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Urakami, Kiyoshi

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# **New IT Business Models in the “Asian Age”**

## **- Multilateral Collaboration and Business Innovation -**

Kiyoshi Urakami

### **Abstract**

China, after its implementation of foreign direct investment policy in December 1978, has continued to receive investments from international companies, and this has been one of the primary driving engines behind the Asian business development. Electronics products originating either from U.S.A. or Europe have experienced tremendous industry shifts to the Asian countries such as Japan, Korea, Taiwan and China.

This paper examines, from the general perspective, the recent development of the Asian electronics industry and business models focusing on the personal computers and mobile communication products. Based on the analysis of the basic characteristics of the business models developed in Asia, future strategic directions for Japanese firms in the “Asian Age” will be discussed.

Due to the interconnected global environment, the competition field has increasingly become leveled out. In the light of the global nature of the playing field, a multilateral collaboration approach will be emphasized and a complementary relationship will be sought.

### **INTRODUCTION**

The electronics industry has seen a tremendous industry shift to the Asian region during the past three decades. Many electronics products found a passage to Asia with a production site and technology transfer. Global outsourcing strategies followed by American firms accelerated this trend. Significant industrial accumulation has been accomplished in Asia. China, particularly after 1978, received a wave of foreign direct investment and the country has been on a continuous upgrading path in economic power and social structure. The Asian region is increasing its role in the world electronics value chains.

This paper is designed, from a general perspective, to discuss the development of the electronics industry in Asia and the business approaches and strategies being followed by Asian firms. Based on this analysis, future strategic directions for Japanese firms in the “Asian Age” will be discussed.

## **INNOVATION ENVIRONMENT SEEN FROM U.S.A.**

Before discussing the subject of the electronics industry in Asia, it is perhaps pertinent to begin with the briefest introduction of the National Innovation Initiative project in the U.S.A. The national project was launched in October 2003 under the Council on Competitiveness to counteract to the changing environment that surrounds America's global innovation leadership. The project was co-chaired by Mr. Samuel Palmisano, Chairman and CEO of IBM Corporation, and Dr. Wayne Clough, President of the Georgia Institute of Technology and brought over several hundred leaders from industry, academia and government. The final report was originally released in December 2004 after the immense work, and the second edition was published in the summer of 2005 (COC 2005). The report is a brilliant summary of recommendations on the national innovation agenda in the U.S.A. grouped under three major categories for action: talent, investment and infrastructure.

The unprecedented challenges have triggered to form the National Innovation Initiative project (COC 2005, p.8). It is important to understand major concerns shared by the American intellectuals. It appears that there are basically two types of key challenges (COC 2005, p.8) that may stem from the simple fact that the world is getting more global. The first challenge comes from global competition. The world is increasingly getting more interconnected and competitive. The second challenge is centered on the nature of innovation itself. Due to the interconnected global environment, the competition ground has increasingly become leveled out. The Internet and personal computers have enabled people to have ubiquitous communications, which also generates a new environment for innovation. 'Mass collaboration on the Internet is shaking up business' (Hof 2005, p.53).

## **INTERNATIONAL INVESTMENT AS A DRIVING FORCE BEHIND ASIA SHIFTS**

The electronics business has recognized a historic industry shift to Asia during the past 30 years. As Vernon (1966, pp.190 – 207) discussed in the mid 1960's, many electronics products with Western origins have experienced a production site transfer to the Asian countries such as Japan, South Korea, Taiwan and China. Televisions, PC's and semiconductors have U.S. origins. GSM (Global System for Mobile communications) mobile phones have a business start in Europe. The industrial passage to Asia was initially triggered by the management desire to find a competitive advantage that enables business to survive against its competition. When the trade is no longer sustainable, a management decision on the foreign direct investments is made. It is

almost a common knowledge that the Asian region has a business start as a factory place. Western enterprises moved their production facilities from their head locations to Asia and many Asian firms acquired technological capability through licensing, joint ventures, original equipment manufacturing (hereinafter called OEM) and subcontracting.

