

Agenda

- How do small companies compete with bigger companies?
- How can firms compete based on innovation?
- Competition in Technology Intensive Industries
 - To lead or to follow?
 - Who benefits from innovation?

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Tale of 2 firms

<p>Polaroid</p> <p>Immensely successful Edwin Land - Polarisation.</p> <p>Product Diversification ↳ focussed diversification. ↳ instant camera.</p> <p>Asset light strategy (CapEx ↓) ↳ outsourcing / subcontracting</p> <p>No debt - risk free capital - NPD Push strategy</p>	<p>Kodak</p> <p>Vertically Integrated. Diversified - Product/Geography Monopoly - film. Licensed Production - Camera. ↳ anti trust ↳ Razor / blade.</p> <p>Supplier of film ↳ prior knowledge. Revenue of Polaroid ↳ Reserve ↳ surplus</p>
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Chronology of events

Polaroid	Kodak
1934 Contract with Kodak for Polascreeens	1934 Contract with Polaroid for Polascreeens
1944 Instant photographic research begun	1935 Kodachrome color film introduced, ASA 10
1948 Contract with Kodak for negative First camera introduced at \$90	1948 Contract with Polaroid for negative

Handwritten notes:
 - "Supplier to Kodak." (under 1934 Polaroid)
 - "No Competition." (under 1934 Kodak)
 - "B&W" (under 1948 Polaroid)
 - "Supplier to Polaroid." (under 1948 Kodak)
 - "10 years" (with arrow from 1934 to 1944)
 - "5 years" (with arrow from 1944 to 1948)

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1948 Contract with Kodak for negative First camera introduced at \$90	1948 Contract with Polaroid for negative
1950 True B&W film introduced, ASA 100	1954 Film and processing sales split apart
1955 ASA 200 and 400 B&W films introduced	
1959 ASA 3000 B&W film introduced	

Handwritten notes:
 - "5 years" (with arrow from 1944 to 1948)
 - "10 years" (with arrow from 1948 to 1958)
 - "Anti trust." (under 1954)
 - "Kodak dominating color film." (under 1959)

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Chronology of events

Polaroid	Kodak
1960 B&W film development time reduced from 60 to 10 seconds First auto-exposure camera introduced	
1963 Contract with Kodak for color negative January, Polacolor film introduced June, ASA 3000 and Polacolor films introduced in pack format for new, \$100 auto-exposure pack camera	1961 Kodachrome II introduced, ASA 25 1963 Contract with Polaroid for color negative February, Instamatic introduced, five models, \$20 to \$100+ Super 8 introduced Kodachrome-X introduced for 35mm and Instamatic cameras
1964 Cheaper Colorpack camera at \$75	
1965 Full line of Colorpacks, \$50 to \$150 Swinger, \$20 B&W roll film camera	
1967 Second-generation Colorpacks, \$45 and up	
1968 Big Swinger \$25, ASA 3000 in packs	
1969 April, \$30 Colorpack camera introduced November, \$99 million raised for R&D and total integration of company	1969 Polaroid's basic patents expiring Rumors of Kodak ability to market Colorpack-compatible film by 1975

Handwritten notes:
 ASA 10
 ↓ 126 years.
 Kodak knows.
 2 years.
 1) Target the existing product of Polaroid.
 OR
 2) Target next gen tech.
 First clash. USA
 7 years
 Next gen Ven. Integration

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Chronology of events

Polaroid	Kodak
1972 November, SX-70 camera introduced at \$180	1972 February, Pocket Instamatic introduced —five models from \$25 to \$200+ May, XL Super 8 system introduced Fall, Sound XL system introduced, giving company total of five movie cameras priced from \$35 to \$200
1974 SX-70 Model II introduced at \$140	
1975 March, Supershooter introduced at \$25 March, Polacolor II introduced May, SX-70 Model III introduced at \$99	1975 May, Trimite series introduced, including telephoto model
1976 January, Pronto! announced March, Pronto! introduced at \$66	1976 February, announced April demonstration April, demonstrated and announced May sales in Canada, July sales in United States April, announced folding model at \$140 for possible fall 1976 introduction

Handwritten notes:
 3 years.
 Patented. ← SX-70 not successful.
 7 years
 Euphoria!!
 → legal →
 7 years.
 SX-70 rival.

