

PLSC 346. GLBL 180. EP&E 231.
Game Theory and International Relations

Spring 2021
Syllabus (this draft: February 9, 2021)

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Class: MW 1.30-2.20pm
Office Hours: MW 4-5pm
Book directly at <https://calendly.com/alexdebs/office-hours>

Teaching Fellow:
Michael Goldfien, michael.goldfien@yale.edu
Sections: MT 5-5.50pm;
Office Hours: R 5-6pm.

This course is an introduction to game theory and its applications to international relations. Game theory is a set of mathematical tools used to understand strategic interactions, where one person's best course of action depends on the behavior of others. Students will become familiar with the "science" and the "art" of game theory, discussing how to solve games and how to create them to represent strategic situations and shed new light on political events. Applications are taken from international relations, with a review of the First World War, the Second World War, and the Nuclear Age.

This is a quantitative reasoning (QR) course, and the mathematical content is challenging. We recommend students to have taken introductory microeconomics prior to taking this course.

Texts and References

There are two main books used in this class.

- Watson, Joel. 2013. *Strategy: An Introduction to Game Theory*. Third Edition. New York, N.Y.: W.W. Norton & Company.
- Osborne, Martin J. 2004. *An Introduction to Game Theory*. New York, N.Y.: Oxford University Press.

Watson (2013) is required for the course. Osborne (2004) is recommended for the course. Both textbooks are available at the Yale bookstore, 77 Broadway at York Square, where new copies are sold for \$126.65 and \$167.95, respectively. There are many other good textbooks in game theory, including the following:

- Fudenberg, Drew and Jean Tirole. 1991. *Game Theory*. Cambridge, MA: MIT Press.
- Gibbons, Robert. 1992. *Game Theory for Applied Economists*. Princeton, N.J.: Princeton University Press.
- Kydd, Andrew H. 2015. *International Relations Theory: The Game-Theoretic Approach*. Cambridge, U.K.: Cambridge University Press.
- McCarty, Nolan and Adam Meirowitz. 2007. *Political Game Theory: An Introduction*. New York, NY: Cambridge University Press.
- Morrow, James D. 1994. *Game Theory for Political Scientists*. Princeton, N.J.: Princeton University Press.

Other references below will be available on Canvas.

Lecture slides will be made available on Canvas shortly after class, at the latest.

Course Requirements

The course grade is a combination of participation (10%), response memos (10%), problem sets (20%), two midterm exams (30%), and a final exam (30%).

Participation (10%): Students should attend sections and they are encouraged to attend lectures. They are expected to participate actively in discussions.

Response Memos (10%): Students are expected to write a response memo for two meetings in the course, following a random assignment. A memo should respond to a prompt about the readings, building on some but not all of the required readings assigned for that particular meeting. Each memo should be about two pages in length, single-spaced (1000-1250 words). Additional guidelines on the structure of a response memo will be handed out at the beginning of the semester. Students must submit their memo on the Canvas website by 12noon on the day before class. Response memos get a late penalty for missing the deadline, and cannot be accepted after class.

Problem Sets (20%): Problem sets consist of around 3 questions on the solution concepts seen in class. They are handed out more or less on a weekly basis. Students can consult each other in solving the problem sets, but each student must submit his/her own solution. Problem sets get a late penalty for missing the deadline, and cannot be accepted after solutions are posted on the course website.

Midterm Exams (30%): There are two midterms, scheduled for Wednesday March 3 and Wednesday April 7 (each exam is worth 15% of the course grade). Each midterm consists of one question, solving a game-theoretic problem and reflecting on its substantive implications.

Final Exam (30%): The final exam will be held on Tuesday, May 18, starting at 9am. Like the midterms, the final asks students to solve a game-theoretic problem and reflect on its substantive implications.

Course Outline

1. Introduction

- **The Theory of Rational Choice** (Monday February 1)
Required Reading
 - Osborne. 2004. Chapter 1.
 - Watson. 2013. Chapter 1.

- **The Normal Form, Strategies, Best Response** (Wednesday February 3)
Required Reading
 - Watson. 2013. Chapters 3, 4, and 6.Recommended Reading
 - Osborne. 2004. Chapter 2, pp. 13-21.
 - Watson. 2013. Chapter 5.

- **Nash Equilibrium** (Monday February 8)
Required Reading
 - Watson. 2013. Chapter 7, Chapter 9, pp. 95-104.Recommended Reading
 - Osborne. 2004. Chapter 2, pp. 21-47, 50-54.

