32 Learning in Global and Local Networks: Experience of Chinese Firms in Hong Kong, Singapore, and Taiwan

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The development of perspectives on organizational learning has been based primarily on the experience in large Western industrialized countries. The learning experience of enterprises in non-Western countries is underrepresented. This chapter presents a review of the learning processes of Chinese firms in Hong Kong, Taiwan, and Singapore, which have characteristics distinct from large Western and Japanese enterprises (see Macharzina, Oesterle, and Brodel, Ch. 28; Child, Ch. 29; Lane, Ch. 31; Nonaka, Toyama, and Byosière, Ch. 22 in this volume).

The chronic Asian economic downturn has prompted policy-makers in many countries in the region to rethink their strategies of development. This reassessment has directed a certain degree of attention to three Chinese-dominated economies—Taiwan, Hong Kong, and Singapore—which are seen as being more resilient than their chief export rivals, such as South Korea and Japan. This characteristic is attributed at least partly to the dominance of Chinese small and medium-sized enterprises, whose corporate flexibility and adaptability enables them to cope with market fluctuation. Within these three economies, however, academics and policy-makers are concerned about the capacity for innovation and competitiveness of small and medium-sized enterprises in the face of both persistent regional economic downturn and economic as well as social structural transformation at the national and local level.

Since the English industrial revolution, the role of small and medium-sized enterprises in society has received far less attention than the role of large firms. Conflict sociology has traditionally focused on the study of the class struggle between capital and labor primarily in large corporations. By contrast, Calhoun (1982) pointed out that factory workers are not directly exposed to the market but rather are shielded by their organizations, in which they can seek a higher level of security and income than craft workers, self-employed artisans, and owners of small domestic enterprises who are directly exposed to flagging economic activity and market fluctuations. Further interest in the role of small and medium-sized enterprises has built in light of several other realities as well, including the indigenous economic development of non-Western countries since the end of the World War II era (Kumar 1981; Lall 1980); the growing competitiveness of industrial districts in Germany, Italy, and Japan (Piore and Sabel 1984; Sayer 1986; Semlinger 1994), and the rise of small high-tech start-ups in technopolis since the 1970s (Saxenian 1994). Whole fields of social science, such as industrial sociology, development sociology, and the macroeconomic approach to development, now deal with the impact that history and the international and national politicoeconomic environment have on the organization of global, regional, and local production systems (Bello and Rosenfeld 1990; Fujita and Hill 1997), a major topic being technological development, transfer, and learning among firms (Hobday 1994, 1995). Another stream of research, the study of Chinese business organizations[1] (Hamilton 1991; Redding 1990), has concentrated on uncovering cultural strengths and constraints of overseas Chinese enterprises and networks, based on which some phenomena of interorganizational learning can be discerned.

A review of the experience of Chinese small and medium-sized enterprises in Hong Kong, Singapore, and Taiwan can contribute to the field of organizational learning by informing researchers and policy-makers of the diversity in learning strategies and by providing insights for the evaluation of the various perspectives in this line of study. The perspectives of organizational learning can offer concepts to help improve the understanding of the learning processes these firms undergo. This chapter therefore represents an attempt to promote the cross-fertilization of ideas between a variety of research fields.

Perspectives of Organizational Learning

The contending perspectives on organizational learning are broadly categorized in this chapter as the conventional model and the pragmatist viewpoint, depending on the philosophical and theoretical traditions that underlie each.

The Conventional Model of Organizational Learning

The conventional model of organizational learning is based on the traditional theory of organization, which draws insights from cognitive and behavioral theories, structural contingency theory, and ecological approaches (for an overview, see Baum 1996; Burrell and Morgan 1979; Donaldson 1996; Tenbrunsel, Glavin, Neale, and Bazerman 1996). Proponents of the traditional theory of organization conceptualize organizations as systems, as rather stable entities defined by a boundary separating them from the environment (Cyert and March 1963). Organizations need to learn to solve new problems in response to stimuli from the changing environment (Lawrence and Lorsch 1967). Hence, the central task of an organization is to process information in order to arrive at the right strategic decision and to design appropriate rules and procedures to effect changes in cognitive behavior. Leaders and top management are considered the agents responsible for the management of learning. Learning is distinguished largely in terms of dichotomous typologies, such as exploitation versus exploration (March 1991), operational learning versus conceptual learning (Kim 1993), tactical learning versus strategic learning (Dodgson 1993), and lower learning versus higher learning (Fiol and Lyles 1985). These typologies reflect the dichotomous distinction between imitation and innovation: the former being adaptive behavior; the latter, creative behavior.

There are three streams of views on the organizational learning process. The first stream is the information-processing approach, which conceptualizes the learning process as a linear sequence of information acquisition, diffusion, interpretation, and storage of information and experience in organizational memory (Huber 1991; Walsh and Ungson 1991). In this stream the roles of information technologies and written media are discussed in fairly great depth. Action is not taken into explicit account and is assumed to be a natural consequence of learning. The second stream focuses less on the linear sequence of information processing than on the development of shared views derived

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[1] There is a strand of research on Chinese business organizations sited outside mainland China. It is focused on the business organizations run by overseas Chinese in Southeast Asian countries, Hong Kong, Taiwan, and Western countries. Some authors prefer to use 'overseas Chinese' business organizations or networks.

from different values and ideas of individuals and groups. To facilitate organizational learning, authors suggest ways to promote dialogue between the proponents of different mental models (Argyris and Schön 1996) or to evolve shared mental models (Kim 1993) or cognitive maps (Lee, Courtney, and O'Keefe 1992). In the third stream of views on the organizational learning process, learning is conceived of as stimuli-response patterns, a perspective that reflects a biologistic view of social life (Levitt and March 1988; March and Olsen 1976). Levinthal and March (1993), in line with the institutionalist tradition of organizational studies, discern the paradoxes of organizational learning by theorizing the learning traps of both success and failure. On the one hand, success reinforces excessive exploitation of the existing routine, reducing the organization's ability to cope with the changing environment. On the other hand, failure triggers an excessive exploration of new solutions, leading to neglect of the need for continuity and subjecting the organization to vulnerability in the long run.

