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Technology Development with Chinese Characteristics

Philip Sohmen

I. Introduction

1.1 What Asian Model?

The rapid post-war growth in many of the East Asian economies has often been viewed as the 'East Asian Miracle'¹, a single homogeneous phenomenon encompassing all the East Asian countries. Growth was achieved through the 'Asian model', a virtuous circle of investment, education, wise government influence and a beneficial external environment. However, closer inspection reveals that, while sharing some similarities, the East Asian countries followed individual and divergent growth paths. Differences can be seen between Japan and the earlier developing North East Asian 'tiger economies' and the later developing South East Asian countries, but there was substantial differentiation even within the tigers in terms of the pre-existing endowment base from which growth occurred, the role played by the state, the extent and method of technology acquisition and the type of industrial structure which resulted. Looking further afield, we find India with its unsuccessful efforts to pursue industrialization through import-substitution and the extreme case of China's central planning regime under Mao. Rather than a single model of development, the experiences of Asia reflect a diverse range of 'models' and growth paths.

Following China's reform and opening in the 1980s, its economy has grown at a remarkable rate which, given the state the country lapsed into during the Cultural Revolution, might well be considered the latest phase of the 'East Asian Miracle'. Where, if at all, does China's post-reform experience fit into the existing spectrum of East Asian growth models? In what ways

has China's path been similar to other Asian countries and in which areas does it present a fundamentally different model of development?

The basis from which China started on its rapid growth path was clearly different from that of the other East Asian countries. Emerging from three decades of Maoist rule, it did not have the institutional framework that the colonial legacy bequeathed to Hong Kong and Singapore, face the same external threats as Taiwan and Korea², nor benefit from the strong US support and 'peace dividend' of Japan.³ While the economy underwent extensive reform, and began to be opened up to world trade, the central planning system remained in effect, and its legacy continues to hang over China today. The legal system was vague and arbitrary, while property rights were undefined and unprotected.⁴ China did however have the benefit of a huge population. This provided for a large talent pool and the development of a considerable engineering skill base. In addition it meant that China had a potentially sizeable domestic market.

Studies have already drawn attention to the rural locus of growth in the 1980s, with the rapid growth of township and village enterprises (TVEs).⁵ Oi writes that "at the core of China's 'economic miracle' is a massive upsurge of rural industrialization. The decade of the

² See Meredith Jung-En Woo Cummings 'National security and the rise of the developmental state in South Korea and Taiwan' in Henry Rowen (1998) ed., *Behind East Asian Growth*, London; New York: Routledge, 319-341.

³ See Daniel Okimoto *Japan-American Security Alliance: Prospects for the 21st Century* Asia Pacific Research Center Discussion Paper, Stanford 2000.

⁴ See Stanley Lubman, *Bird in a cage: legal reform in China after Mao* Stanford: Stanford University Press 1999, for an analysis of the problems underlying China's fledgling legal system, and Jean Oi and Andrew Walder, eds *Property Rights and Economic Reform in China* Stanford: Stanford University Press 1999, for a discussion of property rights issues.

⁵ Jean Oi (1999) *Rural China Takes Off* Berkeley: University of California Press gives a detailed analysis of the origins, incentives behind, and mechanisms of rural industrialization. John Wong, Rong Ma, Mu Yang (eds) *China's Rural Entrepreneurs*, Singapore: Times Academic Press, 1995 provides analysis of individual TVE case studies.

¹ World Bank (1993) *The East Asian Miracle* Oxford: Oxford University Press

1980s saw the economy take off in vast areas of the Chinese countryside."⁶ Incentivised by fiscal decentralization, which allowed localities to retain extrabudgetary surpluses, local officials founded and developed numerous collective enterprises in what Oi terms "local state corporatism". By 1988, rural industry produced almost a quarter of total national output. Such rural industrialization had not been planned by the central government and indeed came as a surprise to the political elite in Beijing. Deng Xiao Ping commented in 1993 that "the greatest achievement that was totally out of our expectation is that rural enterprises have developed."⁷ This rural-led growth was fundamentally different from the experiences of other East Asian countries, as well as from other post-Communist countries, and can be considered a unique model of growth.

However, comparatively less attention has been paid to urban-based industrialization that became increasingly important in the 1990s along with private enterprise. While many parts of China's economy remain mired in the problems of central planning, other new areas have grown up rapidly and are even beginning to achieve competitiveness on a global scale. In particular, the emergence of 'high-tech' enterprises and the role they play in the wider economy has received relatively little attention.⁸ This paper seeks to provide insights into this aspect of China's

development in the late 1980s and 1990s through a case study of such high-tech enterprise, the Legend group (*liang xiang ji tuan*). It focuses specifically on two areas – the development of technological capabilities in the Chinese context and the role played by the state – in a comparative perspective, addressing a key issue within development economics: if and how developing countries and firms in these countries can catch up and achieve competitiveness in the context of technologically advanced, rapidly changing global industries.

Founded in the mid-1980s by researchers from the Chinese Academy of Sciences (CAS) Legend began as a computer servicing company and distributor of foreign PCs. After establishing a subsidiary in Hong Kong, Legend began to grow rapidly in the 1990s, and completed a public share listing on the Hong Kong stock exchange in 1994. In 1996 it achieved the dominant market share in China's PC market, overtaking previous leaders IBM, Compaq and HP. By 2000, Legend had achieved almost 30% market share, becoming the largest PC manufacturer in Asia outside of Japan, and had become a showcase for China's 'new economy' with visits by Jiang Zemin and North Korea's Kim Jong-il. Figure 1 below illustrates Legend's rapid growth path.

Figure 1: Statistics on Legend's growth

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Revenue (RMB m)	120	190	400	490	750	1770	3020	4760	6110	7740	12520	17600	20300
Growth		58%	111%	23%	53%	136%	71%	58%	28%	27%	62%	41%	15%
PC Units (1000 sets)				2	8	17	25	42	98	228	463	791	1476
China domestic PC Market Share						6.3%		3.0%	5.5%	6.9%	10.7%	14.4%	27%

Source: State Council Research Report on Legend, 1998

⁶ Oi (1999), *Rural China Takes Off*, 6.

⁷ *Economic Daily* June 13, 1993

⁸ Not all TVEs were rural and low-tech; one of China's most successful technology enterprises, Stone, was officially a TVE, although the township withdrew from management early on. (Lu *China's Leap into the information age*, Oxford: Oxford University Press 2000, 26-27)

1.2 Methodology

One of the assumptions of macroeconomics is the homogeneity of an economy. However, growth in reality is not spread evenly, but takes place in varying degrees and nature across regions. This is most clear in the different growth paths of different countries but is often overlooked when looking at national economies. There is considerable variation by region, locality and at the basic level of the firm. Firms are the locus of growth within an economy, and arguments about macroeconomic issues of growth require a sound understanding of the microeconomic foundations at the firm and industry level. Through analyzing experiences at this level, it is possible to gain a deeper comprehension of the specific incentives and motivations for the actors involved, the barriers and challenges facing them and the means used to overcome these barriers. Dedrick and Kraemer concluded from their study of the development of the computer industry in Asia-Pacific: "How well different countries did was determined by the capabilities of their companies, the portfolio of companies in their computer industries, and the extent to which their governments acted to provide opportunities and remove barriers to domestic participation in the global production network."⁹ In addition, the nature of firm organization is also a crucial factor in the longer-term economic development and success of a nation. The experience of Japan in the 1990s emphasizes how a certain industrial structure may be poorly suited to further post-industrial development. A case study allows for meaningful insights to be drawn into the development process at its source, as well as allowing examination of the interaction between the firm and the wider context it is operating in.

Legend was selected as the subject of this study for a number of reasons. Over the last decade, it has become one of China's

most successful and well-known enterprises. Some firms contribute little to or even inhibit growth, others drive it. An understanding of both is required to achieve an adequate picture of the overall economy. Legend is one of the firms that is leading growth in China, and as such is an exception rather than a representative example, but it is an exception that helps improve understanding of China's recent past as well as providing insight into its future.

As a spin-off of a state research institute, Legend is a state-owned enterprise, although its operation and development were very different to a traditional SOE. It therefore sheds light on the changing role of the state in China's industrial development, providing an interesting comparison with the experience of other Asian countries. In addition, Legend's role as a computer manufacturer adds a further dimension. The computer industry is a large, dynamic global industry in which competition is intense. PC manufacturing is dominated by a relatively small number of large multinational firms, predominantly in the United States. Understanding how Legend has been able to acquire and develop the technological capabilities to compete successfully in this industry against well-established and technologically advanced competitors is a question of considerable importance to China and other developing economies.

While such a case study can give valuable insights, it is important to beware of extrapolating from a single instance to a broad generalization. The aim of this paper is to contribute to understanding of an aspect of China's development path; its conclusions are meant as a step toward the development of a 'model' for China's post-reform growth, rather than as presenting the complete model. Further work at the industry and multi-industry level is required to complete and refine this picture.

⁹ Jason Dedrick and Kenneth Kraemer (1998) *Asia's Computer Challenge*, New York: Oxford University Press, preface vi.

II. The Computer Industry in China

Computers were identified as a key area of technology development in China in the 1955 long-term science and technology development plan. As a result, the Institute for Computing Technology was established within the Chinese Academy of Sciences as the first national computer research centre. The Institute developed China's first computer, based on a Soviet model. During the 1960s other research institutes were established and produced a small number of computers, primarily for scientific and military use, such as the development of China's nuclear capability. In 1973, at the National Electronic Computer conference, the focus on research geared solely toward improving computer processing speeds was switched to a focus on production and functionality.¹⁰ The Ministry of Electronic Industry (MEI) attempted to develop the computer industry toward large-scale production for industry, and initiated a successful venture to produce microcomputers domestically. However, owing to China's isolation and the lack of a developed semiconductor or component industry, China's domestic computer industry was slow to take off. In the 1980s, the MEI began to pursue a new strategy, investing heavily in imported production lines and importing semi-knocked down and completely knocked down kits for assembly by state-owned enterprises administered by the MEI. In 1984, US\$ 50 million was spent producing RMB 500 million of computers.¹¹ Given the difference in import duties on the kits and fully assembled computers, these enterprises were able to generate profits for a short period.

Production and research remained separated, however, with industrial enterprises under the MEI relying on imported kits, while research institutes, which were mostly administered by the

Ministry of Science and Technology or CAS, focused on developing technology independent of production. As a result, a competitive domestic industry combining both technological and production capabilities failed to develop. Demand for PCs was also limited by the lack of comprehensive Chinese systems technology to allow handling of Chinese characters. Many computers that were installed were underutilized, owing to the lack of Chinese language applications. This eventually led to a pile-up of inventory, including over 15,000 PCs, at the end of 1984, tying up over RMB 400 million of capital.¹²

In the mid-1980s, a number of domestic Chinese Firms succeeded in developing such Chinese systems technology. Consequently, the market began to grow more rapidly and domestic enterprises were able to establish themselves in the market and began manufacturing on a larger scale. The leading Chinese manufacturer at the time was Great Wall, a state-owned enterprise established by the MEI. However, domestic firms still lagged their foreign competitors considerably in terms of technology and production capabilities. While labour costs were lower in China, the small scale of production made it difficult for domestic firms to take advantage of economies of scale. Given the extensive smuggling of imported computers, Chinese manufacturers were therefore unable to offer a price advantage over imported machines.¹³

In the early 1990s, following China's rapid growth during the 1980s, the computer market began to take off, expanding over 50% annually on average.¹⁴ Domestic firms began to narrow the gap on their foreign competitors and increase their share of the market. However, there were no new domestic technology advances comparable to the Chinese systems

¹⁰ State Council Research Report on Legend, Ch 5-25

¹¹ Lu Qiwen (2000) *China's Leap into the Information Age*, Oxford: Oxford University Press, 10, 151

¹² Ibid., 66.

¹³ Harvard Business School Interview, Deputy General Manager, Legend Hong Kong, Aug 2000.

¹⁴ State Council Research Report, 2

technology, and foreign firms were able to achieve a dominant market share. In 1996, over two million PCs were sold, and for the first time a domestic enterprise, Legend, overtook the foreign multinationals to become the market leader.

Figure 2: China's PC market share of domestic enterprises

	1986	1990	1991	1992	1993	1994	1995	1996	1997
PC sales (000s)	59.6	85	100	250	450	720	1150	2100	3500
%age Domestic	65	70	42	39	33	44	50	56	67

Source: State Council Research report on Legend based on MEI/MII

Owing to its limited scale prior to the 1980s, the computer industry was never part of the central plan in terms of production, and prices were left free to be determined by the market.¹⁵ However the government did attempt to direct the development of the industry and exercise control by other means. Domestically, entry into the industry was limited by the requirements for manufacturing licenses from the MEI and import approvals for capital goods. Only a handful of MEI administered SOEs, including Great Wall, Lang Chao and Chang Jiang in Shanghai were given licenses out of a total of 132 enterprises in 1985. The industry was highly concentrated, with the four largest enterprises controlling 50% of the market. The government also attempted to promote the domestic computer industry through protection from external competition with high tariff barriers on imports, and restrictions on foreign direct investment; in 1990, 70% of China's PC sales were made by domestic companies.

However, in the early 1990s the government began to loosen these restrictions, leading to increased competition; in 1992, the combined market share of the four largest enterprises had fallen to 16%. First, limits on the number of manufacturing licenses granted were removed. As a result, by

1997 over 200 firms had received manufacturing licenses. In addition, import approvals were abolished, although obtaining hard currency to pay for imports remained an obstacle for domestic enterprises. In 1992, China signed a Memorandum of Understanding on trade with the U.S., in which China agreed to remove quotas and licenses on

various products, as well as significantly cutting tariffs. Following this, average tariffs on computer-related products were cut from 35% to 15%, and import quotas were abolished in 1993. As a result, foreign firms were able to expand their sales dramatically, causing many Chinese firms to stop competing, and the domestic market share in 1993 dropped to 33%.

In the second half of the 1990s, the market continued to grow rapidly, particularly the consumer market, as computers, seen as educational tools, were added to the list of 'must-have' items for Chinese households. This growth was further spurred by the advent and rapid expansion of the Internet.

III. Legend's Development

3.1 Founding and Early Days

In 1980, the Chinese government launched a new policy to improve the links between scientific and technological research and industrial development. This initiative was also aimed at decreasing the fiscal burden on the state of funding central research institutes. A programme was consequently launched in 1985 to encourage such institutes to find independent means of financial support through the commercialization of

¹⁵ The statistics in this section are drawn from the State Council Research Report on Legend, Ch 5, 8-16.

research results.¹⁶ This resulted in a large number of 'spin-off' enterprises being formed by personnel from research institutes.¹⁷ Legend was founded in 1984 by 11 scientists from the Institute of Computing Technology under the Chinese Academy of Sciences (CAS) in Beijing. Called the New Technology Development Company of the CAS Computing Institute (NTC), its initial funding of RMB 200,000 and office space in a small house, were provided by the Institute. Liu Chuanzhi, one of the researchers from the institute became the President.

Owing to its limited capital, the new startup began business in the distribution and servicing of computers, with individual founders performing whatever work they could to earn money for the company. They even attempted selling other non-computer-related products in order to accumulate funds.¹⁸ Since domestic capacity was limited and imports were strictly controlled through quotas and tariffs, foreign companies were forced to distribute their products via domestic distributors. This allowed scope for numerous firms such as NTC to fill the gap.

In 1985, NTC developed and began to produce its first product, the 'Legend Chinese Language Processing Card'. This was a hardware add-on card that could be inserted into a PC motherboard to give it a Chinese language processing system. The card soon became extremely successful, generating RMB 19.2 million in revenue in 1987. The addition of Chinese language capabilities made PCs considerably more valuable to consumers. By bundling the

card with the foreign computers that it was distributing, NTC was therefore able to increase its sales of PCs along with sales of the card. Together with similar products developed by competitors, this language processing technology stimulated the overall growth in the PC market. Reflecting the card's success, NTC changed its name to Legend in 1989.

Despite this success, distribution remained the core part of the business, generating over 60% of the revenues during this period. In 1987, Legend began to distribute peripheral products from Hewlett-Packard and PCs made by AST, helping to increase AST's market share from under 10% to 26% by 1993.¹⁹ However, as many other firms were competing in distribution, profit margins began to be eroded. Legend's managers realized that longer term success would require it to increase its manufacturing business.

3.2 Establishment and Manufacturing in Hong Kong

Since China's domestic PC industry was strictly controlled by the government, a license was required to manufacture computers domestically. Unable to obtain such a license, Legend's managers decided to establish operations in Hong Kong. However, Legend had limited capital, and lacked any international experience. The managers consequently decided to find suitable partners for the venture in order to overcome these obstacles. Legend Hong Kong was established in early 1988 as a joint venture between NTC and two other companies, China Technology Transfer Corporation and Daw Computer. Each owed 33% of the venture in return for an initial contribution of HK\$ 300,000 each.²⁰ China Technology Transfer Corporation was an investment company owned jointly by a number of large 'red-chip' Chinese state-owned companies in

¹⁶ These reforms are discussed by Lu (2000) *China's Leap*, 10-12, based on CCP Document Research Office *After the third plenum*, 759-76.

¹⁷ See Gu Shuli (1995) *China's industrial technology: market reform and organizational change*, UNU-INTECH Working Paper 16, London; New York: Routledge for a discussion of the background, incentives, financing and characteristics of these spin-off enterprises. Corinna-Barbara Francis (1999) "Bargained Property Rights: The Case of China's High-Technology Sector" in Jean Oi and Andrew Walder, eds, *Property rights and economic reform in China*, Stanford, Calif.: Stanford University Press, 226-247 provides an interesting analysis of the issue of property rights for such enterprises.

¹⁸ Personal Interview with Liu Chuanzhi, Mar 2000.

¹⁹ Legend Holdings New Issue Prospectus, January 1994

²⁰ Personal Interview, Liu Chuanzhi, Mar 2000.

Hong Kong including the Bank of China and China Resources.²¹ It therefore had close links with banks, facilitating the financing of Legend joint venture. Legend's link with CTTC came through a personal connection of the chairman, Liu Chuanzhi, whose father was the chairman of China Patent Agent, one of CTTCs shareholders. Daw was a local Hong Kong company involved in importing and distributing computers in Hong Kong and China. It therefore had international trading and marketing experience and contacts, but lacked any proprietary technology or R&D capabilities. Legend had previously established relations with Daw when it began distributing AST computers of which Daw was a distributor. In terms of its designation, the joint venture was considered a private foreign company, as it was based in Hong Kong, although the Chinese state, through CAS and NTC owned a significant part of the equity. Liu Chuanzhi became the chairman of the joint venture while Daw's chairman became the general manager in Hong Kong.

To begin with, Legend Hong Kong was also focused on distribution, expanding relationship with AST, IBM and HP. In late 1988, it began to develop manufacturing capabilities through the acquisition of Quantum Design International (QDI), a small company in Hong Kong which manufactured motherboards.²² Legend rapidly expanded its manufacturing operations based on a low price strategy, exporting motherboards to PC manufacturers around the world. In 1990, the QDI motherboards were seen by a Chinese Delegation at a trade fair in Germany, who were impressed by their quality, and following inspection and approval of its products and facilities, Legend was issued a domestic manufacturing license for production in

China.²³ Legend began to manufacture its own brand of PCs in Beijing based on semi-knocked down kits produced by Hong Kong Legend and imported into China.

