



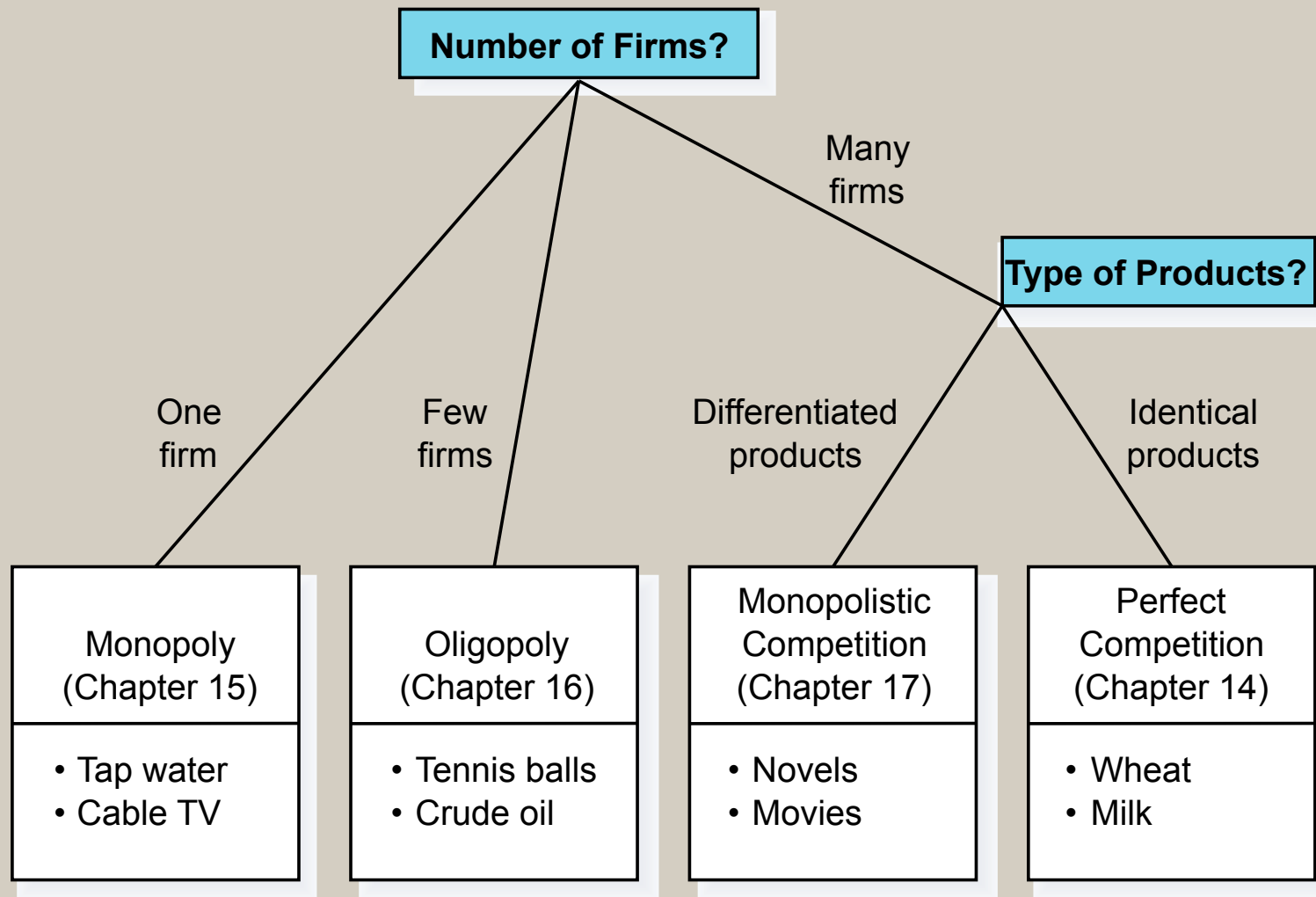
Oligopoly

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# BETWEEN MONOPOLY AND PERFECT COMPETITION

- Types of Imperfectly Competitive Markets
  - *Oligopoly*
    - Only a *few sellers*, each offering a similar or identical product to the others.
  - *Monopolistic Competition*
    - *Many firms* selling products that are similar but not identical.

