Managing the Innovation Process

Origin of the Process
Overview

• Take-Away
• Required Readings
• Supplemental Readings
• Caveats
Take-Away

• Innovations are not created equal

• Innovations are often modified rather than original

• Innovations have costs for productivity… but also drive economic growth

• Innovations are driven by leaders (and their firms)
(Christensen, 1997)

• “The innovator's dilemma - Chapter 1: How can great firms fail? Insights from the hard disk drive industry”

• **Innovator’s Dilemma**
  (keeping close to customers – sometimes to the fatal end)

• **Sustaining vs Disruptive Technologies**
  (increased rate vs redefined performance trajectory)

• **Established vs Entrant Firms**
  (founded before vs after advent of the technology)
(Morison, 1966)

• “Gunfire at sea: A case study of innovation”

• Continuous-Aim Firing
  (keep sight and gun barrel on target throughout ship roll)

• Basic Invention vs Combined Elements
  (gun, elevating gear, and telescope were combined)

• Scott -> Sims -> Teddy Roosevelt
  (personality / status / determination + innovation = adoption)
(Hounshell, 1984)

• “From the American system to mass production, 1800-1932 - Introduction”

• Mass Production
  (assembly line manufacturing techniques)

• Examples
  (Henry Ford’s Model T, Eli Whitney’s cotton gin)

• Productivity Dilemma
  (increase product changes = decrease productivity)
(Mowery & Rosenberg, 1998)

- “Paths of innovation: Technological change in 20th century America - Introduction”

- Alfred North Whitehead
  (“The greatest invention of the 19th century was the invention of the method of invention”)

- Institutionalization of Scientific Method (R&D)
  (incremental learning, modification, and refinement)

- Economic Growth
  (a consequence of technological change…)
(Tedlow, 2001)

• “Giants of enterprise: seven business innovators and the empires they built - Introduction: The big picture”

• Founding and Building New Businesses
  (Americans do best???)

• Innovators
  (Carnegie, Eastman, Ford, Watson, Revson, Walton, Noyce)

• Innovators vs Innovating Companies
  (business leaders who become inseparable from their firms)
Caveats

• How often do disruptive technologies come along?
• How often do innovators have access to President?
• What about small firms with little R&D budget?
• What about all of the businesses leaders that fail?