Legend gradually expanded its manufacturing business, while decreasing the significance of its distribution activities. However, distribution remained an important source of profits, which could be used to sustain the company through losses incurred in the transition to manufacturing. For example, in 1991, the Hong Kong operation was hit by a HK\$ 17m loss in motherboard manufacturing due to inventory overstocking. These losses were covered by profits from the distribution side.²⁴

3.3. Restructuring and going public

Following the reduction in tariffs and removal of quotas for imports by the Chinese government in 1993, Legend was exposed to increased competition from foreign multinationals, but remained the only domestic manufacturer to continue produce its own brand of PCs. Other domestic manufacturers either exited the industry or pursued joint ventures with foreign firms. In 1985, 91% of computer enterprises in China were domestic. In 1995, wholly domestic enterprises constituted only 28% of the total.²⁵ Forced to improve its performance to stay in business, Legend's management conducted a detailed review of its operations and restructured the company in 1993 from a functional organization into business units.

In the course of this restructuring, Liu Chuanzhi made an effort to retire the older generation of managers who dated from the company's founding, and promote a younger generation of leadership. In order to incentivise the

²¹ The other companies were China patent Agent (HK), China Everbright, China Patent Technology Development, China Bao Lian Investment, China National Technology Import and Export Corp (Legend Holdings New Issue Prospectus, 1994)

²² A board that integrates all the major functional elements of a PC, including the CPU and memory, and performs the central control functions.

²³ HBS Interview with Vice-Chairman, Legend Beijing, Aug. 2000.

²⁴ Personal Interview, Liu Chuanzhi

²⁵ State Council Research Report on Legend, Ch 65, 14.

older generation to retire from the business, Liu negotiated with CAS to recognize and reward the efforts and dedication of the founders and early employees, who had been paid wages in line with traditional state-owned enterprises during the early years. He was able to negotiate an agreement with CAS to give 35% of the shares in Legend Holding (Beijing), the overall group holding company which had formerly been NTC and was entirely owned by CAS,²⁶ to the founders and early employees.²⁷ This was called 'right to share rewards' (*fen hong quan*). Since employees were legally not allowed to hold shares directly in state-owned enterprises at that time, Legend in practice owned 35% of its own equity which was held on behalf of its employees. Since these shares were not in any case tradable, the practical implication was that employees were entitled to 35% of the profits of the group. Of the 35% shareholding, 35% was allocated to the first fifteen employees, 20% to the 160 employees who joined before 1988, and the remainder to the 1000 or so employees who had joined after 1988.²⁸ This profit-sharing arrangement provided an incentive for the founders to step down from their positions into retirement. Of the eleven founding scientists, only Liu and one other continue to manage Legend in 2001.

In addition, in 1993 Liu also decided to take Legend Hong Kong public. The primary motivation for the listing was to gain access to further funding. However Liu also argued that making the company public would increase the company's efficiency by exposing it to the scrutiny of external shareholders.²⁹ The IPO on the Hong Kong stock exchange occurred in 1994, with 25% of the shares of Legend Hong Kong offered to outside investors. The remaining 75% was divided between Beijing Legend, which owned 38.8%, CTTC with 2.2%, Daw's former owner-

managers, now managers in Legend Hong Kong, with 32% between them and the Bank of China, with 2%.³⁰ Legend Holdings (Beijing), therefore retained a majority of the shares and control of the company.³¹

3.4 Growth and Success

Following these efforts to improve efficiency, Legend began to grow rapidly, gaining 8.7% market share in 1995. As production efficiency and economies of scale increased further, Legend was able to lower the prices of its computers four times in 1996 and achieved the leading market share over IBM, HP and Compaq. It also began to compete through differentiation. Previously its computers had been based on foreign competitors', but in 1996 Legend began to design computers specifically tailored to local market requirements, such as computers with touch-screens designed for older users unfamiliar with keyboards and computers designed for easy connection to the internet. By 1997, Legend had become one of the top five motherboard manufacturers in the world, and one of three beta test partners to which Intel released its latest chips. Growth was not without problems, however; in 1995, Legend Hong Kong sustained significant losses of HK\$ 170m owing to an overstocking of DRAM chips which was followed by a large fall in their market price necessitating sales at below cost.³²

Following this episode, Legend's management made great efforts to improve management efficiency and increase inventory and account receivable controls. As a result, the Hong Kong and Beijing operations were merged in 1997 in order to consolidate control over the two independent operations. Beijing Legend was owned by the ultimate holding company, Legend Holdings (Beijing), which in turn was owned by CAS and was therefore a SOE.

²⁶ The Computing Institute's shareholding in Legend was transferred up to the higher level of CAS in 1993.

²⁷ Personal Interview with Liu Chuanzhi, Mar 2000.

²⁸ State Council Research Report on Legend, p21

²⁹ Personal Interview with Liu

³⁰ The stake of CTTC in Legend had been significantly diluted during reorganization in preparation for the IPO.

³¹ Legend Holdings (HK) New Issue Prospectus.

³² Personal Interview with Liu

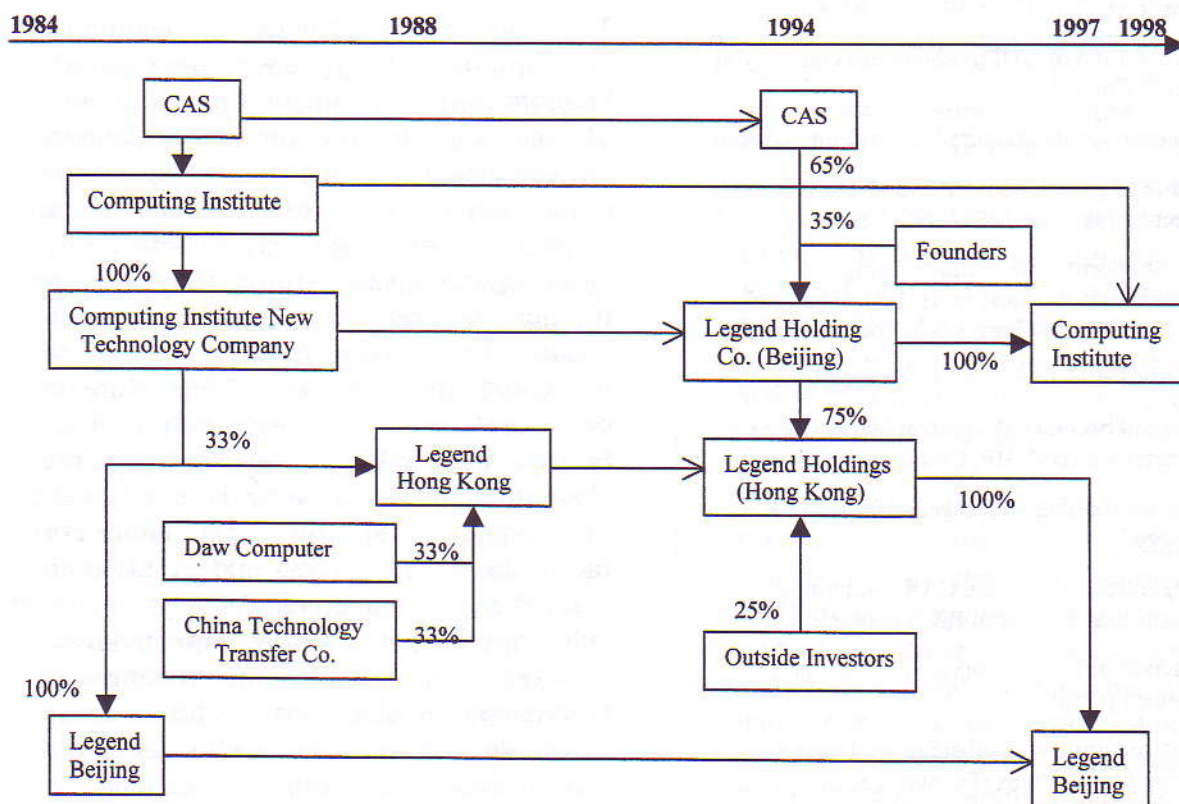
Beijing Legend's assets were transferred to the publicly listed Hong Kong Legend, 40% of which was owned by Legend Holdings. In exchange, Legend Holdings received further shares in Hong Kong Legend. As a result, Beijing Legend became a subsidiary of Hong Kong Legend, which in turn became 73.4% owned by Legend Holdings.³³ This transfer of state-owned assets to what was considered a private foreign company – Legend Hong Kong – was possible because the ultimate shareholder of that company – Legend Holdings (Beijing) – and therefore owner of its assets remained a state-owned enterprise. In addition, also in 1998, the Computing Institute was fully subsumed under the control of Legend, becoming its central R&D group. The changing structure of the group over time is illustrated in Figure 3 below.

In 1999, Legend expanded into the Internet, offering both Internet service provision and Internet content, which it bundled together with its computers such that consumers could access the Internet immediately upon purchase of a new computer. It also expanded its product range to include servers and hand held PDA computers. The distribution business also continued to grow as Legend began to distribute Internet networking equipment such as Cisco. In 1999, PC manufacturing provided 44% of the groups revenue, distribution 32%, motherboard manufacturing 12% and system integration 10%.³⁴

In 2000, the group was restructured again, with the PC manufacturing and distribution units separated into full

Figure 3: Legend's changing corporate structure over time.

Organisational chart of Legend through its development



Sources: State Council Research Report on Legend, Personal Interviews

³³ Legend Hong Kong Annual Report 1998-1999, 80

³⁴ Ibid., 5

subsidiaries, respectively Legend Computer Systems and Digital China. This allowed Legend to mitigate the increasing conflict between selling its own brand of computers and acting as a distributor for foreign competitors. In 2001, it was announced that Digital China would be spun off independently on the Hong Kong stock exchange, entrenching this separation. The latest plans for the holding company are the establishment of a venture capital group, which will be able to provide management expertise as well as capital to startup high-tech companies.³⁵

Figure 4: Timeline of major events in Legend's development

1984	New Technology Company of the Computing Institute of CAS founded.
1985	Development and production of Legend Chinese word-processing card.
1988	Establishment of Legend Hong Kong as equally owned joint venture with Daw Computer and China Technology Transfer Corp.
1989	Acquisition of QDI motherboard company in Hong Kong.
1990	License to manufacture PCs in China granted.
1993	Chinese government cuts import tariffs and quotas following MOU with US.
1994	Restructuring into manufacturing and distribution business units. IPO of Legend Hong Kong on Hong Kong stock exchange.
1995	Major losses from DRAM overstocking.
1996	Legend becomes PC market leader in China, overtaking IBM, HP, Compaq.
1997	Legend Beijing and Legend Hong Kong merged.
1998	Legend takes over the CAS Computing Institute as its central R&D center.
1999	Launch of Internet service provider and content portal.
2000	Restructuring into subsidiaries: Legend Computer Systems (PC manufacturing) and Digital China (Distribution).
2001	Spin-off Digital China on Hong Kong Stock Exchange. Launch of VC arm.

³⁵ Personal interview, Liu.

IV Developing Technology in China's transitional economy

Legend was able to achieve competitiveness with multinational companies that had the benefits of years of experience, large scale production, strong R&D and deep financial backing, in a technologically advanced industry, within the chaotic environment of China's transition from a socialist to a market economy. How has it been able to overcome the obstacles created by this environment and its technology-follower status? Legend has become a national example, a symbol of China's aspirations to become an economic superpower. What significance does its success have for China's overall economic growth and what lessons can be drawn from its experience for China and for other developing countries?

4.1 Technology and Growth: Theoretical Framework

The role of technology in economic growth has long been recognized. Economies grow in relation to the growth of their major inputs, capital and labour, representing a move along their production frontier. However per capita income is allocated more efficiently, allowing increased returns to scale, or through technological progress, which causes the entire production frontier to move out. For example, in 1961, Korea's per capita GNP was less than that of Sudan. By 1995, it had become the eleventh largest economy in the world. Kim argues that the most important factor in Korea's rapid industrialization was the "technological change in its industries"³⁶ Economic competitiveness is increasingly seen as competitiveness in technology development. As China seeks to develop its economy further over the next decades, the role of technology is becoming increasingly central.

³⁶ Linsu Kim (1997) *Imitation to Innovation: the dynamics of Korea's technological learning* Boston: Harvard Business School, 2.

Some economists have questioned the role of technology in East Asia's growth. Based on a recalculation of the growth equation, Lawrence Lau argues convincingly that growth in East Asia's 'high-performance economies' and to a lesser extent in Japan can be attributed almost entirely to an increase in factor inputs rather than any technical progress.³⁷ In Krugman's words it was "perspiration, not inspiration" that was behind Asia's growth.³⁸

While these arguments are well supported, to draw the conclusion that technology development is unimportant would be mistaken. To begin with, as Krugman points out, economies reach a point where further increases in capital or labour generate flat or diminishing returns. Per capita growth beyond this point requires technological development.³⁹ This point has been demonstrated in the continued growth of developed countries based on technical progress following their periods of industrialization.

Moreover, the accumulation and efficient allocation of labour and capital are closely linked to technology development; capital investment in itself does not lead to rapid growth in the absence of a supporting environment with adequate human capital and the grasp of sufficient technical knowledge to be able to use capital efficiently. High rates of capital accumulation coupled with high levels of education enabled rapid growth in East Asia because technological development occurred through the embodiment of the latest technology in capital. In Lau's model such embodied technology and indeed any technology that is paid for is counted as physical capital, while technological skills are counted as human capital. This implies a considerably more limited definition of 'technology', explaining his conclusion. Indeed, the failure of technology

development policies in many countries has often reflected an inadequate conception of technology.⁴⁰

'Technology' comprises not only physical capital, but also 'know-how', the knowledge necessary to operate, maintain and manage capital and processes, and 'know-why', an understanding of the principles underlying products and processes which allow the capacity to design, manufacture and test products and processes. An overly narrow conception of technology can lead to overemphasis on one aspect to the detriment of others. Under central planning in the 1950s and 1960s, China's technology policy focused on the importation of large turnkey capital projects while research and development efforts were concentrated in state-run research institutes. This neglected the middle element of technology, the know-how. Under such a system, China had embodied technology that it was unable to use to its full potential, and knowledge that it was unable to commercialize. Some aspects of this system continue to exist. Shi Yizheng's study of the tape recorder industry in China in the 1990s found that there was a strong bias towards capital goods and a lack of efforts to assimilate the technology.⁴¹ As noted above, the Chinese computer industry in the early 1980s also suffered from the separation of production and research.

Consideration of these arguments leads to the conclusion that what is important for growth is the development of *technological capabilities*, including both embodied and tacit technology, physical and human capital. While the goal of developing strong technology capabilities is hard to question, the best means for countries to do so remains unclear. There

³⁷ Lawrence Lau (1998) "The Sources of East Asian Economic Growth", in F. Gerald Adams and Shinichi Ichimura, eds., *East Asian Development: Will the East Asian Growth Miracle Survive?* Westport: Praeger, 41-67

³⁸ Paul Krugman (1994) "The Myth of the Asian Miracle" *Foreign Affairs*, Nov-Dec 1994 62-78

³⁹ Ibid.

⁴⁰ See for example Martin Bell and Don Scott-Kemmis, (1988) "Technological Dynamism and Technological Content of Collaboration" in Ashok Desai, ed. *Technology Absorption in Indian Industry* New Delhi: Wiley Eastern, 1988, 71-104 on technology transfer in India.

⁴¹ Shi Yizheng (1998) *Chinese firms and technology in the reform era* London; New York Routledge Ch 4-5.

has been considerable disagreement over the merits of import-substitution policies, infant industry protection, the relative roles of public and private R&D and the type of technology that should be concentrated on. The analysis below attempts to shed light on these questions by examining the process of technology development in China as reflected by Legend's growth.

4.2 Industry choice: what kind of technology?

At the fundamental level was Legend's choice of industry to operate in. The PC industry proved to be well suited to China's comparative advantages. Although it is a highly technologically advanced industry, true innovation within the industry often occurs at the component level of the microprocessor, operating system, display, disk drive and so on. Success in manufacturing of PCs is based more on being able to assemble the best technologies available at the component level efficiently, and to market the finished products effectively than having the strongest R&D capability.⁴² This is best exemplified in the success of Dell Computer. Dell did not compete on the basis of research leadership but rather based its success on being able to identify the most attractive technologies for consumers, and designing computers to bring those technologies to the market quickly and cheaply. Its focus was therefore management ability and cost control rather than pure technological research. However, this did not imply that technological capabilities were not needed to compete. On the contrary, Dell developed a strong capability to understand the technologies developed and assess which ones were most suitable, as well as developing certain technology of its own when it saw the need.⁴³

⁴² Such characteristics are not limited to the computer industry. Examples of technically superior products that lost out to inferior but cheaper or better marketed products occur in numerous industries.

⁴³ Michael Dell (1999) *Direct from Dell*, Harper Business, 192-193

China, with its low labour costs, relatively high education level, and large pool of technical talent therefore possessed some of the ideal conditions for success in PC manufacturing. Moreover, there was a rapidly growing domestic market within China, particularly following the deepening of reform and opening in the 1990s, allowing for the scale production necessary to be competitive.⁴⁴ Since the computer industry was well developed globally by the 1980s, there was a significant base of technology, and highly competitive network of suppliers, making the latest technology easy to access. The rapid rate of change within the industry led to short product life cycles and rapid obsolescence. This meant that the poor intellectual property rights protection regime in China was not a great obstacle to accessing technology.

Legend's competitiveness can in retrospect be partly attributed to the suitability of PC manufacturing to the Chinese environment. However, the existence of suitable conditions did not mean that a successful domestic industry would necessarily develop. The Philippines was seen in the 1950s as the country in Asia with the most suitable conditions for growth, but half a century later, it remains a laggard. It was certainly not apparent in the early days that domestic enterprises such as Legend would be able to compete with the multinational giants of the industry. Nor was achieving this competitiveness inevitable; Legend's success depended more on other factors, including its background, state policies, and its own management capabilities than on its nature as a computer manufacturer, as is clear from the failure of many other computer enterprises in China. Indeed the decision to enter the computer industry was largely the result of circumstances rather than any great foresight; as the founders were researchers from the CAS Computing

⁴⁴ The World Bank suggested optimal scale in the PC industry to be 200,000 units per year. Quoted Lu (2000) *China's Leap*, 163.

Institute, computers were the natural area in which to start a business. Legend's strength in this respect was in its ability to remain focused on this core competence rather than trying to develop too rapidly into other areas, a trap into which many Chinese enterprises fell.⁴⁵ The important question is how Legend made use of these conditions to achieve competitiveness: how was Legend able to develop its technological capabilities?

