Learning in Global Networks?

- Industrial Restructuring of Thai Manufacturers in the Automotive and Garment Commodity Chains

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Acronyms:

AICO	the ASEAN industrial co-operation scheme
AIC	Auto-parts Industry Club of the Federation of Thai Industries.
AFTA	ASEAN Free Trade Agreement
ASEAN	Association of Southeast Asian Nations
BBC	Brand to Brand Co-operation scheme
BOI	Office of the Board of Investment
BSID	Bureau of Supporting Industries Development
BUILD	the BOI Unit of Industrial Linkage Development
CAD	Computer-Aided-Design
CBU	Completely Built-Up
CEPT	Common Effective Preferential Tariff
CKD	Completely Knock-Down
DIP	Department of Industrial Promotion
DEKU	Department of Engineering at Kasetsart University
EOI	Export Oriented Industrialisation strategy
GATT	the General Agreement on Tariffs and Trade
GM	General Motors
IMF	International Monetary Fund
IRP	Industrial Restructuring Programme
ISI	Import Substitutions Industrialisation strategy
ISO	International Organization for Standardization
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JIT	Just-in-time (Kanban)
LCR	Local Content Requirement
MFA	the Multi Fibre Agreement
MIDI	Metal-working and Machinery Industries Development Institute
NAFTA	North American Free Trade Agreement
NESDB	National Economy and Social Development Board
NIC	Newly Industrialised Country
NSTDA	National Science and Technology Development Agency
OEM	Original Equipment Manufacturer
OPEC	Organization of the Petroleum Exporting Countries
PPM	Parts Per Million
QC	Quality Circles ('kaizen')
QS 9000	Quality System (the international automotive sector group)
R&D	Research and Development
REM	Replacement Market
SME	Small and Medium sized Enterprise
TAA	Thai Automotive Association

TAI	Thailand Automotive Institute
TAIA	Thai Automotive Industry Association
TAPMA	Thai Auto Parts Manufacturers Association
TDRI	Thai Development Research Institute
TGDF	Thai Garment Development Foundation – Under TGMA
TGMA	Thai Garment Manufacturers Association
THTI	Thai Textile Institute
TID	Textile Industry Division under Bureau of Industrial Sectors Development
TNC	Transnational Corporation
UN	United Nations
VAT	Value Added Tax
VAVE	Value Analysis, Value Engineering.
WTO	World Trade Organization

Chapter One

The Global–Local Deadlock

Introduction

On July 1997, a financial crisis struck Thailand when the Thai Baht was allowed to float against the US dollar. The crisis soon spread to other East and Southeast Asian countries, threatening to reverse years of steady economic growth. The financial crisis was alarming because it affected some of the fastest growing developing countries, the so-called 'miracle economies'. The crisis not only revealed structural problems and regulatory imperfections, which led some to question whether there had ever been an Asian 'miracle' at all, but also reflected the level of globalisation to which Southeast Asian economies have exposed themselves (Kelly and Olds, 1999). The crisis demonstrated that the global reach of finance, as manifested in radical financial deregulation, has had a major impact on Southeast Asian economies as a factor influencing everyday economic life. This raises broader questions concerning the impact of globalisation in relation to other economic, social, cultural and political issues, as well as the extent and scale of global integration.

This study therefore focuses on economic globalisation, in the analysis of which Thailand is regarded as an interesting case. Since the mid-1980s, Thailand has been integrated thoroughly into the global economy through the localisation of transnational corporations (TNCs) and increased export flows, although Thai organisations maintain many of the practices entailed in the business organisation of overseas Chinese business groups. However, the way this increased integration into the global economy is affecting local production structures and whether a learning process is involved, which has not been studied in its own right. In fact, there are very few studies on private entrepreneurship and organisation in Thailand.¹² The development of knowledge has been emphasised by various scholars as the main strategy of creating industrial competitiveness in a globalised world. Furthermore, the ability of a firm to learn is embedded in its social organisation and the structure of its networks with firm-external actors. With its firm-level and interactive focus, the knowledge and learning literature is regarded as a usable theoretic and analytic lens through which the impact of globalisation upon the strategies and practices of Thai firms is examined.

¹ Suchiro (1989) is an important exception, with his thorough examination of the development of leading business groups in Thailand.

² Contemporary with this study, a Danish research team, under the leadership of Lundvall, is examining the knowledge of innovation systems from an Asian perspective (see <u>www.globelics.org.</u>). Among these researchers, Chairatana and Intrakamnerd are working with innovation systems in Thailand.

It is argued that **different industries are not integrated into the international economy to the same extent, but governed by different institutional rules** in terms of, for example, industrial policy and supra-national regulations, as well as by different agents regarding, for example, their nationality or location (Gereffi, 1995). In order to obtain a multifaceted perspective of the impact of globalisation, this study thus analyses how different governance structures affect **local producers within the automotive and garment industries** respectively. It is considered that a comparative study will be able to highlight different aspects of the complex configuration of globalisation in more concrete terms, and this also opens our eyes to various explanatory mechanisms and to the significance of context. Thus, this chapter emphasises the different demands and pressures for upgrading that are placed on local firms at the sectoral or industrial levels.

Research questions

The overall aim of the present study is to obtain a better understanding of how globalisation is impacting on, and interacting with, organisational practices related to production processes in Thai firms. An oft-cited hypothesis in the knowledge and learning literature is that the functional fragmentation of the activities of transnational corporations is leading to an increase in the global diffusion of knowledge, which is open to exploitation by firms in developing countries for learning and upgrading purposes (e.g. Maskell and Malmberg, 1999; Gereffi 1999b). Even though this may be an attractive hypothesis from the perspective of developing countries, reverse tendencies are also a possibility. It is actually becoming increasingly difficult for local producers in third-world countries to access this knowledge and use it competitively in a world that has come to be characterised by intense global competition between individual economies and actors. The intention of this study is to research this double-edged problem of how global processes interact with local production structures and practices by answering the following research questions:³

- Empirically, the aim is to analyse how Thai firms manage to learn and to transform their organisations in the space between global opportunities and organisational practices embedded in the local environment. In other words, are Thai firms successful adaptors in the global economy?
- Theoretically, the aim is to develop a framework for analysing the impact of globalisation on the dynamics of local firms in developing economies, seen through the lenses of knowledge creation and learning

³ The research questions will be elaborated at the end of the theoretical chapter (Chapter 2) in the context of the development of causal mechanisms.

theory, which focus on the relational aspect of global-local interactions.⁴

In order to prepare for the analysis, this introductory chapter briefly outline some of the basic dimensions and concepts regarding the global-local discourse in the following four sections. First, the basic configuration of the Thai business system is broadly defined in order to acquire a better understanding of the empirical context of the study and the organisational and institutional structures of Thai firms that are influenced by globalisation. The second section addresses the concept of globalisation itself and discusses how it is expected to influence economic processes at the local or national level. Two competing perspectives are sketched out, one arguing that global economic processes are the major forces in shaping national organisational structures, the other arguing that national business systems are enduring entities in an increasingly global economy. In section three, it is argued that the two perspectives both are deficient because they neglect concrete social relationships between major actors. The final section presents an overview of the **content of the various chapters**, which constitute the analytical elements used in answering the proposed research questions. In addition, the arguments in favour of using knowledge and learning perspectives as the analytical point of departure are also elaborated.

1.1 Basic configurations of the Thai business system

As the rest of Southeast Asia, Thailand has historically been open to the outside world. Technologies, cultures and people early diffused into the Southeast Asian region and left a lasting imprint. The Chinese in particular have been migrating into the region in large numbers, and Western influence was introduced by the great maritime powers of Spain and Portugal. However, it was not until the beginning of the nineteenth century that the European countries took a serious economic interest in the region, as the Industrial Revolution increased the demand for raw materials and later for new markets for Western industrial output. Between 1825 and 1870, Southeast Asia fell under European control, which brought about a radical change in the division of labour and produced far-reaching changes in the region's economic and social fabric (Thailand and Burma Handbook, 1996; Phongpaichit and Baker, 1995). Though Thailand was never colonised, the Thai king had to sign the Bowring Treaty with the British in 1855, which entailed the adoption of relatively free-trade economic policies and a stable financial system modelled along British lines (Warr, 1993). Free-trade policies promoted agricultural exports, and the trade pattern soon reflected the colonial form of trade, as

⁴ Similar theoretical frameworks have been developed simultaneously with this study. Ernst and Kim (2002), for instance, have developed a conceptual framework to access the knowledge-formation of local suppliers in developing countries mediated through linkages with transnational corporations (or global network flagships). Henderson et al. (2002), moreover, elaborate on Gereffi's global commodity chain perspective to build a conceptual framework for analysing the dynamics of economic globalisation and the implications for the industrial upgrading of firms in developing countries.

Thailand became a source of primary goods and a market for Western manufacturers. The manufacturing sector, however, did not really contribute to the overall growth of the country until the 1960s, when a major restructuring of the economy was undertaken in order to protect and promote private industrial development.

To begin with, major domestic industrial conglomerates engaged in textiles, agribusiness and import-substitution industries spearheaded industrial growth in Thailand. However, the inflow of foreign investment was spurred on by a shift to export-promotion policies at the beginning of the 1980s and the Plaza Accord agreement in 1985, which allowed the Yen to appreciate by 89% against the Dollar. Following a simultaneous devaluation of the Baht, the Thai currency was actually devalued by 100% against the Yen. These developments accelerated foreign investments by Japanese capital and later on by the East Asian Newly Industrialised Countries (NICs) who together accounted for twothirds of investments in Thailand. While foreign investment first concentrated on consumer goods in the import-substitution period, a new wave of investment focused on intermediate goods and industrial manufacturing, aimed at exports such as metal and electrical products, machinery and transport, chemicals and construction materials. These new economic developments caused a veritable economic boom. Manufacturing overtook agriculture as a share of GDP for the first time in 1985, and the Thai economy was the fastest growing in the world from 1986 to 1990, with double-digit growth rates. This remarkable boom was headed by manufacturing exports, which in the three years from 1987 to 1989 rose by more than 60 percent annually. However, domestic Thai industry was not completely overrun by foreign capital in this process, but in fact experienced a fourfold growth in only four years from 1986 (Phongpaichit and Baker, 1995; War, 1993).

The actual Thai business system that emerged from these events should ideally be described with respect to the historical circumstances under which it developed organisationally, including an analysis of the most important foreign and local actors and the nature of the relationship between business and the Thai state. But because of the relative lack of information concerning actual business organisation in Thailand, and in Southeast Asia in general, most descriptions of organisational configurations refer to the Asian business system. Descriptions of this system are based on Chinese business practices, which have been spread all over the region by the mass influx of overseas Chinese business groups (e.g. Hamilton, 1996), including in Thailand. Suehiro (1989), for example, found that only three business groups out of seventy in his survey could be characterised as being 'indigenous', the majority being of ethnic Chinese descent. The Chinese also dominates trade associations and chambers of commerce, and the Chinese Chamber of Commerce is the largest and most important of all Chinese business associations. However, many of these associations function mainly as social clubs for colleagues in the same trade. The main way in which these associations have sought influence has

been through building clientilistic ties with high-ranking officials, though businessmen have increasingly discovered more direct routes to the power by being elected in great numbers to the House of Representatives and various cabinets (Laothamatas, 1992). The Chinese have become fairly well integrated, as they have been educated in Thailand, speak and read Thai, have adopted old Thai family names and have Thai citizenship.

The Chinese population of Thailand early took on the role of tax farmers and merchants in international trade based on their international networks and personal relationships with the political elite. However, their activities soon extended into almost all industries and sectors, including banking, trading, mining, manufacturing, agri-business, construction and services. The industrial groups, however, are still merchant-oriented in nature, since they emerged from a class of importers of manufactured goods (Suehiro, 1989). According to Muscat (1987), a typical pattern in the development of Chinese business firms is for the founder of a firm to begin as a petty retailer with limited schooling and little working capital. After he has learned the business, accumulated some savings and established important connections, he shifts to wholesaling or to dealing in more advanced products, after which he may begin to assemble previously imported products so as to incorporate adaptations for the local market. The founder sends his children to school, and often to university, to learn accounting, business administration, engineering or other subjects relevant to the expansion of the family business.

As a consequence of the migration of overseas Chinese into Southeast Asia, the business systems in this region are said to have many operational structures in common, working along organisational principles that are very different from Western societies (Hamilton, 1996).⁵ The main organising principle of Chinese or Asian business systems is a network of independent firms working as the medium of economic activity, often referred to as 'bamboo networks'. Relationships between firms are extensive and based on **personal networks** or *quanxi*, meaning a personal relationship loaded with affection and mutual obligations. *Quanxi* in general describes personal and particularistic ties between individuals based on a commonality of shared identification, which may be kinship, place of origin, year of birth, marriage or other social bonds. Business networks often make up a cluster of enterprises owned and controlled by a group of individuals linked to one another by a network of various *quanxis*. Links to political circles are often an important aspect of such business networks (Numazaki, 1996). Because of a weak trust in formal systems, such as

⁵ It is important to note, however, that these organisational structures differ empirically, as business system configurations are situated in various historical contexts and represent ongoing adaptations to specific circumstances. Even if certain similarities in Chinese business networks exist across Southeast Asia, Chinese immigrants were exposed to varying historical and national trajectories in adapting themselves to changing structural demand. The monolithic label of Chinese business is therefore an approximation (Bun, 2000; Hamilton, 1996). Presenting the configuration of Thai business under the heading of the Asian business system is therefore an example of what Granovetter (1992) terms 'oversocialisation' (See Chapter 2).

law, the underlying foundation for the formation of business networks between Chinese firms is personal or particularistic trust in relatives and friends, which actually narrows organisational possibilities and the potential for growth. A distinct mark of Chinese business networks is therefore that they often overlap with pre-existing social networks, as is common practice in doing business with trusted friends (Siu-lun, 1996; Wei-ping, 2000).

Chinese business systems are largely family-owned and family-controlled firms, and the patriarchal control of the family often extending to employees too. To ensure family control, and as a risk-management method, the growth pattern is characterised by opportunistic diversification. Instead of growing through vertical integration, assets are diversified by starting new, separately managed firms, often in other economic sectors, and placing a different son in charge of each new firm (Hamilton, 1996; Yeung, 2000). The establishment and growth pattern of a Chinese family business is therefore cyclical. In the emergent phase, the firm is started by a founder, often with a partner, in order to join people and resources. The investors or shareholders are recruited through the network of personal relationships, but if there are no suitable investors among the *quanxi*, new investors can be introduced through mediators. Some investors are silent partners with little managerial power but who invest in many firms to spread investment risk. However, Chinese entrepreneurs are eager to consolidate their holdings and get rid of partners in the later phase of the firm's development. Partnerships are therefore characterised by temporary alliances, where the partners are free to invest in other projects, thus providing openness and flexibility. In the centralising phase, the founder consolidates his business under the control of the extended family. In the next phase, his sons are placed in control of separate departments, plants or subsidiaries within the family business. And finally, the family business is broken up as a result of family division, for example the death of the founder, each branch now imitating the emergent phase of the firm's initial development (Numazaki, 2000).

Thai business systems can therefore be described as family businesses in the common meaning of the term in Southeast Asia, in which both ownership and management decision-making is controlled by the family, all senior management positions being reserved for members of the owning family. It can also be described by virtue of its **group structure** as dominant industrial capitalists in general establish a group of companies. In many cases the manufacturing base of their activities is specialised in one or two types of industry, as seen in the Siam Motors groups and the Sukree and Saha Union Textile groups (Suehiro, 1989; 1993; Muscat, 1987).

Chinese business networks are to a large extent influenced by Chinese cultural values working as codes of behaviour.⁶ The key values are representations of

⁶ The fact that many studies have placed more stress on the behavioural and cultural aspects of firms than on economic and structural issues also leads to the similarities in overseas Chinese businesses

the core values of Confucianism, such as **trust** (as Chinese do not trust outsiders, trust must be established before any serious business relationship can be cemented), **face** (loss of which makes it impossible for a person to function properly within the community), **reciprocity** (indicating that transactions will only take place when they are to the mutual benefit of both parties), **long-term perspective**, and **harmony** (the avoidance of competition and conflict) (Weiping, 2000). While Thai business culture and organisation follow many of these organisational practices, personal relationships also reflect the social hierarchy found in this traditionally agricultural society and in Buddhist philosophy.

As a leftover of the traditional agricultural system (the *sakdina*), most Thais prefer to attach themselves to an individual who has some influence through birth and position, under whose protection he is, and to whom he devotes his service (Suehiro, 1989). As a result, Thais show great respect for rank and are very aware of hierarchy, meaning that **authority and communication are top-down affairs**. In order to maintain harmonious relationships, an employee must show 'appropriate behaviour', 'be polite' and 'lower himself', allowing the senior manager to be the authority and to be knowledgeable instead of expressing his own opinion. In general, the judgement or knowledge of a senior or higher ranking person should always be trusted. On the other hand, a superior is supposed to adopt a caring attitude towards subordinates and care for their needs as an aspect of what implicitly is a reciprocal relationship between them. Provided that the superior is behaving as he should, an employee will be extremely loyal. This is also an aspect of group orientation in Thai society (Dubey-Villinger, 2001).