Learning as Practice

Authors adopting the view that learning is rooted in practice make no distinction between cognition and interpretation or between knowledge and action (Czarniawska and Sevón 1996; Nonaka and Takeuchi 1995). They thereby suggest that learning stems primarily from action rather than from diffusion of information and training (Brown and Duguid 1991; Orr 1993). Other authors suggest that people learn through creative imitation anchored in specific time and space (Czarniawska 1997; Gherardi 1997). Much of the knowledge that helps people deal with actual problems or sparks innovation is tacit and informal, being spread through interaction, story-telling, and informal processes in action-nets or communal processes (Tyre and von Hippel 1997). From this standpoint learning is a daily process of individuals in groups. It is the accumulation of experience, the formation of skills, and the creation and development of knowledge through practice, or action, rather than a specific, difficult task that needs to be designed and managed by leaders and top management. Although authors who view learning as practice do not disagree that knowledge is stored in human minds, they conceive of learning as inherently social. Learning, knowledge, and action are not freestanding; they are context-dependent. Knowledge can be formalized and made explicit in some ways, but primarily it is tacitly rooted in individuals' experience and spread through direct communication (for the concept of tacit knowledge, see Polanyi 1967).

Drawing on their research on large Japanese companies in comparison with large U.S. firms, Nonaka and Takeuchi (1995) attributed the success of Japanese firms to a focus on tacit, informal, on-the-job knowledge and informal processes of knowledge creation based on physical experience, intuition, and direct communication. Being unique to each company, such knowledge, they said, is difficult for competitors to copy and hence endows the company with a proprietary value all its own. However, Nonaka and Takeuchi did not dismiss the role of explicit knowledge, crisis excitement instilled by top leaders, knowledge management by top managers, and the role of organizational hierarchy (see also Nonaka and Konno 1998). They claimed to challenge dichotomies, and they aimed to build a universal model of management, linking the implicit and the explicit, the top-down and the bottom-up, bureaucracy and task force, and Eastern philosophy and Western thinking. Instead of following the U.S. trend of slashing the ranks of middle management in the downsizing era, Nonaka and Takeuchi (1995) identified middle management (e.g. knowledge engineers and line supervisors) as the key agent for bridging the ideals of top managers and the views of frontline workers. The theory of organizational knowledge creation is built on the experience that large Japanese corporations have had with product development processes and mirrors the specific organizational structure, corporate culture, and industrial relations of these enterprises in the era of economic boom. Its applicability to Japanese companies during the current economic debacle and to organizations in other countries remains to be explored.

In fact, the theory of knowledge creation has recently been extended to include three foci, reflecting an effort to widen its applicability. The first focus is on the inclusion of the concept of knowledge management, specifically the role of top management and leaders (Nonaka and Konno 1998). What distinguishes this approach from the prevalent models of information-processing and knowledge management is that it emphasizes the nurturing and cultivation of tacit knowledge and individual and collective experience more than it stresses the processing of information by means of advanced technologies. The second focus is on the spatial nature of knowledge creation, as seen in their development of *ba* (a concept originated by a Japanese philosopher and translated as 'shared space for emerging relationships'; see Nonaka and Konno 1998: 1). The authors have linked the intraorganizational focus of knowledge creation to the interorganizational context in a regional industrial district. The third focus of this extended theory of knowledge creation is 'regional endogenous creation', a concept explained by Nonaka, Reinmöller, and Toyama (Ch. 37 in this volume), who suggest that Asian companies go beyond product imitation to product innovation by harnessing the endogenous knowledge rooted in their cultural heritage.

The conception of imitation was regarded by Czarniawska (1997) as inherently creative and innovative. In order for a company or individual to learn from a context-dependent experience, the original experience must be recontextualized to fit a new context. Czarniawska and Sevón (1996) rejected the conventional negative image of imitation as mechanistic copying and borrowed the metaphor of 'translation' (which Latour 1986 proposed as a substitute for the metaphor of diffusion) in order to illuminate the creative nature of imitation. Translation is literally an act or process by which a text in one language is rendered in another, a way of expressing something in another medium or form. It involves transformation, modification, change, renovation, and identity construction—a blending of the foreign and the local, the new and the old. Some authors argued that the recontextualization of ideas disembedded from their original context during processes of organizational imitation processes requires creativity, just as translation does (Sevón 1996). As shown by examples of city management in Warsaw during the 1990s (Czarniawska 1997), the legal and management philosophy of Western administrative systems must be translated into the post-Communist context of Poland before they are likely to result in new solutions to problems.