The process of technological capability acquisition has also been a learning process as well. Asian firms have obtained basic knowledge on marketing and sales, management control and human resource management. Thus international mindset and business management styles have been formed. It is critically important to note that each location has seen a different industrial accumulation. Different ways of coping with the different situations have generated the different types of business models in Asia, which we will discuss later.

In addition to Japan, three locations have shown a distinguished industrial development in Asia: South Korea, Taiwan and China. Perhaps the rise of China has been a decisive factor in the development of the Asian electronics business. The electronics industry in China consists of several sub-segments such as consumer & home appliance products, computer & related products, telecommunication products, electronic components, materials and software products. It is important to note that China's "Reform and Opening-up" policy initiated towards the end of 1978 triggered an inflow of FDI (Foreign Direct Investment), and the remarkable business shifts have been accomplished. The first joint venture company was registered in 1981 – Hitachi, Ltd.'s color television factory in Fuzhou, and this was followed by a wave of production shifts by multinationals in the world. The formation of the electronics industry in China has been driven by the Government's FDI policy. It is also worthy of mentioning that the China local industries were also born and have grown up during this process. A number of private enterprises have emerged in the course of the local industry formation in China.

## **ELECTRONICS INDUSTRY IN THE "ASIAN AGE"**

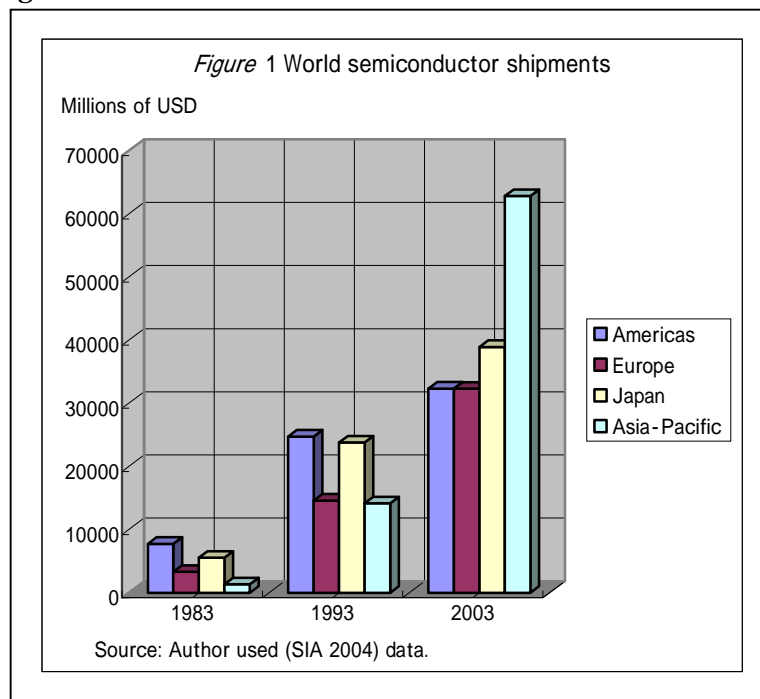
### **Semiconductor industry**

The semiconductor industry began in 1947 with the invention of the transistor at the Bell Laboratories. The transistor is clearly one of the most creative and the greatest inventions that the U.S.A. has ever made. The semiconductor industry that was originated from America found an industrial passage to Europe and Japan. It was Sony Corporation in Japan who made a significant and outstanding contribution to the birth of the semiconductor industry by struggling for years to develop a new transistor that

can be used for radios. The driving forces behind the continuous growth of the semiconductor industry are clearly coming from the intersection of semiconductors and end-use products. The world semiconductor industry has continued to grow by finding out new applications such as televisions, calculators, personal computers and mobile phones.

