



WWS 555c/POL 560
Fall 2008
Topics in IR

**TECHNICAL INNOVATION
& NATIONAL SECURITY**

Instructor: James Shinn
jjshinn@att.net
Weds 7~10 PM
Rm 010

Course Description

This seminar examines the impact of technical innovation on national security. Students learn how private sector innovations in areas such as satellite imaging, global positioning, internet search engines and pandemic vaccines shape the national security calculus of nations.

From a practical perspective, students learn the roots of these technical breakthroughs, how innovations are brought to market, and how firms grapple with the national security consequences of their technology. They also become handy with basic decision-tree analysis.

From a theoretical perspective, students gain insights into the clash between regulatory policy and rough-and-tumble commercial markets, between national security “public goods” and the hard realities of private profit. Students learn how firms, NGO’s, and national security bureaucracies form shifting coalitions promoting (or controlling) innovation, and how these coalitions interact across national boundaries – real-world examples of the “two level game” in international relations literature.

The seminar is based on a series of cases developed at Princeton University’s Department of Electrical Engineering, the Woodrow Wilson School, and Georgetown University’s School of Foreign Service. A background in engineering, computer science, or the life sciences is helpful but certainly not required.

Course Requirements and Grading

Course grades are based on:

- Class participation – 30%
- Short mid-term paper – 20%
- Team term project – 50%

Class Participation:

Class participation is evaluated on the basis of students' insights in analyzing the cases in class discussion – which is conducted in an informal, relaxed seminar style. Students should read *Cracking the Case* note on analyzing innovation, *Running the Numbers* note on “quick and dirty” financial analysis, and the primer on *Decision Tree Analysis* before the first class. Students are advised to come to the first class ready to discuss the first case.

Midterm Paper (5 pages):

A pilot project on a promising candidate topic for the Term Project (see below).

Team Term Project (10 pages):

Pick a topic in which technical innovation affects a foreign policy issue of particular personal or professional interest to the student. Outline the policy alternatives, evaluate them using decision-trees, and make a policy recommendation. These projects are best performed by teams of 2 to 4 people. Promising project cases may be used in the final 2 class sessions. Projects that make it into the *Technical Innovation* case study pantheon are traditionally awarded a \$500 prize to the winning team.

Study Materials

All cases and most reading materials are posted in electronic format on the Blackboard software environment, which is also used to administer the course, in order to minimize overhead and expense for students. Students should quickly view the company website of each case firm (they usually all have a site) prior to each class and do some casual internet browsing on the policy topic.

Students are strongly encouraged to purchase and read the two classics of innovation management, Frederick Brook's *The Mythical Man-Month* and Eric Raymond's *The Cathedral and the Bazaar*. Chapter 5 of the Raymond book is available free online. Both books reward a close read.

Case Assignments and Readings

1. Precision Global Surveillance

Case: GeoEyes in the Sky

Decision: Should GeoEye support or contest a new Presidential Policy Directive (PPD) on civilian satellite imaging -- and should it release its overhead images of B2 bombers on Diego Garcia to CNN?

Optional Readings:

Baker and Williamson, "The Implications of Emerging Satellite Information Technologies for Global Transparency and International Security", Chapter 8 in Bernard Finel and Kristin Lord, eds. *Power and Conflict in the Age of Transparency*, pp.223-255. Federation of American Scientists, Intelligence Resource Program, "IMINT 101: Introduction to Imaging Intelligence," http://www.fas.org/irp/imint/imint_101.htm (examine the photo samples for examples of resolution and swath).

2. Precision Global Navigation

Case: Garmin, GPS and Galileo: The Battle for Global Positioning

Decision: How should Garmin chart its development strategy to deal with the EU "go-ahead" announcement on Galileo? Should it support the US government, the European Commission, or both?

Optional Readings:

MIT *Technology Review*, "Has GPS Lost its Way?," July 1, 1999.