In illuminating the paradox of continuity and change, Czarniawska and Sevón (1996) stressed change stemming from action and power rather than from mistakes and thereby took a neoinstitutionalist approach to organization. According to them, learning changes individual action patterns that, when reinforced by the interaction of individuals, leads to a change in other people's action patterns. The two authors rejected the conventional definition of power as a fixed property or capacity possessed by particular actors or groups of actors and suggested that power stems from associations. As they stated, the more actors there are who associate with each other, the greater the power that the network creates to effect change (see also Coopey 1995). Nevertheless, Czarniawska and Sevón recognized that learning has both intended and unintended consequences, reflecting the paradox of organizational life.

The Learning Experience of Chinese Firms: A Review of the Literature

Characteristics of Chinese Firms in Hong Kong, Taiwan, and Singapore

This section focuses on Chinese manufacturing firms in light industries (such as electronics, textiles and garments, toys, and footwear) of Hong Kong, Taiwan, and Singapore. Most of

the Chinese manufacturing firms in these economies have three characteristics in common. They are (a) small and medium-sized enterprises, (b) latecomers to product technology, and (c) subcontractors or suppliers tied to both global and local production networks. First, most of the small and medium-sized enterprises are owned by a single individual, family, relatives, or friends (Sit and Wong 1989). They are often managed by the owner and a few managers, and the organizational structure is rather flat (Kao 1993). Some authors argue that such a governance structure can enhance a firm's ability to respond quickly to market changes (Lee 1997; Tam 1990). However, given the relative dominance of state monopolies, government-linked companies, and multinational corporations (particularly in Singapore), small and medium-sized enterprises have encountered barriers to the financial market for credit, to the labor market for human resources, and to the product market for sales (Tong 1991; Wade 1990). As compared to the large enterprises, they are more likely to suffer from the vicious cycle of underfinancing, technological underdevelopment, vulnerability to market fluctuations, and bankruptcy.

Second, most of the overseas Chinese firms in Hong Kong, Taiwan, and Singapore are 'latecomers' in product technology (Hobday 1995). Latecomer firms have limited access to the main sources of advanced technology and markets of industrialized countries. They enter the production race not by innovating in the area of production but by performing standardized assembly of low- to medium-end products, traveling backwards along the product life cycle. They gradually catch up with leaders in their respective markets by learning to manufacture, to improve product designs and production processes, and to distribute products beyond domestic markets.

Third, most of these firms are incorporated into the regional production networks of global corporations based in the United States, Japan, western Europe, or their own countries. In the light consumer-goods industries, many brand name companies have given up manufacturing and shifted to design and development and marketing and distribution. They subcontract firms in the catch-up economies to produce the finished products as specified, namely, on an original-equipment manufacturing contract. For products involving fairly sophisticated technology, corporations provide subcontractors core parts and components, production equipment, or know-how (often through licensing). By outsourcing, global firms do not need to bear the costs and risks of expanding their manufacturing facilities and work force or of taking equity in wholly owned subsidiaries and joint ventures.

Unlike the Japanese small and medium-sized firms, which are often tied to one larger firm, most subcontractors do not work for only one customer but rather constantly compete for contracts from various global corporations. The subcontractors seldom develop a high level of in-house backward integration for manufacturing numerous components and parts but rather procure them from local suppliers. Most of the subcontractors pursue cost-cutting strategies by relocating the manufacturing processes to neighboring countries with cheap labor and sufficient land. In summary, a Chinese firm in these economies is often tied to various global networks and local or regional networks.

The Learning Strategies and Processes of Chinese Firms in Hong Kong, Taiwan, and Singapore

Attention to the learning strategies of Chinese firms in Hong Kong, Taiwan, and Singapore (and other Southeast Asian countries) has been recent, reflecting the economic success of these countries during the past three decades. Both Western and Japanese-centered perspectives focus primarily on the transfer of technology and organizational or management systems to the catch-up economies. The modernization and diffusion of innovation paradigms emphasize the diffusion of advanced Western technology and management systems from the global corporations and prescribe a model of copying to the latecomers (Rogers 1962; for an overview, see Blomstrom and Hettne 1985). The metaphor of diffusion fits with the notion of learning as a stimulus-response pattern. In the Japanese-centered flying geese model it is assumed that Japan and Asia are in the catch-up product cycles. Japan is portrayed as the leading goose, diffusing appropriate technology and management practices to East and Southeast Asia, which constitute the following flock. They adapt to the changing product cycles and copy the Japanese strategy (Inoue, Kohama, and Urata 1993; Kojima 1977). This perspective embodies a biological metaphor, that posits a systemic relationship in which the parts function to support the whole. It fits with the notion of learning as adaptive and imitative action.[2]

Both the modernization approach and the flying geese model focus on the processes of diffusion and adaptation that are being driven from the center by Western and Japanese firms leading in technology but do not deal with the active, learning process of the local firms themselves. This gap is filled by studies on imitation and innovation strategies of Chinese business enterprises in networks.

Learning in Global Networks: A Review of Literature in Development Studies and Political Economies

Amsden (1989) was the first researcher to identify corporate learning by imitation as the key strategy by which latecomer firms may catch up with technological leaders. Taking into account the development experience of the newly industrialized Asian countries (Taiwan, Hong Kong, Singapore, and South Korea) in general and that of South Korea in specific, she argued that a learner, by definition, does not innovate and has to learn to manufacture and compete initially on the combined basis of imported technology, incremental productivity, qualitative improvement of existing products, low wages, and state subsidies. (For a similar approach, see also writings of several development economists such as Lall 1992.)