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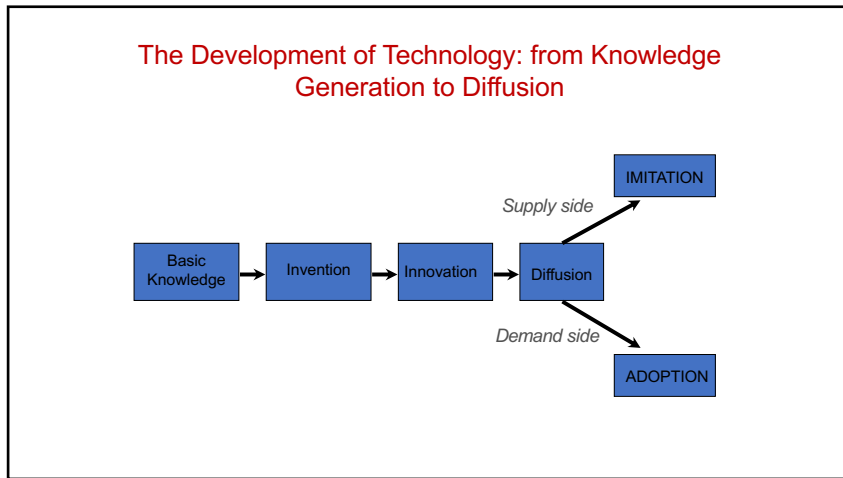
- ### What will Kodak do if Polaroid....
- Handwritten notes:* \$140 \$66 \$140
- Raises prices of existing film/camera
 - Cut prices on existing film/camera *\$49*
 - Brings out more expensive & better models *\$140*
 - Brings out less expensive, simpler products
 - Raises dealer margins, promotional expenses

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Competitive Advantage in Technology Based Industries

Handwritten notes:
 Present
 Future.
 SX-70.
 Polaroid.
 ↳ Swinger.
 Cash Cow.
 ← 5 yrs

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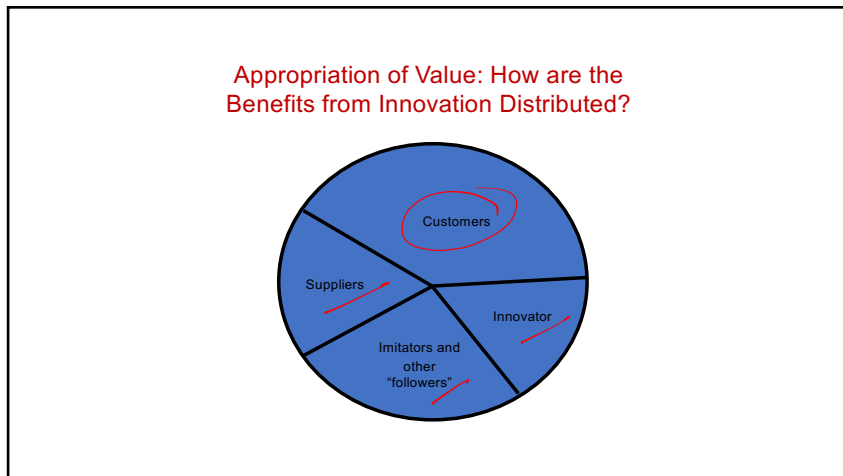
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Compressing the Technology Cycle: Less Lag between Invention and Commercialization