## Figure 1 The Four Types of Market Structure



# MARKETS WITH ONLY A FEW SELLERS

- Characteristics of an Oligopoly Market
  - Few sellers offering similar or identical products
  - Interdependent firms
  - Best off cooperating and acting like a monopolist by producing a small quantity of output and charging a price above marginal cost

# Competition, Monopolies, and Cartels

- The duopolists may agree on a monopoly outcome.
  - *Collusion*
    - An agreement among firms in a market about quantities to produce or prices to charge.
  - *Cartel*
    - A group of firms acting in unison.

# Competition, Monopolies, and Cartels

- Although oligopolists would like to form cartels and earn monopoly profits, often that is not possible. Antitrust laws prohibit explicit agreements among oligopolists as a matter of public policy.

# The Equilibrium for an Oligopoly

- A *Nash equilibrium* is a situation in which economic actors interacting with one another each choose their best strategy given the strategies that all the others have chosen.

# What is Game Theory?

“No man is an island”

- Study of rational behavior  
in *interactive* or *interdependent* situations
- Bad news:  
Knowing game theory does not guarantee winning
- Good news:  
Framework for thinking about strategic interaction



# GAME THEORY AND THE ECONOMICS OF COOPERATION

- *Game theory* is the study of how people behave in strategic situations.
- Strategic decisions are those in which each person, in deciding what actions to take, must consider how others might respond to that action.

# Interactive Decision Theory

- Decision Theory
  - You are self-interested and selfish
- Game Theory
  - So is everyone else

*“If it’s true that we are here to help others,  
then what exactly are the others here for? ”*

- George Carlin

# The Golden Rule

## **COMMANDMENT**

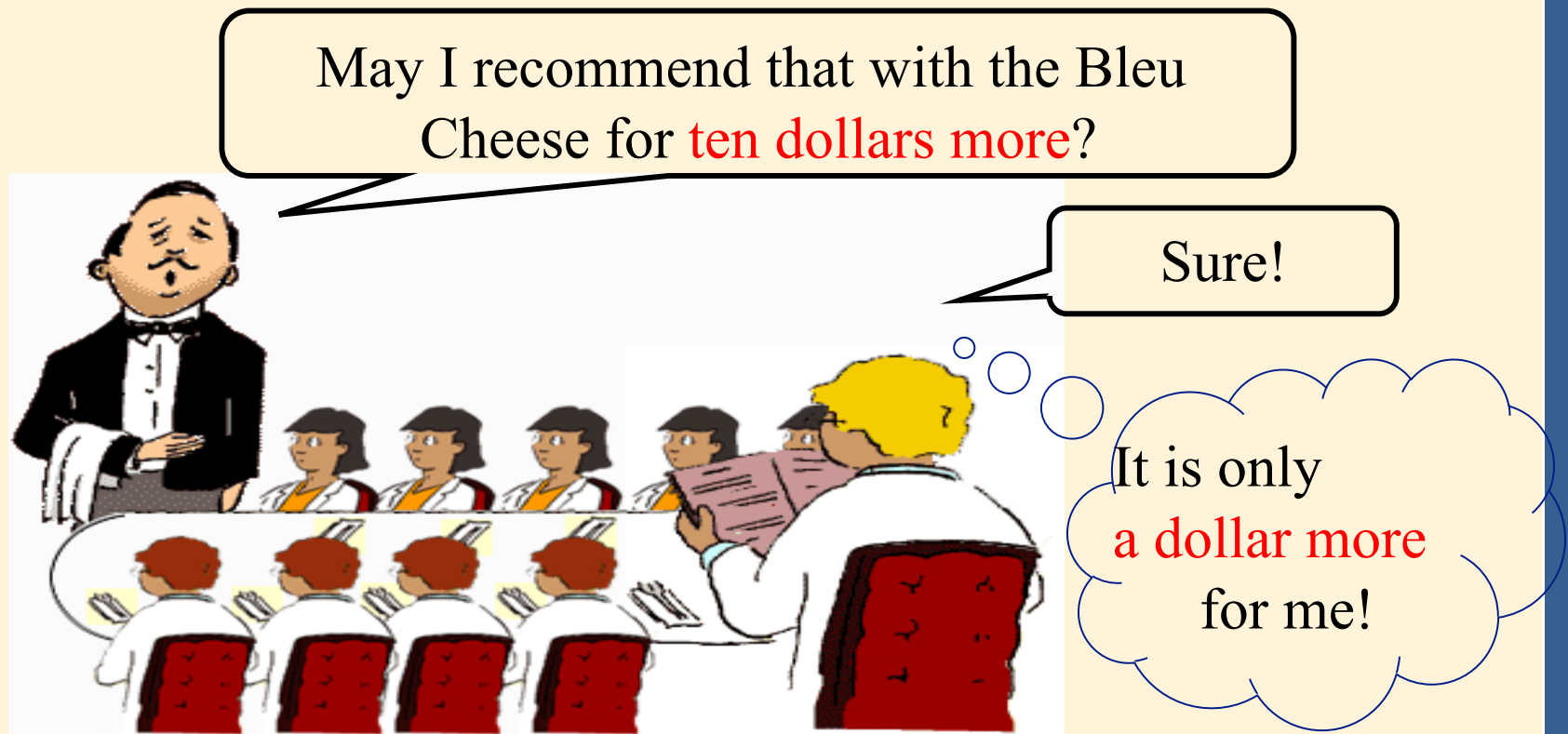
**Never assume that your opponents'  
behavior is fixed.**