1.2 Globalisation and local development

To answer the questions posed in this research, the next logical step is to proceed with a discussion of how such organisational business practices, however ideally described, are being influenced by the transformational forces of the global economy. As will become evident, there are two opposing approaches. Before moving on, however, the concept of globalisation will be discussed in further detail.

On the general level, economic globalisation refers to functional integration and inter-territorial dependence through increased cross-border trade, investment and financial flows, leading to greater competition between firms in different national economies. As such, **economic globalisation** is defined as

being emphasised rather than their differences (Mackie, 2000). The argument of this study agrees with Bun (2000), that **similar organisational tendencies** of the Chinese in Southeast Asia can be considered as being characteristic of immigrant economies in general. Immigrant Chinese were forced into an economic niche and often had to defend themselves against hostile and discriminatory state policies. Under such less than ideal circumstances, ethnic or immigrant businesses are highly dependent on the cultivation of useful ties to make up for their lack of access to systemic safeguards. Thus, Chinese immigrants built a myriad of social organisations to facilitate their social and economic lives in the destination country, such as trade societies, rotating credit associations, surrogate families and other networks, as a safeguard against institutional weaknesses.

increased 'functional integration of hitherto geographical dispersed economic activities' (Lauridsen, 1998: 7). Real social changes associated with globalisation allegedly began with the breakdown of the Bretton Woods system as a means of controlling national economies caused by the OPEC crisis, which initiated a process of reorganisation that has lasted since the 1970s. Financial institutions tried to compensate for policy failures and increased oil prices through the deregulation and internationalisation of financial markets, while national-based corporations saw no other way out of the crisis than reducing costs by 'going global'. As an outcome of this process, flows of international investment have grown at a much faster rate than trade flows since the-mid 1980s. The internationalisation of production was facilitated by the rapid development of information, computer and telecommunication technologies, the greater mobility of capital and improvements in transportation, which made foreign investment easier, quicker and cheaper. Increased cross-border flows of capital and production have been paralleled by the development of a transnational diplomacy. That is, bargaining between firms and governments increasingly takes place through supra-national organisations such as the UN and the WTO (Amin and Thrift, 1994; Hirst and Thompson, 1996; Lundvall and Johnson, 1994). The outcome of the developments outlined above is that competition between firms now has a more global character, meaning that it cuts across national boundaries and industrial sectors, forcing firms to compete simultaneously in all major markets (Ernst and Lundvall, 1997). Thus, the long period of stable economic growth based on state governance and Fordism has been replaced by the increased mobilisation of production and greater global competition.

While agreements can be made about the meaning of globalisation at this general level, there is a great deal of controversy regarding the impact of globalisation on national economies. It is debatable whether globalisation leads to convergence or divergence among national economies (Yeung; 2000); whether it generates prosperity or increased global inequality, breeding violence and social unrest (Kell-Herzog and Szabo, 1997; Wade, 2001); and whether it should be treaded as an 'exogenous' force threatening national identities and autonomies, or as a process of globalisation from below, offering the opportunity for national renewal (Amin and Thrift, 1995; Kong, 1999). Such **dualistic positions** may be the result of the emergence of two very different and seemingly antagonistic perspectives relating to globalisation in the mid-1980s. The so-called 'globalonies' and the strongly globalist perspective are based on the ideology of free trade and limited government interaction as a result of the end of the Cold War in 1989, which promoted the concept of globalisation as a prominent catch word. Global flows of investment, technology, finance and information, it is argued, affect all levels of society and lead to uniform organisational structures. The perspective of the globalisation sceptics, on the other hand, is based on the upsurge of research on local or regional networks, which has been particularly prominent in sociology and economic geography, and which argues that economic activities are

embedded in local or national institutions that are distinctive to their particular society. As a consequence, economic activity takes a myriad of forms, and globalisation is not seen as having any decisive impact on these highly localised and self-reproducing agglomerations or industrial districts.

Proponents of the strong globalisation perspective mostly base their arguments on the ideological victory of laissez-faire policies and attribute their explanations to the market mechanisms which, it is claimed, have dissolved or subordinated many earlier national- and local-level institutions (see Boyer and Hollingsworth, 1997). It is argued that power has shifted from the state to the market as the most important governance or co-ordinating mechanism, and that the key factors for success depend on global conditions representing the effective market (see Lauridsen, 1997; Hirst and Thomsen, 1996). Furthermore, globalisation through the market is seen as being supplemented by globalisation from above through supra-national institutions like the World Trade Organisation (WTO), International Monetary Fund (IMF) and World Bank imposing a disciplinary neo-liberalist regime with the aim of facilitating and regulating the increasing flows of trade and capital (Nordhaug, 2001). From an organisational point of view, Gereffi argues that the competitiveness and position of firms in the global economy results from their integration into global production chains. As this process proceeds, 'globalisation tends to diminish the influence of national origin on business systems. The way firms do business in the international economy, thus, is determined to an increasing extent by their position in global commodity chains, not their national origins' (Gereffi, 1996: 427).

Globalisation sceptics, by contrast, argue that the extent of globalisation as well as its effects on the nation state has been exaggerated. Regarding the former trend, they suggest that in order for globalisation to become a reality, there has to be a real break with the past, implying 'a "widening" and "deepening" of international ties to a degree that creates a qualitatively new (i.e. global) network of social interaction' (Weiss, 2001: 9-10). In this regard, Hirst and Thomson (1996) tend to regard globalisation as a myth, since national states and national economies are still the principal entities involved, and the contemporary period cannot be interpreted as constituting such a decisive break with the internationalised economy. They argue that, in a historical perspective, nothing qualitative new has happened regarding foreign direct investment, global trade or the political independence of the national state. Instead, they consider present-day capitalism as being more consistent with a highly internationalised economy, suggesting that a widening and deepening of the internationalisation process is a better description of current trends than globalisation. Likewise, Weiss (2001) argues from at statist perspective that the advocates of globalisation have failed to convince the world exactly how globalisation constitutes a break with the past. She argues that to conceive globalisation as a process of functional integration resulting from the rise of transnational corporations and increased global competition 'may at best

provide indicators of the extent to which the world economy is becoming more interconnected. But they provide little insight into the nature of the beast of globalization itself' (Weiss 2001: 7).

The above arguments rest on the assumption that the primary mechanism governing economic activities are networks and institutions that are distinctive to particular economies. This perspective on industrial development was initiated by the pioneering work of Piore and Sabel (1984), who announced a break with global Fordism, which for the greater part of the twentieth century, was the framework whereby industrial development was ordinarily understood. The reaction came from social disciplines dealing with industrial organisation, such as economic geography (e.g. Storper and Scott, 1989), economic sociology (e.g. Swedberg and Granovetter, 1992; Orrú et al., 1997; Whitley, 1992) and industrial economics (e.g. Nelson, 1993; Lundvall, 1992). Of course, different writers had very different points of departure and areas of research, but nonetheless common features and concepts could be traced between them.

One major new contribution to the study of industrial organisation was the opening up of the realm of the firm, traditionally regarded as a 'black box' that was analysed through simple input-output models (Knudsen, 1990). With the new approach to economic activity, the focus shifted to organisational processes within the firm and to network relationships between firms. The institutional context in which firms were embedded and the 'path-dependent' nature of economic development were seen as important constituents of economic behaviour and industrial development. Such institution-based theories have gradually moved the focus from pure economic and technological structures as explanations for industrial development to a greater emphasis on social institutions as key explanatory factors (exemplified by the work of Storper, 1997). Since, in this perspective, economic co-ordination and governance are understood as being embedded in place-specific social structures, globalisation is not seen as having much influence on economic behaviour. Either globalisation processes are completely ignored, or it is argued that globalisation has only had a peripheral impact, since systems of economic governance cannot easily be transferred from one society to another because of the embedded and path-dependent nature of economic activities. Focusing on national configurations of business systems, Whitley, for example, argues that the configuration of economic activities is an endogenous process reflecting distinctive, historically developed social institutions, and that it therefore seems to persist in the face of rapid political and economic change external to the societies concerned. 'Once a particular business system has become established and certain rules of the game are institutionalized, major changes in firm type and patterns of behaviour are unlikely to occur in the absence of substantial institutional changes' (Whitley, 1992: 247).

This tendency to focus on localised patterns of interaction at different geographical levels and to ignore wider, global fields of interaction may lie in

the fact that the rise of institutions and local forms of production is based on old themes and theories that have been rediscovered in this process of theoretical 'development'. Thus, the prefix 'neo-' has been used excessively: 'neo-Schumpeterian' approaches have emerged in theories focusing upon technological innovations as the dynamic element in capitalist development; 'neo-Marchallian' perspectives have been revived in theories of the industrial district; 'neo-Veberian' approaches have been taken up in relation to evolutionary views on economic development; and theories arguing that economic activities are embedded in social networks have been given a 'neo-Polanyian' twist (see Malmberg, 1996). This occupation with the theoretical heritage leads one to question whether the emergence of new theories has any roots in current economic and industrial changes, or whether it is simply 'old wine in new bottles'.

1.3 Towards a common ground

Given the two perspectives on globalisation – one emphasising pervasive globalisation leading to the homogenisation of economic governance, the other stressing the continued significance of the national 'roots' of economic governance in parallel with the limited role of globalisation – we are left with an either/or choice in the dualist position between the global and the local. It is not the aim of this study to make this choice, as none of the positions are assessed as being suitable for the analysis being offered here. The main points to be made in this context are that globalisation is a very complex concept, and that the global-local dichotomy is an unfruitful one. Globalisation is a complex concept because it is clearly the result of many different processes on overlapping geographical scales: it is thus misleading to interpret globalisation as a distinctive causal process in its own right. Globalisation has also been understood as an all-embracing concept that can be used to explain anything and everything, even though such events and phenomena might be more clearly analysed and explained in terms of other concepts, such as internationalisation or liberalisation. A more adequate understanding of globalisation would aim to interpret the phenomenon in terms of the most inclusive 'structural context' and as resulting from economic processes on many different scales (Jessop, 1999).

It is therefore meaningless to understand economic activities and organisation as either embedded in social networks influenced only by national rules, institutions or culture, or as the product of a globalised world that restricts opportunities for national institutions and individuals. Both perspectives suffer from an inability to explain strategic action and dynamic changes at the firm level. Theories about local forms of business organisation tend to downplay the significance of particular firm's action in favour of the more general logic of a particular local or national institutional system, thus failing to pay attention to actors and their strategic behaviour as agents of organisational change. Consequently, perspectives focusing on such general and broad systems of economic co-ordination and control have not, as Whitley admits, 'paid a great deal of attention to international forms of economic organisation, or how the growing cross-national interdependence of some firms and markets has affected national business systems' (Whitley, 1996: 414). Global perspectives have a more dynamic point of departure, their focus being on flows of finance, trade and investment. However, aggregate statistical data, which is the main analytical method used, do not allow conclusions about the nature of the strategies and actions of the firm (Dicken and Yeung, 1999). Transnational corporations, for example, may constitute the most important force for global integration and local transformation. However, no attempt has been made theoretically to integrate local production systems with global flows of investment because theories of transnational corporations have mainly focused on the international division of labour, which is difficult to combine with theories of localised production systems (Malmberg, 1996). Global flows of production often appear de-contextualised, making it hard to see the factors connecting such global flows to localised processes. That is, both local and global perspectives operate with a conception of action carried out by atomised actors: dynamic, social interaction between actors only seems to play a very peripheral role.

So how are we to conceive of economic behaviour and industrial organisation in terms of this global–local dichotomy? As Jessop suggests in a critical-realist vein: 'to introduce some order into this chaos requires careful conceptual analysis as well as concern with real causal mechanisms, and how they are actualised in given circumstances' (Jessop, 1999: 19). It is thus essential to construct an analytical and conceptual framework that integrates global and local processes, as well as to move from the general, macro-oriented level to the concrete analytical level, to understand what is going on inside a particular country, industry or company. It is the argument here that to achieve this requires a change from focusing exclusively on localised production systems or on globalisation as an overriding force toward a focus on **processes, actors and networks** in order to construct a conceptual and integrating framework on the concrete level of interaction. In this way, the global is understood as a situated process making it possible for a conceptual framework for the successful integration of the global with the local to be developed.

Globalisation is thus understood as a real mechanism of transformation, since increased global competition, reforms and liberalisation pressures within the framework of supra-national organisations have led to increased interdependence between various geographical localities. Globalisation, however, should not be understood as the end-point, but in terms of multiple processes working in and through various localities in a dialectical relationship with local processes and structures, which may or may not lead to the appearance of qualitatively new modes of governance. Thus, global processes influence local economic activities and industrial development, not as exogenous forces which threaten local production and identities, but as situated processes working as a source of both potential and barrier. Since globalisation works in interaction with domestic regulation, norms and institutions, the outcome may actually be an increase in the differentiation of local practices. Thus, the result of global–local interaction is not a trend towards homogeneous organisational structures, but represents the continuation of differentiated and unique, though possibly more complex industrial production systems (Amin and Thrift, 1994; 1995; Yeung, 2000). The precise outcome of this global–local interaction cannot be predetermined a priori or analysed on a general level, but must instead be established through the analysis of concrete situations. Thus, it is more useful to talk about the degree of globalisation than of globalisation as a final structure.

By adopting a focus on concrete processes and actors, it becomes possible to analyse how globalisation influences economic activities and organisations in a given location, provided that links or networks are established between the global and local actors involved. Thus, the network becomes the focal analytical point of departure in analysing global-local interaction. Network theory emphasises the relational, social and institutional foundations of economic behaviour. Economic activities are consequently regarded as being embedded in networks of interpersonal relations, through which some actors are effectively able to reshape the strategy and activities of other actors in the network, though restricted by existing social and formal institutions. Though often applied exclusively to the local level, relational networks focus on how interactive relationships between actors are intertwined with processes of economic change on various geographical scales: global, regional or local (Yeung, 2002). Networks are regarded as being more suitable for the study of the impact of globalisation on local structures than other institutional mechanisms that co-ordinate economic activity, notably the state and the market.

With regard to the state, it has proved difficult to develop a set of institutional arrangements equivalent to the nation state on the supra-national level. On the contrary, networks can be extended to the international level, though they are more easily developed at the regional or local levels. With regard to the market, competition is regarded as the main global market-co-ordinating mechanism. However, the standard, neo-classical economic theory of the market does not operate with a proper theory of the firm and is unconcerned with the various components of the social conditions of production. In the network perspective, conversely, transactions do not occur within an impersonal system of autonomous actors, but are shaped by the social relationships between actors and the institutional context within which such relationships are embedded (Hollingworth and Boyer, 1997).

There is thus a strong case for refocusing theory towards actors and networks that has led to the recent 'discovery' or 'opening up' of the firm and towards the inclusion of more social or institutional concepts in theoretical developments regarding organisations and industrial development. The relational network approach focuses analytically on the complex set of relationships among various actors and ascribes causal powers to these relationships, which effect dynamic change in the spatial organisation of economic activities. Globalisation at the level of networks introduces a dynamic dimension into the analysis, as it helps to appreciate the differentiated strategies and behaviour of firms and other social actors as deliberate responses to the changing context of globalisation and the dynamic processes of the institutional and organisational context (Yeung, 2000; 2002).

1.4 Disposition and knowledge as the analytical lens

The **next chapter constitutes the theoretical point of departure** for analysing how globalisation influences local structures of production. Interactive learning is suggested as the main mechanism of knowledge creation and change, which is why **network theory** is presented in the first section as an integrating framework for the analysis, focusing on the embeddedness of actors in relational and structural networks. Learning is perceived as a process through which the firm interacts with other actors and extra-firm institutions, and by which new knowledge is potentially absorbed into the knowledge base of the firm. Knowledge creation and learning have been chosen as the theoretical focus on behalf of perspectives focusing, for example on technology transfer, which concentrate mainly on the cost and effectiveness of the technology being transferred.⁷ The knowledge and learning framework focuses on the whole process of becoming efficient as an endlessly ongoing process, which captures networking between firms as well as firm-internal organisational structure, instead of focusing on the result of technological transfer as a once and for all event.⁸ Furthermore, the role of knowledge in the creation of industrial competitiveness has attracted a great deal of attention in the literature on industrial development since the mid-1990s. The argument is that knowledge has become an increasingly important element in the competitiveness of firms precisely because other, formerly critical factors of production have been eroded by globalisation. Global accessibility of some 'ubiquified' forms of knowledge highlights the importance of localised, firm-specific, tacit knowledge as the basis of competitive advantages (Maskell and Malmberg, 1999). In an era of intensified global competition, the ability of the firm to learn and create new knowledge and to put it into effective use in terms of the development of new products and technologies, increased productivity and the

⁷ For a recent study of the effect of technology-transfer through Foreign Direct Investment (FDI) in relation to upgrading the technological capacity of local firms in the automotive industry in Thailand, see Krienkrai (2003).