Amsden's conceptualization of the imitation strategy is incorporated into Hobday's (1995) 'East Asian innovation approach'. In this study of the technological learning of firms in different industries in Taiwan, Singapore, Hong Kong, and South Korea, Hobday found that latecomer firms had improved their products and processes incrementally by accumulating daily production experience and internalizing the knowledge through interfirm cooperation. He argued that latecomer firms have entered the production race not by introducing new products and processes to the marketplace but by learning to manufacture products that have already entered the phase of their life cycle in which they have been standardized. These firms have gradually caught up by 'learning to imitate' and 'learning to innovate' (p. 47). Hobday argued that the experience of the latecomer firms refutes the standard Western model of the product life cycle, which suggests that corporate growth relies on product innovation in the marketplace. Hobday, instead, defined innovation as the introduction of a process or product new to the individual firm rather than to the marketplace. In other words, the incremental improvement of products or production processes is itself an innovation. Hobday rejected the view that imitation and innovation are dichotomous. He argued instead that learning to imitate, as with learning to innovate, requires creativity.

Hobday (1995) found that corporate learning, as with individual learning, is difficult to observe and analyze, for the process is often 'qualitative, informal, idiosyncratic in nature, cumulative in effect, and uncertain in outcome' (p. 33). He illustrated the institutional channels (forms of interfirm linkages) and determinants (especially the role of the state) that facilitate technological learning. In his conception, the institutional channels include wholly foreign-owned subsidiaries, joint ventures, licensing, subcontracting (original-equipment manufacturing or original-design

[2] The comparison between development perspectives and learning models is based on the comments of Barbara Czarniawska (19 March 1998).

manufacturing),[3] overseas acquisitions or equity investments, and strategic partnerships for technology. Hobday stated that a local, wholly foreign-owned subsidiary or joint venture partner learns to operate imported production equipment and to organize a production routine. He further observed that a local firm, in arranging for subcontracting or licenses, learns to develop full production capacities and to purchase material. Original design manufacturing by a local firm particularly demonstrates the firm's 'internalization' of design skills and knowledge.

Although imitative learning may enable latecomer firms to stay in the production race, it does not enable them to cooperate and compete on equal terms with technological leaders. Hobday (1995) revealed, for example, that subcontractors continued to depend on technological leaders for components, product technology, and market channels. He saw the establishment of own brand-name activity as the way to reduce this power asymmetry and he asserted that a firm could, through overseas acquisitions and strategic partnerships for technology tap the research and development knowledge of the partners, scan the environment of the markets in industrialized countries, and pave the way for bringing new products onto the global market. Acer (in Taiwan) is frequently cited as an example of the initial success and limitations of imitative learning and to show the way to strengthen a local firm's capability for product innovation (Engardio and Burros 1996; Hobday 1995; Wade 1990). Acer started with eleven engineers in 1976, mainly cloning IBM computer products. Original-equipment manufacturing deals enabled Acer to learn from technological leaders how to develop full production capacities, and the firm became the world's largest producer of PCs, color monitors, keyboards, fax machines, and printers in the late 1980s. However, Acer was aware of its dependence on technological leaders for core technologies and market outlets. Given the limitation of the imitative learning strategy, Acer set out to create its own brand-name products. It employed a number of U.S.-trained Taiwanese engineers (who had worked for U.S. companies) to develop software behind the research and development frontier set by Intel, IBM, and AT&T. Acer designed the first Chinese operating system, 'Dragon', which became a standard in Asia. With IBM, Apple, and several Japanese companies, Acer helped define Asian computer standards (Hobday 1995). It also received royalties from NEC and several other U.S. companies for licensing its PC chipset designs. By 1988, Acer's own brand accounted for 60 per cent of the company's sales (Johnstone 1989: 51). Acer appears to be determined to continue developing and marketing its own brand names. It has licensed the know-how (a combination of semiconductor, optical, and liquid-crystal technologies) from IBM Japan and plans to introduce its first commercial state-of-the-art product, TFT-LCDs (thin-film-transistor liquid-crystal displays) (Lee 1999). In 1997, Acer's former customer, Hitachi, made an unprecedented move out of in-house product development in order to seek a strategic alliance with the company for joint development of multimedia home appliances so that the company could tap its fast prototype development (Morishita 1997). The decision reconfirms the existence of a 'reverse' flow of knowledge to traditional technological leaders in some niche product areas (Hobday 1995). As Acer has shown, expansion of a firm's size (which brings economies of scale) and financial base are preconditions for a company to learn to innovate, and these preconditions can be nurtured by the company itself, by the institutional environment or by both. Moreover, strategic alliances and joint ventures with traditional brand-name leaders continue to be an important mechanism of learning.

Some authors regard the state as a determinant of latecomers' technological learning (Amsden 1989; Hobday 1995; Lall 1992). They have argued that the building of technological capabilities requires the development of new knowledge, skills, organizational forms, and interfirm linkages and that the associated high risks and learning costs often discourage individual firms from acquiring technological knowledge. These authors therefore reason that institutional support is badly needed to offset the costs and risks in knowledge acquisition. As evident in Taiwan, Singapore, and Hong Kong, the governments have created favorable conditions for learning by providing human resource training, spreading relevant production and marketing knowledge, setting regulations and standards, establishing science parks, or subsidizing research and development in strategic industries and in public institutions.

