review session—yes or no? Yes? Okay, that would be yes. And on Monday or on Tuesday? Monday? Tuesday? Last minute people. Okay. the final. The day of the final. No, on the final.

During the final.

Okay, it's Monday. Now Fei is doing something from 2 to 4.

What about Sunday?

Sunday…I just worked Sunday. I'm not working two Sundays in a row. Although I am working —just not on your stuff. So Monday at 4pm? A review session…I'm assuming one hour or two hours?

Two.

Any surprise there? So we've got a choice. We've got 4 pm, which is after Fei's, or we have… let's just say 10am.

10am.

10am say yay? 4pm say yay? Whoa. Come on guys. Oh, I have to get a room, though. I have to get a room. This is a problem because I can't get this room necessarily.

Just use someone's apartment.

It'll be a BYOB review session. I don't even want to know about your licenses. So are there any more suggestions on the floor about a time better than these two?

12?

12. I'm swimming at 12. I'm busy. Who thinks 12? Okay, see? Forget about it. Everybody's swimming at 12.

Hard core 10 o'clock? If you're serious. You only get to vote for one. 4 o'clock? Okay, 4 o'clock. Who can't make 4 o'clock? Why?

I have a final.

You have a final.

Work.

Work…whatever.

I have another review session.

Another review session. Should we move it to 5? 5-7? Is that better?

There's a final at 5.

There's a final at 5. So 4 is better. Okay.

This is last minute. Called: "I was reviewing it, and I have no idea about this." if you start studying after 4pm then that's probably okay…I don't know. Should be fine. I know the material.

Is this the same stuff Diana did yesterday, or is this like…

This is whatever…I'm going to show up, and you guys are going to ask me questions. I am not leading anything. I'm going to show up and talk shit. Or not. Shit…but it's relevant shit. On the final. You can ask, "Oh, is this on the final." And I'll say, "I don't know because I've already written the questions…"

So office hours…I can do office hours on Thursday morning, this week, at…anybody? 10 o'clock or 11 o'clock? Good or no? Does anybody care? If you care, raise your hand. 11 o'clock? 10 o'clock? 10 o'clock on Thursday, I'll have office hours. Any other questions?

Are we getting the evaluations back, ever?

The briefings will come back at the final.

Okay.

Your homeworks are back, your grades will be uploaded, etc.

Okay, great. See you guys…either on Thursday or on Monday or on Tuesday.

[Applause]

Thank you very much. Get a cookie, damn it.

Transcribed and checked for accuracy by Brynna Bunnag