Leading Digital Business Transformation: Innovation Streams, Executive Leadership, and Ambidexterity

Global Empowerment Meeting
October 2014
Professor Mike Tushman
Harvard Business School



HARVARD BUSINESS SCHOOL

What Do These Firms Have In Common?

GM ATT Apple

Kodak Marks & Spencer RIM

SSIH/Asaug Lego Blockbuster

Britannica/Encarta Ciba-Geigy U.S.Steel

Nokia/Motorola NYPD Polaroid

Siebel RR Donnelley IBM

Xerox EMI (OK Go) Nike

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Siebel RR Donnelley IBM

Acer? Havas/V&S? NASA?

In the past few years...

























Daiei







...and more to come?

What's Gone Wrong With H-P?

A Lengthy Turnaround Plan Will Require CEO Stability, Responsible Spending and Refresh of Products

By BEN WORTHEN

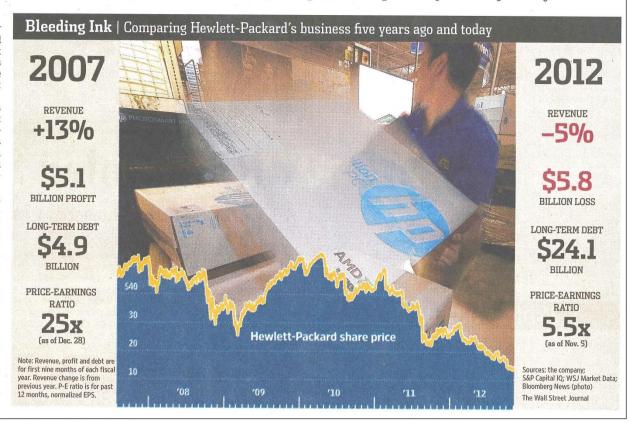
In 2010, **Hewlett-Packard** Co.'s then-chief executive Mark Hurd boasted the company was "the largest IT company in the world" and said "we are still not to our full potential."

Two years and two CEOs later, H-P is stumbling. Over that time, the Palo Alto, Calif., company's market capitalization has fallen to less than \$30 billion from more than \$100 billion. On Friday, H-P's shares hit a new 10-year low.

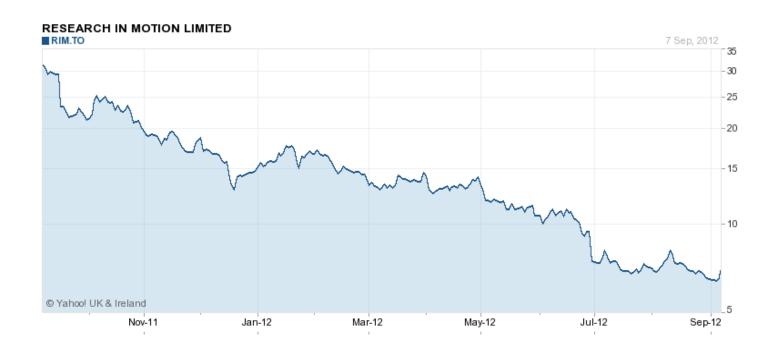
Current CEO Meg Whitman has said H-P—which sells tech products including personal computers, printers, servers and consulting services—is now saddled with outdated products, poor internal processes and has "no silver bullets" for a rebound. She predicts profits will fall again next year and that H-P won't achieve meaningful growth until at least 2015.

An H-P spokesman said the company has a turnaround plan and has "put a strong leadership team in place," among other moves.

Here's a look at H-P's problems, and how the company plans to fix them:



RIM: Leading yesterday's business?



"We are a very secure, entrenched business"

Thorsten Heins CEO, Research in Motion

The New York Times

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MONDAY, JANUARY 7, 2013

Students Rush to Web Classes, But Profits May Be Much Later

By TAMAR LEWIN

MOUNTAIN VIEW, Calif. — In August, four months after Daphne Koller and Andrew Ng started the online education company Coursera, its free college courses had drawn in a million users, a faster launching than either Facebook or Twitter.

The co-founders, computer professors at Stanford University, watched with amazement as enrollment passed two million last month, with 70,000 new students a week signing up for over 200 courses, including Human-Computer Interaction, Songwriting and Gamification, taught by faculty members at the company's partners, 33 elite universities.

In less than a year, Coursera has attracted \$22 million in venture capital and has created so much buzz that some universities sound a bit defensive about not leaping onto the bandwagon.

Other approaches to online courses are emerging as well. Universities nationwide are increasing their online offerings, hoping to attract students around the world. New ventures like Udemy help individual professors put their courses online. Harvard and the Massachusetts Institute of Technology have each provided \$30 million to create edX. Another Stanford spinoff, Udacity, has attracted more than

MOUNTAIN VIEW, Calif. — In a million students to its menu of massive open online courses, or MOOCs, along with \$15 million in financing.

All of this could well add up to the future of higher education if anyone can figure out how to make money.

Coursera has grown at warp speed to emerge as the current

VIRTUAL U.

Building a Model

leader of the pack, striving to support its business by creating revenue streams through licensing, certification fees and recruitment data provided to employers, among other efforts. But there is no guarantee that it will keep its position in the exploding education technology marketplace.

"No one's got the model that's going to work yet," said James Grimmelmann, a New York Law School professor who specializes in computer and Internet law. "I expect all the current ventures to fail, because the expectations are too high. People think something will catch on like wildfire. But more likely, it's maybe a decade later that somebody figures out how to do it and make money."

For their part, Ms. Koller and Continued on Page A10

RD BUSINESS SCHOOL

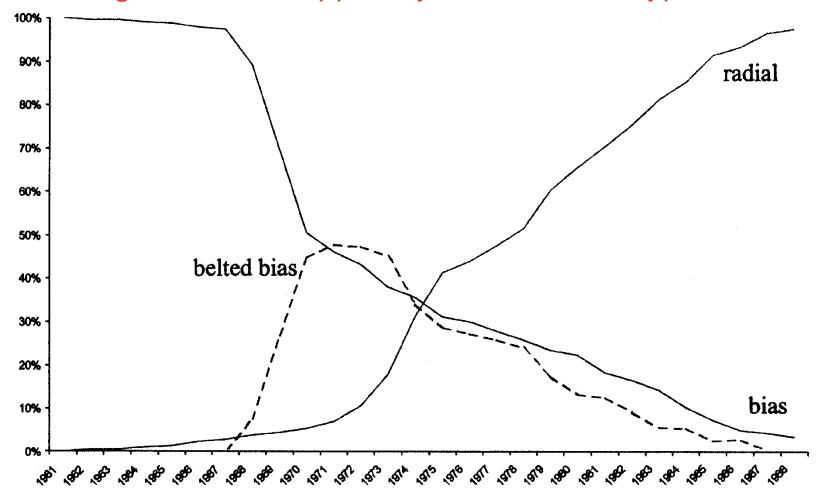
Worldwide Watch Production

Number of Firms and Workers in the Swiss Watch Industry, 1950-1985						
Year	Number of Firms	Employees				
1945	2,500	80,000				
1950	1,863	60,239				
1955	2,316	70,026				
1960	2,167	74,216				
1965	1,927	83,922				
1970	1,618	89,448				
1975	1,169	62,567				
1976	1,083	55,182				
1977	1,021	54,825				
1978	979	52,669				
1979	867	46,716				
1980	861	46,998				
1982	730	38,200				
1985	600	32,000				

Export of Watch Movements and Completed Watches, 1951-1980 (thousands of units)						
Year	Japan	Switzerland				
1951	31	33,549				
1955	19	33,742				
1960	145	40,981				
1965	4,860	53,164				
1970	11,339	71,437				
1975	17,017	65,798				
1980*	68,300	50,986				

^{*}Includes movements

Percentage of Tires Shipped by Construction Type: 1961-1989

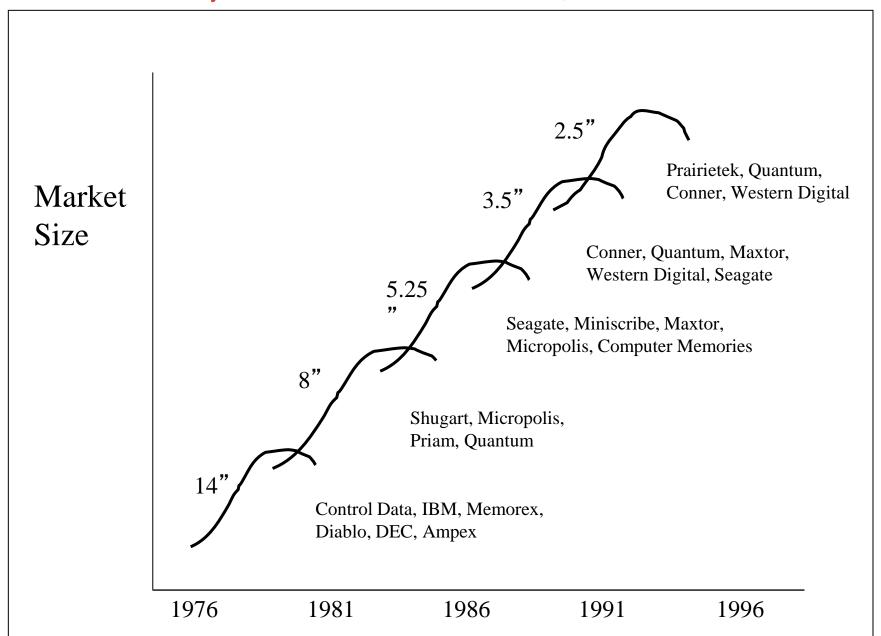


Sources: Rubber Manufacturers Association, "Tire Shipments by Construction," *Tire Industry Facts* (Akron, Ohio, 1990); Firestone Tire & Rubber Company, "Sales Forecasts," Corporate Archives (Akron, Ohio, 1980).