3. Precision Global Locationing

Case: Savi and the Container Security Initiative

Decision: How should Savi exploit its RFID-based locationing technology? How much should it bet on CSI?

4. Google, DoubleClick, and the European Privacy Directive

Case: Is DoubleClick Selling Your Cookies?

5. Acxiom and Counter-Terrorism Data Mining

Case: Is Acxiom Privatizing Big Brother?

Decision: Should Acxiom sign on with the Department of Homeland Security to provide its data mining software to the CAPPS II project? What if the Europeans object?

6. Viisage in Your Face

Case: Viisage: The Future Face of Security

Decision: Should Viisage lobby domestic and foreign governments to adopt Viisage's facial recognition technology, or should the firm focus exclusively on the private sector?

7. Merck and the Race Against HIV

Case: Merck's Crixivan Crisis: No Good Deed Goes Unpunished?

8. Acambis' Vaccine and the Variola Scourge.

Case: Acambis' Vaccine and the Variola Scourge

Decision: Should Acambis focus on making smallpox vaccines for the U.S. government, as a hedge against terrorism, or build a wider global market for infectious disease vaccines?

Optional Readings:

Jon Cohen, "Designer Bugs", *The Atlantic*, July/August 2002.

<http://www.theatlantic.com/issues/2002/07/cohen-j.htm>

Alan Smith "Acambis Smallpox Vaccine Boosts Biotech," *Business Weekly*, September 18, 2002, http://www.businessweekly.co.uk/news/view_article.asp?article_id=6990

Jonathan Tucker, *Scourge: The Once and Future Threat of Smallpox*, Chapters 9, 10, and 11.

9. The Anthrax Bio-Terror Threat

Case: Bayer's CIPRO and Anthrax Bio-Terrorism

Decision: Should Bayer resist compulsory licensing of Cipro, its breakthrough anthrax medication?

10. Bio-Rad and the BSE Panic

Case: Bio-Rad and the BSE Test

11. HiEnergy Steps through Landmines

Case: Landmine Removal, the U.S. Government, and HiEnergy Technologies Inc.

Decision: Should HiEnergy Technologies contract with the Department of Defense to produce landmine detection technology?

12. Open Source Innovation: ICANN and Global Domain-naming

Case: ICANN's Domains: Private Ordering, Government Interference, or Chaos?

Decision: Should ICANN take on a wider agenda of Internet architecture – or just focus on the Internet Domain Naming System (DNS)?

Optional Readings:

Jeff Tyson, “How Internet Infrastructure Works”, *www.howstuffworks.com*.

MIT *Technology Review*, “The Web’s Unelected Government”, November/December 1998, pp.39-55.

Lawrence Lessig, “The Internet Under Siege”, *Foreign Policy*, November-December 2001, http://www.foreignpolicy.com/issue_novdec_2001/lessig.htm

Instructor:

James Shinn is Assistant Secretary of Defense for Asia. Before coming to the Pentagon, he served as the National Intelligence Officer for East Asia in 2003~2006, first at the Central Intelligence Agency and then the newly-created Director of National Intelligence.

After serving in the East Asia Bureau of the U.S. Department of State in the 1970's, he spent 15 years working in high tech firms, first at Advanced Micro Devices, an integrated circuit firm in Silicon Valley, and then at Dialogic, a voice processing technology firm, which he co-founded. Dialogic did an IPO in 1992; Jim subsequently participated in several high tech start-up's, some very successful, some not.

Jim was Senior Fellow for Asia at the Council on Foreign Relations from 1992~1996, where he wrote or co-authored several books and publications, including *Weaving the Net: Conditional Engagement With China* (1996) and *Fires Across the Water: Transnational Problems in Asia* (1998), both published by the Council on Foreign Relations Press. His most recent book is *Political Power and Corporate Control*, co-authored with Peter Gourevitch, published by Princeton University Press (2005).

He has a BA from Princeton ('73), MBA from Harvard ('81), and PhD from Princeton ('01).