

PS12: MIDTERM REVIEW SHEET

I. COURSE OUTLINE

- International relations is the study of strategic **interaction** among **actors** in the international **environment**.
- ACTORS are defined by their **preferences** and their **beliefs**;
 - a **preference ordering** is **rational** if it meets the following two conditions:
 1. **completeness**: actors can compare all alternatives available to them.
 2. **transitivity**: if an actor prefers alternative *A* to *B* and prefers *B* to *C*, then it must also prefer *A* to *C*.
 - beliefs: what it thinks about the preferences of other actors.
- THE ENVIRONMENT is the set of **actions** and **information** available to actors:
 - actions: physically describe what options are open to the actors;
 - information: what they actors know and what they can infer about others.
- STRATEGIC CHOICE refers to the actors taking into account the expected behavior of others when they make their choices:
 - actors are interested in outcomes resulting from the interaction and their preferences are over these outcomes;
 - outcomes are produced by the joint actions of several (or many) different actors;
 - actors take into account what they expect others might do;
 - actors choose actions for their best direct effect for the outcome and their indirect effect on the actions of others.
- We need **theories** to make sense of reality:
 - theories simplify reality by making various **assumptions**;
 - assumptions are neither true nor false, but “as if” statements;
 - assumption are judged by their usefulness.
- THEORIES are statements about expected relationships between **variables**
 - theories connect **explanatory** (or **independent**) variables to the **dependent** variable through **causal mechanisms**;
 - theories establish **necessary** or **sufficient** conditions for changes in the dependent variable.
- Theories must satisfy three requirements:
 - **logical consistency** means (i) the various assumptions do not contradict each other, and (ii) conclusions follow from premises in a logically coherent way;
 - a theory is **falsifiable** if we can imagine a set of circumstances that would disprove its claims;
 - **empirical validity** refers to how well the theory’s predictions match real world events; we can test the theory with case studies, statistical analysis, experiments, and forecasts.
- The **scientific method** for theory selection requires that we never abandon a theory unless we have a better one that is (i) logically consistent, (ii) explains more, and (iii) does not have too many auxiliary assumptions.
- One main assumption is that the international system is **anarchic**:
 1. there is no central authority to enforce agreements, and so no actor can rely on anything but its own resources;

2. the use of force is always possible; unlike domestically where the government has a monopoly on the coercive use of force, everyone can potentially use force internationally at any time.
- To analyze the strategic interaction of rational self-interested actors, we construct a **formal game-theoretic model** and solve it
 - We solve the model by finding its **equilibria**
 - all available actions are called **pure strategies**; a player choosing one of the available actions is said to be playing a pure strategy
 - a player choosing probabilistically among his pure strategies is said to be playing a **mixed strategy**
 - every game we shall analyze has a solution (this is Nash's Theorem)
 - a Nash equilibrium is a strategy profile such that each player's strategy is a best response to all other players' strategies
 - in equilibrium no player has an incentive to unilaterally deviate by changing his strategy given what the other players are doing
 - the model may have many equilibria, some in pure strategies and some in mixed strategies
 - an **equilibrium outcome** is what results if players follow their equilibrium strategies
 - EQUILIBRIUM ANALYSIS provides
 - predictions about the expected outcome of the strategic interaction
 - the reasons actors do what they do when they are doing their best in a strategic setting
 - predictions about outcomes we should not expect to see
 - shows how we might be able to change the incentives to produce behavior that we might be interested in
 - A CONTINUUM OF CONFLICT SITUATIONS can be created, from **pure cooperation** to **pure conflict**:
 - pure cooperative games often require players to **coordinate** their actions, which they can do through **tacit** or **explicit** communication
 - pure conflict games require players to avoid coordination, which they can do through playing **mixed strategies** to keep the opponent guessing
 - between the two extremes lie the **mixed-motive** situations in which players have a common interest in reaching an agreement but conflict over the terms of that agreement
 - DISTRIBUTIONAL CONFLICT (mixed-motive) situations have outcomes that depend on the **expectations** actors have of each other and are occasions for **bargaining**, which is a process through which players **influence each others' expectations** and can coordinate them
 - BARGAINING is both **transmission of information** and establishment of **commitments**
 - actors **signal** something they know or **screen** an opponent for something he knows
 - commitments are pledges to take some action in the future that can be interpreted either as a **threat** or as a **promise** depending on what they do for the other player
 - to influence expectations, commitments have to be **credible** and signals **costly**
 - BARGAINING POWER refers to the ability to influence expectations of the opponent, and
 - it is relative, not absolute,
 - it may not extend beyond a particular domain,
 - it is strategic, not brute force.
 - DYNAMIC COMMITMENT PROBLEMS occur when one pledges to carry out an action that would not be in its interests to fulfill; in these cases we say that commitment is **not credible**
 - SEQUENTIAL MOVES allow players to establish credible commitments and we use **extensive form games** to model situations where the players move in sequence
 - Nash equilibria may rely on incredible threats and so may be unreasonable
 - **subgame perfection** ensures that all threats are credible and eliminates the unreasonable Nash equilibria
 - we find the subgame perfect equilibria by **backward induction**, which is a process of looking forward and reasoning backward

