

University of Montana

ScholarWorks at University of Montana

Graduate Student Theses, Dissertations, &
Professional Papers

Graduate School

1990

Cultural synergistic innovation

Michihiro Yamaguchi

The University of Montana

Follow this and additional works at: <https://scholarworks.umt.edu/etd>

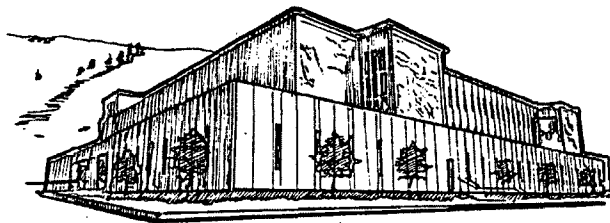
Let us know how access to this document benefits you.

Recommended Citation

Yamaguchi, Michihiro, "Cultural synergistic innovation" (1990). *Graduate Student Theses, Dissertations, & Professional Papers*. 5435.

<https://scholarworks.umt.edu/etd/5435>

This Thesis is brought to you for free and open access by the Graduate School at ScholarWorks at University of Montana. It has been accepted for inclusion in Graduate Student Theses, Dissertations, & Professional Papers by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.



Maureen and Mike
MANSFIELD LIBRARY

Copying allowed as provided under provisions
of the Fair Use Section of the U.S.
COPYRIGHT LAW, 1976.

Any copying for commercial purposes
or financial gain may be undertaken only
with the author's written consent.

University of
Montana

CULTURAL SYNERGISTIC INNOVATION

By

Michihiro Yamaguchi

B.S., Science University of Tokyo, 1981

Presented in partial fulfillment of the requirements

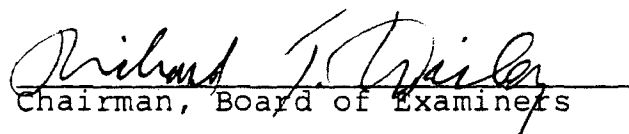
for the degree of

Master of Business Administration

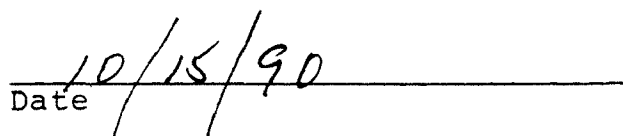
University of Montana

1990

Approved by


Chairman, Board of Examiners


Dean, Graduate School


Date

UMI Number: EP40899

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI EP40899

Published by ProQuest LLC (2014). Copyright in the Dissertation held by the Author.

Microform Edition © ProQuest LLC.

All rights reserved. This work is protected against unauthorized copying under Title 17, United States Code



ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

8-14-91

Table of Contents

Page No.

Chapter 1

INTRODUCTION 1

 The Power of the Cultural Synergy Effect
 in Innovation 1

 Cultural Synergistic Innovation Defined 2

 Objectives of This Paper 4

Chapter 2

WESTERN CREATIVITY AND EASTERN CREATIVITY 5

 The Difference between Western and
 Japanese Approaches to Creativity 5

 Breakthrough Creativity vs. Adaptive
 Creativity 6

 Spontaneous Creativity vs. Cultivated
 Creativity 6

 Creative Fission vs. Creative Fusion 7

 Cartesian Logic vs. Fuzzy Logic 8

 Uni-functional vs. Multi-functional
 Creativity 8

 The Cultural Foundation of Japanese
 Creativity 8

 Japanese Innovation Approaches and
 Techniques 11

 Creative Global Fusion 27

Chapter 3

SYSTEMATIC OPPORTUNITY - Search for Cultural
Synergistic Innovation 29

Source 1: The Unexpected	31
Source 2: Incongruities	34
Source 3: Process Needs	35
Source 4: Industry and Market Structures	40
Source 5: Demographics	41
Source 6: Changes in Perception	43
Source 7: New Knowledge	48

Chapter 4

CREATING CULTURAL SYNERGISTIC INNOVATION IN AN ORGANIZATION	50
Searching for a Model of Cultural Synergistic Innovation: Leadership, Organizational Structure and Techniques	50
LEADERSHIP	51
Misconceptions About Innovation	51
Information and Innovation in the Information Age	54
Employee Training in the Information Age	56
Importance of Employee Training for Cultural Synergistic Innovation	57
ORGANIZATIONAL STRUCTURE	58
Innovative Organizations in the Information Age	59
Structure of the Organization	62
Traits of the Innovative Organization	63
TECHNIQUES	65
Sloppiness of Innovation Process When Designing an Organization	65

Management by Walking Around the World (MBWAW)	68
Innovating in New Locations of Product-Outlets	69
The Management Information System	69
<u>Chapter 5</u>	
SUMMARY AND CONCLUSION	72
<u>Endnotes</u>	77
<u>Bibliography</u>	84

List of Figures

	<u>Page No.</u>
Figure 1:	
The Mandala of Creativity	12
Figure 2:	
The Evolution of Creative Ideas	14
Figure 3:	
Examples of Cultural Synergistic Innovative Companies	32
Figure 4:	
Cultural Synergistic Innovation A Model of a Firm	60

Chapter 1

INTRODUCTION

The Power of the Cultural Synergy Effect in Innovation

Jules-Henri Poincare, the nineteenth century French mathematician, observed that a creative idea often comes from the coupling of two unrelated ideas. Others have taken this concept and created innovative and successful products. For example, Mitch Kapor combined Eastern philosophy with existing software concepts to develop his best-selling Lotus 1-2-3 software.¹ Hanae Mori, a famous Japanese fashion designer in Paris, creates innovative fashions combining two different cultural designs: the old Japanese traditional pants and the French coat of the fourteenth century.² The futon, the Japanese traditional thick bedquilt on tatami mats was made into a roll-away mattress with a wooden frame, popular among health conscious Americans. These are examples of innovations in which the creators related two culturally different ideas. By combining them, a new industry was born. The meeting of East and West, this creative fusion, is the key to Japan's economic future. It is also a key source of future entrepreneurial creativity in the U.S. as the Pacific-Rim age approaches. The world's economic center

of gravity is shifting from the Atlantic to the Pacific basin. By 1991, the Pacific region will be home to nearly two-thirds of the world's people.³ Because of its rapid economic growth and countries with large populations, Asian markets offer significant opportunities for America's economic future.

Cultural Synergistic Innovation Defined

According to professor Ryuei Shimizu, of Keio University in Tokyo, "Joseph Shumpeter, the Austro-American economist, stated that, innovation emerges from new combinations of two elements of production; labor and capital, however, we need to restate that innovation emerges from a new combination of two different kinds of information; marketing information and technical information. The more unrelated the ideas of combinations, the better innovation takes place."⁴

Cultural synergistic innovation is defined as innovation that takes place by relating ideas synergistically and cross-culturally. This concept recognizes the great opportunity of global innovation by combining Western and Eastern ideas to enhance the cultural synergy effect.

Techniques of cultural synergistic innovation are transferable across business sectors as well as across

countries. A good example at the corporate level is the Just In Time (JIT) system. The inventor of the JIT system, Taiichi Ohno, who is former vice-president of Toyota Motor Corporation, got the idea after observing a large supermarket system in the U.S. and perceiving its inherent problems. Perfected by Toyota, JIT production is a major evolution in the manufacturing management system that originated with the Taylor system of scientific management and the Ford system of mass-assembly line production.⁵ The JIT system has spread beyond the auto industry to other manufacturers and is even applied in service sectors, such as supermarkets, publishing and transportation. U.S. factories are now recognizing the value of JIT. Lately, U.S. manufacturers such as IBM, Harley-Davidson, Hewlett-Packard and others have started to produce based on the JIT system.

Cultural Synergistic Innovation takes place not only on a corporate level but on an international level as well.

The authors of Managing Cultural Differences, Philip R. Harris and Robert T. Moran, explain the process of innovation exchange that took place between the U.S. and Japan:

The Japanese have learned from advanced Western nations and have applied this knowledge appropriately to their own cultural situation. Japanese executives borrowed ideas from the U.S., some of

which had been either discarded or not implemented fully by Americans, and refined these for their own purposes. Later, to their credit, some of these renewed techniques and practices were successfully re-exported to North America. That such a synergistic strategy works is attested by the 300 Japanese-owned or controlled firms now operating in the U.S. By adapting their own methods to the U.S. workplace, Japanese companies have been able to overcome differences in culture and work attitudes.⁶

Along these same lines, Peter F. Drucker says, "One of the most interesting examples of social innovation and its importance can be seen in modern Japan . . . Their success is based on social innovation."⁷ Entrepreneurs in small and large companies alike would benefit from a greater knowledge and understanding of cultural synergistic innovation.

Objectives of This Paper

The objectives of this paper are to explore ways in which companies can foster the combining of unrelated ideas cross-culturally and proactively.

This paper will (1) explore the differences between Western and Japanese approaches to creativity, (2) identify the sources of cultural synergistic innovation, especially between the U.S. and Japan, and (3) search for a model of leadership and organizational structure that encourages cultural synergistic organization in a company.

Chapter 2

WESTERN CREATIVITY AND EASTERN CREATIVITY

The distance between nations has shortened drastically as a result of transportation and communication technology in the last two decades. Globalization, the driving force in business today, makes it necessary for companies to have a new theory of creativity. An understanding and integration of the different approaches to the creative process, East and West, is an essential element in cultural synergistic innovation.

The Difference between Western and Japanese Approaches to Creativity

Sheridan M. Tatsuno, the author of Created in Japan, studied the various styles of Japanese creativity.⁸ His book emphasizes the potential of group creativity, a technique that Asian and other non-western people have developed over hundreds of years. Tatsuno identifies five differences in the way Western and Japanese companies approach creativity: (a) Breakthrough Creativity vs. Adaptive Creativity, (b) Spontaneous Creativity vs. Cultivated Creativity, (c) Creative Fission vs. Creative Fusion, (d) Cartesian Logic vs. Fuzzy Logic, and

(e) Uni-functional Creativity vs. Multi-functional Creativity.⁹

Breakthrough Creativity vs. Adaptive Creativity

Americans are excellent at breakthrough research, while Japanese are superior at shaping ideas and technologies to create new products and markets. The Japanese work better when research purposes are set and clarified and Americans work better when goals are unfocused and individual freedom and creativity can come into play. The Western method of creativity relies largely on breakthroughs. The Japanese method, in contrast, takes existing technology and adapts it to current consumer needs. Thus, the Japanese creative process is highly responsive, selective, directed, and practical. For example, while the robot technology was pioneered in the U.S., it was the Japanese who developed sushi-making robots, and fire-fighting robots.¹⁰

Spontaneous Creativity vs. Cultivated Creativity

Western creativity reflects frontier thinking, while Japanese creativity must consider the constraints of limited natural resources. Because of the necessity of cultivating their minimal resources carefully, the Japanese creative style is more studied and intentional than its more spontaneous Western counterpart. Big

Japanese companies cultivate employees by training them, sending them overseas, rotating them from one job to another, and supporting long-term financing for product development teams. Most U.S. companies, on the other hand, have a shorter time horizon and higher employee turnover, which discourages them from investing a lot of time and money in training employees.

Creative Fission vs. Creative Fusion

Tatsuno states, "Western creativity is like nuclear fission, in which individual brilliance has an opportunity to shine, while Japanese creativity is like nuclear fusion."¹¹ The Japanese use group interaction and brainstorming to create ideas to incorporate into a new product, building teamwork and a sense of harmony at the same time. For example, many Americans imagine that Japanese are weak in software development because there are few Japanese software packages in the U.S. But Japanese programmers are good at integrating software for large-scale in-house systems such as Fujitsu's computer-integrated manufacturing systems. In such projects, groups of innovators consider the whole problem and develop overall solutions through interactions.¹²

Cartesian Logic vs. Fuzzy Logic

Western logic reflects a Cartesian heritage, while Japanese logic is influenced by Buddhism. Westerners tend to be "linear, rational, and individualistic," while Japanese are inclined to be more "fuzzy, cyclical, and holistic."¹³ Western thinking is considered to be more digital (black and white) and Japanese thinking to be analog (shades of gray). The Japanese view problems as complex, requiring incremental solutions rather than the hard-hitting solutions proposed in the West.

