Strategic Impacts of the Digital Revolution on Global Politics and Governance
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Lesson Overview:
- Technology developments increasingly have strategic effects
- Converging, accelerating and globalizing innovation in areas like Biotechnology-Robotics-Information and cognitive science-Nanotechnology-Energy (BRINE) affects winners and losers in economies, how nations interact, how our children think
- Tech changes also raise legal, ethical, moral and policy questions
- Near term decisions are needed to shape long-term outcomes, but technology is outpacing both national and international governance processes
- Linear projections CANNOT be the basis for effective guidance or management

Issues for consideration:
- How does technology in general, and digital technology in particular, drive global change and global politics? Look at people, processes, organizations and technology together, not just tech.
- Where is the innovation and investment coming from?
- How do current governance techniques (political, military, diplomatic, legislative, executive, judicial, international organizations) function in tech areas—use the digital revolution as an example?
- What issues should we be most concerned with in accelerating, converging and globalizing technological areas?
- How much influence can leaders have?

Background

The Evolving National Security Environment
- Transformation is a process that shapes the changing nature of competition and cooperation through concept development and innovation management across:
  - People
  - Processes
  - Organizations and
  - Technology

- Types of Transformations Related to National Security
  - Military Innovation
  - Revolutions in Military Affairs (RMA)
  - Military Revolutions

- Trends and Shocks: 6 broad trends
  1. Demographics
  2. Environment and Energy
  3. Economics
  4. Identity, Culture and Governance
5. Nature of Conflict
6. Science & Technology (S&T)
   - Information revolution is transforming the world in which we live, the way we do business and, in fact, our way of living—not to mention the mindsets of the young people who are our future human capital pool. These are issues for policy makers, ambassadors and commanders, not just techies or Chief Information Officers (CIOs).
   - If computing power per unit cost doubles about every 18 months, it implies a 100% increase in a year and a half, 900% in 5 years, 10,000% in ten years. Linear projections CAN’T work!
   - There are several concurrent revolutions: bio, robo, info-cogno, nano, energy (BRINE). Bio is changing faster than info. Robotics are becoming ubiquitous. Cognitive science is in a “renaissance.” Nanotech is poised to become a part of many areas. Energy underpins everything.
   - A power point presentation on “Strategic Impacts of Accelerating Technological Change: Governance Issues and National Defense University’s BRINE Study” provides more details based on a study focused on US defense concerns.

- Trends are pushing toward a Military Revolution
- There have always been inherent strategic uncertainties
  - Ten-year look at the 20th century

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Discussion 1
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The World is Fast, and the Coming Workforce Crisis

- Tom Friedman: “The World is Fast”
  - It will address: “...the biggest challenge we’re facing today: The resilience of our workers, environment and institutions.”
  - Three drivers
    - The market (global, dynamic, reduced barriers to entry)
    - Mother Nature (climate change)
    - Moore’s law (as a shorthand for the rate of change in many technologies)
  - See more at (http://www.nytimes.com/2014/11/05/opinion/the-world-is-fast.html?_r=0)
    - We’re entering “the 2nd half of the chess board”
  - “Makers and Breakers”
    - It’s easier now both to make and break things
    - How we nurture our own in America and in other countries to produce more makers than breakers is now one of the great political — and geopolitical — challenges of this era.
    - There is a critical need for a passionate center
Yeats: “Things fall apart; the centre cannot hold; ... The best lack all conviction, while the worst [A]re full of passionate intensity.” (The Second Coming: http://www.potw.org/archive/potw351.html)

How do we get to a passionate centre given the extremes of current politics?

- National Security Implications of the coming workforce crisis
  - See 3 references:
    - Two TED talks:
      - Rainer Schratz: The Workforce Crisis of 2030, and how to start addressing it now—which juxtaposes workforce demographics with the differential impacts of technology. (http://www.ted.com/talks/rainer_strack_the_surprising_workforce_crisis_of_2030_and_how_to_start_solving_it_now)
    - The collective conclusion is that the rapidly changing tech landscape offers lots of opportunities for those able to adapt, but the pace of change and the lack of opportunity for those with "modest skills" or lack of motivation is only likely to widen the have-have not divide. There are some possible remedies but, given the youth bulge in so many places with "modest skills," and the likely displacement of workers in developed economies (some reports talk of structural 20-25% unemployment even in the U.S.), the potential for domestic unrest and scapegoat-finding is high unless governments and the private sector are really skillful in managing these changes. Also, the exponential growth in machine learning is likely to have greater impacts than the “S-curve” paths of past technology introductions
    - These questions need to be addressed in political and public policy venues on both national and global scales

Discussion 2

Drivers of the Digital Revolution:

- Into the cloud: See “Evolution of the Information Age” handout, p. 6
  - 30-year cycles with 10-year phases.
    - Invention, Boom and Bust; Build-out and Consolidation; Commercialization.
  - How to tie strategies to different cycles?