In the 1980's, the semiconductors were called the "Rice for the Industry" in Japan. We can recognize how the world electronics industry has been shaped geographically by looking at how the semiconductor products are being consumed in each part of the world. Figure 1 illustrates how various parts of the world have consumed the semiconductors. Japan caught up with the U.S.A. in the 1980's, and Asia-Pacific has clearly become the number one region now. Looking at the world semiconductor shipments figures in 2004 (Table 1), the Asia-Pacific region consumed almost USD90 billion of semiconductors and occupied 42 per cent of the world shipment. China is estimated to be in the third position in the world semiconductor consumption in 2004 after Japan and the U.S.A. It is forecasted that China will become the world's second largest market in 2005. China has clearly become the world's factory now.

The world electronics industry has experienced a production shift to the Asia-Pacific region, and the level of the industrial accumulation has greatly been enhanced in Asia. In view of the semiconductor market structure where the Asian region is increasing its critical role in the global value chains, we can recognize the importance of the "Asian Age" in the global electronics business.



*Table 1* World semiconductor shipments

(Millions of USD)

	2002	2003	2004	2005
Americas	31,275	32,331	39,064	38,528
Europe	27,788	32,310	39,424	41,461
Japan	30,494	38,942	45,757	47,261
Asia-Pacific	51,156	62,843	88,781	99,284
Total	140,713	166,426	213,026	226,534
China	20,000	26,000	37,000	46,000

Source: 2002-2004 statistics: SIA (2004).

2005 forecast: WSTSJ (2005).

China data: Author.

### **Personal computers industry**

The history of personal computers began with Apple Computer where Steve Jobs and his friend started the business. IBM Corporation (hereinafter called IBM) is responsible for popularizing the term “PC” when they introduced a new machine with a new operating system in 1981. Thus the PC industry was originated from the U.S.A.

The world PC shipments were reported to be about 190 million sets in 2004 (Gartner 2005). The U.S. occupied almost one third of the world PC market, followed by China and Japan. China’s PC production in 2004 is estimated to account for almost 30 per cent of the world production. In this way, we can recognize the basic structure of the PC business – America as a market place and China as a factory.

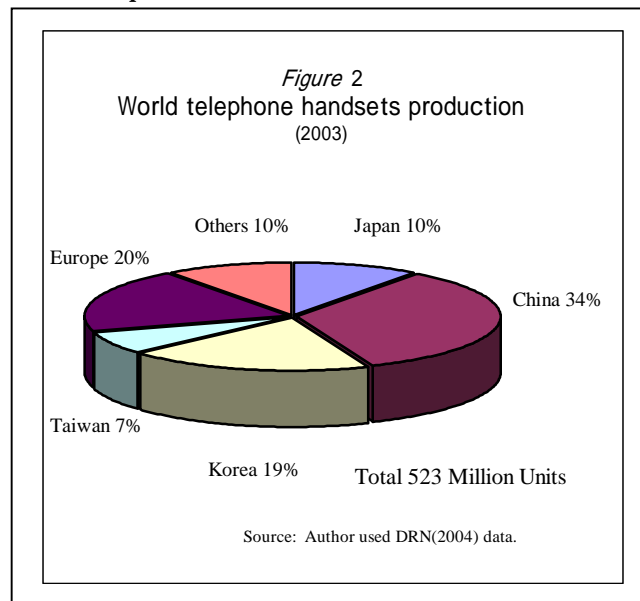
Taiwanese PC manufacturers have continuously shifted their operations to the Chinese mainland. It is reported that the Taiwanese note PC output covers over 70 per cent of the world production (Nihon Keizai Shimbun 2004, p.8).

The enormous production shifts and a higher degree of industrial accumulation have created global value chains in the entire PC industry. The U.S. industry has played a critical role as an innovation power by continuously driving both CPU’s (Central Processing Units) and operating systems. It is important to recognize the global industrial linkage between the U.S.A. and the Asian region.

### **Mobile phone industry**

The mobile phone business has a start in Europe. GSM service platform has made a

profound contribution to the growth of the world mobile communications. The Asian region has seen a dramatic production site transfer and become a world production center. European companies such as Nokia Corp. and Siemens AG have moved the production facilities to China. As shown in Figure 2, the Asian output of the mobile phones covers 70 per cent of the total production in 2003, and China roughly accounts for 50 per cent of the Asian production (DRN 2004).