4.3 Innovation vs. Imitation

Technology can essentially be derived from two sources: imitation – the transfer of existing technology from overseas – and innovation – indigenous technology creation. The technological capability of a country can therefore be divided into two components, which Dore terms 'Independent Technology Learning Capability' and 'Independent Technology creating Capability.'⁴⁶ Many countries attempt to pursue creating capabilities as the route to rapid development, as exemplified by India's self-reliance policies, in which imported technology was seen as a substitute for indigenous technology development and therefore restricted, and 'national champion' firms were promoted by the government. Instead of developing technological capabilities, such policies resulted in Indian firm's technological backwardness and an environment in which innovation and technological improvement was effectively stifled.⁴⁷

More recently, considerable attention has been devoted to Silicon Valley and its capabilities of innovation, with many countries and regions attempting to recreate its environment and emulate its success. Innovation has been seen as a key path for both developed and

developing countries to move ahead, by increasing total factor productivity and thereby overall growth. The focus of such efforts has been the development of a loosely defined 'high-tech' sector. Proponents argue that technology leaders are often able to capture a substantial share of a market and its benefits, while technology followers are left with low value-added roles and low profit margins. Short-term competitiveness based on lower factor costs is quickly eroded; in the long term, only innovation can provide the basis for sustained growth through improving productivity. Relying on imitation condemns an economy to being a perpetual laggard, left with low productivity and slow growth.

However, a number of development theorists have argued that for technology-follower developing countries, a focus on promoting innovation may be inappropriate or even counterproductive. Alice Amsden uses the case of Korea to argue that late industrialization is based on learning rather than innovation: "Economies commencing industrialization in the twentieth century transformed their productive structures and raised their income per capita on the basis of borrowed technology... If industrialization first occurred in England on the basis of invention, and if it occurred in Germany and the United States, then it occurs now among 'backward' countries on the basis of learning."⁴⁸ Based on the case of India, Dore contends that "for a long, long time [during development] independent technology learning capability is overwhelmingly more important than independent technology creating capability."⁴⁹

At the firm level, even for companies within developed economies, consistent innovation is not possible: Levitt notes that "no single company, regardless of its determination, energy, imagination or

⁴⁵ For example, the Stone group has not maintained its pre-eminent position of the 1980s after expanding into a number of different industrial areas, including lighting and pharmaceuticals. Ibid, 59-62.

⁴⁶ Ronald Dore (1984) "Technological Self-reliance: Sturdy Ideal or Self-serving Rhetoric" in Martin Fransman and Kenneth King eds, *Technological Capability in the Third World* New York: St. Martin's Press 1984, 65

⁴⁷ Ibid.

⁴⁸ Alice Amsden (1989) *Asia's Next Giant*, New York: Oxford University Press, 3-4

⁴⁹ Dore (1984) 'Technological Reliance', 67

resources is big enough or solvent enough to do all the productive first things that will ever occur in its industry."⁵⁰ Once this is recognized, the obvious conclusion is that firms and by extension economies would do well to concentrate more of their efforts on imitation of technology leaders rather than attempting to be the innovation leaders. A focus on innovation alone often implies a lack of willingness to transfer technology from technology leaders and pursuit of high-tech when low-tech might be fundamentally more competitive.

Legend's experience provides mixed evidence for such arguments. As a spin-off from a research institute, it did possess significant capabilities for innovation from its founding. This was demonstrated in the development of Legend's Chinese word-processing card. The technology for Chinese word-processing had been developed by Ni Guangnan, a scientist at the Computing Institute, over the course of the 1970s, winning several 'Breakthrough in Science and Technology' Awards.⁵¹ However, it still required considerable development before it could be commercialized. Legend's managers approached Ni and invited him to join the company in order to complete this development. Ni accepted, resulting in the release of the initial Legend brand word-processing card in 1985.⁵² This technology, along with other Chinese systems technology developed by other companies such as Founder, represented a substantial innovation, spurring the rapid development of the PC market in China, and was a commercial success, gaining over 50% market share.

Nevertheless, the Chinese word-processing card was a technology that was designed to solve a specifically local problem rather than launch an entirely new

market, an incremental innovation as opposed to a fundamental innovation. From an overall perspective, although Legend had innovative capabilities, it was not a fundamentally innovative company. Instead its strengths lay in 'local innovation' – delivering products that were new to a particular market. At the height of the word-processing card's success it represented only a quarter of Legend's overall revenue. This was forced to a large extent by its circumstances; with limited funding it could not afford to invest in intensive R&D or manufacturing facilities in the early years. Instead it was forced to begin business in computer servicing and distribution of imported computers. Although it was hard for many of the former research scientists who joined the company to adjust to the mundane world of sales and servicing, through distribution they were able to learn the valuable lesson that delivering what customers needed was more important, and a better source of profits, than attempting to create fundamentally new markets through innovation.⁵³

Responding to the needs of the market was to be the basis for later strategy when Legend began manufacturing its own brand computers. It was not possible to differentiate its computers based on pure technology, since technological breakthroughs occurred at the lower component levels and quickly became industry standards used by almost all competitors. For instance, when Intel developed a new processor, it would soon be adopted as the standard for all PC manufacturers. However, where Legend could achieve some differentiation was through design and functionality. The most notable example of this was the development of 'one-touch to the internet' computers that were designed to allow users who were unfamiliar with using computers to be able to access the Internet simply with the press of a single button, obviating the need to install and run software.

⁵⁰ Theodore Levitt (1986) *The Marketing of Nations*, New York: Free Press, 204

⁵¹ Lu (2000) *China's Leap* 66

⁵² The word-processing technology developed by Ni used artificial intelligence to speed up Chinese character input through prediction of the most likely character association. This gave rise to the name *lian xiang* (associative) *han zi ka*, which was later transliterated as 'Legend'.

⁵³ Personal Interview with Liu Chuanzhi

These computers proved to be a great success, and also delivered substantial business benefits through allowing Legend to expand into the Internet service provision market with a captured market. What Legend emphasized was 'D&D', design and development, rather than R&D. Such a focus on design does not imply technological simplicity. In fact, designing the 'one-touch' computer required considerable engineering skills.⁵⁴ However it reflected a different, and ultimately more productive, direction of resource allocation toward functionality over pure technology.

Another area in which Legend was able to differentiate itself was speed to market. For imitators, the speed of entry into the market is crucial; since the innovator has proven the concept, the first to follow is able to gain substantial market share. One of Legend's strengths was its ability to bring the latest technology to the Chinese market rapidly. For example, according to the President of Legend's computer division, multinational firms would normally introduce new generation products to China four to five months after they had been launched overseas. In 1995, Legend introduced its Pentium chip based PCs to the Chinese market at the same time that the Pentium was launched in the United States. It was able to sell the Pentium computers at a price of RMB 10,000 while competitors were still selling slower 486 chip based computers at the higher price of RMB 15,000. This enabled Legend to be a local innovator, if not a global innovator, and helped it capture the leading market share for the first time in 1996.

4.4 Distribution to Technology: Gradual evolution

Legend's success in incremental improvement as opposed to innovation mirrored the fundamental success of firms in the other East Asian countries. Few of the industries which prospered in Japan, Korea and Taiwan were new. Examples of successful imitation in technology-follower

firms and economies abound, from the automobile industry in Japan, to microwaves in Korea to semiconductors in Taiwan. These firms were able to capture significant, and in some cases dominant market share from the technology leaders. Their strength lay in their ability first to assimilate then to imitate and finally to improve on existing technology, demonstrating successful development of Dore's 'independent technology learning capability.' Kim extends Amsden's argument about Korea, arguing that Korean firms gradually progressed from imitation to innovation as they developed their capabilities.⁵⁵

Legend's development followed a similar step-by-step progression from assimilation to imitation and then incremental innovation. Liu Chuanzhi called this gradual strategy *mao gong ji*, trading – industrialization – technology. From early on, Legend's managers had wanted to compete in the higher value-added manufacturing side of the industry. However, Legend attempted to jump straight into manufacturing its own brand of computers after its inception, its success would have been questionable; it had no manufacturing capabilities, little knowledge of the market and insufficient funding to cover the kind of inventory and procurement problems it faced when it did begin manufacturing. It was instead able to move gradually up the technological value-added hierarchy as it expanded its technological capabilities. Via distribution, it was able to assimilate foreign technology, through its exposure to the foreign products it was distributing. Once it had achieved this, it began its own production, the imitation phase of technology acquisition. During this phase, Legend was forced to learn by doing; lacking any prior manufacturing experience, Legend ran into numerous problems after it began production. However, each of these problems was a

⁵⁴ HBS interview with President, Legend Computer Systems.

⁵⁵ Kim (1997) *From Imitation to Innovation* and (1999) 'Building Technological Capabilities for Industrialization: Analytical Frameworks and Korea's Experience' in *Industrial and Corporate Change*, Vol 8 No 1, Oxford.

means of learning about the nature of the computer industry and about manufacturing. For example, a major problem occurred in 1991 in the Hong Kong motherboard operation, when Legend was left holding a large stock of Intel's 386 processor chips during the introduction of a new model. Since the price of the old model fell rapidly as a result, Legend was forced to sell off its stock below cost at a loss of HK\$ 17 million. This was a disaster that nearly sunk the company, given that its profit for that year was HK\$ 25 million.⁵⁶ However, Legend's managers were able to learn the importance of strict inventory control given the speed of technological change within the computer industry.

Legend was also able to build strong links with foreign technology leaders, entering a number of strategic alliances and partnerships. Through the expansion of motherboard manufacturing, in which Legend became the world's third largest manufacturer in 1997, Legend was able to become one of Intel's three global beta test partners. It was also able to develop a close relationship with Microsoft, entering a joint venture to develop set-top boxes for the Chinese market, although this was ultimately unsuccessful.

The imitation phase was followed by the introduction of incremental improvements, as Legend began to differentiate its computers on the basis of functionality. More recently, Legend sought to expand its R&D capabilities in order to develop its own innovative products; it has several R&D centers located in Beijing, Huiyang, and in Silicon Valley. It is also starting to become a diffuser of technological capability, through the creation of its own venture capital arm in 2001. By being able to offer its accumulated management knowledge and experience, crucial areas in which China remains lacking, as well as funding to new startups, Legend is contributing to the deepening of technological capabilities in China.

4.5. Sources of technology

While Legend may have been an imitator or local innovator rather than a true innovator, this does not mean that the question of technology acquisition is trivial. While imitation does not require the same scientific and creative capacity of innovation, it does require substantial technical and scientific capabilities in order to be achieved successfully. Simply because a technology has already been developed does not mean that it can simply be copied and exploited, even without the various intellectual property protections that exist. Because of technology's multifaceted nature, effective technology transfer involves not only possession of the physical capabilities but also the transfer of technological knowledge. Moreover, since much of this 'know-how' is in the form of tacit knowledge, transferring the explicit technological knowledge may still be insufficient. Paul David notes that "it is one thing to transfer technological knowledge effectively and quite a different matter to *impart technological capabilities* to individuals, organizations... that previously lacked them."⁵⁷ How was Legend able to achieve the learning capacity needed to acquire technological capabilities and move from imitation to innovation?

While rapid growth in Japan, Taiwan and Korea reflected their learning capabilities, each country followed a somewhat different method of learning. In Korea and Japan, technology acquisition was achieved through firms' efforts to reverse engineer Western products. This capital-intensive method depended on the dominance of large, deep-pocketed firms such as Korea's *chaebol* and Japan's *keiretsu* groups. In Taiwan, however, the preponderance of small and medium sized enterprises meant that most enterprises could not afford the research budgets of Japanese and Korean firms. Instead, they relied heavily on foreign

⁵⁶ HBS Interview with Deputy General Manager, Legend Hong Kong

⁵⁷ Paul David (1996) *Rethinking Technology Transfer. Incentives, Institutions and Knowledge-Based Industrial Development* SIEPR Discussion Paper No. 478, 4

firms for the licensing of technology, with 3000 such agreements approved by the government between 1952 and 1988.⁵⁸ Although total foreign direct investment was limited, ranging between 2 and 5.5 per cent of domestic capital formation between 1965 and 1983, FDI played an important role stimulating the growth of new industries, and giving rise to Taiwan's concentration of OEM enterprises.⁵⁹ Many firms started out as subcontractors for multinational firms. Buyers provided product specifications and production processes. Foreign firms also played a substantial role in the training of technical personnel. Many engineers had worked for foreign enterprises either in Taiwan or overseas, and later returned to join domestic enterprises. Domestic firms were able to learn technological capabilities which later allowed them to compete with their former customers. In later stages, the government also played a role in assisting technology transfer through ITRI, the state-funded Industrial Technology Research Institute, which trained engineers and licensed technology to firms.

While Legend was equally successful in developing its learning capacity, the path by which it did so was somewhat different from that of the other north-east Asian countries. Similar to Taiwanese firms, Legend did not have extensive capital to allow it to conduct R&D. Instead it operated within the technological frontier, using and adapting existing technology. New technology was not as important as the ability to understand and use technology created by others. Legend did learn from foreign multinationals, but in contrast to Taiwan, this learning came through its experience as a distributor rather than a supplier. Through distributing for foreign multinationals, Legend was able to become familiar with the leading foreign products and technologies. Distribution also enabled Legend to understand the market in China. However,

distribution at its most basic entailed simply the movement of boxes. Two factors were important in ensuring that Legend was able to gain technological capabilities from this process. First was the ability to understand technology it was accessing through distribution, second was a desire to do so.

In contrast to the Taiwanese experience, in which technological 'know-how' was transferred by the large numbers of technical personnel who returned from education or work overseas, or who worked for multinational enterprises domestically, Legend had few employees who had been educated or worked outside China. However, since many of its engineers including the founders, had been transferred across from the Computing Institute, they possessed the research background to be able to understand and imitate the technology that they were able to access by virtue of being distributors. From early on therefore, Legend benefited from strong technology assimilation capabilities. One of its competitive advantages in distribution was its ability to understand well the products it was selling and therefore to be able to offer better service than its competitors.

Successful assimilation also required a strong desire to acquire technological capabilities. Had Legend been content to remain a distributor for others, there would have been little need to develop its own independent capability. From early on, however, Liu Chuanzhi had seen that margins would ultimately be squeezed in distribution and envisioned Legend becoming a manufacturing company and achieving lofty goals. He aims to have Legend achieve revenues of ten billion dollars by 2005 and join the ranks of the Fortune 500.⁶⁰ Legend's development fits well with Prahalad and Hamel's model of 'strategic intent'.⁶¹ They write that "strategic intent implies

⁵⁸ Michael Hobday (1995) *Innovation in East Asia* Edward Elgar, 104

⁵⁹ *Ibid.*, 108

⁶⁰ HBS Interview with Liu Chuanzhi

⁶¹ G. Hamel and C.K. Prahalad 'Strategic intent' in *Harvard Business Review*, May-June 1989.

a sizable stretch for an organization. Current capabilities and resources will not suffice. This forces the organization to be more inventive, to make the most of limited resources." In the early 1990s, Legend lagged far behind its foreign competitors in terms of financial, technological and managerial resources. However, it leveraged the limited resources it did have to the maximum extent, devising strategies along the way to overcome the obstacles it faced. Management set internal goals and an intensive system of employee review was set up, in which employees were asked to define their own goals and responsibilities for the year ahead.⁶²

In addition to technology learnt through distribution, Legend was also able to obtain technology directly from the Computing Institute. As one of the aims of creating Legend and the other spin-off enterprises had been to commercialize technology developed within CAS, Legend was easily able to access the technology being researched by the Computing Institute. Legend's Chinese word processing card, its first successful own-brand product was the result of research previously conducted within the Institute, and a number of other small-scale technologies were later transferred. No costs seem to have been attached to these technology transfers; Legend was therefore able to access technology at a non-market rate. The technological capability afforded by its links to the Computing Institute were particularly important when Legend began manufacturing in Hong Kong. At one stage, quality problems developed with one of the chips Legend was using. Its Hong Kong engineers were unable to solve the problem and the incident threatened to tarnish its reputation. However, Ni, the chief engineer was able to solve the problem in a matter of hours.⁶³

4.6 Developing organizational and management institutions for technology learning

Successful technological development cannot, however, occur based solely on technological capabilities. Such capabilities had already existed within the Computing Institute prior to their transfer to Legend. Effective development also requires a suitable organizational and institutional background. Countries are therefore "limited by those institutional characteristics that restrict their abilities to finance, organize and operate the kinds of enterprises that are required to exploit the technologies on the frontiers of science and engineering."⁶⁴

These difficulties were exemplified in China's unsuccessful efforts to develop its domestic computer industry prior to the 1980s. While it had achieved a substantial level of technical knowledge within research institutes, it lacked the organizational and management capabilities to transform this knowledge into commercially viable products and economic success. Research and production were separated, with different goals for each. Legend and the other pioneering IT enterprises were the first to combine the functions of R&D, manufacturing and marketing within one organization in order to allow this commercialization. The ability to create an appropriate organization to integrate these functions and develop commercial products efficiently was therefore a key to Legend's success.

The company was reorganized several times in order to create an organization suitable for continued growth. In 1994, the switch was made from a functional organization to independent business units. Under the functional system, which mirrored China's central planning system, a new model was launched once a year, and the corporate planning

⁶² Personal Interview, Deputy HR Manager.

⁶³ Personal Interview, Deputy HR Manager

⁶⁴ Paul David (1996) *Rethinking Technology Transfer. Incentives, Institutions and Knowledge-Based Industrial Development*. SIEPR discussion Paper No. 478, 41

department set out annual budgets and targets for the purchasing, manufacturing and other individual departments. Managers were evaluated on the basis of their efforts to meet their targets rather than on the overall results of the company. This led to inflexible and uncoordinated decision-making, as well as misaligned incentives for managers. In 1993, the purchasing department had been able to buy components at 5% below the budgeted prices following a fall in international component prices. However, in order to provide a buffer against missing its budgetary target for the year, the purchasing department did not inform the manufacturing or marketing departments. The prices for the finished computers were therefore maintained at the level set by the annual budget, while competitors lowered their prices. As a result, sales fell short of the goals for the year. This episode demonstrated the inefficiency of a central planning system in the face of a dynamic global market with fluctuating prices. Following the reorganization, purchasing, manufacturing and marketing for PCs were joined together in the PC business unit, which had the autonomy to make decisions on product launches and pricing dependent on the market conditions. Managers began to be evaluated on the basis of results, both of their function and of the overall business unit. For example, purchasing managers would be held responsible for slow inventory turnover, even if it were the result of inaccurate forecast by the marketing department. This encouraged managers from different functions to work together and improve the responsiveness of Legend to market condition.⁶⁵

Further reorganizations were subsequently implemented to deal with other problems. In 1997 the Hong Kong and Beijing operations were merged in order to consolidate control under one leadership following a large loss in Hong Kong in 1996. In 2000 the autonomy of the business units was further increased

through splitting the company into two independent subsidiaries and devolving considerable power to each. The only functions retained at the holding company level were public relations, finance and major investment management. The managers of each subsidiary had the power to make decisions on investments up to RMB 20 million while investments larger than this still required approval from managers at the holding company level.⁶⁶ This reorganization was aimed at solving the increased channel conflict inherent in producing and selling of its own brand-name products while it acted as a distributor for foreign competitors, as well as providing an opportunity for the new generation of managers to take on greater responsibilities.⁶⁷

An aspect of innovation often overlooked is the importance of process and management innovations. The success of Japan's manufacturing industry was to a large extent built on improved supply chain management through processes such as just-in-time manufacturing and quality circles. These management innovations were subsequently exported across the world and adopted by leading firms globally. Effective management techniques are particularly important in the context of a transitional economy such as China. Under central planning, managers of enterprises had not needed to worry about procurement of raw materials or selling the finished product, since these were both determined by the plan, nor had they been concerned with employee incentivisation because of the iron rice bowl. As a result, China entered the 1980s lacking a professional market-oriented management tradition. Even basic management practices such as financial planning and balance sheet accounting were barely used. Introduction of new management techniques and processes was therefore equally or even more important than new

⁶⁵ HBS Interview with President, Legend Computer Systems, Aug 2000

⁶⁶ HBS Interview with Vice President of Finance, Legend Holdings.