⁸ However, various aspects of the technological transfer debate have become fused into a kind of synthesis based on the evolutionary approach of Nelson and Winter (1982), in which the concept of routines or capacities within the firm is introduced, thus drawing attention to the ongoing and socially constructed nature of technological development (e.g. Ernst et al., 1998) focusing on firm-level technological capacities. Likewise, the theory building in this study can be regarded as eclectic, which will hopefully develop into a workable synthesis. For a historical perspective on various academic perspectives on technological development, see Kragelund (2003), Lorentzen and Granerud (1999) and Kamaruding (2003: Chapter 2).

development of better marketing skills therefore becomes essential to successful economic development.

It is frequently claimed that it is only growth poles that have already become wealthy that gain from global flows of knowledge, as growth tends to become concentrated in a small number of countries like Japan and Germany, regions like California and global cities like London and Singapore (Amin and Thrift, 1995). However, the importance of knowledge-creation is not only essential for research and development functions, but also in everyday operations, such as the organisation of production, logistics, marketing, sales and industrial relations. In this respect, it is the social and organisational aspects of production that need to be upgraded in order to improve the economic performance of firms or countries, which is not necessarily a very capitalintensive process. The learning perspective thus emphasises organisational and social factors of production as well as research and development facilities, and points to the ability of social actors to enter into collective interaction as the main competitive mechanism. Therefore, the concept of learning can be applied to developing countries (Lauridsen, 1997) and low- or medium-tech industries (Malmberg, 1997), as well as to high-tech industrial districts in core economies.

However, the social and organisational dimensions are missing from most of the literature on industrial development. In relation to developing countries, the successful economic development of the NICs is usually ascribed to either the working of the market (Page, 1994) or to the guiding of the market (Wade, 1990). Alice Amsden, however, points to the learning capacities embedded in the social organisation of the firms or the 'strategic shop-floor focus' as an important factor equal to the state and to market explanations (Amsden, 1989; 1990). The learning literature can thus be regarded as a 'third way' to understand industrial development, focusing on social networks rather than the state or the market as the main mechanisms for industrial development and change. Recently, quite a lot of literature about successful industrial development in formerly backward countries has appeared, pointing to the impact of the social system of production, especially network forms of interaction (Clegg and Redding, 1990; Hamilton, 1996; Orrù et al., 1997; Whitley, 1992). This is not to imply that state regulation, supporting measures and increased global competition are unimportant elements of industrial performance. But in a period where agreements within supra-national organisations such as the WTO have prevented developing countries from using a development strategy based largely on state regulation and protective measures⁹, the learning economy holds a new potential for development strategies, as an alternative to on the macro-level.

⁹ However, supply-side measures are still possible as means of encouraging industrial development. See appendix 4.

In this study, learning and its structural outcomes in terms of (changed) actions, practices and strategies are regarded as functions of the pre-existing structure of the organisation and of how relationships with other actors are structured (Lawson, 1999). Thus, knowledge creation is regarded as the result of both external and internal processes. The key question for nations, regions and firms is how best to combine global and local potentials. The argument here is that the various actors, especially in more recently industrialised countries, must be engaged with global processes in order to develop unique advantages and gain access to sources of new knowledge. Late industrialisers in the third world are especially dependent on their ability to gain access to outside sources of knowledge in order for them to catch up with lead firms in developed countries. However, it is the ability of local actors to internalise knowledge for competitive ends and purposes of institutional upgrading that will help them to become or remain growth poles in the global economy. That is, globalisation only rewards adaptable actors who have the capacity to generate and control knowledge, information, skills and innovations, and employ them for industrial and commercial use (Amin and Thrift, 1994).

The literature on knowledge creation and learning offers some very promising insights. However, in focusing on relational aspects at the level of the actors, the knowledge and learning literature suffers from some of the usual flaws of network theory. Being based on earlier theories of the spatial organisation of inter-firm relationships, the various theoretical perspectives are entirely concerned with endogenous processes on the local or national levels and therefore focus narrowly on localised interactions between actors who share the same cultural and institutional backgrounds, while ignoring the impact of global interaction. Furthermore, as a relatively new theoretical perspective that is trying to apply social and organisational dimensions to economic development and behaviour, the various perspectives on learning have not yet found any common ground. The theoretical development so far is therefore very heterogeneous, multidisciplinary and complex. It is thus an important aim of this study to develop a conceptual framework for analysing the global impact on knowledge-creating activities in firms in a third-world context. In order to do so, perspectives with a more implicit notion of how global processes and actors, particular TNCs, may influence the local are used. Three mechanisms of knowledge creation are applied in order to analyse how knowledge is created and practices changed in Thai firms through networks involving global actors, namely externalisation (knowledge has to be externalised from the 'knowers'), socialisation (knowledge has to be transferred through co-operative relationships) and internalisation (knowledge has to be adapted to the particular organisation in order to become company knowledge). The three mechanisms have been found useful in structuring the more empirical chapters.

Chapter 3 offers methodological considerations, the critical-realist approach being the point of departure. The chapter is divided into four sections. In the first section, the critical-realist approach is presented as a useful overall methodological theory, as it focuses on social relationships and contextual constraints, and thus buttresses the underlying causal mechanism of interactive learning. Sections two and three examine how critical-realism has been applied in designing the theoretical and empirical research. In the second section, the design of the analysis is presented from a realist perspective. In the third section, how the theoretical concepts have been translated for actual use in the interviews is discussed. In the final section, the process of interviewing and interpreting the results is presented and the problems arising from this discussed.

Chapter 4 opens the empirical part of the work and deals with the mechanism of externalisation. To be more precise, it deals with how Thai firms are influenced by external pressures embedded within the structures of the particular industry. In this regard, firms are influenced by investment and localisation decisions made by corporate decision-makers who are in the process of reorganising their activities on a global rather than a national scale (Hveem, 2001). But, in order to learn from the knowledge embedded in the organisational practices of others, knowledge must either be released - or externalised by the organisations or individuals possessing it. The analysis of processes of externalisation focuses on the potential of global lead firms to transfer knowledge to local firms. How local firms have inserted themselves into cross-national production networks through their links with transnational corporations, and the kinds of rules, pressures and incentives that exist within such production networks, which regulate transactions and firm strategies, are examined. The analytical focus in this chapter is on the ability of global actors to transfer knowledge to local actors through supplier relationships, which are seen as the consequence of global restructuring tendencies relating to competition, technological change and liberalisation, as well as of specific institutional conditions.

How local firms are becoming a part of global governance structures through their relationship with global lead firms is captured by **the 'global commodity chain' perspective,** which integrates various geographical scales (Gereffi, 1994). Thus, firms in all parts of the world become involved in networks of global corporations through alliances, subcontracting arrangements etc., which subsequently influence their strategies and operations through direct interaction and flows of information, knowledge and resources. Though Gereffi argues that globalisation tends to cause homogenisation, his global commodity chain perspective is regarded here as a useful analytical framework for analysing how global processes within various industries affect the strategies of local producers through how local actors are integrated into global production networks. The assumption is that development potential depends on the positions that different localities or nodes assume in the web of globally integrated production. However, the major issue seems to be **the extent to which TNCs do, or do not, participate, or become embedded, in local** economic and social networks. Only when the links to the local economy are strong can the strategies of the TNC unit be expected to affect the local (Dicken et al., 1994).

While Chapter 4 focuses on the externalisation to others of the knowledge of global lead firms, Chapter 5 is concerned with socialisation mechanisms, focusing on how concrete corporate links with international actors might transform outdated practices and cause learning to take place in Thai firms. In order for knowledge to be exchanged between individuals and/or organisations, the groups involved must be engaged in a long-term process of interactive learning or socialisation in order to create a common framework for the exchange of complex knowledge (Grabher, 1993; Forsgren et al.; 1995). Linkages differ in the extent to which they encourage learning and change. It is therefore necessary to know more about the purpose and type of the specific relationships, the sorts of information and resources flowing through the network, and the kinds of actors involved. In focusing on the relational aspects of economic interaction, the knowledge creation and learning framework is being treated as a useful perspective for studying the context of concrete interaction, as well as the diversity of links created by different national and organisational strategies across economic sectors. In analysing actual examples of learning processes in Thai firms, this chapter is consequently concerned with how local Thai firms interact with other actors and institutions at the level of the firm.

Chapter 6 is also concerned with the level of the firm, but, in contrast to Chapter 5, the object of the analysis is the knowledge-creation and transformation of Thai firms through processes of internationalisation. In other words, the focus is upon how knowledge obtained from others is shared widely among various functions and levels and adapted to the firm-specific knowledge base, which provides the firm's competitive advantage. This process is referred to as internalisation. It is suggested that the internalisation capacity of a firm is largely a function of its existing knowledge, its organisational structure and the motivation and commitment of the leadership (Nonaka et al., 2000; Cohen and Levinthal, 2000). The question of how and whether knowledge is absorbed is crucial in order to determine the extent to which an organisational structure is being transformed, and practices changed, in the particular organisation. If the knowledge obtained from external sources is successfully distributed throughout the organisation and adapted to the knowledge base, the practices and routines that are followed will most likely be transformed. Transformation is thus the key indicator of learning. As it is difficult for an organisation to diverge from the course set by its previous experiences, the current structure and organisation may act as constrains on learning and on the future actions of the firm.

At the end of each of the empirical chapters (Chapters 4, 5 and 6), the **empirical material is reviewed and summarised with respect to how**

various methods can be used to inform the study, and analysed by means of the interplay of the theoretical concepts outlined in Chapter3 and the properties of the empirical data. Causal explanations and tentative propositions will be put forward, and the conditions under which such outcomes occur will be suggested. The aim is to integrate the different components of knowledgecreation and transformation in Thai firms in the conclusion in Chapter7. The final conclusion itself consists of an empirical section and a theoretical section. The empirical section aims to answer how economic globalisation has influenced and transformed practices in Thai firms under various structures of governance and outlines the main mechanisms for change and the conditions under which they have been activated. Furthermore, the extent to which preexisting practices and networks involving local actors have acted as either constraining or beneficial factors for learning and change is assessed. In this regard, it seems relevant to ask whether the learning opportunity entailed in global production networks is sufficient to meet global challenges, or whether such learning opportunities could be increased. The second part of the conclusion is concerned with the theoretical framework for analysing the present case. What is the empirical relevance of the concepts developed theoretically and are they useful in the context of developing countries, or can the theory be informed by the empirical results?

In summary, the aim of this study is theoretically to integrate global and local perspectives on industrial development and organisation within a common analytical framework. On the general, macroeconomic level, this has proved a very difficult task, as global and local perspectives have been engaged in trench warfare with each other in insisting on viewing the world from an entirely global or local platform. Applying a relational network approach, however, it is possible to analyse how local organisations are transformed in response to changing global processes and concrete relationships involving global actors. Focusing on various actors as the main analytical level, it is claimed here that global and local processes of industrial development and change can be brought together successfully within the same analytical framework. With its pivotal interactive point of departure, the knowledge and learning-based literature constitutes a perfect framework for integrating global and local actors within the same analytical framework of dynamic change.

Empirically, the aim is to analyse the extent to which Thai producers in the automotive and garment businesses are influenced by globalisation. Globalisation may act as a major transformational force, as local producers in third-world countries are often dependent on foreign firms for technology and production know-how, especially if the local supporting environment is weak. But the success of this strategy depends on the extent to which links are created by local producers with foreign firms (externalisation), the kind of relationships involved (socialisation) and the organisational adaptability of local producers (internalisation) (Zysman et al., 1996; Ernst, 1997).

Chapter Two

Theoretical conceptualisation and reconceptualisation of the analytical framework

Introduction

The aim of this chapter is to develop a theoretical framework for the empirical analysis of knowledge production and learning in late industrialised countries. As the concept of the network is working as the underlying integrating perspective for fusing global and local actors and processes, different analytical levels, the various theoretical approaches, as well as the underlying causal mechanisms into the same analytical framework, the **network theory** is presented in the first section. Under the heading of networks, the 'embeddedness' perspective is emphasised as an overall understanding of economic outcomes on the basis of the concrete interaction between actors and the context of their interaction. The main part of this chapter, however, presents a review and reconceptualisation of the knowledge and learning literature in relation to the present study. In the second section, the increased role of knowledge in the theory of the firm and in organisational studies will briefly be discussed. In the third section, the aim is to outline the **core concepts** regarding forms of knowledge and learning at various levels. One general problem with the knowledge and learning literature is that 'the theoretical development is not very well elaborated and coherent, [this] being a very young "discipline"" (Lundvall 1999: 17). The existing literature is also very narrow in scope, as many scholars focus primarily on locally embedded, successful cases in Western Europe. In order to overcome such deficiencies, the existing knowledge and learning-based literature must be reconceptualised to develop a synthesis that incorporates global as well as local dimensions. Thus, the fourth section aims to **reconceptualise** and discuss the proposed framework in order to apply it to studies of firms in developing countries that are linked to the international economy through linkages with foreign 'lead' firms. Operating on the level of the firm, various underlying causal mechanisms for the transfer and absorption of knowledge are presented, notably externalisation, socialisation and internalisation.

2.1 Network theory as an integrating framework

The main point of this study is to analyse how and the extent to which knowledge is created and practices changed in Thai firms through networks involving global actors. Knowledge is viewed as context-specific and relational – that is, as in essence related to human action. In order to learn from others, therefore, firms have to enter into relationships with various domestic and foreign actors. The ability of firms to learn from this interaction depends on how such relationships are structured. Thus, this section examines the network more closely as the foundational unit in understanding how various geographical dimensions are integrated and as a means of identifying important actors, their relationships and their structural outcomes in terms of (changed) actions, practices and strategies. In the embeddedness perspective, the activities of specific actors are conceived as being moulded by the social relationships they participate in. As individual actors are part of and embedded in different networks at the level of the firm and the society, as well as at the international level, **the various geographical dimensions are regarded as being linked through this embeddedness**.

The network is a relatively new theoretical concept that is usable in analysing the learning process in Thai firms, but it should not be regarded an overall structure in its own. Socio-economic perspectives on economic action emerged out of the dissatisfaction of many sociologists with the narrow view of economic behaviour held by mainstream economists and others studying industrial organisation. Sociologists dispute the charge that sociological motives of economic action have largely been left out of analyses since the clash between social and economic perspectives around 1880s, the so-called Methodenstreit (Swedberg and Granovetter, 1992). This 'battle of methods' created a wide gulf between economy and sociology in which 'few persons competent in sociological theory have any working knowledge of economy and conversely ... few economist have much knowledge of sociology' (Smelser and Swedberg, 1994: 17). However, the 1960s and 1970s witnessed a resurgence of writings in economic sociology, dominated by class and political dimensions, and stressing the macro-sociological level. In the early 1980s, a group of sociologists at Harvard became interested in problems of economic action and began to challenge the existing division of labour between economics and sociology. This group established the 'New Economic Sociology' tradition, arguing that economic action, like all other action, is socially situated, and that sociology should therefore begin to concentrate on core economic institutions and problems (Smelser and Swedberg, 1994; Swedberg and Granovetter, 1992).

Granovetter, for example, concentrates on social issues as an aspect of business relationships and industrial organisation. His aim is to create a balance between what he refers to as over- and under-socialised approaches in economic and sociological explanations. According to Granovetter, economic theories that take the 'utilitarian' tradition¹ in economic theory as their point of reference are **under-socialised**. The theories assume rational individuals acting in complete isolation from relations with other individuals, and with no recognition of the

¹ The rational-scientific study of human affairs, or utilitarianism, was developed by classical liberalists during the Industrial Revolution. Action could be understood as a matter of the calculation and exchange of advantage or 'utility', and factors such as moral obligations and altruism as causes of human behaviour were disregarded. Thomas Hobbes warned that if everyone pursued their own ends, we could end up with 'a war of all against all', a problem that has since been referred to as 'the Hobbesian problem of order', a persistent problem in sociology ever since (Lee and Newby, 1989).

effects of the institutional environment in moulding actions and beliefs. By neglecting the social motives of the actors and the influence of the wider context, economic action comes to be explained through purely mathematic models. **Over-socialised** theories, on the other hand, treat individuals as being so much embedded in the social context that they blindly and mechanically aspire to the existing norms and values that they have internalised through socialisation. Social structures, which are perceived as external to individuals, therefore become determining forces. Cultural explanations of economic action, for example, fall into this category (Granovetter, 1992).

