

Chapter 1

Rapid Change in a Global World

We are in an age of enormous change in business and industry. While there is significant change in the United States and in Europe, the most dramatic changes are happening in Asia, particularly in China and India. These changes impact the whole world. They may threaten the position of the United States in the rest of the world.

Change can be a source of opportunity for a business. It can also threaten an organization's survival. If your business involves commodity products — products that can be replicated elsewhere in the world — the question you face is how to find the opportunity in change and thus survive.

1.1 Change from China

Until recently Hiroshi Okuda was chairman of Toyota. He also was chairman of Keidan-Ren, the most powerful organization of CEOs in Japan. On November 11, 2003, CEO Okuda, in his capacity of chairman of Keidan-Ren, gave a presentation to a gathering of top Japanese business people, executives, and managers. In his presentation he noted:

China has become the world's top producer of steel, small-sized motors, and home electrical appliances such as refrigerators.

Fast development in these areas has been a result of two important factors:

- foreign investment in China
- the high quality of the Chinese workforce

The quality of the workforce in China is superb. As an example, sup-

pose you needed 10 workers and listed the following qualifications in your advertisement:

- 20–24 years of age
- right-handed
- eyesight better than 2.0 [20/20]
- height 155–165 cm

You would surely have 100 qualified applicants the following day. In addition, those people would be eager to work overtime as well as Saturdays and Sundays. Their pay would be about one-twentieth that of similar workers in Japan.

Japan cannot compete with China in the production of like products. China has an enormous competitive advantage in its quality of workforce. We must clearly understand that competition is not possible in the field of “commoditized” products.

What do we do, then, for future survival?

What Okuda said about Japan’s difficulty in competing with China is true for the rest of the world as well. Labor used to be cheap in Hungary, Ireland, Spain, and so forth, but these countries now have difficulty competing with the labor available in China. And, of course, labor in the United States has not been cheap for many years.

China also is driving out the competition in other countries’ home markets. A few years ago there was a manufacturing company in Budapest, Hungary, that made train equipment, but the company went bankrupt. In October 2004, Shoji Shiba visited and photographed the Józsefvárosi Piac (Four Tigers Market) that now exists in the train factory location (see Figure 1-1). The manufacturing environment is still intact — for instance, there are large industrial cranes on tracks running along the ceiling (see Figure 1-2); but by 2004 the factory buildings were home to rooms full of clothes, lingerie, and toys imported from China. Street stalls located between the buildings sold casual clothes and shoes out of shipping containers that opened into retail sales spaces. Hungarian industry cannot compete with these products.

Interestingly, the people working in the Four Tigers Market are largely Chinese, not Hungarian. We are not sure how they come to be in Hungary.



Figure 1-1. Top: Exterior of former train equipment factory in Budapest, Hungary. Bottom: Reused building — the Four Tigers Market.



Figure 1-2. Interior of the former train equipment factory.

The manual labor workforce is not China's only excellent workforce. The workforce of Chinese knowledge workers is also developing; many Japanese companies now outsource software work to China, and Microsoft's research center in China has been described in the U.S. business press. Soon it may be hard to compete with China in the area of knowledge work as well as in manual work.

More than that, the Chinese are developing excellent management skills. Since China opened itself to participation in the World Trade Organization (WTO), globalization has become a primary task of Chinese managers. China set the goal of becoming the "plant for the world," and is succeeding in our view. An article in the December 24, 2004, issue of the *New York Times* ("In Roaring China, Sweaters Are West of Socks City," pp. A1, C3) described how the city of Datang, China, specializes in manufacturing socks — 9 billion pairs of socks a year. The article said that to the west of Socks City were Sweater City and Kids' Clothing City. To the south . . . Underwear City.

China is promoting the management training required for globalization — "globalization management training" — on three fronts:

1. joint ventures with foreign firms
2. government Department of Labor qualifying examinations for managers
3. diffusion of MBA programs

Joint ventures with China have been frequently documented in the United States business press.

The people of China have a *long* history of qualifying for higher positions by way of examinations. Thus, it is quite natural for China to establish qualifying examinations as a component in promoting the management training required for globalization. There are three grades of examinations. The grade 3 examination qualifies a person to be a middle manager. Grade 2 relates to being a vice president. Grade 1 is to be a CEO or COO. The grade 3 and grade 2 training and examination systems have been operating since 2002. In parallel with setting up qualifications and examinations for three levels of management skill, the Chinese government has established training mechanisms for the examinations. The

grade 1 system began operating in 2004 with an 18-week, two-days-a-week course.¹

Beijing University is offering an International MBA. Its promotional literature says, “If you want to be a CEO in the new century, this school is a ‘West Point’ for management.” The teaching is done in English, often in weekend sessions that students can fit in with their existing jobs. Such international MBA programs also are available at other prestigious universities, among them Chinha University in Beijing, Fudan University in Shanghai, and Lingnan University in Guang Zhou. Some of these programs have alliances with foreign universities, for instance, with the MIT Sloan School of Management.

In China, management education, specifically an MBA, has become a qualification to become a manager. In another break with the past, people are becoming senior managers at younger ages, especially when they have an MBA. For instance, in the management team of the company Suzhou in 2001, the president was 37 years old year and had an MBA, the plant manager was 40 with an MBA, the sales director was 44 with a BA, the marketing manager was 38 with a BA, the IT manager was 37 with a BA, the quality manager was 32 with a BA, the financial manager had an MBA, and the logistics manager was 40 with a BA. In the past, long seniority, possibly based on a rise from the factory floor, might have been more common in Chinese companies.

Also, in at least one well-publicized instance, a Chinese company purchased a U.S. business partly as a way of getting more management talent. In late 2004 IBM announced the sale of its personal computer business to the Chinese company Lenovo. An article in the December 28, 2004, *New York Times*² suggested that at least part of the reason for this purchase by Lenovo was to acquire the experienced management team that came with IBM’s personal computer business.

These rapid changes are perceived within China as well as outside. In 2002, 2003, and 2004, Shoji Shiba asked his students in the international MBA program at Fudan University about changes in Shanghai. Each year he led the students through a process to rank the areas of greatest change in Shanghai. Table 1-1 summarizes the results of the analysis of the students’ perceptions.

Table 1-1. Perception of recent change in Shanghai among Fudan University I-MBA students

	2002	2003	2004
Infrastructure	53.8%	38.8%	38.6%
Globalization	20.0%	41.8%	9.1%
Social life	25.4%	19.4%	52.3%
Number of students	67	67	44

As shown in the table, the perceived area of greatest change moved in three years from infrastructure to globalization to social life — a big shift over a short period.

By change in *infrastructure* the students meant changes in buildings; highways, subways and bridges; environment (water, green space, etc.); population inflow; and income and gross domestic product. *Globalization* referred to foreign companies (joint ventures, branch offices, investment, etc.); foreigners (business people, foreign students, etc.); and language schools as well as to worldwide events. Changes in *social life* were described in less tangible terms but included:

- new styles of consumption — new consumer goods (cars, clothing, etc.) and more opportunities for consumption
- new social trends — demographic changes (increasing numbers of people coming to Shanghai from the country and the reverse)³ and new mentalities (e.g., divorce)
- unfavorable effects — congestion (e.g., cars), layoffs by some companies (as China's planned economy ended), rising costs (housing, etc.), and so on.

In addition to providing severe competition to businesses throughout the world, China will have a big impact as a market itself. For instance, an article in the July 12, 2004, issue of *Nikkei Business* forecasts the change in the worldwide car market between 2003 and 2020. In this forecast the markets in the United States and Europe do not grow expansively — they are saturated. However, the number of cars produced for the domestic

market in China goes from 439×10^4 to $1,700 \times 10^4$. The same is likely to happen for other types of products.

Yet the pace of change in China is such that even Chinese companies sometimes struggle to compete. On December 25, 2005, at a training seminar of the Shanghai Center for Quality of Management (CQM) for the grade 1 qualifying examination, Shoji Shiba worked with executives such as chief executive officers, chief operating officers, vice presidents, and directors of large- and medium-scale companies in the Shanghai area and asked them, “What is the biggest change in your business in 2005?” There were many answers, but the responses could be boiled down into a few categories:

- The cost of labor and materials increased.⁴
- The exchange rate had a big effect.
- Competition became harder and harder.
- The price for the product went down.
- The export market increased [a good thing].

In response to the follow-on question, “What did you do about it?,” the answers fell into the following groups:

- Move the factory away from Shanghai to where land and labor is cheaper.
- Try a new product mix.
- Restructure the company.
- Improve quality.
- Change the mentality of management.

In response to a further follow-on question about results, it became clear some companies had done better in 2005 and some had done worse. In Shoji Shiba’s small sample, six companies reported increased sales, while three reported decreased sales. Two reported a profit increase, and four reported a profit decrease. A couple reported opening new markets.

In general, the change now underway is enormous. Some things that were true as recently as 2003 are no longer true. For instance, Figure 1-3 shows the change over the years 2000–2005 in different countries’ shares of the internal automobile market in China. Almost all automobiles or automobile parts sold in China are now made in China, although in many cases the Chinese makers are in joint ventures with foreign companies;

furthermore, Chinese companies are increasingly producing automobiles themselves with technology and knowhow obtained from their foreign partners.⁵

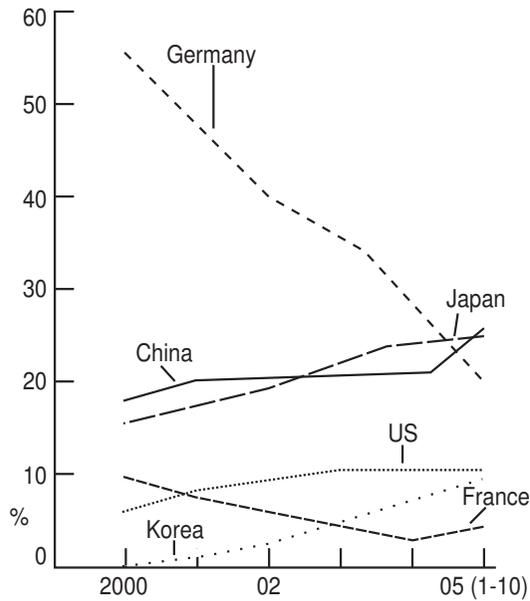


Figure 1-3. China automobile market by country. (From *Nikkei* newspaper, December 8, 2005.)