[3] Undertaking an original-equipment manufacturing contract, a subcontractor is responsible for producing a finished product in compliance with the specification of the customer, who will be responsible for marketing under the customers' brand name. The term 'original design manufacturing' was first used in Taiwan (Johnstone 1989: 51) to refer to an arrangement whereby a subcontractor designs products according to a general design layout provided by a buyer.

Learning in Local Networks: A Review of Literature on Overseas Chinese Business Organizations

In a study of the career histories of Hong Kong entrepreneurs, Tam (1990) constructed an ideal-type Chinese business system with which interorganizational learning, largely unintended, can be discerned. He posited that learning in Chinese enterprises is not firm-centered and that knowledge is not shared beyond the close circle surrounding the entrepreneur, the owner. In Tam's view, the most valuable knowledge is the formula for success. He regarded the learners as untrained excellent performers; they develop themselves, with or without facilitators. Their learning of entrepreneurship is 'essentially self-directed, self-structured, goal-driven, exploratory, experientially based, and continuous throughout life' (p. 173). A successful learner, he asserted, either breaks away from the existing firm to establish his or her own firm or takes over the original firm's leading position with a new vision. According to Tam, learning transcends an individual firm's boundary and existence, so it is futile to take an individual firm as a unit of analysis. Instead, he argued, one should analyze groups of firms, the 'Chinese Business system'.

Following Tam's argument, one should place the focus of study on the innovative capacity of the Chinese business system rather than on the organizational learning of individual firms. The conception of overseas Chinese firms as elements of networks built up by family, clans, former employer–employee relationships, and friendship is widely shared by a number of authors (Kao 1991; Wong 1991). The personal networks help internalize the costs of information exchange. They also provide an impetus for innovation because it is quicker to secure financial support from relatives and immediate family members than from banks (Hamilton 1991).

According to Tam (1990), the Chinese business system resembles the Japanese system only on the surface, diverging significantly from it because of the different institutional and cultural contexts involved. In contrasting the Hong Kong business system and the Japanese business system, he showed that the Japanese system is centripetal whereas that of Hong Kong is centrifugal. In Japan, he stated, supportive and protective government policies and the system's greater control over the market enable industrial groups to adopt a group corporate strategy and to sustain longer, more stable relationships with subcontractors than is usually the case in the Chinese business system. According to Tam, individual firms in Japan enjoy great stability and security, circumstances that enable them to develop mutually beneficial and prosperous interdependent relationships with each other for collective learning and innovation. Hong Kong firms, however, seek corporate survival in a context of uncertainty and insecurity stemming from their vulnerability to world market fluctuation and a lack of government support. Not having the safety nets provided in the Japanese business system, Hong Kong firms can hardly develop long-term orientation. Tam pointed out that their interorganizational bondage tends to be transient and unstable and that the relationships between firms is instrumental and utilitarian. Unlike Japanese corporate networks, which are characterized by a hierarchical structure, tight customer–supplier relationships, a focus on quality, and great stability, Chinese networks are decentralized, loosely coupled,

cost conscious, and highly unstable (Tsui-Auch 1999*a*).

Within a Chinese enterprise, employees feel insecure (Tam 1990). This insecurity drives employees to learn to be self-reliant rather than to attain collective goals. Whereas Japanese firms practice egalitarian inclusion of their members, Chinese firms practice differential and discriminatory inclusion. Chinese firms, according to Tam, are characterized by high reward differentials between owners and employees, limited career opportunities, centralization of decision-making, and arbitrary dismissals. Employees who are related in one way or another to the owning family are nurtured on a fast track, eventually ending up in the ownership echelon. Employees who are not related to the owning family have only limited career movement and face a glass ceiling. Whereas employees in Japanese enterprises are socialized to take the company as their family and to work for the company, Chinese work in companies to earn a living for their own families, and their loyalty and commitment lie outside the firm. Japanese learn to depend on the company, while Chinese learn to depend on themselves. Japanese employees learn in a secure context, whereas Chinese work hard in a context of insecurity.

In Chinese firms the bifurcation of managerial career routes is paralleled by two layers of management development activities, with one being openly endorsed and the other closely concealed. There are two types of learners. The overt learners are those who have a 'relationship' with the owner and who are identified as the 'selected'. The covert learners do not have such a background and are left to develop their entrepreneurial skills and connections on their own within the company and the network, often without the awareness of the owner-manager. Analyzing the career histories of some 300 entrepreneurs drawn from a variety of industries, Tam found that some 71 per cent of them had gone the route of covert learners, moving from employee to employer status.

The spin-off of employees reinforces the employer's distrust of the work force and the strong belief in the loyalty of family members. This combination, in turn, leads to an externalization of operational and administrative functions, which leads to the evolution of the subcontracting system. The balance of these forces produces a drive to reduce the internal complexity of firms, increases employees' determination to set up their own firms, and adds to the number of enterprises that are founded.