The problem with the theoretical concepts of both under- and over-socialised perspectives is that they operate with an understanding that action is carried out by atomised actors, further implying that dynamic social interaction between people is seen as having only peripheral effects on economic behaviour. The lack of a dynamic explanation implies that both under- and over-socialised perspectives rely heavily on functional or cultural explanations. Conversely, Granovetter describes his own explanation as a 'weak embeddedness position', in order to underline the embeddedness of individuals in the social context. At the same time, however, he stresses that the individuals are not embedded to the extent that they are totally guided by their socialisation. Social embeddedness 'refers to the fact that economic action and outcomes, like all social action and outcomes, are affected by actors' dyadic (pairwise) [if this is your own insertion, put in square brackets; and 'paired' is better] relations and by the structure of the overall network of relations' (Granovetter, 1992: 33). As the quotation indicates, Granovetter understands economic action as being relational as well as structurally embedded. Relational embeddedness refers to the concrete social interaction of actors. It is argued that behaviour towards others is affected by a sense of attachment to others and by mutual expectations, which then become constitutive of the relationship. Economic action is thus affected by the non-economic values of such attachments, such as reciprocity, trust and power. Structural embeddedness explains economic behaviour beyond such dyadic or paired relationships. Structures (economic outcomes) refer to the formation of normative, symbolic and cultural principles of behaviour generated among actors in larger groups or alliances. Such 'highdensity networks' are highly efficient in shaping the behaviour of individuals and in distributing information among the members of a cohesive group.

A **network** can be defined 'as a regular set of contacts or similar social connections among individuals' (Swedberg and Granovetter, 1992: 9); and in connection with economic transactions **a business network** can be defined as an integrated and co-ordinated set of ongoing economic and non-economic relations embedded within, among and outside business firms' (Yeung, 1994: 475). 'Ongoing' means that economic transactions usually are repeated. Instead of being co-ordinated by the market, economic activities are governed by relatively enduring relationships between actors. 'Embeddedness' refers to the fact that action becomes evident in interaction with others. That is economic

action not only aims at a profit: because it is expressed in relation to others, social status and social aims are also associated with economic activities. The fact that the firm is embedded also implies that the emerging organisational form is not necessarily the most effective. The specific history of the firm and its social, economic and political environments will act to shape and delimit the number of possible alternative organisational forms. Thus, the embedded nature of firms implies the emergence of a great variety of organisational forms depending on the specific context, but the concept of networks contains some key features:

- First, a network should not be understood as a solidified pattern of interaction, but as a **process**. The network is constantly in flux, as implied by the word 'ongoing' in the above definition. New materials, technology and persons flow through the network and the surrounding structure changes, which again leads to a change in the network. Thus, in focusing on process, the network approach becomes a dynamic theory by which we can explain the implied changes caused by the activities of the actors, which can be difficult to observe on the structural or institutional level.
- Second, and related to the first point, networks are **path-dependent**. This point stems from an evolutionary argument that economic outcomes result from the limitations and possibilities provided by previous historical developments. Events early on in a process lead to the implementation and 'lock-in' of one specific technique or path, which subsequently blocks the introduction of potentially more effective alternatives (Swedberg and Granovetter, 1992). It is, thus, connected with great difficulties to change the once chosen path, and 'best practices' are therefore not easily introduced if they do not suit the existing organisational structure.
- Third, networks are mediated and co-ordinated by high-density networks • - or institutions. The definition of institutions varies according to theoretical viewpoint. Neo-institutionalists and structuralists perceive institutions as restrictions for human action in terms of rules with conjoined sanctions. The perspective applied here is more in line with the sociological view, which regard institutions as social relations and actions which are taken for granted by the actors and therefore make sense to them (Engberg-Pedersen, 1997). Thus, institutions are socially constructed units through which all social action is mediated, and subsequently they work as a framework for further action. In other words, 'Economic institutions are constructed by mobilisation of resources through social networks, conducted, of course, against a background of constraints given by the previous historical development of society, polity, market and technology' (Swedberg and Granovetter, 1992: 18). Consequently, institutions are not merely understood as larger structures, but can represent everything from practices and conventions developed within firms to more formal institutions, such as the state or the labour market. They are relatively enduring, but if they no longer fit the predominant form of interaction in a

society, institutions are susceptible to change through the intentional or unintentional actions of actors.

- Fourth, the key co-ordinating elements in business relationships are **trust** and power. In accordance with other 'soft' dimensions, such as reciprocity and respect, trust forms part of the specific atmosphere that knits a relationship together. Trust and co-operation are vital elements in ensuring long-lasting relationships and collective adherence by producers to a common set of norms for competition and reciprocity. In general, trust is generated by repeated transactions between two parties through which they get to know each other better as the exchange relationship develops. However, the existence of trust in a relationship does not necessarily imply that the partners to that relationship are equal. On the contrary, relationships are most often characterised by asymmetry, in which the one part has more power to negotiate and more resources and connections. It is the most powerful actor who drives the direction of the network and who controls key political, social or technological resources. The struggle for power involves inter-agency conflicts and negotiations, which is never a once-andfor-all process but rather a process leading to change (Yeung, 1994). Power differences thus work as a dynamic aspect in a network. It is suggested that power in a network is a function of the position and autonomy of an actor within the network and the capacity to exercise that power (Dicken et al., 2001).
- Fifth, in describing interaction and relationships between actors, networks are always **localised** processes. But there is great variation according to the spatial level of networks, and the analytical level chosen is contingent on the aim of the study. Some networks are relatively more local in scope because they build upon specific practices and conventions in a particular community or region. Other networks, such as TNCs and financial flows, cross borders and are thus global in scope.

Economic networks can assume various forms, for example alliances in the form of a single development project between two parties, transnational corporations, industries or whole national economies. The form of a network can also be defined on the basis of how it emerges (Devo and Doner, 2001a). First, economic networks might emerge for social reasons, for example between individuals who are engaged in pre-existing relationships, like those between two parties connected through family, kinship or friendship. In such relationships, trust already exists and does not have to be generated in the process of transaction. This kind of network may be formed in order to join together in production, but it may also arise for the members to pool capital, information etc. Secondly, if trust does not exist between the partners beforehand and there is a very low level of trust between the members of a particular society in general, trust is necessarily built up through the process of ongoing interactions among economic actors. Prolonged periods of confidence building normally precede major projects, a practice that Deyo and Doner (2001a) refer to as the emergence approach. Such networks are normally

created for **functional reasons**, when, for example, partners co-operate to produce a product or join in subcontracting arrangements. The third way in which a network might emerge is for pure **strategic reasons**. The key actors systematically create and exploit relations with other firms in order to access new technologies, markets and capital sources. It is also likely that the actors form a network with a specific purpose in mind. In a trade union or trade association, for example, members join to encourage knowledge sharing and promote communication, co-operation and information exchange with the purpose of establishing a common framework for negotiation.

The network can also be defined on the basis of the level of interaction between its members (Yeung, 1994). First, intra-firm networks refer to relationships within a single firm. This may describe the ownership structure, the decision-making process, the organisational form, or interaction and communication between the various functions and levels in the firm. This dimension is important in relation to the openness of the firm and its ability to innovate and internalise new knowledge. Secondly, inter-firm networks refer to relationships between firms, which can take many forms along a continuum between the market and the hierarchy. However, the pure market models, in which transactions are not repeated, and the hierarchy, in which all parts of a final product are produced and controlled within the same ownership, are considered ideal types. It is argued that most transactions actually take place in network forms of organisation somewhere between the two extremes. Thirdly, extra-firm networks refer to any relationship between the firm and the institutions embedded in the wider society. These institutions include nation states, research institutions, non-profit and non-government organisations and other quasi-organisational forms. Extra-firm relationships are important in empowering the firm and in seeking social and political legitimacy.

A final characteristic of the network is that it **possesses causal powers** related to its structure, which can vary according to the above-mentioned features and definitions of networks. A firm must acquire new knowledge by entering into relationships with various actors and institutions in order to learn. These relationships will influence economic action in and the behaviour of firms in various ways, depending on the structure of such relationships. Thai firms, for example, are embedded in various networks, the structure of which is expected to influence the behaviour and strategies of firms in different ways. Some of the network literature, which has produced studies of successful cases like the Third Italy, industrial districts or the so-called newly industrialised countries of East Asia emphasises certain 'a priori' network advantages, such as built-in flexibility and innovative ability. Others emphasise certain disadvantages of network organisation. The economic actor may, for example, be embedded in ineffective networks, or the network may lose its dynamic and its ability to renew itself. The most serious criticism of networks, however, is the exposure of actors within them to corruption or crony capitalism. This is a criticism which is especially directed towards developing countries, particularly in

connection with relationships between private firms and elite state officials. This study avoids attributing any a priori advantages or disadvantages to network forms of organisation. Instead the aim is to treat the network as a dominant organisational form as all actors are part of social networks in carrying out economic activities, as a workable analytical concept for integrating various perspectives and multiple scales of economic relations, and as causal mechanisms, the dynamics of which generate a specific result in terms of organisational change at the level of the firm.

2.2 The growing role of knowledge

Since the beginning of the 1990s, a growing amount of literature within organisational studies, industrial economics, business schools and economic geography has started to focus on the role of **knowledge and learning as the basis element in realising competitive advantages**. The reason given for this increased emphasis on knowledge as the most fundamental resource in the contemporary economy, and learning as the most important process (Lundvall and Johnson 1994) is a combination of rapid technological development, globalisation and increased competition. The outcome is an increased focus on softer and less tangible dimensions of firm behaviour, such as organisational structure, social abilities, routines and practices, and territorial embeddedness as factors producing competitive advantages. It is argued that these perspectives supplementing, even replacing the emphasis on factor markets and technological knowledge, which is becoming increasingly tradable and easier available on world markets. In what follows, different positions in the knowledge and learning literature are briefly presented.

The concept of knowledge has been globalised by **management theory**, producing fads and fashions related to management objectives and practices. which are spread by popular books on management written by gurus such as Michael Porter, consultants and business schools. Management theory gained momentum after the Second World War through the incorporation of a large body of literature, including organisation theory, business practice and softer sources of inspiration such as sociology and psychology. Successions of management objectives, such as quality circles, just-in-time manufacturing and business process re-engineering, have been produced through this literature (Thrift, 1999). The latest fashion within management theory is the shift towards knowledge, encouraged by, for example, Hamel and Prahalad's (1990) concept of 'core competencies' and Nonaka and Takeuchis's (1995) book, The Knowledge Creating Company, which has become a business best seller in the Asian region. The rise and diffusion of new management objectives and ideas there exert a direct impact on business practices and management techniques, as companies are influenced by the leading discourse in their agenda setting. For example, firms invite consulting firms and leading management researchers to help them develop strategic models and plans that aim to stimulate the involvement and commitment of their employees. The result is that in many

firms knowledge-creation now has the same priority as business and technological core issues (Fleming and Søborg, 1999).

In academic circles, the growing role of knowledge is often explained with reference to increased globalisation, which steps up the 'codification' process of some forms of knowledge. Once codified, all knowledge can easily be communicated by symbols and language, meaning that it is more easily transferable over space. Thus, knowledge of the latest production techniques and organisational designs gradually becomes available globally through processes of codification and subsequent dissemination. When international capital, commodity and factor markets are opened up, firms in low-cost areas have the potential to increase their competitiveness, depriving firms in highcost parts of the world from taking advantage of their leading position in the formation of new knowledge (Maskell et al., 1998). The parallel processes of the globalisation and codification of knowledge have been termed 'ubiquification' because of the resulting homogenisation of factors of production that used to be critical (Maskell and Malmberg, 1999). As codifiable knowledge can be accessed more easily, one of the few remaining genuinely localised phenomena in this increasingly 'slippery' global economy is precisely the 'stickiness' of other knowledge and learning processes (Malmberg, 1997). Contrary to codified knowledge, 'sticky' or 'tacit' knowledge may give rise to competitive advantages because it is embedded in social relations and localised institutions that give rise to patterns of knowledge creation that are specific to each firm, industry or region, which is consequently difficult to imitate and has limited tradability.

There are several inter-connected explanations of **the embedded nature of tacit knowledge** and resulting benefits in terms of enhanced dynamic improvement, learning and innovation. Three explanations stand out, namely agglomeration explanations, explanations referring to the existence of a particular milieu or atmosphere, and finally explanations that take systems of innovation as their point of departure (Malmberg, 1996). These explanations will be mentioned briefly in what follows. However, it is not an easy task to point out which scholars support which theories, as positions adopted are in constant flux as much as theories. Consequently the different theories will be presented as somewhat interconnected and not in chronological order.

Spurred on by the post-Fordist debate in economic geography and the success of the Japanese organisational model of industrialisation, interest in the analysis of industrial organisations in particular localities has rapidly increased since late 1980s (Piore and Sabel, 1984; Amin, 1994). The explanation for the success of certain regions, for example the Third Italy, Silicon Valley and Baden Württemberg, has gradually moved from a primarily focus on purely economic and technological structures to a greater emphasis on social institutions as the key factors. By the mid-1990s, there was a marked turn towards examining the role of knowledge in creating and sustaining industrial competitiveness, as well as the role of territory in the process of learning (Malmberg, 1997). The writings of Michael Storper exemplify the theoretical shift from economic to social explanations. As representatives of the Californian School of Economic Geography, Scott and Storper attempted early on to explain spatial industrial configurations by linking inter-firm co-operation and geographical distance, using the transaction-costs model. The argument is that if, for example, a company decides to outsource part of its activities, it will be dependent on other companies. According to Scott, the costs in relation to the exchange between firms will increase in relation to the geographical distance between them. Thus, they will seek to locate near each other, and the spatial outcome will be agglomeration (Scott, 1988). Storper later broke with this mainstream economic perspective and turned to focusing rather on cultural and institutional aspects with his notion of 'untraded interdependencies'. The term 'untraded' refers to the existence of other, more important explanatory factors than explanations referring to input-output relations traded on the spot market – which is what transaction-costs economics is all about. By contrast, Storper emphasised that technologies are the products of interdependent choices. Producers tend to follow certain technological pathways because of the existence of technological spill-over in an economy that is concerned with the density of the non-traded technological connections between them. Because knowledge spill-over, such as technological excellence, frequently rely on knowledge or practices that are not fully codifiable, the producers who master it are tied into various kinds of networks with other producers through formal exchanges and untraded interdependencies. According to Storper, untraded interdependencies are regionally specific assets for developing, communicating and interpreting knowledge. They take the form of conventions, informal rules and habits, as well as labour markets and public institutions, which co-ordinate economic activity under conditions of uncertainty (Storper, 1997).

Emphasising the re-emergence of the region as the locus of untraded interdependencies, Storper's work resembles that on industrial districts, which emphasises a general climate or 'industrial atmosphere' composed of common understandings and networks of conventions and rules, which are 'in the air'. It is argued that such an atmosphere will support the sharing of knowledge, technical information and equipment, and spur co-operation between firms in the region. This atmosphere of belonging to the same community facilitates the process of 'collective learning' and reduces uncertainty (Lawson, 1999). The local environment thus supports a collective learning process through the creation and further development of a base of common or shared knowledge among the individuals within a productive system. The establishment of a common language, technical know-how and organisational conventions through the informal interchange of information between firms permits action to be co-ordinated, problems to be resolved and uncertainty to be reduced. The transcoding that translates external information into a language that the firm can understand results from labour and managerial mobility, technical and organisational interchange between customers and
suppliers, imitation processes, reverse engineering and co-operative decisionmaking through local associations; in addition, it protects the firm from 'cutthroat' competition. It is also argued that an informal process of decisionmaking, co-ordination and circulation of information is achieved via interpersonal linkages between families, clubs and associations.

Approaches along these lines thus emphasise 'territorial embeddedness', including simple geographical distance and the cultural dimensions of space, which are seen as key elements linking the firms in a given location. The key to explaining successful industrial accumulation is the superior ability of agglomerations of related industries to enhance learning and reinforce mutual commitments and trust, which accelerate knowledge spill-over. Proximity to suppliers, rivals and universities plays a fundamental role in the innovation process (Malmberg, 1996; Blanc and Sierra, 1999). The argument is that relationships come to be structured in ways that are highly specific to a given, initially geographically bounded context, and that over time they will become more and more specific as unwritten rules of the game (conventions), formal institutions and customary forms of knowledge are built up (Amin and Thrift, 1995). Institutions are thus established through the co-operation of agglomerated firms, and once established they contribute to the reproduction of the industrial configuration. Focusing on industrial 'clusters', Maskell and Malmberg (1999) argue that proximity between firms plays an important role in interactive learning processes, and that the process of spatial agglomeration can be found in all industries where interactive learning is a key element.