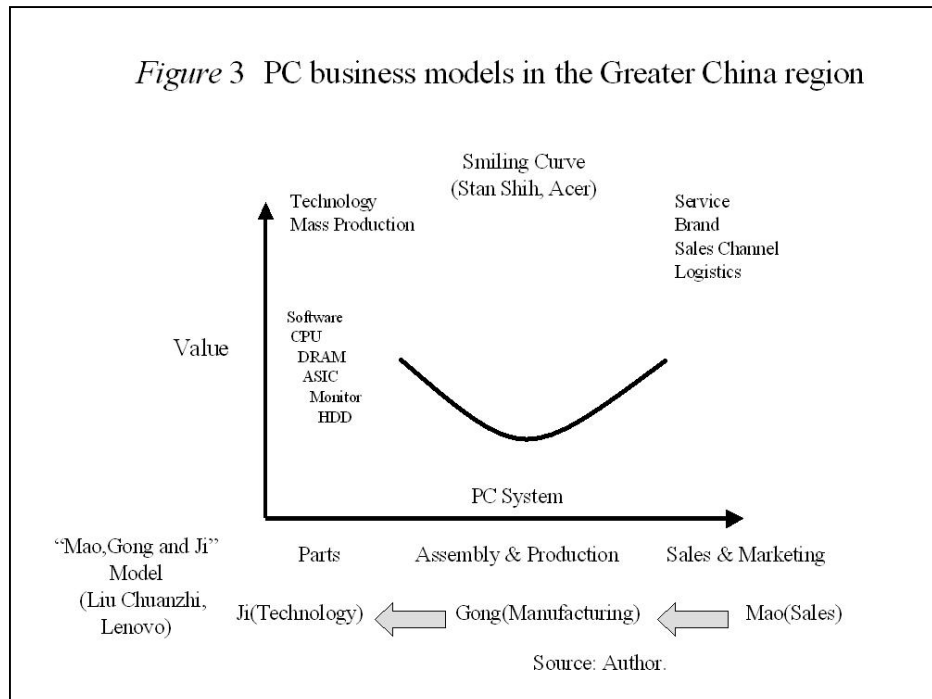


## IT BUSINESS MODELS IN THE GREATER CHINA REGION

### PC business models

#### (1) OEM business model in Taiwan

Turning to the subject of business approaches in Asia, PC business models will be examined. Figure 3 describes two major business models in the Greater China region. Greater China is a regional concept that includes People's Republic of China, Hong Kong Special Administrative Region and Taiwan. The first model at issue is the Taiwanese model that is often called OEM model. Stan Shih, the founder of Acer Inc., created "Smiling Curve" (Shih 2000) as shown in Figure 3. Taiwanese PC firms entered the business from assembly and production processes. They were quick to acquire technological capability. Most business observers today agree that Taiwan's PC industry, which is based on OEM business model, has firmly established itself as a world-class player. In recent years, Taiwanese firms have made ambitious efforts to enhance their business operations both in the components and brand business areas so that they can upgrade the industrial structure that can increase the business value.



