Social Interactions & Economic Outcomes

Session 3

PMAP 8141: Microeconomics for Public Policy
Andrew Young School of Policy Studies

Plan for today
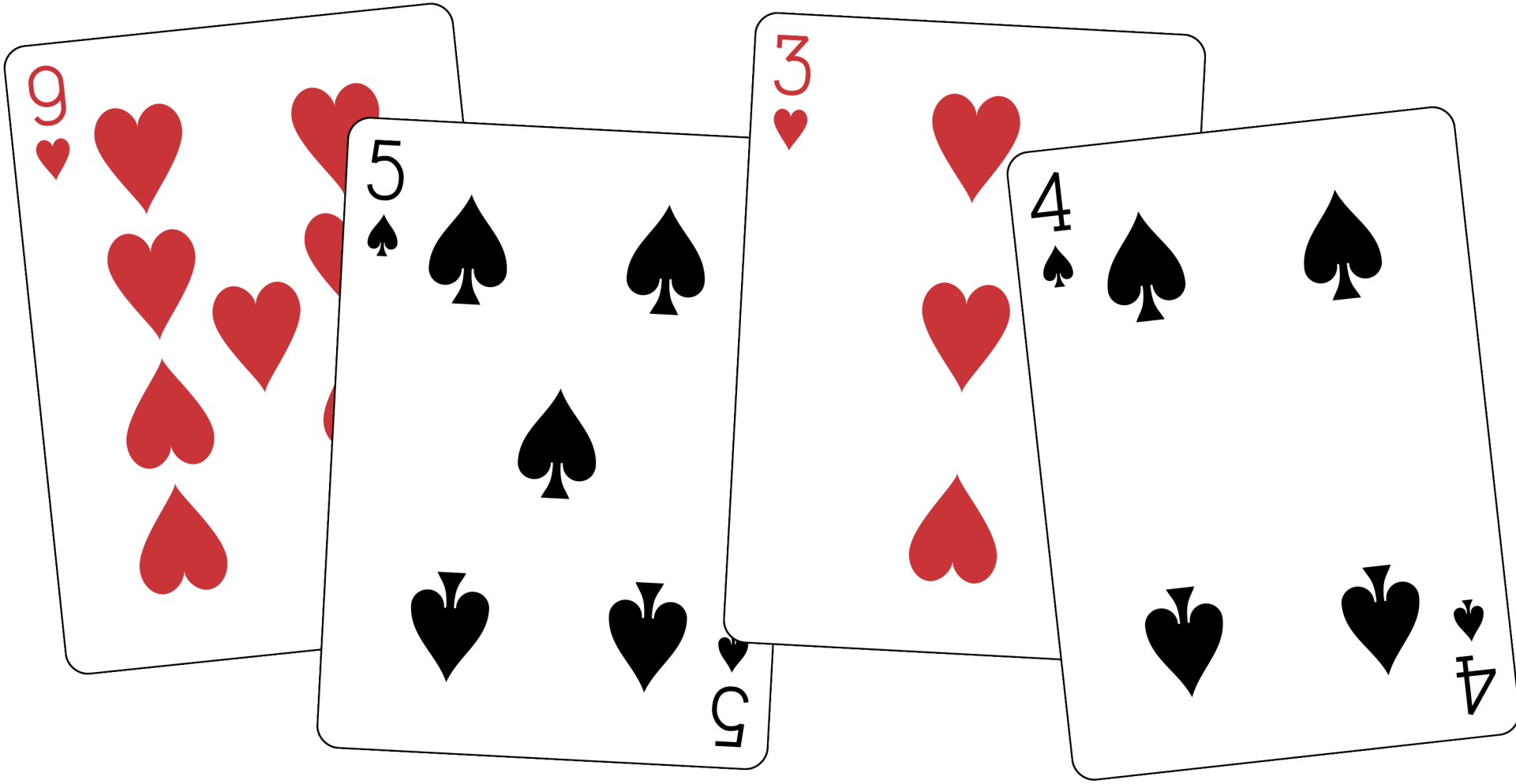
Individuals and society

Game theory

Stags, hares, and prisoners

Fixing collective action problems

Individuals and society