Within the industrial economy, Schumpeter inspired approaches focus on national systems of innovation; these approaches include the works of Freemann (1982), Nelson (1993) and Lundvall (1992). In contrast to the linear view of economic growth, that it proceeds directly from science to technology to growth, this group of researchers aims to acquire a deeper understanding of the relationship between technological change, national institutions and economic growth by focusing on the innovative performance of firms. Among the common characteristics of these approaches are the evolutionary perspective and the emphasis on routines and institutions as the dynamic factors in economic systems. Technology is regarded as being partly tacit or 'uncodifiable' because it derives from historical search routines within the firm and depends on existing education and knowledge systems that imply that technology cannot be easily transferred. This group of researchers also agrees that various national systems have their own autonomy and differ in terms of social institutions. Even where the innovative performance of firms is the main concern, the national system is the analytical point of departure. Consequently, there is a tendency to over-emphasis the aggregate national structure rather than firm action, the organisational structure in the firm largely being seen as determined by technology, itself defined, however, in a very broad sense (McKelvey, 1991). Lundvall's approach seems less deterministic, as he understands innovation as a process going on at all levels of society. Interactive

learning lies at the centre of his analysis, which emphasises both the user– producer interaction on the firm level, and the social embeddedness of this process in the institutional and cultural context (Lundvall, 1992). In order to bridge the two levels of knowledge production, Lundvall argues that knowledge is neither completely public nor completely private. Instead, 'the knowledge base is fragmented and constituted by semi-public "pools" to which access is shared regionally, professionally and through networking' (Lundvall, 1999: 4).

Although the knowledge and learning literature is by no means homogeneous – since different writers have different points of departure and research areas, and emphasise different analytical levels - common features are discernible. There has been a general shift in explanatory focus from simple input-output linkages, transaction-costs analysis and traded interdependencies to more deeply seated or underlying factors, such as conventions, untraded interdependencies and practices, which emerge from social interaction and specific regional or national properties. The emphasis on linkages and relations has led to the 'black-box' conception of the firm being developed into to a greater concern with the internal organisational make-up of firms (Lawson, 1999). Common underlying perspectives and concepts thus involve a dominant focus on territorial embeddedness, institutions and interactive learning. This might be the outcome of a shared point of reference, as significantly in Nelson's and Winter's book from 1982, which stressed the importance of tacit knowledge, routines and path dependency by drawing on evolutionary economics.

The implicit notion is that societies are characterised by regularities of behaviour, such as habits and routines, that develop in order to deal with the complexities of everyday life, and that these are specific to time and place. Habits are important in economic analysis because they relate to a large set of routinised behaviour in the economy (Johnson, 1992). Firms cope with uncertain conditions by developing organisationally and managerially satisfying 'routines', which they adapt over time as they gather new information, learn from experience and imitate other firms (Nelson and Winter, 1982). Learning is thus regarded as a collective and path-dependent activity, embedded in a specific space, which links firms and formal institutions through mechanisms of simple distance. Important institutions, such as trust and conventions, are regarded as supporting social interaction and the sharing of technical knowledge. The commonalties mentioned above, with respect to the emphasis on the territorial embeddedness of learning at the level of the region or the nation, provide the basic understanding for most theories of knowledge and learning, whether they are supported by 'untraded interdependencies', 'collective learning' or 'national institutions'. However, concepts and terminology are seldom used consistently, even when the various approaches share underlying perspectives. Consequently, important concepts must be defined, and the way competencies on the firm and social levels interact to

shape the learning performance of firms must be presented more thoroughly. This is the aim of the next section.

2.3 Basic ideas and concepts in the knowledge and learning literature

Knowledge

To begin with, it is appropriate to ask what **knowledge** is? However, it is not an easy task to define knowledge, as different scholars often define the components of knowledge – such as technology, competence, qualifications, capabilities and capacity – differently and use these concepts interchangeably at the level of both the firm and society. Regarding the concept of knowledge, the Western theory of knowledge has a tradition, which goes back to the 'Cartesian split' posited by Descartes, of separating the subject who knows from the object that is known. This separation between mind and body or mind and matter has led Western philosophers to claim that knowledge is 'justified true belief', which can be obtained deductively by reasoning (rationalism) or inductively from sensory experiences (empiricism). This epistemological tradition has affected economic, managerial and organisational thinking about knowledge and innovation by emphasising the absolute, static and objective nature of knowledge. Although there have been some attempts in respect of studies of organisational culture and theories of the firm to achieve a synthesis between scientific and humanistic views of knowledge in the knowledge and learning literature, this is a recent development. In contrast with traditional belief, knowledge is considered 'a dynamic human process of justifying personal belief toward the "'truth", a definition which considers both the scientific and personal elements of knowledge (Nonaka and Takeuchi, 1995: 58). In a similar vein, Sanchez and Heene (2000: 24) define knowledge as 'the set of beliefs held by individuals or groups of individuals about causal relationships among phenomena'. When knowledge exists in the form of beliefs, it is never certain. In other words, knowledge is not absolute or deterministic, but consists of more or less firmly held beliefs based on probabilistic assessments of possible causal relationships between phenomena.

Firm-level knowledge can be understood as an asset of the firm and may appear in the production process both as an input, in terms of competence or R&D investment, and an output, in terms of technological and organisational innovations (Lundvall, 1999). A common way to explain and define the concept of knowledge is to distinguish it from other resources. The firm is made up of a number of resources, consisting of assets, competencies and positional advantages embodied in various forms of capital (financial, commercial, human, social), which to a greater or lesser extent are specific to the firm (Nooteboom 1999). Knowledge differs from all other inputs in the production process in the non-tradable, inimitable and intangible nature of some of its forms and by its frugality, with its implication that using knowledge does not reduce its stock (Maskell and Malmberg, 1999). Consequently, knowledge does not decrease in value when used. On the contrary, use increases its value: thus it follows that knowledge is not scarce in the same sense as other natural resources and technical artefacts. It is, however, difficult to appraise the value of knowledge and obtain the full potential value of acquired knowledge. The buyer, for example, may want to determine whether a piece of knowledge he or she is offered is worth the price demanded. But when the buyer is informed of the content of knowledge being offered for sale, he is in effect providing it for free. Awareness of this predictable reaction will discourage the seller from offering the piece of knowledge in the first place (Sanchez and Heene, 2000; Maskell and Malmberg, 1995). As such, the exchange and use of knowledge may contribute to market failures. As a consequence of the difficulties involved in pricing and transferring knowledge between individuals and organisations, knowledge is subject to uncertainties. Lundvall (1999) thus argues that standard economic analysis is not relevant in relation to studies of knowledge creation and learning, because knowledge differs in crucial respects from other resources in the economy, and because market failures are the rule rather than the exception.

Knowledge within a firm can basically be understood as lying along the epistemological dimension, involving the **theory of knowledge**, and the ontological dimension concerned with the **locus of knowledge**, that is, knowledge-creating entities such as the individual or the organisation. The first dimension refers to the distinction between tacit and explicit knowledge, which cannot be separated in practice but are associated together in a symbiotic relationship. The second dimension refers to the distinction between knowledge at the individual and organisational levels (Lam, 1998a, Nonaka and Takeuchi, 1995). In theory and for operational reasons, however, it is useful to make a distinction.

Explicit knowledge

Explicit or codified knowledge concerns formal and systematic knowledge that can be specified or communicated verbally, or shared in the form of hard data, scientific formulae, codified procedures or universal principles. Explicit knowledge is thus viewed synonymously with a computer code, a chemical formula or general rules (Nonaka and Takeuchi, 1995). It refers to scientific or technological knowledge in relation to products, process equipment and software systems, or in the automatisation of human skills related to the operation of this technology. Such codifiable items include engineering blueprints and designs, performance requirements, material specifications and quality assurance criteria, as well as the written organisational methods and manuals which are used to implement them (Ernst and Lundvall, 1997). Scientific knowledge can be taught through formal education and training or by reading books and accessing of databases, and it involves a combination of

'know-what' and 'know-why' kinds of knowledge. Know-what refers to knowledge about 'facts', which is close to what is normally called information. How many people live in New York, what are the ingredients of pancakes, or when was the battle of Waterloo fought are examples of this kind of knowledge. Know-why refers to knowledge about principles and laws of motion in nature, the human mind and society. This kind of knowledge is extremely important for technological development, especially in science-based areas such as the chemical and electronic industries (Lundvall and Johnson, 1994). Once codified, all knowledge can be broken down into codes or symbols, which do not require a human to 'hold' but can be stored as data or information.² Such elements of knowledge can be communicated and transferred relatively easily between economic agents. It can be abstracted and stored in the 'objective world', and can thus be formulated and shared across time and space independently of the 'knowing subject'. However, the acquisition of codified knowledge elements of technology may be constrained by patenting, secrecy or technology leaders imposing high licensing fees, which substantially increase the cost of external technology sourcing (Lam, 1998a).

Tacit knowledge

Knowledge that can be expressed in words and numbers represents only the tip of the iceberg of the entire body of knowledge. However, most knowledge will remain tacit. Tacit knowledge is deeply rooted in an individual's actions and practical experience, as well as in his or her ideals, values or emotions. Subjective insights, behavioural knowledge, social conventions, routines, habits and cultural elements fall into this category. Tacit knowledge is thus highly personal, context-specific and hence difficult to formalise and communicate. In contrast to explicit knowledge, tacit knowledge cannot be fused into information. Relative to information, tacit knowledge can be referred to as an institution, partly because it is stable and overarches many other knowledge elements, and partly because it consist of aggregated, processed and accumulated information that may not be communicated as such. Additionally, in contrast to information, tacit knowledge requires human 'knowers' or agents (Fransman, 1998). Tacit elements of knowledge can be segmented into a technical dimension and a cognitive dimension. The technical dimension encompasses the kind of informal and hard-to-pin-down skills or crafts captured in the term 'know-how'. Know-how refers either to the ability to do something or to activities that do not permit precise descriptions of the action involved, for example, playing chess, biking or swimming. A master craftsman, for example, develops a wealth of expertise and practical skills 'at his

² When knowledge is broken down into symbols or signals, it approaches information. However, in all other forms, knowledge differs in crucial respects from information because knowledge consists on the one hand of processes and cumulated information, while on the other hand it can be used as a tool for acquiring and processing new information. Consequently, knowledge mediates information, and as such exists as an institution relative to information (Fransman, 1998).

fingertips' after years of experience. But he is often unable to articulate the scientific or technical principles behind what he knows. Know-how also plays a key role in other activities, for example, the businessman judging market prospects for a new product, or the personnel manager selecting and training staff. Know-how is embedded in organisational routines, collective expertise or skills, production procedures and R&D activities. The cognitive dimension consists of mental models, beliefs and perspectives, viewpoints and perceptions that are so ingrained that we take them for granted. Human beings create such working models of the world by making and manipulating analogies in the mind in order to perceive and define the world. The cognitive dimension of knowledge reflects our image of reality (what is) and our vision for the future (what ought to be) (Lundvall and Johnson, 1994; Nonaka and Takeuchi, 1995; Ernst and Lundvall, 1997).

Tacit knowledge cannot be acquired by attending lectures or through formal learning. As tacit knowledge is 'subjective knowledge', it is difficult to process or transmit simply, either because the performer is not fully conscious of all the 'secrets' of successful performance, or because the codes of language are not well enough developed to permit explanation in any systematic manner. Consequently, operational skills and practical experience cannot be understood, communicated and shared without the 'knowing subject'. Tacit knowledge is derived from and tied to the localised and collective learning experiences of a given company through its own development of technological capabilities. Thus, it is argued that the personal and specific nature of tacit knowledge increases its internal circulation, but impedes its external accessibility and thus its transferability. The best way to convey such knowledge is through demonstration and experience, as in the master-apprentice relationship, in which the learning process mostly takes the form of observation, imitation, practice and correction. The acquisition of tacit knowledge thus occurs through direct experience, trial and error, and concerns bodily learning as well as learning with the mind (Ernst and Lundvall, 1997; Gertler, 2001; Amin and Wilkinson, 1999). As the diffusion of tacit knowledge between economic agents cannot take place without the knowing subject, the exchange is restricted to personal contacts.

As a result, the 'know-who' dimension of knowledge becomes increasingly important. **Know-who** involves information about who knows what and who knows what to do. In particular, it involves a social capacity to establish relationships with specialised groups in order to draw upon their expertise. One important rationale for the formation of industrial networks is thus the need for firms to acquire access to or share specific knowledge developed within the boundaries of other firms (Lundvall and Johnson, 1994). In general, the transmission of tacit knowledge demands the development of a similar knowledge base and cognitive framework between sender and recipient, which can function as a code key between them. This in turn requires close interaction and the building up of shared understanding and trust between them (Lam, 1998a).

The individual level

At the most basic ontological level, knowledge resides in the brains and bodily skills of the individual and is acquired through formal education and practical experience. Explicit knowledge at the individual level consists of formal, abstract or theoretical knowledge, for example scientific knowledge, focusing on the rational understanding and knowing of universal principles. The term qualification will be used here to denote this highly transferable type of knowledge, which can be acquired through formal education and training. Knowledge embodied in the practical experience of individuals will here be termed **skills.**³ Skills refer to tacit knowledge at the individual level, which is practical and action-oriented, and created through hands-on experience or 'learning by doing'. It is also context specific, since, in practice, this particular know-how type of knowledge only becomes relevant in relation to specific tasks 'in light of the problem at hand'. Skills are thus embedded in practical life and trained in practical processes. The central components of a skill can be defined by its flexibility, as an activity related to problem solving, and as the ability of individuals to adapt to changing conditions and to transform their skills when needed. As the generation of skills cannot be separated from their application in concrete processes, a skill is the specific pattern of action that a person demonstrates in interaction with the job situation and within a specific organisational context (Lam, 1998a; Gudmundsson, 1998; Fleming and Søborg, 1999).

The organisational level

To become an organisational asset of the firm, individual knowledge must be freed and put into action. Collective knowledge refers to how knowledge is distributed and shared among the members of the organisation and constitutes the organisation's collective memory. **Competencies** became central in the early 1990s as an underlying concept in the study of firm behaviour in organisational and management theory (Gudmundsson, 1998). While skills are embodied in individuals, competencies are embedded in organisations. Competencies denote a comprehensive pattern of internal co-ordination and collective learning in the organisation, especially how to co-ordinate different production skills and integrate multiple streams of technology, as well as the organisation of work. Having a competence implies an organisational intention

³ Most scholars refer to skills and qualifications at the individual level, but various scholars define the concepts differently. The meaning of the concepts has also changed since the 1950's, when knowledge tied to individuals first acquired importance as the third factor in relation to capital and labour (Gudmundsson, 1998). It is therefore necessary to define skills and qualifications here.

to achieve some desired results through specific action. This is defined as the ability to sustain the co-ordinated deployment of assets and skills in a way that helps a firm achieve its goals. The organisational ability to consolidate corporate-wide technologies and production skills into competencies that empower the firm to adapt quickly to changing opportunities constitutes the sources of competitive advantage. Thus firms compete on the basis of their competencies. The management literature emphasises the importance of developing distinctive core competencies as intangible assets of the firm. Core competencies refer to end products which make a significant contribution to customer benefits, which is difficult for competitors to imitate, expresses what a firm can do better than its competitors, and provides a firm with access to a wide variety of markets. A rival might acquire some of the technologies that comprise the core competence, but it will find it more difficult to duplicate the firm-internal patterns of co-ordination and learning (Sanchez and Heene, 2000; Prahalad and Hamel, 1990).

Collective knowledge or organisational competencies exist between rather than within individuals and can be centralised – for example, at the level of the top management - or dispersed throughout the organisation. Like individual knowledge, collective knowledge can be explicit as well as tacit. Collectiveexplicit knowledge, or **encoded knowledge**, consists of public knowledge or information which has been stored in blueprints, recipes, written rules and procedures that are accessible to the wider organisation. This is a mechanistic type of knowledge that tends to generate a unified and predictable pattern of behaviour and output. The abstraction of individuals' experience and knowledge into encoded knowledge facilitates centralisation and control in the organisation. An organisation co-ordinated primarily through encoded knowledge will tend to apply the principles of scientific management and attempt to control and standardise work though the formalisation of work roles and procedures. Collective-tacit knowledge, or embedded knowledge, resides in complex social relationships in the form of the routines, practices and shared norms of an organisation, which guide the behaviour, problem-solving activities and patterns of interaction of its members. It is socially constructed and interactive in nature and is based on shared beliefs and understandings, which make effective communication possible and create some necessary cognitive certainty. Embedded knowledge is situated knowledge organised around a set of rules and a myriad of relationships, which enable the organisation to function in a co-ordinated way. It is organic and dynamic, an emergent form of knowledge capable of supporting complex patterns of interaction in the absence of written rules. It is, however, also 'sticky' and 'path-dependent', implying that its generation and application can be constrained by already established organising principles and patterns of social relations (Lam, 1998a).

