



INTS 764: Fault Lines & Foresight (A Primer for Future Worlds)

Tuesdays, 3:00-6:00pm (JMHH 418)

Fall Syllabus

Faculty:

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Course Description:

Fault Lines in the Global System introduces students to the field of foresight strategy. It does so through video, readings, discussion, and experiential exercises centered on a well-known global fault line: water stress.

Now commonly described as “Blue Gold” or “Today’s Oil,” water has played a critical role in the evolution of human civilization. It underpins production in a wide range of economic sectors, and, above all else, is fundamental to human life. Water is now commodified, and on a scale never before seen, making the study of water stress an ideal point of entry into the complex and unintended consequences of choices made by societal, enterprise, and government actors. Through this topic as well, we have a path toward knowledge acquisition of, and applied experience with systems thinking, one of the epistemological foundations of foresight strategy.

Aimed toward contexts of high ambiguity, systems thinking is deliberately ecological and holistic in its framing of causality and consequences. Specifically, systems thinkers attend to the prospect that change is not just sequential and linear, but more often iterative, exponential, and multi-causal. As such, systems thinking, by its nature, concerns itself with sources of sustainability and change, whether focused on the environment, a company’s bottom line, or the performance of economies, nations, and militaries. For this reason, anyone concerned with strategic design in highly ambiguous contexts can only benefit from honing their foresight skills.

By the end of this course, students will acquire content knowledge regarding water issues, demonstrate capacity using several leading foresight tools (e.g., scenario planning, back casting, feedback loops, red/blue teaming, matrix gaming, horizon scanning), and complete a team-based futures scenario on a topic of their choosing.

In addition to discussion of assigned readings, experiential and interactive group exercises comprise the remainder of in-class activities. Full attendance and active participation is therefore required of all students. In addition, there is a full day field trip to Washington to engage with subject matter experts in the fields of foresight strategy and water resource management.

Course Requirements and Grading:

The requirements below aim to provide students with an opportunity to learn different foresight tools, road test them, and reflect on our experiential exercises. For the final assignment, students will complete a team-based futures scenario on a topic of their choosing.

I. Class Participation: (25%)

Inclusive of,

- active participation in strategic foresight exercises
- attendance and regular participation in class discussion
- feedback to classmates on preliminary drafts of their “Global Futures” presentations

II. Writing Assignments: (30%)

A. 2 Reflection Memos (250-500 words maximum, 12pt font) (10%)

Due Dates: You are asked to complete two reflection memos. You must complete at least one reflection memo by October 10 (meaning in relation to the October 6 class activities or an earlier class). The second reflection memo may be submitted at will with regard to a class of your choosing. **Memos are due to me by email no later than the day prior to our next class.**

These memos are an opportunity for you to reflect up a group-based learning experience. Possible items to consider may be what, if any, value you found in the exercise and what you observed in others and yourself with regard to the role of mental models, cognitive biases, and faulty assumptions during a given discussion or exercise.

B. Foresight Strategy Essay: Seeing the Future? (8-10 dbl-sp pgs, 12pt font)
(20%)

For this assignment you will read Peter Schwartz's *Learnings from the Long View* (60 pages), and one book from the assigned list (see appendix). Essay specifics will be discussed in the classroom and posted to our Canvas site. The essay should be no more than 8-10 double-spaced pages, in narrative prose, with proper citation, page numbers, bibliography and footnotes.

Happy to read drafts submitted no later than 1 week prior to due date.

III. The "Global Futures" Scenario Project (40%)

Your capstone assignment asks you to apply tools introduced in this course to a global fault line of your choice. These "fault lines" may be geopolitical, environmental, societal, or industry-based in nature, and must be of a nature where the outcome is highly ambiguous but also highly likely to have major impact.

Team topics must be pre-approved by the faculty, and finalized no later than week 4 of the course.

The assignment has several components:

- a) A 15-20 minute oral presentation of your "Global Futures" project, including time for Q&A. This presentation will be centered on four (4) future scenarios developed following the "most uncertain, most impact" 2x2 matrix model that will be introduced in class; Students are expected to demonstrate adequate response to earlier feedback.
- b) Preliminary presentation of your 2x2 matrix and peer-to-peer feedback during week 8 of the term
- c) An annotated bibliography and project executive summary that will be distributed to classmates no less than one week in advance of your presentation;
- d) Details from your field interviews with subject matter experts.

Class Etiquette:

The benefit of a small group seminar starts with a commitment to prepare for class and keen mindfulness of one's impact on others. To facilitate an environment for shared and respectful learning, you need to prepare in advance for each class, and are encouraged to participate often and with enthusiasm. In addition, please comply with the following:

A. Use of Electronic Devices:

Laptops and other electronic devices are required to remain down during class discussion, except in instances where you are referring to readings and/or working on a group exercise. You are also requested to leave your phone in your book bag. Should you have reason to need your phone during class, please inform the course instructor in advance.

