Closed innovation system: everything done inside the firm

Richard B. Dasher
Stanford University
Open innovation: inflow and outflow of knowledge across boundaries of firm

From Henry Chesborough (2003 and following), as drawn at <http://finfish.org/blog/open-innovation/>
Open innovation: key features

- **Seeks knowledge (not just technologies) from R&D both outside and inside company**
  - Buy technology licenses, buy entire companies
  - Joint development
- **Willing to spin some good ideas out of company**
  - License out to start-up companies or other firms
  - Thereby make return-on-R&D-investment while maintaining business focus and hedging risk
  - Seller company aims to achieve greatest return (which requires win-win license that aids success of the buyer firm, as well)
Some famous examples of open innovation - 1 -

Microsoft: the early days

- Seattle Computer Products develops a prototype computer operating system (DOS) for personal computers (1980).
  - Microsoft first buys nonexclusive rights to the prototype (version 0.3) in late 1980.
  - Microsoft buys all rights to the first commercial version (version 1.00) in July 1981
  - Soon after that, IBM announced the first Personal Computer, which used MS-DOS from Microsoft -- Microsoft revenue skyrockets

Richard B. Dasher
Stanford University

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Some famous examples of open innovation - 2 - Cisco Systems

♦ Cisco Systems founded in 1984
♦ Cisco’s first major acquisition of another company: Crescendo Communications (in 1993)
♦ By mid 2008, Cisco had acquired over 127 companies
  ♦ Most acquisitions were in computer networking, VOIP, LAN switching, or other communications equipment
  ♦ Acquired companies now account for 1/2 the value of Cisco
♦ Cisco devotes special resources to integrate the knowledge of each acquired company.
  ♦ Acquisitions are driven by Cisco vision of customer (latent) needs
  ♦ Apparently, relatively few hostile takeovers
  ♦ About $5.2 billion / year devoted to internal R&D
Points to remember about open innovation

♦ “Open” innovation is a relative concept: no innovation system is completely open or completely closed
  ♦ But, external knowledge acquisition not mentioned in “The Knowledge Creating Company” (book) by Nonaka & Takeuchi

♦ Open innovation presents more complex challenges than closed innovation
Requirements for successful open innovation

- **Ability to evaluate external knowledge**
  - Without long-term acquaintance of the people behind it
- **Ability to integrate external knowledge**
  - Tacit as well as explicit
- **Clear vision of company direction and strengths**
- **Brilliant understanding of market psychology** and potential new markets (unmet needs)
- **Flexibility in business planning**
  - Recognize when it’s time to change plans
- **Strategies to hedge risk**
- **Strong external sources of knowledge** who will cooperate
Silicon Valley and (Selected) Asia Models of Innovation
Models of Innovation

**India:**

*Provide innovation as a service*

- **Open system**
- **Closed system**

**Silicon Valley:**

*Entrepreneurial innovation*

- **Open system**
- **Closed system**

**Japan:**

*Managed corporate innovation*

- **Incremental**
- **Disruptive**

**Old-style big company labs:**

*AT&T Bell Labs, etc.*

- **Incremental**
- **Disruptive**
Silicon Valley-style versus Japanese-style (Open?) Innovation

**Silicon Valley-style**
- Individual people leave big firms and universities to create start-ups
- Investors seek to maximize the growth of the start-up
  - Always looking for “exit strategy”
  - Start-ups grow before acquisition by big firms
- **Strong**: incubating disruptive innovation

**Japan-style**
- Company spins off new ideas, business activities as separate companies
- Hierarchy: **core companies** lead captive supplier companies
  - Group planning tends to be centralized
  - Small affiliates usually stay in niche markets
- **Strong**: managing incremental innovation
Different innovation models are related to different stages of growth

- Early-industrialization entrepreneurial growth
- Mid-stage managed growth
- Advanced stage entrepreneurial growth (knowledge economy)

Income, per cap GDP vs. Time

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Richard B. Dasher
Stanford University
Figure 8 — Early-Stage Entrepreneurial Activity Rates and Per Capita GDP, 2008

Early Industrialization
Entrepreneurial Growth

Mid Stage
Managed Growth

Advanced Stage
Entrepreneurial Growth
## Characteristics of the entrepreneurial sandwich

<table>
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<th>Early industr. growth</th>
<th>Managed Growth</th>
<th>Advanced stage growth</th>
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<tbody>
<tr>
<td><strong>Social developments</strong></td>
<td>Industrialization, urbanization</td>
<td>High skill levels, labor and capital shortages</td>
<td>Wealth spreads throughout pop, high ed level</td>
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<td><strong>Business opportunities</strong></td>
<td>“Gold rush” to supply basic demands</td>
<td>Develop new markets - domestic or int’l</td>
<td>Fresh new ideas, “out of the box” thinking</td>
</tr>
<tr>
<td><strong>Key competitive strengths</strong></td>
<td>Get there first!</td>
<td>Efficiency, rapid scaling, high quality</td>
<td>Manage (allow) risk, early ID of great new ideas</td>
</tr>
<tr>
<td><strong>Typical focus of new government policies</strong></td>
<td>Basic laws, establish industry base</td>
<td>IPR, promote the winners</td>
<td>Stimuli to bridge “valley of death”</td>
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<tr>
<th><strong>China</strong></th>
<th><strong>India</strong></th>
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<tr>
<td>♦ Very fluid labor market</td>
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<tr>
<td>♦ Innovation focus: domestic market growth</td>
<td>♦ Innovation focus: leverage global &amp; tech skills</td>
</tr>
<tr>
<td>♦ Business innovation</td>
<td>♦ Now more for domestic market, as well</td>
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<tr>
<td>♦ Relatively little market demand for technology innovation</td>
<td>♦ Headed for a more closed (&quot;managed&quot;) system ?</td>
</tr>
<tr>
<td>♦ Work force generally lacks global skills</td>
<td>♦ Consolidation of resources in big firms</td>
</tr>
<tr>
<td>♦ Concern: &quot;Gold Rush&quot; problems</td>
<td>♦ Seek stable (&quot;captive&quot;) supplier relationships</td>
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<td></td>
<td>♦ Concern: value chain positioning</td>
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Japan: in a sea change from “managed growth” to “advanced stage growth”

- A.k.a. aiming at a knowledge-based economy
- Opening up of innovation system
  - Cross-keiretsu M&A and partnerships, university-industry collaboration, start-up companies
- Increased importance of entrepreneurial companies
  - Ownership structures that can efficiently handle increased risk
  - More fluid labor markets
- Education for new skill sets (with focus on critical thinking, individual decision-making)
  - Global skills, entrepreneurship
- To build into economy: more diverse paths to success
Summary

- **Technology strategy as a set of business questions**
- **Types of innovation**
  - Disruptive versus incremental
  - Open versus closed systems
- **Silicon Valley success**
  - Depends on open innovation system
  - But, it resulted more from entrepreneurial environment: aimed at incubating maximum success of disruptive innovations
- "Entrepreneurial sandwich" of three-stages of economic growth and its impact on innovation models
  - Applied to selected Asian economies: Japan, India, China
- **Next week:** managing R&D outsourcing in India
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