- Six trends driving ICT: Speed, mobility, commoditization, big data, multiple clouds and the Internet of Things (Cloud of Everything).
- E-Commerce to Me-Commerce, location-based services.
• Social Software and National Security – Dealing with the Volume and Velocity of Information (IV2) generated by the 24x7 news cycle and social media.
  - Impacts of Personally Identifiable Information (PII)
• Consider Electromagnetic spectrum (EMS) implications and Electronic Warfare (EW) vulnerabilities posed by these changes.
  - How do they affect Globally Integrated Operations and Cross-Domain Synergy?
• Trans-generational issues: “No one in my generation ever uses the term cyber unless we come to government events”
  - National security cyber as a very small part of activities in the information domain
  - Governments can dominate in physical space but they can’t dominate the forces that connect us
  - Sharing information produces more power than controlling it

What is cyberspace?
• Frank Kramer in NDU’s “Cyberpower and National Security” (2009) identified 28 definitions of cyberspace

Discussion 3

Governance Strategies under Unpredictable Conditions

Wicked Problem Criteria: Rittel and Webber, in 1973, described ten characteristics of “wicked problems”
• There is no definitive formulation of the problem
• There is no stopping rule and no end state
• Solutions are better or worse, not true or false
• There is no ultimate test of a solution
• Every attempt counts significantly
• There is no enumerable set of potential solutions
• Every problem set is essentially unique
• Every wicked problem is a symptom of another wicked problem
• The causes can be explained in numerous ways
• The planner has no right to be wrong
The US Army’s “Commander’s Appreciation and Campaign Design” adds one more:
• Wicked problems are interactively complex

Strategies for Wicked Problems: Dr. Nancy Roberts of NPS, in a 2000 paper, outlined 3 approaches (authoritative, competitive and collaborative) for resolving wicked problems where there are conflicts over both the problem definition and the proposed solution.
• If power is neither dispersed nor contested, authoritative solutions can be successful.
• If power is dispersed, but not contested, collaborative approaches may work.
• If power is dispersed and contested, competitive strategies may be the only approach.

Some Lessons from Real World Wicked Problems (from Roberts 2000):
• Fail into collaboration
• Beware of attempts to “tame” wicked problems
• Get the “whole system” in the room
• Be open to self-organization and co-evolution

Experience suggests two others:
• Force yourself to re-examine assumptions frequently
• Expect solutions to wicked problems to be iterative
  - How do you build support for such approaches as a leader?

Discussion 4

Digital Revolution Issues as Wicked Problems
• Begin with Feb 2015 CRS report: Cybersecurity: Authoritative Reports and Resources
  - “No major legislative provisions relating to cybersecurity have been enacted since 2002, despite many recommendations made over the past decade.” In 2013 5 bills were introduced into 5 different Senate committees. In the House, 9 bills were introduced into 7 different committees.
• Within the Executive Branch, DepSecDef Lynn’s 2010 Foreign Affairs article and the 2011 Defense Strategy for Operations in Cyberspace (DSOC) have laid out DoD strategy, and publicly linked CND, CNE and CNA, but their publication as DoD documents also reflected an inability to get government-wide agreement.
• Within the business community, many are very reluctant to accept mandatory cybersecurity guidance, despite growing evidence of massive intellectual property theft.
  - Consider outcomes from Stanford summit and Feb 2015 Executive Order
• Intelligence Gain-Loss (IGL)—who decides?

How many stakeholders are there on cyber issues?
• Lessons from a recent Wicked Problems course at NDU
• Is power dispersed? Contested?
• Who governs in this era?
  - What is the role of an information age Chief Information Officer (CIO)

Moises Naim: The End of Power
• “in the 21st century, power is easier to get, harder to use – and easier to lose.”
• This is due to a sea change in power relations
  - More people, able to move, and less inclined to accept authority
  - This enables “alienated demographics to escape older definitions of community and the constraints those definitions imposed.”
  - There are particular alienations from “traditional units of allegiance” (like countries, political parties, or corporations).
Discussion 5

Areas for other discussions—how do these issues affect politics, strategy and governance?
(with thanks to Paul Rosenzweig)
- The rise of hackers and non-state actors
- Threats from nation states
- Encryption and privacy issues
- Capitol Hill and legislative action
- Internet governance—the UN and ITU, fallout from WCIT and Snowden
- The proliferation of big data and the growth of commercial analytic capability

Thoughts about people
- Are we developing the right leaders and workforce to operate effectively in the future digital environment?
- Do judges, legislators and policy makers understand digital (and other technological) issues? How can we help them?
- What else should you be learning about the digital revolution (and other tech developments) while at MIIS? After you finish here?