B. Food:

Please keep in class food consumption to a minimum as it can be viewed as disruptive by some, while making others wish they had something to eat too. Best if you can refrain from eating until break time (or bring enough for all).

Code of Academic Integrity:

The Global Program fully supports and adheres to all university policies and procedures regarding academic integrity (cheating, fabrication, plagiarism, etc.). The work you submit in this class is expected to be your own. If you submit work that has been copied without attribution from any published or unpublished source including the Internet, or that has been prepared by someone other than you, or that in any way attributes somebody else's work as your own (e.g., translation without proper attribution), you may face discipline by the university's Office of Student Conduct. For more information consult:

- **University Code of Academic Integrity** <http://www.upenn.edu/academicintegrity/>
- **Office of Student Conduct** <http://www.upenn.edu/osc>

Class Attendance Policies:

Attendance is valued and expected in this class. Given the small number of class meeting times, **no more than one class absence** is excused without impact. More than one absence will result in a full grade drop in your final grade. **Three absences** will result in an automatic course failure. Three late arrivals constitute one absence. Given the experiential nature of the class, make-up work is generally not possible.

Fault Lines in the Global System Class Schedule

Class 1: Introduction (August 30)

In today's class, students will be introduced to the idea of systems thinking through several experiential exercises. In addition, discussion of course objectives, the logic of our focus on water stress as a fault line to study, and the idea of foresight as a strategic planning tool will be discussed.

Class 2: Water as Civilizing or Economic Force? (September 6)

In today's class, we begin with careful consideration of the idea of "water civilizations," and by way of discussing some of the major historic water civilizations. As you read, consider how the centrality of water played a role in institution-building, power, and conflict in the examined cases.

Steven Solomon, 2010. *Water: The Epic Struggle for Wealth, Power, and Civilization* (New York: Harper Collins)

Chapter 2: "Water and the Start of Civilization," pp. 15-23

Chapter 3: "Rivers, Irrigation, and the Earliest Empires," pp. 24-58

Chapter 5: "The Grand Canal and the Flourishing of Chinese Civilization," pp. 96-125

J. Stephen Lansing 1987. "Balinese 'Water Temples' and the Management of Irrigation," *American Anthropologist* (89:2), June 1987, pp. 326-341.

For the second half of the class, students will be asked to apply some of the systems thinking concepts introduced in the last class to a well-known water civilization not discussed in the readings.

Class 3: California Dreaming I: Building an Export Engine (September 20)

In today's class, we lay the foundation for in-depth discussion of water issues in California. We also use the case of California as our backdrop to an exploration of several critical foresight strategy tools. In advance of this class, please view Part 1 (Mulholland's Dream) of the documentary, *Cadillac Desert* (approximately 90 minutes of your time). Details on how to access the video are provided on our canvas site

Exercise: Students will model California's water crisis from a systems thinking perspective.

Class 4: California Dreaming II: How Did California Grow into a Water Crisis (September 27)

Having now experienced core elements of systems thinking through class exercises, this class opens with an introduction to the field of foresight strategy. Special attention to its roots in government and business, in places as wide-ranging as the Department of Defense's Office of Net Assessment to the Shell Corporation will be considered. We use this background to discuss the differences between foresight and forecasting.

In the second half of the class, we turn to the legacy of Mulholland's Dream, with special attention to the making of the California water system and the role of the federal government. Readings focused on the Central Valley's Westlands Water District will be circulated for discussion next week.

Class 5: California Dreaming III: Westlands Water District in Crisis (October 4)

In today's class, students are introduced to the Westlands Water District, heartland of the American almond industry, and home to one of the most powerful lobbying groups in the USA. We will examine how Westlands came into creation and its water crisis as the backdrop to thinking about the design of sustainable futures.

Exercise: Students will work in small groups to back cast a version of Westlands with and without water stress. Considerable time will be allocated to discuss the strengths and weaknesses of this method as a means to identify control mechanisms within complex systems.

Class 6: California Dreaming IV: Westlands Water District Foresight (October 11)

Building off each team's back cast from the last class, students will begin the shift toward scenario planning as a foresight strategy tool. Special attention is given to the critical role of horizon scanning at the start of a scenario-building exercise.

Exercise: Students will work in small teams to complete a horizon scanning exercise. Through discussion we will explore possible explanations for variation in each team's findings.

Class 7: California Dreaming V: Westlands Water District 2025 (October 18)

In this final class on foresight skill-building, student teams are expected to apply a larger menu of concepts to the Westlands Water District and the U.S. almond industry.

Exercise: Following an introduction to likelihood matrices, student teams will be asked to develop a likelihood matrix for the Westlands almond industry. Building off these matrices, student teams are asked to develop 4 possible futures for the region.

