Games of Strategy: Basic principles
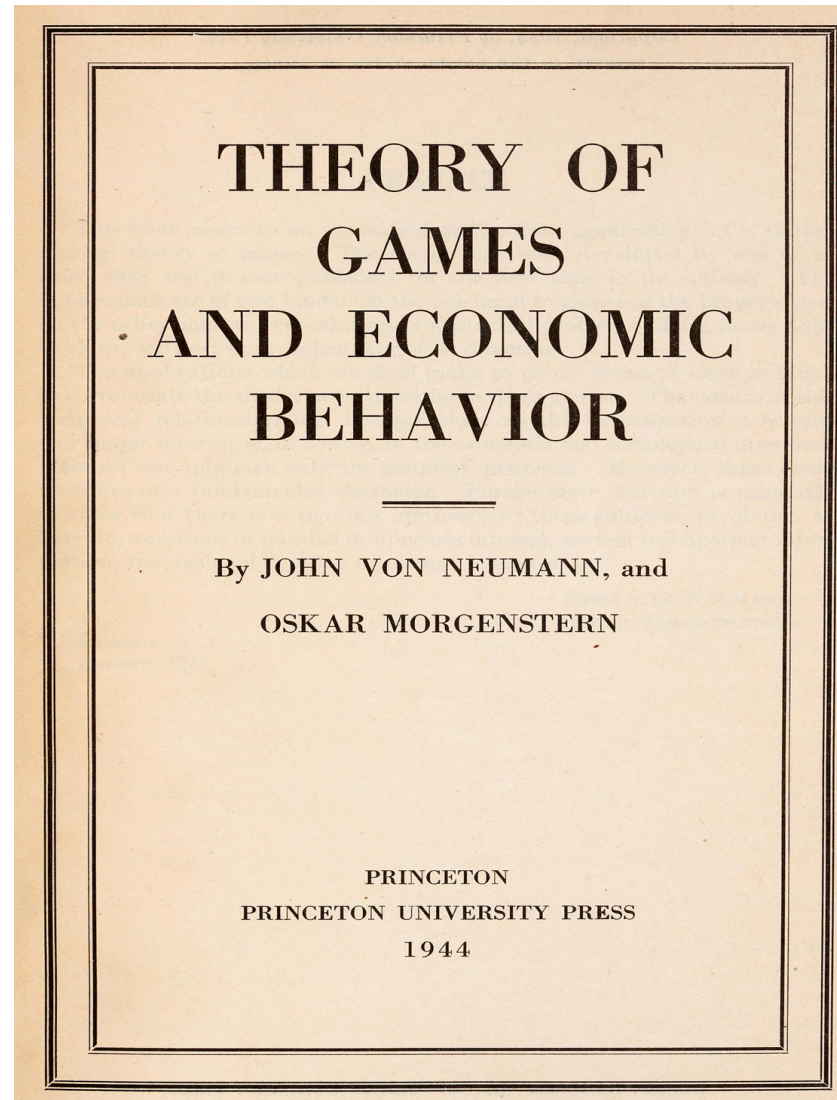
Game Theory // Fall 2025

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A bit of History

A bit of History

THEORY OF
GAMES
AND ECONOMIC
BEHAVIOR

By JOHN VON NEUMANN, and

OSKAR MORGENSTERN

PRINCETON
PRINCETON UNIVERSITY PRESS
1944

A bit of History

A game as *any interaction between agents that is governed by a set of rules specifying the possible moves for each participant and a set of outcomes for each possible combination of moves.*

A bit of History

Nobel prizes in Economics:

1972, 1994, 2005, 2007, 2009, 2012, 2014, 2016, 2017, 2020.

More formally

More formally

In short, games are **formal descriptions of strategic settings**.

For our purposes, strategic settings ➝ **interdependence**.

- What *you* do affects *my* outcomes, and what *I* do affects *your* outcomes.

Most of the time, *outcomes* do not imply **winning** or **losing**.

More formally

We will learn a *mathematically precise and logically consistent structure*.

To start, **5** elements:

1. A *list* of *players*;

2. A complete description of what the players *can* do (i.e., their actions);

3. A description of *what* the players *know* when they act;

4. A specification of *how* the players' actions lead to *outcomes*;

5. A specification of the players' preferences over outcomes (i.e., the *payoffs*).

More fomally

Noncooperative vs. *cooperative* games

Individual actions *vs.* *Contractual* relations

More fomally

Noncooperative games:

- **Extensive** form;
- **Normal** (strategic) form.

Next time: The extensive form