

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

Fall 2018

Syllabus (this draft: January 3, 2019)

Professor Alexandre Debs
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Class: MW 9.25-10.15am, Watson Center, 60 Sachem Street, Room B74.
Office Hours: MT 4-5pm, Rosenkranz Hall, 115 Prospect St., Room 311.
Book directly at <https://calendly.com/alexdebs/15min/>.

Teaching Fellows:

Ian Crichton, ian.crichton@yale.edu

Sections: M 5-5.50pm, William L. Harkness Hall, 100 Wall Street, Room 204;
T 2.30-3.20pm, William L. Harkness Hall, Room 203.

Office Hours: R, 4-5pm, Rosenkranz Hall, Room 220.

Benjamin Miller, benjamin.miller@yale.edu

Sections: M 10.30-11.20am, Watson Center, Room A48;
W 1.30-2.20pm, Linsly Chittenden Hall, 63 High Street, Room 103.

Office Hours: R 10.30-11.30am, Rosenkranz Hall, Room 220.

This course provides 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. The course provides an introduction to 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.

- Osborne, Martin J. 2004. *An Introduction to Game Theory*. New York, N.Y.: Oxford University Press.

- Watson, Joel. 2013. *Strategy: An Introduction to Game Theory*. Third Edition. New York, N.Y.: W.W. Norton & Company.

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 \$124 and \$147.95, respectively. Copies are also put on reserve at CSSSI, for 2-hour loans (the library has the second edition of Watson's *Strategy*). There are many 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. Note that the use of any electronic devices, including laptop computers, tablets, and phones is not allowed during lectures or sections. Please plan to take notes using pen and paper. 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%), a midterm exam (25%), and a final exam (35%).

Participation (10%): Students are expected to attend lectures and sections and actively participate in discussions in class and in sections.

Response Memos (10%): Students are expected to write a response memo for two meetings. A memo should present an opinion about the strategic interaction described in the readings: Who were important actors? What were their choices and preferences over outcomes? Why did they make their particular decision? Each memo should be about one page in length, single-spaced (500-750 words). Assignments are handed out a couple of weeks into 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 test the student's understanding of the solution concepts seen in class. Problem sets are handed out more or less on a weekly basis. Students can consult each other in working on the solutions, but every student must submit his/her own answer in his/her own words/formulae. Problem sets get a late penalty for missing the deadline, and cannot be accepted after solutions are posted on the course website.

Midterm Exam (25%): The midterm exam is scheduled for Monday, October 29.

Final Exam (35%): The final exam will be held on Friday December 14, 2pm-5pm. WTS A51.

Academic Integrity

Students should be familiar with the University's policies on academic integrity and plagiarism (consult the relevant section of the Yale College Writing Center here).

Course Outline

1. Introduction

- **The Theory of Rational Choice** (Wednesday August 29)
Required Reading
 - Osborne. 2004. Chapter 1; Watson. 2013. Chapter 1.Friday August 31, Monday September 3: no class (APSA, Labor Day).
- **Strategies, the Normal Form, and Best Responses** (Wednesday September 5)
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 September 10)
Required Reading
 - Watson. 2013. Chapter 7 and Chapter 9, pp. 95-104.Recommended Reading
 - Osborne. 2004. Chapter 2, pp. 21-47, 50-54.
- **Mixed Strategy Nash Equilibrium** (Wednesday September 12)
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 September 17)

Required Reading

- Osborne. 2004. Chapter 4, pp. 137-142.

Recommended Reading

- Osborne. 2004. Chapter 4, pp. 120-23.

- **The Role of Game Theory in International Relations** (Wednesday September 19)

Required Reading

- Debs, Alexandre. 2017. “The Empirical Promise of Game Theory,” *The Oxford Encyclopedia of Empirical International Relations*, William Thompson, ed. (forthcoming). Oxford: Oxford University Press. Digital version at <http://politics.oxfordre.com/>.
- 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.

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.

2. The First World War

- **Planning for War** (Monday September 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
- Keegan, John. 1999. *The First World War*. New York: Alfred A. Knopf. Chapter Two: War Plans, pp. 24-47.

Recommended Reading

- 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. Available electronically here.

- **Subgame Perfection** (Wednesday September 26)

Required Reading

- Watson. 2013. Chapters 14 and 15, pp. 183-192.

Recommended Reading

- Osborne. 2004. Chapter 5, pp. 153-173.

- **Repeated Games** (Monday October 1)

Required Reading

- Watson. 2013. Chapter 22.

- **Fighting in the First World War** (Wednesday October 3)

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.

3. The Second World War

- **Bargaining** (Monday October 8)

Required Reading

- Watson. 2013. Chapter 19.

• **Incomplete Information, Bayesian Nash Equilibrium** (Wednesday October 10)

Required Reading

- Watson. 2013. Chapters 24, 26.

Recommended Reading

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

• **Information, Commitment Problems, and War** (Monday October 15)

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 October 17: no class (October recess).

• **1938-1940. The Munich Conference and The Phoney War** (Monday October 22)

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. Chapters 3 and 4, “The Allied Decision *Not* to Attack Germany, March 1939-May 1940” and “The German Decision to Attack in the West, 1939-1940,” pp. 67-133.

Recommended Reading

- Tooze, Adam. 2006. *The Wages of Destruction: the Making and Breaking of the Nazi Economy*. Longman: Penguin. Introduction, pp. 1-33.
- 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.

• **1940-1941. The Pacific Theater, the U.S. Entry into the War** (Wednesday October 24)

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. 2017. “An Economic Theory of War.” *Yale University Mimeo*.

Recommend 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.

Midterm Exam: Monday October 29

4. The Nuclear Age

• Arms Races in the Early Nuclear Age. The Soviet Atomic Bomb and the Hydrogen Bomb (Wednesday October 31)

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** (Monday November 5)

Required 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. Chapters 1-2 (pp. 3-57).
- 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 (pp. 257-289).
- Schelling, Thomas C. 2008 [1966]. *Arms and Influence*. New Haven, CT: Yale University Press. Chapter 2 (pp. 92-125). Available [here](#).

Recommended Reading

- 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).

- **War of Attrition** (Wednesday November 7)

Required Reading

- Osborne. 2004. Chapter 3, pp. 70-80.

Recommended Reading

- Watson. 2013. Chapter 27, pp. 363-368.

- **Beliefs, Information Aggregation** (Monday November 12)

Required Reading

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

- **Perfect Bayesian Equilibrium** (Wednesday November 14)

Required Reading

- Watson. 2013. Chapter 28.

Recommended Reading

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

Monday November 19, Wednesday November 21: no class (November recess).

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

Required Reading

- Watson. 2013. Chapter 29.

• **The 2003 U.S.-led Invasion of Iraq** (Wednesday November 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.
- 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. Available here.
- 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.
- 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). Available here.
- 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** (Monday December 3)

Required Reading

- Debs, Alexandre and Nuno P. Monteiro. 2017. “Conflict and Cooperation on Nuclear Non-Proliferation.” *Annual Review of Political Science*, Vol. 20, pp. 331-349.
- 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.

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 December 5: Review Session

Final Exam: Friday December 14, 2pm-5pm. WTS A51.