

## **EEP100 Lecture 26 (Dec 1, 2009)**

### **David Zetland**

Okay everybody. Let's get going. I'm going to start now. Thank you everyone for handing in your briefings. We're almost done, so congratulations on that. I'm going to say a little bit more on the briefings in a second. I'm going to go over some logistical stuff. You'll be getting homework...

Homework 3 grades and the key are posted. You'll be getting them back at the end of next lecture because we don't want to have...

We are going to do a scrum like last time at the end of this lecture, so we don't want to have too many papers flying around.

I'm having my office hours today at 4 o'clock. Not at 12:30. I have to go experiment on students. So that'll be happening. Somebody asked me about my office hours on Thursday... normal time...I think...

*Normal time is?*

3:30. Unless I cancel them, and I'm not sure.

*So it's not usually after class?*

No, Thursdays are usually at 3:30. The evaluations are going right now in sections for your GSIs, so that's hopefully something you're enjoying doing.

And we should all be thankful to Fei for doing all of the grading on Homework 3. Of course there might be mistakes, which of course are my problem, not his. Just kidding. They're his problem. But anyway, they've been putting in a good amount of work. And as we wind down the semester, hopefully you guys will be getting the last tidbits of help from the GSIs. And Diana is sorting out all of your briefings right now. My evaluations will come out...you guys will be doing those on the last class...on next Tuesday. A week from today.

The final exam is on the 15<sup>th</sup>. It is not here. The final exam is in the room called 50 Birge Hall. That's just uphill from the clock tower. Yeah?

Next to Leconte. I've never been there, but I'm sure I'll find my way there.

Here's the format of the final exam. It's the same as the midterm exam, except a little longer. Which actually means that...given that you have 3 hours, instead of 80 minutes, you should have plenty of time. We're making it 50% longer.

There will be about 15 true/false/explain questions. 15 or 16. And there will be about 8 long answer, quantitative questions similar to your homework, okay?

Here's the bad news: guess what? It's cumulative. So the weight...the predominant weight is going to be on material after the midterm. However, there will be a possibility that we'll go back to some material just before the midterm. Especially stuff that we didn't necessarily cover in the midterm itself.

You will not see, this I will guarantee, you will not see a midterm question again with different numbers. But you might see something that we covered that we didn't ask about on the midterm. If you were looking to put weight down on your studying, I would say...put at least  $\frac{3}{4}$  of your time on post midterm material. And potentially  $\frac{1}{4}$  of your time on pre midterm material. As I mentioned, the goal is not memorization. Taking a derivative does not count as memorization, okay? You guys should know how to do optimization. But besides that, there will be a lot of commonsensical stuff come up in the true false, and there will be writing out answers for the longer answers. Any questions about that so far?

*The books before the midterm...are those going to be on there?*

All books...oh no sorry. The two books that were due before the midterm will not be on the final. The two books after the midterm will be on the final. Those will show up in true/false questions. I don't think Mr. Mancur Olson will be doing optimization. Any other questions about that?

*Do we need a blue book?*

No, no blue books. Everything will be written on the pages we hand to you. Same game as normal in terms of test taking.

A lot of people are going to be worried about the curve...their grades...so I'm going to say something about that. At the moment, the class average is 72%. That is a mean. Everybody know the difference between a mean and a median? The mean is 72.

I'm going to set the curve in the following way. It's going to be on the median, and the median will be at 80%. That means that half of the class...now this is assuming...this is what I mean. I don't mean that you're going to get a worse grade. If half the class is doing better than 80% then I'm not going to lower your grade. But if half the class is getting a 74 and below, I'm going to raise everybody by 6 points. Does that make sense?

So if you have an 84, you're going to get 6 points. You'll be at an A-. Does that make sense? Does everybody understand that? That's the curve.

*Why would you do it on the median instead of the mean?*

Because in the mean, people who have zero grades would drag down everybody. In fact, it would increase the curve for everybody. But we're trying to get rid of the outlier problem.

*Is the median of the class right now 80%?*

No. I don't know what it is, but I'll tell you what it is when I send out the grades.

I'm also going to pimp up your grade on section attendance. The way it's written on the syllabus...and I'm assuming this is not objectionable. On the syllabus it says you will get 10 points if you have 100% attendance or you miss one section. And then you get 5 points, you drop 5 if you only have 2 or 3 absences. And you get zero if you have four or more absences.

I'm going to change that. It's going to be much more gradual.

So 0-1 is 10. 2 is 9. 3 is 8. 4 is 7. And so on. So if you miss 11 sections, which I think is actually impossible, because we had 10...you get zero. Does that make sense?

That's what we're going to do for grading section attendance. That cliff between 10 and 5 was a little bit dramatic, and people that were being excused for doctors reasons and all that stuff, they usually notify me. But if they notify GSIs, that will not count against you.

That's logistical stuff. Any open questions about anything...new?

Now the briefings, as you handed them in today, and they're gone...disappeared...

As I've mentioned a million times, we're doing peer grading. It is single blind because your names are on it. Some student asked me...said it was difficult to find her post on the blog, and as graders, you will want to look up the original post. If they don't actually post...on the e-mail I sent last night I said you can put your original post date. Some people are changing the titles of their briefing, often because I mangled their titles because I tried to make it nice to fit into the line. If you need to find someone's briefing, type their name into the search box on the blog. Okay?

That'll save you a lot of time. That's my hint. The other thing is...when you're grading, you're grading on the economic analysis on these briefings. So just think like...they're doing economics, you're doing economics, and as before, you want to do a summary. You want to say what you like, say what you dislike, but put down your economic analysis of their analysis, right? Your responses to their responses.

"I liked this briefing" does not count as...well it could count as a pro comment, but "I disliked this briefing" does not count as a con comment, okay? You have to explain why. And that will come up because we (the GSIs and I) will be grading your grading and making sure you're doing careful economic evaluation on an economic basis when you're doing your grading.