Uni-functional vs. Multi-functional Creativity

In the West, ideas are generally developed for a single use, while the Japanese seek multiple uses for new ideas because of limited space and resources; for example, Japanese retailers are looking for a synergistic effect by combining different kinds of merchandise and services to add allure to the marketing of all within one complex. This may include, for example, a gas station, car dealer, family restaurant, cafe, art gallery, bookstore, film developer, athletic club, beauty shop and dentist.¹⁴

The Cultural Foundation of Japanese Creativity

The Japanese have a rich cultural heritage to guide them as they begin to concentrate their creativity on basic research and technological breakthroughs. They have

many aesthetic principles and concepts to apply to science and technological problems. This is already used in corporate research laboratories all over Japan. The following are some examples of how traditional Japanese arts and aesthetic principles have been applied to business research and technology.

Japanese children learn many kinds of folk crafts and games that teach aesthetic and neuromuscular skills. For example, paper folding (origami) requires manual skill and patience as well as acute visual perception. Through origami, children experience the transformation of a simple piece of paper into a beautiful, complex three-dimensional figure. When folding the paper, one must visualize the object being formed, a skill that is easily carried over to computer-aided, complex three-dimensional design and simulation modeling.

Sensu (traditional paper fans) also uses the concept of foldable space, which designers use to produce collapsible products such as the laptop computer, modular furniture, prefabricated bathrooms, and multifunctional kitchen shelves. High land costs and crowded conditions force Japanese furniture and tools to be smaller and more foldable than those in the U.S.

Another useful tradition is the abacus, a Chinese

calculator from the sixteenth century. Children learn how to use the abacus in Japanese elementary schools and vocational high school accounting and business courses. Even today, Japanese companies and banks use the abacus because it helps them to calculate addition and subtraction faster than with an electronic calculator. Highly trained abacus users can calculate 10-digit figures in their heads. These visualization and computational skills are useful in solving problems in computer programming and simulation.

Language also aids the Japanese mind in creating new product designs. Tatsuno says, "Like Chinese, learning Japanese trains one in complex pattern recognition, visualization, and recall, skills that are valuable in computer-aided design."¹⁵ According to Richard Saul Wurman, the author of Information Anxiety,

Japanese grammar is extremely modular, each word carrying with it another word called a relational that lets everyone know how that word is meant to function in a sentence, (e.g. as a noun, an adjective, etc.) and the main verb is put at the end. This means that you can change the order of words in a sentence without changing the meaning To think in Japanese is to think in a language that is inherently easier and less limiting to combining the process of words, thoughts, and ultimately ideas into new forms.¹⁶

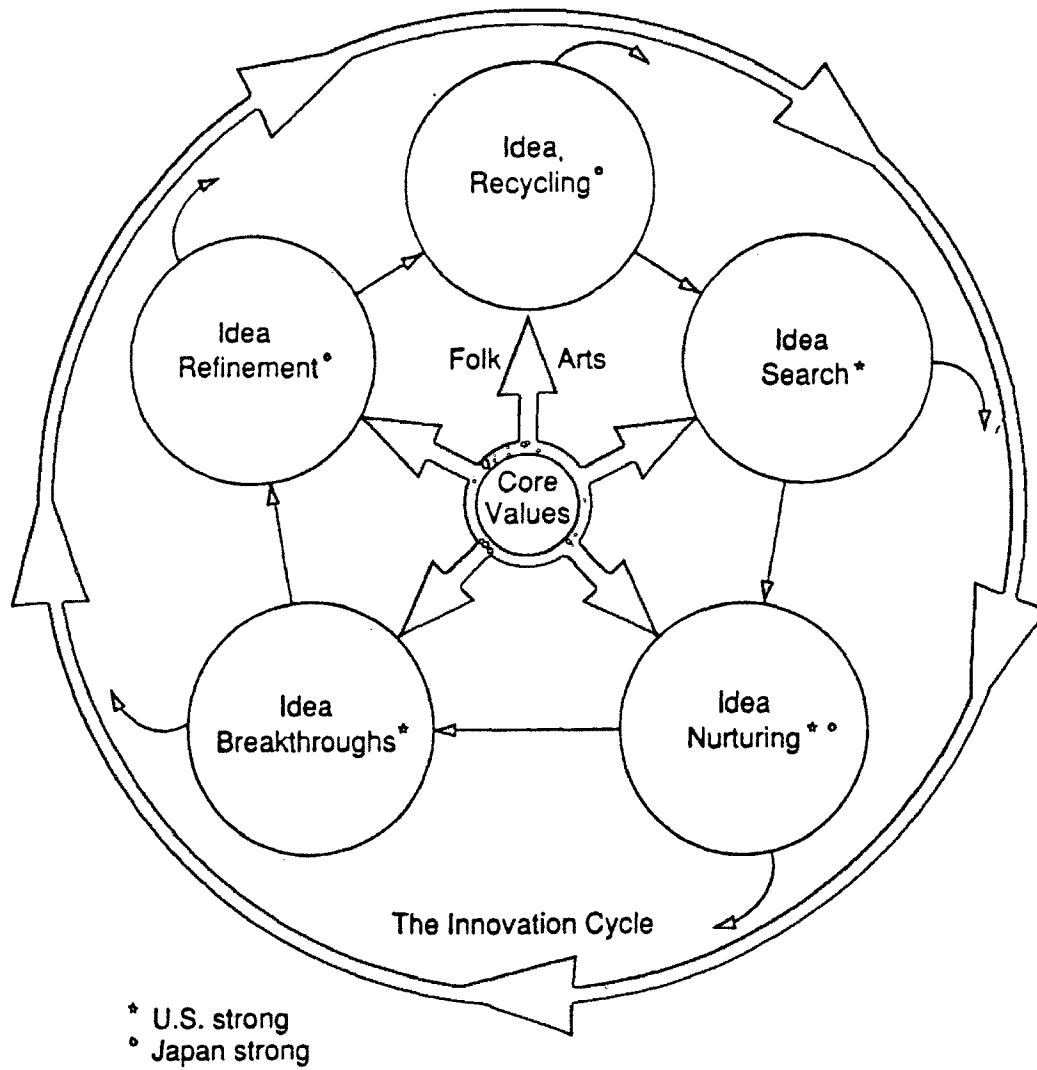
Japanese Innovation Approaches and Techniques

Sueo Matsubara of the Mukta Institute constructed a new model of creativity called "the mandala of creativity."¹⁷ The model explains both Western and Eastern characteristics of creativity well, and introduces Westerners to a new dimension of creativity. In the West, creativity is seen as a linear process based on individual effort, while creativity in Japan is cyclical, a "mandala of creativity," divided into five related stages as shown in Figure 1:

1. Idea Recycling (new uses for old and existing ideas)
2. Idea Search (the search for new ideas when existing ideas are insufficient)
3. Idea Nurturing (the seeding and incubation of new ideas)
4. Idea Breakthrough (idea generation)
5. Idea Refinement (improving and adapting new ideas to the changed environment)¹⁸

In this model of creativity, old ideas are revived and transformed into new ideas, like energy, as they go around the mandala. According to Michael Ray and Rochelle Myers, the authors of Creativity in Business, "The Sanskrit word mandala means both circle and center."¹⁹ It was adapted by Buddhists as a symbol of supreme inner enlightenment (satori) and a reflection of the Buddhists' view of existence as an endless cycle, reaching higher and

FIGURE 1
The Mandala of Creativity



Source: Sheridan M. Tatsuno, Created in Japan: From Imitators to World-Class Innovators, (New York: Harper & Row, 1990): 51.

higher levels for spiritual enlightenment with each succeeding cycle. As shown in Figure 2, one can visualize the Japanese concept of creativity as a helix, where each cycle brings one to a higher level of creativity as it revolves.

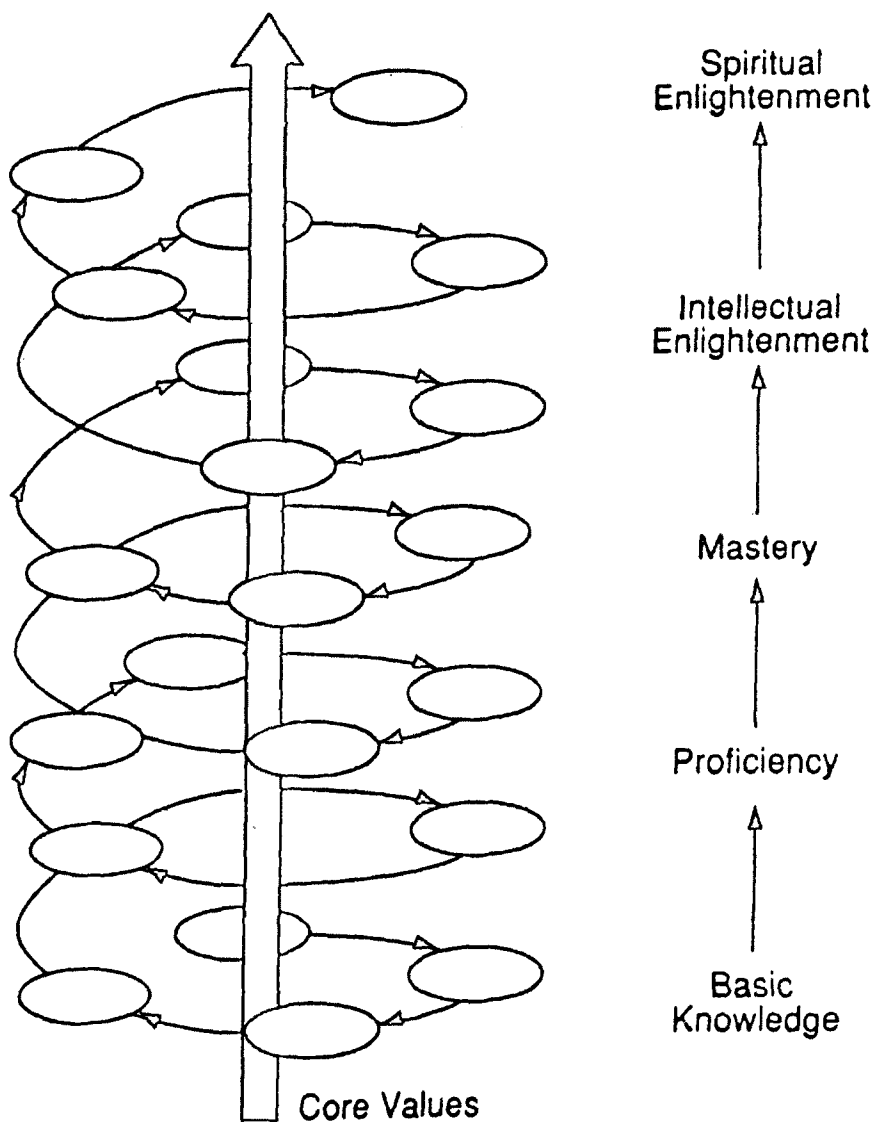
According to Matsubara,

Creativity is not a one dimensional circle. Like reincarnation, it is an unending process of refinement and recycling. The mandala of creativity is really three dimensional. Each time you go around, the idea should get better and better. Otherwise, you're only going around in circles and going nowhere.²⁰

While creativity refers to pure ideas, innovation is the translation of ideas into tangible products and services. Innovation comes from this mandala-like flow of ideas.

Both the East and the West are strong in the idea-nurturing phase of the mandala. But Westerners are stronger in the phases of the idea search and idea breakthrough. By contrast, the Japanese are stronger in two other phases of the mandala: idea refinement and idea recycling. Tatsuno also points out a blind spot for perceiving Japanese creativity:

FIGURE 2
The Evolution of Creative Ideas



Source: Sheridan M. Tatsuno, Created in Japan: From Imitators to World-Class Innovators, (New York: Harper & Row, 1990): 54.