Shoji Shiba, who travels the world studying and teaching business, has never seen a country change so fast. For example, developments in China are proceeding much faster than the changes he saw in Japan in the 1960s and 1970s. It seems inevitable that the changes in China will continue to jar the rest of the world for years to come.

1.2 Change from India

Another major venue of change — and source of change in the rest of the world — is India. If China wants to become the “plant of the world,” India seems on its way to becoming the “back office of the world.”

In particular, India is trying to become a major software center for the

world. As shown in Figure 1-4, between 1995 and 2004 the value of export software work taken in by India rose from \$.7 billion to \$15 billion. Over the last four years of the period, the value doubled.

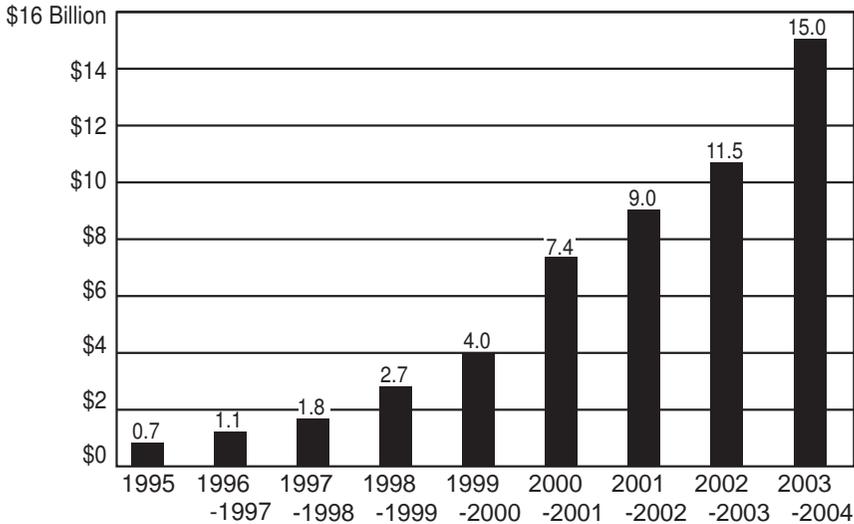


Figure 1-4. IT export work taken in by India. (Derived from *Fole*, October 2004, p. 5.)

Figure 1-5 shows why India is becoming a top-notch competitor in the software area. The vertical axis represents a measure of the “goodness” of available human resources in a country’s software industry — a combination of the skill level and labor cost of engineers. The horizontal axis represents the number of highly qualified vendors of software. For our purposes here, the noteworthy aspect of this figure is that India has nearly caught up with Britain, the United States, and Japan in terms of the overall quality (capacity, skill, and cost) of their software industry.

A second strength of India in the changing business world is in manufacturing. In 1988 the Confederation of Indian Industry (CII) set up a Total Quality Management (TQM) division and began the intensive diffusion of quality methods. The level of quality of Indian industry has been such that 111 Indian companies were TPM Award Winners between 1995 and 2006. Similarly, 16 Indian companies won the Deming Prize and Japan

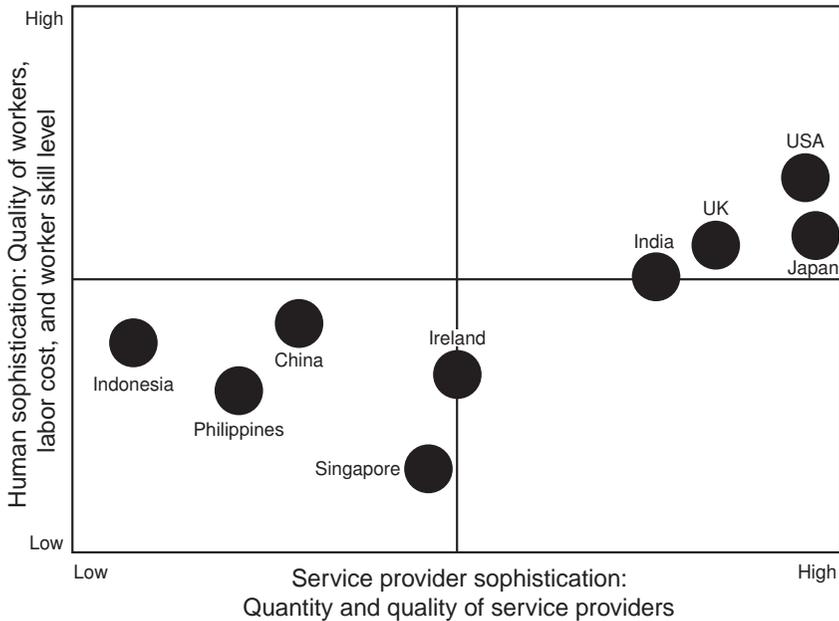


Figure 1-5. India IT positioning to capitalize on a global delivery model. (Source: Slightly adapted from Softbridge Solutions Japan Co. Ltd.)

Quality Medal. In the United States only two companies have ever won the Deming Prize (Florida Power and Light in 1989 and AT&T Power Systems in 1994). In Taiwan only one company has ever won the Deming Prize (Phillips in 1991).

Of course, in only a few countries do companies even bother to challenge the Deming Prize, which raises the question of why so many Indian companies have successfully sought the prize. The answer is that Indian companies are competing to be excellent; applying for the prize both provides a target for improvement and benefits a company's reputation. (That eight companies in Thailand have won the Deming Prize since 2001 may be indicative of another coming Asian competitive powerhouse.)

In a slightly different domain, at the International Conference on Quality Circles in Bangkok in December 2004, there were more participants from India than from any other country except Thailand. The level

of QC Circle activity in India today is comparable to the activity in Japan in the 1970s.

Another important component of India's drive for and success in improved quality in manufacturing is the embrace of cross-company mutual learning that we are seeing in several Indian industries. We describe this in more detail in section 10.1 (beginning on page 235).

Shoji Shiba was able to get a high-level view of India's industrial strategy on July 25, 2004, when he was invited to meet for an hour with Dr. A. P. J. Abdul Kalam, the president of India. President Kalam told Shoji Shiba that India has three types of companies:

- companies with an R&D capability to create unique technologies
- companies that license technology and do some design
- companies that do manufacturing according to a specification given to them

The issue in each case is how to push that type of company to a higher level.

The way Shoji Shiba's meeting with President Kalam came about brought home to Shoji Shiba the insight that one of the skills of great leaders is quick action at cutting through bureaucracy. Shoji Shiba was in New Delhi for three weeks giving a seminar. A seminar participant who was well connected in the government passed along to the president's office information about what Shoji Shiba was teaching. Immediately an invitation came to visit the president.

A similar thing had happened in Hungary in 1989 when Shoji Shiba was giving a seminar in Budapest, and the Hungarian minister of industry, Laszlo Kapolyi, invited Shoji Shiba to come directly to his office.

And, in another example in the United States, in late 1990 the term of Shoji Shiba's secondment from Tsukuba University to MIT had expired. When U.S. Secretary of Commerce Robert A. Mosbacher heard that Shoji Shiba had to return to Japan, he immediately wrote to the Japanese ambassador to the United States asking that Shoji Shiba be allowed to stay and help U.S. industry for an additional period of time.

1.3 Change in the United States and Europe

Even though the competition is strong, the United States has not been standing still. Since 1990 Shoji Shiba has been regularly visiting U.S. companies.⁶ In 1990 no U.S. company Shoji Shiba saw practiced all of the elements of a world-class factory as defined by Czarnecki et al. (Czarneckioo, p. 78). By 1998–99, the best U.S. companies, including Intel, HP, Honeywell, and General Motors, had all of the elements of a world-class factory.

Another example comes from an informal survey of Shoji Shiba's students in MIT's Leaders for Manufacturing (LFM) program. The LFM students are highly qualified for graduate school and typically have several years of industrial or business experience before attending the program. In 2002 Shoji Shiba gave the LFM students a questionnaire to determine their awareness of quality methods that are common to world-class factories. As shown in Figure 1-6, the students were asked about a representative few items in a longer list of quality methods; also, the students did not discriminate between using and teaching a method (which is why the percentage figures span those two columns).

On average half of the students did not know about or had not heard of the various quality methods. However, the other half of the students did know of the methods, and a majority of those students had personally used or taught the methods. This was a significant change from our impression of our LFM students' awareness of such methods 5 and 10 years before. Shoji Shiba also believes that you would not find such a high level of awareness in any other country (not even in Japan where the level of awareness is now a bit less than it once was).

Historically, U.S. companies have been strong in strategy but weaker in operations than firms in some other countries. Since 1990, however, U.S. business has also achieved great strength in operations. For instance, the Boeing "moving line" production system for its 737 airplane includes standardization, just-in-time, and other techniques — all of the elements of a world-class factory. Incidentally, having a strong operations capability also facilitates globalization; without it, it is difficult to set up reliable factories outside the United States.

		Do not know/Have not heard of	Know	Personally used	Taught
Improvement Steps (7 steps, etc.)		57%	18%	25%	
7 Tools					
	Pareto				
	Cause and Effect	32	27	41	
	Checklist				
	Control Chart				
Affinity					
Tree Diagram					
5S		43	30	27	
Visual Factory		68	14	18	
Six Sigma					
Benchmarking					
Concept Engineering					
SPC					
Taguchi		58	40	3	
Experimental Design					

Figure 1-6. Student awareness of quality methods. (Based on a 2002 survey in MIT's LFM program.)