Mechanisms of knowledge creation

This section investigates in more detail the origin and main mechanisms of knowledge creation, and clarifies the individual, organisational and contextual levels at which knowledge is stored and which provide the point of origin for change. As the environmental conditions in which a firm is embedded change – for example, through increased competition between firms -a firm must renew its knowledge or change how existing knowledge is used in order to compete more effectively. It becomes necessary to create new competencies, a process that requires thinking up new ways to create and acquire knowledge. Learning is regarded as the chief mechanism in changing the state of knowledge of an individual or an organisation. A change in knowledge may take the form of the adoption of a new belief about new causal relationships, the modification of an existing belief, the abandonment of a previously held belief, or a change in the degree of confidence with which a set of beliefs is held. While knowledge is seen as an asset or stock of beliefs – or the knowledge base – held by individuals or groups of individuals within an organisation, learning is a **process** representing flows that lead to a change in this knowledge base (Sanchez and Heene, 2000). When organisations learn, they apply new knowledge, which becomes embedded in business processes, formal reporting structures, performance management systems and resource allocation processes that guide the overall direction of the firm (Cross and Israelit, 2000).

An organisation does not learn: it is the members of the organisation who learn. The primarily concern of the firm is thus to release and use knowledge tied to individuals effectively, so that their knowledge become the property of the organisation. The managerial objective is constantly to train and educate members of the firm and to create a corporate culture within which employees actively seek to share and apply their knowledge to company goals (Hildebrandt and Brandi, 1998). As already noted, the knowledge base of the firm is in essence socially embedded, since it is rooted in organisational coordinating mechanisms, and the application of knowledge through action is at the foundation of the creation of individual skills. Accomplishing desired goals by taking some action requires that individuals within a firm have some beliefs as to how skills can be used to cause certain desired effects. A framework for organisational knowledge or competencies is created when the beliefs of individuals are articulated and connected. At the most basic level, a firm will develop or adopt a language to express shared beliefs provided either by established technical or professional vocabularies. Gradually various representations of its knowledge base become established, as organisational knowledge is applied in different contexts (Sanchez and Heene, 2000).

The underlying routines, rules and conventions of the firm are thus the most important mechanisms that are used in creating a common knowledge base. The way an organisation is structured and the routines it follows will have a major effect on the rate of learning. In accordance with the realist approach in social science, social systems such as firms have the competence to do something because of their internal structure, that is, their rules, social relations and organisational structure. Such elements of the structure form part of an underlying mechanism that gives rise to and explains basic surface phenomena or events, such as the existence of particular products, the occupancy of particular market positions, and sustained competitive advantages or disadvantages. However, organisational pattern and routines only exist as long as the members of the firm repeat and carry out various communication, decision-making and production processes. In this sense, competencies can be understood as the emergent properties of social activity, but they are not reducible to it or predictable from it.

The main mechanism in generating and developing the knowledge base and competence at the level of the firm may be described as **a process of interactive learning.** Accordingly, the manner in which the relevant social interactions or relationships are reproduced or transformed becomes the central focus of analysis (Lawson, 1999; Lundvall, 1994). An important issue related to organisational learning is the extent to which organisational memory is effective in generating social activity. The challenge of the firm is to create an organisational knowledge base or memory, to which all members of the organisation have easy access, whether this knowledge is stored in an explicit or tacit manner (Hildebrandt and Brandi, 1998). From the presentation so far, it is evident that the development of competencies – or change – within a firm involves processes of interactive learning at both the firm and the wider contextual levels, as illustrated in Figure 2.1 below. The figure can be used to illustrate the learning process both within and between firms.



Fig 2.1 Mechanisms of learning

Organisational learning among the members of the firm leads to the creation of new knowledge through a feedback mechanism. The most basic level of learning (single-loop learning) entails the detection and correction of errors, while in other respects the firm continues to pursue its general policies and objectives. Transferring knowledge and information between individuals leads to the type of modification called **transmission**. Transmission covers learning carried out in accordance with routine operations, which may result in noticeable changes, but the competencies and routines of the organisation fundamentally remain the same. The cognitive models in the firm, such as values, rules, norms, objectives and assumptions, have not been changed, and future behaviour and action will not reflect changes (Hildebrandt and Brandi, 1998). In general, the everyday experiences of workers, production engineers and sales representatives constantly influence the agenda, and the knowledge and insights thus acquired lead to increased technical knowledge and provide ideas concerning where solutions should be sought. However, day-to-day operations only result in minor, incremental creations of new knowledge, and it is quite easy to predict the direction of technical change (Lundvall, 1992). Transmission thus consists of knowledge, which is reproduced through daily practices and group routines as an organisational inheritance. Learning through transmission is thus regarded as the unintended, rather unconscious outcome of processes of production. Incremental knowledge creation, however, can have a crucial impact on the economy, especially if it involves small technical changes solving a bottleneck problem of strategic importance.

More qualified learning (double-loop learning) comes into its own when uncovering errors involves questioning and modifying basic routines, procedures, norms and objectives. The most sophisticated form of learning (deutero-learning) is the ability of the members of the firm to reflect on earlier episodes that lead to either learning or a lack of learning and thus learn to understand the context of learning – in other words, learning how to learn (Hildebrandt and Brandi, 1998). When learning results in fundamental changes in which the knowledge base or firm-specific competencies or routines are changed, we are dealing with a **transformation** which will affect future behaviour. A transformation occurs when fundamental understandings in the firm are questioned, new understandings emerge and new processes are institutionalised in order to achieve new objectives.

As noted above, new knowledge can be obtained through various learning processes. Every-day **firm-level learning**, which is often related to problem solving, may result in new codified technological knowledge and products or new behavioural routines as a result of using existing knowledge and resources in new ways. Without a focus, learning often takes place in a path-dependent manner. Everyday experience involves 'learning by doing, which results in the increased efficiency of production operations; 'learning by using, which leads to increased efficiency in the use of complex systems; and 'learning by interaction', involving interaction between members of the firm and between users and other producers (Lundvall, 1992). However, confronting problems in the production process might trigger more deliberate processes of learning. Searching is a goal-oriented process in which firms consciously invest time and resources in expanding their knowledge base with new knowledge, which is not developed in the course of day-to-day operations. Such purposeful learning is critical to future success, and there is an important planning process involved in identifying the future core competencies and important tacit and

explicit knowledge necessary to support such competencies. Knowledge production as a deliberate process can either be acquired by initiating firminternal research and development activities or through interaction with universities, technical institutions or other firms and institutions (Lundvall, 92; Cross and Israelit, 2000). The main reason why a firm initiates a process of searching for new knowledge is the quest for continued competitiveness. Learning, however, is not simply a matter of external conditions, but is likewise determined by the internal organisation and present knowledge base. While successful firms constantly renew their knowledge bases, a firm may become embedded in what might be called 'desperate search' if its survival is threatened. The firm will look for alternatives in terms of products, processes and markets close to those it is already familiar with (Lundvall, 1992). Desperate searching is not always efficient, especially if the direction and vision for the development of future core competencies is not made clear.

Even if firms purposefully engage in the search for new knowledge, there will be a limit to the range of possible directions it can choose to obtain that knowledge. The development of a specific knowledge base and investments made by the firm over time will solidify the once chosen distribution of investments. Sunk costs and investments in one technological route will make it unlikely that the firm will develop along an entirely different path. Knowledge creation is thus strongly path-dependent (Maskell and Malmberg, 1999). Habits and routines embedded at the individual and organisational levels in the firm also make it difficult to absorb new knowledge. It is simply difficult to unlearn yesteryear's successful habits, even if they are hindering future success. In general, the knowledge base is reproduced because individuals as well as organisations encounter an often unconscious resistance to changing the conceptions, habits and representations that have been conceived of as the truth. As some learning undoubtedly becomes obsolete when the surrounding conditions change, it is obvious that the learning process implies a 'process of un-learning' to create a leeway for new understandings. Transformation thus implies learning by forgetting. However, very successful firms in particular experience great difficulties in changing the successful habits of yesterday, and they are frequently led by their former success into trajectory-specific lock-in situations (Hildebrandt and Brandi, 1998; Lundvall, 1992).

The context of learning

Whether the creation of knowledge is an internal process, taking place between the members of a particular firm, or an external exchange process between firms, knowledge is created – and reproduced – through interaction in social relations, which in turn are heavily influenced by social institutions. The broader **social and institutional context** is regarded as crucial in shaping the knowledge base of the firm and in influencing the extent to which the dominant form of knowledge is explicit or tacit. Thus, the nature of knowledge within the

firm and the process of interactive learning between firms cannot be understood fully by focusing the analysis on the organisational level alone (Lam, 1998a). In standard economics, business relationships are characterised by competition and by pure market relations. As already noted, however, there is a degree of uncertainty involved in exchanging knowledge, related to market failures, which can only be overcome by the development of specialised institutions that remove interaction between firms from the world of pure market relations (Maskell and Malmberg, 1995). It is necessary to create an institutional set-up that provides agents or organisations with a common framework for understanding in order to create new knowledge. Co-operation between firms is thus a necessary supplement to competition, making it possible to survive and act in an uncertain world (Lundvall, 1992). For firms engaged in exchange relations, institutions have the role of providing incentives to carry out economic activities and to create a co-operative atmosphere among the various actors in an economy. The literature on knowledge and learning emphasises the 'cultural' and 'social' foundations of industrial development, such as the importance of extensive institutional support, intense inter-firm collaboration and communication, and a strong sense of common industrial purpose and social consensus as being responsible for the creation of a common framework for interaction (Amin and Thrift, 1994). The social or contextual level is concerned with how the institutional set-up forms and maintains the effective social relationships necessary to activate the learning process both within and between firms. This emphasis on the non-economic factors in economic action point to the importance of understanding inter-firm networks and networks between firms and the environment, as well as the institutional underpinning of economic development. One important notion, however, is that the institutional environment itself is reshaped through the process of knowledge creation, although as Lundvall (1992) stresses, institutions are conceived as being relatively stable over time, which is a necessary condition for learning efforts to take place in an uncertain world.

As a context-specific activity, knowledge creation is located in a particular time and space. This space is defined as a shared context in cognition and action, in which knowledge is exchanged, created and utilised. It is a place where information is given meaning through interpretation and new knowledge is created out of existing knowledge. The specific place is dynamically confined and defined by interaction among individuals and between individuals and their environment (Nonaka et al., 2000). Thus, particular places are required as **centres of representation, interaction and innovation**. First, centres provide the face-to-face contact needed to generate collective beliefs, stories, norms etc. Secondly, centres enable social and cultural interaction for gathering information, establishing coalitions, maintaining trust and developing rules of behaviour. Finally, centres are needed to develop, test and provide incentives for innovations (Amin and Thrift, 1994). The recognition of socio-cultural aspects of economic behaviour has thus accentuated the importance of territorial embeddedness. There is, however, not much agreement between different scholars about the geographical demarcation of institutions sustaining interactive learning. Approaches inspired by the 'districtness' of industrial development argue that learning is a result of regional, territorial capacities (Storper, 1997; Maskell and Malmberg, 1999), while Lundvall (1992) emphasises the technological infrastructure at the national level. Others understand geographical demarcation in a more fluid sense operating with the term 'community', which consists of firms that are tied to each other in a systemic way by a common purpose and a particular institutional and market environment. Communities are understood as effective forums for individuals with specialised knowledge to collaborate and learn from each other (Cross and Israelit, 2000; Lorenzen, 1999). They are commonly organised around a given business sector established at a particular place. The strong representation of firms within the same business sector will make the particular place especially suitable in meeting the location-specific requirements of the firms within the sector and induce more entrepreneurs to re-locate there.

The institutional context necessary for firms to become locally embedded and relatively successful is not available or reproducible in all localities. Whether the social context is conducive to economic growth seems to be proportional to the density of relationships among actors and organisations. Lundvall (1998), for instance, argues that learning capacities will be high in systems in which people are used to collaborating in civic organisations and networks which are open to interaction with wider communities. Similarly, Soskice (1991) emphasises as key institutions the close links between companies, embodied formally in powerful business organisations and informally in long-term, interorganisational networks. Interaction is necessary for the creation of trust between the various actors in an economy, which is needed to carry out business activities. Trust is, for instance, a necessary ingredient in the provision of long-term financing, firm-internal training and co-operation in export marketing and R&D activities. Successful economic behaviour is thus a matter of 'getting social relations right' (Woolcock, 1998) or 'institutional thickness' (Amin and Thrift, 1994). Amin and Thrift use the term institutional thickness to sum up the social and cultural factors that underpin economic success in the literature on industrial districts and agglomeration. The constituting elements of institutional thickness are a strong institutional presence, a high level of interaction, the development of collective representations and a mutual awareness among participants that they are involved in a common industrial agenda.

No fixed agenda exists as to what kinds of social institutions best facilitate efficient co-ordination among firms and ensure successful outcomes. What kinds of institutions will be regarded as the key to competitive advantage seems to depend on the object and level of the analysis. It is, however, agreed that the particular context encompasses formal as well as informal institutions. **Formal institutions** encompass a plethora of different kinds, such as financial institutions, government agencies providing support, land and infrastructure, chambers of commerce, centres of innovation and training, unions and trade associations, and business service and marketing boards. These institutions provide the basis for economic growth, but rarely provide a sufficient basis for social interaction. **Informal institutions** within a particular context consist of common conventions, shared rules and norms, which are of crucial importance for creating and sustaining high levels of contact, as well as co-operation and information exchange between participants. Interaction results in the development of a collective representation of what are the defined patterns of behaviour and normal interests among participants, which serves to socialise costs or to control rogue behaviour (Amin and Thrift, 1994).

Inspired by the literature on **national innovation systems**, Lam (1998a) emphasises the importance of formal and informal education and training systems as a key social factor in shaping the knowledge base and competence criteria within firms. Education and training affects the competence of a firm in terms of both its quantitative and qualitative dimensions. Quantitatively, an adequate supply of highly trained people is crucial. Qualitatively the system of education and training is decisive for the extent to which the firm's knowledge base is dominated by abstract theoretical or practical knowledge, which is critical to its problem-solving approach and the internal communication and decision-making processes.

In addition to education and training, Lundvall (1998) stresses the relationship and interaction between R&D laboratories and technological institutes and the production system as crucial institutions, besides the importance of non-market elements of power, trust and loyalty. Leaving aside national systems of innovation, Soskice (1991) regards formal and informal long-term cooperation between firms in the institutional form of business associations or employer organisations as the most critical element providing firms with adequate and appropriate business service and infrastructure. He states that while governments only play a supporting role, business associations and employer organisations occupy a leading role in providing the service necessary for competitiveness. Training, for instance, need to take place within companies in order for trainees to understand work organisation and planning. But in order for the training to be properly applied, firms need to be advised, helped and monitored, implying that experts are allowed access to the firm. Companies are often nervous about opening themselves and their books to governments, since there is no guarantee that the information will not be used against the firm in some other context. A business community, on the other hand, is well placed to be trusted, since its goal is to work for the interests of its members.

Lall (1999), on the other hand, emphasising the **national incentive structure**⁴ as crucial to the upgrading and innovating capacity of firms, trusts the state

⁴ This concept has been used to structure the institutional framework for the development of the automotive and garment industries in Thailand, as presented in Appendix 4.

with the most important role in the context of relatively late industrial development. Firms in more recently industrialised countries are faced with constraints such as market imperfections and technological setbacks when compared with already industrialised countries. Consequently, there is a vital learning process involved in becoming efficient and competitive, during which purposeful action by the state in promoting and protecting firms is necessary. This policy lesson is largely drawn from the experience of the most successful industrialising countries in the developing world, notably Hong Kong, South Korea, Taiwan and Singapore. The incentive system, which is decisive for firm's innovative behaviour, consists of industrial policy, supporting institutions and factor markets. Important elements of industrial policy are trade and investment measures, taxes and subsidises, and the macroeconomic apparatus. Factor markets involve a range of building blocks that are necessary in the production process, marketing and distribution, such as the availability and costs of labour, resources and infrastructure, and access to information, finance and technology. Public and private support institutions manage support in terms of education, training, testing, research laboratories and technical information.