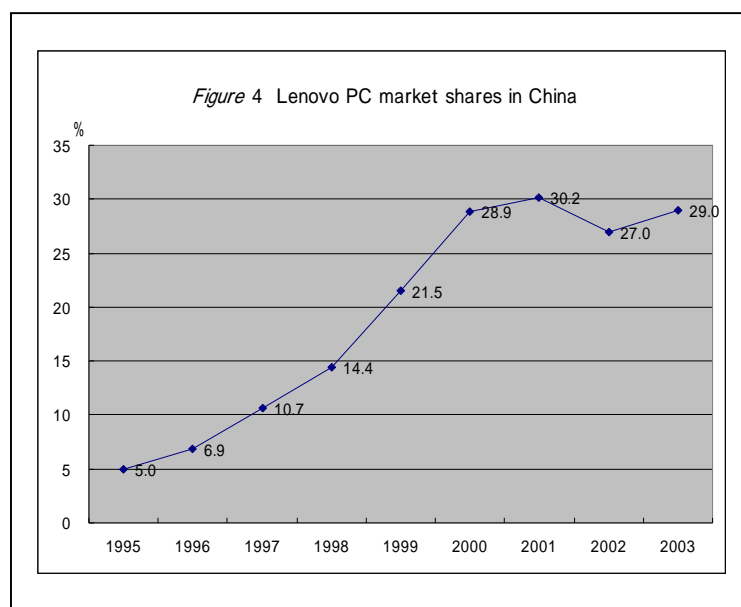
## (2) Lenovo's “Mao (Sales), Gong (Manufacturing) and Ji (Technology)” Method

Liu Chuanzhi who founded Lenovo Group Ltd. (hereinafter called Lenovo) took what he calls “Mao, Gong and Ji” method when he and his colleagues initiated the PC business in the mid-eighties (Urakami 2004b, p.4 – 9). Liu Chuanzhi’s business philosophy and vision are described in the interview article in Business Week (SAP 2002). Due to the insufficient capital money, Liu and his colleagues had to start with the sales agent activity for U.S. PC firms. “Mao”(Sales) phase was followed by “Gong”(Manufacturing), and after these processes, “Ji”(Technology) was sought. One can also find many other companies in China who took the same approach. Liu Chuanzhi who used the sales driven method was lucky enough to come across with Yang Yuanqing who joined the company in 1989.

Yang introduced the divisional system into Lenovo, which was evolutionary at that time. He also built up a management mechanism where “Mao”, “Gong” and “Ji” phases are interconnected (Qin 2002). It was Yang who initiated the marketing and sales oriented business at Lenovo. Market segmentation approach was emphasized, and serious efforts to build direct sales have been made. Lenovo started the direct sales initiative in 1998 by launching dedicated sales shops. Lenovo has dramatically increased their market shares in China. The market shares on a unit basis during the past few years stayed around 30 per cent (Figure 4). According to the recent newspaper article (Ramstad and McWilliams 2005, p.1, p. A19), Lenovo’s market share has been



declining and Dell Computer has been challenging the China giant. Nevertheless Lenovo is a preeminent Chinese company and their primary strength is clearly its marketing driven management. It is impressive that Yang Yuanqing appeared in the business stage in the late 1980's, took modern approaches to develop China's PC business throughout the 1990's, and laid the groundwork.



Source: 1995 -2001 figures are based on JMA and Searchina (2002) and 2002 – 2003 figures are author's estimates.

### (3) Lenovo's new adventure

In December 2004, Lenovo and IBM jointly announced to start a joint venture company where Lenovo has 81 per cent of the capital. It was reported that Lenovo spends about USD 1.8 billion for this acquisition, which means that this case is so far the biggest acquisition where Chinese enterprise has been involved. The joint venture formation process was completed in the second quarter of 2005. Yang Yuanqing moved to New York to take a CEO's position in the new company. Lenovo and IBM will hopefully find pathways to new business models in the personal computer industry. Lenovo in its brief history has continuously searched for the business excellence based on their market and customer oriented management. How far Lenovo Group will enhance their new business with IBM can perhaps be a touchstone. A possible breakthrough can be realized in Liu's "Mao, Gong and Ji" method in the future if Lenovo can successfully develop the joint operations with IBM.

## **Mobile phone business in China**

### **(1) Recent business situation**

Foreign participants in the mobile phones business moved their production facilities of the handsets from their mother countries to China, and Japanese and Korean firms who try to reduce manufacturing costs followed these companies. The initial emphasis was to make export activity more competitive, and therefore China was used as a factory. Towards the end of the 1990's, the international players started a domestic marketing and sales initiative and the foreign suppliers acquired extremely high market shares in China in the initial stages. The China local firms entered the mobile phones business from around 2000, which has made the entire business environment fiercely competitive. The Chinese companies started the business from OEM product sales where both Korean and Taiwanese companies were the primary sources of the products. China local firms have increased market shares based on the marketing and sales of the imported products. In parallel with the sales activity, Chinese suppliers built production facilities and started their own production.