Since 1990 Japanese business has developed a decent capability in strategy but has lost some of its earlier capability in operations (with notable exceptions such as Toyota). Japan's loss of operations capability results from a shortage of manpower, the refocusing of top management's attention on strategy, and deemphasis on quality improvement training.

Even universities are showing signs of revolutionary change. The Massachusetts Institute of Technology, with which we both have been affiliated on and off over the years, has recently made a symbolic gesture toward a new kind of thinking. In Figure 1-7 (top), one of the MIT science buildings looks like it stood for efficiency. In contrast, the new Ray and Maria Stata Center shown in the bottom photograph clearly stands for

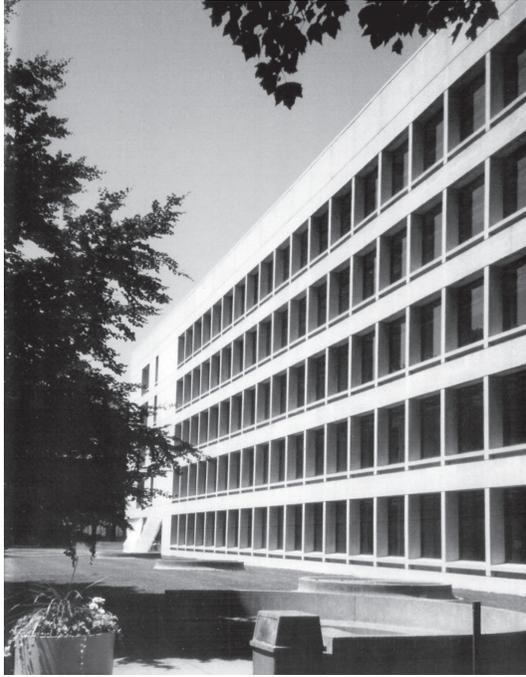


Figure 1-7. Top: Camille Edouard Dreyfus Chemistry Building, I. M. Pei architect, built 1967–70. Bottom: Ray and Maria Stata Center, Frank Gehry architect, opened May 7, 2004. The Stata Center houses the electrical engineering and computer science department and a few other groups.

something beyond efficiency. In the words of MIT president Charles Vest,

On the threshold of a new century and millennium, MIT had the responsibility of . . . constructing . . . a new home for computer, information, and intelligence sciences. . . . MIT needed to be as bold at the start of the twenty-first century as our predecessors had been at the start of the twentieth. The time had come to build a facility, the physical form of which signaled the intellectual brashness, energy and excellence held within. The building must display our soul as well as contain it. (Joyce04, Preface, p. xiv)

Europe also has not been standing still. Although the European nations' impact on business practices and global economy may not be as great as the changes coming from China and India, some of the most advanced thinking about business is emerging from Europe. In Chapters 3–5 we will introduce several case studies of European companies.

Chapter 2

Exploiting the 10× Change

This chapter will focus on breakthrough — a fundamental change in an organization’s direction — as a response to an abrupt, radical change in the business environment. Andrew Grove of Intel has characterized such environmental changes as “10× change,” indicative of an order of magnitude change in one or another factor in the environment.

2.1 The 10× change

In his book *Only the Paranoid Survive* (Grove99), Andrew Grove illustrated great insight about change in our time. He starts by paraphrasing the five forces that Michael Porter (Porter80) said determine the competitive well-being of a business (which we paraphrase still further):

- the strength of the company’s current competitors
- the strength of the company’s suppliers
- the strength of the company’s customers
- the strength of the company’s potential competitors
- the possibility the company’s product can be built or delivered in a different way

To this list Grove adds a sixth element:

- the company’s situation with regard to other companies whose businesses complement the company’s business

Grove shows these forces in what he calls a Six Forces Diagram, as shown in Figure 2-1.

The six forces can be sufficient to deal with normal business pressures. However, suppose one of the six forces is suddenly increased by a factor

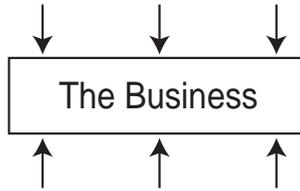


Figure 2-1. Grove's Six Forces Diagram. (Grove99, p. 29.)

of 10, as illustrated in Figure 2-2. For instance, suppose a competitor offers the equivalent of your product at one-tenth the price and perhaps with more capability; this is a $10\times$ change. When a $10\times$ change happens, says Grove, a business gets really hard to manage. You lose control of your business. Eventually the industry will settle down with the new paradigm, and your company may or may not be one of the survivors. Unfortunately, a company often does not or cannot anticipate when a $10\times$ change is about to happen.

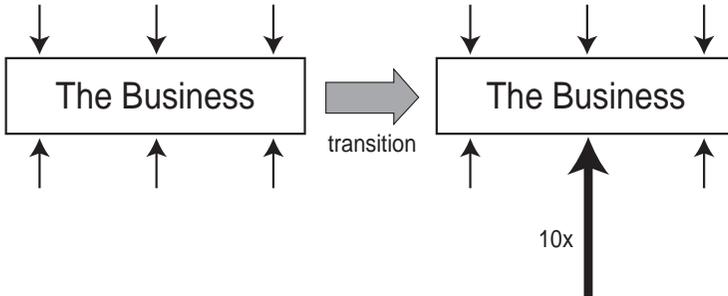


Figure 2-2. A $10\times$ transition. (Grove99, p. 31.)

In his book Grove describes the instance of transition shown in Figure 2-2 as an inflection point in what he called the inflection curve (see Figure 2-3). As we look at Figure 2-3 and reflect on the two major twentieth-century transitions in management practice (the control methods developed in the 1930s and 1940s and the incremental improvement methods developed in the 1970s and 1980s, as described in Section 2.3 below), we understand that a new era has begun — the era of breakthrough.

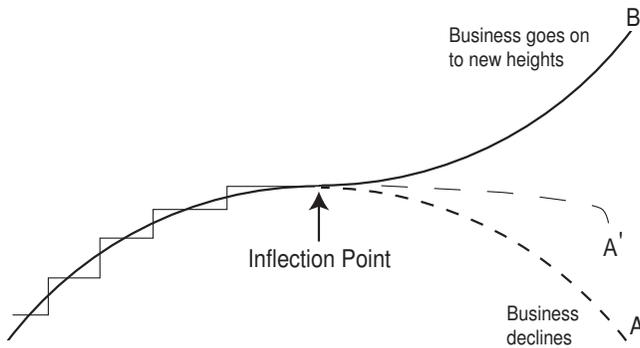


Figure 2-3. The Inflection Curve. (Derived from Grove99, p. 32.)

The breakthrough era, which started in the mid-1990s, was well formulated in Grove's book as being the result of 10× changes. Control and incremental improvement (indicated in Figure 2-3 by the steps) are no longer sufficient in the face of a 10× change; something dramatic has to be done to counteract the decline of the old business in the face of the 10× change. Even if the current business appears to be losing ground very slowly, as shown by curve A' in the figure, it will likely eventually disappear. To counteract the decline of the existing business, the company needs to fundamentally change its business — to switch from path A or A' to path B.

There are many reasons why a business may begin to decline and a new business must be sought. Traditionally, of course, products have a life cycle and must be replaced periodically by upgraded products; or markets may become saturated and thus no longer provide the growth opportunity that investors expect. However, a 10× change is bigger or more sudden than those traditional challenges. A 10× change may result from factors such as (a) rapid or dramatic price decreases, (b) dramatic market changes, or (c) societal incidents. Or it may occur because of (d) a clear insight or understanding that a value shift has happened, which could be a result of a, b, or c.

An example of *dramatic price decrease* has been seen over the history of the computer industry. The computer industry has seen a series of A-to-B changes: from the mainframe computers oriented primarily to

IT departments; to minicomputers with a different set of customers, including personnel in the process control area; to workstations as desktop computers for engineers; to personal computers eventually being adopted for desktop use by everyone at home or in business; to desktop computers providing information retrieval and some computing power as well as entertainment and means of communication through interactions across the Internet. Each of these changes came about because technology made it possible to provide more powerful computers at dramatically lower prices. Also, arguably, each step in the change of the computer business took advantage of the desire of individual departments or functions of businesses to escape from more centralized control of their computer operations; thus, another component of the continuing change in the computer industry has been a *latent dramatic market change*.

IBM's sale of its personal computer business to the Chinese company Lenovo, as mentioned in Chapter 1, is a result of the continuing dramatic price decreases in the computer industry. IBM is apparently increasingly moving to selling services and was no longer satisfied with the money it could make in the personal computer business. Another example in the price area is the rapid decrease in the retail price of DVD recorders in Japan, which has dropped as shown in Table 2-1.

Table 2-1. DVD recorder price decreases

Year	Price	Decrease
2000	100	
2001	53	47%
2002	37	21%
2003	26	30%
2004	19	23%
2005	15	21%

(Source: *Katu-Koujou* ["The Factory Winning in Competition"] by Yasuhiro Goto, published by Nihon Keizai Shinbunsha, 2005.)