In whatever form, the **function of institutions** is to support the learning process in and between firms by providing protection, channels of communication, certainty and work as guidelines for economic behaviour. Social institutions provide the members of the specific community with a sense of commonality and impart rules or beliefs as to what constitutes good behaviour. Additionally, such an institutional climate constrains misbehaviour because information about any kind of misbehaviour will sooner or later become available to most potential partners, hindering the wrongdoer in doing business with other members of the community and from acquiring access to its knowledge flows. Institutions thus encourage reliable information and reduce malfeasance, making the formation of network arrangements between the members of the community easier (Maskell, 2001). The problem of uncertainty in markets is solved either by formal institutions through legal protection in terms of patents, licenses and copyright, or informally through the formation of a cognitive framework, which functions as a 'code key' for communications between exchange partners (Lorenzen, 1999). Long-term and reciprocal networks of exchange arrangements based on the development of trust enable the transmission of complex knowledge and reduce search and information costs, bargaining and decision costs, and policing and enforcement costs. Network arrangements thus improve the efficiency of resource allocation, enable further divisions of labour or specialisation, and leading to a more productive use of resources than is found in market arrangements, because the parties involved in networks get to know one another and generate a cooperative atmosphere between them (Maskell, 2001). Social institutions can therefore be defined as those expectations for action within a network or community that affect the economic goals and goal-seeking behaviour of its

members, even where these expectations are not oriented toward the economic sphere (Woolcock, 1998).

Limitations of the knowledge-based and learning approach

While the knowledge-based and learning approach provides certain mechanisms for analysing learning and change in firms as an outcome of internal and external processes on the level of the individual, the organisation and the context, there are certain limitations. One main problem is the question of how knowledge can be reproduced, appropriated and shared widely within and between firms in the real world. The root of this problem is related to the tacit dimension of knowledge and the path-dependent and socially embedded nature of the learning process. The concept of tacit knowledge has gained importance because it is arguably the underlying constituent in the creation of unique competencies and products in an increasingly competitive era. When everyone has relatively easy access to explicit knowledge – even if core competences are protected by licences, the creation of more firm-specific forms of knowledge becomes crucial for competitiveness. However, because of the cognitive and experiential qualities of tacit knowledge, it is defined by its social context. It is experiential, in the sense that we conceive of tacit knowledge as 'know-how' acquired through experience, or learning by doing. It is cognitive, in the sense that it defies conscious articulations, meaning that individuals or organisations are not even aware of it and that communicating it in written or verbal form will never be fully equal to the task. Such qualifications imply that tacit knowledge can only be shared effectively between two or more people when they also share a common social context, such as shared values, language and culture. The consequence of the context-specific nature of tacit knowledge is that it is difficult to exchange it over long distances and across cultural or national differences (Gertler, 2001).

The concept of tacit knowledge is problematic in the sense that its importance has been overemphasised, as well as in terms of its **transferability**. Not only is the sharing of knowledge limited between organisations, but arguably also within organisations. Tacit knowledge has been seen as more advantageous on the premise that it makes it more difficult for competitors to acquire or imitate a firm's products and processes. However, it is just as difficult for other individuals and groups within a firm to access and use tacit knowledge if the organisational structure is not conducive to it. This implies that the transferability of tacit knowledge within an organisation may be limited. Some organisations therefore have to transform tacit knowledge into explicit knowledge in order to make it more accessible to the members of the organisation. There are various means by which to apply a structure to knowledge in order to improve its apprehensibility and transferability between individuals and groups, for example, in the form of manuals and engineering drawings (Sanchez and Heene, 2000). In a similar vein, Lam (1998b) maintains that various firms, economic sectors and contexts vary in their reliance on tacit knowledge, depending on the method of skill formation and knowledge acquisition. The mechanisms for co-ordination and knowledge transmission within an organisation can vary from being highly tacit and network-based to being explicit and document-based. 'Know-what' and 'know-why' (theoretical knowledge) thus have different strategic values in various contexts than 'knowhow' and 'know-who' (practical knowledge). Referring to the Western 'professional' model of knowledge formation, which is dominated by explicit knowledge, and the Japanese 'organisational' model, which is dominated by practical, tacit knowledge, Lam demonstrates that not all production systems are pervaded by tacit knowledge to an equal extent. It is important not to lose sight of the continuing importance of explicit knowledge and its complementarily to tacit knowledge. The challenge for individuals, firms and regions is to establish the right balance between theoretical and practical learning.

The main critical point to be made here is, however, that the central role of tacit knowledge in the learning process tends to exaggerate the importance of the local over the global. Tacit knowledge is defined by its social context, as it can only be exchanged between two or more people sharing common values, language and culture. The shared understanding and conventions that serve to enhance trust and impede opportunistic behaviour is derived from territorially defined social assets, which can only be enjoyed by local firms (Gertler, 2001).⁵ It is thus difficult to exchange tacit knowledge over long distances, or between partners with different national and cultural backgrounds, which makes it spatially sticky. In this regard, it is paradoxical that while globalisation is argued to increase the importance of tacit knowledge, the influence of globalisation is subsequently left completely out of the analysis. The reason for the neglect of the global might be that most case studies of collective learning centre on strong, locally embedded clusters of firms. Famous examples of 'learning regions', such as Silicon Valley, the Third Italy and Baden Württemberg, are characterised by having a strong innovative capacity and an intensive network of relations embedded in local institutions. Taking these very self-centred regions as the point of departure, it is not surprising that the focus is too much on the territorial logic of development processes. In fact, most regions and nations are more or less influenced by globalisation through international trade relations, finance or localised foreign investments. The view that only the local context is determinant gives rise to a conception of knowledge that is necessarily tied to a particular place. This appears to exclude any analysis of how the context that matters stretches beyond the local to include wider social conventions and institutions (Lorenz,

⁵ In an effort to counter this criticism, Bathelt et al. (2002) highlights the conditions under which both tacit and codified knowledge can be exchanged with providers of knowledge located outside the local milieu by investing in communication channels or pipelines. In this regard they take into account the sequence of transactions and interactions wherein trust is built up between the actors involved and the absorptive capacity of firms.

2001). There is thus a need for more empirical analysis of the influence of globalisation on local practices and institutions.

There are weighty arguments in favour of extending the analysis beyond the region or the nation. Organisational change is often the result of a transfer of external knowledge, especially in the case of firms in recently industrialised countries. Another reason for applying a more open and outwardly oriented approach to the study of local development is the danger of **lock-in situations**. Once successful agglomerations might, for whatever reasons, lose their dynamism, the factors that formed the basis of their former success, such as strong local linkages, may come to function as a lock-in (Grabher, 1993). Where local actors and firms do not co-operate internationally, geographical concentration carries with it the long-term risk that the region will not be able to adjust its institutional endowment in time to meet changing demands. Thus, access to knowledge outside local areas becomes important if obsolete and uncompetitive practices are to be changed. The interesting point is, what kinds of external knowledge are transferable, and to what extent?

Beside the problems related to the transferability of tacit knowledge across national and cultural borders, it is far from clear precisely how the specific context facilitates the learning process – or in other words what are the mechanisms that determine learning. As already noted, there are at least two broad explanations, the first emphasising proximity or simply geographical distance as the mechanism of learning, the second the existence of a specific cultural and social institutional atmosphere.⁶ In the literature concerning agglomeration economies and industrial districts, reviewed above, the key to explaining successful industrial development is the superior ability of agglomerations of related industries to enhance learning, reinforce mutual commitments and accelerate knowledge spill-over. **Proximity** to suppliers, rivals and universities plays a fundamental role in the learning process (Malmberg, 1996, Blanc and Sierra, 1999). Institutions are thus established though the co-operation of agglomerated firms, after which they contribute to the reproduction of the industrial configuration. Maskell and Malmberg (1999) even argue that the process of spatial agglomeration can be found in all industries in which interactive learning is a key element. This is in reality a question of the chicken and the egg, as it might as well be argued that interactive learning takes place whenever there is an agglomeration of firms. The weak point is the empirical validation of when and under what circumstances localised collaboration and competition facilitates learning. Even though the approach incorporates a notion of inter-firm interaction, the focus on 'territorial embeddedness' as the main mechanism linking the firm and its

⁶ These explanations may appear in the same theoretical approach, as both stress the importance of territorially defined assets in collective learning processes, which is captured by notions such as 'institutional thickness', 'social capital' and 'the region as a nexus of untrated interdependencies' (Hudson, 1999).

social environment leads to the explanation being rather under-socialised and functionalistic, and it fails to explain the dynamics of the system.

The other broad approach points to **cultural and institutional** issues in a broad sense as the main mechanism for learning. This approach can be exemplified by the literature concerned with 'the learning region', based on the idea that the learning process is interactive in nature (Cooke and Morgan, 1994; Asheim, 1997). The argument is that tacit knowledge is best shared between partners who already share some basic similarities such as language, common 'code keys' for communication, shared conventions and norms, and optionally who have personal knowledge of each other. Such commonalties facilitate the building of trust between actors and consequently enhance the flow of tacit knowledge in a specific locality (Gertler, 2001). The main limitation of this approach is that the cultural and social institutions underpinning economic competitiveness seem to be inherited. It is not explicitly explained exactly how an advantageous co-operative culture originates. Instead, the context remains idiosyncratic and 'cultural' in origin, or over-socialised.

Conceptualising tacit knowledge and understanding learning as a pathdependent process have thus given rise to analytical frameworks focusing on the proximity of partners or cultural and social institutions in explaining knowledge creation and learning in relation to successful economic regions. However, the current emphasis on spatial agglomerations or the cultural and social underpinning of regional advantages implies that the focus has been moved from the firm to the territory as the key analytical unit (Hudson, 1999). Consequently, the framework has lost its dynamics and is no longer geared towards the incorporation of global actors and institutions into the analysis. To revive the dynamics, it is necessary to open up the learning process to the possibility that linkages are not necessarily local and that local ties can be made with non-local actors. It calls for an analysis that focuses to a greater extent on the relational aspects of economic behaviour.

In order to do this, this study points to the **embeddedness approach**⁷ in analysing how practices, norms, mutual expectations and trust are shaped through long-term relationships between various actors, and by the institutions created by the history of such relations. 'Relational' or 'social' embeddedness, rather than territorial or institutional embeddedness, is then regarded as the main mechanism linking the various firms and the firm with the institutional environment. Social embeddedness is thus a less functionalistic analytical tool than territorial embeddedness, as social interaction between different actors is a more dynamic concept than spatial or territorial proximity. With regard to

⁷Henderson et al. (2002) similarly divide embeddedness into two forms. Territorial embeddedness deals with the 'anchoring' of global production network firms in different places, which affect the prospects for the development of these locations. Network embeddedness refers not only to territorial embeddedness, but also to the process of building trust between the members of a network, and the stability and durability of connections, regardless of their country of origin or local anchoring in particular places, and it takes the broader institutional networks into account.

knowledge accumulation, social embeddedness points to the effect of interactive and mutual learning between suppliers, customers, rivals and institutions. The argument is that social cohesion in an economy is based more on widely circulated knowledge concerning the reputation and reliability of individual firms and long-term relationships between firms than on deep-seated cultural similarities.

Although the passage above has led to a clarification of the concepts of knowledge and to an understanding of the complex nature of the learning process, the barriers to learning and the underlying social and institutional context, it is not directly applicable to the analysis of learning and change in Thai firms. The aim of the following section is thus to construct a conceptual framework that can be applied to this particular case and context. In the spirit of critical realism, the knowledge-based and learning framework need to be reconceptualised in order to explain knowledge creation and organisational transformation in less successful economies influenced by globalisation as well as local practices and networks. Furthermore, the firm-level focus must be reintroduced into the analysis in order not to run the risk of falling back on explanations focusing on the territory or cultural dimensions in which the dynamic has been lost. A firm-level perspective is important in order to grasp concrete learning through dynamic social interaction. Social action and interaction, however, are seen as giving rise to social structures, which again set a limit to the action. In order to structure the reconceptualisation of the knowledge framework, three mechanisms whereby knowledge is exchanged and learned will be included in the analysis, notably externalisation, socialisation and internalisation (Nonaka and Takeuchi, 1995).⁸

- In order to learn knowledge embedded in the organisational practices of others, this knowledge must be released from the organisation or individual holding it in an articulated or codified form referred to as **externalisation**. The elaboration of processes of externalisation in the following section will focus on the potential of global lead firms to transfer knowledge to local firms, taking into account the restructuring tendencies of the global economy and the embeddedness of such global lead firms in the social institutions of their home and host countries.
- Knowledge embedded in the organisational practices of global lead firms has limited mobility and cannot easily be transferred to local suppliers. In order to share such knowledge between individuals or organisations, the groups involved must be engaged in a long-term process of interactive learning in order to create a common framework for the exchange of complex knowledge. This mechanism is referred to as **socialisation**, and is

⁸ Although these concepts are regarded as being very useful in this particular case, they are not used in exactly the same understanding as in Nonaka and Takeuchi. The focus in their book is on firm-internal learning processes in highly innovative Japanese companies. To be applied to the concrete analysis, the concepts will be used and reconceptualised in relation to inter-firm interactions in a global–local context. Furthermore, the knowledge-conversion mechanisms are defined very differently here than by Nonaka and Takeuchi.

particularly applied to inter-firm relationships. With reference to the present study, it is relevant to elaborate on the extent to which cross-cultural relationships provide a barrier to learning.

• The last issue touched on is how knowledge obtained from others is shared widely among various functions and levels and adapted to the knowledge base of the organisation concerned. The question of the internalisation of knowledge has not yet become prominent in the knowledge approach, but the question of how and whether knowledge is absorbed is crucial in determining the extent to which an organisational structure is transformed and the practices of the particular organisation changed. This mechanism, which is essential to the competitive advantage of the local firm, is referred to as **internalisation**. In this regard, it is also essential to ask whether traditional practices constitute a barrier to transformation.

The three mechanisms for learning through knowledge exchange will be elaborated in the following part from the perspective of local suppliers in developing countries, with a focus on the potential for learning from global actors.

2.4 Knowledge-creating mechanisms

Externalisation

In this section, the focus will be on the intersection between global lead firms, notably transnational corporation (TNCs), and the potential for knowledge creation in local firms in developing countries. As mentioned already, there has been a lack of research on the integration of global and local production structures. The main reason for this may be that most studies regard TNCs as a hierarchical and isolated entity defined in terms of equity and foreign direct investment data and analysed via statistics. It is thus difficult to integrate such organisations, which are build around a set of global activities, into an analysis of localised systems of production or to understand the complex linkages between TNCs and host country firms. TNCs can, however, be a powerful means for local firms to obtain knowledge, as 'participation in global commodity chains is a necessary step for industrial upgrading because it puts firms and economies on a potential dynamic learning curve' (Gereffi, 1999b: 14).

Thus, a different view of TNCs has developed, partly because the environment in which TNCs operate has changed, and partly because a new theory of TNCs has emerged, based upon the embedded nature of business relationships in the network literature. Ernst and Kim (2002) argue that **recent changes in the global economy** have lead to an increased mobility of knowledge within global production networks and thus **created new opportunities for international knowledge diffusion**, which are **open for suppliers in developing countries** to exploit. They list some of the major changes in the global economy which have led to the restructuring of the practices of TNCs and have had a crucial impact on actors in host countries. First, liberalisation -including trade liberalisation, the liberalisation of capital markets and the liberalisation of foreign direct investment policies – provides global corporations with a greater range of choices in entering markets, greater scope for the geographical dispersal of the value chain, and better access to external resources and capacities. Secondly, information and communication technologies have led to the rise of a leaner and meaner production system that cuts across firm boundaries and national borders. Finally, the combined effect of liberalisation and developments in information technology is the broader geographical scope of competition and the growing complexity of competitive requirements. Competition now cuts across national borders, and a firm's position in one country is no longer independent of its position in another. The implication is that a firm must be present in all major growth markets and be able to coordinate and integrate its dispersed activities on a world scale. It is no longer sufficient to compete on price. Price competition must be combined with product differentiation, and getting the right products to the various markets as quickly as possible has become of critical importance to competition and profit. The essence is that no firm can generate the different elements required to cope with the increasing requirements of global competition within its own internal hierarchy. Competitive success critically depends instead on the capacity to source selectively specialised capacities outside the firm. This externalisation of activities can range from simple contract assembly to the outsourcing of quite sophisticated design capabilities. Besides, since there has been an extension of cross-border manufacturing and services, and a growing number of lower-cost countries have been integrated into global production networks, the opportunity for knowledge diffusion to these areas has been increased.

In order to manage the challenges regarding increased and more complex forms of competition and the increased geographical distribution of activities, an organisational shift within TNCs has arguably taken place from individual to increasingly collective forms of organisation. A corresponding theoretical shift has occurred from theories dealing with the multidivisional functional hierarchy of 'multinational corporations' to theories that to a larger extent regard TNCs as networks. From a network perspective, TNCs can be analysed as the nodal point of, and interface between, two realms: that of embeddedness in global structures, and that of embeddedness in the domestic structures of national or regional political economies (Asheim, 1997). In what follows, two TNC theories will be presented, both of which regard TNCs as composed of a variety of functional units, each with distinct development potentials for local areas: the global commodity chain perspective, and the interorganisational perspective. Combined, they contribute to an understanding of how developing countries are integrated into global production networks, and how such networks shape the possibilities for knowledge to be diffused to firms in developing countries.