$4 for each red card you keep **$1 to everyone for each red card in pool**

Public goods

Non-excludable

Not possible to stop others from using the good

Non-rivalrous

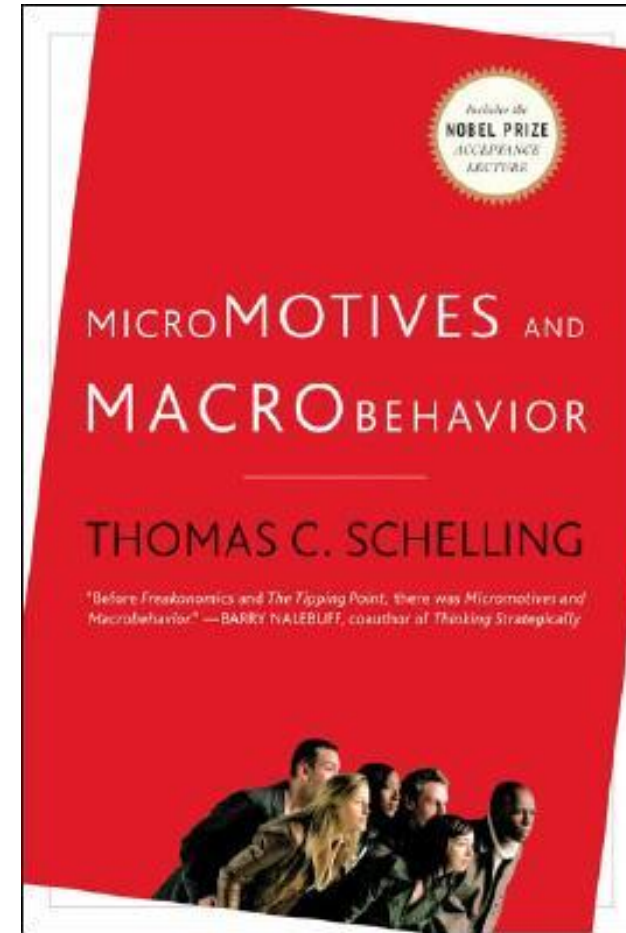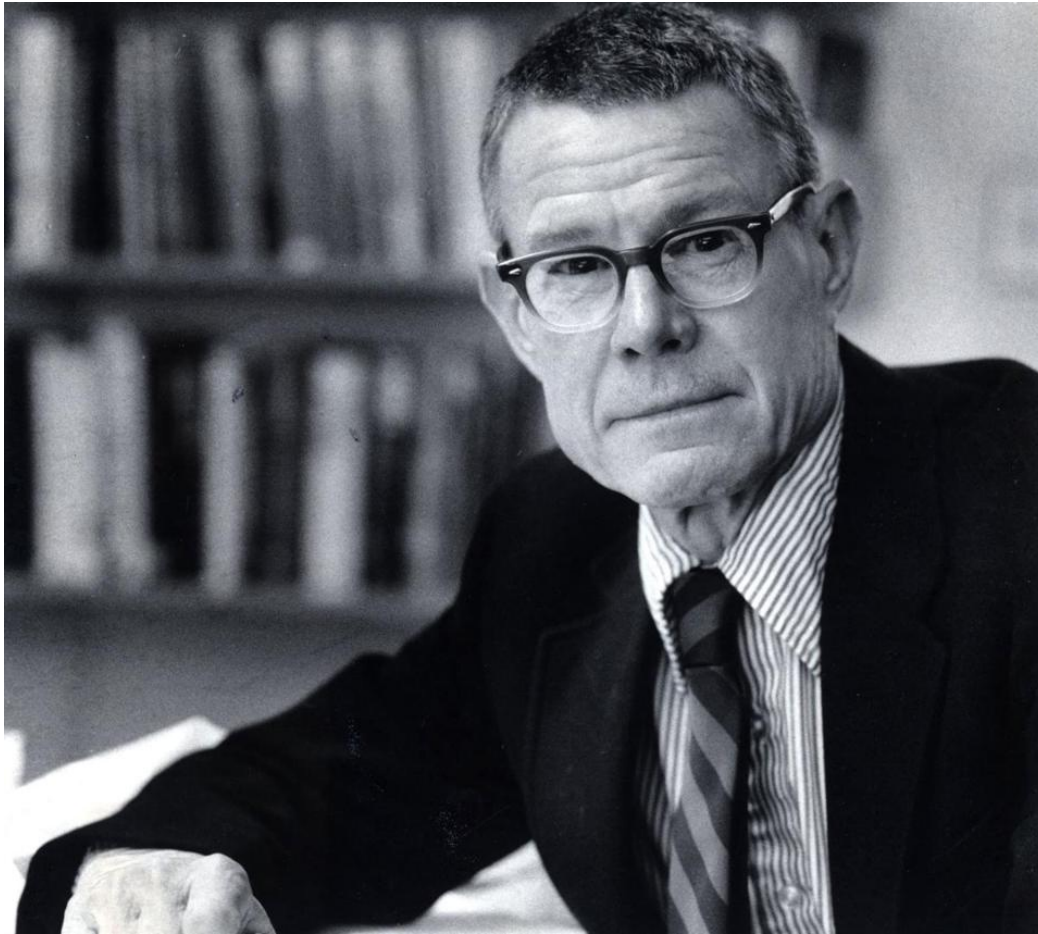One person using the good doesn't prevent anyone else from using it