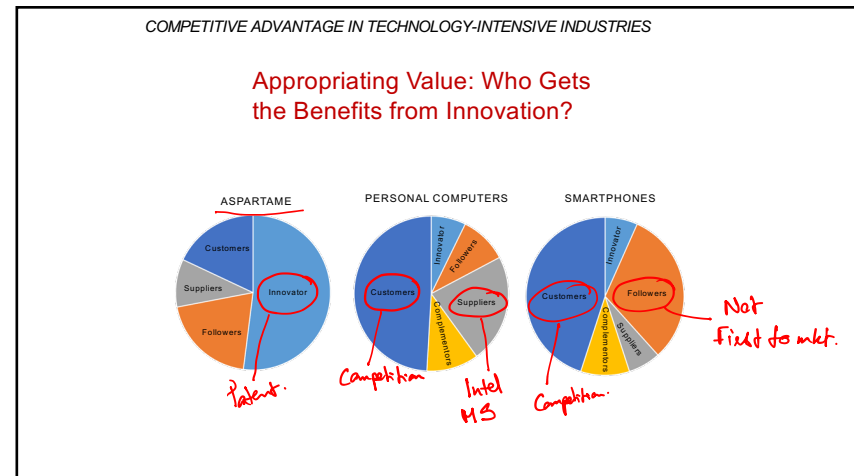
	BASIC KNOWLEDGE	FIRST PATENTS	PRODUCT LAUNCH	IMITATION
Jet Engines	17 th century Newtonian physics	1930	1957	1959
Xerography	Late 19 th , early 20 th centuries	1940	1958	1974
Fuzzy logic controllers	1960's	1981	1987	1988
Automobile satellite navigation	Late 1950s	Early 1960s	1998	2002
MP3 players	Early 1990s	1994	1997	1999
Instant messaging	Late 1980s	2002	2008	2009

Note: A red arrow on the left points downwards, indicating the progression of time. A red line underlines the bottom three rows of the table.

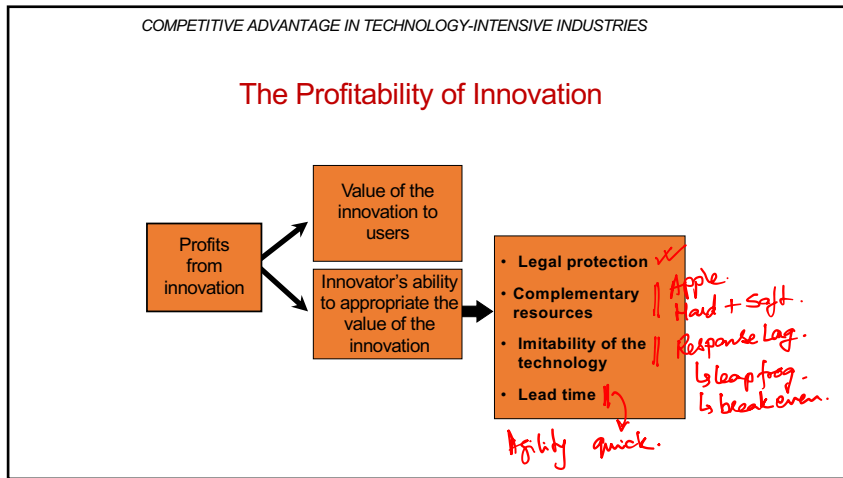
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Legal Protection of Intellectual Property

- Patents — exclusive rights to a new product, process, substance or design.
- Copyrights — exclusive rights to artistic, dramatic, and musical works. *Creative.*
- Trademarks — exclusive rights to words, symbols or other marks to distinguish goods and services; trademarks are registered with the Patent Office.
- Trade Secrets — protection of chemical formulae, recipes, and industrial processes.

Also: employment contracts may restrict employees' freedom to transfer technology and know how.

