

444 Lecture 1

Course Overview

Brian Weatherson

1/5/23

Plan

- To introduce the outlines of the course, and to say a little bit about games.

Day Plan

Course Overview

Games

Three Parts of Course

1. Game Theory

Three Parts of Course

1. Game Theory
2. Origins of Unfairness

Three Parts of Course

1. Game Theory
2. Origins of Unfairness
3. Group attitudes

Game Theory



Giacomo Bonanno

Giacomo Bonanno, Game Theory

Aims

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- Introduce some famous examples of simple game theoretic models that get used throughout academic work.
- Look at some attempted explanation of real world phenomena using game theoretic tools, and go over the strengths and weaknesses of these explanations.



Cailin O'Connor, The Origins of Unfairness

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- Ask whether these models are plausible in light of the facts about how this kind of inequality manifests in the real world.
- And in particular, look at the different kinds of gender inequality in different parts of life (in particular in workforces vs in households) and look at whether the models are as plausible in each case.

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posted 2020-10-15 by David Bourget

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PhilPapers

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- Along the way, ask what it means to answer this question positively or negatively.
- And, if we have the time, ask what a positive answer would mean for our theories of knowledge, responsibility, and so on.

Schedule

- Seven weeks on game theory

Schedule

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- Three weeks on unfairness

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- Three weeks on unfairness
- Three weeks on group attitudes

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- And for a couple of weeks, the assignments are a little 'behind' the lectures.
- But we catch up around February 15.

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- I'd like to claim this was great course design, but it was actually a bit of luck.

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- Do six small assignments on game theory (the best five will count).

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- Each of these will be half of the grade.

Day Plan

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Games

Games

- A **game** is any situation where the outcome is determined by the actions of the players, plus perhaps some impact from the outside world.
- If this seems really general, it is!

Formal games

In a formal representation of a game we specify:

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- How many players there are.
- How many moves they each have.
- What order those moves get made in.
- How many options they have at each move.
- What the payoff is for each player for each possible combination of moves by the players and 'moves' by nature.

Two Main Types

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- Players take turns making moves, and every move is revealed to all players when they are made.



An example of a turn taking game



An example of a one move game



A more familiar one move game

Other Types

- Nature gets involved.
- Nature gets involved and their move is only revealed to one of the players.
- A move made by a player is not revealed to the other player(s) straight away.
- Multiple sequential moves.



How nature can get involved in a public way.



How nature can get involved in a private way.



Moves that are not revealed



Multiple simultaneous moves

Positive Sum Game

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- These instances are a bit non-representative in one crucial respect.
- They are all **zero-sum**.
- That is, someone doing well means someone else must be doing worse.
- This is not the general case.

Positive Sum Game

Most of the games we're going to look at have the following characteristic.

- There is a pair of possible outcomes such that every player is better off in the first outcome than the second.

For Next Time

We're going to get a bit clearer on what this last claim means, and how it affects how we write up games.