An example of *dramatic market change* comes from the experience of a Japanese construction company. The company built industrial plants in the 1970s (as pictured in the top part of Figure 2-4); in the 1980s it shifted to building city skyscrapers (middle part of Figure 2-4) in response

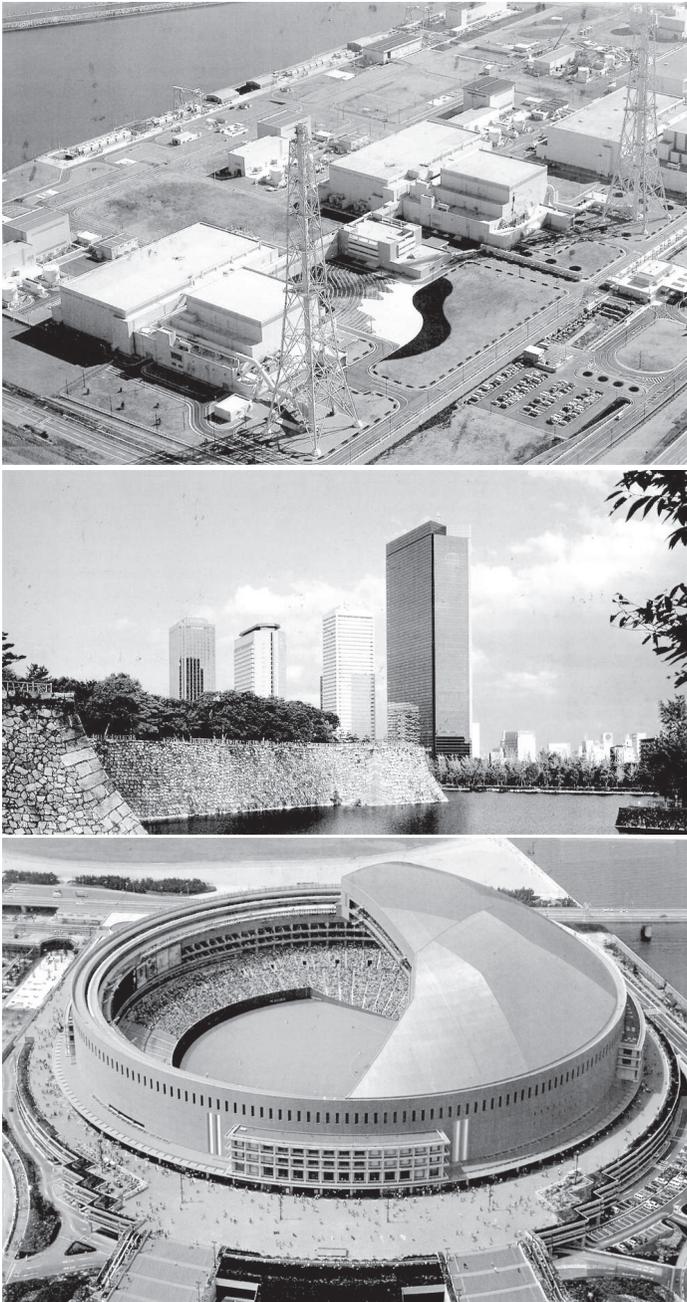


Figure 2-4. A Japanese construction company's changing businesses. Top, industrial plants in the 1970s; middle, skyscrapers in the 1980s; bottom, a stadium in the 1990s.

to market demand; the company then moved in the 1990s to building “leisure structures” such as large stadiums (bottom part of Figure 2-4).

We will study another example of repeated dramatic market changes in the case study of FAVI in Chapter 4; you might glance at Figure 4-1 now.

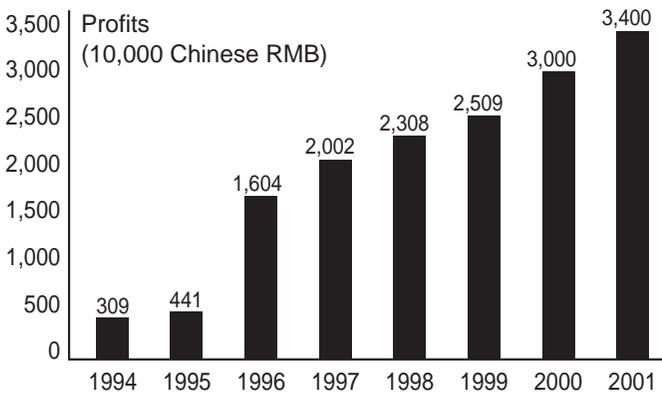
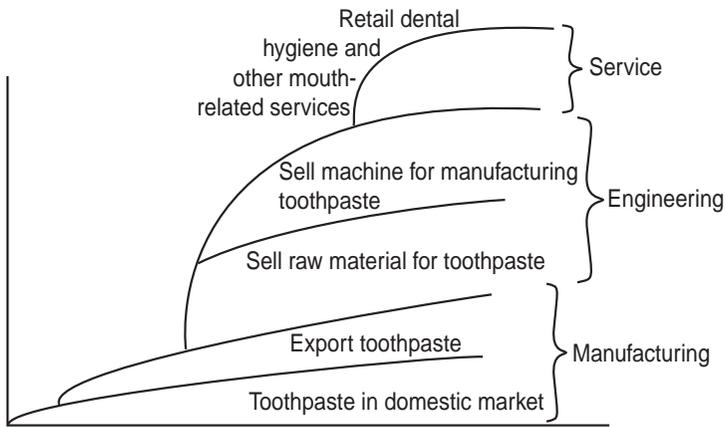


Figure 2-5. Changes at Shanghai Toothpaste Company.

The Shanghai Toothpaste Company provides an example of a company facing a $10\times$ change from a *societal incident*. Many companies in China were privatized as China adopted non-communistic market practices in recent years — and privatization was a $10\times$ change for these traditionally government-owned companies, because they could no longer

expect government support and as much government control of markets. Some survived the change and some did not. The Shanghai Toothpaste Company's original business was manufacturing toothpaste for the domestic market; in time the company developed an the export business as well. Then it encountered the 10× change of privatization and the need for an A-to-B change in the business. As shown in the top part of Figure 2-5, Shanghai Toothpaste moved into the business of selling compounds that went into toothpaste and machines to fill toothpaste tubes and print the labels. It encouraged other, new companies to go into the toothpaste manufacturing and sales business — that is, Shanghai Toothpaste actively created competitors for its original business — and it proceeded to supply these companies. In a sense, Shanghai Toothpaste moved from being only a manufacturing company to being a manufacturing and engineering company. Then, starting in about 2000, the company moved its business again — to providing mouth-related services in chain stores. The company hires dentists and dental hygienists and situates them in retail locations. The top part of the figure is a diagram for illustrative purposes only and does not accurately portray either the time axis or the results axis; the bottom part of the figure shows actual profit figures for the listed period of time.

Perhaps other examples of such A-to-B changes in business will come to mind for readers.

A 10× change, for example a change prompted by societal incidents, can be bigger than an industry or a collection of competitors. For instance, September 11, 2001, caused various 10× changes in the United States (e.g., expansion of anything related to “antiterrorism”) and in some other countries. For at least a period of time, the 2003 SARS scare caused a 10× change — China-based elements in many supply chains simply stopped. China's joining the World Trade Organization resulted in a 10× change in management thinking in China, which in turn is engendering a 10× change in the global economy. It is beginning to appear that the European Union's change in currency to the Euro is resulting in a 10× change in European standards and in competitiveness to the dollar.

It also works the other way. For instance, the integrated circuit certainly resulted in various 10× changes, some of which might be called societal incidents. The Internet has had similar effects.

The grid in Figure 2-6 shows our assessments of how companies we describe in this book have addressed sudden market weaknesses caused by the types of 10× change listed on page 21. The horizontal rows of the grid relate to three ways to create a new business, as we'll discuss in section 2.2. Earlier in this section we discussed companies b, c, and d as listed in Figure 2-6.

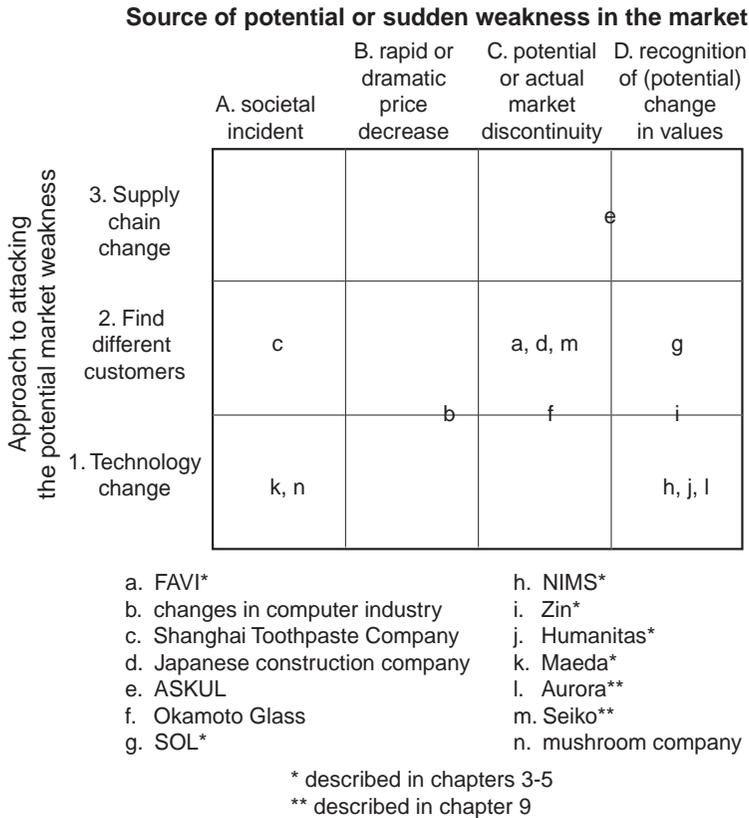


Figure 2-6. Market weaknesses and ways of attack.

2.2 Three ways to create a new business

Typically, creation of a new business happens in one of three ways:

1. technology change
2. finding different customers
3. supply-chain change

In the last section we mentioned several cases of business change that were customer-based — the Japanese construction company, the Shanghai Toothpaste Company, and FAVI.