- we must examine the optimality of the strategies everywhere along the game tree, even at places that will not be reached if the strategies are followed
- we use subgame perfection to study the **credibility of commitments** (both of threats and promises)
- in a **subgame perfect equilibrium** all commitments are credible, and so agreements self-enforcing in anarchy
- Establish credible commitments by leaving the **LAST CLEAR CHANCE TO AVOID DISASTER** to the opponent:
 - **constraining our choices**; eliminate options that we would be tempted to take; if we eliminate the loopholes in the agreement, then we cannot be tempted to make use of them, which forces the opponent to concede;
 - **relinquishing initiative**; let the opponent make the most painful choice

These tactics depend on **communicating the commitment** or else they would be ineffective; making oneself unavailable to receive communication is one way to escape such tactics.

The **hurting-more criterion** is not rationally and logically valid; it is not necessary for an action to hurt the threatened party more than it would hurt the threatener to make it an effective threat.

- Establish credible commitments by threatening the **RISK OF UNDESIRE AND UNINTENDED CONSEQUENCES**:
 - the **threat that leaves something to chance**, or **brinkmanship** is the art of creating a **shared risk of disaster** by pulling the opponent to the brink and letting him retreat first.
 - the **strategy of limited retaliation** threatens with increasing costs and risks; that is, it threatens with future punishment.

Both tactics depend on players' resolve and nerve; their willingness to run risks; they both increase the credibility of the threat of future destruction.

Both risk strategies depend on the generation of risk, especially **autonomous risk** like accidents and inadvertent consequences.

II. GAME THEORY CONCEPTS

- expected utility
- payoff matrix
- strictly competitive (zero-sum) game
- cooperative game
- coordination
- focal point
- tacit coordination
- mixed-motive game (distributional conflict)
- strictly dominant strategy
- Nash equilibrium
- pure-strategy equilibrium
- mixed-strategy equilibrium
- critical values
- extensive form game
- subgame perfect equilibrium
- backward induction
- know how to solve simple games

III. GENERAL CONCEPTS

- necessary/sufficient conditions
- assumptions
- theory falsifiability
- empirical evidence
- dependent variable
- explanatory variable
- causal mechanism
- logical consistency
- anarchy
- strategic interaction
- interdependent decisions
- decision-theoretic
- game-theoretic
- bargaining
- commitment (threats/promises)
- credible commitment
- dynamic commitment problem
- bargaining power
- strategic moves
- constrain choices (burn bridges)
- relinquish initiative
- threat that leaves something to chance
- limited retaliation
- shared risk of disaster
- competition in risk taking
- brinkmanship