**Predict their reaction to your behavior.**

# Decision Theory vs. Game Theory

- Ten of you go to a restaurant
- If each of you pays for your own meal...
  - This is a decision problem
- If you all agree to split the bill...
  - Now, this is a game

# Restaurant Decision-Making



- Check splitting policy changes incentives.

# Understanding Incentives

- Do bicycle helmets cause less injuries?
- Should airplanes require children to be in their own seats?

# The Prisoners' Dilemma

- The *prisoners' dilemma* provides insight into the difficulty in maintaining cooperation.
- **Often people (firms) fail to cooperate with one another even when cooperation would make them better off.**

## Figure 2 The Prisoners' Dilemma

		Bonnie's Decision	
		Confess	Remain Silent
Clyde's Decision	Confess	Bonnie gets 8 years Clyde gets 8 years	Bonnie gets 20 years Clyde goes free
	Remain Silent	Bonnie goes free Clyde gets 20 years	Bonnie gets 1 year Clyde gets 1 year



# The Prisoners' Dilemma

- The *dominant strategy* is the best strategy for a player to follow regardless of the strategies chosen by the other players.

# The Prisoners' Dilemma

- Cooperation is difficult to maintain, because cooperation is not in the best interest of the individual player.

# Why People Sometimes Cooperate

- Firms that care about future profits will cooperate in repeated games rather than cheating in a single game to achieve a one-time gain.

# PUBLIC POLICY TOWARD OLIGOPOLIES

- Cooperation among oligopolists is undesirable from the standpoint of society as a whole because it leads to *production that is too low* and *prices that are too high*.

# Restraint of Trade and the Antitrust Laws

- Antitrust laws make it illegal to restrain trade or attempt to monopolize a market.
  - Sherman Antitrust Act of 1890
  - Clayton Act of 1914