As most of you hopefully found out, there was a lot of very thoughtful commentary on your briefings by the graders, by yourselves. And I actually felt that was pretty good. I don't know if some people felt it was unfair, they got the wrong grade because they don't deserve it or whatever...but the whole process of peer grading, in my opinion, is a good exercise in learning about how to be critical readers, but also, it's learning about how to talk to each other. As your peer group. And I'll get into a little bit more about that. But I thought it was very, very good in terms of the quality of the work that you guys were doing in terms of grading each other. And that was essentially my point.

As I mentioned, it was an experiment, and I was very pleased with the results. And we'll be doing the exact same thing. And remember, formatting, when you turn in the formatting of your grading of the briefing you're going to...what I'd like you to do is write the name of the person you're grading on the upper right. Just where the peer is right now. Write your four digit SID up here. Upper left.

You want 2 copies of each one. You want to staple your grading on top of the original. If that does not happen, we the graders will take points off. Some of you might have noticed minus one point because you only handed in one copy. That's because we had to go make a copy of your

grading. And that's a pain in the ass. And if it's a pain in the ass for us, it's minus a point for you.

If you wrote it in pencil, you lost a point. It's a pain in the ass to read pencil. Especially when I say type it. Everybody knows how to type. I couldn't believe it, actually. Somebody copied their handwriting. That was pretty impressive.

So...type it, you see, does anybody have any questions about this?

So it's the first copy...then it's the original....

No, the originals are on the bottom. 2 copies. Okay? Because what we do is: we grade your grading, rip that off, and that goes back to you. The grade of that other person goes back to them. They're staple together still, right? That's the whole point. It's a paper flow problem. When we're dealing with 300 pieces of paper, we really have to watch what the hell is going on. As you guys saw when we tried to hand these things back...it's a complete mess. Any other questions? I'm sure I'll get e-mails saying, "Oh my god, where do I put my SID number?" but I'm just trying to nail this down as soon as possible.

There's another...I had an interesting e-mail from one of your peers. And he said, "Well, given this is peer grading, and given that if somebody gets a better grade..." Now how does that work...if it's peer grading, then we're grading each other, and if I give a bad grade to the other student, then my grade in the course will go up. That was the logic that was presented to me when the student wrote the e-mail.

So, he went on...what I should do is give the best briefing the worst grade, and the worst briefing the best grade in order to screw over the person that was doing well so that they come down to my level (I guess). And now actually, I have to say, this has to be his actual, personal thought and action, but he was worried about other people doing that to him, which is a concern. You always worry about that other person.

So the logic would be to screw the person who did the best job, give them the worst grade, and then give the worse paper the best grade.

Now, I had some responses to that. My first response is that you, as an individual, will have no impact whatsoever on the total. Because there's 270 papers floating around, or 1 out of 90... 1/90<sup>th</sup> you can affect by this interesting method of grading. But the other one is...what would happen if every body thought the same when they handed in their briefing? How would they write their briefings? If you're smart, you would write the worst possible briefing, wouldn't you? And then everybody would write crap. And I would have to fail all of you for that strategy, because there's this kind of omnipotent problem. But the problem is that everybody would write crap. I'm not...and actually, I forgot to ask him, given your strategy...did you write the worst possible briefing? But I don't know. Hopefully, he wrote something good.

What I told him to do is do the right thing—give the best briefing the best grade, which is obviously what works. And let me say a little more about that...and importantly...is this idea... this peer grading...actually relevant as a...is it my little good idea or is it my fetish or is it ironically appropriate to this class?

This class is environmental economics and policy. We were talking about...what's that book? That Mancur Olson book? What's it called?

### *The Logic of Collective Action*

The Logic of Collective Action.

And your first briefing was what? How to solve a problem where you have...you're writing a briefing for a politician, and the idea is to help the many at the expense of the few. Who's had section on Monday already? You guys played a game in a section. I'm not going to spill the beans for the people that are going to enjoy other sections, right? But in that game, you are learning more about collective action problems.

This peer grading is actually one of the most applied collective action problems you can think of. Because you can go around and say...I'm going to screw everybody else so I can make myself better off, then everybody ends up handing in crappy briefings, and then the advance of knowledge is zero.

Now the worst thing is that you might be doing quite well with respects to your peers in this class, but the kids over in Chem 192, who have managed to cooperate in producing a good outcome, will come over here and destroy you all in terms of tribal warfare, right? I want you to think about why we have collective action. Why, actually, our society has a very strong notion of what is fair, and very, very strong notions of dealing with cheaters, and imprisoning them or punishing cheaters. And I'm not just talking about infidelity in a marriage. I'm talking about thieves who are killed immediately in the markets in India (often, as they're caught). In other countries, right?

The whole idea of our society is that we want to punish cheaters because the tribes in the past, if you want, that didn't punish cheaters...they decayed. They all bickered. Until some other tribe came along and beat the shit out of them. And we're them. The reason our social evolution has gotten us to this point right now is because we cooperated better than the other folks. And when it came down to war, you know, some of us went off to fight the war, and the other ones stayed back to take care of the household. And the people that went off to fight the war. The people that were back home...they didn't just like...you know...run around and eat all the food and screw all the women and say, "Who cares about the fighters?" when the fighters came back, they were heroes because there was cooperation.

That is why we have Homer and all that stuff, right? And things that...if you look at any kind of religious text, they emphasize the necessity of cooperating. Some think that's because god told us to; I think it's social evolution. This class, and this grading mechanism, is applied social evolution. And what I want you guys to think when you're doing this grading is: am I going to run this good essay down because I feel like it will make my chances of a better grade better, or am I going to help my peer improve their knowledge and exposition. And so they go out and do a better job in this world. That's why I'm doing peer grading in this class. I would probably do it if this was math, but it really applies in this class.