Whereas the Japanese recognize their weaknesses--basic research (idea exploration) and breakthrough thinking (idea generation)--and are trying to correct them, Westerners mistakenly believe they have a monopoly on creativity and disregard the two areas where the Japanese are stronger--idea refinement and idea recycling. If this myopia continues, the Japanese could eventually master the entire mandala of creativity, which would have a devastating impact on Western industry in the twenty-first century.²¹

The following are the management techniques which are applied by many Japanese companies to develop new products at each stage of the mandala.

1. Idea Recycling

According to Tatsuno, "It is often said Europeans look to the past, Americans discard their past, and Japanese carry their past within them into the future."²² The Japanese are good at recycling old ideas. Japan is composed of small islands with few natural resources, and Japanese children are traditionally educated never to waste anything. They are constantly reminded by the word "Mottainai" (what a waste!), to conserve their limited resources. They are taught to recycle and reuse everything possible and to find new uses for it. This attitude carries over to ideas; good ideas are treated as if they were as scarce an asset as land or gold. For

example,

Kyoto Ceramics (Kyocera) is taking advantage of a marriage of old and new technologies. It is developing new industrial concretes and building materials, such as ceramic electronic components, durable earthenware, ceramic engine parts, and artificial bones and teeth, by combining its high-tech ceramic processing and business know-how with centuries-old knowledge of materials and molding and firing techniques developed by the traditional Satsuma pottery makers.²³

Because of cultural synergistic innovation, great opportunities develop because one studies and recycles not only his own culture's past ideas but also those of other cultures.

2. Idea Search

Japanese people realize they must not only obtain and commercialize foreign technologies but also contribute to the pool of scientific knowledge. Creative research requires a great deal of curiosity and risk-taking. But the Japanese are more comfortable with proven ideas, and do not like to explore new technology at their own risk. They dislike unstructured, individualistic approaches and scrupulously avoid losing face or being left out. There is an old saying that "tall trees get more wind." Yet Japanese companies are starting to promote exploratory

research, using methods such as visionary thinking, global searching, spiral development and matrix framework.²⁴

Visionary thinking has taken hold in Japan as its people have watched people in the U.S. pursue "the American dream."

A "visions of the future" plan has been issued each year by the Ministry of International Trade and Industry (MITI) of the Japanese government since the early 1970s in order to encourage private business sectors to become more creative and visionary thinkers.²⁵ MITI's Fifth Generation Computer Project also exemplifies how the Japanese government uses the power of visionary thinking to inspire the direction of scientific research. Today's von Neumann computers are developed for Westerners, which can only process alphanumeric data sequentially. The project aims to develop state-of-the-art computers which will be able to speak with humans in natural language and understand speech and pictures. To accomplish this goal, they have to develop enormous arrays of parallel processors to use symbolic logic images and graphics in order to fit the Japanese kanji writing system which is ideographic, not phonetic like Western alphabets.²⁶ The vision of the project stimulates risk-averse Japanese companies to carry out research on the new computer architecture.

The global search research method also is a powerful business tool. Japanese companies discover many new ideas and technologies that have practical applications by searching for them globally. For example, Sharp's solar-powered calculator was developed by this method. Sharp found that a U.S. company, Energy Conversion Devices (ECD), had created a new amorphous silicon material that could be mass-produced like rolled steel. Sharp was looking for such a material for its solar-powered calculator panels that would be economical and efficient to replace the conventional bulky photovoltaic cells. After developing the new calculator with ECD's material, Sharp dominated the batteryless calculator market.²⁷

While global research is a useful technique for pursuing ideas and technologies outside the organization, many Japanese corporations generate new products internally, through spiral development. Product development is often perceived as a linear process from basic research to final distribution but spiral development is a cyclical process. It uses a recursive feedback process with the interaction of four essential functions of an organization: basic research, product development, manufacturing, and sales and distribution. Toshiba used the spiral development approach for its best-

selling laptop computer. At first, it produced a Japanese word processor with kana-kanji conversion ability (changing phonetic letters into complex visual characters). But the machine was sent back to the laboratory for more research because office distributors requested a small, lighter word processor. That inspired Toshiba's new chip technology and resulted in the manufacture of more compact word processors. In addition, the old system was replaced by slim thermal printers and liquid crystal displays (LCDs) in order to make Japanese word processors portable and attractive.²⁸

Even though the spiral development method was developed in the West, it works well in Japan for four primary reasons: (1) return on investment in long-range planning; (2) encouragement for employees to work outside their specialization, disregarding rigid job definitions, and rotating from job to job, thus becoming a thinking and flexible labor force; (3) tolerance for product failure and freeing creators from the fear of being laid off; (4) the viewing of products and services as incomplete, requiring constant improvements and refinements.²⁹

Global searches and spiral product development are effective when one has existing ideas to make into new products; however, these methods are of little use in probing new frontiers. Japanese corporations use the

matrix framework to structure and discover promising areas of research to maximize the return of their funds. This method plots, on technical or management charts, magnitudes of scientific progressions and technology trends all over the world. Using this technique, researchers at the National Research Institute of Metals in Tsukuba City on the outskirts of Tokyo found a novel ceramic oxide that became a superconductor at -243 degrees Celsius, 50 degrees higher than former records.³⁰

3. Idea Nurturing

It is difficult to cultivate ideas in Japan because hyper-competition forces people to commercialize ideas rather than cultivate them. To remain competitive, companies must launch new products as quickly as possible. Nevertheless, Japanese companies are carefully planting and nurturing technology seeds in order to pursue breakthroughs in the twenty-first century, realizing that most breakthrough ideas are discovered unintentionally and unexpectedly. Japanese industry leaders and managers are starting to encourage their creative people to take risks and to experiment.

Because of Japan's large corporate groupings, or keiretsu structure, it is still difficult for new business ventures with creative ideas to acquire financing,

talented people and customers.

Masasuke Ide, associate dean at the Nomura School of Advanced Management, explains:

The ministry of Finance and the major banks are like father and children. The Ministry protects the big banks and the big industrial groups from competition (from outside this group). The system was regulated to protect the status quo, and made it very difficult for entrepreneurs to start something but easy for one of the big groups to launch new businesses.³¹

Business incubators and venture business associations are being organized throughout Japan, to back entrepreneurs. At the national level, MITI has produced different kinds of incubator programs for high-risk high-technology ventures.

MITI, as catalyst and coordinator of the "technopolis" program, extensively supports Japanese creative research "to promote manufacturing-type R&D through technology transfer from Tokyo and Osaka, and to establish locations where knowledge-oriented R&D will be undertaken."³² It has started construction on twenty-six research cities, or technopolises, throughout Japan.

According to Sheridan Tatsuno,

The technopolises are envisioned as incubators for scientific and

technological research in the twenty-first century. They will feature research universities, techno-centers, research parks, joint R&D consortia, venture business incubators, intelligent office complexes, international convention centers, and residential new towns.³³

MITI formed the "regional research core" program to provide funding for specific research activities.

Tatsuno goes on to explain,

The program promotes four types of research incubator facilities: joint industry-university-government research institutes, new research training centers, venture business incubators, and international conference and exhibition halls.³⁴

The major difference between this program and the technopolis program is that the latter is more manufacturing-oriented. MITI is cooperating with private industry sectors to boost the technopolis and research core programs into a nationwide system, linking cities with computer networks.

4. Idea Breakthroughs

The Japanese are good at incremental improvements, refining and recycling ideas. But they rarely make spectacular breakthroughs that create an entirely new industry. So companies are pursuing ways to encourage

breakthrough thinking among their workers. Some are sending employees around the globe to find new breakthrough techniques, while others are looking inward for new methods of their own. The Japanese have created various kinds of their own brainstorming techniques to take advantage of Japanese group dynamics.

The KJ method, an abbreviation for its inventor, Kitagawa Jiro (a cultural anthropology professor), widely used among Japanese researchers and managers, attempts to eliminate rigid thinking and facilitate new ideas. This method uses cards to visually formulate complex combinations among ideas to trigger new ideas. The KJ method consists of four stages: (1) given a theme, writing down as many ideas as possible on small cards (100 cards or more); (2) a. organizing these cards into categories of 50-100 cards. b. sorting these cards into groups of 20-30 cards according to common themes. c. sorting them again into smaller groups of ten cards or less, trying to generate and use new conceptual frameworks; (3) a. writing down ideas that come to mind onto a large sheet of paper or depicting them graphically in order to understand visually their meaning and relationship to each other. b. a conceptual picture of the new ideas emerges; (4) writing down ideas that are inspired by the picture.

The method is also called the "scrap paper method," for inducing new conceptual meaning from raw data in exploratory research.³⁵

Japanese companies are also using creativity circle methods, gathering five people together from research and development, engineering, marketing, sales and manufacturing to brainstorm and develop new "hit" products. Yamaha's digital sound-field processor, awarded the Nikkei Annual Award for Creative Excellence, is one example of Japanese creativity circles. Yamaha pulled researchers from different divisions to form a development team with a goal of replicating "the rich sonic 'afterglow' that results from the early reflections and later echoes off a chamber wall." Tatsuno explains that by simulating sound fields using CAD techniques, "the product astonished music listeners with its ability to create spatially realistic sounds for sixteen different performance spaces."³⁶

Yasuo Matsumura, president of Clover Management Research, developed and patented the MY (Matsumura Yasuo) method, or lotus blossom technique. Returning to Japanese cultural and religious origins, the method uses the mandala way of cyclical and spiraling thinking in which ideas evolve from central core values or themes. In the

MY method, a core theme is pursued into ever-widening petals, or "windows." This approach is familiar to Westerners because it is based on the key concept behind Lotus 1-2-3, the famous spreadsheet software program. In Lotus 1-2-3, the petals are lined up as windows along the top of the computer screen, but in the MY methods, petals are widened like circles around a chosen theme. According to Tatsuno, "The lotus blossom method is probably the most effective because its simple, open-ended structure allows for the systematical linking of new ideas."³⁷

5. Idea Refinement

Of all the five phases in the mandala of creativity, Japanese business is strongest in idea refinement. Contrary to popular opinion in the U.S., creative refinement does not mean just product imitation or copying. It is a conceptual leap, transforming an old idea into something new and beneficial. Western companies often aspire to technological quantum jumps; in contrast, Japanese companies seek incremental improvements in daily operations. Japanese workers are trained to make these small improvements, crucial for the survival of their company. Japanese researchers constantly refine not just their products, but also the theories and technologies behind them.

One method of refinement is miniaturization. The

Japanese are good at this, which is evident in their compact, lightweight tape recorders, video cameras, televisions, and autos. Miniaturization is also used for developing concepts of new products. The Japanese use miniaturization strategy to create entirely new markets, as well as to reduce costs.

The concept of simplicity also aids the Japanese in refining products. While Westerners often formulate elaborate, large-scale solutions to problems, the Japanese constantly lessen the complexity of products and ideas to a minimum. Zen and haiku, a form of poetry, influence Japanese designs with their simplicity and utility. This method is used to simplify product design, reduce the number of parts, and streamline the process of manufacturing and moving parts. Fuji Photo Film's disposable cameras, "Utsurun desu" ("it takes a picture"), is an example of simplified technology. It is a paper box designed with a simple lens and no focusing or diaphragm devices.³⁸

A distinctive feature of Japanese art and manners since Japan's feudal period has been the concept of leaving something slightly incomplete. A Zen garden with its asymmetric incompleteness invokes viewers to respond creatively and to fill in the gap with their own imaginations. Companies use this concept to encourage

employees to develop new ideas. Japanese management perceives a product as if it were a human being requiring polishing in a never-ending process. With this spirit of incompleteness, employees are inspired to reconstruct products and services in new ways.

Transformation capability is also a means of product refinement, as in the rearranging of the elements of a system to develop something completely different from the original product. The best example is the Japanese house, which traditionally contains multi-function rooms that are used for a variety of purposes. Mazda has utilized this concept in creating the MX-04 concept car. Because of the shortage of garage space, most Japanese people can afford only one car. To adapt to rapidly-changing consumer tastes, Mazda designed the MX-04 so that the owner can change the style of the car body whenever he wishes.³⁹

Creative Global Fusion

Cultural synergistic innovation methods make use of the strengths of all cultures. The Japanese bring new ways of viewing and using ideas generated originally in the West. Conversely, Japanese approaches to creativity--such as miniaturization, technology fusion, and idea recycling--offer Westerners prospects for new creative breakthroughs. By understanding aspects of culturally

different creative approaches, international entrepreneurs can coordinate human resources across different cultures and accelerate the rate of cultural synergistic innovation.