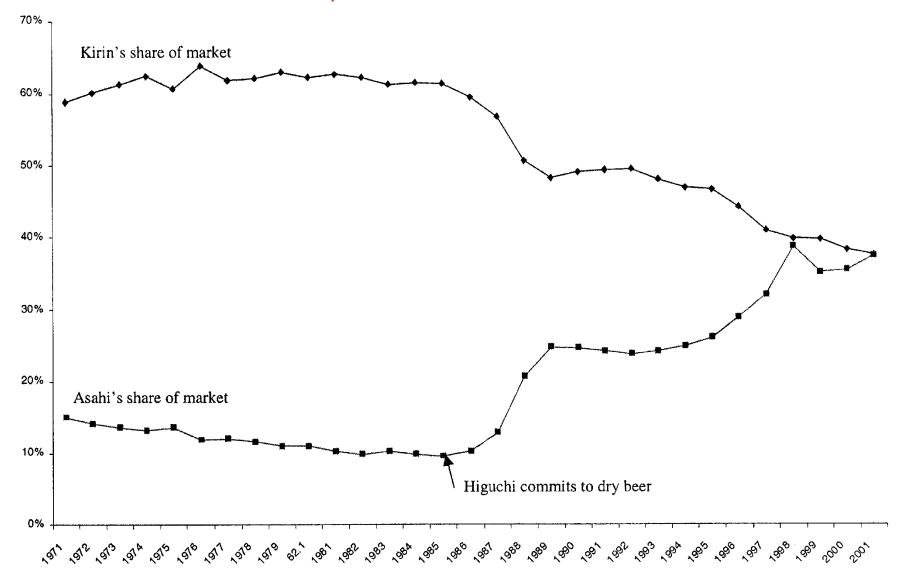
Citation:

Sull, Donald. "The Dynamics of Standing Still: Firestone Tire & Rubber and the Radial Revolution," Business History Review, 1999, pp. 430-464.

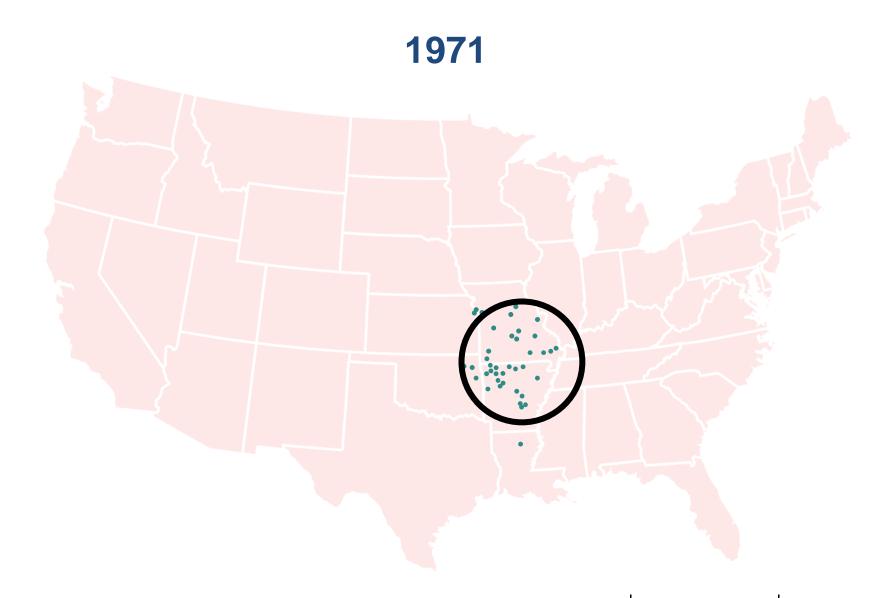
Disk Drive Industry Evolution: 146 firms founded; 125 failures

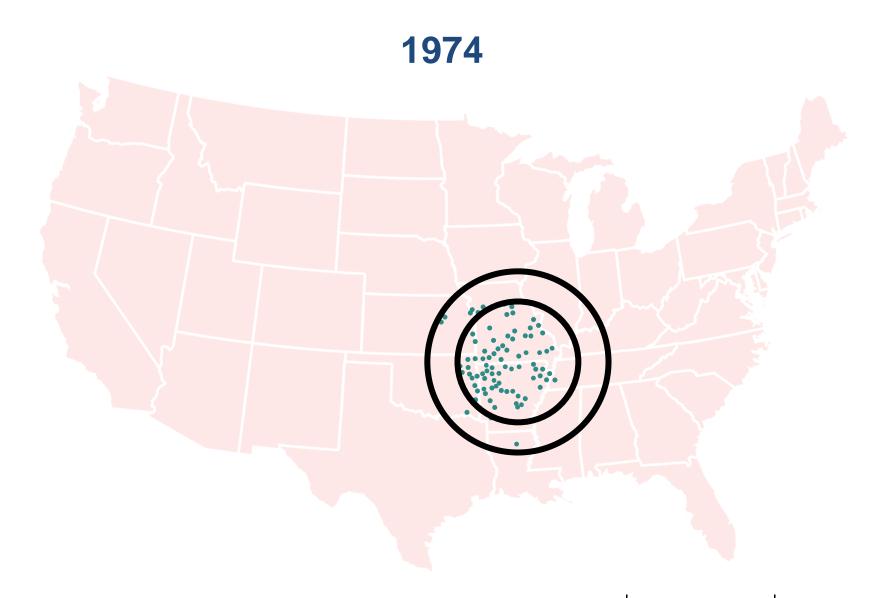


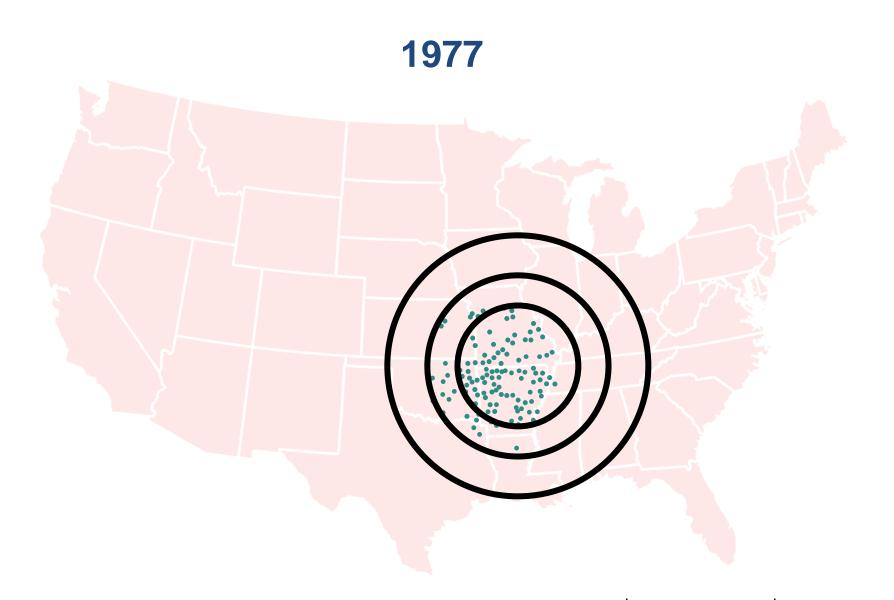
Kirin and Asahi share of Japanese Beer Market: 1949 – 2001

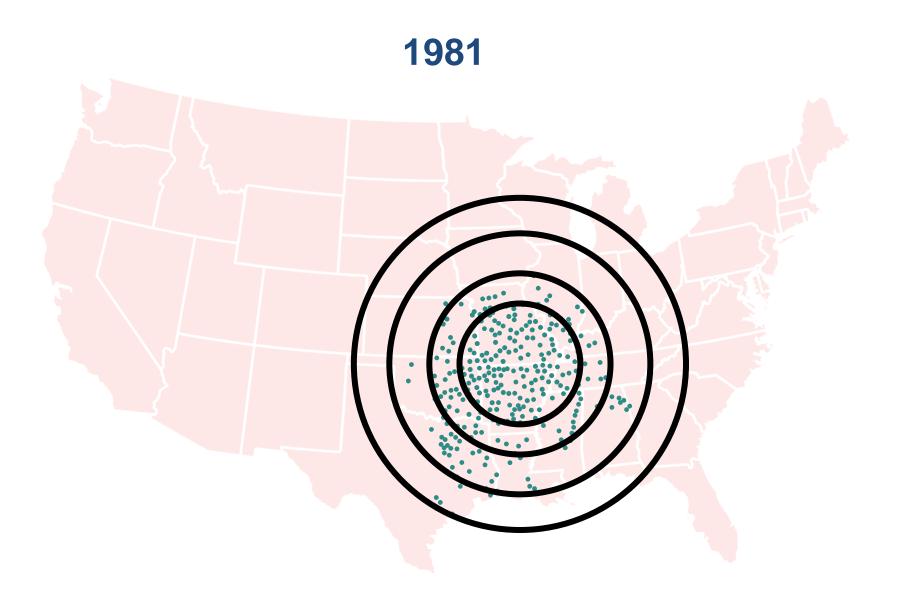


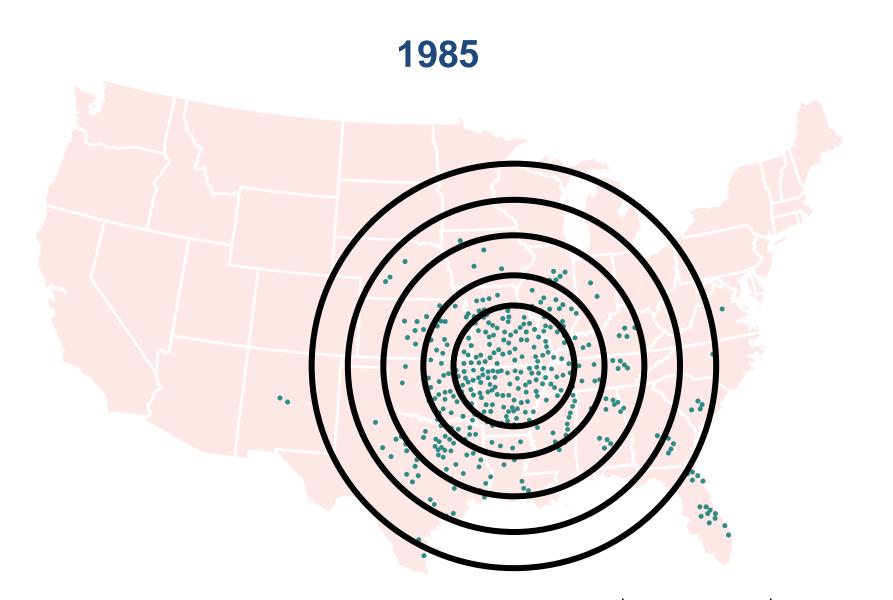
Source: Timothy James, Resource development in firms: New product development and organizational change in the Japanese brewing industry, University of Washington, 1992: table 5.8. Nikko Weekly.

