

Lecture 1 5 Sep 07

<< What is Game Theory?

- law, sports

Administration

- filming
- 30-30-40 final
- etc.

>>

Grade Game

		my pair	
		α	β
me	α	B ⁻	A
	β	C	B ⁺

my grades

		my pair	
		α	β
me	α	B ⁻	C
	β	A	B ⁺

pairs' grades

<< Rather than draw two tables, superimpose them >>

"Outcome matrix"

		my pair	
		α	β
me	α	B ⁻ , B ⁻	A, C
	β	C, A	B ⁺ , B ⁺

<< 1st grade = row player 2nd grade = column player >>

<< Not a game until I know the payoffs - what you value >>

possible payoffs (1)

		my pair	
		α	β
me	α	0, 0	3, -1
	β	-1, 3	1, 1

#_s = utils
 (A, C) → 3
 (B⁻, B⁻) → 0

These people care only about their own grade

Def We say that my strategy α strictly dominates my strategy β if my payoff from α is strictly greater than that from β regardless of what others do.

Lesson 1: Do not play a strictly dominated strategy

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

Possible payoffs (2) "Indignant Angels"

		my pair	
		α	β
me	α	0, 0	-1, -3
	β	-3, -1	1, 1

(A, C) → $\frac{3}{\text{my A}} - \frac{4}{\text{my guilt over pairs' C}} = -1$

(C, A) → $-1 - 2 = -3$
my C indignation

"Coordination problem"

Lesson 3: You can't get what you want, until you know what you want

<< ie payoffs matter >>

Evil Git v. Indignant Angel << possible payoffs 3 >>

		my pair <<angel>>	
		α	β
me <<evil>>	α	0, 0	3, -3
	β	-1, -1	1, 1

<< α still dominates - that didn't change - so still chose it >>

Indignant Angel v. Evil Git

my pair \leftarrow evil

		α	β
me \nearrow angel	α	0, 0	-1, -1
	β	-3, 3	1, 1

my α does not dominate my β ,
but my pair's α dominates her β ,
so she will choose α .
So I should choose α also.

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

Real world 70% choose α
30% choose β

Yale

238 α

36 β

Lesson 5 Yale students are evil

Game 2

3 people

25, 5, 60

$$\text{tot} = 90$$

$$\text{avg} = 30$$

$$\frac{2}{3} \text{avg} = 20$$

25 wins: $\$5 - 5¢ = \4.95

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