⁶⁷ Personal Interview, Liu

product technology, as these would create the basis for sustained growth and corporatization.

Again, while Legend was not a fundamental innovator in this area, it was a local innovator, one of the earliest firms in China to introduce a number of successful practices. At the basic level it instituted such practices as account receivable management, insisting that distributors of Legend's computers pay cash to purchase its products. While this was by no means an innovation, it was a practice which even foreign competitors had great difficulties instituting in China.⁶⁸ For example Compaq experienced major problems in 1996 when the credit it extended to distributors was not paid off. Legend was one of the first Chinese enterprises to list shares on the Hong Kong stock exchange, introducing a level of transparency and accountability to its operations unprecedented for a Chinese state-owned enterprise. It was also a pioneer in China in the implementation of just-in-time manufacturing, improving its inventory turnover from 1.3 times in 1993 to 18 times in 2000.⁶⁹ More recently, Legend was a leader in China in introducing new technology to China, but also in promoting the use of new technology within business. This provides a less visible, but extremely important contribution to productivity growth. Legend today is as sophisticated and well-managed as many leading Western firms.

Legend has concentrated particularly on developing a professional management culture within its organization. Recognizing that China lacked a pool of experienced managers, and the pitfall of relying too much on one generation of management, Liu Chuanzhi paid great attention to the development of managerial talent. The Legend College of Management was established in 1995 to research corporate culture and management as well as to provide training to all employees of

Legend. Such training encompasses compulsory courses for all office employees, teaching managerial skills such as budget planning, along with a strong emphasis on imparting Legend's corporate culture, as well as optional classes to provide practical skills for various functions.

Liu commented that while the criteria used for promotion of lower level and mid level managers are taking responsibility and ambition respectively, the most important criterion for senior management is loyalty to the company. All of Legend's senior management has risen up through the ranks. This emphasis on commitment to the firm to some extent replicates the system of lifetime employment within traditional SOEs under central planning. Francis notes how other aspects of the *danwei* system have been recreated in the context of China's high-tech firms.⁷⁰ However the difference between the *danwei* system and high-tech firms is that such features are instituted for business, rather than political reasons. Legend's emphasis on loyalty to the firm stems from its inability to compete with multinationals operating in China in terms of the compensation offered to employees, and the lack of a management market in China. By making senior management positions open only to those who have worked their way up within the company, Legend provides an incentive for prospective employees to choose it rather than a competing foreign firm offering higher levels of pay. Although Legend rewards loyalty, promotions are not made merely on the basis of seniority, in contrast to the *danwei* system. In fact, Legend has made efforts to create a young culture, with an average employee age of only twenty-nine, and several members of the top level of management in their thirties.

In these ways, Legend has been able to create an organizational and managerial

⁶⁸ See "The Answer lies within", *Business China*, Aug 2, 2000s

⁶⁹ HBS Interview with President, Legend Computer Systems, Aug 2000.

⁷⁰ Corinna-Barbara Francis (1996) "Reproduction of the Danwei Institutional Features in China's High-Tech Sector" *China Quarterly* 1996.

culture that allowed it to make maximum use of the technology which it was able to access through distribution and the Computing Institute. A number of other external factors also played a part in Legend's success in acquiring technological capabilities, which are worth mentioning because of their wider implications.

4.7 Other factors: domestic orientation and cluster effects

One aspect common to industrialization in Japan, Korea, Taiwan was their export-orientation. Following an initial period of import substitution, the government of all three countries instituted policies providing strong incentives to firms to export. By focusing on export markets, firms were forced to compete on even terms with foreign technology leaders, spurring them to improve their technical capabilities. As a result, commentators have argued that export-orientation was a key development policy for these countries.⁷¹

Although Legend exported a significant quantity of its motherboards, in contrast to the other East Asian countries, Legend's focus was not on China's domestic market rather than the export market. This was possible because of the enormous size of China's domestic market, compared to the relatively small domestic markets in Taiwan, Korea and Japan. Legend's managers made a conscious decision to focus on China's domestic market rather than attempting to expand into export markets, learning from the experience of Taiwanese companies such as Acer that establishing a global brand as a latecomer is extremely difficult. Instead, Legend chose to leverage its advantages – its proximity and knowledge of China's market and its ability to attract talented employees – rather than to compete where it was at a disadvantage. Legend's success demonstrates that export orientation should not be taken as a mantra by developing economies. While achieving economies of scale in production

may be difficult within the confines of a small domestic economy, the key aspect is the level of competition which an enterprise is subjected to, not the location of its customers. Conversely, import-substitution is not in itself bad; indeed domestic products crowding out foreign products may be good for an economy. What matters again is whether this occurs through even competition or through the protection of domestic industry from outside competition.

Similar to Taiwan, and to a lesser extent Japan and Korea, Legend has been a beneficiary of industrial clustering.⁷² *Zhong guan cun*, the area in Haidian district where it is located, is often seen as China's Silicon Valley, a cluster of universities, research institutes and high tech enterprises, similar to Taiwan's *Hsin chu* science park. This has benefited Legend in a number of ways. Most concretely, Haidian was designated as the first special high tech development zone (*ji shu ke ji kai fa qu*) in 1988 as part of China's Torch program to develop high-tech enterprise. Special tax breaks and import allowances were given to high tech enterprises within the zone: two years of tax exemption followed by tax at half the normal rate and waivers of import and export duties. Less tangibly, the local district government was also more attuned to the need of such enterprises, cutting red tape for approvals and speeding up bureaucratic procedures that often hinder business in China.⁷³ Proximity also helped give Legend access to the graduates of some of China's top universities, such as Beijing University and Qinghua. In particular, Qinghua provided many of Legend's employees. Approximately 20% of the three hundred employees at Legend's headquarters in 2001 were Qinghua alumni. Least tangibly, the cultural atmosphere in Haidian can be argued to have been more conducive to entrepreneurialism in the 1980s than

⁷¹ See for example World Bank (1993) 'The Asian Miracle'

⁷² See for example World Bank (1993) 'The East Asian Miracle'

⁷³ Personal Interview with Director of Torch Program, Mar 2000

other areas, owing to the large number of startups founded there. The pioneering spirit of the area and close proximity of competitors may have spurred entrepreneurs to do their utmost, although these factors are hard to access.

V. Bringing the State In

The analysis above explains the factors and strategies which enabled Legend to achieve competitiveness in the context of a technology-follower environment. However, one crucial aspect that has been omitted so far is the role of the state. The role of the state in development is a question which pertains to all developing economies. It is especially relevant to China given its history of central planning. Under the plan, the state pervaded all aspects of the economy, controlling the financial system and trade as well as production. Ascertaining how the state was involved in China's recent development, and the extent to which this involvement inhibited or was conducive to growth is therefore of considerable interest.

5.1. Plan or Market?

The role played by the State in East Asia's growth has been a subject of considerable debate. While there is widespread agreement that favourable fiscal and monetary policies limited inflation, maintained stable exchange rates and encouraged savings and investment, creating a sound environment for growth, there is considerable disagreement on the effect of more interventionist policies by the state. Revisionist theorists such as Chalmers Johnson and Alice Amsden have argued strongly that East Asian countries followed a path of state-led development, contending that extensive industrial policies and interventions in the market played a crucial role in spurring growth. Johnson argues that the Ministry of International Trade and Industry in Japan directed the course of development in Japan, selecting key industries to focus on and implementing policies to protect such industries, supply low-cost credit

subsidies, help in technology acquisition, promote exports, and increase consumer demand for their products. He claims it is possible to show the "differences between the course of development of a particular industry without governmental policies and its course of development with the aid of governmental policies".⁷⁴

Amsden describes how, in Korea under Park Chung-hee, the state operated closely with industry, supporting the growth of the huge chaebol groups through preferential policies and credit, in return for political support, declaring that Asia's 'second industrial revolution' was built on infant industry protection, in comparison to the laissez faire policies of the western industrial revolution: "In late industrialization, the foundation is the subsidy – which includes both protection and financial incentives." She concludes that Korean growth was faster than Latin America or India "not because markets have been allowed to operate more freely but because the subsidization process has been qualitatively superior."⁷⁵

While the industrial structure was not developed into the concentration of Korea or Japan, the state played an active role in Taiwan as well; during the 1950s, up to half of Taiwan's industrial production took place in state-owned enterprises,⁷⁶ and during the 1960s, state investment in heavy industries such as steel, petrochemicals and shipbuilding was extensive. The government later spurred the development of the private electronics industry through trade protection, export incentives and technical support through government R&D institutes and universities. In Singapore, the government aimed specifically at attracting foreign investors, by offering incentives for particular types of investment and through wage policies, as well as

⁷⁴ Chalmers Johnson (1982) *MITI and the Japanese Miracle*, Stanford University Press introduction reproduced in Okimoto and Rohlen, Thomas (eds) *Inside the Japanese system: readings on contemporary society and political economy* Stanford: Stanford University Press.

⁷⁵ Alice Amsden, (1989) *Asia's Next Giant*, 144-5

⁷⁶ Hobday (1995) *Innovation in East Asia*, 97

intervening in the form of government-owned enterprises and investment. Even in Hong Kong, seen as the paradigm of market freedom, the government intervened extensively in real estate, arguably creating a well-developed property sector through its control over land sales.

While neoclassic theorists concede that the state did intervene extensively in East Asia, they downplay the effect of these interventions, arguing that they were of little help to and may even have obstructed or created problems in the development process. The World Bank's "East Asian Miracle" report argues that the effect of government intervention in Asia was limited -- "we find very little evidence that industrial policies have affected either the sectoral structure of industry or rates of productivity change" but concedes that East Asia "has at times benefited from careful policy interventions".⁷⁷ The report concludes that specific industry promotion was a failure, while financial repression was mildly successful and export-push strategies were extremely successful compared to the import substitution regimes of Brazil and India.

The case of Legend offers an opportunity to examine these questions in the context of China's market reforms. Should Legend's success be attributed to the plan or the market? Legend was officially a state-owned enterprise (*guo you qi ye*). Its experience might prima facie be assumed to be a typical example of state-led development. However, the criterion of importance in judging this claim should be the actual practice rather than the nominal property rights designation of the type of enterprise. The relationship between Legend and the state, and the role of the state are considerably more subtle than might first appear. The state did play an important role in Legend's development, but not in ways that might be expected. Although some aspects of its organization reflected the old state planning system,

Legend was far removed from a traditional SOE. Instead it was a non-governmental SOE (*min ying qi ye*): the state owned Legend's assets, but did not play a role in management. Nor was Legend included in the central budget. This combination of close links to the state but autonomy in management was the crucial factor in explaining how Legend was able to become China's most successful computer manufacturer, outshining both traditional SOEs such as Great Wall and non-state enterprises such as Stone.⁷⁸ The involvement of the state in Legend's development is analyzed further below.

5.2. Industrial Intervention

As described in section II above, computer technology was designated in the mid-1950s as a key technology in China's science and technology modernization. Following the change from a research to a production focus in the 1980s, the central government instituted a number of measures to promote the development of a domestic computer industry. First was the creation of the Computer Industry Administration Bureau (*dian zi jisuan ji gong ye zong ju*) under the MEI in 1979, which was the government department directly responsible for overseeing and regulating the development of the industry. The government also intervened in the industry in a number of ways, implementing infant industry policies to protect and grow the industry. This development strategy was laid out in the Seventh Five Year Plan for 1986-1990.⁷⁹ These policies took both direct and indirect forms: establishing state owned computer enterprises, providing fiscal support for domestic enterprises, protection from foreign competition, and limits on domestic competition. The government was also able to promote

⁷⁸ As noted above (note 8), as a TVE Stone was neither a SOE or a private enterprise. However, after the township government withdrew from its management in 1985, it was effectively run as a private enterprise. (Lu 2000)

⁷⁹ Information in this section, including all statistics, is drawn from the State Council Research Report on Legend, 5:16-22.

⁷⁷ World Bank (1993) *The East Asian Miracle*, 21.

the domestic computer industry through procurement; besides central government purchasing, the purchasing of SOEs could also be directed. However, not all computer enterprises were subject to the same treatment: in the mid-1980s, the MEI's strategy focused on 'picking a winner' and promoting a 'national champion' enterprise, in the form of the Great Wall (*chang cheng gongsi*) a central SOE established and administered by the MEI. Great Wall was a traditional SOE, although it did have some important differences from other such SOEs.⁸⁰

In 1985, there were 132 enterprises involved in the computer industry, of which 89% were SOEs.⁸¹ Fiscal support from the state took the form of tax benefits, direct funding and the allocation of policy loans. Four tax policies were established in 1986 as part of the Seventh Five-year plan, for enterprises producing computers, software and integrated circuits: exemption from product tax (*chan pin shui*), a fifty per cent reduction in income tax (*suo de shui*), tax allowances of up to 10% for R&D spending and the waiving of import duty for capital goods. Second, RMB 100 million was allocated annually from the central budget in the form of direct funding to finance the development of these enterprises and commercialize technology. Third, special low interest loans of up to RMB 200 million annually were allocated for enterprises producing computers. Although the tax advantages were abolished in the fiscal reforms of 1994, these fiscal measures added up to substantial benefits for enterprises. From 1987-1993, 161 out of 234 enterprises received tax benefits totaling over RMB two billion. From 1987-1997, 87 enterprises received direct budgetary funding from the state amounting to over RMB one billion.

The main recipients of this direct financial support were SOEs under the MEI, Great Wall, Lang Chao and Hua Guang all received substantial fiscal support. Great Wall gained RMB 130 million of tax benefits from 1986-1990, and received RMB 13.7 million in direct funding.⁸² The Computing Institute of CAS was one of the first group of enterprises to receive these benefits in 1987. However, since Legend was not a producer of computers at the time, it was not subject to any of these benefits until 1990, when it was granted a domestic production license after having established production in Hong Kong.

As the second component of the government's development strategy for the computer industry, foreign competition was severely limited through high tariffs on imported computers, reaching up to 70%, as well as import quotas. The government did make efforts to attract foreign direct investment but the terms of such investment was limited.⁸³ Foreign investors were allowed only to establish joint ventures with Chinese partners, required to use a certain percentage of local components and to export a certain percentage of their output and to use domestic distributors to sell their products. These restrictions explain why multinationals such as IBM and HP, which had established production in China, chose to continue using Legend as a distributor after it had launched its own brand of computers which competed directly with them.⁸⁴ The effect of government protection was however mitigated by extensive imports through 'grey channels', effectively smuggling. While industry participants claim that smuggling was widespread, it is difficult

⁸⁰ See Lu (2000) *China's Leap into the information age* for a detailed analysis of Great Wall's development and organizational form.

⁸¹ This number includes both PC manufacturers and software companies, as both are included as part of the 'computer industry'.

⁸² State Council Research Report on Legend, 5-19.

⁸³ These restrictions were not limited to the computer industry in particular, but applied to a large number of industries in the 1980s.

⁸⁴ Personal Interview with Managers, Hewlett-Packard China.

to obtain an accurate estimate of its precise extent.⁸⁵

The government also attempted to control domestic competition in manufacturing through the requirement for a manufacturing license issued by the MEI, which were limited in number. These licenses were restricted to large and medium sized SOEs which had proven manufacturing capabilities. Imports of key capital goods need for manufacturing computers also required approval from the MEI, as well as foreign currency, which was strictly controlled.

What were the effects of the government's intervention to direct the development course of the computer industry? Legend and other companies starting up in the 1980s, such as Great Wall and Founder (*fang zheng*), a spin-off from Beijing University, certainly benefited from the early period of protection from foreign competition. Since their technological and management capabilities were limited, protection allowed them space to begin operations. Had the industry been entirely unprotected and opened to foreign competition, it seems likely that foreign competitors with established products, economies of scale and deep pockets would have dominated the market. Import and FDI restrictions created friction in the market which gave Legend and others a niche to fill as middlemen distributing foreign products to domestic consumers. Since demand for these products far outpaced the limited supply, distribution was a lucrative business, allowing Legend to build up the capital necessary to expand, which it was unable to obtain through standard financial channels.

However, state industrial intervention does not explain how Legend was able to succeed eventually in manufacturing. In fact, the limits on domestic competition, and the MEI's strong support of Great Wall inhibited rather than developed Legend's

ability to compete effectively in the 1980s. As a central SOE under the MEI's supervision, Great Wall was able to gain substantial funding from the central budget, operating under a soft budget constraint. As noted, direct financial support of Great Wall by the government amounted to over RMB 140 million. In 1989, Great Wall submitted a plan to the government for inclusion in the Eighth Five-year plan of a major investment project to increase capacity to 200,000 PCs a year in order to achieve efficient scale, which was approved. At the time, however, Great Wall's output was only 20,000 units a year.⁸⁶ The capacity was filled eventually only through Great Wall's joint venture with IBM. Legend by contrast, although it was a SOE, operated outside the state budget. Aside from an initial grant from the Computing Institute, it was forced to rely on finding its own funds for development. Without any scale manufacturing capabilities it was refused a domestic manufacturing license. Without manufacturing capabilities however, it was not eligible for the fiscal benefits provided by the government, a 'Catch 22' situation. This prevented Legend from moving from distribution into the higher value-added production sector. To do so, Legend was forced to establish operations in Hong Kong. Only in 1990 when it had independently acquired manufacturing capabilities through its Hong Kong operations was Legend granted a license to manufacture in China, along with the corresponding tax benefits.

Thus, while the computer industry in China was the focus of a state-led development effort and subject to a number of interventionist policies, preferential state support is not a sufficient explanation of Legend's success. The most successful firm in the longer term, Legend, was one which was not promoted directly by the government. Indeed there is a strong argument that Legend achieved its

⁸⁵ HBS interview with Deputy General Manager, Legend Hong Kong.

⁸⁶ Lu (2000) *China's Leap into the Information Age*, 163.

success precisely because it was *not* supported by the government.

Although it may be argued that Legend's period of significant success in the 1990s dates from after and was therefore caused by the commencement of government support, there are good reasons to believe that this is the wrong interpretation. Direct government support also had its drawbacks, reflecting the legacy of central planning. For example, under a localization policy, Great Wall was required to use a significant proportion of local components in its computers. From 0% in 1984, this proportion had reached 70% by 1987.⁸⁷ However since the component industry in China was undeveloped and also limited by manufacturing licenses, leading to monopolies for certain components, the quality of domestically produced components was low. Since the prices for components purchased by Great Wall were set by MEI, suppliers exported or sold the higher quality products on the market, supplying the lower quality products to Great Wall. Unable to avoid this problem, Great Wall's computers were of poor quality and unreliable, making them uncompetitive with foreign imports. In a survey in 1989 by the National Product Quality Inspection Centre, Great Wall's product was ranked the lowest among major domestically produced PCs.⁸⁸

In contrast, while Legend faced a hard budget constraint, it also had the flexibility to determine its own operations. Denied domestic production and funding, Legend was forced to expand into Hong Kong to gain both of these. This move proved to have great strategic benefits, giving Legend exposure to international management methods and a competitive market. Motherboard manufacturing gave Legend its first experience in export markets as its motherboards were marketed around the world through twenty-one sales subsidiaries in 1994. Through the IPO, it was able to gain access to a source of funding which

brought further independence. In order to pursue the IPO it was subjected to the rules of the Hong Kong Stock Exchange, requiring increased accountability and transparency, and as a result of the IPO, it received some exposure to the discipline of external shareholders. While the state-owned holding company in Beijing continued to retain the controlling share, Legend's managers were forced to take into account the demands of external shareholders; Liu Chuanzhi spends a significant amount of his time travelling to meet Legend's shareholders.⁸⁹ Government support came because Legend had already established its success, not the other way around.