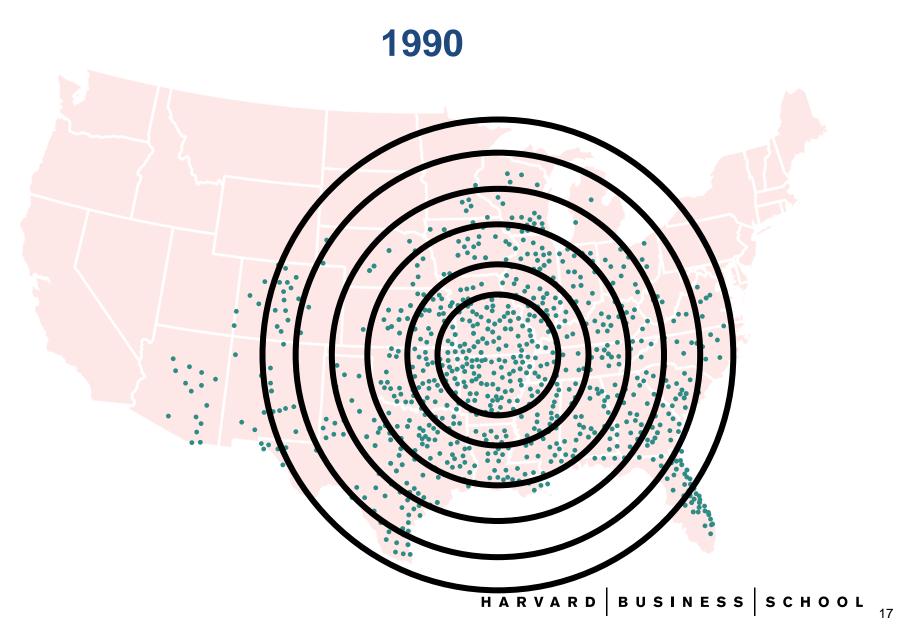


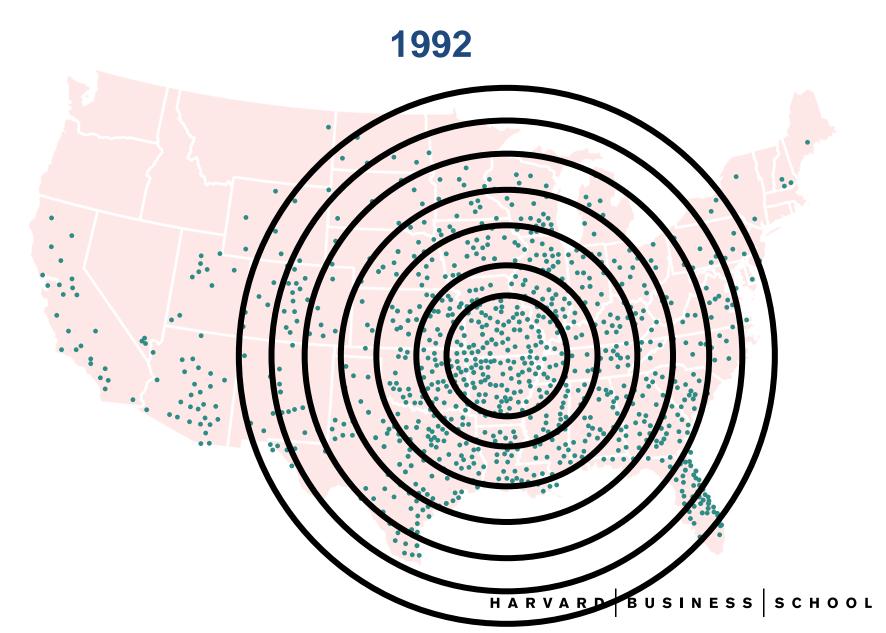


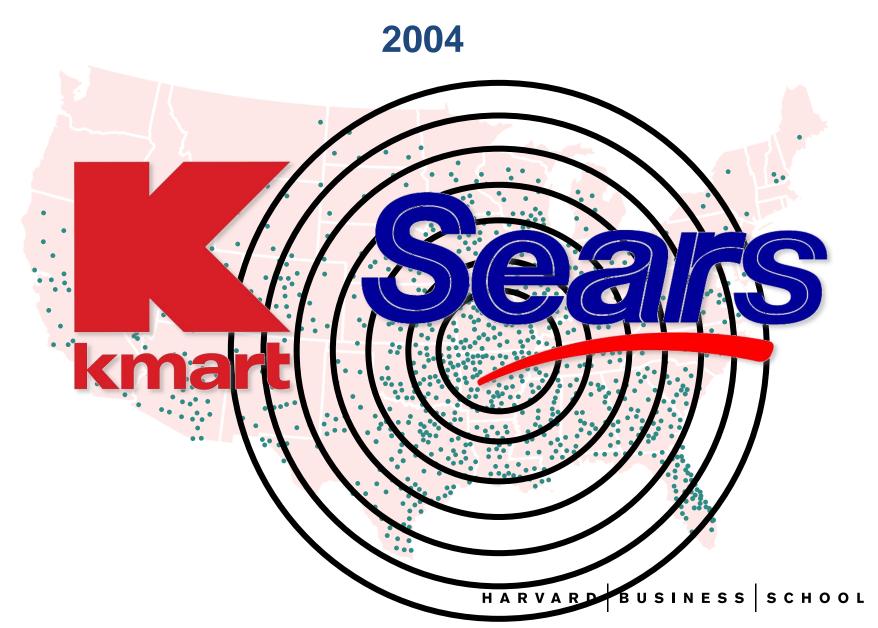












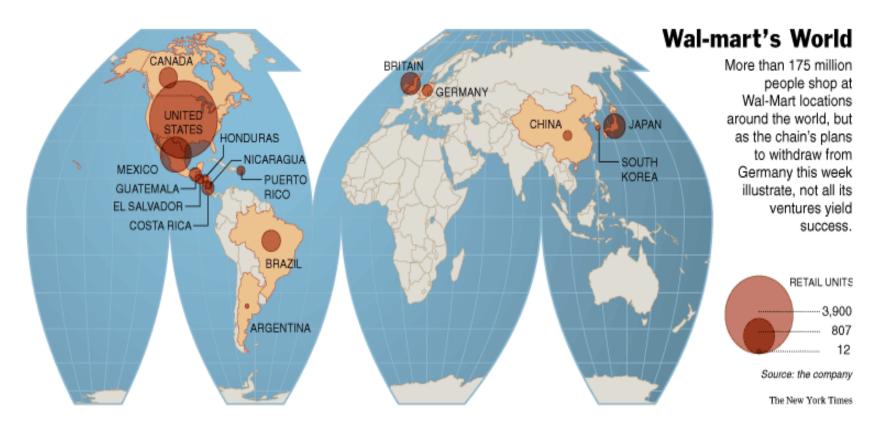


Goals

- 1.Enable corporate capacity to build 300 stores per year
- 2. Deliver 1st 1,000 stores

Wal-mart's World

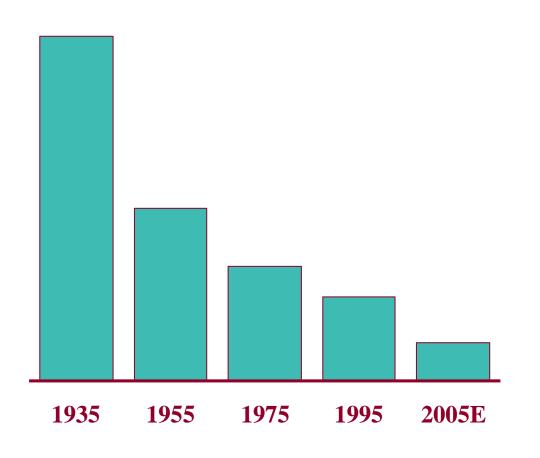
August 1, 2006



© 2006, The New York Times Co.

Defenders Eventually Lose

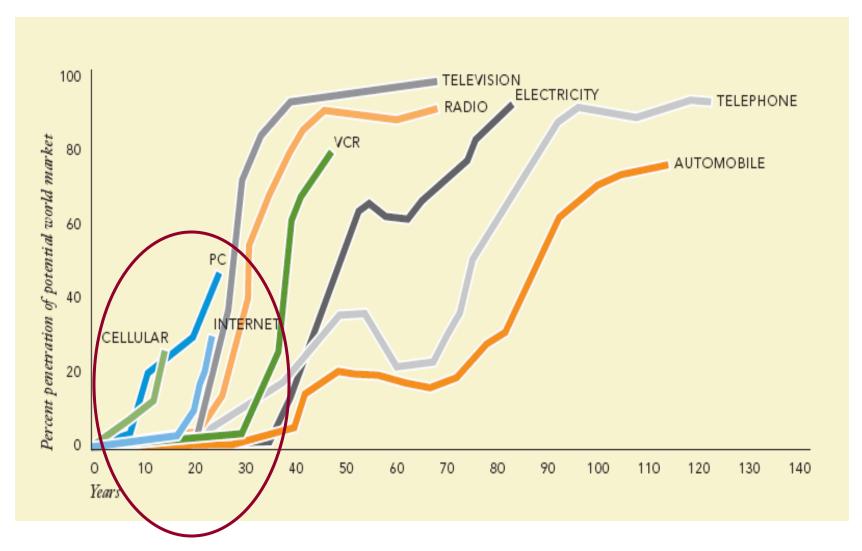
Expected years in S&P 500



Many Pathologies...

- Cultural lock-in
- Blindness to disruptive technologies
- Strategic-operational imbalance
- Limitations of operating organization
- Low genetic diversity

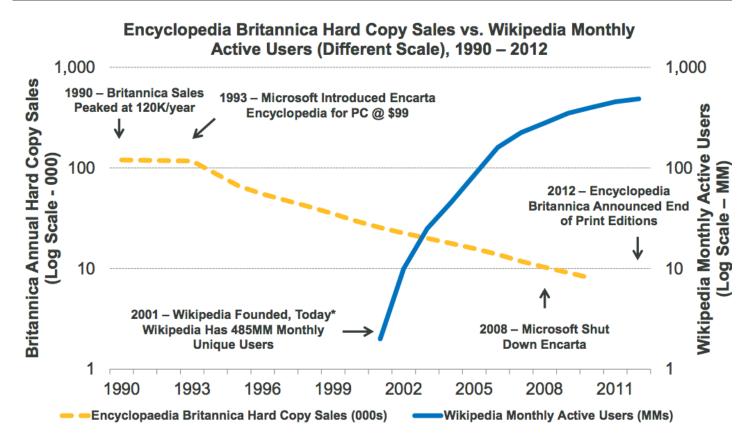
The Pace of Change is Increasing



Source: IBM's Global Innovation Outlook, Joseph Jacobsen, Organizational and Individual Innovation Diffusion, 2004

The Encyclopedia Britannica Story

244 Years In, Encyclopedia Britannica Went Out of Print in 2012





Note: *as of 9/12, per comScore global data. Source: Kellog School of Management, Shane Greenstein and Michelle Devereux, "The Crisis at Encyclopedia Britannica."