In the rest of this section, we will give specific examples of companies that made business breakthroughs through changes that were supply-chain driven (ASKUL) and technology driven (Okamoto Glass and a Chinese mushroom company). The changes in the computer industry were also technology based, but in that case no single company was able to make the successive leaps from A to B; it was always a new company that made the A-to-B leap.

Supply-chain-based change

For years the Japanese stationery and office supplies market was monopolized by the large company KOKUYO; a small company promoting new products had little chance of entering the business. In this environment, ASKUL was started to address the desire of its parent company, PLUS, to get a bigger foothold in the market dominated by KOKUYO. From its first sale in 1994, ASKUL grew to be a successful venture by 1999 and has continued growing since.¹

The essence of the business concept of ASKUL (point e in Figure 2-6) was to change the supply chain in the stationery industry. ASKUL recognized both the fact that the market was ripe for a change and the potential for expanded use of advanced IT technology.

In 1990–92, a “blue sky committee” at PLUS investigated the future direction of a new business, defining the ideal customers and the ideal distribution system. The committee concluded that the new business should not distribute to dealers or retail shops, channels that KOKUYO dominated, but rather should go directly to customers. They also decided

the new business should not target big and medium-sized companies that require the full service traditionally provided by customer service organizations in dealers and large retail shops. Rather, they decided to focus on small companies, which until then had had to buy their office supplies in retail shops.

In 1992, Shoichiro Iwata spun out of PLUS with a two-person team and started the ASKUL venture. Iwata believed that *time* could create new additional value. “ASKUL” means “deliver tomorrow.”² ASKUL offered next-day delivery of orders made by phone, fax, or the Internet from a 6,000-item catalog. Next-day delivery rate was 99.7 percent, with same-day delivery for orders placed by 11:00 a.m. to locations within Tokyo and Osaka. Forty percent discounts from list price were offered to all customers.

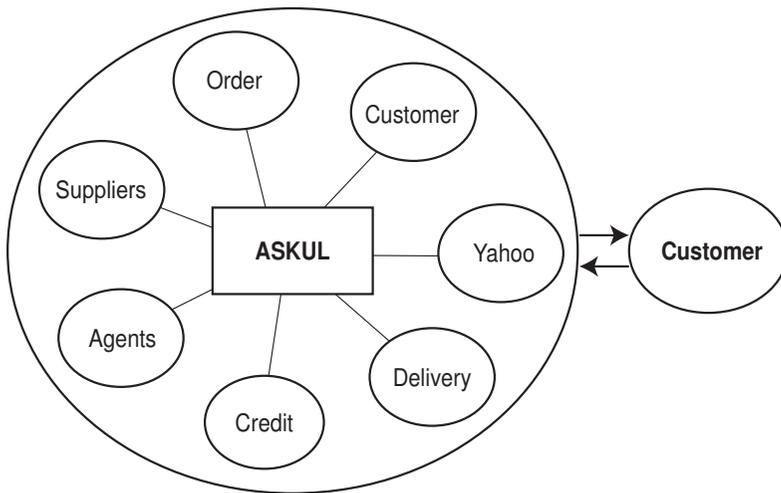


Figure 2-7. The ASKUL “virtual company” model.

As shown in Figure 2-7, ASKUL created a virtual company with a minimal central staff; a majority of the business functions were handled by outsource affiliates, temporary workers, and part-time workers. Reporting to the president of ASKUL were the financial and project innovation departments along with the organizations that handled their key business processes: customer support, efficient customer response, business

planning, and back office. ASKUL employees themselves played one of three roles: they served as staff handling the core daily jobs, as innovators improving the current business, or as entrepreneurs looking five years into the future.

Rather than offering only products made by PLUS, ASKUL concluded that its real business purpose was to deliver all products regardless of manufacturer. Offering a 40 percent discount from list to all their customers drew criticism and resistance from the traditional stationery industry. However, ASKUL refused to compromise — because its business purpose was to create the optimum system from a societal point of view. ASKUL concluded that its job was not to sell office supplies but to create a system for how to sell office supplies. Using information technology, ASKUL made each day's orders immediately visible and undertook daily intensive analysis to enable quick action on new strategies or tactics with items and prices. The company worked jointly on this with suppliers and manufacturers (including those not traditionally part of the office supply industry). Such analysis and collaboration resulted in delivery of food and drink, foot warmers, and other office needs along with office supplies.

ASKUL's initial supply-chain-based attempt to attack the Japanese stationery market was motivated by the parent company's desire to gain a bigger foothold in the market. The blue sky committee that launched the particular mode of attack apparently recognized the possibility of *instigating* a 10× change in the market via changes in the supply chain.

Figure 2-8 shows ASKUL's sales from its inception through 2004. ASKUL has now added a catalog for health care products to sell in addition to its stationery business line, anticipating market saturation in the stationery business, we think. It is trying to make a customer-based change that still utilizes its supply chain innovations.

Technology-based change

Okamoto Glass (point f in Figure 2-6) has stuck with glass-making technology and advances in that technology, but they recognized that such technologies would lead it into different markets.

Okamoto Glass has existed since 1928. Originally its business was

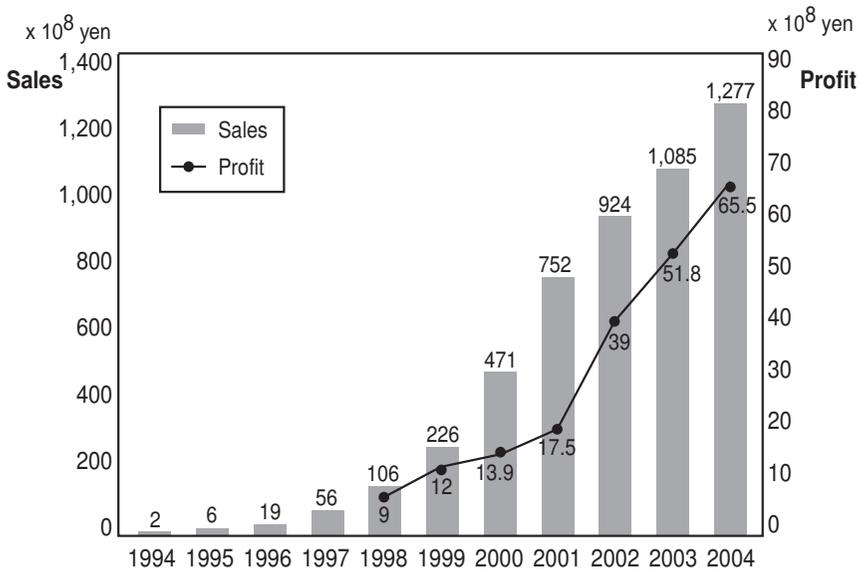


Figure 2-8. ASKUL sales history.

manufacturing cut glass for the consumer market. In 1977 the company moved into industrial glass production. By 1980 the company's industrial glass products included, on the one hand, automobile "hard lenses," airplane windshield glass, and electrical range and microwave door glass; and, on the other hand, special illumination for supermarkets (to make meat look pretty).

The expansion into industrial glass products continued. By 1996, for instance, the company was making reflectors for projectors, in which the glass needs to be durable to withstand high temperatures. This required technology for casting and cutting delicate glass pieces. Also by 1996, the company was making dental light mirrors. One can see how each of these was an extrapolation on the 1980 products.

Behind this dramatic business change was lots of research and development — toward high-function glass, lenses, and filtering of light.

In another technology-based example, the Shanghai Pudong Tiencu Mushroom Co. Ltd. (point n in Figure 2-6) wanted continued business growth, but it was difficult and too expensive to expand the amount

of land they had in the Shanghai region. (Also, in general there are restrictions on people moving in China.) Thus, the company made a break with traditional agricultural methods of growing mushrooms, although this case involves more of a societal constraint than an incident as such. The company now produces 1,000 tons of fresh mushrooms per year using high-tech methods. These methods include bioengineered ways of selecting the seeds for breeding, “intelligent” control of an artificially stimulative environment, and roboticized mechanical work. The company grows mushrooms in an “organic” way, in the sense that it does not use pesticide, chemical fertilizers, or growth hormones. The resulting mushrooms are kept fresh in a vacuum. Using these high-tech approaches, the company keeps growing mushrooms around the year with no off-season. The mushrooms are substantially exported to North America, Europe, Australia, and throughout southeast Asia, even though there is unsatisfied demand in the domestic Chinese market.³

2.3 Three eras of change and management

While this book is almost totally about breakthrough management, we must look back briefly and provide some context for breakthrough management in terms of the two paradigms for management that dominated much of the twentieth century: process control and incremental improvement.

The methods of process control were developed in the United States in the 1930s and 1940s and were adopted with revolutionary effect by Japan in the 1950s. Process control, as symbolically indicated by the flat line in the left portion of Figure 2-9, had the goal of synchronizing and minimizing the variation of all of the parts of an industrial process in order to make mass production possible. The methods of process control are now used by sophisticated businesses (and other institutions) throughout the world.

The incremental improvement paradigm was developed in Japan in the 1970s and 1980s. Incremental improvement is symbolically indicated by the staircase graph in the middle portion of Figure 2-9; its goal is incrementally improving businesses’ products and services and the processes

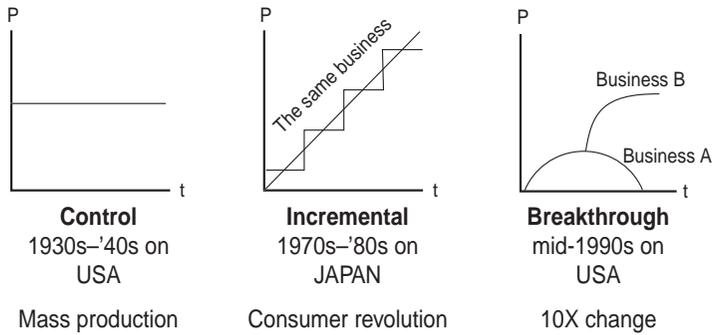


Figure 2-9. Left: process control; middle: incremental improvement; right: breakthrough.

for providing both products and services. As with process control, the methods of incremental improvement (e.g., lean production or six sigma) are now used by sophisticated businesses throughout the world.

