Think in games!
Enhance your (students’) critical thinking using game theory

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About this guy:

- Lecturer at Rotterdam University of Applied Sciences
  - Risk Management
  - Behavioural Economics
  - Game Theory

- Research
  - Combining risk management and behavioural economics
  - Game theory
What is game theory?
What is game theory? (1)

- Nobel Prize awarded science
  - Vernon L. Smith (economic analysis)
  - John Forbes Nash (contributions to game theory)
  - Reinhard Selten (contributions to game theory)

- Film about John Forbes Nash: “A Beautiful Mind”
What is game theory? (2)

- UMTS
- Cuban missile crisis
What is game theory? (3)

- Method to study strategic situations
  - Additional insights lead to another solution

- What is a strategic situation?
  - What is it not?
    - No situation without effects on other players
    - No situation with only one player
  - It is something in between
    - A few players
    - Actions affect other players
What is game theory? (4)

→ Where do we find game theory?
  → In any situation where there are players with choices
  → In any situation where we can make a rational choice
  → Examples: Economics, politics, law, biology
    → In the classroom
Take it or leave it
Take it or leave it (1)

→ Random couple

→ Divide 5 coins
  ➔ First player proposes a division of the coins
  ➔ Second player accepts or declines the offer
    ➔ Accepting leads to the 5 coins being divided as proposed
    ➔ Declining leads to neither player gaining anything

→ This is the ultimatum game
  ➔ Accept or decline the “ultimatum”
Take it or leave it (2)

What makes a game a game?

- **Players**
  - 2, A and B

- **Choices**
  - A divides, B accepts or declines

- **Results**
  - How many coins are won
  - How the result is perceived
Take it or leave it (3)

→ Why did you choose a strategy?
   → What makes me happy?
   → Can we cooperate?
   → What is the social norm?
   → What does the other player do?
   → I just randomly pick a choice

→ What do we miss?
   → A goal, the last ingredient
Take it or leave it (4)

What is the goal of the players?
- Just make some money
- Come out better than the other
- Fight injustice

What does the “rational” human love?
- Money!
Take it or leave it (5)

- The ultimatum game in the real world
  - People do not like to accept injustice
  - People might have sense of stripped honour

- The case for revenge
  - People decline offers
  - During experiments people actually pay to decline offers
Take it or leave it (6)

- **Homo economicus**: man is rational and constant
  - Look at the possible results and then choose

- **Homer sapiens**: man is not very rational or constant
  - Same experiment in 15 different cultures
  - Every culture played differently
What is game theory?
Continued
What is game theory? (5)

What is the goal?
- There is not just an economic goal
  - People also want honesty
- Emotions can influence these goals
  - And thus choices made
- Cooperation is possible to reach the goal
  - But you have to trust people

Understand someone’s goals
- Understand which decision people make
- Understand why people make that decision
What is game theory? (6)

- Think about strategic situations
  - School projects

- Which goals do stakeholders have?
  - Short term goals (credit points for students)
  - Long term goals (added value for company)

- How are results perceived?
  - Is it just about passing or do you care about the grade?

- What do you do and what do others do?
  - How is work divided?
What is game theory good for?

- Game theory for students
- Students benefit from game theory
  - Application to strategic situations
  - Spontaneous classroom discussions
  - Getting to know one another
- And who doesn’t like playing games anyway?
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