The Copenhagen talks are in the news right now. Obama's going there with nothing except nice words, the Chinese say, "We're going to try". The Indian's are like...forget about it. The Europeans are tearing their hair out...right now we are in the middle of the biggest collective

action...applied collective action ever. Climate gate aside, it's been very interesting to follow that. Climate gate? What I was talking about with the scientists that were throwing away original data and leaving behind their smooth data to show their opinion. Those guys should be shot, right? That kind of stuff...besides that, it is my belief that there still is a climate change problem. And you know...even if there isn't a climate change problem, we still have endless social cooperation problems to worry about, right? If climate change wasn't happening, it'd be war, it'd be hunger, it'd be something else. So trust me. This is not just a one shot game. So, in that sense, this is very, very applied.

And those of you that are feeling nervous about trusting your peers should use that nervousness as a learning opportunity to go out in the world, and you'll look at collective action problems. You say...oh, you know what? I was worried about my B+/A- split, but maybe, actually, the whole idea of public transportation...or paying taxes...or voting is actually the same problem.

And maybe all of these really difficult problems, and the things that I was working on in this class, I could work on...if I'm going to work on public transportation or whatever.

So that's essentially...I think this e-mail from this guy was interesting, but it got me to thinking. Is this a complete waste of time, or is it my fetish? No it isn't. It is a very good pedagogical opportunity. And hopefully you guys are being pedagoed correctly in terms of what's going on.

So...that's a little speech. Any questions about that or other things?

I will get into more collective action stuff in a minute.

So do a good job grading; make the world a better place. And go to section and play the game. I'll talk about the game next Tuesday.

So let's get to an example....

Oh...I want to cover some jargon here so you have it. It was on the syllabus...

Bounded rationality. It's a very simple idea. It basically means that if you're a rational being and you're trying to calculate the cost benefit of any given action, that you're going to want to calculate the costs and benefits, but you're imperfect. You're not a supercomputer. You're sitting there trying to figure out...well...if I buy this can of tomato soup, the sodium is higher than this can of cheaper tomato soup...lower. Lower than this can of tomato soup, and I'll have more money if I buy the cheaper stuff, but it's more sodium, and sodium will lead to high blood pressure, and blood pressure can affect my life expectancy, and I'm thinking about having kids, and if I have grandkids, and I have a heart attack, I'm not going to see them when they play the baseball game and...there is a limit to how far you can go, right?

You are bounded, essentially, by either time or uncertainty or risk in terms of figuring out what's going to happen. But what you do is you make a decision, based on your boundedly rational thought, right?

You basically have limits to how much you can consider at any given time on your table...on your plate...you know how much stuff you can put on your plate to think about...and you make a decision based on that.

Bounded rationality, essentially, is kind of an excuse for people making mistakes, which, surprisingly, they do. I put up a blogpost last week about bubbles in financial markets...asset markets? Anybody been noticing there's been a bubble in the real estate market? Now I saw a headline today...someone is calling a bubble in the gold market? Gold is at 1150 dollars an ounce, I believe?

And the whole notion...the research has been done on bubbles by either...today's going to be talking about the great work of other economists. And they've done in experimental laboratories (the same kind of stuff that I do) based on forming bubbles and watching how they form and how they pop. And they're based on having a mistaken idea of the value of something.

And someone just says...oh, yeah, actually, I think it's going to be worth more.

They make their forecast. And someone else says, "Ooh, you think it's worth more? Then maybe I should think it's worth more." And as you guys might know, the best thing to do in a bubble is to sell at the top. The problem is...we almost never know where the top is. And if you sell against the bubble...if you're a short seller in a stock market...a short seller is somebody who bets on the price going down. If you're a short seller in an equities market, and the price is going up...the higher the price goes up, the more money you are losing.

So if you're short seller, you're thinking the market is overvalued. It should go down. But if the price keeps going up, it will bankrupt you. Never bet against the wall of money. That's my little bit of stock market wisdom. So the thing is that bubbles do form because humans run, and they all, collectively, get into this kind of dream state of...my house is always going to be worth more forever and ever. Until, suddenly, the bubble pops and everybody's house is worth 40% less. And you say, "I should've sold at the top of the market." But usually don't. You guys can figure out how to handle your own investment bubbles, but you should know that it's based on this same idea of bounded rationality...making the mistake of calculation. Because we're all imperfect.

You'll notice that most academic economists don't invest in anything...they have tea bills. But they talk a lot about it, right? It's like...that's for the people out there to lose their money on. Most academic economists don't care.

I mentioned that cheater detection is extremely important. When we play games...remember I mentioned to you the trust game...where one person A, starts with \$10, and it passes someone that money to person B, so X goes across, and whatever shows up is 2X, and B decides to send back Y. Remember that description? Yes? Okay, so...I mentioned to you that the normal thing...the best thing, of course...social optimum is to send 10, 20 over here. That person says hey, you trust in me, I'll trust in you I'll send back 10. That's a very common response...sending 10. But as I also mentioned, the autistic economist (the person who only took econ 1) who doesn't get it will say, if I trust that person, he'll keep all the money. So I'll send nothing. So they end up with 10. Oh shoot, I forgot. Anyway, there's something wrong with sending zero. Oh I know why; I drew it wrong.

It's called an ultimatum game. A variety of the trust game. Let me start again.

A variety of the trust game is called an ultimatum game. Person A proposes a split with person B. I've got 10 bucks. I'll give you 5, I'll give you 1, I'll give you 0.1. I'll give you 9. They

propose a split with person B. And B either accepts the split or rejects it. If he rejects it, then neither gets anything. So the most common thing to do when you're playing the ultimatum game is A will say, I'll give you 5. And B will say, I will accept.