- **Mixed-Strategy Nash Equilibrium** (Wednesday February 10)
Required Reading
 - Osborne. 2004. Chapter 4, pp. 111-114.
 - Watson. 2013. Chapter 11.Recommended Reading
 - Osborne. 2004. Chapter 4, pp. 99-111.

- **Algorithm for Finding Nash Equilibria** (Monday February 15)
Required Reading
 - Osborne. 2004. Chapter 4, pp. 137-142.Recommended Reading
 - Osborne. 2004. Chapter 4, pp. 120-123.

• **The Role of Game Theory in International Relations** (Wednesday February 17)

Required Reading

- Walt, Stephen M. 1999. “Rigor or Rigor Mortis? Rational Choice and Security Studies.” *International Security*. Vol. 23, No. 4, pp. 5-48.
- Debs, Alexandre. 2018. “The Empirical Promise of Game Theory,” *The Oxford Encyclopedia of Empirical International Relations*, William Thompson, ed. (Oxford: Oxford University Press), Vol. 1, pp. 737-755.

Recommended Reading

- Clarke, Kevin A. and David M. Primo. 2012. *A Model Discipline: Political Science and the Logic of Representations*. Oxford: Oxford University Press.
- Goemans, H.E. and William Spaniel. 2016. “Multimethod Research: A Case for Formal Theory.” *Security Studies*, Vol. 25, No. 1, pp. 25-33.
- Lorentzen, Peter, Taylor M. Fravel, and Jack Paine. 2017. “Qualitative Investigation of Theoretical Models: The Value of Process Tracing.” *Journal of Theoretical Politics*. Vol. 29, No. 3, pp. 467-491.
- Powell, Robert L. 1999. *In the Shadow of Power: States and Strategies in International Politics*. Princeton, N.J.: Princeton University Press, pp. 23-39.

Monday February 22: no class (break day).

2. **The First World War**

• **Planning for War** (Wednesday February 24)

Required Reading

- Trachtenberg, Marc. 1991. *History and Strategy*. Princeton, N.J.: Princeton University Press. Chapter 2. “The Coming of the First World War: A Reassessment,” pp. 47-99.
- Copeland, Dale A. 2000. *The Origins of Major War*. Ithaca, NY: Cornell University Press. Chapter 4. “The July Crisis and the Outbreak of World War I,” pp. 79-117.

Recommended Reading

- Keegan, John. 1999. *The First World War*. New York: Alfred A. Knopf. Chapter Two: “War Plans,” pp. 24-47.
- Zuber, Terence. 1999. “The Schlieffen Plan Reconsidered,” *War in History*, Vol. 6, no. 3, pp. 262-305.

- Lieber, Keir A. 2007. “The New History of World War I and What It Means for International Relations Theory,” *International Security*, Vol. 32, No. 2, pp. 155-191.
 - Snyder, Jack and Keir A. Lieber. 2008. “Correspondence: Defensive Realism and the “New” History of World War I,” *International Security*, Vol. 33, No. 1, pp. 174-194.
 - Ehlert, Hans, Michael Epkenhans, and Gerhard P. Gross. 2014. *The Schlieffen Plan: International Perspectives on the German Strategy for World War I*. Lexington, Kentucky: University Press of Kentucky.
 - Jervis, Robert, Marc Trachtenberg, Dale C. Copeland, and Stephen A. Schuker. 2017. “New Light on 1914?” H-Diplo Forum, No. 16.
 - Tanenbaum, Jan Karl. 2014 [1986]. “French Estimates of Germany’s Operational War Plans,” in *Knowing One’s Enemies: Intelligence Assessment before the Two World Wars*, edited by Ernest R. May, pp. 150-171. Princeton, N.J.: Princeton University Press.
 - Osborne. 2004. Chapter 5, pp. 153-173.
- **Subgame Perfection** (Monday March 1)
 - Required Reading
 - Watson. 2013. Chapter 14 and Chapter 15, pp. 183-192.
 - Recommended Reading
 - Osborne. 2004. Chapter 5, pp. 153-173.
- First Midterm Exam:** Wednesday March 3
- **Fighting in the First World War** (Monday March 8)
 - Required Reading
 - Hastings, Max. 2013. *Catastrophe 1914: Europe Goes to War*. New York: Alfred A. Knopf. Chapter 18: “Silent Night, Holy Night,” pp. 541-566.
 - Axelrod, Robert. 1984. *The Evolution of Cooperation*. New York: Basic Books: 3-24, 73-87.
- **Repeated Games** (Wednesday March 10)
 - Required Reading
 - Watson. 2013. Chapter 22.