Chapter 3

SYSTEMATIC OPPORTUNITY - Search for Cultural Synergistic Innovation

The capacity for innovation is not limited to gifted people; it is learnable and manageable but not risk-free. It is most successful in organizations which deliberately and systematically search for opportunities to reduce risks and be competitive in a rapidly changing world. Innovative businessmen benefit from knowing how to apply principles of cultural synergistic innovation. One can learn systematic research methods and principles from examples of cultural synergistic innovation that have taken place between the U.S. and Japan.

According to Harris and Moran,

Innovation has been defined as creative idea generation, as the act of introducing something new into the established order: a change in ways of doing things from the traditional pattern. The scholars at the University of Southern California's Graduate School of Business Administration maintained that innovation should include the invention and development of new technology, as well as entrepreneurial and managerial risk-taking to improve services and productivity. Innovation for survival and development should be built into business systems.⁴⁰

Cases of cultural synergistic innovation in Japan and the U.S. fall into seven categories, which Drucker identified in his book, Innovation and Entrepreneurship. They are listed here in descending order of reliability and predictability:

- Source 1: The unexpected--the unexpected success, the unexpected failure, the unexpected outside event;
- Source 2: The incongruity--between reality as it actually is and reality as it is assumed to be or as it "ought to be";
- Source 3: Innovation based on process needs;
- Source 4: Changes in industry or market structures that catch everyone unawares;
- Source 5: Demographics (population changes);
- Source 6: Changes in perception, mood, and meaning;
- Source 7: New knowledge, both scientific and nonscientific.⁴¹

It is difficult to draw lines clearly distinguishing one source from the other because they are all interrelated. Source One simply comes easiest for the inventor, compared to Source Seven, which takes more time and study. Sources One through Four all come from internal changes--opportunity provided within an industry, a market, or a business. Sources Five, Six and Seven deal with external changes for innovation.

Figure 3 represents examples of cultural synergistic

innovative companies arranged according to their innovation sources, sizes, and the sectors in which they conduct business, such as auto, consumer electronics, copier, transportation, retail and fashion.

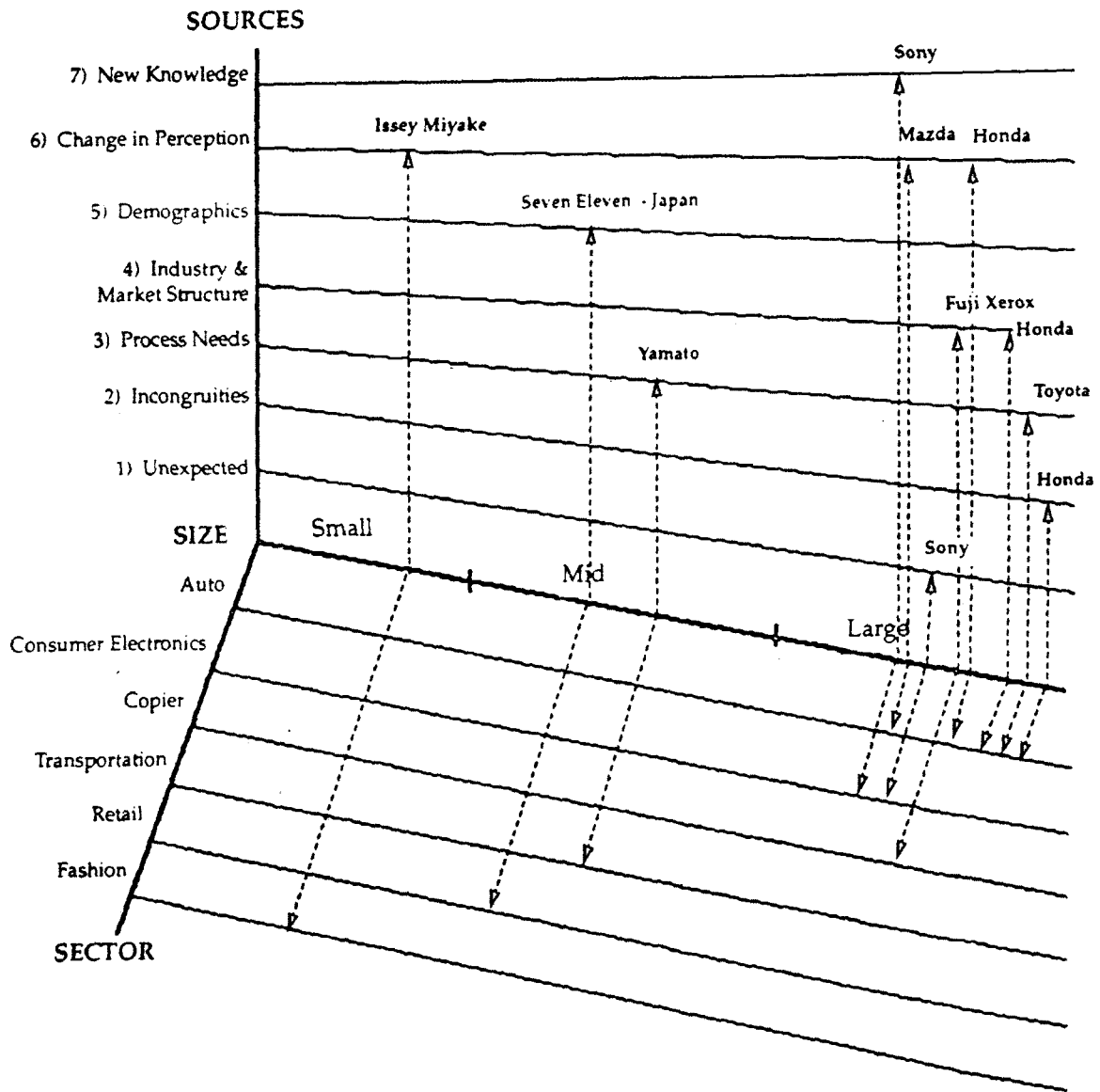
Source 1: The Unexpected

Unexpected innovation is the least risky and least difficult of all seven sources. Unexpected success or failure forces managers to rethink the definition of their business, their technology and their product and market. But unexpected success is often ignored by managers because it is only a symptom of opportunity. Businesses often fail to recognize what underlies the symptom because success is comfortable. It is easier to stay in old thinking ruts. A management information system is needed that would purposefully and systematically recognize, analyze and exploit unexpected opportunities. Tom Peters writes, "In the first category, innovation comes from the "wrong person" in the "wrong place" in the "wrong industry" at the "wrong time," even occurring to the "wrong user."⁴² It is up to business to be able to recognize this type of innovation and to exploit it.

Sony Corporation serves as a good example of the ability to exploit unexpected innovation. In 1950, the president of Sony, Akio Morita, discovered German magnetic

FIGURE 3

Examples of Cultural Synergistic Innovative Companies.



Source: Peter F. Drucker, Innovation and Entrepreneurship, Perennial Library Ed., (New York: Harper & Row, 1986): 35.

tape recording and brought out the first tape recorder produced in East Asia.⁴³ Sony went on to develop the world's smallest stereo and the world's lightest headphones and combined them into the Sony Walkman portable stereo. This innovation is an example of unexpected but successful innovation.

The engineers at Sony never intended to develop the Walkman. A young engineer of the tape recorder division rebuilt a small tape recorder for himself. He took the speaker out of the tape recorder, inserted the circuit board and replaced the head to change it from monaural to stereo sound. He then made two earphone jacks for headphone use. When Mr. Morita discovered this, he saw an opportunity. Despite objections from the sales division because the Walkman had no recording function, Mr. Morita decided to launch the product before the summer vacation started, giving the project team only four months to refine the Walkman. Now Sony produces more than 700,000 Walkman sets per month, and more than 50% of the headphones produced in the world today come from Sony.⁴⁴

Mr. Morita's success with the Walkman, and with other such projects that did not begin as formally developed products from Sony's research and development department, comes from his ability to recognize and seize unexpected opportunity. He is very attuned, for example, to youthful

trends, reading "Popeye" magazines and keeping his mind open to perceive untapped markets.

Source 2: Incongruities

According to Drucker, "Incongruity is a discrepancy, a dissonance, between what is and what 'ought' to be, or between what is and what everybody assumes it to be."⁴⁵

An incongruity, which is qualitative rather than quantitative, provides an opportunity for innovation. Incongruity is a symptom of change within an industry, a market or a process, so only people within or close by can perceive it. Innovators need not understand causes of the incongruity, but they should rather look for ways to exploit it. The limitation of incongruity is that only people within a related industry can discover it or know how to exploit it.

Industrial pollution control began to influence the thinking and motivation of modern society in the 1970s. People began to realize the limits of their environment and the effects of an economy that relentlessly pursues economies of scale. The Japanese public immediately attacked the auto industry when the Diet took up the issue of toxic carbon emissions from auto engines, but forcing Japanese industry to turn its efforts toward the development of pollution-controlling technologies. The

automobile industry in Japan exemplifies the seriousness with which Japanese industry took the problem of pollution. Today only cars made in Japan can pass the Japanese tests for carbon monoxide emission controls and the problem of pollution control has resulted in an unexpected improvement in engine performance and increased technical skill in automaking.⁴⁶ Thus, successful innovation was brought about by the necessity of an environmental incongruity.

Automakers in Japan accepted the tight regulation of exhaust emissions as an opportunity, rather than a threat. Then car exports to the U.S. increased as Japanese automakers were seen to improve the performance and exhaust emissions of their cars. U.S. automakers were slower and less serious in meeting the challenge of emission control, and thus lagged behind in their industry, even in their own country.⁴⁷

Source 3: Process Needs

Process needs that are sources of innovation exist within the process of an industry, a business, a product or a service. The process need is specific because it redesigns an old process, replacing weak links with new ideas or technologies. Two examples are provided by

Toyota and the JIT system, and Yamato Transport and transportation needs.

Toyota and the JIT System

JIT is the process of innovation that features a leveling of production volume, small lot production, frequent delivery of parts and components, reduction in set-up time, workers trained in multiple-skills, and a concentrated effort to improve product quality. Although Japanese managers learned much about production technology from the U.S., they have significantly improved on the American production processes. JIT is an example of process innovation based on the concept of allowing the customers' orders to pull products through the factory, while American factory systems generally attempt to push their products on to customers.⁴⁸ The technique of JIT was developed through a trial-and-error process in several manufacturing locations.

The main purpose of the JIT system is to reduce costs and to increase the turnover ratio of capital (i.e., total sales/total assets) and amplify the total productivity of a company, making the movement of materials smooth and uninterrupted, much like water flowing.

The key to this process innovation is the reduction of throughput time from suppliers, to operations and

finally to customers by eliminating adversarial relationships between divisions and vendors, and streamlining the whole process system. Throughput time is composed of process time, inspection time, move time, queue time and storage time. Of these five steps, only process time actually adds value to the product. All other activities are considered as non-value-added processes within the JIT philosophy, because they add cost but no value to the product.

Robert D. Mcilhattan, the director of cost management for the Midwest Consulting Group of Ernst & Whinney, says,

In many organizations, the amount of process time is much less than 10% of the total manufacturing throughput time and cost associated with manufacturing a salable item. Therefore, over 90% of the manufacturing throughput time associated with a product adds cost, but no value to the product.⁴⁹

The ultimate goal of JIT is to convert raw materials to finished products with throughput times equal to processing times, thus eliminating all lead time for material and all idle inventories. The concept is that "time is money" and the longer it takes to produce a product, the more it will cost. Thus Toyota employs the latest technology available in computerized linear motor cars on its assembly line to minimize moving time, instead

of using conventional conveyors for critical paths of movement. Also, line workers at Toyota are not just followers of the system, they are designers and problem solvers, constantly improving the flow line of the factory, attempting to improve in many areas of production, such as minimizing defects, improving product design, minimizing interruptions in the schedule, and maximizing output.