And they end up splitting the money 50/50. See where I'm going there?

I can get back to this other one...the trust game...later. When person A says...I'll send you a dollar. And Mr. B, as a rational economist, you should consider zero or one. Which do you prefer? One. Remember doing those game trees? One dollar is bigger than zero. How often do people who are presented with a choice of one accept it? Anybody? Who would say, "I would accept it" if you're given one? Raise your hand high. I'll take one.

Who says, "I'll reject one. I'd rather have zero."

It turns out that about 90% of people reject one. Because it's just not fair. Especially since, as you guys know in the auction game, you just ended up with 10. You didn't even earn it. Didn't even deserve it.

When you play this game, and the person actually has to work to get the money before they offer it, it could change the dynamics. But if you just say, "You get \$10, and you guys are playing the game" and you offer 1, most of the time, she'll reject it. Especially if it's anonymous. Sometimes they might take it.

But economic students who are trained in game theory might accept one, but those people (the world...the people with the ladder on their truck) will reject it. And here's the interesting thing. If you put a 3<sup>rd</sup> party out there who's watching this game, or watching the trust game, and they're watching what that person is doing...usually the people know they're being watched. If you sit there and say...you've got \$5 just to do your job called "watching". And you watch what A does. And if you want to punish A, you can spend \$1 to take \$2 away from A.

So when A offers a \$1 (or some variety of offering to split), it's very common to CC punishing heavily. You only offered \$1? I'm going to spend \$3 to screw that guy over. I'll spend all \$5 even. People will pay to punish other people.

And this is...you know you can go back to an eye for an eye or whatever you want to call it in the Bible, in the Tamed or whatever. Every culture has a notion of punishment because cheaters shall be punished. I'm not saying this as some kind of religious thing. It's just there. It's part of our evolutionary psychology. You put them in a laboratory, you give them the opportunity to punish, they will punish. They love it.

And they put them under the CATscan machine? They do brain waves. And they watch people cheating, and they watch the brain waves when they're cheating...people freak out. Their brains go WAH because they are really upset. And if you give them the opportunity to punish...if you put a gun in their hand, they'll shoot them. \$5 is nothing. They'll shoot them. So I'm telling you...the cheater detection is a very, very strong impulse in our society. This is a little bit jumping the gun in terms of what you guys are doing in section, but it is important and I have to bring it up.

*Does that defy game theory and rationality if you're paying to punish someone else?*

Depends...the question is: does it defy game theory and rationality. It depends what you put in this thing. What goes into your utility?

If you only care about I, me, then potentially you could be like...\$5? I don't care. And sometimes people...there was this famous example of the woman who was being raped, I think? Or killed? Or stabbed in New York in the 70s and everybody just kind of walked by or didn't pay attention. It's like...oh...that's New York. And that can happen when people are alienated from each other. But, you know...go to the opposite extreme. Go to the village. If somebody takes a clothespin off your line, everybody knows.

And it turns out that in those situations of a public attack, that as soon as one person starts to move, everybody kind of wakes up and starts to move. There's that first mover disadvantage. People are afraid. I heard about some cop (a bad cop) went into a bar and started beating up the bartender who was a woman, while all the male patrons sat there and didn't do anything.

Apparently in Chicago, you do not contradict Chicago cops. Because the cops together will...as a group, they will defend each other, and if it turns out you died in custody under accidental circumstances...hanging yourself by a cop's belt, then they will...no one saw anything. The video camera failed for some reason. It happens, you know?

And when you talk about addressing power structures, this kind of stuff starts to matter because it becomes...who watches the watchers? This is the thing that I pay a lot of attention to. Where do you address corruption?

*I thought the case in New York was a woman being raped or whatever, and nobody helping her was more of a...nobody feels responsible...I heard with that...if you actually have a problem and need help, if you approach one person, and only one, and I say, "I need help from you." Then that person will do something. But if you just say, in general, "Help me!" then nobody feels...like there's no clear role or whatever. It's your responsibility to be punished.*

Right. And it's the same thing. This person knows their job. But if you sit there and say...oh they've actually done this experiment too: Both C and D are watching, and they both have \$5 to spend on punishment, and they're both like, "Your job." So no punishment happens. So... exactly what you're talking about.

*They did this psychology experiment where they told people that they were taking a test, but really they were testing whether or not people would follow their intuition, and in the other room, from the vents...there's like smoke coming out and yelling from the room, and when there's a group of people taking the test, everybody kind of freezes, but when there's one person, they go help them out.*

Absolutely. Yeah. Exactly the same thing.

There was even something more ridiculous where there was a group of seminary students were told...something like...you have to go to building B. And half of them were told...go to building B and I want you to give a talk on the Good Samaritan. I only know the Monty Python version of the Good Samaritan. But someone who wants to help out someone else. That's the idea. And the other half were told...you're going to go give a talk about whatever. Sermon on the Mount. Or Wine and Water. Or something like that.

And they actually had...they sent them down the path, and then on the path there was some dude that had fallen down... "Oh, my leg, my leg!" something like that. But they had to get to building B on time. they were late, right? And the people that were prompted (that's called prompting) by the Good Samaritan story stopped more often, I think. They didn't...of course they didn't stop 100%. There was the whole... "Dude, I'm in a hurry. Your leg. Whatever." And they would do that. Seminary students! People in training to be of service to the community. And the people who were going and giving a general talk, they were like, "Yeah, whatever." And fewer of them stopped.

So there's a lot of things that matter in terms of feeling and communication and you know...if you're thinking about this, not just as you go through life, but if you're designing mechanisms, and you want to have impacts on social norms or environmental issues, think about the psychology, and think about the economics.

Behavioral economics is just, essentially, psychology relabeled/repackaged. So we are stealing a lot of good ideas from the psychology people. So that's all about cheater detection. It's very important, and it comes up a lot.