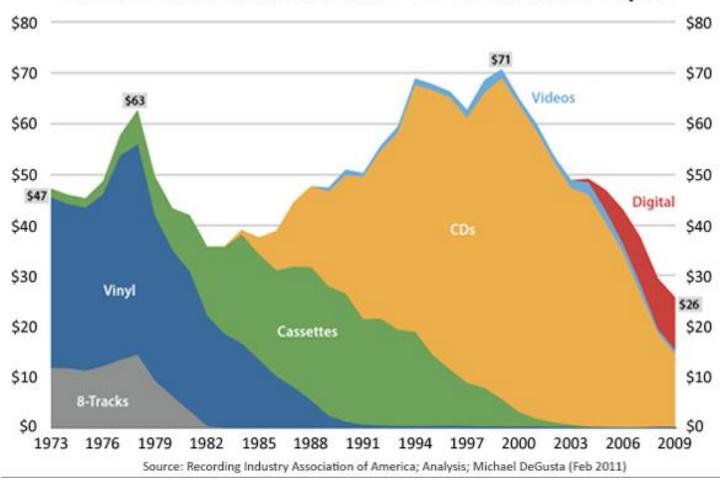
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OK Go Goes Viral

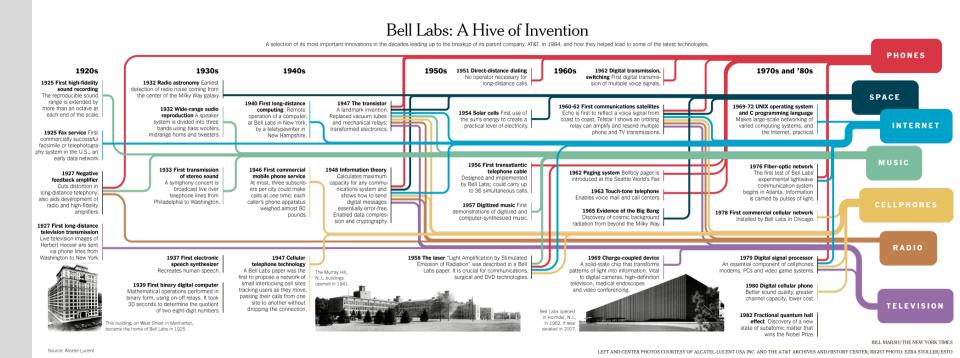




U.S. Recorded Music Revenue - 2011 Dollars Per Capita



Bell Labs



NASA Pavilion on InnoCentive

NASA Innovation Pavilion



Welcome to the NASA Innovation Pavilion, which provides Solvers the opportunity to develop innovative solutions to the unique challenges faced by NASA in achieving its mission to pioneer the future of space exploration, scientific discovery, and aeronautics research. Solutions to these challenges will not only benefit space exploration, but may also further the development of commercial products and services in the fields of health and medicine, industry, consumer goods, transportation, public safety, computer technology, and environmental resources.

Johnson Space Center

Langley Research Center

Glenn Research Center

Centers Participating in the NASA Innovation Pavilion



The Johnson Space Center has been home to all U.S. human space flight programs. Our scientists and engineers are engaged in research and technology development projects encompassing human health and performance, life sciences, and aerodynamics, mechanical, electrical, industrial, propulsion, chemical, and computer engineering. We are seeking new and creative ideas to enable our success as we venture beyond low Earth orbit and further explore the universe.

PAUSE

InnoCentive Pilot: Challenge Data and Statistics

Challenge Title	Ctr	Posted	Deadline	Proj Rms	Sub	Award Date	Award Amount
Improved Barrier Layers Keeping Food Fresh in Space	JSC - SLSD	12/18/2009	2/28/2010	174	22	5/7/2010	\$11,000
Mechanism for a Compact Aerobic Resistive Exercise Device	JSC - SLSD	12/18/2009	2/28/2010	564	95	5/14/2010	\$20,000
Data-Driven Forecasting of Solar Events	JSC - SLSD	12/22/2009	3/22/2010	579	11	5/13/2010	\$30,000
Coordination of Sensor Swarms for Extraterrestrial Research	LRC	2/27/2010	4/26/2010	423	37	6/4/2010	\$18,000 (3)
Medical Consumables Tracking	GRC	5/17/2010	7/27/2010	365	56	in progress	\$15,000 (3)
Augmenting the Exercise Experience	JSC - SLSD	5/27/2010	7/27/2010	229	18	9/20/2010	\$10,000
Simple Microgravity Laundry System	JSC - EA	5/27/2010	7/27/2010	598	108	9/21/2010	\$7,500

2900 Solvers – 80 Countries

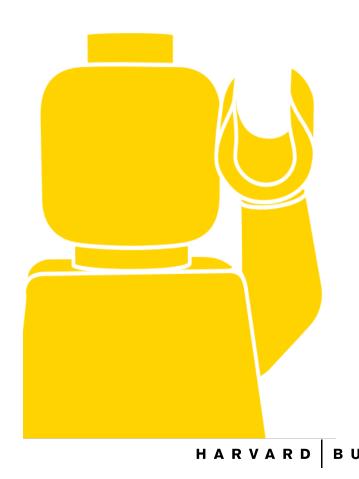


Ad Agency Video



Lego

Self organized brick design Mindstorm: components and software



Emerging New Product Identity Challenges: Existing Organizational Identity

Organizational identity

Dominant closed & introverted

Subcultures: "Wild Men"

Fans: "Shadow Market"

Disruption

Brick Systems

Interplay Bites & Bricks

1990

1995

2000

2005

2010

Emerging new product identities

LEGO Mindstorms: LEGO gives fans "the right to hack"

Adult Fans of LEGO (AFOL) generated on-line/off line communities



Antorini, 2008 Schultz et al. 2005

THE MYTH OF CORPORATE REINVENTION

The key is knowing when to give up-and just spin off the sexier parts of the business

EASTMAN KODAK

- ▶ OPERATING CASH FLOW \$1.9 billion last year
- ▶ PINNING HOPES ON Digital photography, including prints
- ➤ PROGNOSIS Kodak hopes digital photography will represent half its revenue and a quarter of profits by 2005. But it's having trouble making money in a market marked by low profit margins and short product cycles

from

- \$11.6 billion last year, mainly from consumer long distance
- PINNING HOPES ON Broadband fixed and wireless connections to consumers and businesses

AT&T

PROGNOSIS Unclear whether AT&T can move its long-distance customers onto new cable TVbased network. Customers are defecting to Baby Bells

\$1.2 billion last year, mainly from copiers

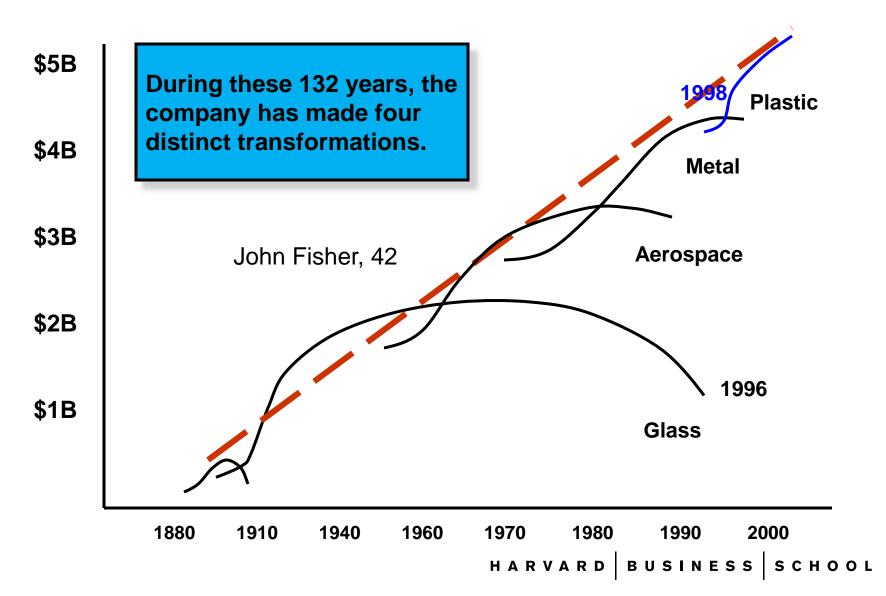
► PINNING HOPES ON Printing
► PROGNOSIS Xerox sees

XEROX

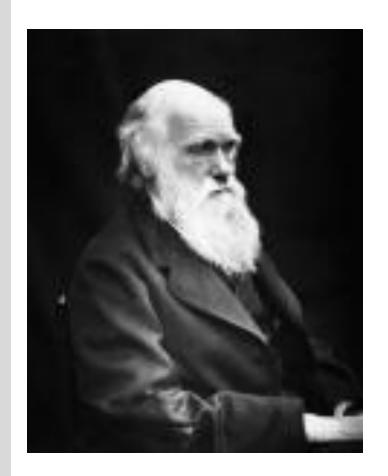
▶ OPERATING CASH FLOW

- growth in low-end printers and high-end publishing systems. But it needs results soon. It just suffered its first quarterly loss in 16 years and
- had to draw on its bank line of credit

Ball Corporation



Charles Darwin



"It is not the strongest of the species that survive, nor the most intelligent, but the one that is most responsive to change."

"Those who live by the sword...

will be shot by those who don't."

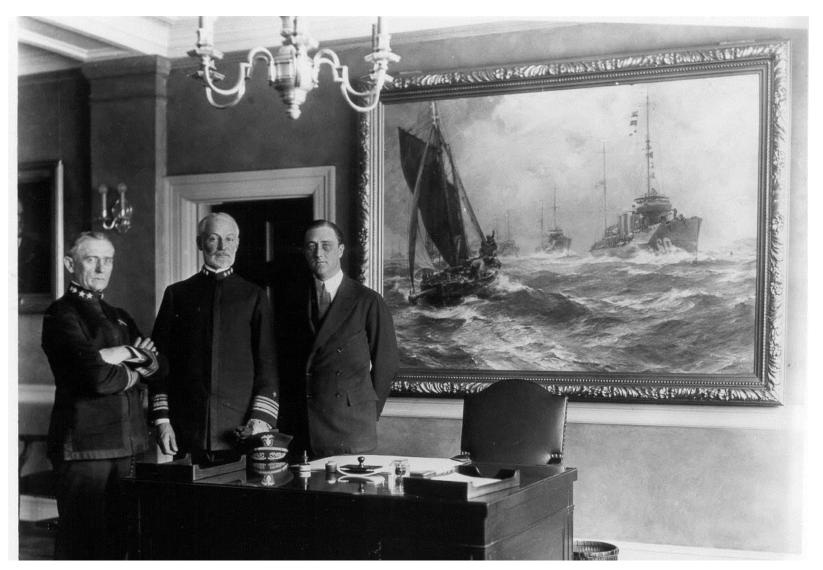
The Innovation Paradox

Why Do Winners Become Losers?