3. The Second World War

- **Bargaining** (Monday March 15)

Required Reading

- Watson. 2013. Chapter 19.

- **Incomplete Information, Bayesian Nash Equilibrium** (Wednesday March 17)

Required Reading

- Watson. 2013. Chapters 24 and 26.

Recommended Reading

- Osborne. 2004. Chapter 9, pp. 273-282, and 285-287.

- **Information, Commitment Problems, and War** (Monday March 22)

Required Reading

- Fearon, James D. 1995. “Rationalist Explanations for War.” *International Organization*. Vol. 49, No. 3, pp. 379-414.

Recommended Reading

- Powell, Robert. 2006. “War as a Commitment Problem.” *International Organization*. Vol. 60, No. 1, pp. 169-203.

Wednesday March 24: no class (break day).

- **1938-1940. The Munich Conference and The Phoney War.** (Monday March 29)

Required Reading

- Parker, R. A. C. 1993. *Chamberlain and Appeasement: British Policy and the Coming of the Second World War*. London: Macmillan. Chapter 8. “Munich,” pp. 156-181.
- Mearsheimer, John J. 1983. *Conventional Deterrence*. Ithaca, N.Y.: Cornell University Press. Chapter 4, “The German Decision to Attack in the West, 1939-1940,” pp. 99-133.

Recommended Reading

- Mearsheimer, John J. 1983. *Conventional Deterrence*. Ithaca, N.Y.: Cornell University Press. Chapter 3, “The Allied Decision *Not* to Attack Germany, March 1939-May 1940,” pp. 67-98.
- Weinberg, Gerhard L. 1992. “Germany and Munich.” in Maya Latynski, ed. *Reappraising the Munich Pact: Continental Perspectives*. Washington, D.C.: Woodrow Wilson Center Press, pp. 9-20.
- Tooze, Adam. 2006. *The Wages of Destruction: the Making and Breaking of the Nazi Economy*. Longman: Penguin. Introduction, pp. 1-33.

• **1940-1941. The Pacific Theater, the U.S. Entry into the War** (Wednesday March 31)

Required Reading

- Keegan, John. 1989. *The Second World War*. London: Hutchinson. Chapter 12. “Tojo’s Strategic Dilemma.” pp. 240-250.
- Kershaw, Ian. 2007. *Fateful Choices: Ten Decisions That Changed the World, 1940-1941*. New York: The Penguin Press. Chapter 9. “Berlin, Autumn 1941. Hitler Declares War on the United States.” pp. 382-430.
- Monteiro, Nuno P. and Alexandre Debs. 2020. “An Economic Theory of War.” *Journal of Politics*. Vol. 82, No. 1, pp. 255-268.

Recommended Reading

- Barnhart, Michael A. 1987. *Japan Prepares for Total War: The Search for Economic Security, 1919-1941*. Ithaca, N.Y.: Cornell University Press.
- Copeland, Dale C. 2015. *Economic Interdependence and War*. Princeton, N.J.: Princeton University Press. Chapter 5. “The Russian Problem and the Onset of the Pacific War, March-December 1941.” pp. 184-246.
- Heinrichs, Waldo. 1990. “The Russian Factor in Japanese-American Relations, 1941.” In Hilary Conroy and Harry Wray. eds. *Pearl Harbor Reexamined: Prologue to the Pacific War*. Honolulu: University of Hawaii Press. pp. 163-177
- Iriye, Akira. 1987. *The Origins of the Second World War in Asia and the Pacific*. New York: Longman.
- Watson. 2013. Chapter 21.

• **The Nuclear Attacks on Hiroshima and Nagasaki** (Monday April 5)

Required Reading

- Sherwin, Martin. 2003. *A World Destroyed: Hiroshima and Its Legacies*. Stanford, CA: Stanford University Press. Chapter 8, “The Bomb, the War, and the Russians,” pp. 193-219.
- Freedman, Lawrence and Jeffrey Michaels. 2019. *The Evolution of Nuclear Strategy*. New, Updated and Completely Revised. 4th edition. London: Palgrave Macmillan. Chapter 2, “The Strategy of Hiroshima,” pp. 17-33, available here.

Other Reading

- Alperovitz, Gar. 1995. “Hiroshima: Historians Reassess.” *Foreign Policy*. 99 (Summer): 15-34.
- Bernstein, Barton J. 1995. “The Atomic Bombings Reconsidered.” *Foreign Affairs*. 74(1): 135-152.