A key aspect of JIT is the simplification of all activity processes, which reduces the cost of the system. The drastic reduction in throughput time results in a timeliness of data when controlling costs. The process innovation of the JIT system even transforms the cost accounting system into a cost management system because simplification brings better management, better quality, better service and lower costs.

Yamato Transport and its Transportation Innovation

Yamato Transport conducts a door-to-door parcel delivery service by truck all over Japan, streamlining the existing distribution system and utilizing a computer network to keep track of every package delivered. The company has exceeded the Post Office of Japan in its annual volume of parcels transported.⁵⁰ The company accomplished a process innovation that was inspired by the

American company, Federal Express. This company had created an entirely new service industry, overnight delivery of packages, thus fulfilling untapped needs in the transportation process. Society is in transition from a mechanical to an electronic information age where information is processed quickly. The ordinary distribution system is too slow to keep up with the speed of computer processing, a situation which created the need for such innovators as Federal Express and Yamato Transport.

Yamato began a new service, listening to customers and making innovations, such as "cool door-to-door delivery services," to fill their more detailed needs. Yamato has developed trucks with refrigerators to transport fresh specialty foods across Japan. In this way suppliers and consumers are connected quickly and directly; Yamato is streamlining the complicated Japanese distribution system, bypassing the delay incurred by middlemen. For example, Yamato negotiates with fishermen who supply live crab and salmon to make the connections more direct and provide faster service between fishermen and consumers throughout Japan. Yamato also started a new service called "golf bag door-to-door delivery" for golfers who have to carry bulky and heavy golf bags through congested and narrow transportation facilities in Japan.

Source 4: Industry and Market Structures

Industry and market structures sometimes give the competitive advantage to certain industries within a country. Culture sometimes generates significant competition without one industry, so that the technology in a particular industry in one country may be considerably ahead of the same industry in another country.

For example, according to the director of the motorcycle division for Honda Motor Company, Hiroyuki Yoshino, the division in Japan is losing money because the high competition in the industry results in extremely low profit margins.⁵¹ Major motorcycle producers in Japan regularly put fifty or more new models on the market each year. Honda's fifty-five motorcycle plants overseas, however, are flourishing because foreign companies do not provide so much competition. In fact, Harley-Davidson, a famous American motorcycle manufacturer, produces only one new model every ten years.⁵²

Another example is provided by Fuji-Xerox. It also needs to be highly innovative to survive in the extremely competitive Japanese small copy machine industry. Xerox, an American company, teamed up with Fuji not only to get access to the Japanese market, but also to enhance its own

product innovation. The Japanese small copier machine industry is extremely competitive and Fuji-Xerox competes against six of Japan's most successful companies--Canon, Sharp, Toshiba, Minolta, Ricoh, and Matsushita (Panasonic). The president of Fuji-Xerox, Tony Kabayashi, has as his motto: "Each new Xerox product must contain at least one dantotsu feature."⁵³ The definition of dantotsu is "best of the best." The innovation that emerges within Fuji-Xerox because of this competition is then transferred to Xerox in the U.S. to protect its American home market and its European market against Japanese competitors there. This gives Xerox a huge competitive advantage in global competition. In this way, innovation may come from very competitive markets in a certain country. The parent company then uses this innovation (the intangible asset) as a competitive advantage to compete on the international level.

Source 5: Demographics

Demographics is the study of population: its size, growth, age structure, composition, employment, educational status and income. Of all external factors, these are the most predictable. Only reading these statistics is not enough, however. Field research is also necessary to allow researchers to gain hands-on

experience. Thus, they will have a better chance of finding opportunities for innovation. For example, in the past, most trends of Westernization in Japan were highly predictable and took place 5 to 10 years after they were observed in the U.S.⁵⁴ Presently, however, the Japanese population is aging more rapidly than that of any developed country.⁵⁵ This phenomenon will allow entrepreneurs in the U.S. to find opportunities by studying Japanese "silver markets."

The world is becoming more homogeneous in lifestyles and preferences. According to Makino:

In the United States, the number of families in which the man worked and the woman stayed at home was 43 percent in 1960, 25 percent in 1975 and is projected to decline to 14 percent in 1990. Conversely, families where both husbands and wives worked was 23 percent in 1960 and will rise to 31 percent in 1990. Nonworking single woman families will rise to 13 percent in the same year. Families relying entirely on welfare are also expected to reach 10 percent in 1990. The family structure and female role is changing the same way in Japan. Seventy percent of middle-aged housewives in Japan now work outside the home.⁵⁶

The increase in the number of working women is bringing about other innovations in industry. For example, many supermarkets have changed their methods of distribution to accommodate the busy, more time-conscious

woman. They have developed such innovations as self-service, computerized management and direct purchasing. The result is not only more convenient and economical supermarkets, but increased sales. Some food store chains have increased their sales a thousandfold in just a few years.⁵⁷

The changed family life has also given birth to convenience store chains in Japan such as Seven Eleven Japan. One truck delivers under the "umbrella" of forty stores in an area that can easily be covered in one or two hours.⁵⁸ In this way, a convenience store can carry several thousand products and always keep them fresh and available. Such innovations have proved themselves well worth the time and money spent to create and set them up.

Source 6: Changes in Perception

Changes in the perception of producers or of customers are also sources of innovation. The unexpected innovation discussed in Source One often comes from a change in perception. The timing is crucial in perception-based innovation because a perception change cannot easily be quantified, or by the time it is quantified, it is no longer an opportunity for innovation. Fashion style, life style, and management style have all seen this kind of perception change in recent years.

Fashion Style

The following is an example of cultural synergistic innovation between Europe and Japan. Issey Miyake, a fashion designer, is successful in Paris and Japan. Miyake studied the methodical structure of "haute couture" in Paris as well as that of "kimono" in Japan. He blends Western and Eastern styles into a completely new fashion, by creating a new way of perceiving clothes. His secret of success is based on his use of space between the body and the fabric.

A famous Japanese architect, Arata Isozaki, explains:

The original quality created by Issey Miyake's method is due to the fact that the generally accepted divisions between Eastern and Western styles--between Asia and Europe--were completely abolished. What he is working with is the essential space, the inconsistency between the body and the fabric. In western clothing, the fabric is cut precisely to the bodyline and sewn. The form of the attire is modelled after the body, with a shell similar to the shape of the body thus being created. In so doing, the space between the two is eliminated. In the case of Japanese attire, a technique which simplifies cutting to the minimum is predominate [sic]; the set width of the material itself, like an invariable constant, given importance.

Rather than adopting either of these techniques, Issey Miyake has directed his attention to the co-existence of the fabric and the body. In this case, both the fabric and the

body are able to assert themselves, enabling the space between them to wave, flutter, and fold with each movement of the body. The space absorbs and is absorbed. Through movement, fabric and body become one.⁵⁹

Based on his own philosophy, Miyake designs the pattern on the cloth, chooses the material and texture, dyes, cuts and sews each new creation with the help of his team members. Thus, he includes the process innovation as well as the perception innovation.

Life Style

In recent years, people's spending habits have changed dramatically. For example, young people today who buy motorcycles or motorscooters tend to purchase them for their sensual pleasure and performance, as a way of expressing themselves, rather than as simply a way of getting from one place to another.

Thus, in developing a product, one must consider the consumer's needs and discover what kind of "sensual" pleasure he seeks. About ten years ago Mazda (Toyo Kogyo), an automaker located in Hiroshima and in Kyushu, was at a standstill, its factory parking lots were full of unsold cars. As a last resort, the company sent all its employees out to research the market and discover exactly what consumers wanted. Every employee, whether he worked

in the manufacturing, planning, technological or administrative division of the company, scoured the country talking to consumers. "It was like seeing soldiers going to war," remarked Yoshiki Yamasaki, Mazda's former president, about the day Mazda's employees left Hiroshima station.⁶⁰ The research results were used to design the Familia, a car that was extremely successful when it first appeared.

Management Style

Most U.S. automakers use only design engineers to develop new car designs. Not so in Japan. Honda uses SED (Sales, Engineering, Design), an integrated program consisting of salespersons, engineers, and research and development people. The steady flow of ideas from different divisions helps Honda produce cars and services suited to the American customer's taste. With its Tech Line, a computerized database of skilled technicians, Honda can solve a problem for a dealership mechanic in minutes, that once took hours to correct. Honda also spends less on advertising per vehicle than any other car maker. It gets as much as 50% of its new buyers through word-of-mouth advertising from satisfied customers.⁶¹ Repeat sales come from maximizing customer satisfaction and by constantly providing superior products and

proactive service. In Japan, the term for customer is "Kami sama," or God.

Honda also looks at human resource management in a new way. Soichiro Honda, the founder of Honda, said, "The most important thing in the world is not diamonds or gold, but humans."⁶² Job rotation within a team makes associates more valuable to the company, promotes good teamwork and generates a feeling of pride and belonging. Honda's reputation of superior product quality and better service gives employees pride in their workmanship. Honda's most valuable asset is the thinking, innovative associate who solves problems, devises more efficient methods of workmanship, and improves the quality of products. Mr. Honda once said, "If you think people are important and you want to improve their lives, that's when innovation occurs."⁶³ The Honda company provides a creative environment that includes employee programs such as the idea contest, the suggestion program, and the quality circle (QC) program combined with JIT. To maximize its human resources, Honda management implements 59% of all suggestions its employees submit.⁶⁴ This system helps to maintain Honda's competitive edge, and has created a new corporate atmosphere by combining teamwork and individual creativity. Thus, most of Honda's management style is a new way of perceiving and managing

its work force which has given Honda its competitive edge.

Source 7: New Knowledge

Knowledge-based innovation is the most difficult to manage and most risky of all kinds of innovation because it requires long lead times for both of its stages. The first stage is a transition time from the emergence of new knowledge into its application to modern technology. The second stage is the time lag before the new technology is turned into products or services. Knowledge-based innovation is also unpredictable because it occurs by combining several different kinds of knowledge.

To produce an innovative product, it is sometimes necessary to converge one's own ideas with those of another industry, or of a competitor. In order to launch a product, a company may not be able to spend time developing its own ideas, or competitors will surpass it. For example, Philips invented the compact disc (CD) player, the latest in musical recording technology. This CD player produces clear and pure sounds because a laser beam can write and read digital signals without contacting the disk. Also, a four-inch CD has a large storage capacity capable of holding Beethoven's Ninth Symphony in its entirety, a work that takes up three sides of an LP record. However, Philips, the front-runner, must use

Sony's patents to produce CDs because Sony, a runner-up, owned the technologies to put that technology into practical use.⁶⁵ This explains the importance of the 1.5th position. It means a position of a company between front-runner and runner-up, attempting to develop a practical product from an abandoned invention. According to Noboru Makino, chairman of Mitsubishi Research Institute, "Sony, Honda, Mazda, . . ., and Kyocera are all companies that have succeeded with this strategy."⁶⁶

Chapter 4

CREATING CULTURAL SYNERGISTIC INNOVATION IN AN ORGANIZATION

Searching for a Model of Cultural Synergistic Innovation: Leadership, Organizational Structure and Techniques.

Tom Peters, in his book Thriving on Chaos, states that in the quickly changing business environment, innovation is indispensable for a firm just to survive.⁶⁷ Creating one innovative product is not the last step in the creative process. In order to stay at the leading edge of a specialized market niche, one must constantly innovate and organize a system of innovation within the firm. With regard to systematic innovation, Peter Drucker says:

This system needs to be systematic, to be manageable and to be based on purposeful innovation . . . Opportunities require more than mere luck or intuition. They demand that the enterprise search for innovation, be organized for it, and be managed so as to exploit it.⁶⁸

Management techniques have to be developed to create an innovative atmosphere that motivates every employee in the entire firm, from marketing, to production, to research and development.

LEADERSHIP

Business success is far more than managing scale and cutting costs. It is leadership that cultivates employees and challenges their creativity in order to find out what customers really want and need. In order to become a leader of an innovative organization, one must understand the principles of innovation, the challenges of the information age we are facing, and the traits of the innovative organization.