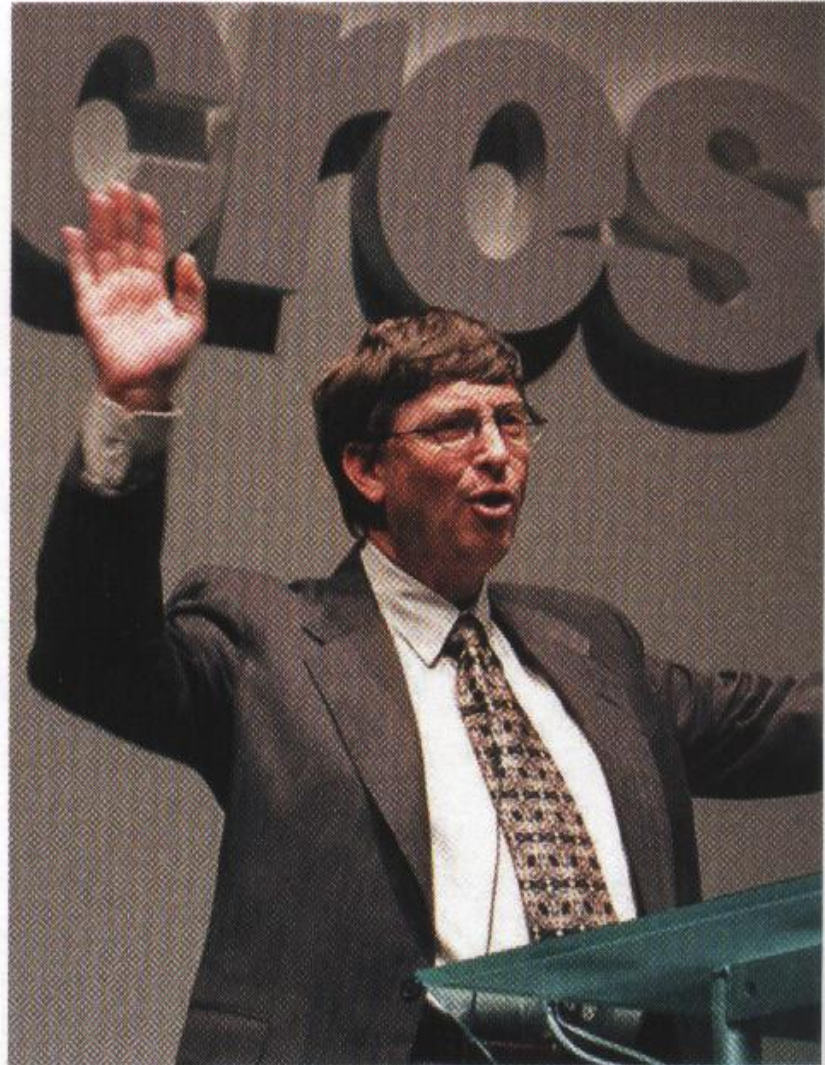


# Controversies over Antitrust Policy

- Resale Price Maintenance (or fair trade)
  - occurs when suppliers (like wholesalers) require retailers to charge a specific amount
- Predatory Pricing
  - occurs when a large firm begins to cut the price of its product(s) with the intent of driving its competitor(s) out of the market
- Tying
  - when a firm offers two (or more) of its products together at a single price, rather than separately

Case Study:  
The Microsoft Case

AP/WIDE WORLD PHOTOS



*"Me? A monopolist? Now  
just wait a minute . . ."*

# Survivor Immunity Challenge



- There are 21 flags
- Players alternate removing 1, 2, or 3 flags
- The player to take the last flag wins





# Sequential Rationality

## **COMMANDMENT**

**Look forward and reason back.**

**Anticipate what your rivals will do  
*tomorrow*  
in response to your actions  
*today***

# Pricing without Dominant Strategies

- Two bars (bar 1, bar 2) compete
  - Can charge price of \$2, \$4, or \$5
- Customer base consists of tourists and natives
  - 6,000 tourists pick a bar randomly
  - 4,000 natives select the lowest price bar
- Marginal costs are close to zero

# Tourists & Natives

- Example scenario:
  - Bar 1 charges \$4, Bar 2 charges \$5
  - Bar 1 gets:  
3,000 tourists + 4,000 natives  
= 7,000 customers                      x \$4 = \$28K
  - Bar 2 gets:  
3,000 tourists + 0 natives  
= 3,000 customers      x \$5 = \$15K

# Tourists & Natives

		Bar 2					
		\$2		\$4		\$5	
Bar 1	\$2	10	, 10	14	, 12	14	, 15
	\$4	12	, 14	20	, 20	28	, 15
	\$5	15	, 14	15	, 28	25	, 25

*in thousands of dollars*

# Successive Elimination of Dominated Strategies

- Does any player have a dominant strategy?
- Does any player have a dominated strategy?
  - A strategy is *dominated* if there is some other strategy which always does better
    - Eliminate the dominated strategies
    - Reduce the size of the game
    - Iterate the above procedure
- What is the equilibrium?