Risk aversion: important concept...I mentioned it to you. I just want to give you a small example of a real world thing with water.

I realized that most of the semester, I've kind of mentioned water now and then, and obviously it's my day job. I talk about water all the time on my blog, but this is a...I'm not going to regale you with more tails of water screw-ups, as far as I know. But there's a place in Southern California down here called the Imperial Irrigation District. Who's heard of the Imperial Valley?

So Imperial Irrigation District...the Colorado River goes right around here. And California gets 4.4 million acre-feet of water from the Colorado River every year. That's the legal entitlement. The river doesn't necessarily have the water, but it's ours. There's a problem with climate change. In California, a grand total of about 40 million acre-feet is used for agriculture and not environment...agriculture and urban use. Municipal Industrial is what it's called. Ag-MNI. This is about 20% this is about 80%. I don't need to get into the whole, long debates about those things.

So about 10% of the water in California comes from the Colorado River. About 3 million acre-feet goes to IID. And a little bit more goes to some agricultural areas. And the rest goes to Los Angeles. Now here's the key. You've got (don't worry about the names right now). I'll just call it IID et. al. They've got 3.85 million acre-feet. The next 0.55 million acre-feet, go to a big organization called the Metropolitan Water District.

That's urban water. This is ag, this is urban. This is 4.4. And...this is kind of a long story, but it's an interesting story. So if there's a shortage, the urban get's cut first. Now if you're sitting there going, "What the fuck?" It's okay. It's water. It's normal. IID was told: "You have to use less water" because they're using flood irrigation to grow Alfalfa. If anybody's sitting there going, "Oh my god, growing alfalfa in the desert?" This is it. These are the guys. So they were told you have to use less water.

And the management of IID managed to do the...almost worst possible solution. I couldn't have thought of a worse possible solution. Because what they did is that they told the farmers...in the

old days, it used to be: use as much water as you want. That's fine. We'll just charge you for what you use.

And then, they're like...uh oh, there's not enough water. You have to use less than...I'm going to say 5.5 feet.

So that means 5 ½ feet of water you would put on your ground. That's irrigation, right? An acre-foot of water is 326,000 gallons.

They pay \$20 for that. Or 326,000 gallons.

Next time you buy a bottle of water at the store, remember how much you pay. I figured it out... at the airport it costs about 5 million dollars an acre-foot. Million, right? They pay \$20 per acre-foot.

So there's this difference in pricing between Ag and urban.

*Would the water be different...*

Well...it's fit for food, but it's not strictly the quality difference. There's a difference between the rights to the water. That's why it's cheaper. The water in the airport...not only is it bottled in spring with supermodels...

Did you ever see Colbert do the bottled water thing...around the world? It's just insanely funny.

So bottled water is different because it's in a bottle, it comes from Fiji, it's cleaner (a little bit). But this water is cheap mostly because it's very strong property rights to keep the water first. But regardless of that, they were used to paying \$20, as much as you want! And then they were told, "Wait you've got to put a limit. You can't use more than 5.5 feet."

And it turns out that agriculture is not a precision science. You don't go exactly up to 5.5 acre-feet and say, "Stop." Or "Put it in your holding tank." 326 thousand gallons of water is a lot of water.

So what the farmers are doing is they're running out...they're cutting alfalfa in their irrigating. And they said we can only...we can't...if we do three irrigations, we know we use between 5 and 6 if we do three irrigations. But if we go over, we're going to be penalized. They were told, "You will be penalized." Punished. Bad to go over that.

So risk averse farmers...what did they do? They only ran 2 irrigations. Because they're like... you know what? I'm not going to run more than I am sure to stay under my limit, and I'll run two irrigations. And that meant they were firmly below the 5.5. There was a lot of safety margin here. Now here's the interesting thing. This is where it starts to get more interesting. Because of risk aversion, they were more conservative. They didn't run it up to the limit, right? Because they didn't want to pay that penalty.

And the penalty might have been...instead of \$20, it would've been like \$30. But even still, they're like, ooh \$30? That's a scary number.

They had a World War 3 trying to get from \$20 to \$17. It took them four years, I think. So the farmers use less water, and, therefore, IID had a surplus of 200 thousand acre feet of water. They used roughly about 6% less. Now where did that water go? It went to the junior holder of water rights (The Metropolitan Water District). And metropolitan values this water as roughly \$200 per acre-foot. So using these numbers (I think I used different numbers before). Using these numbers, IID kind of sent \$40 million of water down the river. Those farmers would have loved to have seen \$40 million dollars of cash from selling that water to IID.

But they didn't, because they basically just screwed up. They didn't say, "They'll use less, we'll sell you the extra." They set this arbitrary thing here, and the farmers responded by going below it, and if you're doing your game theory, you'd say, "Wait. If I set this limit, are the farmers going to hit this limit exactly?" No, they're going to become conservative.

If they're conservative, there's going to be surplus water. Where's that going to go? We're not going to store it; it's just going to go down the river. "Wow, maybe we should be clever and sell this water to MWD before they get it for free. Except that they weren't that clever. So \$40 million of water went down the river, and Metropolitan said, "Thank you very much. I'll take that." Now the citizens of LA and San Diego, and all that, they love getting their laws irrigated, because now they have greener grass. But that was an example of, if you want, an implied risk aversion in terms of...and I call this a massive screw up. I actually think there might have been...I have no evidence whatsoever, but if I was Met, I would've passed a few briefcases full of thank you notes across the table. \$40 million of water for free is quite a deal. So that's an example of risk aversion. Is that clear? Any questions about that?

The last thing I want to talk about in my key word process here is...

*Does the alfalfa sprout still grow though? Or did the farmers...because it seems kind of odd that they first used a lot of water, and once somebody says you can't use as much, they use less and the crops will still grow as well.*

No, no they didn't grow as many crops. Only three cuttings. They only do two cuttings instead of three.