Group interests = public goods

"The achievement of any common goal or the satisfaction of any common interest means that a public or collective good has been provided for that group"

Mancur Olson, The Logic of Collective Action, p. 15

Free riding!

# Micromotives and macrobehavior

Micromotives and macrobehavior

Perfectly rational individual behavior can create irrational and inferior social outcomes

Social dilemma

Collective action problem

No man is an island,
entire of itself;
every man is a piece of the continent,
a part of the main.
If a clod be washed away by the sea,
Europe is the less,
as well as if a promontory were.
as well as if a manor of thy friend's
or of thine own were.
Any man's death diminishes me,
because I am involved in mankind;
and therefore never send to know for whom
the bell tolls;
it tolls for thee.
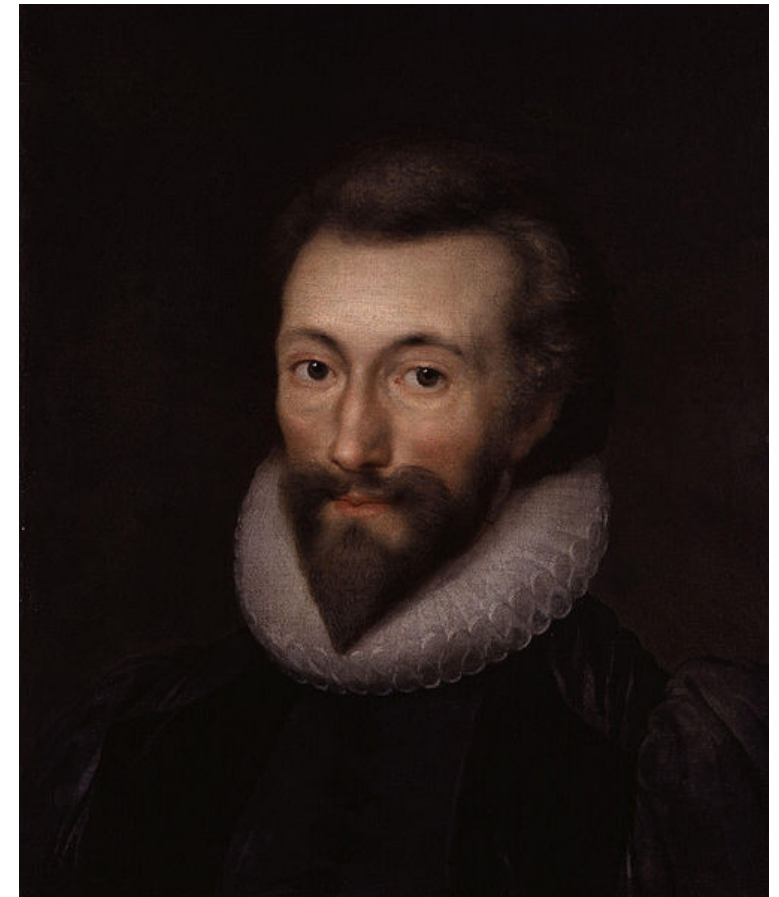
John Donne
Meditation XVII
Devotions upon Emergent Occasions
1623

