Levels of Analysis in International Relations

J2P216 SE: International Cooperation and Conflict
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Reto Wüest
Global Studies Institute
University of Geneva
1. Course Logistics
   Piazza, Critical Response Papers, Class Presentation

2. What Is In a Model?
   Actors
   Interests
   Interactions
   Institutions

3. Levels of Analysis In International Relations

4. Introduction to Game Theory
   Prisoners’ Dilemma
   Battle of Sexes
   Game of Chicken
• Sign up on Piazza
• Choose one reading for your class presentation
• Choose two readings for your critical response papers
What Is In a Model?

A model specifies (Frieden et al. 2016: 45-53):

- Actors
- Interests
- Interactions
- Institutions
What Is In a Model?

Actors

Basic unit for analysis

- E.g., states, politicians, firms, IOs, NGOs, etc.
Interests are what actors want to achieve through political action

- Power and security
- Economic welfare
- Ideological goals
What Is In a Model?

Interests

Interests determine preferences of actors over the possible outcomes that might result from their (and other actors’) political choices

- E.g., United States have an interest in security
- US preferences over Iraqi government: Democratic government friendly toward US ≻ Pro-Western dictator ≻ Anti-American government ≻ Instability and chaos
Outcomes depend not only on the choices of one actor but on the choices of others as well.

Interactions: the ways in which the choices of two or more actors combine to produce outcomes.

Strategic interactions: each actor’s strategy depends on the anticipated strategy of other actors.

We use game theory to study strategic interactions.
What Is In a Model?

Institutions

- Sets of rules that define constraints, and provide opportunities for, behavior
- Institutions serve to facilitate cooperation among members
We can analyze actors and their interactions at three levels

- **International level**: states interact with each other, sometimes in the context of international institutions
- **Domestic level**: subnational actors interact within domestic institutions
- **Transnational level**: groups whose members span border try to influence domestic and international politics
What does Singer (1961) say?
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International level:

• Comprehensive, encompassing all interactions that take place within the international system
• Little emphasis on national autonomy
• "Black box" or "billiard ball" concept of national actors (states are homogeneous)
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What does Singer (1961) say?

- Allows us to examine states in greater detail
- Produces richer description and more satisfactory explanations
- Tendency to exaggerate differences among states
- If we attribute different interests to different states, question becomes why states have different interests
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Domestic level:

- Allows us to examine states in greater detail
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- Tendency to exaggerate differences among states
- If we attribute different interests to different states, question becomes why states have different interests
Set of tools to study strategic interactions
Players choose between actions
Strategy for a player is a complete plan of action. Describes the actions that the player would take at each of his possible decision points.
Suppose

- Two actors, \( i \in \{\text{A1, A2}\} \)
- Each actor \( i \) has a strategy space, \( S_i \)
- Set of strategy profiles, \( S = S_{\text{A1}} \times S_{\text{A2}} \)
- For each actor \( i \), we can define a payoff function \( u_i : S \rightarrow \mathbb{R} \)
- \( u_i(s) \) gives player \( i \)'s payoff in the game when strategy profile \( s \in S \) is played
• Two criminals, \( i \in \{A_1, A_2\} \)
• Strategy space \( S_i = \{C, D\} \)
• Set of strategy profiles
\[
S = S_{A_1} \times S_{A_2} = \{(C, C), (D, D), (C, D), (D, C)\}
\]
• We are looking for strategy profile(s) that is/are a Nash equilibrium
• A strategy profile is a Nash equilibrium if and only if each player’s strategy is a best response to the strategies of the others
Payoff function $u_i$ is defined to be

- $u_i(D, C) = 3$
- $u_i(C, C) = 2$
- $u_i(D, D) = 1$
- $u_i(C, D) = 0$
Prisoners’ Dilemma

<table>
<thead>
<tr>
<th></th>
<th>A1</th>
<th>A2</th>
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<tbody>
<tr>
<td>C</td>
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<td>0, 3</td>
</tr>
<tr>
<td>D</td>
<td>3, 0</td>
<td>1, 1*</td>
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- Woman and Man going on a date, $i \in \{\text{Woman, Man}\}$
- Strategy space $S_i = \{\text{Concert, Movie}\}$
- Set of strategy profiles
  $S = \{(C, C'), (M, M), (C, M), (M, C)\}$
- We are looking for (pure strategy) Nash equilibria
Payoff functions $u_W$ and $u_M$ are defined to be

- $u_W(\text{Concert, Concert}) = 2$
- $u_M(\text{Concert, Concert}) = 1$
- $u_W(\text{Movie, Movie}) = 1$
- $u_M(\text{Movie, Movie}) = 2$
- $u_i(\text{Concert, Movie}) = 0$
- $u_i(\text{Movie, Concert}) = 0$
### Battle of Sexes

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<table>
<thead>
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<td>Movie</td>
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• Two car drivers driving toward each other, $i \in \{A_1, A_2\}$

• Strategy space $S_i = \{C, D\}$, where $C$ means turn aside and $D$ means standing tough

• Set of strategy profiles $S = \{(C, C), (D, D), (C, D), (D, C)\}$

• We are looking for (pure strategy) Nash equilibria
Payoff function $u_i$ is defined to be

- $u_i(D, C) = 3$
- $u_i(C, C) = 2$
- $u_i(C, D) = 1$
- $u_i(D, D) = 0$,
## Introduction to Game Theory

### Game of Chicken

<table>
<thead>
<tr>
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