

# The Tragedy of the Wise NDA

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# Agenda

- What is a Social Dilemma?
- Cyber Security Disclosure Policies
- How Disclosure Policies Relate to Social Dilemmas
- Food for Thought

# What is a Social Dilemma?

- The group benefits as a whole through cooperation
- The incentives for each individual are NOT to cooperate
- Also known as a 'collective action problem'
- Associated with research into game theory, psychology, economics, and political science

## The Tragedy of the Commons

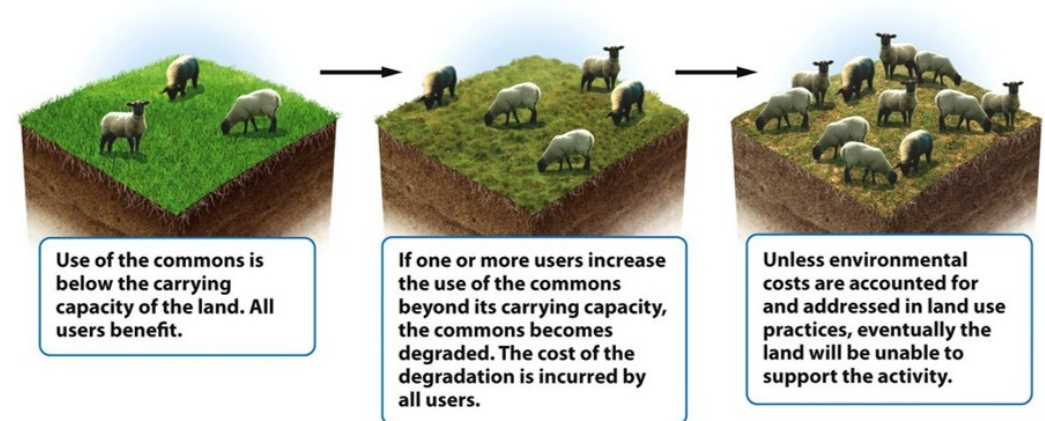


Figure 10.2  
Environmental Science  
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# The Prisoner's Dilemma



- Famous example in game theory
- Illustrates the collective problem
- Two partners in crime are imprisoned separately and asked to testify against each other

	<b>Prisoner B Cooperates</b> (Does not confess)	<b>Prisoner B Defects</b> (Confesses)
<b>Prisoner A Cooperates</b> (Does not confess)	<b>Each serves 1 year</b>	<b>Prisoner A: 3 years</b> <b>Prisoner B: Goes free</b>
<b>Prisoner A Defects</b> (Confesses)	<b>Prisoner A: Goes free</b> <b>Prisoner B: 3 years</b>	<b>Each serves 2 years</b>

# Key Factors

- Trust
  - Fear of being a sucker
- Iteration
  - Tit-for-Tat
- Free riders
- Boundaries



## Complications for Cyber Security Disclosure

- The OODA Loop (**O**bserve, **O**rient, **D**ecide, **A**ct)
  - Disparate reaction times
- Information Dissemination
  - Security by obscurity

# Cyber Security Disclosure Policies

- Three common disclosure policies
  - Non Disclosure
  - Coordinated Disclosure
  - Full Disclosure
- Issues surrounding disclosure policies
  - An exploit used in one attack may be used again in another
  - Published exploits may be used by attackers who were previously unaware of the exploit; and used before the exploit can be patched
  - Companies who have been targeted may not have any incentive to patch or correct vulnerabilities if the public is not aware of them
  - Publicly announcing the successful use of an exploit may hurt the reputation and business of the targeted company
  - Security through obscurity



# How Disclosure Relates to Social Dilemmas

- Public benefits from identifying and fixing vulnerabilities
- Companies, hackers, and some researchers benefit from keeping vulnerabilities private
- Coordinated disclosure relies on trust; targets must patch their vulnerabilities and coordinate disclosure in a timely fashion



# Factors Affecting Cooperation

- Motivational solutions
  - Social Value Orientations
    - Individualism (proself)
      - Tragedy of the Commons
    - Competitiveness (proself)
    - Cooperation (prosocial)
  - Encouraging prosocial orientations
- Strategic solutions
  - Demonstrate success of a cooperative strategy
    - Tit-for-Tat
    - Generous-Tit-for-Tat







# Factors to Encourage Cooperation

- Structural solutions
  - Change the rules of the game
    - Reward and punishment
    - Coercive power
    - Privatization
    - Reducing group size
  - Importance of Information
    - Defining the Dilemma
    - Monitoring
  - External political structures
    - Support
    - Enforcement



# Questions?

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