Neither did Legend benefit from direct government procurement, as Great Wall had in the 1980s. In the early 1990s, when government agencies and large enterprises remained the main customers for PCs, Legend had difficulties in selling to such customers. The president of Legend's Computer Unit explained: "Since a PC purchase is a relatively significant expense for these customers, the decision maker would prefer to buy a foreign product, even at a higher price, since foreign products were considered to be of higher quality, and the decision maker wouldn't be blamed even if that product didn't work."⁹⁰ Legend was only able to sell a small quantity of computers to the National Tax Bureau, which, when convinced of the quality and service provided by Legend was willing to buy more. Although the government later issued a directive encouraging government agencies and SOEs to purchase domestic products if their price and product quality was comparative to foreign products, he noted that because of foreign brands superior reputation, "in reality, our price/performance ratio has to be significantly better than that of our foreign competitors for us to get those accounts."⁹¹ Legend therefore focused

⁸⁷ Ibid., 157.

⁸⁸ Ibid., 162-163

⁸⁹ Personal Interview, Liu Chuanzhi.

⁹⁰ HBS Interview, President, Legend Computer Systems.

⁹¹ Ibid.

more on the consumer market, which in the second half of the 1990s became the fastest growing segment. As state procurement became more open, those companies such as Great Wall, that had been relying on directed government purchasing, suffered greatly.

Further evidence for this interpretation is provided by the results of the removal of trade protection for the industry in the early 1990s, particularly following the 1992 MoU with the United States. Following exposure to competition with foreign imports on almost even terms, the domestic computer industry was decimated, with its share of the market falling from the high of 70% in 1990 to 33% in 1993.⁹² The only major firm which continued to produce its own brand of computer was Legend. Having been involved in the international markets through its Hong Kong operations, Legend's managers felt that they had sufficient strength to compete and would hold out for another year.⁹³ While other firms later re-entered the market, by maintaining its presence Legend was able to establish a lead resulting in its market dominance in the second half of the 1990s.

Infant industry protection therefore seems to have failed its objective of promoting domestic champions; although Legend emerged as the domestic champion, its success can only to a small degree be attributed to interventionist policies. To extend the 'infant' analogy, Legend can be seen as an illegitimate child that was left to fend for itself and thereby forced to grow up quickly. This was similar to the role of the government in Taiwan's electronics industry: Hobday concludes that "direct technological and industrial intervention had little effect.... Taiwan's vigour in electronics depended primarily on the strategies and abilities of entrepreneurs, engineers and managers."⁹⁴ Even in Japan, seen as the paradigm of

successful state-led development, Okimoto notes that "the myth of MITI omniscience is also belied by costly mistakes that have been made"⁹⁵ quoting the examples of the petrochemical industry. Legend's experience adds further weight to the argument that successful development comes more from the market than the state.

5.3. The State in another guise: the role of the Academy of Science

The analysis above criticizes direct industrial intervention by the government, but it ignores a crucial role played by the state in a wider sense in Legend's development. This was the role of the Computing Institute of CAS.

At the time of Legend's founding, China had only recently begun its period of reform and opening. As a result, alongside the normal obstacles facing startups anywhere, Legend faced a seemingly insuperable raft of barriers to its development stemming from the legacy of central planning. The financial System was dominated by the state-owned banks which were mainly used to extend policy loans to approved enterprises. Loans from such banks required collateral or guarantees, making funding extremely difficult to obtain for startup ventures. There were no public stock markets, and indeed no conception of stock holding, let alone a venture capital industry. Legend's founders, all scientists, lacked any management experience, and no management market existed. The legal system remained weak and undefined. Cultural attitudes, particularly among scientists and engineers, were predisposed against business and entrepreneurial activities, seen under both Confucian and Communist influences as inferior to scholarly pursuits.

⁹² State Council Research Report 1-21

⁹³ Personal Interview with Liu

⁹⁴ Hobday (1995) *Innovation in East Asia*, 98

⁹⁵ Daniel Okimoto (1988) 'Costs of Japanese Industrial Policy' in Okimoto and Rohlen, Thomas (eds) *Inside the Japanese System: readings on contemporary society and political economy* Stanford: Stanford University Press 1988, 224

Legend's relationship with CAS enabled it overcome many of these barriers. The Computing Institute of CAS, as Legend's sponsoring institution, provided the initial funding of RMB 200,000. In the early 1980s, CAS founded a dozen such spin-off companies as an attempt to commercialize its technology as well as to provide itself with ongoing funding. The Institute relocated one of its research units to provide Legend with a small house to use as office space. The relationship to CAS also provided benefits in less tangible ways. As the New Technology Development Company of the Computing Institute of CAS, Legend was able to benefit from using the established 'brand' of the computer institute. In the absence of a firm legal environment, the business environment in China depended heavily on connections and reputation. The Computing Institute was China's premier computer research institute and the strength of the Institute's 'brand' allowed Legend to surmount the considerable obstacles raised by its own lack of reputation and experience. Furthermore, CAS was the source of Legend's first major piece of business, which Legend was able to gain through its internal contacts. This was a project to install, test and maintain a batch of computers that CAS had purchased and to train operators. The project enabled Legend to earn RMB 700,000 of capital which it was able to use for the launch of the Chinese word-processing card.⁹⁶

As discussed above, CAS also functioned as a source of technology for Legend. Legend was given access to technology development within the Computing Institute. Even more valuable than the specific technology which CAS provided was its contribution in terms of human resources; given the negative attitude of scientists in China towards business in the 1980s, it was extremely difficult for Legend to recruit technical personnel. Even within CAS, scientists were unwilling to join Legend. Zeng Maochao, Head of the Computing Institute noted that "the

culture environment in the Academy of Science was not favourable at all to start-up companies. People who dealt with business were despised."⁹⁷ Having access to the wide pool of scientists within the Computing Institute, which had over 1500 research and support staff, was therefore an important resource for Legend. Other enterprises such as Stone were also attempting to lure scientists from the Institute. What made it an invaluable resource for Legend in particular was the support of CAS' managers. Zeng helped to alleviate the cultural bias against and the risk of joining Legend by offering to maintain the official positions (*bian zhi*) of those scientists who left to join Legend, giving them the option of return. This was known as 'stopping payrolls but keeping the position' (*ting xin liu zhi*). If they decided they wanted to return to CAS, they would be allowed to do so and given work.⁹⁸ CAS also continued to provide housing and other benefits for its researchers who transferred to Legend during the first few years, until it had grown sufficiently, and the commercial housing market developed sufficiently, for Legend to be able to do so. It is not clear when precisely Legend assumed responsibility for housing. It seems that after 1988, when it began hiring outside CAS, it was forced to provide its own housing for employees. After this, scientists who subsequently joined from CAS would be less likely to be able to retain their housing privileges. Over time, Legend began subsidizing its employees to find housing on the commercial, given the costs of the commercial market.⁹⁹

This close relationship and movement of personnel between CAS and Legend continued into the 1990s, culminating in 1998, when Legend took over the entire Computing Institute as its central R&D group. Thus CAS played a major role as an incubator during Legend's early development. The relationship with CAS

⁹⁶ Lu (2000) *China's Leap into the Information Age*, 65

⁹⁷ HBS Interview with Zeng Maochao, Aug 2000.

⁹⁸ Ibid.

⁹⁹ HBS Interview with former Managers, Legend Planning Department.

enabled Legend to overcome many of the barriers caused by missing or incomplete markets in the early period of reform. This role is similar to that played by Taiwan's state-controlled Industrial Technology Research Institute. ITRI trained engineers in technology as well as transferring technology to domestic firms, such as United Microelectronic Corp. (UMC), one of the leaders in the semiconductor industry. ITRI also incubated several firms that were later to become part of the core of the Taiwanese semiconductor industry. One company whose founding mirrored Legend was Winbond Electronics. Winbond was founded in 1987 by eight engineers from ITRI who left when ITRI decided to spin-off its commercial chip production operations to the private sector. They licensed the technology from ITRI as well as taking over the existing customer base. The original eight engineers were soon joined by 40 more ITRI employees. While Winbond did not receive direct funding from ITRI or the government, and was required to pay to license its technology, it benefited greatly from its close association with ITRI.¹⁰⁰

5.4. Clarifying the boundaries of the state

Was Legend part of the state or private? The close relationship between Legend and CAS was reflected in the lack of definition of the property rights between the two groups, evidenced by the relatively free movement of personnel and costless transfer of resources and technology from CAS. Francis argues that this under-specification of property rights reflects the lack of an official legal status for spin-off enterprises, the dual affiliation of founding employees, and incomplete and underdeveloped labour, technology and capital markets.¹⁰¹ Indeed, there was no conception of corporate identity for these enterprises. Thus the seed funding provided by the Computing Institute was

not provided under a contract in return for a certain ownership stake in Legend; since it was paid back by Legend, it might be considered debt rather than equity capital. However, the Computing Institute theoretically owned Legend in its entirety by virtue of the fact that it was the sponsoring agency, although the precise rights this 'ownership' entailed is far from clear.

However, although the state, in the form of the Computing Institute, owned Legend's assets, it was not involved in the operation of the business. This combination represented a fundamentally new organizational form in China, state-owned but non-government run enterprises (*guo you min ying qi ye*). Legend's founder-manager Liu Chuanzhi, was granted "three autonomies" (*san quan*) by Zeng Maochao, the head of the Computing Institute as a condition for agreeing to found and manage Legend. Zeng explained the reasoning behind this decision to grant Legend these rights: if Legend was going to operate in the market, and compete on even terms against private firms such as Stone, it would need to have "its hand and feet untied" from the encumbrances imposed by the "old system."¹⁰² First, Legend would be given autonomy in its operations. It would be free to decide its business scope and to run its day to day operations autonomously. Underpinning this, Legend would have financial autonomy, the power to decide the distribution of its income as well as the obligation to find its own funding. As the owner of Legend's assets, the Institute did have some claim over part of Legend's profits, but this claim was not set in advance but negotiated annually. The size of the portion of profits remitted to the Institute depended on how much Legend needed to retain for its growth, but was also determined by the recognition of responsibility which Legend owned towards its parent. Liu Chuanzhi explained that it was not the case that each of the dozen CAS-

¹⁰⁰ Hobday (1995) *Innovation in East Asia*, 120-122

¹⁰¹ Corinna-Barbara Francis (1999) "Bargained Property Rights: The Case of China's High-Technology Sector" in Jean Oi and Andrew Walder, eds, *Property rights and economic reform in China*, Stanford, Calif.: Stanford University Press, 222-223

¹⁰² HBS interview with Zeng Maochao

sponsored startups should pay 10%, for example, of their profits back, but rather that Legend, as the most successful of these enterprises, had a responsibility to turn over more to cover the failure of the other enterprises.¹⁰³ By 1986, Legend had paid back the original RMB 200,000 and had transferred an additional RMB 3.65 million to the Computing Institute. In 1988, this payment was fixed at RMB 1.2 Million annually.¹⁰⁴

The third right granted to Legend was control over human resources. Most importantly this included the right to decide its own management team. Although the original founding team came from the ranks of the Computing Institute, after the founding Zeng agreed that the Computing Institute would not be involved in the selection of managers. This power was most prominently exhibited in 1993, when many of the original founders were moved aside or forced into retirement in favour of a younger generation of managers. Yang Yuanqing, a twenty-nine year old graduate of the University of Science and Technology was promoted to head of the PC business unit after only five years with Legend. However, Legend was also given the option to hire anyone within the Computing Institute that it wanted to, except for those employed in important strategic groups on state projects. Access to the "talent warehouse" of the Computing Institute would therefore give Legend a significant competitive advantage over private firms.

The granting of these three autonomies to Liu allowed Legend to develop an effective organization. Legend was able to benefit from its proximity and access to the Computing Institute, while being operationally independent from the beginning, freeing it from potentially damaging day-to-day interference by managers from CAS. This organizational structure represented a *de facto* separation of the rights of control and the rights to the residual, with Legend holding

the former and CAS the latter. In the context of the uncertainty of China's transitional environment, this seemingly strange splitting of rights seems to have worked more successfully for Legend than full privatization, allowing Legend to benefit from the technological capabilities built up within the state but without detrimental state involvement.

As Legend grew and became more successful, its autonomy increased further. By the 1990s, it was no longer reliant on the Computing Institute for personnel, technology or funding, able to access these through the market. Most new employees were graduates hired directly from the universities at the bottom level, and from other enterprises at the higher level, although R&D staff continued to come from CAS. Financing was achieved through funds accumulated from the distribution business as well as through bank loans. Legend was first able to obtain a bank loan of HK\$ 300,000 from the Bank of China in Hong Kong in 1987 to provide the funding for the establishment of Legend Hong Kong, although it was only able to do so through Liu Chuanzhi's personal contacts: his father and brother were both bankers.¹⁰⁵

Legend's expansion eventually forced further clarification of property rights. Legend Hong Kong was established in 1988 as a contractual joint venture. Each party's ownership stake and rights to control through the appointment of the board of directors was specified in the contract. This formed a step forward in the gradual process of corporatization. Such well-defined property rights were possible only within the context of Hong Kong's well-established legal system. However, exposure to such a system also allowed Legend's managers to push forward the process of corporatization in China. This was exemplified in Liu's successful push to have CAS grant shares in Legend to its founders and early employees, resulting in the profit-sharing plan Legend (*fen hong*). This plan

¹⁰³ Personal interview with Liu Chuanzhi.

¹⁰⁴ Lu (2000) *China's Leap into the Information Age*, 70

¹⁰⁵ Personal Interview with Liu.

represented a further step in the clarification of property rights by formalizing the claims of various parties over the residual.

Further strengthening of property rights came through the initial public offering in 1994. Although only 25% of the shares were sold to outside investors, the minimum level permitted by the exchange regulations in Hong Kong, and CAS remained the majority shareholder, the discipline and transparency forced by such public listing, as well as the funds that it brought it, increased Legend's independence from the state. The next step was taken in 1998 when Legend Hong Kong merged with Beijing Legend, further clarifying the corporate ownership structure.¹⁰⁶ Legend also launched an employee stock option scheme to provide further incentives to employees. 17% of the shares owned by CAS in Legend Hong Kong were set aside as an option pool (*gu quan*) for employees who had worked for Legend for over two years, excluding factory workers. Such a scheme was unprecedented in China, and indeed because of foreign currency restrictions, it was illegal for individuals in China to trade in shares overseas. To get around these restrictions, a mechanism was created whereby employees would receive the cash premium from the company when they decided to exercise their options, rather than actually trading in the shares themselves. By 2001, further dilution of CAS' shareholding following a secondary stock offering left CAS with 55% share of Legend, while the remaining 45% was publicly held by outside investors.¹⁰⁷

The relative power which possession of the rights to control gave Legend can be seen in its changing relationship with the Computing Institute. In 1993, the Computing Institute's shares in Legend were transferred up to the level of CAS. In 1995, Legend was granted equivalent status under CAS to that of the

Computing Institute and Liu was made the Director of the Institute, while Zeng, the former head of the Institute became Chairman of the overall Holding company's board. In 1998, Legend took over the Computing Institute, subsuming it into Legend's central R&D group.¹⁰⁸ This role reversal between the Institute and Legend reflected the transfer of research and technological capabilities from the central state to the independent – although still state-owned – business sector. It was a clear sign of the shifting balance of power between the state and market.

VI. Concluding Remarks

Legend's development and success provides further evidence for the argument that development of technological capabilities through the assimilation of existing technologies is more conducive to rapid growth than a focus on pure innovation. Similar to many of the most successful companies in Japan, Taiwan and Korea, Legend was a local innovator, assimilating existing technology, adapting and improving it for the local conditions.

Such a task was not however simple; successful assimilation required considerable technological learning capabilities. Legend was able to acquire these capabilities through the transfer of personnel and know-how from the Computing Institute of the Chinese Academy of Sciences, its parent organization. As a distributor of foreign products it was forced to apply this technological capability towards learning and adopting existing technology rather than attempting to pursue its own fundamental innovation. This adoption was not simply copying of foreign technology; through selected incremental innovations, such as its Chinese word-processing technology, Legend was able to improve on existing technology and add significant value. Technological learning capability was not based on

¹⁰⁶ See Figure 3.

¹⁰⁷ HBS interview with Deputy General Manager, Legend Hong Kong

¹⁰⁸ Lu (2000) *China's leap into Information Age*

technical capacity alone. It also required the development of organizational and managerial capabilities in order to commercialize learned technology successfully and grow, as well as the entrepreneurial vision and desire to do so. Although Legend's organization did reflect the legacy of central planning, through its functional organization and annual plan, in this area as well Legend was a local innovator, introducing and adapting organizational and managerial institutions that had been successful elsewhere. It was gradually able to evolve away from the plan and towards the market.

Legend's case also weighs against the argument that imitation rather than innovation will condemn a firm or economy to a perpetual follower role. Although Legend began in a low value-added role as a distributor, it was gradually able to increase its technological level and move up the hierarchy from imitation towards innovation and achieve competitiveness with foreign technology leaders. Indeed the distribution phase provided an opportunity for Legend to learn both technological and managerial capabilities. This was achieved by its unique position as a spin-off of a state research institute, which allowed it to leverage the technological capabilities accumulated within the state through applying them toward the market.

Outside observers, particularly foreign competitors, have claimed that Legend's success can be attributed to government support. As a state-owned enterprise, it might by definition be seen as paradigm of state-led development. However, categorizing Legend's development simply as 'state-led' would be too simplistic. The real picture is considerably more complex. The SOE category covered a wide variety of enterprises, with different characteristics and different degrees of state involvement. To understand the role of the state, a more detailed conception of the 'state' is required. Under the Maoist central planning system, almost all aspects of the economy and society were controlled by the state in some form. This

legacy was the starting point of reform. Thus the question that should be asked is not "what role did the state play?" but rather "what role did which part of the state play?"

In Legend's case, the state in the form of the central government, primarily the MEI, did pursue policies of 'state-led development' similar to those of Japan and Korea and to a lesser extent Taiwan. The government intervened in the computer industry, supporting the development of an infant industry through state-run enterprises, protection, licenses, and subsidies, and promoting the growth of a national champion, Great Wall. However, such market interventions failed to achieve their desired aim; when protection was removed, the protected firms were unable to compete with foreign entrants. Nor did Great Wall, the 'winner' picked by the government, become the national champion, although it was able to achieve some success. It was a company that was not directly promoted by the central government that eventually became de facto national champion – Legend. Although protection did play some role in allowing Legend to grow by creating friction in the market, and it did receive some advantages once it had achieved success, Legend's ability to compete successfully came primarily because it had been forced to become independently competitive in order to survive. Faced with a hard budget constraint and numerous environmental barriers, its managers were forced to develop strategies to overcome these obstacles.