Game theory

Why do these un-fun "games"?!?

"Economics is the study of how people interact with each other... in providing for their livelihoods"

We need formal language + an analytical framework for looking at those interactions

Key vocabulary

Game — Model of strategic interaction

Zero-sum — Only one winner

Non-zero-sum — Both players can win; requires cooperation

Pareto efficiency — Outcome can't be improved without hurting another player

Strategies

Nash equilibrium — Choice where no player has incentive to change

Dominant — Choice where you gain no matter what the other player does

Pure — Choice you make every time

Mixed — You gain or lose based on probabilities of other player's choices

Payoffs

The benefit an actor gets from the choice

Money, points, utility, etc.

		Bala	
		Rice	Cassava
Anil	Rice	1, 3	2, 2
	Cassava	4, 4	3, 1

Invisible hand

		Bala	
		Rice	Cassava
Anil	Rice	1, 3	2, 2
	Cassava	4, 4	3, 1

Non-zero-sum   One dominant equilibrium

Bach or Stravinsky

		Friend 2	
		Chinese	Italian
Friend 1	**Chinese**	**2, 1**	**0, 0**
	Italian	**0, 0**	**1, 2**

Non-zero-sum   Two equilibria   **Mixed strategy**

Chicken

		Racer 2	
		Keep going	Swerve
Racer 1	Keep going	**−100, −100**	**5, −5**
	Swerve	**−5, 5**	**0, 0**

Non-zero-sum   Two equilibria   **Mixed strategy**

Prisoner's dilemma

		Bala	
		Magic bugs	Poison
Anil	Magic bugs	3, 3	1, 4
	Poison	4, 1	2, 2

Non-zero-sum   One dominant equilibrium   Not socially optimal!

Stags, hares, and prisoners

Cooperation in PD land

Repetition + iteration

One-shot vs. repeated

Infinitization

Defect at $t - 1$

PD games underpredict voluntary cooperation

People cooperate even though the dominant strategy is always defect

Stag hunt

		Bala	
		Hunt stag	**Hunt hare**
Anil	**Hunt stag**	**10, 10**	**0, 2**
	Hunt hare	**2, 0**	**2, 2**

Non-zero-sum   Two pure equilibria

Mixed strategy   Not socially optimal!

Cooperation in stag hunt land

The payoffs for cooperation are greater than the payoffs for defection

There's still an incentive to defect

Better model of social dilemmas

Climate change

Arriving on time

Points in soccer tournaments

Negative political campaigns

Fixing collective action problems

Perfectly rational individual behavior can create irrational and inferior social outcomes

What stops us from cooperating?

Uneven payoffs

Lack of assurance

Dishonesty

Selfishness

These are all rational things that utility-maximizing people do!

How do we fix this?

Altruism

Repetition and iteration

Infinitization

Punishment

Norms

Institutions

Public policy

Tragedy of the commons

		Farmer 2	
		Use water normally	Double water use
Farmer 1	Use water normally	6, 6	2, 8
	Double water use	8, 2	3, 3

Institutional fixes

Change payoffs so that normal water use is more valuable

Make water common property

Privatize the water and let one person control it