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Alternative Strategies for Exploiting Innovation

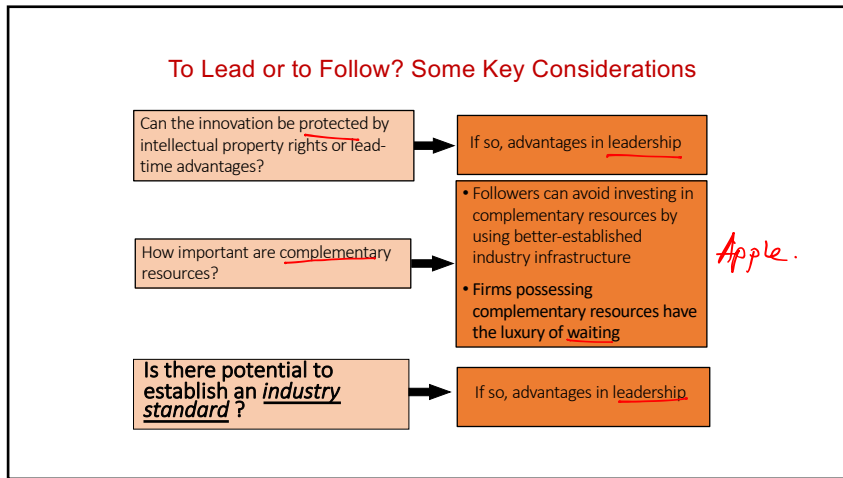
	<i>Kodak.</i> Licensing	<i>Polynoid</i> Outsourcing certain functions	Strategic Alliance	Joint Venture	Internal Commercialization
Risk & Return	Low risk, but limited returns (unless patent position very strong)	Reduces investment, but means dependence on suppliers & partners	Benefits of flexibility and speed, but coordination risks	Reduces investment and risk, but partner disagreement likely	Biggest risks and benefits. Allows complete control
Competing Resources	Few	Allows outside resources & capabilities to be accessed	Permits pooling of the resources/capabilities of more than one firm		Substantial resource requirements
Examples	ARM licenses its micro-processor designs to several semi-conductor	Apple outsources manufacture to Foxconn	Apple and Nike collaborate to develop intelligent footwear	Tesla and Panasonic jointly build gigafactory for lithium ion batteries	Page and Brin establish Google Inc. to commercialize their search algorithm

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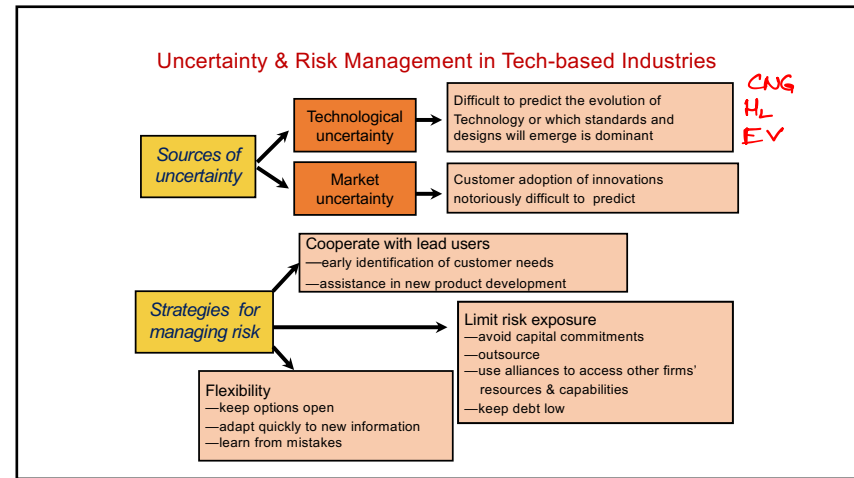
The Timing of Innovation: To Leader or to Follow?