The overarching purposes of process control and incremental improvement in their times were the same as the purpose of breakthrough management today — to enable companies to successfully compete and survive. Survival requires making money — at least sufficient money to cover costs, and typically enough money to provide investors with a return on their investment.⁴

However, while process control was sufficient for long-term survival in the 1930s and 1940s, a business in the 1970s and 1980s could not count on long-term survival by focusing only on incremental improvement; incremental improvement was becoming an increasingly necessary condition but was not a sufficient condition. Businesses still needed to maintain their skill at process control, or their products and costs would not be sufficiently reliable to let them stay in business. Examples abound of companies that have gone out of business because of inadequate process control. For instance, Shoji Shiba remembers that between the afternoon of March 1 and the morning of March 2, 1955, a total of 1,936 students at nine elementary schools in Tokyo had serious stomach problems including vomiting from drinking Snow brand milk products. Because Snow had lost control of its manufacturing process on account of an electrical blackout and insufficient maintenance work, products from one of the

company's plants caused food poisoning in the children. As a result, the chief executive had to resign. In another example, the world-renowned Arthur Andersen accounting firm was forced out of business when it became clear that its internal controls on giving conservative accounting advice were inadequate, if not explicitly ignored. You will be able to think up your own additional examples — perhaps close calls within your own business.

The same thing is true in today's breakthrough era in which companies are sometimes forced to seek new businesses, as shown symbolically in the right portion of Figure 2-9. That is, a company can switch businesses, but then the company has to deliver its products or services in a reliable, controlled way if it is going to succeed in getting and keeping customers. Also, probably sooner rather than later, it will likely have to provide incremental improvements to its products and services to remain competitive with other companies that are trying to expand in the same business area.

The connection between making money and survival is illustrated at the right side of Figure 2-10. The figure also illustrates the necessity

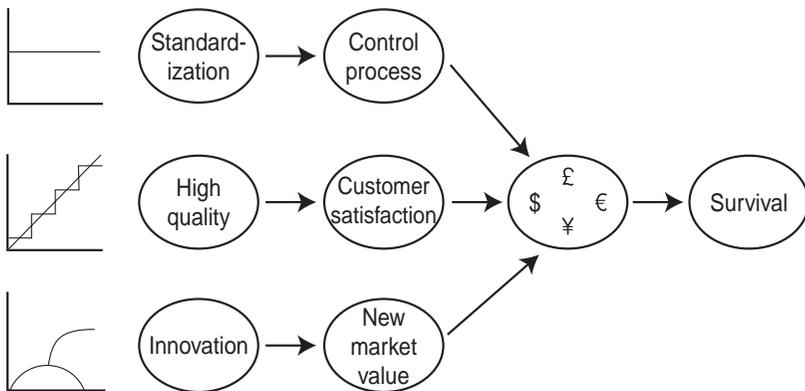


Figure 2-10. Business logic of the three management paradigms.

of having elements of all three paradigms: process control (with its emphasis on standardization), incremental improvement (with its emphasis on continuing customer satisfaction based on ever-improving levels of customer-perceived quality), and breakthrough management (with its

emphasis on attaining new markets through innovation).

The key trick is the relative timing of increased emphasis on each of the three elements shown in the figure. The importance of the three concepts of management has changed over the years as the *clock speed* of various industries has changed. Clock speed is the rate at which aspects of an industry change. Charles Fine's book on the subject (Fine98) discusses three types of clock speed (product technology clock speed, organization clock speed, and process technology clock speed) and gives examples from various industries.

Twenty or 30 years ago, many leading industries had clock speeds mostly measured in decades or perhaps in terms of a hundred years or more; such industries included aircraft, tobacco, steel, ship building, petrochemicals, paper, electricity, and diamond mining. Leading industries with product clock speeds mostly ranging from 4 to 8 years and organization and process clock speeds ranging from 5 to 25 years included the bicycle, automobile, computer operating system, agriculture, fast food, beer brewing, and airline industries.

Today, in contrast, a number of leading industries have product clock speeds mostly under a year (and no more than 1 to 3 years) and organization and process clock speeds of a few years to at most 10 to 20 years.

Thus, many years ago it was sufficient to introduce a technology and then do control management for many years. A little more recently, say as recently as the mid-1980s, a company could introduce a new technology, do control management, and then add management of incremental improvement to remain competitive, as shown in the top part of Figure 2-11. A firm could alternate back and forth between incremental improvement and control for years until eventually it needed to make a new breakthrough to stay in business.

Today, management often must be done in a new way. A business starts with a breakthrough, as shown in the bottom part of Figure 2-11, producing the new product exactly as developed and getting it under control. From there one improves the product using the methods of incremental improvement, getting each change under control; but, surprisingly soon, it becomes necessary to jump to the next breakthrough. In

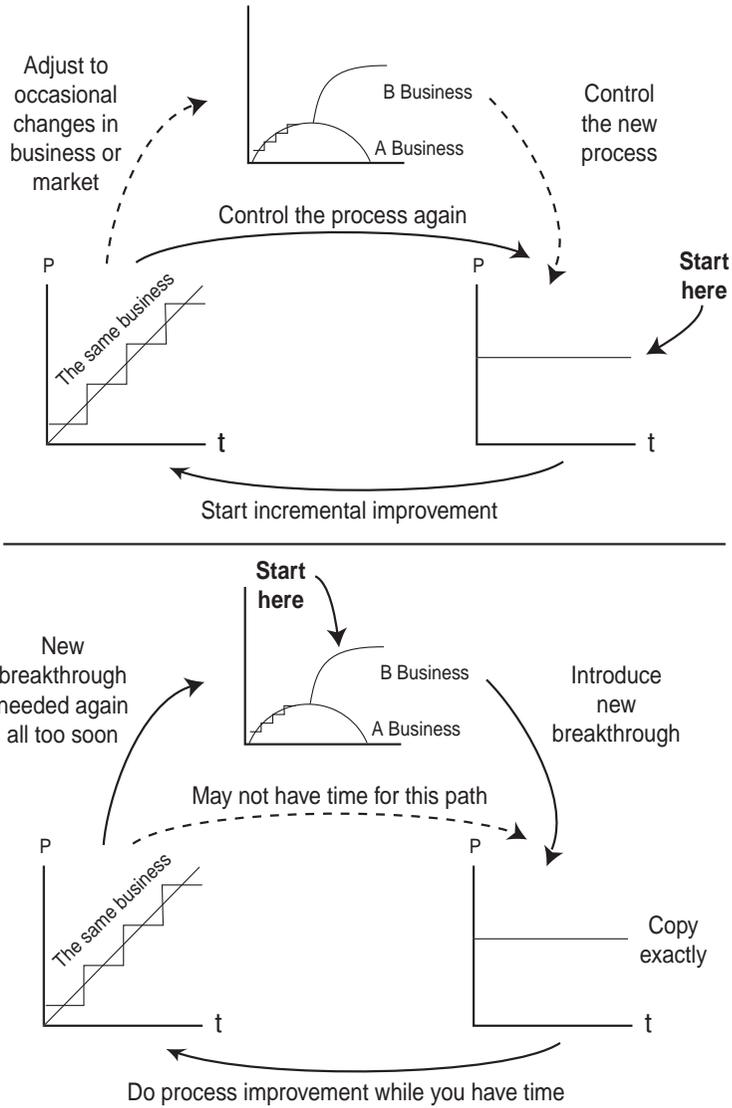


Figure 2-11. Change in the frequency of the need for breakthrough management.

other words, faster clock speed in an industry means that breakthrough is required more often.

Before we move on, we'd like to summarize and compare the characteristics of the three types of management using the chart in Figure 2-12.

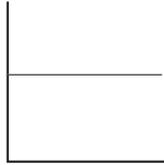
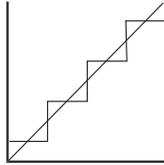
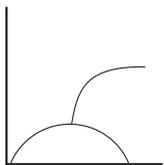
	Control	Incremental	Break Through
			
Business logic	Control process	Customer satisfaction	New market value
Changing Unchanging	Process Standards	Standards Business	Business Values
Hypothesis of human nature	Theory X	Theory Y	Theory Z
Key player	Middle manager	Shop floor workers	Top managers
Management focus	Discipline focus	Backward focus	Forward focus
Data	Numeric	Numeric and language	Language and image
Tools	Statistical analysis	Kaizen methods	Chapters 6–7 methods

Figure 2-12. Comparison of the three paradigms of management.

The top row of the chart symbolized the “logic” of the three approaches to management, as shown in Figure 2-9 and listed in the next row of the chart. In all three cases, making money is required for survival. In the control management paradigm, making money requires a firm to control processes, and to do that the firm must have standardization. In the paradigm for managing incremental improvement, making money requires customer satisfaction, which in turn requires a culture and systems for quality. In the paradigm for management of breakthrough, making money requires that the firm bring some new value to the market, which in turn requires innovation in some dimension of the business.

The next row of Figure 2-12 shows what is changing and unchanging in the different management approaches. In control management, the standards (i.e., characteristics of the product or service) may be unchanging, while the process for achieving the standards changes to improve. In incremental improvement management, the business is more or less unchanging, while the standards themselves change.