- Hersey, John. 1966. *Hiroshima*. New York. N.Y.: A. A. Knopf.
- Miscamble, Wilson D. 2011. *The Most Controversial Decision: Truman, the Atomic Bombs, and the Defeat of Japan*. New York: Cambridge University Press. Chapter 7 (pp. 112-124).
- Rhodes, Richard. 1986. *The Making of the Atomic Bomb*. New York, N.Y.: Simon and Schuster. Chapter 19 (pp. 679-747).
- Sherwin, Martin. 2003. *A World Destroyed: Hiroshima and Its Legacies*. Stanford, CA: Stanford University Press. Chapter 9, “Diplomacy - and Destruction,” pp. 220-238.
- Stimson, Henry L. 1947. “The Decision to Use the Atomic Bomb.” *Harper’s Magazine*. 194 (1161): 97-107.
- Walker, J. Samuel. 2005. “Recent Literature on Truman’s Atomic Bomb Decision: A Search for Middle Ground.” *Diplomatic History*. 29(2): 311-334.

Second Midterm Exam: Wednesday April 7

4. The Nuclear Age

• Arms Races in the Early Nuclear Age. The Soviet Atomic Bomb and the Hydrogen Bomb (Monday April 12)

Required Reading

- Wells, Samuel F., Jr. 1979. “Sounding the Tocsin: NSC 68 and the Soviet Threat.” *International Security*. Vol. 4, No. 2, pp. 116-158.
- Jervis, Robert. 1978. “Cooperation under the Security Dilemma.” *World Politics*. Vol. 30, No. 1, pp. 167-214.

Recommended Reading

- “General Advisory Committee’s Majority and Minority Reports on Building the H-Bomb.” October 30, 1949. [available on PBS.org here].
- National Security Council Report 68 (NSC-68). April 7, 1950, *Foreign Relations of the United States*. 1950, Vol. I, Document 85, enclosure 2. Available here.
- DeGroot, Gerard J. 2005. *The Bomb: A Life*. Cambridge, MA: Harvard University Press. Chapter 10: “To Little Boy, a Big Brother.” pp. 162-183.
- Holloway, David. 1994. *Stalin and the Bomb: The Soviet Union and Atomic Energy, 1939-1956*. New Haven: Yale University Press. Chapters 10 and 11 (pp. 196-252).
- Rosenberg, David Alan. 1979. “American Atomic Strategy and the Hydrogen Bomb Decision.” *The Journal of American History*. Vol. 66, No. 1, pp. 62-87.

• **Nuclear Deterrence and the Cuban Missile Crisis** (Wednesday April 14)

Required Reading

- Schelling, Thomas C. 2008 [1966]. *Arms and Influence*. New Haven, CT: Yale University Press. Chapter 3, “The Manipulation of Risk,” pp. 92-125.
- Dobbs, Michael. 2008. *One Minute to Midnight: Kennedy, Khrushchev, and Castro on the Brink of Nuclear War*. New York, N.Y.: Alfred A. Knopf. Chapter 1, “Americans,” pp. 3-31.

Recommended Reading

- Dobbs, Michael. 2008. *One Minute to Midnight: Kennedy, Khrushchev, and Castro on the Brink of Nuclear War*. New York, N.Y.: Alfred A. Knopf. Chapter 2, “Russians,” pp. 32-57.
- Fursenko, Aleksandr and Timothy Naftali. 1997. *“One Hell of a Gamble”: Khrushchev, Castro, and Kennedy. 1958-64*. New York, N.Y.: W.W. Norton and Co. Chapter 14, “Climax of the Cold War,” pp. 257-289.
- Blanton, Thomas. 2012. “The Cuban Missile Crisis Just Isn’t What It Used to Be.” in *The Global Cuban Missile Crisis at 50: New Evidence from Behind the Iron, Bamboo, and Sugar-cane Curtains, and Beyond*. James G. Hershberg and Christian F. Ostermann (eds.). Wilson Center. Cold War International History Project. Issue 17/18: 11-18.
- Schelling, Thomas C. 2008 [1966]. *Arms and Influence*. New Haven, CT: Yale University Press. Chapters 1 and 2 (pp. 1-91).

• **Beliefs and Information Aggregation.** (Monday April 19)

Required Reading

- Watson. 2013. Chapter 27, pp. 368-373.