# Successive Elimination of Dominated Strategies

		Bar 2					
		\$2		\$4		\$5	
Bar 1	\$2	10	, 10	14	, 12	14	, 15
	\$4	12	, 14	20	, 20	28	, 15
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# Dominance

## **CAVEAT**

**Expect your opponent to use her dominant strategy if she has one.**

## **BUT**

**Be sure you understand your opponents' true payoffs.**

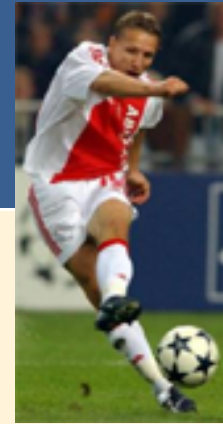
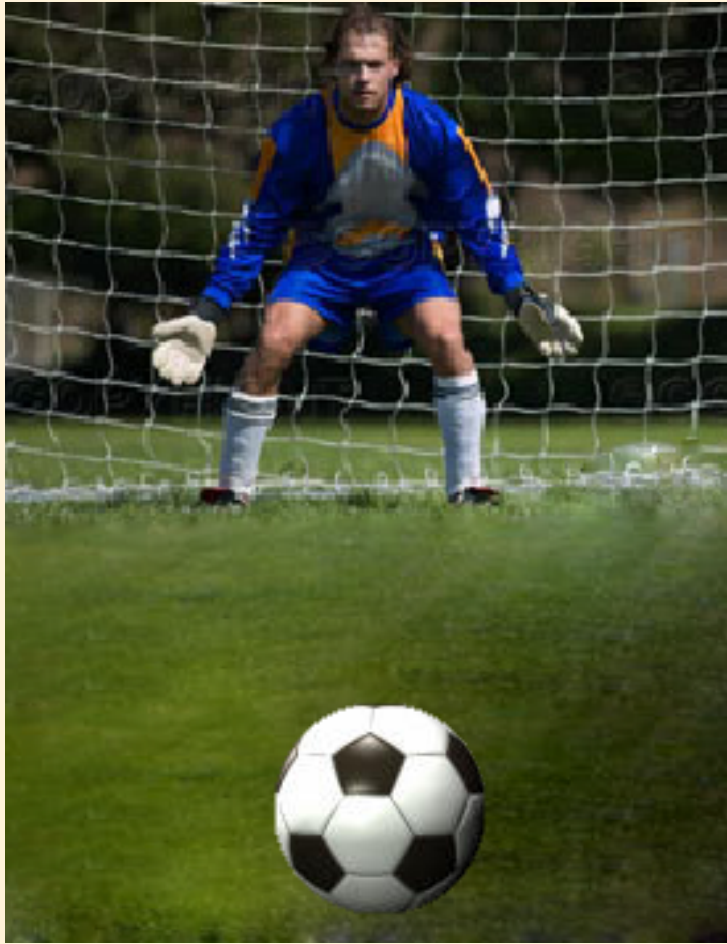
**(Do you know what really motivates them?)**

# Soccer Penalty Kicks

- There are no mutual best responses
  - Seemingly, no equilibria
- How would you play this game?
- What would you do if you know that the goalie jumps left 75% of the time?



# Game Winning Goal



# Soccer Penalty Kicks (Pee Wee League Version)

		G O A L I E	
			
		L	R
K I C K E R	 L	-1 , 1	1 , -1
	 R	1 , -1	-1 , 1

# Mixed Strategies

## **COMMANDMENT**

**Use the mixed strategy that keeps your opponents guessing.**