Product	Innovator	Follower	The winner
Jet airliner	De Havilland (Comet)	Boeing (707)	Follower
Float glass	Pilkington	Corning	Leader
X-ray scanner	EMI	General Electric	Follower
Office PC	Xerox	IBM	Follower
VCRs	Ampex/Sony	Matsushita	Follower
Instant camera	Polaroid	Kodak	Leader
Microwave oven	Raytheon	Samsung	Follower
Video games player	Atari	Nintendo/Sony	Followers
Disposable diaper	Procter & Gamble	Kimberly-Clark	Leader
Compact disk (CD)	Sony/Philips	Matsushita, Pioneer	Leader
Web browser	Netscape	Microsoft	Follower
Web search engine	Lycos	Google	Follower
MP3 music players	Diamond Multimedia	Apple (iPod)	Follower
Operating systems for mobile devices	Symbian, Palm OS	Apple, Google	Followers
Cryptocurrencies	Bitcoin	Etherium, Ripple	Leader
Flash memory	Toshiba	Samsung, Intel	Followers
E-book reader	Sony (Digital Reader)	Amazon (Kindle)	Follower
Social networking	SixDegrees.com	Facebook	Follower

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Disruptive Innovation

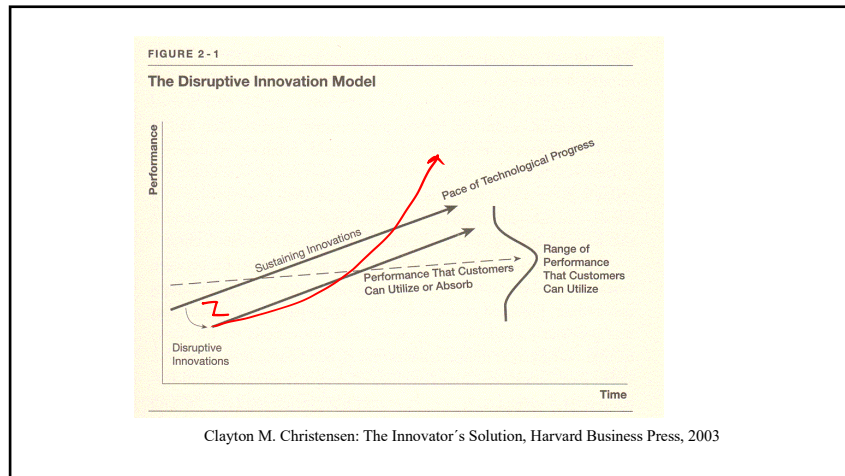
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Impact of Innovation

- **Sustaining** – better products that can be sold with higher margin to demanding customers; incumbents win
 - focused on demanding customers; both incremental and radical. Incumbents have resources and motivation.
- **Disruptive** – commercialization of simpler, more user-friendly products, which are cheaper and targeted to new or less demanding customers; new entrants win
 - introduce products and services not as advanced as existing ones, but offering other advantages (simpler, cheaper, more user friendly, ...) and focus on new or less demanding customers.

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Conditions of success

- Good managers are expected to continuously improve products to target upper market tiers and attain higher margins
 - Each company therefore prepares its own disruption.
 - This is the **innovator's dilemma**, but also the start of innovator's solution.
- The advice to new, growing firms: focus on products and markets ignored or neglected by incumbents.

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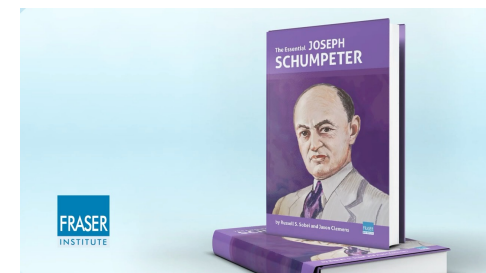
Two types of disruption

- **New markets**: compete with non-consumption: simpler, more user friendly, can be used by less sophisticated customers (PC, transistor radio, desk copiers).
- **Low-end**: focus on lower tiers of main markets (minimills, discount stores, Korean auto-makers); motivate incumbents to leave the market

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Dethroning the leader

- Creative destruction
 - Inevitable destruction of the leader's position due to the creative new actions of challengers
 - Discovery of a new profit opportunity through differences in knowledge / views
 - Behavior of customers removes information asymmetry
 - Higher the creativity higher will be the imitation lag



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Summary

- Competition as a tennis match
- Disruptive innovation
- Creative destruction
- Competitive Advantage in Technology based Industries