*So it's not that they lost in profits. They just plant less.*

They planted less, or they cropped it less. Alfalfa is a crop that you plant and grow...this is my nontechnical belief. You cut it 5 times over 5 years. But you can do multiple cuttings, and as much water it gets is as much as it grows. If you don't water it, it slows down.

So the other key word here is on race. And let's change that to a more technical jargon: in-group versus out-group dynamics. Race or stereotype or club...who's in my club? Who's in my posse? Who's in my tribe.

They did this really interesting experiment where they put a bunch of students like you guys in front of computers. And they said, "Pay attention to all the faces going by, and we want you to remember who's in your group and who's not in your group."

And they put a bunch of white folks and a bunch of black folks going by on a screen. Who's on your team and who's not on your team? And lo and behold, when they ran this, and I'm slightly

interpolating because I haven't read the paper for a couple of years, but the result will be the same.

All the white people that were participating remembered that the white people folks were on their team, and the black folks were not on their team. And vice versa with the black observers.

And it's clearly racism, or not. Because what they did as part two of this experiment is they put the exact same photos of faces, but they put Jerseys on them. Digital jerseys. I think it was red and green or whatever. Red team, green team. And they scattered the jerseys across the skin colors. And people completely ignored race when it came down to finding who their team was. Because they were paying attention to...who's my team? Not what the fuck the color of the skin the person is.

Because it turns out (this is the evolutionary psychology explanation. If we pay a lot of attention to stereotypes and race, and in-group/out-group because when we meet a stranger...it's like... wait. Are you from my tribe? Are you going to kill me, or should I kill you?

Team sports. If you ever go to a game (did the big game happen yet?)

*Yes.*

Did we win?

*Yes.*

Awesome. So we win, we hate Stanford. They wear red. And we wear blue. And blue is better. Because that's our team. Anybody get into Stanford? And you didn't go? And you're wearing red! As soon as you go to Stanford, oh suddenly who cares...screw Cal. Let's go screw the bear. Or whatever they talk about. Burn the bear. Homecoming stuff, right? So they're creating a team dynamic, and sports are merely a refined form of warfare, aren't they? We're lucky that we have sports, and we don't have people shooting each other on the streets trying to get a little ball.

But it brings out that same kind of energy. Who's in my group? Who's *in* my group. The out-group. Who's the out-group? I hate the out-group, whatever the out-group is.

And it turns out that the most obvious way to overcome long standing warfare between groups... the crypts and the bloods, I suppose, should be mingled into one big football team to go beat up the Stanford/Cal axis. That would be an awesome game.

And would that be a ludic game? Or would that be a conflict game? You cannot bring your weapons onto the field.

But it turns out that in-group and out-group dynamics are based on very simple observations. What's the color of the dude's skin? Or his jersey? Or his haircut? Or his mustache, or whatever?

That's why if you go into...

My girlfriend just flew off to Vietnam, and she's going up into the northern tribal areas in Vietnam. Who's been to Guatemala? Vietnam? Other tribal areas? More traditional tribal areas?

Have you noticed that everybody dresses in the same clothes? Because as soon as one village walks over to the next village, it's like...ooh! You're a stranger. I can tell by your embroidery. I was going around Central Asia, and I was wearing a hat. And in Central Asia they wear these little skull caps because it's all Muslim. And I was wearing this skull cap that I got somewhere. And everybody thought I was from somewhere else. It's like...oh, where are you from? Where is your tribe! I'm like...well...and I had this cap on, and they all kept looking at my cap trying to figure out where I was from. Because if I put on their cap, I would be one of them, except for a lot of different problems right?

But there is a notion of the signal. What team are you on? Pay attention to this.

It's very important in terms of understanding some of the dynamics that we see out there. In terms of like...who saw the South Park episode on the Prius drivers. I should post this on my blog. Smug. We have a big coating of Smug over South Park. Over San Francisco. The home of the smuggest people in the world. And the people in the Prius, and they go up to the intersection, and they're like, "I'm cool. You're cool. We're cool. We drive Priuses." And if you drive a Honda insight, you're not cool because it's an insight, right? There's this notion of... you're on the same team, and therefore you're cool.

There was a chemistry professor who was quoted. And they said, "Why do you drive a Prius?"

He says, "Well, I know it does nothing to save the earth, but all of my colleagues drive them, and they wouldn't talk to me if I didn't drive one.

And that was essentially it. That was your scientific explanation about why you should drive a Prius. So keep that in mind in terms of more stuff on social cooperation.

Any questions on these things?

I'm going to get into one of my favorite examples of a collective action problem. I'm actually going to solve a problem I think. So you should be more interested in that. Instead of just complaining all the time.

Fei can you blip the thingy?

Sometimes we have poster children for bad policy, and the congress tends to excel at writing... you know...wow you thought that was bad, watch this.

But we've had a policy for a long time on sugar. C&H...pure cane sugar? What does that stand for? California and Hawaii. Now Hawaii, of course, is in the tropics, and you can grow sugar cane there.

But most of the sugar in the United States...sugar comes from what?

*Beets.*

Sugar beets, right? But where does more of our sweetening come from in the United States?

*Corn*

High fructose corn syrup. Now it turns out...who's had Mexican Coca-Cola? The real thing, so to speak? It's made with sugar, right? We make it with corn syrup. Now why would we, as economists have corn syrup flavored soda?

*Cheaper.*

Cheaper. It's cheaper. So we have cheaper ingredients. Now if you're cola manufacturer, and someone said, "I'm going to give you a cheaper ingredient." Are you in favor of that? Lobbyists? Say aye, right?

So Coca Cola loves the corn subsidy program. Who likes the corn subsidy program? Do corn farmers like the corn subsidy program?

