

Lecture 1 – Introduction: First Five Lessons

We introduce Game Theory by playing a game. We organize the game into players, their strategies, and their goals or payoffs; and we learn that we should decide what our goals are before we make choices. With some plausible payoffs, our game is a prisoners' dilemma. We learn that we should never choose a dominated strategy; but that rational play by rational players can lead to bad outcomes. We discuss some prisoners' dilemmas in the real world and some possible real-world remedies. With other plausible payoffs, our game is a coordination problem and has very different outcomes: so different payoffs matter. We often need to think, not only about our own payoffs, but also others' payoffs. We should put ourselves in others' shoes and try to predict what they will do. This is the essence of strategic thinking.

Game Theory: Game theory is a method of studying strategic situations.

Strategic Situations: It's a setting where the outcomes that affect you depend on actions, not just your own actions, but on actions of others.

- We say that my strategy a, **strictly dominates** my strategy b if my payoff from a is strictly greater than that from b regardless of what others do.

Lesson 1: Do not play a strictly dominated strategy.

- The reason I never want to play a strictly dominated strategy is, if instead I play the strategy that dominates it, whatever everyone else does I am doing better than I would have done.

Lesson 2: Rational choice can lead to outcome that suck.

- Rational choice can lead to outcomes that are Pareto inefficient.

Prisoner's Dilemma: You have got two accused crooks, and they are in separate cells and they are being interviewed separately kept apart and they are both told that if neither of them rats the other guy out they will go to jail for a year. If they both rat each other out, they will end up in jail for two years. But if you rat the other guy out and he doesn't rat you out, then you will go home free and he will go to jail for five years.

Lesson 3: You can't get what you want till you know what you want.

Lesson 4: Put yourself in other's shoes and try to figure out what they will do.

- A great way to analyse games, is the ability to put yourself in someone else's shoes, figure out what their payoffs are, and try and figure out what they are going to do.

Lesson 5: People are evil.