

Basic Ideas and Examples: Introduction & General Principles

Econ 2160 - Chapter 1

What is a Game of Strategy

- There are many kinds of games
 - Chance (e.g. one-armed bandit)
 - Skill (e.g. 100m sprint)
 - Strategy (e.g. chess)
- Strategic thinking is about your interactions with others as they do similar thinking at the same time and about the same situation
- So we can think of game theory as the analysis of interactive decision making

Some Examples Of Strategic Games

Run or Pass?

- You're at the one-yard line
- Your Pro-Bowl RB is averaging 4 yards per carry & is famously difficult to tackle (and had gained 4 yds on the previous play)
- Your Pro-Bowl QB is having a good but inefficient game
- You have one timeout and about thirty seconds
- The elements systematically call for a run



The GPA Rat Race

- Your class is graded on a curve
 - 40% of the students will receive As
 - 40% of the students will receive Bs
- Your class forms a coalition to not work too hard
- You note that if you work a little bit harder you can substantially improve your GPA, so you study a little bit harder
- Everyone else comes to the same conclusion and now everyone is working harder than they would like
- This situation is a version of the *prisoners' dilemma*

Prisoners' Dilemma Example

- Question 1 is simple and worth 10%. Both students get full marks.
- Question 2 asks "Which tire?" and is worth 90 percent.
- If they guess randomly and independently, they have a 25% chance of being correct.
 - They both have the same options: {Front Driver, Rear Driver, Front Passenger, Rear Passenger}
 - This yields 16 outcomes, 4 where they pick the same tire?
 - Can they improve upon this?
- It may seem obvious that the most likely tire would be the front passenger, but it's important to consider what your co-conspirator believes and what your co-conspirator believes you believe and so on
 - As a note 50% of people select the front driver's side tire
 - Without more info, these games don't converge on a **focal point**

Why Are Professors So Mean

- Most professors draw a hard line on makeup exams and tardy submissions
- The reason for this is because it is difficult to distinguish between legitimate and fraudulent excuses
- The only option is to adopt a "no excuses" strategy, but they will need a **credible commitment device** in order for the students to take the threat seriously
 - can lean on university policy
 - can make an early announcement
 - can make early harsh examples

Roommates And Families On The Brink

- You share an apartment with someone where you mutually agree to share the expenses of communal necessities - dishwasher detergent, paper towels, beer, toilet paper, etc.
- However, one of you incurs an additional cost by physically getting the goods. How is this resolved?
- Perhaps you play the waiting game, until one of you breaks.
- In the dynamic context, conditions can deteriorate to the point where you run out of something critical. i.e. each of you and your roommate is pushing the other to the *brink* of catastrophe.
 - This strategy is called **brinksmanship**

The Dating Game

Dating is a classic game of hidden information

- You would like to amplify your good qualities while concealing the bad ones. Your date has a similar strategy.
 - The goal for both is determine the **signal** from the **noise**
- Each of you needs to determine actions that are both **credible** and **costly** (not always in the sense of money) .
 - It's easy to groom so may provide little information
 - Flowers are cheap
 - Habits are harder to fake & are revealing
 - Costly gifts can be a credible signal of commitment
- Dating is a game of **uncertain** and **incomplete** information where you would like to induce someone to reveal credible information. You induce them through the use of **screening devices**

Our Strategy For Studying Games Of Strategy

- The previous slides show frequent situations that come up in everyday life where you might not have realized you were exercising strategic thinking.
- Moving forward we're going to construct a *theory* of strategic action
- At first it may seem abstract but at the end you will have a better understanding of *why* games have the outcomes they do and not just *how*
- What's to come tomorrow? *How to Think about Strategic Games*

We Can't Take The Exam Because We Had A Flat Tire

- Two Vanderbilt students go to a party in Memphis a couple days before a final exam
- They return late the next day and are unable to study for the exam
- Instead of taking the exam they craft an excuse that they were stuck in Memphis because they caught a flat tire and had great difficulty finding assistance
- The professor accepts the excuse and administers the exam the following day