The state in another guise did play an important role in helping Legend, however. While the MEI did not support of Legend's development, the Computing Institute of CAS, a state agency, did. The support of the Computing Institute was crucial in the early years in allowing Legend to surmount the barriers created by the lack of developed markets and institutions. Its role as an incubator and provider of capital, technology and

personnel was similar to ITRI's in Taiwan, although the boundaries between state and private sector in Taiwan were considerably clearer. However, while its relationship with CAS was extremely valuable for Legend, its success cannot be explained by this factor alone, as the fate of the other startups founded by CAS shows.

While Legend was still considered an SOE, its mode of operation was far distanced from traditional SOEs, with the government playing a minimal role in its operation. It was therefore designated a non-government run SOE. From its founding, it was largely autonomous of CAS; while CAS provided a small amount of seed funding which was later repaid, it was not willing or able to subsidize Legend's growth. Legend was forced to find other sources of funding, primarily through the accumulation of profits through its distribution business. Likewise, while CAS offered access to its pool of human resources, it did not impose any managers on Legend, allowing it to break free of the traditional seniority based management of SOEs. This financial and human resources autonomy provided the basis for managerial autonomy. Legend's managers were left free to make their own operational decisions and devise their own strategies, allowing it to introduce innovations in organization and management. Legend's autonomy increased further and its property rights became more clearly defined following its growth and success. Its managers were able to negotiate a profit sharing agreement in which founders and early employees held 35% of the overall holding company's shares. The Hong Kong subsidiary was meanwhile listed on the stock exchange introducing outside shareholding to the organization. Eventually, Legend had grown to the stage where it was able entirely to subsume its parent, the Computing Institute.

Thus Legend's development was 'state supported' rather than 'state-led' and the state concerned was not the central state but lower levels of the state, akin to Oi's

'local state corporatism'. In Legend's case, this was the Computing Institute, a unit within the state. There was even considerable competition between the different branches of the state through the enterprises supported by each: the MEI's Great Wall, Beijing University's Founder, and CAS' Legend, as well as local government supported companies such as Stone. However, Legend succeeded through facilitating the transfer of resources from the state to the market. It was through turning away from the state and engaging in markets and competition that Legend was able to learn and develop the management skills and competitive capabilities that drove its success. Perhaps the best characterization of the model of development followed by Legend is 'market oriented, state supported'.

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Liu Chuanzhi, President and Founder Legend Holdings
Deputy General Manager, Human Resources Department, Legend Holdings
Manager, Legend College of Management, Legend Holdings
Business Development Manager, Legend Computer Systems
Assistant, PR department, Legend Computer Systems
Manager, Hewlett-Packard China
Deputy Director, International Department, China Torch Program
Editor, China PC World
Commercial Attaché, US Embassy

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Managers, Legend Planning Dept.
Director, State Council R&D Centre
Manager, Microsoft China.
Deputy General Manager, Legend Holdings (Hong Kong)
Vice Chairman, Legend Holdings
Vice President, Legend Group (Beijing)
President, Legend Computer Systems
President, Legend Holdings
Zhu Li Nan, Vice President, Legend Holdings
President, Digital China
Chairman, Legend Group Holdings Beijing, former director of Computing Institute

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Probeabdruck aus: Der Blick durch die Drachenhaut - Friedrich Schiff, Maler dreier Kontinente

Gerd Kaminski

Ein junger "Zille" des Shanghaier Milieus

Schon während seiner Studienzeit arbeitete Schiff für Zeitungen. Seine Zeichnungen berühmter österreichischer Schauspieler verraten seine große Begabung. Doch das nach dem Zerfall der Monarchie zu einem Kleinstaat geschrumpfte Österreich war dem jungen Maler zu eng. Sein Cousin Francis Gmehling, Sohn der ältesten Schwester von Friedrich Schiffs Mutter, lebte bereits einige Jahre als Kunst- und Antiquitätenhändler in Shanghai. 1930 entschloß sich Schiff, sein Glück ebenfalls in China zu suchen. Dort wäre er beinahe nicht angekommen, denn während der langen Reise legte er seinen Skizzenblock kaum weg. Als er in Moskau in der Nähe der Bahnhofes zeichnete, wurde er verhaftet und erst nach einem langen Verhör wieder freigelassen. In Shanghai kam er fast ohne Geld in der Tasche an und mußte sich beeilen, Fuß zu fassen. Er selbst hat beschrieben, wie Shanghai auf ihn wirkte: "Zur neuen Heimat wurde mir Shanghai bald. Das Leben in dieser buntesten internationalen Stadt der Welt mit seiner Unruhe, seinen ständigen

Wechselfällen, dem Reiz der Neuartigkeit und der Fremdheit faszinierte mich. Ich war jung und hatte offene Augen und Ohren für all das Neue, das auf mich einstürmte. Und ich muß sagen, daß diese Stadt und die Menschen in ihr niemals anders auf mich gewirkt haben. In all den Jahren, da ich da gelebt habe, in guten und schlechten Zeiten, rollten die Bilder und Eindrücke, ein nie endender, immer interessanter, lebensvoller, faszinierender Film an meinen Blicken vorbei.."

Die "Wiener Clique", welche in Shanghai schon vor der Emigration bestanden hatte, nahm den jungen Zugereisten sofort für sich in Anspruch. Schon am 2. November 1930 berichtet die *China Press* auf der Gesellschaftsseite mit Bildern über eine Aufführung des "Spiel im Schloß" mit Schiff als Mansky. Dr. Anton Walk, wenig älter als Schiff, Vertreter der Handelsfirma Glanzmann in Shanghai gibt den "Schauspieler". Mit ihm ging Schiff öfters aus und besuchte die Abende des österreichischen Ehepaars Eduard und Margaret Kann. Eduard Kann, der bald zum Auftraggeber Schiffs wurde, war Banker und führte ein großes Haus.

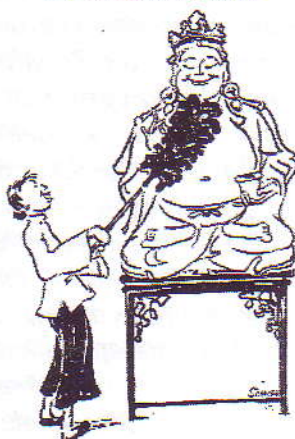
Anfang 1932 häuften sich Eindrücke mehr als dem jungen Maler lieb sein konnte. Teile seines *Shanghai-Tagebuchs* werden mit einiger Verspätung vom *Wiener Journal* am 5. Dezember desselben Jahres abgedruckt:

29. Januar, 6 Uhr früh.

Ich erwache und werde mir langsam klar, daß die gehörten Detonationen Schüsse sind. Es wird hell. Ich versuche weiter zu schlafen, aber es geht nicht. Folglich rasiere ich mich umständlich und bade. Der Boy kommt um eine halbe Stunde zu spät, weil die Straßenbahn nicht verkehrt.

1 Uhr 15 mittags. Von meinem Balkon läßt sich der Flugzeugangriff wunderbar beobachten. Silberne Drachen mit rot beklecksten Flügeln kreisen in eleganten Kurven durch das klare Blau des Himmels und flach über die Dächer weg, dann

LAMPEN, LAMPENSCHIRME
KUNSTGEGENSTÄNDE



Francis G. GMEHLING
137 Nanking Road, Apt. 17 B, 2 Storey
(corner Szechuen Clock & Sunclock)

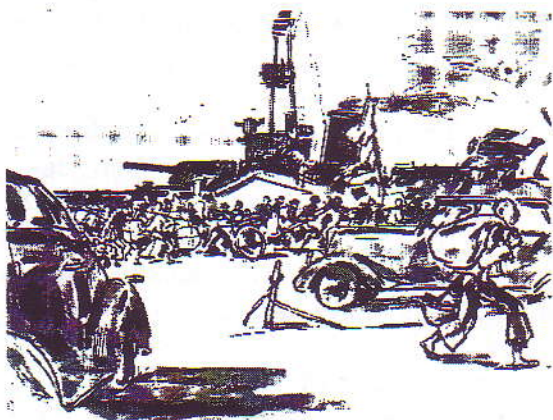
wieder steil in die Höhe, aber vorher ein dumpfer Krach – eine Bombe. Dazwischen wie Knallerbsen Gewehrschüsse und das Ra-ta-ta-ta der Maschinengewehre. Um Punkt 2 Uhr ist die Vorstellung zu Ende.

4 Uhr 30. Wieder das surrende Maschinengewehrgeräusch, wieder Flieger. Im Hintergrund dicke Rauchwolken.

5 Uhr. Ich gehe auf das Dach des Cathay-Hotels. Die Stadt liegt in der Dämmerung riesenhaft da – ohne Ende. Jenseits des Kanals hängen dunkelgraue Rauchschwaden und züngeln Flammen. Die Stadt brennt an sechs verschiedenen Stellen. In der Luft taumeln verbrannte Papierfetzen.

5 Uhr 30. Tee in der Hotellounge. Salonorchester. Lippenstiftgeschmückte Damen, Cocktails und Extraausgaben.

11 Uhr nachts. Sternenhimmel. Im Nordwesten ist alles glutrot hinter schwarzen Häuserkulissen. Die Straßen sind ausgestorben, wenn auch alle Lichtreklamen brennen, als sei nichts geschehen. Nur jenseits der Brücken ist Schwärze, aus der in kurzen Pausen das Knallen der Gewehrschüsse kommt.



31. Januar, ½ 10 Uhr früh.

Heute, Sonntag, geweckt durch ein mit Musik vorbeimarschierendes englisches Regiment. Als Abschluß ein Auto mit schußbereitem Maschinengewehr. Und gleich darauf – eben jetzt – erscheinen japanische Flieger (ich zähle sechzehn) und kreisen über der Stadt. Seit gestern mittag sieht man haufenweise Flüchtlinge: Frauen, die Kinder am Rücken, Koffer und Kisten, Bettzeug und aller möglicher und unmöglicher Krimskrams auf Karren und

Rikschas. Tschapei wird evakuiert. In den Kabarets und Bars des Settlements spürte man gestern abend nichts von all dem Wirbel. Der reguläre Samstag-nachtbetrieb. Nur daß eine Reihe von Jünglingen des S.V.C. (Shanghai Volunteer Corps) die Gelegenheit ausnutzte, um vor den Damen als Vaterlandsverteidiger in Uniform zu paradien...

23. Februar...

Vormittags Besuch in einem Flüchtlingslager. Das Bild des entsetzlichsten Elends, gegen das man durch den allzu oft gewährten Anblick fast abstumpft. Fast! Schildern kann man das nicht. Es ist trostlos erschütternd! Nachher sah ich den ersten Verwundetentransport.

2. März.

Frühlingstage! Klar und schön mit blauem Himmel! An diesen Tagen glaubt man, alle Menschen müßten in neuen Kleidern auf reinen Straßen spazieren gehen und den jungen Frauen nachschauen. In Schanghai gibt es keine reinen Straßen und nur wenig junge Frauen, aber viel Schmutz und Kulis, die spucken, und zu allem gerade jetzt noch viel Stacheldrahtverhaue und spanische Reiter und Posten mit blanken Bajonetten, die in der Frühlingssonne glitzern. Gestern um 1 Uhr 15 gab es einen guten Ruck: Die Fensterscheiben klirrten und der Boden schwankte und alles glaubte, wir bekämen noch ein kleines Erdbeben zu den anderen Annehmlichkeiten dazu. Aber es stellte sich bald heraus, daß es nur der harmlose Versuch war, das viel begehrte Flaggschiff „Idzume“ unter Zuhilfenahme von Minen in die Luft zu sprengen. In der Nacht gab es – wieder einmal in der Nähe – eine wilde Schießerei. Und heute ziehen sich die Chinesen zurück. Ich beobachte vom Balkon aus die Brände in Tschapei. Man sieht die Flammen züngeln und die Rauchwolken, die die schwarzen Punkte verschlucken, die Flieger, diese unscheinbaren Haupturheber des Schauspiels. Der Rauch ist viel westlicher wie früher, ein Zeichen, daß die Chinesen zurückgegangen sind.

In Shanghai half ihm nicht nur sein Cousin Gmehling sondern auch die freimaurerische Zugehörigkeit. Für die Loge in Shanghai malte er den District Grand Master of Northern China Henry Clerk in Lebensgröße.

Doch bald hatte er Protektion nicht mehr nötig. Chinesische Zeitungen rissen sich um seine Karikaturen und Covergestaltungen.



Mit der Zeit wurde er eine Zelebrität der Klatschspalten. Seine rege Anteilnahme am Shanghaier Nachtleben und den dort handelnden Personen sicherte ihm die Aufmerksamkeit der Journalisten. Unter dem Titel „Young Artist Invades Cabarets With His Protective Pig“ brachte die *Shanghaier Evening Post* einen Bericht über Schiffs nächtliche Exkursionen:

„Ein junger österreichischer Künstler in Shanghai findet es höchst spannend am Abend in die lokalen Nachtclubs zu gehen, um mit Bleistift und Notizblock die ungewöhnlichen Erscheinungen zu skizzieren, welche er dort antrifft. Bis jetzt ist er dabei ein oder zweimal in Lebensgefahr gekommen und auch im Mittelpunkt von ein oder zwei Raufereien gestanden, während er seiner Arbeit nachging. Es muß aber dazu erklärt werden, daß es nicht die Nachtklubeigentümer waren sondern die

Zuhälter und manchmal die Tanzmädchen selbst...

Wenn Herr Schiff in die Nachtclubs geht, dann bewaffnet er sich mit einem kurzen Bleistift und einem kleinen Zeichenblock, um so unauffällig wie möglich zu erscheinen. Wenn die nächtlings tätige Welt an ihm vorbeizieht, dann skizziert er rasch, was er sieht, während er seinen Block unter dem Tischrand hält. Trotz dieser Vorsichtsmaßnahmen kommt er manchmal in den Verdacht mancher Leute, welche dann kommen, um ihm über die Schulter zu schauen.

Der junge Künstler hat immer das Bild eines fetten Schweins in seinem Skizzenbuch. Wenn irgendjemand fragt, ob er gezeichnet worden sei, antwortet er „ja“ und zeigt ihm das Schwein. Diese Vorgangsweise entwaffnet sie normalerweise und ist eine kalte Dusche für ihre Entrüstung. Einige werden zornig und wollen eine Rauferei beginnen. Daher sichert sich Schiff immer die Dienste eines Rausschmeißers, wenn er zeichnen geht. So kann er, wie er meint, immer in Ruhe arbeiten.“

Das scheint allerdings nicht immer funktioniert zu haben, denn der Klatschspaltenkollege des Kunstkritikers vermerkte ein andermal: „*Freddie Schiff has a beautiful black eye. Hit himself with a tennis racquet sez he. One summer version of the old door-in-the-dark gag.*“



Zum Thema Nachtclub brachte auch die *North China Daily News* einen Bericht:

Eine der Sehenswürdigkeiten, welche von unseren Besuchern besonders geschätzt wird, ist der Nachtclub, wo Herren sowie

Damen vom Anblick der chinesischen Tanzhostessen hingerissen sind.... Einer der häufigsten Kommentare ist "Oh, wie pittoresk! Ich wollte, ich hätte davon ein Bild!" Nun, das gibt es jetzt.

Friedrich Schiff beleuchtete die "Szene" jedoch nicht nur mit Augenzwinkern, sondern bereits seine frühesten Arbeiten bringen sein Mitgefühl mit dem Elend der käuflichen Mädchen zum Ausdruck.



Andererseits formt sich in seinen Zeichnungen allmählich der Typ des "Schiff-Girls", dessen Archetyp auf einem 1931 für seinen guten Freund Anton Walk gezeichneten Weihnachtsgruß zu finden



ist. Innerhalb der nächsten Jahre wurden die Figuren schlanker, schwebender, bis schließlich auf grazilen langen Beinen, das "Schiff-Girl", welches von den Zeitungen auch so angesprochen wurde, die Szene betrat.

The Times Week: "He might be called the creator of the 'Schiff-Girl'".

Die vom American Bookshop in Shanghai edierte Serie "Shanghai Cabaret Girls" gehörte zu den beliebtesten Postkarten, welche von Shanghailändern und Touristen nach Hause geschrieben wurde.

1933 wollte Schiff seine Kreationen aus dem Nachtleben in Form einer Ausstellung präsentieren, doch wurde dies durch die Sponsoren der Galerie verhindert. Zwar gehörte das "Saufen wie ein Pferd und Lieben wie ein Hahn" zu den Mottos der europäischen Shangaier Gesellschaft, doch legte man keinen Wert darauf, öffentlich damit konfrontiert zu werden. Vom *Peking Chronicle* wurde dies bedauert, welches nach der Schilderung von Schiffs Schwierigkeiten feststellte: "There is nothing disagreeable about the Schiff's brand of humour". Zur Bekräftigung



dieser Ansicht wurde im *Chronicle* ein "Schiff-Girl" wiedergegeben.

Wie er einer Journalistin der *Wiener Zeitung* gegenüber erwähnte, waren die Nachtclubs nicht nur seine Jagdgründe für interessante Milieustudien, sondern fungierten selbst als ständige Galerie der Werke des jungen Malers.



Eines der ersten Projekte dieser Art scheint gemeinsam mit dem Architekten C.H. Gonda entstanden zu sein. Es handelte sich um den Nachtclub *Valencia* in der Sichuan Road Nr. 84. Ein wichtiger Auftrag waren die Wandmalereien für den noblen französischen Klub in der Route Vallon, welcher das Zentrum des Lebens der französischen Gemeinde darstellte. Im großen Empfangsraum präsentierte Schiff Shanghaier Straßenszenen. Würdige Chinesen in ihren schwarzen Seidenjacken promenierten zwischen Straßenhändlern. In einer der Ecken versuchten drei kleine Mädchen von einem Matrosen Münzen zu erbetteln, ein Trio von Singsong-Girls lief zu dem Engagement in einem Restaurant und - wie die *North China Daily News* schrieb - eines der besten Motive war die Gruppe chinesischer Straßenhändler.



Alle Zeitungen betonten, diese interessanten Malereien seien die ersten ihrer Art in Shanghai.