Class 8: Preliminary Student Presentations (October 25)

In today's class, students will make their first foray into the design of their "Global Futures" scenarios. Each student team will be given 10 minutes to introduce their topic to the class, describe what they have identified as the most critical uncertainties with regard to their topic, and in turn, what four prospective futures might look like.

Please come to class prepared with questions and feedback for classmates to aid them in honing their work, starting fundamentally with whether you agree with what has been identified as the most critical uncertainties with regard to a team's chosen topic.

Class 9: "Water Stress" in Africa (November 1)

Shifting geographies, we focus in today's class on water stress on the African continent and efforts to resolve it. Students will acquire a basic understanding of key water issues in Africa. Please read the short articles below, which can be found on our canvas site.

Daren Taylor, "Climate Change threatens Africa's Biggest Water Supplies"
Janet Otieno, "Understanding Africa's Water Wars"
John Vidal, "How food and water are driving a 21st Century African Land Grab"
Jim Goodman, "The Re-Colonization of Africa"
Tina Rosenberg, "A Green Revolution: This time for Africa"
United Nations Report, "Building an Alliance for a Green Revolution in Africa" (skim only)

Exercise: In the second half of the class, students will explore through an experiential exercise some of the tremendous challenges faced in trying to resolve water stress in Africa, particularly the impact of gender and power differentials in shaping outcomes.

Class 10 Pandemic vs. Monopoly: Gaming in Foresight Strategy I (November 8)

In today's class, divided into teams, students will play two different table-top games as a means to explore the utility of "gaming" as a foresight strategy tool.

As part of our debrief, we will critically examine and discuss the parallels and differences between gaming and game theory, the relation between "rules" and social behavior, and their implications for the design of organizational life.

Class 11 Playing Conflict: Gaming in Foresight Strategy II (November 15)

Today, we have a guest speaker from the U.S. National Defense University's Center for Applied Learning (formerly the "War Gaming Design and Training Center") who will introduce us to the history and role of "war gaming" in the USA and elsewhere.

We will focus especially on matrix gaming as a means to facilitate dialogue and develop strategy in times of conflict and ambiguity. Students will participate in a matrix game, followed by discussion.

Note: No Class on Tuesday, November 22: Happy Thanksgiving!

NOTE:

For our last two classes, student teams will make their final "Global Futures" presentations. Each team will be allotted 20 minutes, including Q&A. Each team is strongly encouraged to send along a draft of your presentation for faculty feedback in advance of your presentation date.

Remember to submit to classmates a copy of your annotated bibliography and executive project summary no later than one week prior to your presentation.

Class 12 Student "Global Futures" Presentations (November 29)

Class 13 Student "Global Futures" Presentations (December 6)

Appendix A: Foresight Strategy Essay: Seeing the Future?

For this assignment you will read Peter Schwartz's *Learnings from the Long View* (60 pages), and one book from the list below. Additional details on assignment content, format, and due date will be posted to the course Canvas site and discussed in class.

The Reading List

Required:

Peter Schwartz 2011. *Learnings from the Long View*. (Emeryville, CA: Global Business Network).

Select One from Below:

Nick Bostrom 2014. *Superintelligence: Paths, Dangers, Strategies* (Oxford, UK: Oxford University Press).

Yuval Noah Harari 2015. *Homo Deus: A Brief History of Tomorrow* (London: Vintage Press).

Vasilis Kostakis & Michael Bauwens 2014. *Network Society & Future Scenarios for a Collaborative Economy* (New York: Palgrave Press)

Andrew W. Krepinevich 2010. *7 Deadly Scenarios: A Military Futurist Explores War in the Twenty-First Century* (New York: Bantam Books).

Andrew W. Krepinevich & Barry Watts 2015. *The Last Warrior: Andrew Marshall & the Shaping of Modern American Defense Strategy* (New York: Basic Books)

Daniel C. Lynch 2015. *China's Futures: PRC Elites debate Economics, Politics, and Foreign Policy* (Palo Alto, CA: Stanford University Press)

National Intelligence Council 2017. *Global Trends: Paradox of Progress* (Washington DC: National Intelligence Council)

National Intelligence Council 2012. *Global Trends 2030: Alternative Worlds* (Washington DC: National Intelligence Council)

Nate Silver 2012. *The Signal and the Noise: Why So Many Predictions Fail – but Some Don't* (New York: Penguin Press)

James Surowiecki 2004. *The Wisdom of Crowds* (New York: Anchor Books)

Nassim Nicholas Taleb 2015. *Antifragile: Things that Gain from Disorder* (New York: Random House)

Philip E. Tetlock and Dan Gardner 2015. *Superforecasting: The Art and Science of Prediction* (New York: Crown Press).

Philip E. Tetlock 2006. *Expert Political Judgement: How Good is It? How Can We Know?* (Princeton, NJ: Princeton University Press).