### **(2) Roles of independent design houses**

The Chinese mobile phones companies, from the “Mao, Gong and Ji” model perspective, are now staying in both “Mao”(Sales) and “Gong”(Manufacturing) stages. Frequent model changes occur in many different models, and it is, therefore, hard for the Chinese suppliers to catch up with R & D activities. Under the sales and manufacturing driven environment, independent design houses have increased their presence in the value chains of mobile phones in China. These design houses propose design plans and basic platforms to the handsets companies who purchase design platforms and plans. In some cases, design houses are equipped with an EMS (Electronic Manufacturing Service) capability to produce prototype products. China's design houses in the mobile phones are acting as “Ji”(Technology) department on an outsourcing basis.

Chinese design houses such as CEC Wireless Inc., SIM Technology Group Ltd. and some other companies have developed global activities. CEC Wireless, which was formed in Beijing in 1999, is an independent design house for wireless modules and terminals. In the same year, Cellon International was founded in Silicon Valley, California as its world headquarters. In 2001, CEC Wireless took over the R&D center of Philips mobile communications in France. Thus CEC Wireless has enhanced international resources. SIM Technology Group formed SIMCom Ltd. in Shanghai in 2002 and the Shanghai based organization has rapidly developed design capability

based on partnership arrangements with Western firms.

### **RECENT TRENDS IN DESIGN SHIFTS TO ASIA**

The recent development of these Chinese design houses indicate that some of the Chinese firms can initiate international activities right from their birth, which is much interesting since Chinese private enterprises, in general, reportedly have a hard time finding out pathways to the international market (HKTDC 2005). It is an important task for every one of us to know how some of the design firms in China have been equipped with the global business capability.

International communications have appeared to enhance the level of business collaboration. Business Week had a special report on “Outsourcing Innovation” (Engardio and Einhorn 2005). Nowadays the U.S. electronics industry has started subcontracting certain R & D activities, particularly design works to many Asian firms in addition to the conventional manufacturing outsourcing.

The U.S. semiconductor industry has experienced a farming out of manufacturing process to Asia where Silicon foundry business is growing at an extremely high speed, and the recent chip design outsourcing followed this trend (Ernst 2005). It is quite impressive that the American semiconductor industry is moving fast to a chip design outsourcing. One of the primary reasons for the increased level of the outsourcing activity is clearly a cost cutting. Many companies are struggling with the pressure of rising design costs. Secondly, the Asian design environment has now enabled to provide with many capable chip designers who can use the most updated methodologies and design tools. The capable Asian designers and firms have been presenting multi-national corporations a faster and more efficient track to the global market. On top of these, as previously discussed, China semiconductor markets are getting more attractive to the semiconductor players so that the U.S. semiconductor companies have started the local design initiative.

Enormous numbers of design works now move to Asia. It is getting much common to outsource design work in the U.S. electronics business segment. It is therefore with even some fresh astonishment to see Apple Computer’s message on the recent hit product, iPod, - ‘Designed by Apple in California Assembled in China’. Some companies like Apple Computer sticks to the knitting.

### **BUSINESS DIRECTIONS FOR JAPANESE FIRMS IN THE “ASIAN AGE”**

#### **Complementarity in business models**

As discussed, different types of business models have been built up in different

countries in Asia. Table 2 summarizes major characteristics of each business model in the Greater China region and Japan. The experience of Japan and other Asian countries or regions demonstrates the complementarities between technological innovation capability and the state of manufacturing, sales and the overall management structure. It is impressive that Japanese history of the electronics industry exhibits outstanding R&D capability.