*Yes they do.*

Yes, corn farmers like it. Now these guys don't necessary like the corn subsidy program, but let's treat them separately just for a second. Sugar in the United States is protected by a tariff. Oh sorry. Tariff and quota.

Sugar is protected by a quota. And the quota essentially says that we, the US, will allow in a certain number of tons every year from certain countries that are given a piece of the quota. Does Cuba get a piece of the quota? No, we hate them; they're commies. Brazil gets a piece of the quota, yes? Because Brazil is one of the biggest sugar producers in the entire world. For better or for worse, we won't get into that. They happen to make it for ethanol. Here comes another thing.

What do we make our ethanol out of?

*Corn.*

Corn! Oh, more things for corn. Who likes that? Corn farmers? Say yes. Yes.

Okay, so here's what happened. Let's just go as far back as possible in a little, stylized story.

Back in the day of C&H pure can sugar, they were growing...I think California might have been where the sugar showed up to, and it was from Hawaii. Let's just say that's it. I could be wrong. And if somebody wants to do the Wikipedia research, that's awesome.

So C&H was out there, and they were producing sugar in Hawaii. And the Brazilians, or whoever, came along, or the Cubans, I think let's go back to the Cubans. That's because this was actually before Castro. And said, "Oh, cheaper sugar from Cuba! Well...if you're a sugar farmer in Hawaii, or ironically Florida, or Louisiana, do you want that low cost competition? No. So what you want to do is you want to put some kind of barrier, right? You could put a tariff, which is just a tax...it's a certain number of dollars per ton, or you could actually be even more sneaky, and you could put a quota, because a quota doesn't cost anything. A quota is free. So you've got Florida, Louisiana...let's call these guys the axis of evil. And they want to limit competition from the foreigners, and they want to do it in a simple way.

They say look: you can put as much sugar in the country as...you can put in 100 million tons... let's say 10 million tons per year. I don't even know how much sugar we eat, but it's a lot. Let's say 10 million tons per year

You can sell into our market. And if you put more than that, then you have to put \$20 a ton as a tariff. Now the price...let's just say the price in the US is \$15 from domestic production. The cost of domestic production is \$15. Let's say that the cost of Cuban domestic production is \$5 a ton. Now you know these numbers are wrong. But it's just for the sake of the example.

The Cubans could send (and everybody else can send in) in 10 million tons at \$5 a ton cost. They sell it at the US perfectly elastic price of \$15 a ton. If they sell more, they pay a tariff of \$20 a ton. Are they going to sell anything? No, zero. \$5 plus \$20 is \$25; that's too expensive. So they're out of the market. So when you draw a supply curve, you basically have the foreigners coming in at \$5 up to 10 million. And then bang, it goes up to \$25 because of that tariff.

And let's just say the US can do something like...this is the US supply curve.

And then let's just say...if I aggregate the two of them...I'm going to ship this over because... this is the aggregate supply curve (is that clear enough? Is that too many lines there? You see what I'm doing), and let's just say this is demand.

So the supply and demand cross here. Supply and Demand cross there. The foreigners come in with this much market share, and the US takes out the rest. Everybody got that part?

They grow cane sugar where they can, which is Hawaii and Florida and Louisiana, and they grow beet sugar where they can't grow cane sugar, but in the Midwest. That's where beet sugar is grown. In Europe, they happen to have a similarly stupid policy about sugar, and they grow lots of beet sugar in Poland or in Germany, or stuff like that.

And they were protected from those nasty tropical people in poor countries by their own set of barriers. So what we get, in the US, is a mix of cane and beet sugar. And then because sugar goes into more products, it actually makes...I'm not going to draw a whole bunch of supply and demand curves, but you can imagine it makes high fructose corn syrup cost competitive. Because your high fructose corn syrup...let's just say...

If you're keeping costs \$10 a ton of sugar equivalent. If you're keeping out the foreigners a their \$5 ton stuff, then you're high fructose corn market will exist. Does that make sense? So because the foreign sugars are too expensive to enter the market, there is a market for high fructose corn syrup, and that's why we use it in our drinks. Solid sugar is use for other things. Used for baking...if you go to the...if you price out a kilo of sugar the store here, versus a cube of sugar in Brazil, or any country that has free trade in sugar, you'll find that our sugar is 2 or 3 times the world price.

Now how much sugar did you buy last year at the store? Anybody buy more than 10 pounds of sugar? Big sugar eaters here? No? Forget the Splenda crowd. So let.

And let's just say all of them are paying an extra \$5 a year times 300 million. 1.5 billion dollars of extra rent. There's a whole pile of money on the table...who is getting that money in terms of higher prices?

*The sugar producers?*

Which ones? US sugar producers! Are there three hundred million US sugar producers?

Let's just say there's a 1000 of them. Each of them making an extra 1.5 million dollars.

Are they a general interest group or a special interest group? They're a special interest group, right? They're making a million and a half dollars of rent. Extra money. Just because of protectionism. They spend a little bit on bribing their congressman to keep the tariff in place.

I don't know if the republican hold in South Cuba is based on...or South Florida...I don't know if the republican hold in South Florida is based on the Cuban exile community or the sugar lobby. But there's a heavy overlap between these two. They keep their legislators tweaked with bribes. That's why we have this sugar tariff. All of us pay \$5 extra per year.

And you know? It's interesting. The businesses that use a lot of sugar...Coca Cola—they use high fructose corn syrup because their product...they ship syrup around, and their final product is made of local plants and stuff like that. But what would be an interesting side effect, you imagine? The US price of sugar is very expensive. What do you think would happen in next-door markets (Mexico and Canada)? We know that Mexico uses sugar in their coke. Let me ask you a different question.

If you were a candy manufacturer, where would you put your plant? Canada?

Canada, it turns out. There's a huge amount of confectionary made in Canada and shipped across the border. Importing virtual sugar, right?