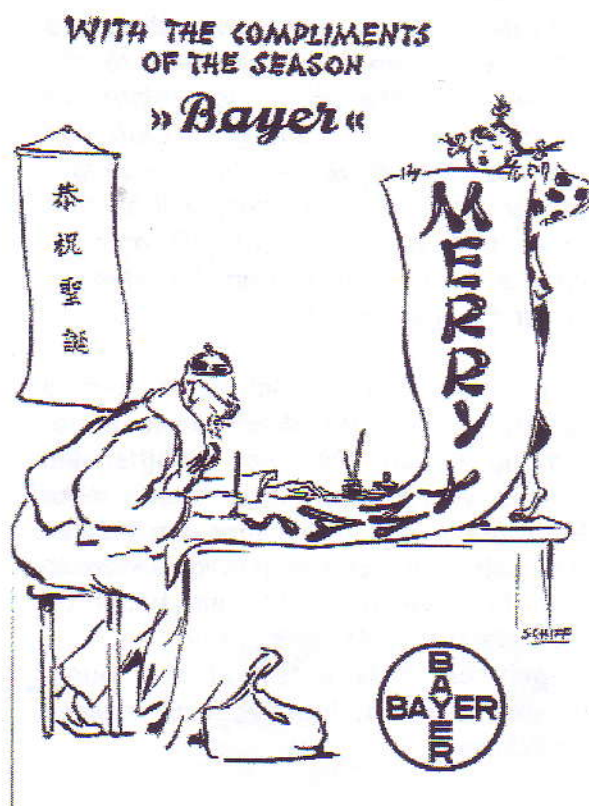
Die Dekoration weiterer Clubs wie das *Balaleika*, das *Roxy* und andere folgten. Am meisten umworben wurde Schiff durch das *Maskee*, wo Schiff immer wieder weitere Werke schuf. Daß es sich dabei wirklich um eine Art Kunstgalerie des Shanghaier Lebens handelte, wurde sehr wohl erkannt und geschätzt. Die *China-Press*, eine der vielen Zeitungen, welche über Schiffs Ausgestaltung des *Maskee* berichteten, schrieb „*About the most attractive art gallery of this culture-forsaken city of the high-cast dollar is Horst Riehm's Maskee—the Schiffings which decorate the walls along the stairs all the way from the Paramount to the Maskee treat phases in local night life from Chupaosan to Shanghai Club and are in themselves well worth inspecting. Riehm's trouble, we think, will be that people will waste 15 or 20 minutes climbing those stairs step by step to inspect the drawings.*“

Das Publikum war von Schiffs Werken so begeistert, daß das *Maskee* in seiner Werbung neuen Malereien Schiffs den Vorrang vor seinen Küchenchefs oder Sängerinnen gab. Das Leben im *Maskee* hielt Schiff in chinesisch gebundenen Alben fest, welche heute ein begehrter Gegenstand von Sammlern sind. Gelegentlich verlegte Schiff das bunte Treiben der Nachtclubs in seine eigenen vier Wände.

Seine Atelierfeste wurden Legende und von der Presse eifrig kommentiert. Diese Feste dienten dem Spaß an sich, aber auch der Reklame für seine eigene Malschule, welche für Schiff während seines Shanghai-Aufenthaltes ein weiteres wichtiges finanzielles Standbein darstellte. Wie es dort nach den Intentionen des Gastgebers zugehen sollte, zeigt die von ihm gezeichnete Einladung zu einer dieser rauschenden Partys.

Mit dem Studio und seiner Wohnung ist er mehrmals umgezogen und schickte seinem Freundes- und Bekanntenkreis charmante Ortsangaben. Die Anzeige des Umzugs seines Studios zeigt, daß seine vornehmliche Schülerklientel weiblich und reich war. Wöchentlich 3 Stunden kosteten pro Person 50\$. Von ca. 20 Dollar im Monat konnte man bereits einen bescheidenen Lebensunterhalt bestreiten.

Eine wichtige Unterstützung von Schiffs aufwendigem Lebensstil waren auch die Auftraggeber für Werbegraphiken, worunter sich große Unternehmen wie z.B. Bayer befanden.



Doch über die Hauptquellen seiner Situiertheit, den "Szenebildern", den Porträts reicher Shanghailänder und den Werbegraphiken vergaß Schiff nicht die Augen für andere Eindrücke offenzuhalten. Alle Facetten der chinesischen Kultur interessierten ihn. Immer wieder besuchte er Tempel und Pagoden und studierte die Physiognomien der Mönche und Betenden.

Für Europäer schwer zu verstehen war das chinesische Operntheater. Mit seinem

Freund Walk ging er zu Pekingopernaufführungen. Wie eine solche chinesische Oper auf den europäischen Gast wirkte, beschrieb Walk in einem Brief nach Wien:

...Ich werde Euch womöglich einmal ein paar chinesische Grammophonplatten schicken, damit Ihr eine Vorstellung von der Melodieführung und dem Rhythmus von Musik und Gesang bekommt. Gesungen wird, auch von Darstellern männlicher Rollen, nur im Diskant und mit Kehlstimme. Ohne daß ich jemals Kastraten gehört habe, möchte ich sagen, daß es sich wie Kastratenstimmen anhört. Hart. Und keine Übergänge von Ton zu Ton, sondern immer jeder Ton für sich.- Die Musik und der Gesang der Bühne kennt nur alte Melodien und Lieder, die jedermann im Publikum von Kindheit auf kennt. Es gibt also keine „neuen Opern und Operetten“. - Die Texte der Gesänge mit Worten sind im chinesischen Programm gedruckt und werden mitgelesen. Nur die Frauen sieht man vielfach anstatt mitlesend, das Spiel auf der Bühne beobachten. Sie lernen von dort für die in ihrem häuslichen Leben nötigen Gestikulationen und für's tägliche Leben verwendbare Mimik.

Sämtliche Rollen werden von Männern gespielt, auch die Frauenrollen. Alle Männer darstellenden Schauspieler tragen Bärte, bis auf den Spaßmacher, der in traditioneller Art geschminkt ist. Auch der Abgesandte des Kaisers war bartlos. Dafür war er als Krieger geschminkt, d.h. das ganze Gesicht ziegelrot und darauf schwarze Falten; Krieger müssen ja furchterregend aussehen, denn sonst geht die Chance, den Gegner zu besiegen, verloren. Denn im Kampf tötet man nicht, das wäre sonst ein zu gefährliches Handwerk.- Die Bühne kennt nur andeutungsweise Dekorationen. Außer den Schauspielern befinden sich auf ihr in einer vorderen Ecke die Musikanten und die Kulis, welche Sessel für die einzelnen Szenen zurechtstellen. Die Kulis und die Musikanten schwatzen während der Vorstellung, rauchen, trinken Tee, lesen Zeitung und natürlich spucken sie auch

auf den Fußboden und rotzen sich (der Chinese gebraucht keine Taschentücher). Der Zuschauerraum ist während der ganzen Vorstellung beleuchtet. Den Logenbesuchern wird von der Direktion Tee, Orangen, Sonnenblumenkerne und eine grüne olivenförmige Frucht, die einen Kern hat und zusammenziehend bitter schmeckt, gratis zur Verfügung gestellt. Im Parkett muß man dafür bezahlen. Es ist ein ständiges Hin- und Hergehen von Kulis mit Erfrischungen, es gibt ständig Lärm. Was im Stück vorgeht, erseht Ihr aus beiliegendem Programm.-

Mei Lan - Fang ist der berühmteste Frauendarsteller der Gegenwart. Er ist kaum so groß wie Anny, äußerst graziös und hat ein zwar fremdartiges, aber schönes Profil. Seine Augen sind groß und stehen ganz vorne. Er lächelt während der ganzen Aufführung nicht ein einziges Mal. Das Kostüm wechselt er zu jedem Auftritt. Ich habe etliche acht oder 10 verschiedene Kostüme an ihm gesehen. Auf dem Theater werden nur alte Kostüme getragen, die von der heutigen chinesischen Kleidung durchaus verschieden sind.

Im Gegensatz zu seinem nur bedingt begeisterten Freund, war Schiff vom Treiben vor und auf der Bühne fasziniert. Erste Skizzen für Szenen einer Opernloge entstanden, welche später in seinem berühmten Ölgemälde gipfeln sollten. Von denen auf der Bühne hielt sein flinker Stift Bewegungen und Kostüme fest, was ihm dann später als Vorlage für Ölbilder diente.



Darüber hinaus war er ein aufmerksamer Beobachter des Lebens der einfachen Leute, was er gelegentlich augenzwinkernd in Kontrast zu dem Betragen der europäischen Einwohner Shanghais brachte.

Einmal sprang Schiff dem Betrachter mit übermütigen Cartoons entgegen und ein ander Mal lud er ihn ein, sich im Antlitz chinesischer Menschen oder in der Majestät chinesischer Landschaft zu versenken. Die Ausstellungen solcher Werke fanden andere aber ebenso wohlwollende Kritiken.

1932 fuhr er zum ersten Mal nach Japan und kam auch von dort mit einer prall gefüllten Skizzenmappe zurück.

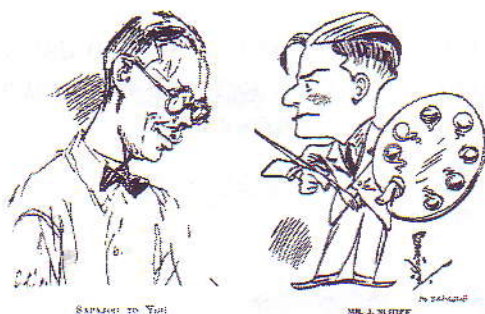


Vom *Peiping Chronicle*: (Peking hieß damals Peiping) erhielt Schiff 1934 den Auftrag, eine Serie von Porträtskizzen der bekanntesten Persönlichkeiten der Stadt anzufertigen. Gleichzeitig begann er eine Zusammenarbeit mit der aus Österreich stammenden Korrespondentin der *Neuen Freien Presse* Ellen Katleen und illustrierte ihr Buch über Peking, welches von Kelly und Walsh herausgebracht wurde. Diese Aufgaben hielten ihn fast ein Jahr in Peking fest. Das Buch erschien zu Weihnachten 1934. Schiffs begleitende Bilder wurden von der *Tientsin Times* folgendermaßen charakterisiert: "It is a work of art, informed with a whimsical

humour, the very milk of human kindness, and a sense of the beautiful."

Neben den Vignetten für das Buch wurden Szenen wie die berühmte Straße der Jadehändler festgehalten, die Große Mauer, der Kohlehügel, Menschen bei der Arbeit und bei den kurzen vergönnten Momenten des Ruhens.

Der Russe Sapajou, bis dahin berühmtester Cartoonist Shanghais, begrüßt Friedrich Schiff als Ebenbürtigen in der Zunft mit einer Karikatur und Schiff revanchiert sich mit "Sapajou to you".



1935 kommt Schiff nach Wien zurück, um seinen schwer erkrankten Vater noch einmal zu sehen. Er gibt Herta Staub für die Pfingstbeilage der Wiener Zeitung ein Interview. Er spricht vom "unmenschlich harten Daseinskampf in Shanghai" und vom gnadenlosen von nichts zu bremsenden Tempo seiner Entwicklung: "Ob Krieg, ob Frieden, ob Bürgerkrieg oder Banditeninvasion, diese Riesenstadt überdauert alles, wächst unaufhörlich, verfällt unaufhörlich. Ständig werden Häuser niedergerissen oder verwittern von selbst, ständig werden in fieberhafter Schnelligkeit, billig, früher von europäischen, jetzt schon mehr und mehr von chinesischen Architekten, Häuser aufgebaut. Neue Geschäfte, neue Wohnungen, Bureaus, Nachtlöcher und Kinos werden eingerichtet und wer offene Augen, gute Beziehungen und eine tüchtige Portion Kühnheit hat, findet dabei immer zu tun."

Schiff gab auch zu, daß er nicht wählerisch sein konnte: "Er machte Wandmalereien in Privatwohnungen von

Amerikanern und Chinesen und schmückte Kabaretts und Filmtheater, da die Freskotechnik dem chinesischen Klima nicht standhält, mit Leinwandmalereien. Selber mußte er sich die Leinwand zuschneiden, stückeln, nähen, um das gewünschte Format herauszubekommen; in wenigen Tagen mußte alles fertig sein, mit unzulänglichen Hilfsmitteln, ohne Mitarbeiter mußte er die Befestigung durchführen." Aber nun gäbe es mehrere Lokale in Shanghai, in denen man chinesisch-wienerische Landschaften bewundern könne.

Was Peking betrifft, so sei es edler, abgeschlossener und kunstreicher als das laute Shanghai, besonders in den Westbergen, wo er in den Hainen uralter Bäume soviel Schönheit empfangen habe. Er habe auch die Inseln im Gelben Meer, die Museen und die Privatsammlungen besucht und von den Meistern des Ostens gelernt ohne sich selbst verlieren zu wollen.



Ein zerstörter Kindheitstraum

Wang Yingqi¹

Aus dem Chinesischen von Ingrid Müller

Schwer zu sagen, ob mir ein kindliches Gemüt erhalten blieb, oder ob es eher eine Veranlagung zum Spiel ist, die zur Leidenschaft wurde. Bis heute muß ich, ein altes Mädchen von bald dreißig Jahren, nur Bonbonpapier irgendwo auf der Straße liegen sehen, da schaue ich sofort um mich, und wenn ich merke, daß niemand auf mich achtet, lese ich das Papierchen sofort auf. Diesen schönen bunten Fetzelchen kann ich nun einmal nicht widerstehen, und ich glaube sicher, daß das bis ins hohe Alter so bleiben wird, sogar wenn ich, mit einem Kopf voller weißer Haare, meinen Körper unter Qualen bücken muß. Wir beide, die Bonbonpapierchen und ich, sind wirklich und wahrhaftig in einer Schicksalsgemeinschaft verbunden!

Ich war dreizehn zu der Zeit, als die Kulturrevolution ausbrach. Wie viele andere Jugendliche in diesem Alter hatte ich "Kinderträume", die von der

Kompliziertheit des Lebens noch nichts ahnten. Ich träumte davon, eine bekannte Malerin zu werden. Die Wände meines Zimmers waren mit allerlei Frauenbildnissen und mit Tiermotiven aus der chinesischen Malerei geschmückt, und am Kopfende meines Bettes stapelten sich bunt durcheinanderliegend Comics und Bildchen. Jeden Tag nach der Schule und dem Essen beschäftigte ich mich hingebungsvoll mit dieser Welt des schönen Scheins.

Die mühsam zusammengetragenen Comics und alle meine anderen Bilder wurden gleich zu Anfang der Kulturrevolution von meinen gleichaltrigen Freunden beschlagnahmt und verbrannt. Außerdem bestand für sie nicht der geringste Zweifel daran, daß ich den "ehrendvollen Reihen" der Roten Garden einverleibt werden müßte. Ganz gleich wie verworren und durcheinander ich und die anderen Kinder diesen Jugendlichen folgten, nachdem wir mit ihnen Sprüche geklopft und auf die Pauke gehaut haben, verhöhnten wir noch die "Machthaber, die den kapitalistischen Weg gingen". Gleichzeitig blieb ich aber meiner Malerei treu und sehnte mich nach ihr und nach meinem Malertraum. Schließlich stellte ich mich krank, schwerkrank, und konnte so zu Hause bleiben und mich ihrem Chaos entziehen.

Ich nahm nun wieder meine geliebten Pinsel in die Hand, doch es zeigte sich bald, daß mein kleiner Kopf leer geworden war. Außerdem war mein gesamtes Material konfisziert und verbrannt worden. Was sollte ich also zeichnen? Ich konnte doch nicht mein eigenes wertiges Gesicht im Spiegel abzeichnen, abgesehen davon, daß ich nicht die Fähigkeit dazu hatte. Für eine Weile war ich ratlos. Dann fielen mir wieder – warum weiß ich nicht – die Bonbonpapierchen ein, die ich beim Bonbonlutschen aufbewahrt hatte. Ich ging diesem Einfall eher Zielloos nach, suchte ein bißchen herum und fand tatsächlich auch ein paar. Oh, es waren sehr schöne Fetzen mit allen möglichen Mustern und mit Tiermotiven

¹ Wang Yingqi, geboren 1954 in der Großstadt Hefei der Provinz Anhui.

Während der Großen Kulturrevolution (1966-76) wurde sie als junger Mensch wie Millionen ihrer Generation aufs Land geschickt. Später kehrte sie in die Stadt zurück, und arbeitete als Arbeiterin, Kader und Journalistin. Sie absolvierte ein Studium am Autorenkolleg der Universität Wuhan. Heute ist sie als Berufsschriftstellerin ersten Ranges an der Akademie für Literatur des Verbandes für Literatur und Kunst der Provinz Anhui tätig und ist Mitglied des chinesischen Schriftstellerverbandes.

Sie interessiert sich für Qigong, Kongfu und Tanz.

Ihr Motto lautet "Lebenslang kämpfen für die menschliche Freiheit und Reinheit."

Ihr Lebenstraum war es einmal, Schauspielerin zu werden.

Ihr eigenes Lieblingswerk ist "Sein eigenes Kreuz tragen".

Sie schätzt Immanuel Kant und Albert Einstein und verehrt Tolstoi.

Die drei Kritiken von Kant sind die Bücher, von denen sie am meisten profitiert hat.

Sie sagt: "Meine Hoffnung für das neue Jahrtausend ist, daß die chinesischen Schriftsteller die 'Leidenschaft des Spaltens' zur 'Leidenschaft des Vereinigens', zur Leidenschaft fortwährender Vervollkommnung der eigenen Persönlichkeit, wandeln mögen."

Ihre wichtigsten Werke:

- Der Einzelgänger auf langer Reise
- Der bestimmte Himmel über uns
- Sammlung selbst ausgewählter Essays
- Sammlung der besten Essays von Wang Yingqi

Ihre Werke gewannen Preise auf staatlicher wie auch auf Provinzebene. Sie wurden ins Englische, Französische, Japanische und andere Sprachen übersetzt.

– mir lachte das Herz, als ich sie sah. Vornehmlich waren es die mit der Mickey Mouse und solche mit einem weißen Hasen aus Shanghai oder mit einem Eichhörnchen aus Peking. Alle Zeichnungen waren naturgetreu und lebendig. Sie waren wirklich die beste Kopiervorlage und phantastisches Zeichenmaterial!

Ich behandelte sie wie eine Kostbarkeit, zeichnete sie täglich aufs Neue ab, und konnte sie schon nach kurzer Zeit beiseite legen und die Tier- und Blumenmotive der Bonbonpapiere ohne Vorlage korrekt und mit dem Pinsel malen. Ich wurde besonders erfahren im Zeichnen der Mickey Mouse, des weißen Hasen und des Eichhörnchens. Nicht daß ich damit prahlen möchte, aber bis auf den heutigen Tag kann ich, sobald ich den Pinsel in die Hand nehme, mit geschlossenen Augen diese drei liebenswerten Tiergestalten lebensecht zeichnen. Das verdanke ich nur meinen damaligen Anstrengungen.

Nach einigen Monaten saß ich wieder auf dem Trockenen. Wieder zog ich raus auf die Straße, Papierchen sammeln, aber selbst nach gründlicher Suche konnte ich diesmal kein einziges annähernd schönes Bonbonpapier finden, das ich hätte abzeichnen wollen. Ich haderte mit meinem Schicksal: Warum bloß hatten mich meine Eltern nicht in Peking oder Shanghai zur Welt gebracht? Und warum hatte ich nicht früher begonnen, mehr von den schönen Fetzchen aus diesen Städten aufzuheben. Schließlich fiel mir der "Kleine Geizkragen" ein, eine Mitschülerin in der Grundschule, die aus Shanghai zugezogen war und diesen Spitznamen erhalten hatte. Sie besaß viele Shanghaier Bonbonpapierchen. Sollte es möglich sein, dem "kleinen Geizkragen" einige davon zu entreißen? Dem Kleinen Geizkragen etwas entreißen, ach wie leicht das gesagt war!