Misconceptions About Innovation

The authors of The Innovation Formula, Michel Robert and Alan Weiss, identified eight misconceptions of innovation:⁶⁹

Misconception Number 1: An Entrepreneur is a high risk-taker.

Contrary to popular belief, a successful entrepreneur is very prudent about the risks he takes. The entrepreneur is not a gambler at all, but carefully evaluates and analyzes risk by planning and considering what could go wrong.

Misconception Number 2: Entrepreneurs are owners of a business, not employees.

It is employees who produce most ideas of innovation.

There are two reasons for this. First, there are more employees than owners, and therefore more minds and more and more potential for innovative ideas. Second, according to Robert and Weiss, "employees are closest to the customers and the fields where innovation can take place."⁷⁰ Given the opportunity, they enjoy being innovative, especially when they are trained to improve their skills and to sharpen their ability to innovate.

Misconception Number 3: Innovation occurs only in small firms, not in large firms.

Large and highly bureaucratic firms often see change as a threat, not as an opportunity, and discourage innovation. But even a company as large as Hewlett-Packard was able to create an innovative corporate culture, and a process for innovation; its employees perceive change as opportunity. It is not the size of a firm that determines its level of innovation, but willingness to evolve.

Misconception Number 4: Entrepreneurs have global ideas only and don't start with small ideas.

Innovators aim at market leadership, which can be gradually attained by focusing on what they want to accomplish. According to a study by Robert and Weiss, innovators generally start small in order to marshal their

resources, direct their energies, and "enlist the proper support to see their idea through to implementation."⁷¹

Misconception Number 5: Entrepreneurs are idea generators only and should not be held responsible for implementation.

According to The Innovation Formula, reality requires "the exact opposite. Successful innovators are those who implement their ideas. Innovation is not theoretical, it is practical."⁷² Innovation means taking new ideas and making them happen, achieving a desired effect on the environment. True innovators develop appropriate ways to negotiate hurdles and overcome the obstacles to their goals.

Misconception Number 6: Innovation is best when brought on by a flash of genius.

According to Robert and Weiss, "While there is the occasional kiss on the cheek by the muse, innovation is almost always the result of systematic, hard mental work."⁷³ People must go through a systematic, disciplined and pragmatic process to be innovative, working on routines daily. A flash of genius is, of course, always welcome. But if one sits around waiting for it, chances are the wait will be very long and lonely, while

competitors pass by in the fast lane.

Entrepreneurship is perceived as something slightly mysterious, whether inspired by gift, talent or "flash of genius." But innovation and entrepreneurship are purposeful tasks that can and should be organized as systematic work. Innovation and entrepreneurship are not just part of the executive's job; everyone should take a part.

Misconception Number 7: Entrepreneurs are born, not made.

Innovation is a learnable skill. It can be learned, practiced, communicated, and used individually or with others, with competency and purpose.

Information and Innovation in the Information Age

A manager must understand the concept of the information age as well as that of innovation in the rapidly changing business environment. According to Tom Peters,

. . . In the new global economy, nearly everyone has access to big ideas and the machines and money to turn them into standardized products, at about the same time, and on roughly the same terms. The older industrial economies have two options: They can try to match the wages for which workers elsewhere are willing to labor. Or they can compete on the basis of how quickly and well they can transform ideas into incrementally better products.⁷⁴

It is extremely important for a firm to organize information. Managers must be able to deal with the facts of the information age. Wurman states,

Information has become the driving force of our personal lives as well as our corporate lives. But because we are facing a tremendously expanding amount of information, we are facing a problem of how to assimilate it to survive in the world's competitive environment.

For example, a weekday edition of the New York Times contains more information than the average person was likely to come across in a lifetime in seventeenth-century England The amount of available information now doubles every five years; soon it will be doubling every four years.⁷⁵

Companies are reliant on those who design information, such as news directors, who control and often restrict the flow of information. This is a problem that must be overcome.

Wurman goes on to say,

It [the information age] still focuses on hardware technologies, mass production, narrow economic models of efficiency, and competition and is more an extension of industrial ideas and methods than a new stage in human development.⁷⁶

Thus we need to develop systems to fill the gap between data and knowledge, converting the data into the

knowledge we need through organizing, relating, and structuring it. We will depend more upon computers because they convert a large number of facts into spreadsheets, graphs, and comparisons to assign meanings.⁷⁷ Corporations must train employees to convert data into information as the world economy becomes more and more dependent on information, using the computer to assist them to organize information.

Employee Training in the Information Age

According to Robert Waterman, a consultant and co-author of In Search of Excellence, "Successful businesses in the future will be those that can make the best use of information."⁷⁸ Waterman suggests that if we assume "it is important to have some sense of direction and the future is not predictable, my answer is we get very knowledgeable information about our business and our competitive environment."⁷⁹

Companies are realizing that information can be used not only in managing a business, but also to increase profits, manage resources, improve marketing efficiency, maintain smaller inventory, and to innovate. The time between the creation of new knowledge and its incorporation into new products is shortening very rapidly. The world is filled with unprocessed data

waiting to be used and the more efficiently a business can organize information, the more information it will be able to use. The key lies in training employees to make connections between different ideas, and to make use of all the technology and knowledge available to them. Patricia Galagan states in an article entitled "How to Avoid Datacide," in Training & Development Journal, ". . . this 'human processing' was found to be the dominant organizational process, with marketing the dominant component and management the dominant function."⁸⁰

Importance of Employee Training for Cultural Synergistic Innovation

Before creating a leadership and organizational model, one must identify the obstructions to cultural synergistic innovation. Language barriers, distances between countries, differences in political ideologies, and cultural differences all obstruct the process of cultural synergistic innovation by separating people from information. It is necessary to develop a corporate culture with a sense of challenge and open-mindedness toward unfamiliar cultures. To create this, an enthusiastic manager is necessary, a leader and champion who can motivate others to get involved in the innovation process. A firm must also have a good information

gathering system.

Preconceived beliefs, biases, thinking ruts and unchallenged assumptions all discourage a person from combining totally unrelated ideas. Employees must be trained continuously to help them to get rid of these barriers. They must be trained by opportunity-oriented, idea-oriented and feedback-oriented team builders with good intuition. These "coaches" should develop their own techniques to inspire a team from which ideas will flow.

It is important that failure should be "celebrated" in a corporation. According to Wurman, "Great achievements have been built on foundations of inadequacy and error. The anxiety associated with failure inhibits us from exploring our creativity. That is why we celebrate failure."⁸¹

ORGANIZATIONAL STRUCTURE

As organizations face the problem of assimilating the present-day overflow of information, they are finding it more and more necessary to construct new ways of organizing information. New communication channels are supported by training employees to be human processors. The structure of an innovative organization is being redesigned to produce innovative products and services much more quickly. Knowing how to organize information

efficiently is a definite competitive advantage because most competing companies all have access to the same information. It is simply a matter of who assimilates it and delivers it to consumers the fastest.

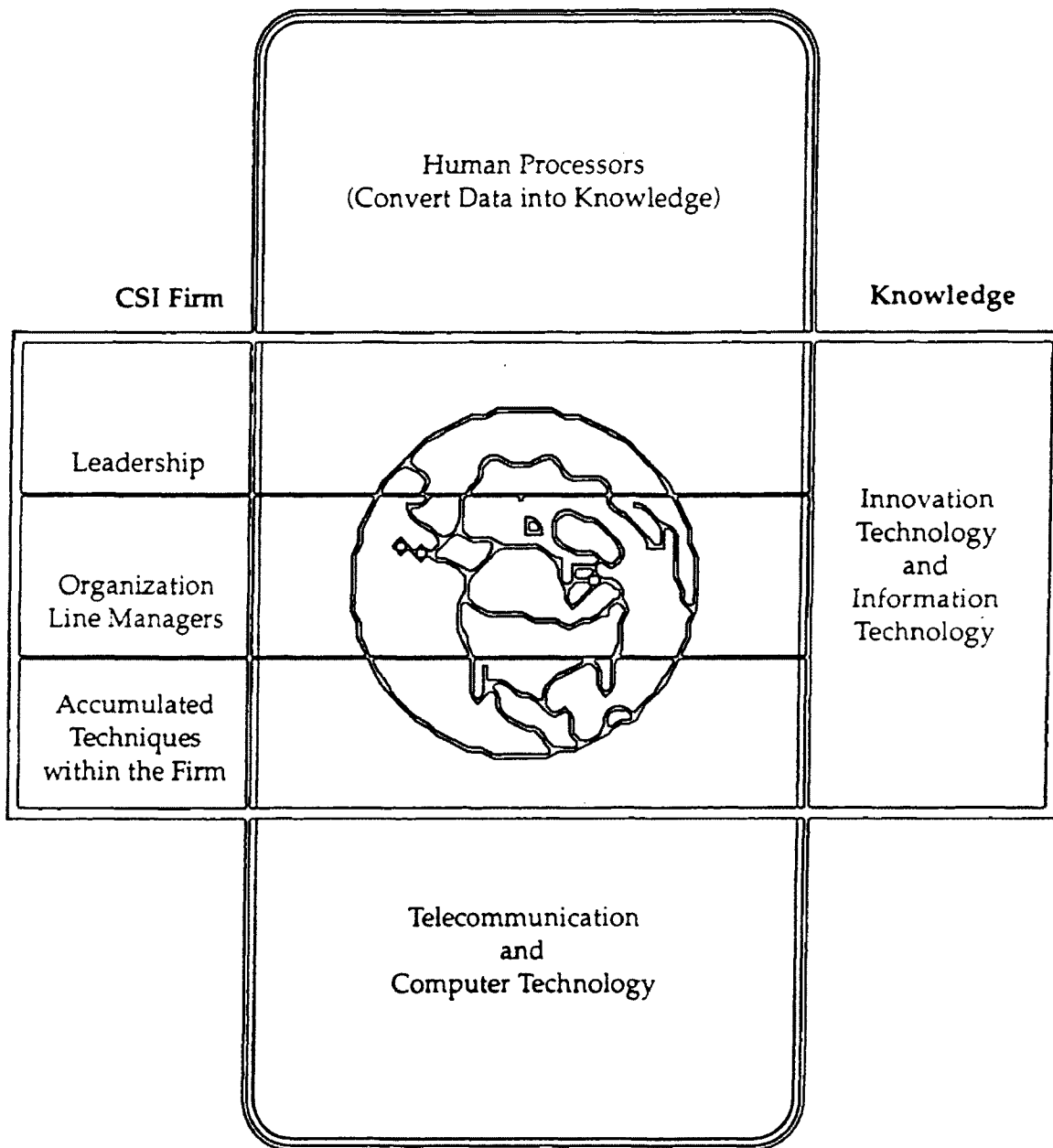
Innovative Organizations in the Information Age

A model of the cultural synergistic organization as shown in Figure 4 consists of human processors who convert data into knowledge for innovation, computers that organize information, and a telecommunications network to pool data and information.

According to Peters, "Most innovation occurs in the palpable interacting among plant team, designer, marketer, and customer."⁸² Management must therefore train employees to cooperate with each other and be willing to cross over to different departments in the pursuit of better quality and services for customers. Every member of a company must be trained as an innovator in the total innovation system.

An organization may be constrained physically because of its location, but the flow of information and knowledge available to it is unlimited because any firm can cover the world electronically.

FIGURE 4
 Cultural Synergistic Innovation
 A Model of a Firm
 Information Network



Source: Richard S. Wurman, *Information Anxiety*, (New York: Doubleday, 1989): 77.

The author of Megatrends, John Naisbitt, says, "The new source of power of a firm is not money in the hands of a few but information in the hands of many."⁸³ It is necessary to construct the new communication channel of a corporation, not by fragmented information efforts, but by pooling efforts. By giving employees easier access to various information sources beyond national borders, there is a better opportunity to relate ideas between cultures and develop new ones in the process.