The path along which Chinese firms achieve constant renewal and innovation efficiency differs from that taken by U.S. and Japanese corporations. The corporate renewal of large U.S. enterprises depends on leadership replacement—the mechanism by which a new leader is substituted for the old one. The new leader is expected to introduce new vision and will adjust personnel, structure, and systems to reflect the new emphasis. Japanese firms achieve corporate renewal by means of crisis excitement. Instead of being replaced, the leader articulates the crisis and mobilizes the work force to respond to new situations and to share the fate of the 'community'. In Chinese firms, there is no separation of ownership and management (see also Redding 1990), an arrangement that makes it almost impossible to replace corporate leadership. Furthermore, the lack of a sense of belonging and of an integrative community makes crisis excitement impracticable. The articulation of crises might undermine the limited confidence that employees have in the owning family and might increase the firm's labor turnover. Instead, corporate renewal is achieved through the fission and refusion of firms. The business system is constantly revitalized when learners break away from the existing companies and strike out their own. The constant breaking-up of firms and the nonstandardization of employee behavior reduce the possibility of building bureaucracies and prevent ossification. Furthermore, Tam (1998) suggested that the Chinese business system provides a favorable context for the diffusion of innovation, that the entrepreneurial bent of the system makes it conducive to the cross-fertilization of ideas and to innovation. The system portrayed by Tam fosters rapid entry and exploitation of business opportunities. Tam concluded (p. 174) that the Chinese system

offers a 'seedbed for learning and experimentation' given relatively free market entry and exit, and the readiness of entrepreneurial minded employees to establish spin-offs, and the spillover of success formulae. Hamilton (1991), who studied Chinese firms in Taiwan, observed that manufacturers cope with market fluctuations by keeping their firms small and develop a network of reliable firms by encouraging their employees to set up their own businesses as spin-offs. Employers supported the employees by granting them initial market access and supplying components to the new firms, and many of the former employees remained loyal to their former employers out of mutual self-interest. The constant fusion of firms, coupled with relatively free exit from and entry into networks, made it difficult for firms to keep new business formulae secret. In a local network, each firm was surrounded by a number of firms watching for new formulae, and each firm had potential entrepreneurs willing to set up their own business. Circulating stories of success and failure in networks encouraged organizational imitation. A firm that commenced the manufacture of wigs, plastic flowers, and electronic products would be imitated during the year by hundreds of firms, each locking into and expanding the core network.

The networking mode reflects heavy reliance on personal trust based on '*guanxi*'—connections derived from family, clans, former employer–employee relationships, and friendship (Ichiro 1991; Kao 1991; Wong 1991). This reliance fosters fast learning and helps reduce the costs of learning and innovation. Rather than use impersonal channels such as advertising and sales promotion, Hong Kong textile manufacturers count on family members, relatives, friends, former employers, or employees to procure subcontracting orders (Leung 1993; Sit and Wong 1989; Wong 1988). Hamilton (1991) observed that manufacturers often entered into informal verbal agreements with local firms. For instance, computer firms in Taiwan based most of their transactions with local firms on personal trust instead of contracts (but they did close formal contracts with multinational corporations). Hamilton argued that reliance on personal trust was not simply a kind of sentimental tie but rather a reflection of an instrumental rationality. First, it provided a degree of predictability for manufacturers. Reliance on personal trust has normative rules that people are obliged to follow; those who fail to fulfill their promise will find it difficult to reestablish connections. Second, such reliance offered manufacturers security. Manufacturers often passed on production and marketing knowledge to their family and friends free of cost at social gatherings in restaurants, festivals, and wedding dinners. Lastly, reliance on personal trust enhanced flexibility by making it possible to accelerate the mobilization of resources. A family often offered capital and credit for risk-taking ventures and thereby spurred innovation (see also Limlingan 1986). In these ways predictability, security, and flexibility help reduce risks and costs in knowledge acquisition and innovation.

Continuity Versus Change in the Learning Strategies

The organizing and networking modes of Chinese firms have fostered specific network-dependent learning processes, which generate both intended and unintended consequences. In global networks, Chinese firms succeed largely in imitative learning but, except for a few enterprises mainly in Taiwan, rarely develop their own brand-name products. In local contexts, the constant fusion of firms speeds up the flow of information and hence the imitation especially of product and investment strategies. Manufacturers imitate the business formulae of niche-spotting and quick profit-making and are successful in their pursuit of constant renewal. However, Chinese industrial networks maintain a short-term focus and do not engage in joint development and design as the Japanese do. Individual firms devote few resources to developing a skilled work force and strengthening their engineering capability. Firms produce standardized products in small lots, keeping minimum inventory and a small work force in neighboring countries that offer a cheap supply of labor. When the market

expands, Chinese manufacturers subcontract their surplus orders to the other firms. When it contracts, they downsize their existing business and venture into more lucrative business such as real estate and stocks and shares. This business strategy enables firms to survive more than to innovate products. In fact, Chinese firms in Hong Kong, Taiwan, and Singapore are 'sandwiched' between the technological dominance of global corporations and stiff competition from their Southeast Asian imitators who can produce at even lower cost. The dependence on cheap labor and land available in China and Southeast Asian countries might pose high risks to manufacturers if social and political turmoil threatens these host countries (Wehrfritz 1995; Wyszomierski 1998).

Past success with interorganizational imitation, which has often meant neglect of intraorganizational learning, is not enough to sustain corporate survival and growth among enterprises in industries marked by rapidly increasing technological sophistication. In electronics and the associated supporting industries for metal and plastics, for example, Chinese manufacturing enterprises will eventually lose out if they resist organizational change. Firms in Taiwan and Singapore are increasingly stabilizing their subcontracting relationships with customers and suppliers in order to upgrade technologically, exchange information, and ensure high product quality and timely delivery (Tsui-Auch 2000). The institutionalization of quality control as exemplified in requirement 9002 of the International Organization for Standardization (ISO) has accelerated organizational learning and unlearning. The maintenance of ISO 9002 certification requires stringent quality control, systematic data analysis, documentation, storage, and retrieval. The learning of these new practices is also fostering a partial unlearning of the habit of relying purely on 'talk' or 'rough calculation' (Tsui-Auch 1999*b*).