- Not A New Phenomenon
- Common Across Industries
- Seen Around The World

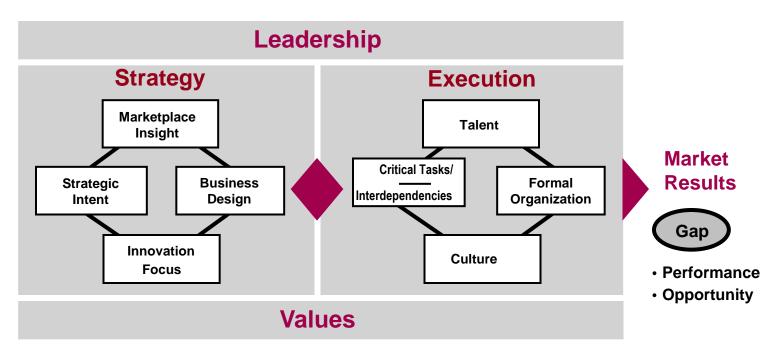
Why Do Successful Firms Fail?

- WRONG STRATEGY?
- WRONG TECHNOLOGY?
- STUNTED EXECUTION?
- BAD LUCK?



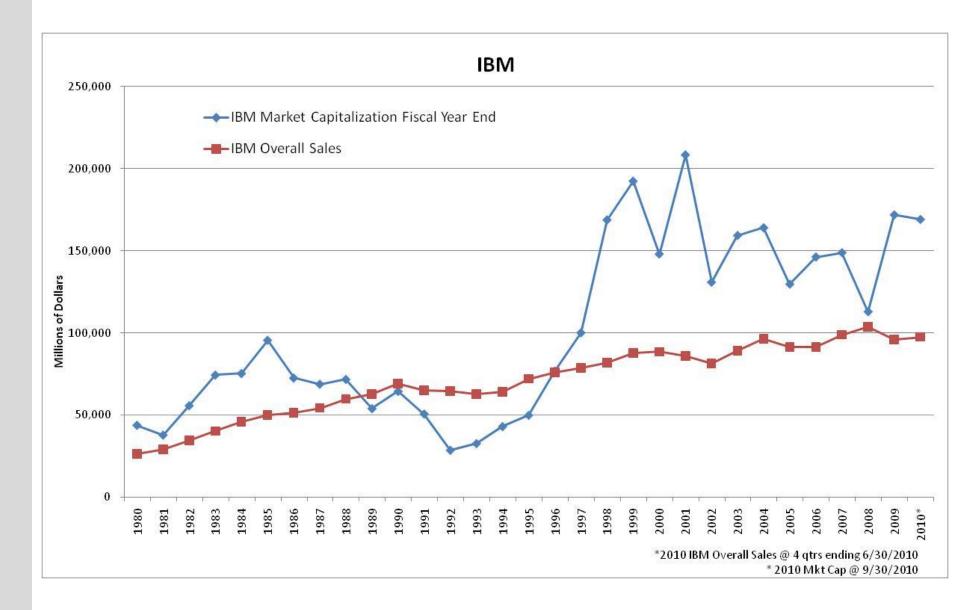
The young Assistant Secretary of the Navy stands with Admirals McKean, left, and Sims in 1919.

Innovation and Organizations



Strategic Insight

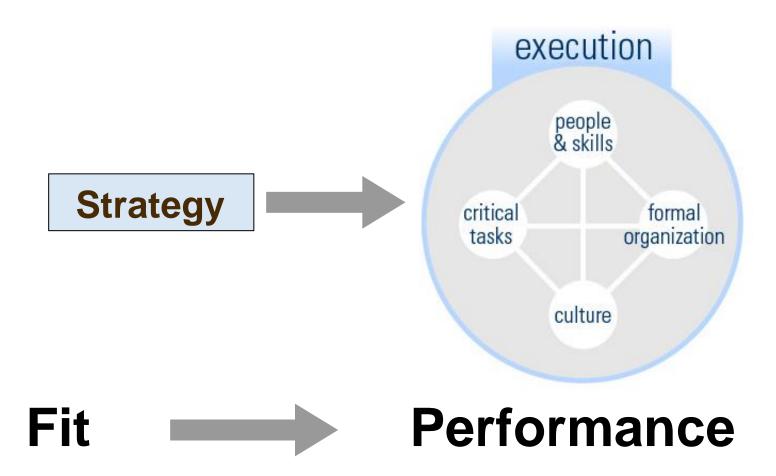
Strategic Execution



Performance and Opportunity Gaps

- <u>Performance Gap</u>: Our revenue growth over the past 10 years has lagged the market (4% vs. 8%). Our goal is to break out of this pattern of low growth and achieve 10% profitable revenue growth in the next 24 months. Achieving this will result in an estimated \$5 billion in top line growth.
- Business Owner: VP of Line of Business
- Performance Gap: The firm has grown dramatically over the past 5 years. During this period the quality of our products has declined. Our attempts at introducing six sigma have failed and we have lost 5 points in market share in the past 12 months. Each point lost represents roughly \$500 million in revenue.
- Business Owner: VP Quality
- Opportunity Gap: Current revenue growth per customer in our existing markets is growing only slowly (5% per annum) and customer expectations are increasing. If we are able to move up the stack and provide solutions rather than point products, we should be able to increase revenues and profits by 20% over the next 3 years.
- Business Owner: Division GM

Strategic Innovation and Change

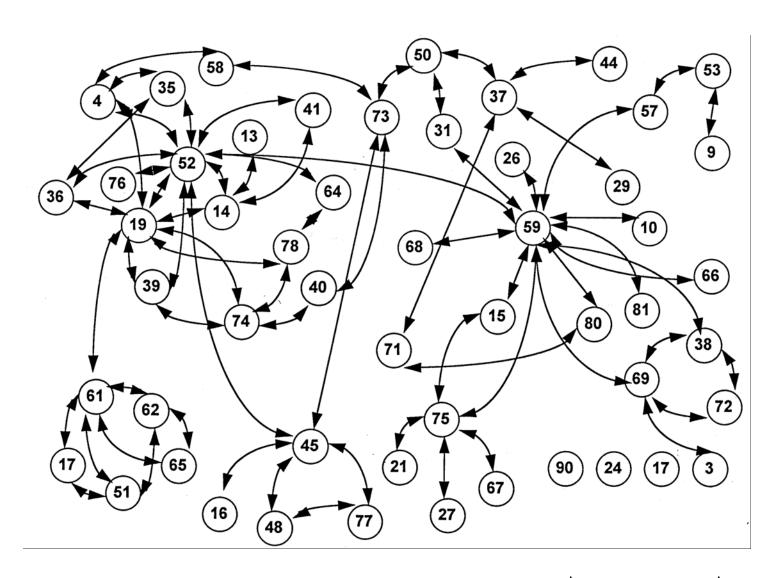


Informal Organizations (Culture)

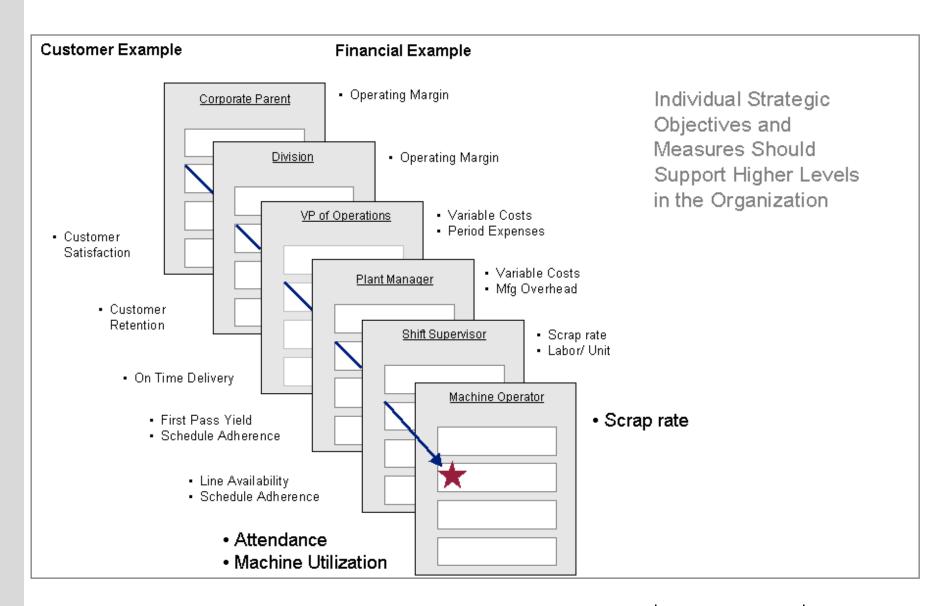
- Norms...dress, working late, conflict resolution
- ▶ Values
- Communication and influence patterns
- Climate...collaborative, teamwork, standards
- ► Core beliefs...what we believe in
- ▶ Power/politics
- ► Key roles

Conduct multiple levels of analysis, e.g., unit, interunit, organization

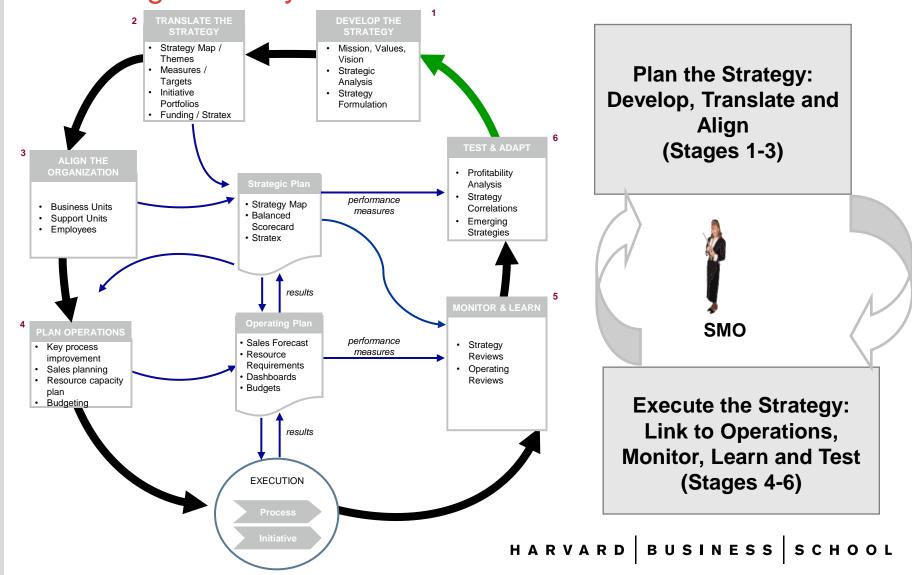
Informal Communication Networks



Align Employee Objectives to Strategic Priorities



8. Institutionalize the New Culture: A New Strategy Management Office Coordinates the Six Stage Management System



Principles of TQM

1. Customer focus

Ensure that customers drive quality

2. Visible leadership & empowerment

Involve everyone Small group activities

3. Process mapping & benchmarking

Treat everything as a process

4. Aggressive improvement goals

Defect reduction

Cycle time reduction

Customer satisfaction

5. Build in quality from the start

Tanguchi methods Robust design 6. Solve problems using facts and data

Common measurement system
The tools of TQM

7. Common values and language

Education/training (prerequisite)
Motivation & recognition

8. Creation and diffusion of "success stories"

Start a critical few TQM projects

9. Action being taken

TQM is an executive's responsibility

We then repeat the process, factoring new knowledge gained into the next generation of the plan. PDCA is an ongoing iterative process aimed at systematic improvement through each cycle.