According to Information Anxiety,

Computers and technology bring the free flow of information. The instantaneous transmission of it via modems, satellites, countries . . . The whole idea of how a thing relates to something else is often left unexamined in school, yet it is essential to knowledge . . . The greatest crisis facing modern civilization is going to be how to transform information into structured knowledge. In order to do that, people must learn to overcome their lack of dimension and discover how to make better information connections.⁸⁴

The authors of Innovation Formula go on to state,

Unhappily, our experience is that most people tend to be excellent acquirers of information, but very poor appliers of information to achieve practical results. In the long run, we feel that it all boils down to a question of hard, disciplined mental work. Those who are willing to consciously try to use the

process--and learn from their failures and gain from their successes in so doing--are those who will master it and use it most effectively in the future. Innovation is not complete until opportunities are implemented.⁸⁵

One could conclude that there are two ways information must be managed. First, employees should be trained to connect ideas together, i.e., to connect an idea from opportunity variables (The Unexpected, Incongruities, Changes in Perception, and New Knowledge) to another idea collected from the organization. Second, through the stage of implementing the new idea into the real world, employees should know how to deal with feedback information until the idea is implemented.

Structure of the Organization

Peters conceived of a clear picture of the successful firm in the 1990s and beyond. In his view it will be:

- * flatter (have fewer layers of organization structure)
- * populated by more autonomous units (have fewer central-staff second-guessers, more local authority to introduce and price products)
- * oriented toward differentiation, producing high value-added goods and services, creating niche markets (short production runs)
- * quality conscious
- * service conscious
- * fast (responsive, adaptive)
- * more responsible
- * much faster at innovation

- * a user of highly trained, flexible people as the principal means of adding value
- * international (even if small)
- * smaller (stand-alone, small within big)
- * gain sharing, participation, adding value through people.⁸⁶

Most companies with rigid, hierarchical structures have been driven by their research and development departments, which work only on big projects and emphasize cleverness of design rather than the fit and finish of a product. In contrast, future companies must have flat and flexible structures and must be customer-driven, making small, customer-noticeable improvements in order to adapt to the fast changing and unpredictable business environment of the 1990s and beyond. Employees must become autonomous "stars" working in decentralized units.

Traits of the Innovative Organization

It is important to develop an organizational culture where employees autonomously challenge their creativity in order to determine what customers really want, and to learn innovative ways of consistently bringing higher value to their customers.

According to The Innovation Formula,

Innovative companies generally try to stay ahead of the competition by constantly seeking small improvements in

every aspect of their business. Even a slight edge in timing can mean a tremendous amount of difference in the marketplace.⁸⁷

Incremental improvement is the result of deliberate stimulation by the organization, such as providing the financial resources and the freedom necessary to constantly examine all aspects of the operation and determine how it can be improved. One of the greatest sources of "newness" and opportunity is the recombination of existing or "old" ideas. Robert and Weiss state, "Innovative organizations achieve tremendous value by recombining existing approaches, ideas, and methodologies."⁸⁸ The line manager is important because he is in contact with the customer, the company's products and services, and the support mechanisms of the organization. The line manager is actually the "point person" in the search for change. Line managers are opportunity finders. They can provide important data and information to other human processors. A good example of this is Honda's SED approach, in which the product design team is composed of selected people from different departments.

TECHNIQUES

A manager must understand the "sloppiness" of the innovation process when designing an innovative organization. He must also be familiar with the Management by Walking Around the World (MBWAW) process and understand the need for a management information system that is tailored to support innovators who seek out innovative opportunities.

Sloppiness of Innovation Process When Designing an Organization

When designing an organization, one must consider the necessary sloppiness of the process and take advantage of it, rather than attempt to fight it. In The Sources of Invention, John Jewkes concludes that, "a report of extensive case studies of 58 major inventions that took place in Europe and America in the last century . . . there is no industry group where very much innovation occurred as or when it was supposed to."⁸⁹ The course of invention, from the generation of an idea through prototype development, contact with the initial user to breakthrough and then to final market is highly uncertain. Moreover, it is always messy, unpredictable, and very much affected by determined champions, or project leaders.

Considering the disorganized and unpredictable nature

of the innovation process, one should take the experimental (incremental) approach rather than merely theoretical instead of just sitting at a desk, thinking, and doing a "paper study." In other words, one should aim for single hits rather than home runs. According to Peters and Austin, "Numerous singles often set in motion a series of developments that become *de facto* home runs; few home-run swings result in getting on base at all."⁹⁰ Hewlett-Packard is an example of a company that practices this approach.

The basis for this experimental approach is to develop a prototype as quickly as possible in order to let prospective buyers try it out. The purpose of this is to turn the user's response into market data and assimilate it with the technical data in order to improve the product.

Champions are necessary to carry forward the experimental approach. National Science Foundation studies advise that "the champion's rule is crucial in pushing an idea to fruition."⁹¹ Champions have the energy required to cope with the indifference and resistance that change provokes. They are egotistical, competitive, passionate, and persistent beyond belief, and able to withstand all the inevitable rebuffs while getting their ideas to market.

Champions, the leaders, benefit with the aid of

"skunkworks," or decentralized groups. Tom Peters and Nancy Austin, in their book A Passion for Excellence, say, "When a practical innovation occurs, a skunkwork, usually with a nucleus of six to twenty-five people, is at the heart of it."⁹² A skunk is simply a bootlegger, scrounger, a person who works at the far edges of the traditional corporate structure. Peters and Austin go on to state, "Skunks seem to do things in an exceptionally short period of time because in such groups there's no passing the buck."⁹³ When the pressure is on after big groups have exhausted their resources, companies usually turn to these decentralized bands.

A product of a skunkwork is usually of higher quality even if it was invented in a short period of time. According to Tom Peters, the reason for this is, "Under the pressure of ridiculous deadlines, and suffering limited staffing, the skunkwork seldom reinvents the wheel."⁹⁴ Members of the skunkwork usually adapt standard items that have been manufactured flawlessly for years. Whereas big groups tend to start from scratch with every activity, small groups are crucial to innovation.

The National Science Foundation put the optimal size of a research group at about seven.⁹⁵ With this size there is a stronger sense of ownership and commitment.

Management by Walking Around the World (MBWAW)

Tom Peters and Robert Waterman observed that one of the keys to developing an excellent company is "managing by walking around" (MBW).⁹⁶ Kenichi Ohmae, a co-worker of Peters and Waterman at McKinsey & Company, added to this concept one more word, to make it, **MBWAW** - Management by Walking Around the World, to gain accurate knowledge of sociocultural matters in markets abroad.⁹⁷

How well a company can respond to cultural differences is an extremely important factor for ensuring a product's success. Designers must see the target area with their own eyes to gain accurate knowledge of the lifestyles and tastes of specific cultures. Such knowledge cannot be obtained from market research data alone. For example, Mattel's International Barbie Doll was successful in the U.S. but not in Japan. So Mattel sold the license to a Japanese toymaker, Takara, for the rights of production and sales. Takara found that the American Barbie Doll's breasts were too large and her legs were too long for Japanese girls to identify with it. So Takara fine-tuned the product, changing the color of the eyes from blue to brown and reshaping the "sexy" Barbie doll into a "cute" Rica-chan doll. Takara then received so many orders that at one time it could not produce

enough of the dolls to meet the demand. Takara sold two million Japanese versions of Barbie in only two years.⁹⁸

Innovating in New Locations of Product-Outlets

Japan McDonald's partner, Den Fujita, made the company number one in the Japanese fast food industry in just ten years. Now he has 400 stores and annual sales of 100 billion yen (about 670 million dollars).⁹⁹ McDonald's in the U.S. had been successful locating its chains in the suburbs; but Fujita decided to locate his chains right in the centers of major Japanese cities, focusing on the commuters flowing into the center of the cities. He did this because he observed differences in lifestyles between the U.S. and Japan. His insight was accurate and his strategy was successful. He also fine-tuned the product line by adding items such as "blue apple flavored" milkshakes to its ordinary shake lines.

It is vitally important to learn cultural differences, not through marketing reports but by "Walking Around the World," to get hands-on experience. Companies must develop the ability to sense subtle cultural differences in order to be successful.

The Management Information System

The management information system must include a systematic approach to finding opportunity in the form of

cultural synergistic innovation in addition to traditional areas of marketing, production, finance, accounting, etc. All information is sorted into seven sources (The Unexpected, Incongruities, Process Needs, Industry and Market Structures, Demographics, Changes in Perception, and New Knowledge) to obtain the opportunity for the cultural synergistic innovation. This has the function of making the unexpected seen and calling for attention when it comes to cultural synergistic criteria. The system is also useful in designing Spiral Developments, Matrix Frameworks, Technology Trees and Technology Road Maps within the company. These systems are all visual and systematic, and suitable for the information age.

Although Japanese corporations are often weak in scientific exploration, they are good at searching globally for new ideas and technologies, under the guidance of the Ministry of International Trade and Industry (MITI). Sogo Shoshas, Japan's general trading companies, provide the vital service of supplying up-to-date information to clients about thousands of product markets from Japan to Africa, Asia and Latin America. In this way, Japanese companies can learn important information about "trends that are likely to have an impact on the Japanese economy."¹⁰⁰ It is important for a

corporation to have an intelligence system to collect useful information from all over the world, and to better trigger cultural synergistic fusion.

Chapter 5

SUMMARY AND CONCLUSION

Profits are derived from the creativity of people belonging to a firm. The most innovative company exploits this creativity by combining the efforts of all members of the firm from top management to the rank and file employees. Innovation is thus derived from the recombination of existing ideas. As stated earlier, a creative idea often comes from the combining of two totally unrelated ideas. The more different and unrelated spatially and timewise the combined ideas, the better the creative idea (or product) that emerges. By converging unrelated ideas cross-culturally, cultural synergistic innovation provides a firm one way of enhancing innovation proactively in the rapidly changing world we are facing. It is becoming easier to access foreign ideas and to obtain products from abroad as technologies advance, such as transportation, telecommunications, and the use of computers.

In order to construct a practical model of cultural synergistic innovation, three aspects were explored. First, in chapter two, the difference in Western and Japanese approaches (Breakthrough Creativity vs. Adaptive

Creativity, Spontaneous Creativity vs. Cultivated Creativity, Creative Fission vs. Creative Fusion, Cartesian Logic vs. Fuzzy Logic, and Uni-functional Creativity vs. Multi-functional Creativity) were discussed. The mandala of creativity, which consists of five related stages--Idea Recycling, Idea Search, Idea Nurturing, Idea Refinement, and Idea Breakthrough--integrates the different creativity approaches of East and West. Cultural synergism cannot be exploited using straight-line projections based on today's realities and recent growth; this type of thinking serves only to limit results. Buddha's teachings speak of the benefits of looking with five different eyes: the seeing (naked) eye, intuitive eye, the ethical eye, the analytical eye, and the benevolent eye. Cultural synergistic innovation encourages business people to perceive things with five different eyes also: the visual, artistic, philosophical, analytical and unbiased eyes. Put another way, Buddha teaches the importance of perceiving things in nonlinear and spiral ways.

Second, in chapter three, examples of cultural synergistic innovation, mainly between the U.S. and Japan, were presented in accordance with the seven sources of opportunity (The Unexpected, Incongruities, Process Needs, Industry and Market Structures, Demographics, Changes in

Perception, and New Knowledge). These seven sources of opportunity suggest to a firm the importance of purposeful and systematic opportunity searching.

Third, chapter four discussed leadership, organization structure, and techniques in searching for a model of the cultural synergistic innovative firm. Leaders in an innovative organization must understand the principles of innovation, facts and problems of the information age we are facing, and characteristics of the innovative organization. The structure of the organization should be changed into one that is small, flexible and autonomous, and that pursues incremental innovation to adapt to the complex, fast changing and unpredictable world. Fast prototype development, passionate product champions and skunkworks are necessary to implement the ideas as quickly as possible, thereby exploring the complex and chaotic world non-linearly. Finally, a new management information system was suggested to support cultural synergistic innovation.