Latecomer firms that are relatively isolated from markets and R&D bases in the traditional industrial center are initially unable to compete with leaders in the cutting-edge technologies. Instead of competing with the technological leaders head-on, latecomers might better concentrate on the niches where they enjoy comparative advantages. In the electronics industry, for example, firms should aim at developing electronics components for the Chinese market instead of competing with each other to supply similar consumer electronics products to the mature markets of the United States and western Europe (HKGID 1991). In the biotechnology industry, which is knowledge-intensive, Chinese firms in Hong Kong, Taiwan, and Singapore enjoy a competitive advantage in the development and manufacture of traditional Chinese medicine (Tsui-Auch 1997, in press). They are operating in a bilingual environment involving Chinese and English. Their home bases enjoy proximity to and affinity with China, which provides medical resources, human resources, and a potential market. The empirical knowledge of traditional Chinese medicine is available in the medical-research and health-care community. These factors pose a barrier to competition from the Western pharmaceutical companies (Berger and Lester 1997). In fact, the development strategy of creating endogenous knowledge and relying on local and regional markets has been proposed in dependency theory and the alternative development approach within development studies since the 1970s (Bello and Rosenfeld 1990; for a summary, see Blomstrom and Hettne 1985). Proponents of these theories and approaches have been criticized for leaning toward the politics of national and regional isolationism and for disregarding the advantage of combining exogenous and endogenous knowledge as a way to meet the needs of nations. Nevertheless, recent rediscovery of this strategy has come at a time when Asia is encountering economic stagnancy and crises and is seeking new paths for industrial development.

Whereas the strategy of creating regional endogenous knowledge may be the path in the long run, it may not be feasible in the short and medium term. It requires strong institutional support by a proactive state, a tradition characteristic of Taiwan and Singapore but not of Hong Kong (Tsui-Auch 1998). Nevertheless, the postcolonial Hong Kong government has recently made a paradigm shift toward supporting technological upgrading and organizational collaboration (personal interview with James Liu, Chairman, Hong Kong Industrial Technology Corporation, 15 October 1998). Hong Kong authorities have introduced policies to strengthen the industrial and R&D base, to upgrade human resources, and to help tap technical knowledge by facilitating the recruitment of ethnic Chinese to serve in industry. However, as necessary as the establishment of institutional mechanisms is for fostering learning and innovation, it is not sufficient. One must promote a cultural change—from one that fosters the pursuit of quick profit and tangible assets to one that encourages the pursuit of long-term development and tolerates risk and failure in new technological ventures. Such a change of industrial culture will take a long time. In the short and medium terms, there is little viable option other than striking strategic alliances with technological leaders by offering access to regional markets in exchange for technological and marketing knowledge. In other words, interorganizational learning, especially in global networks, remains crucial.

Cross-fertilization of Fields

The preceding review of the imitation and innovation strategies of Chinese firms in networks bears out support to the pragmatist perspective that learning is an active, social process more than it is a matter of information processing or passive behavioral adaptation. Manufacturers interact constantly with their customers in global networks and with suppliers in local networks. In the global networks, individual firms work with foreign partners through various interfirm linkages. Firms start with assembly processes based on the importation of simple tools and the testing of equipment. Their technological knowledge, production skills, and organizing routine are developed, accumulated, and improved in the production process. Manufacturers explore business formulae largely through informal processes in local networks. The use of written media and information technologies for diffusion and storage of production and organizational knowledge is limited.

The learning experience of Chinese firms does not preclude information acquisition and diffusion processes. The use of foreign technology certainly involves the acquisition of information about licensing regulations and the diffusion of operational manuals. Exploring the possibility of establishing branch plants in neighboring countries requires information on regulations governing foreign investments, land use, labor employment, and taxation. Yet, these facets constitute only a small portion of the know-how required if Chinese firms are to operate successfully in global and local networks. Much of it is accumulated by manufacturers and engineers primarily through technological hardware and software and through interaction with local government officials, business persons, and relatives living in the target countries. Hence, the information-processing approach is inadequate for describing much of what is being learned in Chinese firms in Hong Kong, Singapore, and Taiwan. The approach has its strengths but serious weaknesses as well. It has an appeal of 'order' in that one assumes the organization to be an input–processing–output system; compresses the complex, social process of learning into a linear sequence of discrete processes; and disregards the concurrence of processes and likelihood of feedback loops between them. The 'usefulness' of the approach limits it to the function of accounting for the learning of abstract, formalized knowledge. The information approach can also be useful when it comes to prescribing recipes for building informational infrastructure in companies. As necessary as it may be to strengthen that infrastructure, however, such reinforcement alone cannot enhance learning, for as Weick (1979) might say, structure and process are only loosely coupled.