It's the same thing as the US rice producers sending Sushi to Japan to get around the rice tariff quotas because sushi is not the same as rice. You get these kind of weird situations where all these Snickers bars (or whatever the hell they are) are being made in Ontario and shipped into the US. Ontario, Canada, instead of being made in whatever. Indiana or Massachusetts or whatever. So this special interest group is benefiting from this sugar tariff. And that is the small exploiting the large, which is what Mancur Olson was talking about. They have...you've got your...and your corn farmers support that because that helps them out. They have a bigger market for corn, right? So you have this unholy alliance between corn farmers, sugar farmers, politicians, and actually, the few foreign countries that get access to this tariff. Because they don't sell their sugar in the states for \$5 a ton at price, at cost. They sell it for \$20. So they actually make rents also. And guess who gets the tariffs? It's not the Brazilians, the most efficient sugar producers in the world.

What the US should be doing is they should be auctioning access to that quota. But instead we give it to our favorite political friends. If you're a commie, forget it. Cubans don't get sugar quota, but Haiti does, or the Dominican Republic, or whoever's flavor of the month at the State Department. They get access to the quota. And that is how screwed up something will get. Oh! Here's my favorite part. When you grow sugar cane in the tropics? The wetlands of Florida and

Louisiana? You farm the wetlands. What happens to ecosystem services? Who's heard of that jargon. Do those wetlands function anymore? No. They're turned into agricultural fields.

So when a hurricane named Katrina shows up and attacks your coastline, and you've got no wetlands to absorb the blow, then the hurricane's blow falls more heavily on other places, including New Orleans.

I really actually, seriously am telling you that the sugar policy made Katrina worse. It made it worse because there was no wetlands barrier to absorb the storm waves and the rainfall, etc. from Katrina. Talk about shooting yourself in the foot. And of course we have subsidized flood insurance, so people build in flood plains because it's cheaper. That's another brilliant move. All of these things kind of come together in one...they call it a perfect storm...it's a perfect fuck up of policies. Every policy goes wrong at the same time.

Sugar, subsidized flood insurance, the US Army Corp of Engineers, the straightening channels, the shipping...and nature comes along and says, "Oh I'll just blow you up."

And those hurricanes are happening...they've been happening for a long time. I'm not even going to talk about climate change. And we made it worse by distorting the system, and in order to deliver some rents.

That's sugar. Any questions? My opinion, but I think it's pretty sound economics.

*I think it's a pretty difficult thing because I can see why people would just want to maximize profits and stuff? I guess like...is there anything more that you can do besides changing the policies that would like drive the mindsets so they're not like screwing over people in other parts of the world for like...profit?*

After long and careful analysis, the only thing I figured out is the only way to fix these problems is to not have the government make these policies in the first place. It's kind of one of those... power corrupts and corrupt power corrupts absolutely. And you know...it's the same thing as banking. Banks being concentrated and concentrated and concentrated, so there's very few banks...few big banks? Making very big bets? And then blowing up. And ironically, when we had thousands of banks...you know individually you have idiots who would charge here and there, and the banks would fail here and there, but not Citi Bank. Or AIG. Like fucking up on a colossal scale. Hundreds of billions of dollars because they got that big.

So it turns out when you channel power through the government, if you don't have...there's this quote from the federalist papers. And it's actually in favor of government. If men were angels, there would be no need for the government. But then you put the government in charge, and sometimes you don't have angels going on in there.

So the one thing I'm watching is when are we going to repeal the ethanol program, which has no environmental benefits, creates massive distortions in terms of agriculture, displacing not just food crops but other crops. Corn from food to...the corn that we put into ethanol is more than like the entire production of Australia. Or something huge. There's the environmental problems of all the dead zones and the gulf south of New Orleans. All of that from agricultural runoff. So like...when are we going to end the ethanol program, which clearly has no benefits in terms of net carbon reductions, and it's producing a small income bump to those farmers. It's like...can

we just pay them money? I think the simplest thing to do is pay the farmers money. It turns out that the politicians like to pretend that they're delivering something important, so they can steal from the taxpayers and it ends up costing a lot more.

It costs...for every dollar the farmers get, it costs \$5 of distortion. And it'll be like...okay fine. Just give the money to the farmers. Don't waste my...don't burn \$5 for every dollar.

That's the tricky part. No one will be honest about it. It's tough.

*So you're saying that out of the policies in place, this is a giant collective action problem of... there's 350 million people losing \$5, they don't care, so they're not going to really fight for it? So really...is there any way to...*

It's one of those things. If every person in this country...not even every person. that's not even true. If a 100 people in every congressional district, on a daily basis started hassling their congressmen. There's 435 congressmen. Is that right? Or 535. I don't...senators and congressmen together is 535. Right? 435 local reps. A hundred people. And they serve an average of less than a million people each. But a hundred people each hassle their staff members everyday about sugar, then that would end it.

The problem is the \$5 in benefits that you're going to get is less than the costs. So you literally have to be missionary about this. Like religious. Like...I don't even care what it costs me. I'm going to take this down. And that would be awesome.

As a side note, because I told you I'm only lecturing for this class, and I'm going to go off and do other things...I think I'm going into politics. And I'm going to politics, and I'm going to start yelling all this shit out loud all the time.

*On Sproul?*

Forget Sproul! But it's going to be interesting because it turns out...solving these collective action problems...but I'm like...I can't be an economist, I've got to go do politics, which is really a dirty, dirty business. But I can't wait, because it's just going to be a learning opportunity. Talk about learning opportunity.

You guys are in a learning opportunity? Wait till I run for congress. This is going to be great.

Alright, so let's stop now. Is Diana...where's Diana? Let's do this paper redistribution.

**Transcribed and checked for accuracy by Brynna Bunnag**