In breakthrough management, a company’s core “values” are unchanging even though the type of business may change. This pattern can be seen with the various businesses we described earlier in this chapter. In each case the underlying company value was unchanged. The toothpaste company always did something related to the mouth as it repeatedly augmented the form of its business. Okamoto Glass always dealt with glass, even though it dramatically changed its glass-making technology and areas of application. The Shanghai Pudong Tiencu Mushroom Co. kept growing mushrooms even as its “farming” methods changed and markets expanded. ASKUL always continued to address daily distribution of a commodity product as it went through its various business evolutions. The FAVI company we will describe in Chapter 4 always stays focused on die casting even as it finds different areas of business (see Figure 4-1).

One can imagine how too big a jump to a new business could result in a situation so different that the ability to solve problems and come up with new ideas would be decreased. For instance, one Japanese steel company started a fish cultivation business in order to utilize hot water that was a by-product of the steel manufacturing process; but fish cultivation was too far from the original steel business, and the project failed. When

faced with $10\times$ change, a company foreseeing that it has to make an A-to-B jump will do well to think about the question, “What is our core, unchanging value?”

The fourth row of Figure 2-12 lists theories of human nature and management. Theories X and Y were described by Douglas McGregor (McGregor85). Theory X says that people want to have stability and want to be led. This theory suggests the power of standardization and control of workers in the pursuit of mass production. Theory Y says people seek self-determination and innovation. This model suggests the accrual of knowledge, continuous improvement, and worker development and empowerment in pursuit of creating something new. Theory Z is what Shoji Shiba calls his idea that in the quest for breakthrough we must move beyond rational thinking in some circumstances (see page 206).

The fifth row of the figure shows who is important in the three types of management. Historically, leaders of organizations delegated control management to middle managers, and this was appropriate. Continuous improvement activities must be substantially focused among the workers themselves — that is where the information needed for improvement exists, not at the top levels of the organization. However, management of breakthrough necessitates great attention on the part of leaders of organizations; no one but the leader can change the business. Thus, breakthrough management is a key skill for top managers; in a different paradigm than for either control management or incremental improvement management, the top manager must build an appropriate system to accomplish breakthrough. Also, the leader is the most logical person to have the forward view called for in the next row of the figure.

The seventh row of the chart indicates the types of data that are most relevant to the different types of management, and the final row indicates the types of tools most relevant for scientific analysis of the various types of data. While breakthrough management is a relatively new skill, it is not without tools, and we describe relevant tools for breakthrough analysis in Chapters 6 and 7.

We conclude this section by connecting the three types of management to a memorable visual image. In paintings relating to Buddhism, three eyes are sometimes shown. These are the eye of the past, the eye of

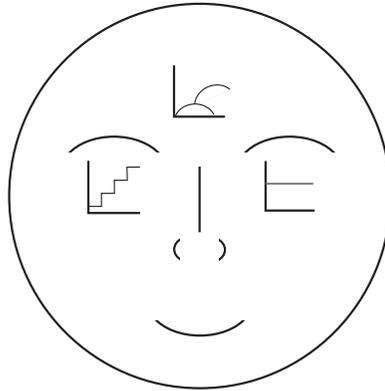


Figure 2-13. An adaptation of a Buddhist motif: eyes of the past (right), present (left), and future (top middle).

the present, and the eye of wisdom. The three types of management, which today's CEOs must simultaneously be concerned with, can be illustrated as the three eyes in Buddhism, as shown in Figure 2-13. That is, the CEO needs an eye to monitor management for control, or else the company will not meet the minimum contract between the company and society. The CEO needs an eye to monitor management for incremental improvement, or else the company will not keep up with changing customer requirements. And the CEO needs the wisdom to see the path to future breakthrough, or else the company will have no tomorrow.

2.4 The rest of this book

In the introductory paragraphs of Chapter 1, we raised the question of how to survive in the face of worldwide competition (particularly from Asia) in producing commodity products. We see three basic approaches to survival:

1. Relocation — for example, outsource to China or India
2. Continually evolving what Noriaki Kano called “attractive” product characteristics⁵ — engaging in constant product development to regularly find new latent customer requirements and bring out new versions of the product

3. Moving beyond commodity products — changing your game by completely shifting to a new business area

Variations on the relocation approach could include contracting out activities (traditional outsourcing), entering into joint ventures with companies in other countries, and outright sale of a business to a company in another country (as when IBM sold its personal computer business to Lenovo in China). We don't know much about the strategy and tactics of the relocation approach; readers will have to find someone else's book to learn about this approach.

Continually evolving attractive product characteristics was the subject of our previous books, *A New American TQM* and *Four Practical Revolutions in Management* (Shiba94, Shiba01). It also is a strategy we shall encounter in some cases in this book.

Breakthrough to a completely new business area, however, is the central focus of this book.

The structure of the rest of this book is based on the various perspectives of breakthrough shown in Figure 2-14. These perspectives come from Shoji Shiba's study of many cases of breakthrough — both successful and unsuccessful — in the United States, Japan, and Europe.

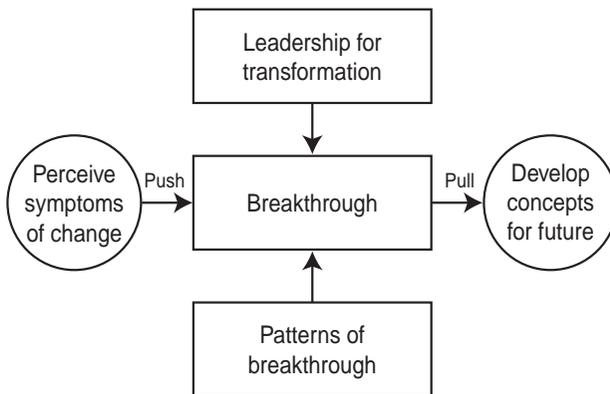


Figure 2-14. Perspectives on breakthrough.

The four elements for successful breakthrough are classified in two dimensions.

The elements in the vertical dimension, *leadership for transformation* and *patterns of breakthrough*, relate to organizational issues — how to change the organization. In Chapters 3–5 we discuss leadership for transformation. In Chapters 8–10 we discuss patterns of breakthrough.

The horizontal dimension elements, *perceive symptoms of change* and *develop concepts for future*, relate to individuals and have to do with giving individuals new skills. We discuss ways to foster these skills in Chapters 6–7.

Notes

Chapter 1

1. Shoji Shiba was the first speaker for two days (December 14–15, 2003) at the inaugural grade 1 course.

2. “Outsourcing to the U.S.,” David Barboza, pp. C1–C2.

3. The Chinese are also creating and moving to suburbs, according to an article in a China Air flight magazine in 2004. For example, Yosemite Villa and Venice Water Townhouses are housing developments built around (probably man-made) lakes distant from the center of Shanghai. The creation of suburbs requires cars, which in turn will move China further into the international competition for available oil. These suburban homes are being furnished with modern furniture.

4. In late 2005, Shoji Shiba heard that the one-year increase in minimum wages in the nine cities of Shanghai, Shencheng, Guangzhou, Suzhou, Amoi, Tjin, Beijing, Chintao, and Dalian averaged 17 percent, with the minimum increase of 6.4 percent in Beijing and the maximum increase of 34.1 percent in Guangzhou.

5. “Thanks to Detroit, China is Poised to Lead,” *New York Times*, March 12, 2003, section 3, pp. 1 and 9.

6. As part of the annual two-week factory tour of the graduate students in MIT’s Leaders for Manufacturing (LFM) program.

Chapter 2

1. See also Shibao1, Chapter 27. (Some of the current text previously appeared there.)

2. The Japanese company name PLUS means plus as in English.

3. Information from a brochure from the Pudong Tiencu Mushroom Company that Shoji Shiba obtained when he visited the Shanghai company in May

2005.

4. Peter Drucker (Drucker⁰¹, Chapter 3; Drucker⁷⁴, pp. 58–62, 114) famously noted that the goal of business is not making a profit; rather the goal of business is finding or creating and keeping customers by providing products or services they need. Profit, Drucker continued, is a *cost* of doing business; making a profit enables a business to attract the investors it needs and to invest in the future.

5. Noriaki Kano and Fumio Takahashi. Hinshitsu no m-h sei ni tsuite (Motivator and hygiene factor in quality). *Quality*, JSQC, 14(2), 1984. Presentation given at Japanese Society for Quality Control Annual Meeting, October 1979.

Noriaki Kano et al. Miryokuteki hinshitsu to atarimae hinshitsu (1), (2) (Attractive quality and must-be quality (1), (2)). *Quality*, JSQC, 14(2), 1984. Presentation given at Japanese Society for Quality Control Annual Meeting, October 1982.

Chapter 3

1. The information on Humanitas in this section comes from that visit, from a Humanitas brochure entitled “The Humanitas Foundation in a Nutshell (copyrighted 2003/2005 by Stichting Humanitas), and from Marrewijko⁴. Another source that was not available to us at the time this section was written is an interview of Hans Becker by Elisabeth Ballery (Jouslin de Norayo⁶, Chapter 4).

2. The assessments in this subsection are primarily based on the personal experience and observation of the authors (particularly David Walden) as their parents, parents-in-law, and parents of other family members, friends and acquaintances grew too old and infirm to live alone at home. There also have been candid conversations with many health care professionals. The apparent situation in the United States is remarkably similar to the situation Humanitas is trying to address in the Netherlands, as described in the next subsection.

3. This sentence is only slightly paraphrased from the 2003/2005 Stichting Humanitas brochure.

4. Traditional elder care in the United States also puts keeping a patient safe from injury above the happiness of the patient. For instance, a facility may discourage a patient who takes a fall but is unhurt from continuing to walk and may encourage the person to use a wheelchair for fear that he or she will fall again and break something. This despite the fact that everyone, of any age, takes a spill from time to time and perhaps sometimes breaks something. But many elderly people would choose not to give up walking in order to be more safe from falls.