• **Perfect Bayesian Equilibrium** (Wednesday April 21)

Required Reading

- Watson. 2013. Chapter 28.

Recommended Reading

- Osborne. 2004. Chapter 10, pp. 313-336.

• **Signaling and Reputation** (Monday April 26)

Required Reading

- Watson. 2013. Chapter 29.

• **The 2003 U.S.-led Invasion of Iraq** (Wednesday April 28)

Required Reading

- Bozo, Frederic. 2016. *A History of the Iraq Crisis: France, the United States, and Iraq, 1991-2003*. Washington, D.C.: Woodrow Wilson Center Press. Chapter 4 “The Negotiations: September-December 2002,” pp. 133-173.
- Debs, Alexandre and Nuno P. Monteiro. 2014. “Known Unknowns: Power Shifts, Uncertainty, and War.” *International Organization*. Vol. 68, No. 1, pp. 1-32.

Recommended Reading

- Bas, Muhammet A. and Andrew J. Coe. 2016. “A Dynamic Theory of Nuclear Proliferation and Preventive War.” *International Organization*. Vol. 70. No. 4, pp. 655-685.
- Brands, Hal and David Palkki. 2011. “Saddam, Israel, and the Bomb: Nuclear Alarmism Justified?” *International Security*. Vol. 36, No. 1, pp. 133-166.
- Brands, Hal and David Palkki. 2011. “Why did Saddam Want the Bomb?” Washington, D.C.: Foreign Policy Research Institute. Available [here](#).
- Braut-Hegghammer, Malfrid. 2016. *Unclear Physics: Why Iraq and Libya Failed to Get the Bomb*. Ithaca, N.Y.: Cornell University Press.
- Debs Alexandre, Nuno P. Monteiro, and David A. Lake. 2013. “What Caused the Iraq War? A Debate.” *Duck of Minerva* online. July 30 - August 6.
- Debs, Alexandre and Nuno P. Monteiro. 2017. *Nuclear Politics: The Strategic Causes of Proliferation*. Chapter 2, “A Strategic Theory of Nuclear Proliferation.” pp. 33-60.
- Duelfer, Charles. 2004. *Key Findings of the Comprehensive Report of the Special Advisor to the DCI on Iraq’s WMD*.
- Ehrenberg, John, J. Patrice McSherry, Jose Ramon Sanchez, and Caroleen Marji Sayej. 2010. *The Iraq Papers*. New York: Oxford University Press. Chapter 2 “Organizing for Preemptive War: Iraq and the Presidency of George W. Bush,” pp. 52-115.
- Jervis, Robert. 2010. *Why Intelligence Fails: Lessons from the Iranian Revolution and the Iraq War*. Ithaca, N.Y.: Cornell University Press. Chapter 3 “The Iraq WMD Intelligence Failure: What Everyone Knows Is Wrong,” pp. 123-155.
- Lake, David A. 2010/2011. “Two Cheers for Bargaining Theory: Assessing Rationalist Explanations of the Iraq War.” *International Security*. Vol. 35, No. 3, pp. 7-52.
- Thompson, Alexander. 2009. *Channels of Power: The U.N. Security Council and U.S. Statecraft in Iraq*. Ithaca, N.Y.: Cornell University Press. Chapter 5 (pp. 133-162).

- Woods, Kevin M., David D. Palkki and Mark E. Stout. 2011. *The Saddam Tapes: The Inner Workings of a Tyrant's Regime, 1978-2001*. New York, N.Y.: Cambridge University Press.

- **Nuclear Proliferation and Preventive War** (Monday May 3)

Required Reading

- Sagan, Scott D. 1996-1997. “Why Do States Build Nuclear Weapons?: Three Models in Search of a Bomb.” *International Security*, Vol. 21, No. 3, pp. 54-86.
- Debs, Alexandre and Nuno P. Monteiro. 2017. “Conflict and Cooperation on Nuclear Non-Proliferation.” *Annual Review of Political Science*, Vol. 20, pp. 331-349.

Recommended Reading

- Sagan, Scott D. 2011. “The Causes of Nuclear Weapons Proliferation.” *Annual Review of Political Science*, Vol. 14, No. 1, pp. 225-244.
- Debs, Alexandre and Nuno P. Monteiro. 2017. *Nuclear Politics: The Strategic Logic of Proliferation*. New York: Cambridge University Press. Chapters 1-2.

5. Conclusion

- Wednesday May 5: **Review Session**

Final Exam: Tuesday, May 18, starting at 9am