This review of the development experience of Chinese firms illuminates the imitative learning strategy of selectively adopting foreign

technologies, organizational practices, and networking practices and then adapting them to fit into local production contexts without resorting to wholesale copying. The selective adoption of imported knowledge appears to be a creative and innovative process. In development studies, there are theses suggesting that the focus of this research be shifted from knowledge diffusion and adaptation to imitative learning and a reformation of imitation as an active, creative, innovative, and continual learning process. Indeed, the attention to learning-by-imitation reflects a gradual paradigm shift in social science research in general—from a view of the center to a view of the periphery, from the perspective of the provider to that of the adopter. The metaphor of 'translation' in the learning organizing perspective serves well to illuminate this new paradigm. The metaphor of translation has two advantages over that of diffusion and adaptation. First, it reflects learning as a dynamic, active process rather than a passive, behavioral adaptation to the environment. Second, it illuminates the action of the imitators rather than that of the providers or the source of knowledge. Future research on the learning of Asian, specifically Chinese, firms can benefit from using the metaphor of translation in exploring the learning processes involved.

The development experience of Chinese manufacturing networks indicates the difficulty in defining success and failure and in addressing the question of continuity and change in existing learning strategies. The identification of the success or failure of learning depends very much on the researcher's points of reference. Arguing that there is a success trap or exploitation trap, one can assert that the corporate success of given firms is due to their adoption of an imitative learning strategy, emphasis on network efficiency, and reliance on personal trust and that this success inspires other firms to follow suit. Imitation then becomes recognized as the most appropriate strategy or a norm, in the specified industry or business culture. The endorsement of the strategy or the norm allows most Chinese manufacturers to forgo exploration of alternatives for enhancing product innovation, economies of scale, and long-term development. However, a rejection of the theory of learning traps can also be justified. A review of the development experience of individual Chinese firms points to an incremental improvement of process and product technologies, a high degree of flexibility in operating different product lines, and constant renewal more than to mechanistic adaptation or excessive exploitation of existing routines. Especially in industries such as the electronics and the computer industry, where products require a fairly high level of technology and precision, there is evidence that firms are increasing the stability of their subcontracting networks and are employing professional managers and engineers. Overall, the learning strategy leads to at least small wins, if not 'quantum jumps' (Weick and Westley 1996: 455), revealing no success trap or exploitation trap. Even the shift of investment to real estate and the service industry despite the profit squeeze in those sectors can be said to reflect not a failure trap or exploration trap but rather a rational decision to redirect resources to profitable ventures.

Whereas it remains difficult to theorize about learning traps, it is safe to argue that there have been both intended and unintended consequences. One of the hazards of trying to illuminate the paradox of learning is the choice between the theory of learning traps and the conception of the duality of consequences. It is a decision that should be made on a case-by-case basis. The theory of learning traps, with its deterministic character, can be applied better to cases having a clear definition of success and failure (for an example that deals with learning how to implement regulations, see de Haën, Tsui-Auch, and Alexis, Ch. 41 in this volume) than to cases that lack such clarity. In most other instances, the concept of the duality of consequences is the more effective interpretive device. Yet, researchers interested in building theories and providing recipes will find the duality concept less useful for predicting change or continuity than the theory of learning traps is likely to be.

The original version of the theory of knowledge creation is more applicable to large Japanese firms, upon whose experience the theory was originally based, than to small and medium-sized Chinese enterprises, which often have unstable organizational structure, little or no middle management, and volatile labor relations. The knowledge creation and knowledge development demonstrated by such Chinese firms is split between the individual entrepreneurs, top managers, engineers, and scientists of the research complex organized by government, industry, and academia, which vary from country to country (more in Taiwan and Singapore than in Hong Kong). The theory of knowledge creation, which extends the focus of interest from the intraorganizational context to the interorganizational context in regional industrial districts, is highly applicable to the study of learning among Chinese firms, especially those pursuing product development and innovation. Nevertheless, the recent emphasis on the creation of endogenous knowledge needs to be combined with the translation of exogenous ideas into the local context in which firms operate. In the current context of regional Asian economic crises, the focus on exogenous ideas can help researchers and policy-makers avoid becoming trapped by regional and national isolationism in the process by which endogenous knowledge is created.

Lastly, the development experience of Chinese firms can provide insights on the study of power, learning, and knowledge distribution. In Chinese manufacturing firms, the process of knowledge creation centers on entrepreneurs, top management, and engineers; knowledge-sharing, collective sense-making, and the evolution of shared mental models or cognitive maps are virtually absent. Within a global manufacturing network, power is asymmetrically distributed between technological leaders and latecomers. The control of the former over resources often hinders the latter in learning to catch up. That asymmetry indicates that hierarchical structures within an organization or a vertical network empower leaders and tend to result in an unequal distribution of knowledge. The assumption that information diffusion and collective interpretation are processes of organizational learning in all human organizations is less inapplicable to the study of hierarchically structured organizations than to lean organizations. It remains unrealistic to prescribe the evolution of shared mental models in order to facilitate organizational learning. Instead of being fostered and managed by technological leaders, learning is initiated by the latecomers and facilitated by governmental policies to strengthen the pool of resources available to strategic industries and the industrial infrastructure as a whole. Improvement of the power base and resource base through individual and collective actions is a precondition to an enhancement of learning. The notion that power derives from association between actors as conceived in the learning organizing perspective, is applicable. Yet the power asymmetry and unequal distribution of knowledge within and between organizations need further analysis (Coopey 1995; Makhija and Ganesh 1997). To account for these phenomena, researchers developing theory may draw insights from one of the main sociological traditions, the conflict tradition (see Collins 1994: 47–120; Gherardi and Nicolini, Ch. 2 in this volume; Hardy and Clegg 1996).

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