The basic philosophy of PDCA is to make continuing incremental improvements rather that major one time breakthroughs. Some organisations use terms like "leap frogging the competition" to illustrate the concept of the quantum leap improvement.

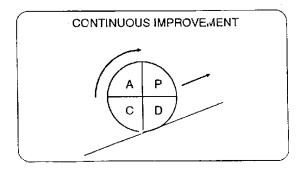
PDCA "PHILOSOPHY"

WIN WITH MANY SMALL GAINS,

NOT BY A FEW "MIRACLES"

Unfortunately such improvements (often driven by high technology or radical business changes) are seldom realised. The slower (but surer) approach of learning from experience and developing successes built on past experience leads to many small gains which accumulate over time into major improvements.

The PDCA cycle is often characterised by a wheel turning through the Plan, Do, Check and Act phases, resulting in continuing improvement, moving upward toward a goal. We will refer to this concept as "turning the PDCA wheel".



Congruence is a double-edged sword: The failure of success

- Size leads to structural inertia
- Age leads to social inertia
- Success leads to pride and arrogance



Inertia dangerous in a rapidly changing environment

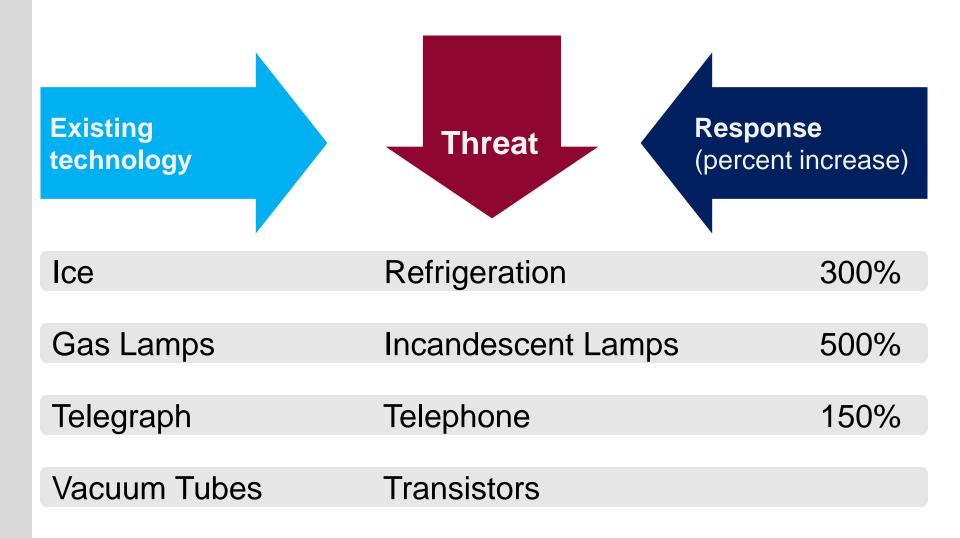
When environmental situation changes dramatically, managers typically:

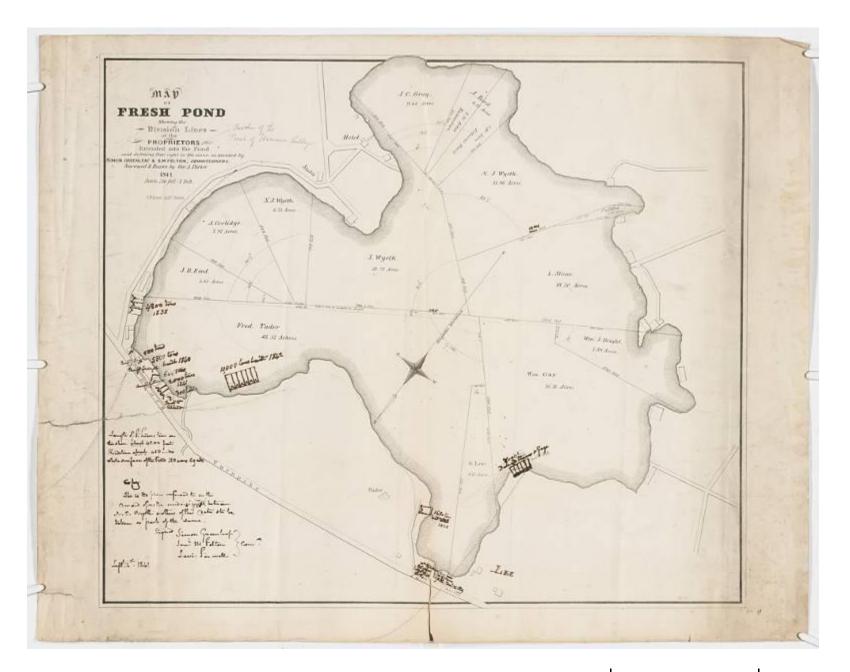


- Increase commitment to the status quo
- Decrease vigilant information search
- Increase conformity pressures

Or, do more of what we do best!

Examples

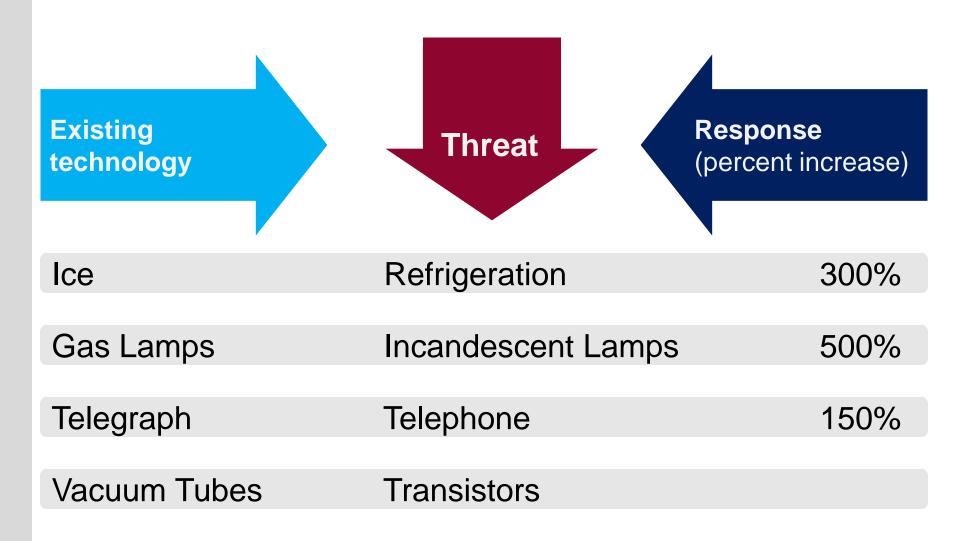








Examples



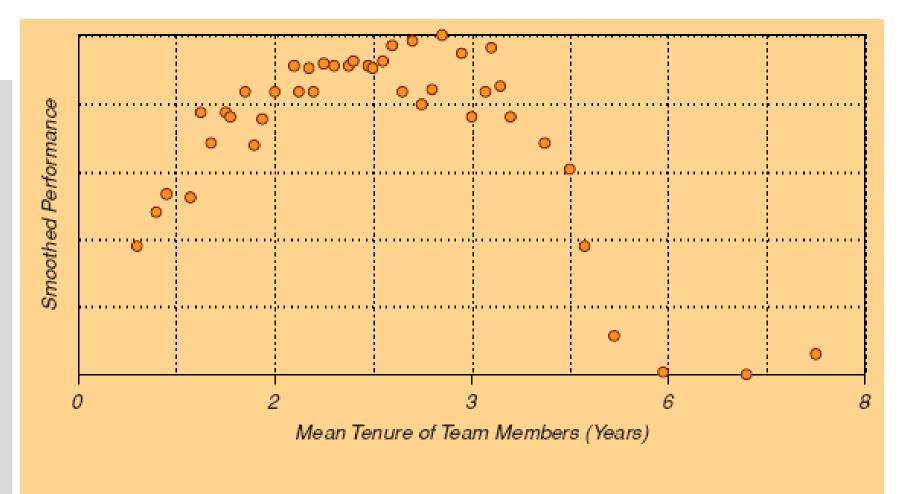
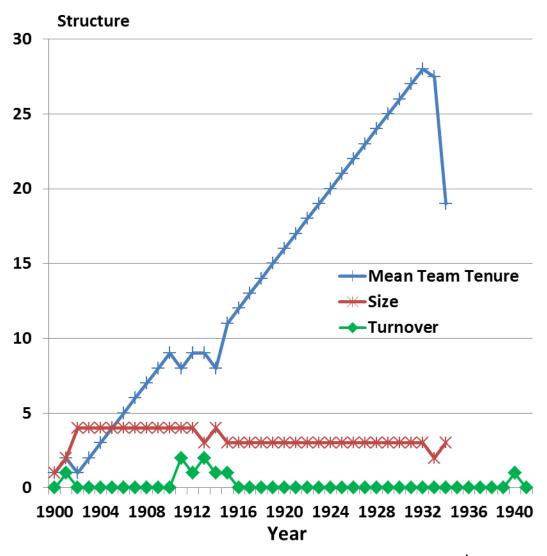