*Table 2* Greater China region and Japan  
 — Business models —

	Strengths	Weaknesses
Japan	R&D, Manufacturing (High tech)	Japanese people orientation
Taiwan	OEM business, Management in China	R&D, Brand business
Hong Kong	General trading, Marketing & service	R&D, High costs
China	Manufacturing(Low tech), Sales in domestic market	R&D, management, Human resources

Source: Author.

Taiwan has become the number one producer of personal computers and the OEM manufacturing has clearly become a first-class business model. Taiwanese firms are now one of the most reliable suppliers in the PC business. They are also extremely talented in business management in the Chinese mainland since they find China's business climate in the mainland quite similar to that in Taiwan and they can therefore take a natural managerial behavior. When it comes to the weak area, even top Taiwanese management officials admit that they badly need more basic technological capability and that developing partnerships with Japanese companies can find a great value in Taiwan's business environment.

China's strengths at this stage are perhaps centered on manufacturing of the low and mid end electronics products. Particularly the consumer electronics industry has made a remarkable progress in production capability. As discussed before, many Chinese electronics companies started their business from sales of imported products, and it is natural for them to initiate a strong marketing and sales orientation particularly in the domestic China markets. As for some of the weaknesses, Chinese firms have to go

through many challenging environments such as technology, human resource, and management development.

Japan has established herself as a world-class technology and manufacturing leader. It is almost a common understanding among the Asian electronics industry participants that the Japanese electronics companies have built unparalleled technology and manufacturing power. In regards to the weaknesses, the awkward and irresistible orientation towards Japanese staff is an obvious disadvantage in the Japanese management structure. How far it is possible to address the issue and generate a change in human resource management can perhaps be the biggest strategic task for Japanese firms.

Each business model has advantages and disadvantages. Those countries or regions have accumulated industrial experience and knowledge in somewhat different ways, and therefore each location unit can demonstrate innovative capability in a unique manner. It is rather important to pursue a complementary relationship so that one can play a “Win, Win” game.

### **Multilateral collaboration in the Greater China region**

Japan’s foreign direct investments have already seen many multilateral activities seeking for a realistic complementarity. The number of joint venture operations between Japanese and Taiwanese companies in the Chinese mainland has increased. A Japanese research paper in one of the research institutes’ report examines the effectiveness of Japanese joint venture operations with Taiwanese firms based on the 249 cases of the joint venture operations in China (Ito 2004). At this stage, it is fair to say that Taiwan side tends to use Japanese technologies while Japanese companies are dependent on Taiwanese management capability in China.

Looking at the South China business, both Hong Kong SAR (Special Administrative Region) and Canton Province governments have continued to place a strategic emphasis on the Pearl River Delta initiative where the consignment processing trade still occupies a core business area. Many Hong Kong manufacturers moved factories to Canton Province and laid a fundamental groundwork for the existing industry structure, which fuels dynamic economic growth in the Pearl River Delta Economic Zone, one of the leading economic regions of China. Nowadays many international businesses rely on the massive business infrastructure that has been jointly built by Hong Kong and Canton Province. Small and medium sized Japanese companies are allying with Hong Kong firms who use the consignment processing firms in the South China region.

The study team visited Institute of Foreign Economy, National Development and

Reform Commission in Beijing towards the end of 2004 and exchanged views and opinions on foreign direct investments in China. (The author visited the above institute on 21 December 2004 together with representatives from Japan-China Economic Association.) It was learnt that China government continuously intends to receive a technological support from Japanese firms. The importance of the complementarity between Japan's R&D capability and China's manufacturing and sales capability was emphasized, and the following Nippon Steel case was cited as one of the ideal cases of successful collaborations.

Nippon Steel Corporation and Baoshan Iron & Steel Co., Ltd. established a joint venture company (NSC 2003). The joint venture aims to meet demands for high-grade automotive sheet steels that are expected to grow in China. Baoshan uses Nippon Steel's technology and Nippon Steel makes the best use of Baoshan's manufacturing and sales capabilities. Similar approaches are much expected in the electronics industry segment as well.