International trade is thriving in the world today. According to Donald A. Bell and Wendell H. McCulloch, Jr., authors of International Business, "Merchandise exports alone amount to 2 trillion dollars."¹⁰¹ But the possibility of exchanging humans and ideas between nations

and enhancing the potential for cultural synergistic innovation is not being exploited. According to Robert L. Shook, in Honda: An American Success, "Barely 800 U.S. citizens are studying at Japanese universities. Yet according to the National Science Foundation, there are some 13,000 Japanese attending U.S. universities."¹⁰² This represents a trade imbalance between the U.S. and Japan, which the traditional accounting systems cannot measure. These two cultures have a huge potential for cultural synergistic innovation that is not currently being fully exploited. With the development of better technology in computers, telecommunications and transportation, a firm has endless opportunities for cultural synergistic innovation, regardless of its size and location.

People might as well be living in isolated villages, considering how well they take advantage of the information age. The objective of cultural synergistic innovation is to relate isolated ideas geographically all over the planet and to exchange human processors and ideas in order to trigger innovation beyond national borders. The integration of human processing, information technology, and networking on a global scale is becoming a strategic business technique because it leads to cultural synergistic innovation, an intangible asset that

traditional accounting cannot measure in impact and value.

Economic dominance relies on a country's creative strength. But the globalization of markets will drive competitors to embrace other styles of creativity than those they have traditionally used. In an era of global competition, the most successful companies and nations will be those willing to learn from others. Cultural synergistic innovation will become a strategic tool.

Endnotes

¹Dr. Denis E. Waitley and Robert B. Tucker, Winning The Innovation Game, (New York: Berkley Books, 1989): 145.

²Ryuei Shimizu, "Hokkaido's Topography and Factors for Growing Company Management," Kinoshiro Taisetsu Corporation, Forum for Managers, Kuriyama Cho, Hokkaido, Japan, 26 September 1989.

³Joel Kotkin and Yoriko Kishimoto, The Third Century, (New York: Crown Publishers, Inc., 1988): 3.

⁴Shimizu.

⁵Yasuhiro Monden, Toyota Production System: Practical Approach to Production Management, (Norcross, Georgia: International Engineering and Management Press, 1983): 1.

⁶Philip R. Harris and Robert T. Moran, Managing Cultural Differences, 2nd Ed., (Houston, Texas: Gulf Publishing Company, 1987): 88.

⁷Peter F. Drucker, Innovation and Entrepreneurship, Perennial Library Ed., (New York: Harper & Row, 1986): 32.

⁸Sheridan M. Tatsuno, Created in Japan, (New York: Harper & Row, 1990): 3-25.

⁹Ibid., 15-23.

¹⁰Ibid., 17.

¹¹Ibid., 19.

¹²Ibid., 21.

¹³Ibid., 22.

¹⁴Leonard Koren, 283 Useful Ideas from Japan, (San Francisco: Chronicle Books, 1988): 86.

¹⁵Tatsuno, 59.

¹⁶Richard S. Wurman, Information Anxiety, (New York: Doubleday, 1989): 104.

¹⁷Tatsuno, 53.

¹⁸Ibid., 50.

¹⁹Michael Ray and Rochelle Myers, Creativity in Business, (New York: Doubleday, 1989): 123.

²⁰Tatsuno, 53.

²¹Ibid., 54.

²²Ibid., 62.

²³Ibid., 61.

²⁴Ibid., 74-82.

²⁵Ibid., 74.

²⁶Ibid.

²⁷Ibid., 167.

²⁸Ibid., 78.

²⁹Ibid., 79.

³⁰Ibid., 80.

³¹Kotkin and Kishimoto, 86.

³²Tatsuno, 97.

³³Ibid., 95.

³⁴Ibid., 98.

³⁵Ibid., 104.

³⁶Ibid., 107.

³⁷Ibid., 113.

³⁸Ibid., 121.

³⁹Ibid., 125.

⁴⁰Harris and Moran, 316.

⁴¹Drucker, 35.

⁴²Thomas J. Peters and Nancy K. Austin, A Passion for Excellence, (New York: Warner Books, 1986): 143.

⁴³O-Young Lee, Smaller is Better, (Tokyo and New York: Kodansha International, 1984): 115.

⁴⁴Yasuo Kuroki, WALKMAN, Kaku Tatakaeri, (Tokyo: Chikuma Shobo, 1990): 50.

⁴⁵Drucker, 57.

⁴⁶Noboru Makino, Decline and Prosperity: Corporate Innovation in Japan, (Tokyo and New York: Kodansha International, 1987): 44.

⁴⁷Ibid.

⁴⁸Jeremy Main, "Manufacturing the Right Way." Fortune (21 May 1990): 60.

⁴⁹Robert D. Mcilhattan, "How Cost Management Systems Can Support the JIT Philosophy--Traditional Measures Common in Many Cost Accounting Systems May Encourage Actions to the Spirit of JIT." Management Accounting (September 1987): 21.

⁵⁰Makino, 52.

⁵¹Ibid., 27.

⁵²Ibid.

⁵³Gary Jacobson and John Hillkirk, Xerox-American Samurai, (New York: Macmillan Publishing Company, 1986): 26.

⁵⁴Masayoshi Takao, Toyo No Yochigaku, (Tokyo: Saine Shuppan, 1986): 236.

⁵⁵Grover Starling, The Changing Environment of Business--A Manager's Approach, 3rd Ed., (Boston: Kent Publishing Company, 1988): 352.

⁵⁶Makino, 33.

⁵⁷Ibid., 35.

⁵⁸Ibid.

⁵⁹Issey Miyake, East Meets West, (Tokyo: Heibonsha, 1985):
55.

⁶⁰Makino, 56.

⁶¹Robert L. Shook, Honda: An American Success, (New York: Prentice-Hall Press, 1988): 75.

⁶²Ibid., 103.

⁶³Ibid., 104.

⁶⁴Ibid., 135.

⁶⁵Makino, 170.

⁶⁶Ibid.

⁶⁷Thomas J. Peters, Thriving on Chaos, (New York: Alfred A. Knopf, 1988): 192-279.

⁶⁸Drucker, 29.

⁶⁹Michel Robert and Alan Weiss, The Innovation Formula, (Cambridge, Massachusetts: Ballinger Publishing Company, 1988): 15-27.

⁷⁰Robert and Weiss, 17.

⁷¹Ibid., 19.

⁷²Ibid., 20.

⁷³Ibid., 21.

⁷⁴Thomas J. Peters, Thriving on Chaos: Handbook for a Management Revolution, (New York: Alfred A. Knopf, 1987): 21.

⁷⁵Wurman, 32.

⁷⁶Ibid., 42.

⁷⁷Ibid., 36.

⁷⁸Ibid., 297.

⁷⁹Ibid., 298.

⁸⁰Ibid., 39.

⁸¹Ibid., 192.

⁸²Peters, 31.

⁸³Wurman, 81.

⁸⁴Ibid., 301.

⁸⁵Robert and Weiss, 107.

⁸⁶Peters, 29.

⁸⁷Robert and Weiss, 116.

⁸⁸Ibid., 114.

⁸⁹Peters, 144.

⁹⁰Peters and Austin, 157.

⁹¹Ibid., 159.

⁹²Ibid., 162.

⁹³Ibid., 165.

⁹⁴Ibid.

⁹⁵Ibid., 166.

⁹⁶Kenichi Ohmae, Beyond National Borders: Reflections on Japan and the World, (Tokyo: Kodansha International, 1988): 100.

⁹⁷Ibid.

⁹⁸Ibid., 98.

⁹⁹Ibid., 33.

¹⁰⁰Alexander K. Young, The Sogo Shosha, (Tokyo, Japan: Charles E. Tuttle Company, Inc., 1982): 62.

¹⁰¹Donald A. Ball and Wendell H. McCulloch, Jr., International Business: Introduction and Essentials, 3rd Ed., (Homewood, Ill.: Richard D. Irwin, 1988): 28.

¹⁰²Shook, 200.

Bibliography

- Ball, Donald A., and Wendell H. McCulloch, Jr. International Business: Introduction and Essentials, 3rd Ed. Homewood, Ill.: Richard D. Irwin, 1988.
- Berry, Vollman and Whybark. Manufacturing Planning and Control Systems, 2nd Ed. Homewood, Ill.: Richard D. Irwin, 1988.
- Brand, Stewart. The Media Lab: Inventing the Future at MIT. New York: Viking Penguin, 1987.
- Burstein, Daniel. Yen!: Japan's New Financial Empire and Its Threat to America. New York: Simon and Schuster, 1988.
- Clifford, Donald K. Jr., and Richard E. Cavanagh. The Winning Performance, 3rd Ed. New York: Bantam Books, 1988.
- Dertouzos, Michael L., et al. Made in America: Regaining the Productive Edge. Cambridge, Mass.: The MIT Press, 1989.
- Diebold, John. The Innovators: The Discoveries, Inventions, and Breakthrough of Our Time. New York: E.P. Dutton, 1990.
- Drucker, Peter F. Innovation and Entrepreneurship, Perennial Library Ed. New York: Harper & Row, 1986.
- Harris, Philip R., and Robert T. Moran. Managing Cultural Differences, 2nd Ed. Houston, Texas: Gulf Publishing Company, 1987.
- Jacobson, Gary, and John Hillkirk. Xerox: American Samurai. New York: Macmillan Publishing Company, 1986.
- Keegan, Warren J. Global Marketing Management, 4th Ed. Englewood Cliffs, NJ: Prentice-Hall, 1989.
- Koren, Leonard. 283 Useful Ideas from Japan. San Francisco: Chronicle Books, 1988.
- Kotkin, Joel, and Yoriko Kishimoto. The Third Century: America's Resurgence in the Asian Era. New York: Crown Publishers, 1988.
- Kuroki, Yasuo. WALKMAN, Kaku Tatakaeri (WALKMAN's Challenge). Tokyo: Chikuma Shobo, 1990.

- Lee, O-Young. Smaller Is Better, trans. Robert N. Huey. Tokyo and New York: Kodansha International, 1984.
- Main, Jeremy. "Manufacturing the Right Way." Fortune (May 21, 1990): 54-64.
- Makino, Noboru. Decline and Prosperity: Corporate Innovation in Japan. Tokyo and New York: Kodansha International, 1987. (First published in Japanese in 1985 under the title Hanei to Suibo.)
- Miyake, Issey., ed. East Meets West. Tokyo: Heibonsha, 1985.
- Monden, Yasuhiro. Toyota Production System: Practical Approach to Production Management. Norcross, Georgia: International Engineering and Management Press, 1983.
- Ohmae, Kenichi. Beyond National Borders: Reflections on Japan and the World. Tokyo: Kodansha International, 1988.
- _____. Nihon Kigyo Ikinokori Senryaku (Strategies for Japanese Companies to Survive). Tokyo: President, 1987.
- _____. The Mind of the Strategist. London: Penguin books, 1983.
- Ohno, Taiichi. Toyota Seisan Hoshiki (Toyota Production System). Tokyo: Diamond, 1978.
- Peters, Thomas J. Thriving on Chaos: Handbook for a Management Revolution. New York: Alfred A. Knopf, 1987.
- _____, and Nancy K. Austin. A Passion for Excellence. New York: Warner Books, 1986.
- Porter, Michael E. Competitive Advantage. New York: The Free Press, 1985.
- _____. Competitive Strategy. New York: The Free Press, 1980.
- Robert, Michel, and Alan Weiss. The Innovation Formula. Cambridge, Mass.: Ballinger Publishing, 1988.
- Rogers, Everett M. Diffusion of Innovations, 3rd Ed. New York: The Free Press, 1983.
- Shook, Robert L. Honda: An American Success Story. New York: Prentice-Hall, 1988.

- Tatsuno, Sheridan M. Created in Japan: From Imitators to World-Class Innovators. New York: Harper & Row, 1990.
- The Best of Japan. Tokyo: Kodansha, 1987.
- Waitley, Denis E., and Robert B. Tucker. Winning the Innovation Game. New York: The Berkley Publishing Group, 1989.
- Waterman, Robert H. Jr. Choyuryo Kigyo ha Kakushin-suru (The Renewal Factor), translated under the supervision of Akihiro Okumura. Tokyo: Kodansha, 1989.
- Watsuji, Tetsuro. Climate and Culture: A Philosophical Study (Fudo), trans. Geoffrey Bownas. Tokyo: The Hokuseido Press, 1961.
- Wurman, Richard S. Information Anxiety. New York: Doubleday, 1989.