Figure 2-5 Project Performance as a Function of Team Age (45 Chemical Industry Projects)

Colorado Portland Cement Company Executive Team Structure

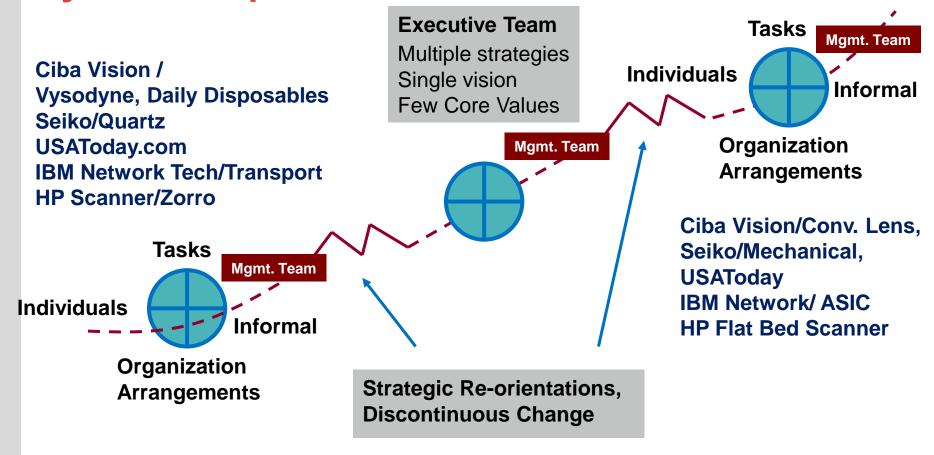


Innovation Streams

	Incremental	Architectural / Modular	Radical
New MARKETS Existing	Flat Bed Scanners (HP)	Network Chip/IBM Continuous Aim Gunfire HP/Lobo,Condor	Wear Lens (Ciba Vision)
	Ciba Vision (Soft Lens)		Disposable & Extended
	Ciba/Tilt (Corn)		Ciba / Seeds
	ASIC/IBM		Analog Devices (IC)
	USAToday		Firestone/ Radial
	Analog Devices		
			Analog Devices(DSP)
			USAToday.com
	Ciba/Tilt (Wheat)	DISK DIIVES	Knitting (HP)
	(Ciba)		Vysodine (Ciba Vision)
	Fashion Lens		Analog Devices (MEMS, DSP)

TECHNOLOGY

Ambidextrous Designs, Innovation Streams & Dynamic Capabilities



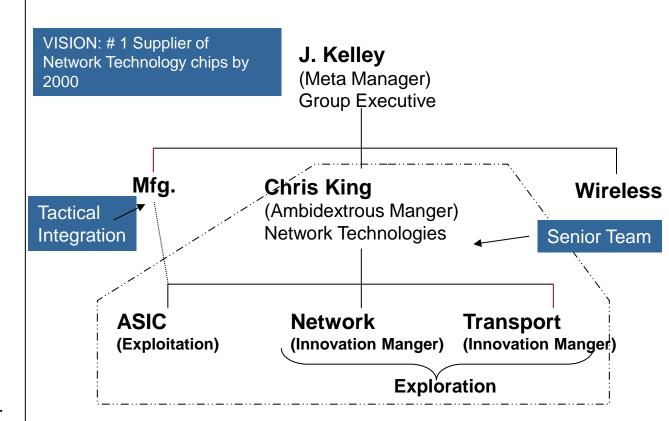
Exploration: Multiple failures, experiments, variants

Exploitation: Consistency, incremental change, and continuous improvements

Characteristics of Ambidexterity

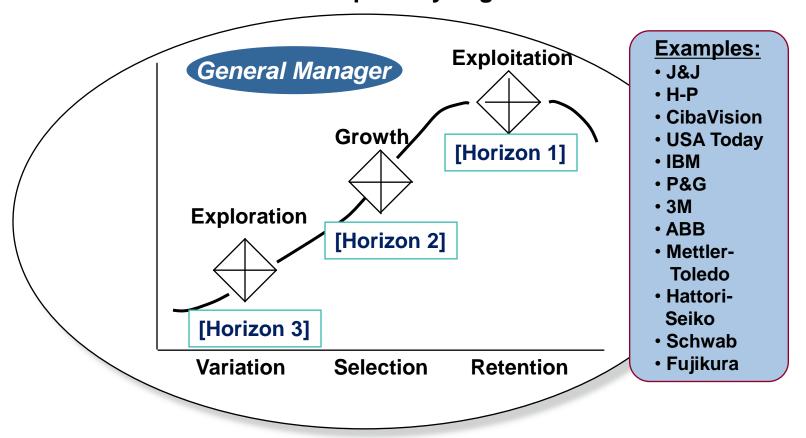
<u>Characteristics of</u> **Ambidextrous Forms**

- Structural differentiation of explore/exploit units
- Integration at senior team level
- Investment by <u>'Meta</u> <u>Manager'</u>
- <u>Targeted integration</u> of functional resources
- Common fate <u>rewards</u> system
- Overarching <u>vision</u> of senior team including both explore and exploit
- IM internal/external, staff external



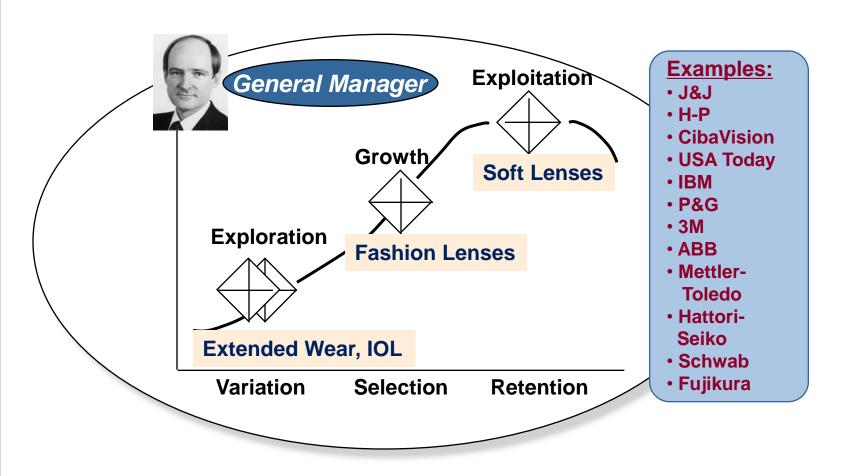
The Ambidextrous Organization

- A single general manager and team
- A common vision and values
- Strong decentralization
- Multiple strategies, structures, processes, and cultures -- each separately aligned



The Ambidextrous Organization

Ciba Vision



Senior Team Challenges

- Clear strategic intent that justifies the importance of the ambidextrous form
- Overarching vision and HR practices to emotionally engage everyone
- Aligned senior team with common rewards that communicates a consistent message
- Organizational architecture that promotes exploration and exploitation with targeted integration to leverage firm-wide assets
- Ambidextrous leadership that tolerates the contradictions of multiple alignments and can resolve the trade-offs required

Ambidextrous Leadership Skills...

- Hold Paradox, Be Consistently Inconsistent
- Manage a portfolio of related experiments or projects
- Establish and communicate a clear vision.
- Establish a Few Overarching Core Values
- Create an extended team for advice and counsel
- Balance opposing factors to imagine future possibilities that are currently unrecognized market needs
 - Recognize when to continue and when to abandon an idea
 - Build and Coach a senior Team that can deal with paradox

Leadership Teams: Four Ironies

(from Wageman and Hackman, 2010)

Irony I: Leadership teams are composed of powerful people—yet they tend to be under-designed, under-led, and under-resourced.

Irony II: Membership is important and coveted—but members often don't know who is on the team, and they do not really want to come to team meetings.

Irony III: Members are overloaded— but they tend to waste enormous amounts of time in team meetings

Irony IV: Authority dynamics pervade leadership teams and complicate team processes —but members won't talk about them.

Irony V: These dynamics are accentuated the more senior the team....

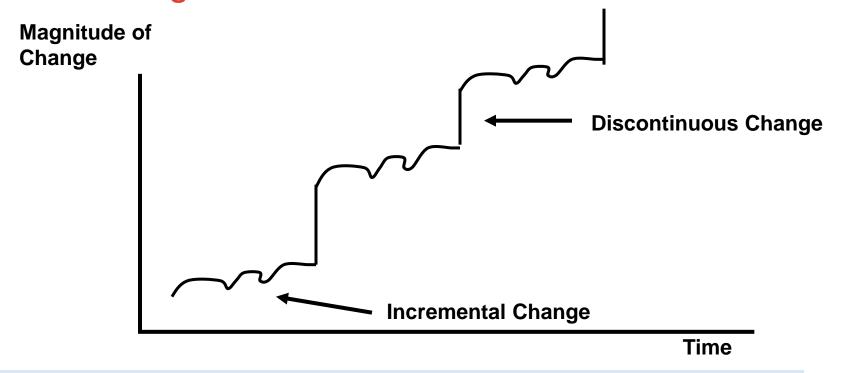
How do Organizations Evolve?