Ich konnte sie mühelos ausfindig machen, aber wie schwierig war es diese Dutzend Papierchen zu bekommen. Unverschämterweise wollte sie nur Dinge, die ihr gefallen als Gegenwert in unserem Tauschgeschäft akzeptieren. Wie kann ich aber, verflucht

noch mal, wissen, was ihr gefallen würde? Ich erinnerte mich nur, daß sie – abgesehen von ihrem triebhaften Geiz – auch noch eitel war: sie trug immer den Ring ihrer Mutter, um mit ihm anzugeben. Ich war ratlos. Schließlich mußte ich mir, um diese paar Bonbonpapierchen zu bekommen, den Gegenwert vom Mund absparen, so schwer es mir auch fiel. Von meinem Taschengeld, das ich sonst vernascht hätte, kaufte ich viele geblühte Taschentücher und Haarklammern mit Blumendekor und schenkte alles dem "Kleinen Geizkragen". Obgleich ich bei diesem Handel ganz offensichtlich den kürzeren zog, blieb mir nichts anderes übrig als diese bittere Pille zu schlucken, so ärgerlich das Ganze auch war.

In jenen Jahre fingen auch die Wanderungen und Reisen zum "Erfahrungsaustausch"² an. Meine Motive unterschieden sich von den eigentlichen, aber das konnte ich den anderen nicht erzählen. Ich dachte daran, zunächst nach Shanghai und Peking zu fahren, ohne irgend jemanden zu informieren. Aber niemand war bereit gewesen, mich kleinen Zwerg mitzunehmen. Was tun? Die Papierchen lockten von Tag zu Tag mehr. Da raffte ich mich auf und machte mich ganz alleine auf den Weg. Der war voller Unbilden und Leiden bevor ich endlich in Shanghai ankam. Damals war Shanghai schon längst im Chaos der Kulturrevolution versunken. Die Straßen hingen voller Wandzeitungen und Spruchbänder. Man debattierte öffentlich, sang die Worte des Vorsitzenden Mao und belastete mit der Propaganda der Lautsprecherwägen überall Nerven und Verstand, die zu dem Zeitpunkt schon in Unordnung geraten waren. Allerdings interessierte ich mich für das alles nicht, mein ganzes Streben war, möglichst viele von den Bonbonpapieren einzusammeln.

² "chuan lian": Erfahrungsaustausch, zu dem die Jugendlichen während der Kulturrevolution wanderten oder reisten. Die Beförderung war gratis, z.B. zum Platz des Himmlischen Friedens nach Peking, wo sie von Mao von der Tribüne herab begrüßt wurden.

Der Himmel war mir tatsächlich wohlgesonnen. Die Reise war nicht umsonst gewesen. Shanghai erwies sich seines Namens als Hauptstadt des Bonbonpapiers würdig. Egal wo, auf welcher Straße, überall lagen genug davon herum, so daß ich die meiste Zeit mit dem Hinterteil oben und dem Kopf unten am Sammeln war. Es gab sehr viel Auswahl, und sie waren so schön, daß sie sogar diejenigen mit den Bildern von Mickey Mouse in den Schatten stellten.

Jeden Morgen bei Tagesanbruch zog es mich auf die Straße, und erst nachdem der Abend die letzten Sonnenstrahlen aufgesogen hatte, kehrte ich im Dunkeln zurück.

Das Papierchensammeln wurde auf diese Weise zu einer ziemlich anstrengenden Arbeit. Man brauchte dafür Zeit und eine Gesinnung, die weder Tod noch Teufel fürchtete.

Eines Tages stand ich an der Nanking Straße vor einer Wandzeitung, unter der einige sehr schöne Papiere lagen, aber leider konnte ich mich nicht durch die Menschenmenge zwängen, die sich vor den Plakaten drängte. Aufgeregt stand ich am Rand und überlegte fieberhaft. Es war unerträglich heiß, und ich bedauerte sehr, mich in keine Fliege verwandeln zu können, um durch die Luft dorthin zu gelangen. So von allen Seiten gedrängt und geschoben, war es gar nicht einfach, auch nur ein Schlupfloch zu finden. Ich habe keine Ahnung, woher plötzlich jenes Flugblatt angeweht kam, das die Menschenmasse in heftige Bewegung setzte. Alle rissen sich um das Blatt und stießen mich dabei zur Erde. Ich wurde von dem Hin- und Hergetrampeln und dem Gestampfe verletzt, es tat sehr weh, und für kurze Zeit ging es um Leben und Tod, da endlich konnte ich bis zu den Papierfetzchen kriechen. Als ich sie schließlich in Händen hielt, hatte ich überall Hautabschürfungen und Prellungen, mein Haar war zerzaust und mein Gesicht schmutzig. Ich sah aus wie "Aschenputtel".

Hätte ich auf der Nanking Straße, wie man so sagt, beinahe mein Leben verloren, so brachten mich an einem anderen Tag die Ereignisse auf der Huaihai Straße in die Nähe der Eisenbahnpartisanenkämpfer vom Typ "Held der rasenden Waggons". Ich stieg in die Straßenbahn, mit dem Ziel, auf dem mittleren Abschnitt der Straße die bewußten Schnipsel zu sammeln. Straßenbahnfahren war in jenen Jahren der "Rebellion" gratis. Es zählt jedoch vermutlich zu meinen großen Pionierleistungen, daß ich mich von der Straßenbahn gratis zum Sammeln von Bonbonpapierchen habe fahren lassen.

Die Straßenbahn hatte sich bereits in Bewegung gesetzt, da erblickte ich ganz unverhofft auf der Straße ein nie zuvor gesehenes, einmalig schönes Bonbonpapier! Ich konnte doch nicht die Bahn anhalten. Die Situation duldet auch nicht den geringsten Aufschub. Unmöglich, mir ein Papier, das ich schon fast in der Hand hatte, einfach so entgehen zu lassen! Ich war gezwungen blitzschnell zu handeln, sprang also auf und stürzte mich, gefolgt von den sich überschlagenden Schreckensschreien der Passagiere des vollbesetzten Wagens, unter Lebensgefahr aus der Straßenbahn. Ich knallte hart auf die Straße. Dieser Sturz war wirklich einzigartig und mitten auf meiner glatten Stirn wuchs eine Beule, so groß wie ein Hühnerei! Ungeachtet der dröhnenden Schmerzen hob ich zitternd jenes Papier auf, beruhigte und tröstete mich wegen der Beule auf der Stirn und dachte selig lächelnd: Diese Beule hast du dir nicht umsonst geholt!

Nicht nur Bonbonpapier von der Straße aufzulesen war meine Beschäftigung, sondern ich schlenderte von Zeit zu Zeit auch ganz gerne in den Läden herum und schaute mir die Einwickelpapiere der Süßigkeiten genau an, hielt die Bonbons zwischen den Fingern und zögerte lange bis ich mich entschloß, sie zu kaufen. Für diese Reise hatte ich nämlich nur jämmerliche fünf Yuan in der Tasche, da ich mich klammheimlich, ohne die Familie

in meine Pläne einzuweißen, auf den Weg gemacht hatte.

Auf diese Weise verbrachte ich eine Woche lang auf Shanghais Straßen und hatte die dortigen Papiere alle mehr oder weniger zusammenbekommen. Nun saß ich glücklich im Gratzug nach Peking und hielt zwei große Sammelhefte für Bonbonpapiere in den Händen.

Bei meiner Ankunft in Peking stellte sich die Situation als äußerst ungünstig für mich dar. Die Bonbonpapiere waren dort erst kurz vor meiner Ankunft durch eine "glorreiche Revolution" gegangen. Bonbonpapiere vom Typ Eichhörnchen waren schon vor meiner Ankunft in aller Eile und vollständig mit einem eisernen Besen weggefeht und von den Worten des Vorsitzenden Mao und Propagandabildchen verdrängt worden, die jetzt die Bonbonpapierfront beherrschten. Ich fühlte mich betrogen und konnte kaum glauben, daß ich wegen dieser Papiere hierher ins weit entfernte Peking gefahren war. Da hätte ich mich auch gleich zu Hause hinsetzen und die Worte des Vorsitzenden Mao bis zum Erbrechen abschreiben können. Wozu bin ich hierher gekommen und habe so viele Unannehmlichkeiten erlitten?

Noch am selben Tag wollte ich zurückfahren, so wütend war ich. Jegliches Interesse war erloschen. Ich lief zum Platz des Himmlischen Friedens, ließ ein "Ehrenfoto" aufnehmen und kehrte am zweiten Tag mit der Bahn nach Hause zurück.

Zu Hause dienten mir die beiden "mit Blut erkämpften" wertvollen Sammelhefte lange Zeit als hochgeschätzte Zeichenvorlage. Sie begleiteten mich durch die vielen langweiligen und erbärmlichen Tage und Nächte, in denen nur gekämpft und die hin und wieder von Gewehrsalven zerrissen wurden.

Wie schade, daß aus meinem Malertraum schließlich doch nichts geworden ist! Lag es daran, daß ich nicht fleißig genug war? Oder mangelte es mir an Willenskraft?

Oder ist es eher fraglich, ob zwei armselige Sammelhefte große Erfolge bewirken können, wenn es um Kunst geht. Wo auf der Welt gibt es auch nur einen Künstler, der Bonbonpapierchen kopiert und ewig nachgezeichnet hat und darüber bekannt geworden wäre?

Der Malertraum ist zwar zerronnen, die beiden Sammelhefte aber sind zu einer bleibenden Erinnerung geworden. Wie das Leben auch spielte und die Zeiten sich änderten, ob ich aufs Land geschickt wurde, um bei den Bauern zu arbeiten, oder ob ich die Arbeit gewechselt habe – während die Habseligkeiten meiner Kindheit bei jedem weiteren Umzug nach und nach verloren gingen – sind einzig diese zwei Sammelhefte übrig geblieben und haben all die Jahre überlebt. Für mich sind sie mittlerweile zu einem wertvollen Kulturgut geworden, aber sie sind auch eine schmerzliche Erinnerung und ein Mahnmal der Erniedrigung!

Gegen Ende dieser "Kulturrevolution" lag, nach all den politischen Säuerungskampagnen, die Kultur zerstört am Boden. Nach tausenden von Jahren, in denen das Land stark war und ein prächtiges kulturelles Leben entwickelt hatte, mußte ein kleines Mädchen auf der Suche nach dieser Kultur sie mit den Bonbonpapieren von der Straße aufsammeln, nur um Bilder malen zu können. Was für eine bedrückende, jämmerliche Zeit war das doch!

Ach, ich wünsche mir, daß das Gestern immer gestern bleibt. Ich wünsche mir, daß unsere Kinder Comics lesen, Bilderbücher anschauen und Kunstmuseen besuchen können. Und ich wünsche mir, daß auf den Straßen unseres jungen Landes niemals mehr die Gestalt eines kleinen Mädchens zu sehen sein wird, das Bonbonpapier aufammelt.

2008 Olympics – Historic Opportunity for Beijing

Li Xin

At 20:00 of July 13, Beijing time, Juan Antonio Samaranch, the outgoing chairman of the International Olympic Committee, announced in Moscow that Beijing was chosen to host the 2008 Olympic Games. The overnight mass celebrations had hardly quieted down when the Beijing Municipal Government called a press conference to explain what the city would do over the next seven years to prepare itself for the Games. "For Beijing", a jubilant spokesman declared, "the 2008 Olympics will be a historic opportunity."

The 2008 Olympics will be "historic" in many ways. For the first time, the world's greatest sports event will be brought to the world's most populous country. After inspecting Beijing and the four other candidate cities early this year, an IOC panel of 17 experts concluded in a report published on May 15 that "a Beijing Games would leave unique legacy to China and to sports."

As the spokesman, Tang Long, put it, the "2008 Olympic Games will be historic because it will definitely accelerate the pace of our march towards modernization."

The Greatest Winners

Tang Long told the press conference that from now to 2008, Beijing will invest a total of 180 billion yuan (US\$ 21.8 billion) in 127 urban infrastructure and public utility projects to make itself a truly modern international metropolis. The sum is "historic", as Beijing has never invested so much over the same length of time in urban construction and development. The sum includes 90 billion yuan for improving the Capital Airport and the city's road system, 45 billion yuan for environmental protection and pollution control, and 30 billion yuan for developing the city into a digital society. "The last 15 billion yuan

will be used to increase the supply of power, water, heat and gas so that there will be an overall improvement in the quality of life", Tang said.

The Capital Airport currently has two runways, two terminals and 75 standard aircraft parking bays. By 2008, it will have undergone significant expansion including provision of one more terminal, one more runway and 55 more standard aircraft parking bays to handle a total capacity of 48 million passengers a year. Right now the airport handles 30 million passengers a year.

By 2008, workers will have completed construction of the 93-kilometer fifth ring road, the city's outermost ring road that links urban Beijing with its outer outskirts. Other road projects planned for the next seven years include expressways totaling 35 kilometers and extensions of existing roads that total 105 kilometers.

The city's subway system operates now on two lines with a capacity of 480 million passengers a year. By 2008, the system will have expanded to seven lines with a capacity of 1.74 billion passengers a year. Moreover, a magnetic suspension railway line will be laid between the Capital Airport and the city, a trip lasting just 15 minutes, compared with 45 minutes now.

By dint of hard work over the years, Beijing has significantly improved its air quality. In nearly 50% of the days in 2000, the city's air quality was rated "good" or "fair". It will be rated as such for each and every day in 2008. Trees and grass will be planted to 23,000 hectares along the banks of the major rivers and highways in the city. Green cover will account for up to 50% of the land meant for construction of Olympic-specific projects. Beginning January 1, 2007, the most stringent European standard for vehicle exhaust emission will be enforced. "That will cut air pollution by some 60% from the current

level"; Tang Long assured the press conference.

The subscribers to fixed telephone services in Beijing now number 5.5 million. By 2008, the figure will have grown to 7.4 million, suggesting that 64% of the families will have private telephones. The city now has a total of 3.3 million subscribers to mobile communication services, and the 2008 figure is expected to be no less than 15 million. For the Olympic Games, a digital cable TV network and the bandwidth of international communication will be built. Additional optical submarine cables and earth stations are under construction, and vehicle-mounted satellite stations will also be deployed.

"Our people will be the greatest winners in the 2008 Olympics", Tang Long conceded. "They will be able to enjoy the cleanest air and water in history, the easiest access to public transport and communication, and guaranteed supply of power, heat and gas."

Moreover, the construction boom will create tens of thousands of jobs not only for the locals but also for those immigrant workers mostly from relatively underdevelopment regions. The "Olympic business", so to speak, is expected to boost the growth of China's annual GDP grow by an extra 0.3 percentage points a year. "The entire Chinese people will benefit from the 2008 Olympics", Tang Long said.

No small a challenge

Most of the 127 projects are already included in Beijing's development plans, including the Tenth Five-year Plan (2001-2005) that the Beijing Municipal People's Congress approved in March. Municipal officials told the author that in drawing up the five-year plan, the municipal authorities had taken into full account of what would have to be done if Beijing won the 2008 Olympics. "Now that we have won", said Tang Long, "many of the projects will be started earlier than

planned. Some of the major development targets will be attained ahead of schedule".

Beijing's Tenth Five-year Plan calls for an annual average economic growth of up to 9% over the 2001-2005 period, and envisages a growth rate of around 7% for the next five years. Under municipal long- and medium-term development plans, by 2010 the city's gross domestic product (GDP) will have grown to US\$ 6,000 per capita, up from US\$ 2,600 for now. According to Tang Long, the target originally set at US\$ 6,000 for 2010 will have been met by 2008, two years ahead of schedule. By 2008, the disposal incomes for Beijing's urban and rural residents will have grown to 25,000 yuan (US\$ 3,022) per capita, a target originally set for 2010. Under plans drawn up previously by the Municipal Government, each member of the local population should own, on an average, a living space of 18 square meters by 2010. According to the Beijing Evening News, the target could be met by 2005, five years earlier, given the scope of infrastructure construction in the coming years.

Pan Zhiqi, a local developer, endorses the prediction. "As a rule, sales of housing property becomes easier as urban infrastructure – roads and public transport, in particular – improves", he said. Pan is developing the "Modern City Estate" – one of the largest in Beijing – near what will be the Olympic Park on the north section of the fourth ring road. He said that in just two days after Beijing's victory, more than 100 apartments there were sold.

While presenting a rosy picture of Beijing over the next seven years, officials admit that preparations for the 2008 Olympic will be no small a challenge to the city, given the scope of the construction and the size of the financial technological input. In the words of Jiang Xiaoyu, director of the Publicity Department of the Beijing Municipal Committee of the Chinese Communist Party, "there will be

a greater responsibility for Beijing to perform and more work for it to do from now to 2008".

Meanwhile Jiang is confident of Beijing's capability to meet the challenge. "In recent years", he noted, "projects totaling 30 million square meters have been undertaken annually in Beijing, and the construction tasks for the next seven years will not be excessively greater than that. The Government has adequate financial, human and material resources to accomplish what we promised to the Olympic family. Besides, we'll allow the market forces to play a still greater role in the construction boom."

On August 1, the Olympic lottery will be issued to raise up to one billion yuan (about US\$ 1.3 billion) every year until the 2008 Olympic Games opens. All construction projects will be subject to public bidding, meaning that their construction will be cost effective. "Moreover", Jiang said, "we have the full support of the Central Government. The Central Government has made it clear to the IOC that should the 2008 Olympics incur any deficit, it will make up for it."

"Invisible Legacy"

The word "legacy" is frequently used in the report made public by the IOC Evaluation Commission on May 15. If held in Beijing, the report says, the 2008 Olympic Games will create for Beijing a "major" environmental legacy, and a "unique" legacy for China and the sports. Municipal officials hold that beside those new infrastructure facilities that constitute a "visible legacy", the 2008 Olympic Games will leave an "invisible" legacy, a legacy that will influence the Chinese of the future generations.

A series of education programs will be launched to enhance the environmental awareness of the general public. The municipal authorities have instituted a system of inviting representatives of government departments, non-government organizations and individual citizens to

discuss ways of getting all citizens involved in the greening campaign, in ways to the best of their own convenience. School children are being encouraged to use recycled paper and be friendly towards animals. Star-class hotels are being requested to adopt the ISO standards for environmental control. The mass media are advising citizens to use private cars less frequently. Home landscaping competitions are being held across the city, and growing potted flowers has become the hobby of millions. "The popular willingness to work for a 'green environment' will prove invaluable to a country as large as China", the Beijing Daily commented.

The most important aspect of the "invisible legacy", however is to be created by the 2008 Olympics itself. "Harmony, Exchange and Development" will be the theme of the cultural event to take place during the Games. Some 17,000 athletes, 10,000 sports officials and roughly as many journalists will come to Beijing for the Games. "That will expose Beijing's 13 million residents – nay, the entire Chinese population of 1.3 billion, to a great occasion of East-West exchange, of cultural pluralism", Yang Lan, the famous TV anchorwoman and a goodwill ambassador for Beijing's Olympic bid.

"That will definitely influence China in its social reforms", said Yang Lan, who was one of the speakers at Beijing's final presentation to the IOC on July 13 in Moscow.