Bibliography

- Ackoff81.** Ackoff, Russell L. *Creating the Corporate Future: Plan or Be Planned For*. New York: Wiley, 1981.
- Bower97.** Bower, Joseph L. Harvard Business School Case: “Teradyne: The Aurora project” (revised March 29, 1999). Boston: Harvard Business School Press, 1997.
- Bower98.** Bower, Joseph L. Harvard Business School Case: “Teradyne: Corporate management of disruptive change” (revised March 25, 1999). Boston: Harvard Business School Press, 1998.
- Burto4.** Burt, Ronald S. “Structural Holes and Good Ideas.” *American Journal of Sociology* 110 (2005): 349–399.
- Challapallioo.** Challapalli, Sally, Michael Chu, Annie Kuo, Emily Liu, Arundhati Singh, and Erick Tseng. “Teradyne’s Aurora Project.” MIT class 6.933 (2000), web.mit.edu/6.933/www/final1.pdf.
- Christensen97.** Christensen, Clayton. *The Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail*. Boston: Harvard Business School Press, 1997. Professor Christensen has written later books and papers elaborating on his ideas relating to the innovator’s dilemma.
- Czarneckioo.** Czarnecki, H., B. Schroer, M. Adams, and M. Spann, “Continuous Process Improvement When It Counts Most.” *Quality Progress* (May 2000): 74–80.
- Dertouzos89.** Dertouzos, Michael L., Richard K. Lester, Robert M. Solow, and the MIT Commission on Industrial Productivity. *Made in America: Regaining the Productive Edge*. Cambridge, MA: MIT Press, 1989.
- Derveux98.** Derveux, Isabelle. “Manet, Monet, and the Gare Saint-Lazare.” Exhibition brochure. Washington, DC: National Gallery of Art, 1998. www.nga.gov/feature/manet/manetbro.pdf
- Drucker74.** Drucker, Peter. *Management: Tasks, Responsibilities, Practices*. New York: Harper & Row, 1974.

- Drucker93.** Drucker, Peter. *Innovation and Entrepreneurship*, paperback edition. New York: Collins, 1993.
- Drucker01.** Drucker, Peter. *The Essential Drucker*. New York: HarperBusiness, 2001.
- Fine98.** Fine, Charles H. *Clock Speed: Winning Industry Control in the Age of Temporary Advantage*. Reading, MA: Perseus Books, 1998.
- Foster86.** Foster, Richard. *Innovation: The Attacker's Advantage*. New York: Summit, 1986.
- Gates96.** Gates, Bill, Nathan Myhrvold, and Peter M. Rinearson. *The Road Ahead*, paperback edition. New York: Penguin, 1996.
- Gates99.** Gates, Bill, and Collins Hemingway. *Business @ the Speed of Thought*. New York: Warner Books, 1999.
- Gerstner03.** Gerstner, Louis. *Who Says Elephants Can't Dance?*, paperback edition. New York: HarperBusiness, 2003.
- Griffin91.** Griffin, Abbie, and John Hauser, "The Voice of the Customer." Working Paper 92-2, MIT Marketing Center, Cambridge, MA, January 1991.
- Grove99.** Grove, Andrew S. *Only the Paranoid Survive: How to Exploit the Crisis Points That Challenge Every Company*, paperback edition. New York: Currency, 1999.
- Hayakawa90.** Hayakawa, S.I., and Alan R. Hayakawa. *Language in Thought and Action*, 5th edition. San Diego, CA: Harcourt Brace Jovanovich, 1990.
- Johnson98.** Johnson, Spencer. *Who Moved My Cheese? An Amazing Way to Deal with Change in Your Work and in Your Life*. New York: Putnam, 1998.
- Jouslin de Noray06.** Jouslin de Noray, Bertrand, Elisabeth Ballery, Shoji Shiba, and David Walden. *Transformational Case Studies*. Salem, NH: GOAL/QPC, 2006.
- Joyce04.** Joyce, Nancy. *Building Stata: The Design and Construction of Frank O. Gehry's Stata Center at MIT*. Cambridge, MA: The MIT Press, 2004.
- Katzenbach95.** Katzenbach, Jon R. *Real Change Leaders*, New York: Random House, 1995.
- Kobayashi86.** Kobayashi, Koji. *Computers and Communications: A Vision of C&C*. Cambridge, MA: MIT Press, 1986.
- Kobayashi91.** Kobayashi, Koji. *The Rise of NEC: How the World's Greatest Company Is Managed*. Cambridge, MA: Blackwell, 1991.
- Kume85.** Kume, Hitoshi. *Statistical Methods for Quality Improvement*. Tokyo: AOTS Press, 1985.

- Lefebvre06.** Lefebvre, Jean, and Shoji Shiba. "Collaboration and Trust in the Supply Chain: The Case of FAVA S.A." *Supply Chain Forum: An International Journal* 6.2 (2005): 90–94.
- Levy94.** Levy, Steven. "Insanely Great: An ode to an artifact — the computer that changed everything." *Wired* 2.02 (February 1994).
- Likero4.** Liker, Jeffery K. *The Toyota Way*. New York: McGraw-Hill, 2004.
- Lillrank89.** Lillrank, Paul, and Noriaki Kano. *Continuous Improvement: Quality Control Circles in Japanese Industry*. Ann Arbor: Center for Japanese Studies, The University of Michigan, 1989.
- McGregor85.** McGregor, Douglas. *The Human Side of Enterprise*, 25th anniversary edition. New York: McGraw-Hill, 1985.
- Maeda01.** Maeda, Matabee Kenji. "Creativity from Adversity — Three Breakthroughs at Maeda Corporation." *Center for Quality of Management Journal* 10.2 (Winter 2001): 3–17.
- Marrewijk04.** Marrewijk, Marcel, and Hans Becker, "The Hidden Hand of Cultural Governance: The Transformation Process of Humanitas, a Community-driven Organization Providing, Cure, Care, Housing and Well-being to Elderly People." *Journal of Business Ethics* 55.2 (December 2004): 205–214.
- Meyers05.** Meyers, Jeffrey. *Impressionist Quartet: The Intimate Genius of Manet and Morisot, Degas and Cassatt*. Orlando, FL: Harcourt, 2005.
- Nonaka95.** Nonaka, Ikujiro, and Hirotaka Takeuchi. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press, 1995.
- O'Reilly04.** O'Reilly, Charles A. III, and Michael L. Tushman. "The Ambidextrous Organization." *Harvard Business Review* 82.4 (April 2004): 77–81.
- Porter80.** Porter, Michael. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: The Free Press, 1980.
- Rifkino4.** Rifkin, Jeremy. *The European Dream: How Europe's Vision of the Future Is Quietly Eclipsing the American Dream*. New York: Tarcher Penguin, 2004.
- Shiba93.** Shiba, Shoji, Alan Graham, and David Walden. *A New American TQM: Four Practical Revolutions in Management*. New York: Productivity Press, 1993.
- Shiba98.** Shiba, Shoji. "Leadership and Breakthrough." *Center for Quality of Management Journal* 7.2 (Winter 1998): 10–22.

- Shiba01.** Shiba, Shoji, and David Walden. *Four Practical Revolutions in Management: Systems for Creating Unique Organizational Capability*. New York: Productivity Press, 2001.
- Shiba03.** Shiba, Shoji. *Breakthrough Management* (in Japanese). 1-2-1, Motdishi - Nihonbashi Chuo-Ku, Tokyo Japan - 103-8345: Toyo Keizai Publishing Company, 2003.
- Shiba05a.** Shiba, Shoji. *The Five Step Discovery Process Manual*, document 01-2005. Gurgaon, Haryana, India, fax (0124) 401-4051: Confederation of Indian Industry, February 2005.
- Shiba05b.** Shiba, Shoji. *Breakthrough Management: The Indian Way*. Gurgaon, Haryana, India, fax (0124) 401-4051: Confederation of Indian Industry, February 2005.
- Shiba06a.** Shiba, Shoji, and the First Learning Community. *Breakthrough management — The Indian Way — III*. Gurgaon, Haryana, India, fax (0124) 401-4051: Confederation of Indian Industry, April 2006.
- Shiba06b.** Shiba, Shoji, and the Learning Communities. *Breakthrough management — The Indian Way — IV — New Product/Business Development*. Gurgaon, Haryana, India, fax (0124) 401-4051: Confederation of Indian Industry, July 2006.
- Shiba06c.** Shiba, Shoji, with Sona Koyo Steerings Ltd. *The Five Step Discovery Process Manual with Examples*. Gurgaon, Haryana, India, fax (0124) 401-4051: Confederation of Indian Industry, July 2006.
- Spear99.** Spear, Steven, and H. Kent Bowen. “Decoding the DNA of the Toyota Production System.” *Harvard Business Review* (September–October 1999): 97–106.
- Spear04.** Spear, Steven J. “Learning to Lead at Toyota.” *Harvard Business Review* (May 2004): 78–86.
- Tushman02.** Tushman, Michael L., and Charles A. O’Reilly III. *Winning through Innovation*. Boston: Harvard Business School Press, 2002.
- Uchimar03.** Uchimar, Kiyoshi, Susumu Okamoto, Bunteru Kurahara, and Keisuke Arai (foreword by David Walden). *TQM for Technical Groups: Total Quality Principles for Product Development*. New York: Productivity Press, 1993.
- Walden93.** Walden, David. “Breakthrough and Continuous Improvement in Research and Development — An Essay.” *Center for Quality of Management Journal* 2.2 (Spring 1993): 25–29.

-
- Webb66.** Webb, Eugene J., Donald T. Campbell, Richard D. Schwartz, and Lee Sechrest. *Unobtrusive Measures: Nonreactive Research in the Social Sciences*. Chicago: Rand McNally & Company, 1966. A second, revised edition was published by Sage in 2000.