From a different perspective, "unutilized" technologies in Japan, if combined with OEM power in Taiwan, can give rise to a possible new product in the near future since the Japanese R & D environment somehow generates many "unutilized" technologies. Technology developments receive a challenge in the business planning process. Many items cannot go into a real business either for cost reasons or product strategy reasons. These technologies can easily become a sleeping intellectual property. How far it is possible to convert these "unutilized" technologies into a venture under the Japanese circumstances is an extremely important task. It has often been pointed out that those "unutilized" technologies can be revitalized by some other Asian firms such as Taiwanese. It is worthwhile to look at such issues from a possible multilateral collaboration perspective.

### **Asian talents and Asia orientation**

As previously discussed, the major assets and capability demonstrated in the Japanese business models are (1) strength in R & D, and; (2) preeminent world-class manufacturing. The weaker side of the Japanese business models remains in (1) management styles where the decision-making process lacks speed, and (2) home-region oriented approach. Japanese business models are basically advanced markets oriented, and therefore it has not been easy for Japanese firms to face with the Asian markets.

To some extent, it is also a challenge for any firms with high technology orientation to face with the Asian markets where an irresistible tendency towards low-end business is still a dominant factor. To address low-end business in the high technology industry

such as the electronics industry raises a challenging question: a priority issue. The use of high-end technology needs to be fueled by a large amount of sustained investment, which in turn requires higher profits. Knowing that a serious consideration on pricing is the principal factor in the face of fierce competition, Asia, in general, has not been listed in the priority table in the past.

The Asian businesses have started attracting the enthusiastic attention of the world with the rise of China, and the key for a successful business highly depends on the understandings of the Asian markets and people. It appears that there have been marked differences between basic approaches taken by American firms and Japanese firms. American companies, when they set up their business operations in Asia, often study the local environment very carefully since Asia is a “Far East” region with a long distance and wide cultural differences. U.S. companies have in fact spent much time to develop organizational structures and marketing initiatives. They also attach the primary importance to empower local people to manage local businesses. It is much important to note that the foreign direct investments in Asia historically have formed and fueled the global human resource market where international companies can hire qualified engineers and management staff.

Japanese companies, in contrast with U.S. firms, often send many expatriates from their mother division to the Asian subsidiaries. This is particularly still happening in China since the Chinese mainland is physically close to Japan and Japanese firms tend to mistakenly underestimate the cultural differences that lie between China and Japan.

One has to reconsider how to make the better use of the Asian talents to facilitate the Asia oriented business. Key questions here are (1) How far it is possible for Japan’s electronics industry to adjust their mindset, (2) How the “Home and advanced region orientation” can be altered and (3) How the local capability can be equipped. In order to build the Asia oriented business, it is essential to make the best use of the Asian talents, and this can clearly be one of the most important strategic tasks of the Japanese electronics firms.

#### **CONCLUDING REMARKS: POSSIBILITIES FOT THE FUTURE**

In April 2004, United Nation Economic and Social Commission for Asia and the Pacific (UNESCAP) organized its first business forum in history in Shanghai. The author participated as one of the panelists to discuss business partnerships with Chinese enterprises (Urakami 2004a). The organization of “Asia-Pacific Business Forum” clearly indicates that Asia has emerged as an important region in the business world as well. The forum was organized ‘to foster region-wide business networking,

partnerships and dialogues among the business community (UNESCAP 2004).’ The experience of UNESCAP business forum and other international sessions that have recently been held in Asia demonstrates the critical importance of the cross-regional communications and cooperation.

As we enter the global era where the world is deeply interconnected, most of the multinational companies are fully aware of the significance of the Asian businesses. In view of the global nature of the electronics industry and growing Internet technologies, one has to seek for efficient ways to further develop collaboration in partnership with Asian firms and talents. We need a platform for technical and business communications so that the cross-regional collaboration can be enhanced. Pursuit of line of this thought may lead us to see a new business that has an Asian origination in the near future.

(September 2005)



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