- Through incremental change in exploitative unit
- Proactive discontinuous change in exploratory unit
- Or, periods of convergence with increasing congruence punctuated by re-orientations, often requiring new top management teams

Examples

- Ciba Vision
- ► IBM Middlewear
- USAToday
- ▶ HP Scanner
- ▶ IBM Network Tech

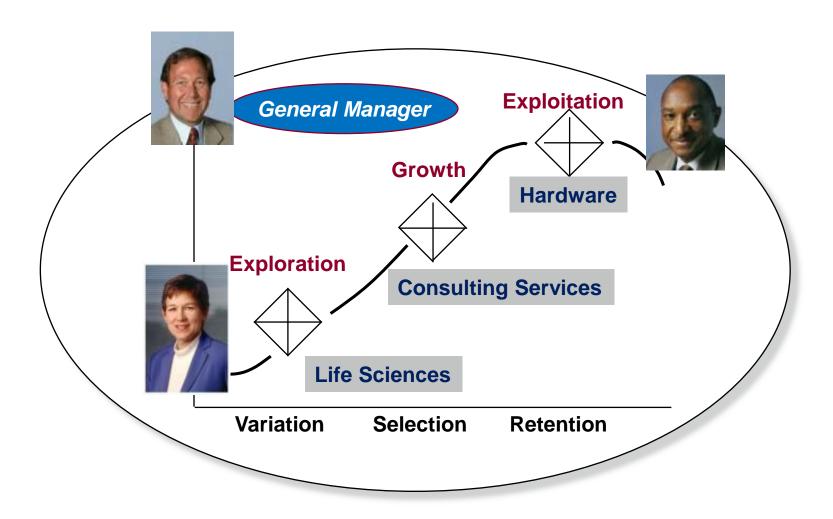
Patterns in Organizational Evolution



Organization Evolution:

- Incremental and punctuated change or Periods of incremental change punctuated by discontinuous change
- Executive team succession often associated with discontinuous organizational change
- Managing discontinuous change fundamentally different than managing incremental change

Corporate Ambidexterity at IBM



Varieties of Open Innovation: Communities and Contests

Distributed Selection Knowledge	External Selection (eg, Voting and Approval Contests) (LuLuLemon; OK-GO)	Community or Contest (Lego, Doritos)
Concentrated	Internal Firm Effort (EMI, Lego, NASA, Havas)	Internal Selection (eg Tournaments and Prizes) (NASA; V&S)

Narrow

Solution Generation Knowledge

Broad

HARVARD BUSINESS SCHOOL

Innovation and Organization Design Logic in Networked Information Economy (Benkler, 2006)

Logic of Communities, Peers

Autonomous, self-selected, decentralized action

Decentralized coordination; emergent social structure

Intrinsic (and extrinsic?) motivation

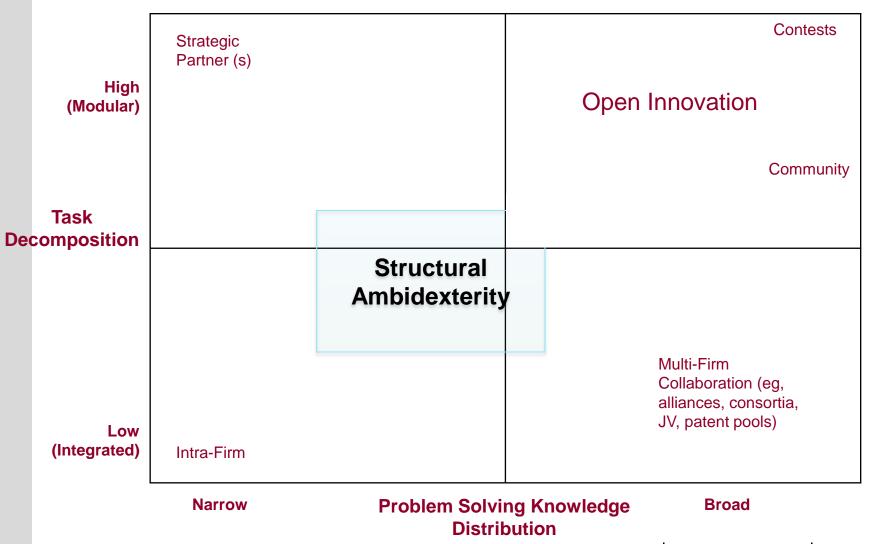
Non-market production; share resources and outputs

Peer, non-proprietary innovation

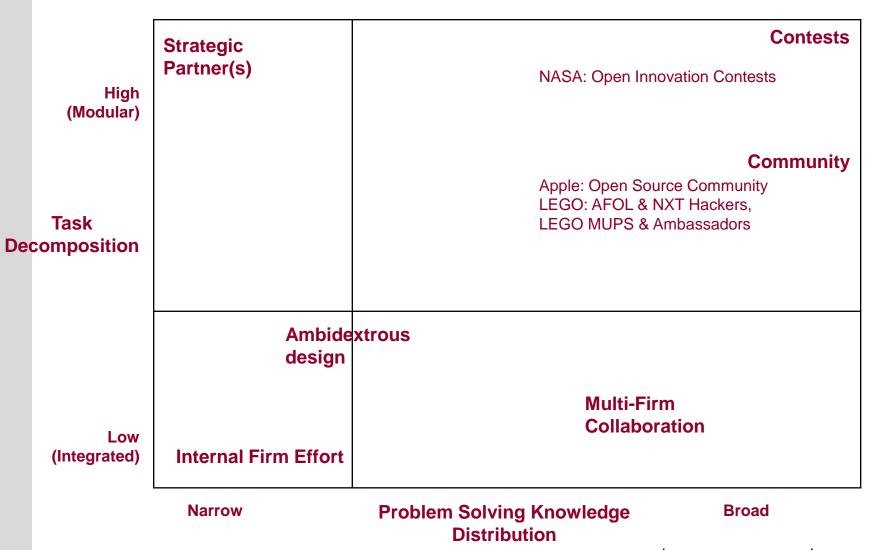
Open, shared IP

Social, emergent, distributed architectures

Modularity, Knowledge Distribution, and Locus of Innovation



The Increasing Intrusion of Open Innovation on Incumbents



HARVARD BUSINESS SCHOOL

Strategic Renewal at IBM (1999-2008)

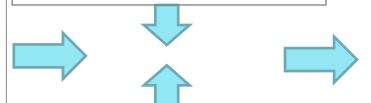
Gerstner's Innovation Challenge; Palmisano's Aspiration to Reinvent IBM

EBO's and SLF's

- Common Language
- Joint Executive Sponsorship
- · Growth and Innovation Focused
- Intact Teams by:
 - Country
 - · Business unit,
 - Functions
 - · Cross-unit
- · Gaps, Diagnosis, and Action

Top Down Challenge and Executive Sponsorship

High Expectations; Substantive and Symbolic Involvement
Fact based dialog and conversations across communities
Idiosyncratic root causes
Action and follow-up
Learning about leading change shared across units



Punctuated Change at unit level 1999 to 2008

By 2008, strategic renewal at IBM level

Bottom Up Systemic Themes

- Community dialog on common root causes
- Common culture, metrics, interdependencies, leader behaviors
- Systemic, integrated action owned by corporate executives

The Art of Strategic Renewal

The Art of Strategic Renewal



By Andy Binns, J. Bruce Harreld, Charles O'Reilly III and Michael L. Tushman

- 1. Select growth aspirations that connect with people emotionally
- 2. Treat strategy as a dialogue as opposed to a ritualistic, document-based planning process
- 3. Use experiments to explore future possibilities
- 4. Engage a leadership community in the work of renewal.
- 5. Apply execution disciplines to the effort.

LCOR in Action: Content of Change

LCOR Model helps leaders make decisions about why change (strategy), what to change (execution) and outputs (gaps).

#CISNEROS

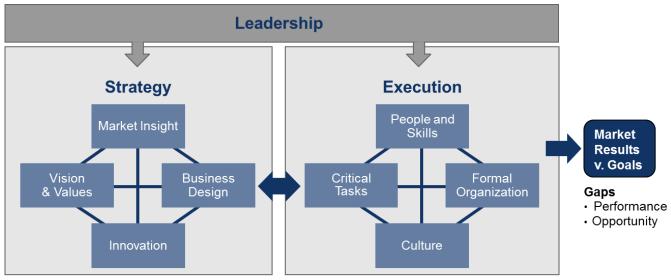
Executive Task Forces apply model to diagnose and solve strategic problems in the business.



All executives trained in the method; used for business planning process. Use to stand-up new businesses.



Each employee has a 'mouse mat' with the model completed for their business – explained strategic goals.



Source: Harreld, O'Reilly, Tushman, 2007

LCOR in Action: Process of Change

LCOR as a 'Leadership Forum' provides a process for accelerating transformation efforts by engaging large groups of leaders.



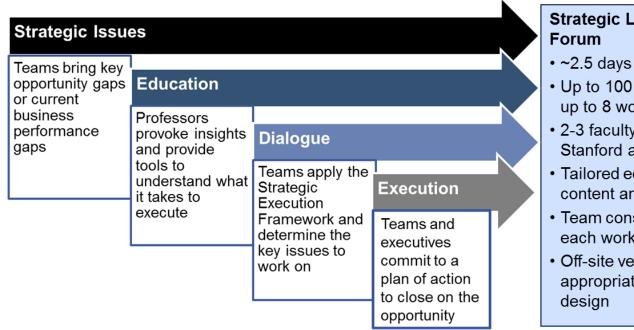
'Strategy as dialogue' – 5k executives participated in SLFs



Transformation to support \$650M capital investment; 8 sessions, 500 executives



R&D team use as method for building plans for new, disruptive projects



Strategic Leadership

- Up to 100 people and up to 8 work teams
- 2-3 faculty from HBS, Stanford and others
- Tailored education content and cases
- Team consultants for each work team
- · Off-site venue with appropriate classroom

LCOR in Action: Value of Method

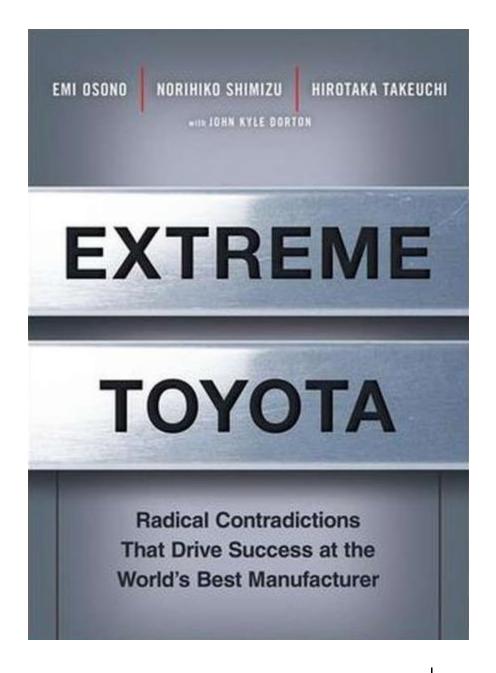
LCOR Method tackles both the tangible - logical, managerial concerns - and intangible - human, leadership dimensions of transformation.

Tangible

- Business goal/output driven approach
- Strategic alignment integrates disparate leadership agendas
- Discipline of root cause analysis
- Research-based approach

Intangible

- Leadership Forums create common purpose
- Transparent method, enables openness about tough issues
- Dialogue enables issues to be solved, rather than find someone to blame
- Leadership and culture embedded, not an add-on to business conversations



Extreme Toyota

A state of disequilibrium in which radical contradictions coexist, propelling Toyota away from its comfort zone and creating healthy tension and instability within the organization

Key Words for Understanding Toyota



Contradictions

Opposites

Paradoxes

Toyota's Contradictions



- Cultivating frugality while spending huge sums
- Operational efficiency as well as redundancy
- Cultivating stability and a mindset of paranoia
- Bureaucratic hierarchy and freedom to dissent
- Moving gradually and also taking big leaps
- Relatively low executive pay but self-actualization