First, the global commodity chain perspective is presented as one recent attempt to understand how economic activities in developing countries are linked to the global production system (Gerrefi et al, 1994).⁹ The assumption is that economic production activities are internationally dispersed but functionally integrated, and the development option depends on the positions that different localities or nodes assume in this web of globally integrated production. Basically, a commodity chain is a network of labour and production processes consisting of connected value-added segments, which are interdependently linked to each other in an organisational system or network, with a finished commodity as the end result. This perception is very much in line with, for example, Porter's value chain, but the global commodity chain perspective differs from related concepts based on national production systems in that it incorporates an explicit international dimension. Each node in the chain is linked to other nodes, and the resulting network becomes transnational in scope, as different activities are often spread geographically. A basic characteristic of global commodity chains is the understanding that competitive pressures and innovations act as mechanisms for organisational changes within a commodity chain. This implies that the integration of one country into the international economy cannot be explained with reference to stereotyped stage theories, but must involve an analysis of the activities involved and the particular linkages that connect industries to global production networks. For instance, it cannot be taken for granted that the production node is the locus of profitability. The marketing or design nodes, for instance, may also be motors of development (Appelbaum et. al., 1994).

Embedded in this notion of dynamic change is the emphasis on organisational learning as one of the critical mechanisms through which firms try to improve or consolidate their positions within the global commodity chain (Gereffi, 1999a). The position in the chain and the opportunity for development that a particular country or firm may attain depends on the intensity of competition and innovation relating to industrial activities in that particular country. The development option of firms or national economies depends on the specific export role adopted. Gereffi (1995) identifies five such export roles in relation to the goods and services with which a particular country supplies the world economy. The move from one stage to the next requires learning, as 'each type of manufacturing exporting is progressively more difficult to establish because it implies a higher degree of domestic integration and entrepreneurship' (ibid. 121). In his later writings, Gereffi (1999b) develops the potential of organisational learning associated with linkages with global lead firms somewhat further through an empirical analysis of Mexican garment manufacturers. According to Gereffi, the opportunity to learn and upgrade for Original Equipment Manufacturers (OEM) connected with global buyers is

⁹ The global commodity chain approach has also been acknowledged by international organisations such as UNIDO as a tool to assess industrial upgrading conditions in developing countries (e.g. UNIDO, 2002; Gereffi and Memedovic, 2003).

extensive. As the buyers do not know how to make the garment, the suppliers must learn how to do everything independently, from making the garment to its distribution, and this takes place within the framework of relatively long-term relationships established with the buyers. This type of export role is called 'full-package production'. But besides the organisational learning embedded in the social structure of the producers – which is made up of organisational chains of buying and supplying firms – industrial upgrading, it is argued, also requires physical, human and social capital. The latter refers to the ability to build and co-ordinate forward and backward linkages with different kind of global lead firms and suppliers and intermediate organisations. However, although a central theme in the global commodity chain approach is that technologically advanced TNCs may generate significant backward linkages to local suppliers and thus facilitate industrial upgrading and learning, the opportunity to learn from global lead firms remains very hypothetical.

A very important notion in the global commodity chain perspective is that there is a great **variety in the learning potential** of local firms, as different industries are not integrated into the international economy to the same extent: a specific country may therefore occupy various positions in different industries. Different industrial activities are tied to international production networks in various ways, determined by the international co-ordination of specific activities, technologies and market characteristics, and the size of entry barriers. How specific industries are linked to key actors in the global economy is the most decisive factor in the extent of international integration. The continuous increases in competitive pressure influences the strategies and organisational character of these so-called 'lead firms', and thus – what is important here – localised industrial structures too.

Consequently, the main dimension that the global commodity chain perspective uses in trying to determine the various ways in which developing countries or industries are integrated into global production networks is **governance** (or **control**) **structures**. Governance¹⁰ refers to how lead firms co-ordinate the individual links in the commodity chain, and it determines how financial, material and other resources are allocated through authority or power relationships (ibid.). The lead firms therefore exert a great influence over opportunities for firms to improve and upgrade. Though it is not a central point in the global commodity chain perspective, this introduces the important notion of power in networks. The partners in a network depend on each other because of the particular division of labour, but this does not mean that there is an equal distribution of power is located with the leading firms in those industrial segments where the barriers to entry for new competition are the greatest and where concentration levels are relatively high. In capital- and technology-intensive

¹⁰ Governance is understood as the totality of institutional arrangements – including rules and rulemaking agents – that regulate transactions inside and across the boundaries of an economic system (Deyo and Doner, 2001: 6).

producer-driven chains, the power lies with transnational corporations or other large integrated industrial enterprises. The main barriers to entry in labour-intensive **buyer-driven chains**, on the other hand, occur at the design and marketing stages, which gives the main power to large retailers and branded marketers. Actors have a position in networks which are determined by the historical development of the network, the resources and assets the actors command, and the knowledge and information the actor possesses. These factors provide the individual actor with power, which can be used from his position in the network through his relationships. The concept of power in a network also involves the notion of the focal actor in the network. This may be a person or an organisation, who, in relation to a specific network configuration, is at the centre of the relationships and therefore important in understanding the direction and dynamics in the network (Schaumburg-Müller, 1999). Producer- and buyer-driven commodity chains reflect the central but different roles played by industrial and commercial capital respectively (Gereffi, 1994; 1995).

- **Producer-driven commodity chains** as a way of controlling global production networks, characterise capital- and technology-intensive industries like automobiles, computers, aircraft and electrical machinery. The international subcontracting of components is common, especially for the most labour-intensive production processes, as are strategic alliances. Industrial manufacturers, such as TNCs, are the key economic agents and control the production chain at the point of production. The main process involved is mass-production, in which vertically integrated manufacturers reduce the costs of making standardised goods by using dedicated machinery. The value added is derived from economies of scale, intensive and costly research and development providing the producer with technological advantages and control of the most profitable activities. Following Porter, Gereffi argues that production is geographically centralised, spurred on by the pursuit of location-specific competitive advantages, such as technology, product differentiation and the need for constant industrial upgrading, which entails proximity to research centres and world-class component suppliers and customers. Firms that produce for high-value niches create high barriers of entry for competing firms by developing innovative process technologies, offering products of superior quality and establishing brand reputation. In producer-driven chains, governments often intervene in the private sector, and capital- and technology-intensive industries are often associated with importsubstitution policies (ISI).
- **Buyer-driven commodity chains,** as a way of co-ordinating international production, are found in industries where large retailers, branded marketers and trading companies play the pivotal role in setting up global production networks. This form of trade-led industrialisation is common in labour-intensive consumer goods industries, such as garments, footwear, toys, consumer electronic goods, household goods and handcrafted items such as

furniture. Production is generally carried out by locally owned third-world factories that make finished goods to the specifications of foreign buyers: so-called 'original equipment manufacturing' (OEM).¹¹ Branded companies or large retailers engaged in global sourcing receive the bulk of the profits in the chain from a combination of high-value research, design, sales and marketing. Some of the larger buyers are referred to as 'manufacturers without factories', as they often do not own any productions facilities themselves, but farm out all specialised tasks, except possibly design activities. In contrast to producer-driven commodity chains, labourintensive industries tend to be geographically fragmented and decentralised, as low value-added activities rely on cost advantages, such as cheap labour and raw materials, and use machinery and equipment available worldwide. Thus, firms in these niches scour the globe in search of low-wage labour and cheap materials, and as a result the production is distributed across many third-world countries. Entrance barriers to setting up production facilities are low, which means that low value-added activities represent the leading edge of economic globalisation for many third-world countries. However, this is a very unstable development strategy, as competition between countries with low labour costs is strong. An affinity exists between the export-oriented industrial (EOI) strategies connected with national development policies and buyer-driven commodity chains. The role of governments is primarily to act as facilitators: they rarely become directly involved in production.

The global commodity chain perspective is a very useful analytical tool in determining the position of developing countries in various industrial networks and in distinguishing and comparing how firms are integrated differently into the international economy by economic sector. Gereffi also deserves credit in encompassing all the relevant actors within a single framework, which has been a weakness in organisational theory. The central issue regarding the position of global and local actors highlights the importance of the power structure as the dynamic aspect of the theory. The global commodity chain perspective also stresses the importance of analysing the driving forces behind global economic change, such as technical change, competition and liberalisation measures, which provide different industries in different locations with different challenges and opportunities. A problem related to this study, however, is that the role and opportunities of local firms in developing countries is determined by rather stereotypical characteristics of global lead firms, without any consideration being given to the impact of local structures in the positioning of domestic firms in the international economy. Accordingly, Gereffi ascribes to large global lead firms the ability and responsibility for the industrial upgrading

¹¹ OEM is a specific form of subcontracting under which a complete, finished product is made to the exact specification of the buyer. The product is then marketed through the buyer's own distribution channels and brand name. The TNC gains all the non-manufacturing value added (e.g. design, R&D and distribution), which typically exceeds the value added in production, thus earning large returns and creating competitive advantages for foreign firms (Hobday, 2003: 5).

of firms in the third world. Thus, the global commodity chain perspective can be said to contribute to the ongoing discussion from a global platform. Thus, it is difficult to develop appropriate tools to understand precisely the connection between organisational change and the internationalisation strategies of lead firms and their likely local impact on the basis of the global commodity chain framework. It has therefore proved necessary to include literature that relates organisational models and local learning opportunities more implicitly.

Accordingly, the second perspective presented draws upon the literature on organisational learning and embeddedness in business relationships. Focusing on the linkage between the different units of a TNC and their environment, this perspective considers TNCs as an interorganisational (Ghoshal and Bartlett 1990; 1993) or differentiated network (Anderson et al., 1999). The basic notion is that the subsidiaries of a TNC are not just an extension of the headquarters, but that they differ in terms of their histories, contexts, capabilities and organisational roles. Writers on organisational literature agree with Gereffi that transnational corporations should be analysed as networks and that the paramount challenge for corporate management is how to co-ordinate or control the complex network of geographically dispersed subsidiaries and their collaborative network. In this saying they agree with Sage (2000), who argues that competition is no longer a matter of one large entity pitted against others, but of the entire supply chain, its component suppliers and dealers, against those of its rivals. How well a TNC manages, co-ordinates and controls its relationships with its suppliers and distributors as well as its own internal operations, and how well it creates an efficient flow of information and products, thus comes to play a substantial role in its success or failure. Supplychain management may be a complex task. In the garment industry, for instance, manufacturing may be a truly global activity involving thousands of suppliers scattered across twenty to thirty countries, which places great demands on the information- financial and distribution systems. Competing on the basis of the whole supply chain is also a matter of more and closer cooperation, knowledge-sharing and joint product development between a TNC and its suppliers. Thus, the interorganisational approach does not regard TNCs as well-defined, internally homogenous and coherent entities. Because of the complex nature of a TNC, the possibility of local learning cannot be determined by developing stereotypical TNC categories, as Gereffi does, or the parent company's firm-specific advantages, as in the work of Dunning (e.g. 1994). Instead the underlying belief is that TNCs are embedded in the social and institutional structures of their home and host countries, both of which play an important role in influencing the organisation's strategies. A wide range of organisational forms arises from the fact that the different units of a TNC are embedded in different national environments and relational networks. Consequently, understanding a TNC as a hierarchical and isolated entity defined in terms of equity and foreign direct investment data is misleading as an indicator of the scale and distribution of its transnational activities.

To be able to distinguish between different organisational forms of globalisation, it is useful to see TNC units as embedded in two different networks: 'the internal corporate network' and 'the external business and institutional network'. Internal networks reflect the ability of the corporate management to co-ordinate or control the network of intra-firm relationships between subsidiaries, affiliates and joint ventures. External networks refer to all the other organisations, such as customers, suppliers, services-providers and regulators that are related to different units of the corporation. A corporation breaks down the value chain into a variety of discrete functions and locates them wherever they can be carried out most effectively, where they improve the firm's access to resources and capacities, and where they are needed to facilitate the penetration of important growth markets. Every unit of the corporation is dependent on the strategic decisions of its headquarters for various resources, but it also becomes an independent actor when it establishes relationships with firms and other organisations in the local environment in which it is operating. This is not to imply that all parts of a TNC organisation are equal. In fact very significant differences exist in the power to co-ordinate and control resources between the centre of strategic decision-making and remote subsidiaries. But to see TNCs as consisting of an internal and an external network provides a tool to distinguish different forms of organisation, ranging from vertical, hierarchical governance structures to horizontal, co-operative ones, or from top-down integration to reciprocal and interdependent external relationships. The links between headquarters control and subsidiaries may be very weak where large physical and cultural distances exist between the units. Moreover, the subsidiaries often control critical linkages with key actors in their local environments, which contribute to the autonomy of local management.

Dicken et al. (1994) adhere to this understanding of TNCs as embedded in various internal and external networks in their attempt to develop operational tools to understand the dynamic processes of evolving TNC strategies and the local impact of these developments. From the perspective of embeddedness, the major issue seems to be the extent of **the participation of TNCs in local economic and social networks**. Only when the links with the local economy are strong can the strategies of the TNC unit be expected to affect the local level. In any particular geographical area, they encounter the following determinants:

• The type of operation involved. That is, the position within the internal production chain and external business networks, as well as the kinds of functions it performs, are factors influencing where a TNC will locate which stages of the value chain. First, the overall control that one actor has over other actors' activities in the network is based on their respective positions within the network, the strength of their relationships and the relative importance of the actors to one another (Håkansson and Johanson, 1993). Secondly, the function performed by the TNC also has wide

implications for local areas. It is clear that different elements within the value-added chain (for example, headquarters, R&D and manufacturing) have different local implications and different potentials for local embeddedness. According to Ernst and Kim, (2002) the degree of geographical dispersal differs across the value chain, increasing the closer one gets to the final product, while dispersal remains concentrated on central nodes regarding headquarters, R&D activities and critical components. Furthermore, corporations located in export-processing zones in order to take advantage of low labour costs tend to be more foot-loose than corporations located where they can serve a local market. The learning approach includes the notion that firms embedded in the local context have a greater potential to create links with local firms than foot-loose firms.

- How a TNC tries to co-ordinate its operations. Contributing factors to corporate co-ordination are the size and importance of the resources that the particular unit controls, and the degree and kind of autonomy the unit possesses. The co-ordination of strategies should be seen in connection with the competitive incentives and pressures for change that are part of global production chains as understood in the arguments of Ernst and Kim (2002) and Gereffi (1994; 1995).
- Furthermore, **time** is conceived to play an important role: the longer a subsidiary has been operating in a particular country or region, the more locally embedded its strategies appear to become.

This perspective on global reorganisation represents a differentiated view of the TNC in relation to Gereffi. The challenges facing large firms in particular in the turbulent competitive environment is how to balance the advantages of globalisation and localisation. Seen from the learning and knowledge perspective, a proximity to producers and users at the home base facilitates close interaction and learning. However, despite these obvious advantages in keeping production at home, firms in most sectors are increasingly moving towards international production (Ernst, 1997). Thus, the decision whether to stay at home or 'go global' is a trade-off. To succeed on a global scale, firms must need to be globally efficient and capable of benefiting from localised learning. Some TNCs attempt to achieve competitive advantages through economies of scale, thus implying a centralisation of knowledge and expertise, and thus tending to ignore local conditions. By contrast, more locally orientated TNCs are able to respond to local needs and take advantage of local knowledge, but at the cost of the internal scale of efficiency and coherence. The contribution of TNCs to the potential of local learning thus depends on the strategic decision of the corporate management as to where to locate specific operations and how to co-ordinate them. Such decisions must, of course, be made on the basis of existing structures and economic conditions. As is evident, the strategies, functions and structures of TNCs have wide implications for the local firms with which they have established links. Dicken et al. (1994) find that, from the perspective of third-world firms and their

potential to link up with global actors, the most important indicators of local embeddedness are:

- The parent company's **policy towards the externalisation** of key functions (the make-or-buy decision) (Dicken et al., 1994). Formerly, vertical integration, associated with Ford Motor Company, was the preferred way of organising production in order to reduce risks. However, this strategy proved inefficient in the context of rapid technological development and increased international competition. In order to become more flexible, firms now reduce the share of in-house production and increasingly rely on external suppliers. Japanese corporations took the lead in this development, and the Japanese automobile industry still produces much less in-house as compared with its European and especially American counterparts (Grabher, 1993). It is thus essential to analyse the degree to which TNCs rely on outsourcing, and whether their control over these transactions is exercised in a centralised or a decentralised manner (Ernst, 1997).
- The **extent to which outsourcing is exercised locally**. For the local area, this translates into the extent to which the local subsidiary has sufficient autonomy that it can choose its own suppliers and the firm's purchasing strategies. The degree of local autonomy in purchasing and the extent to which the TNC chooses to employ local managers in senior management positions are important determinants in this regard.
- The challenge of local suppliers is to get connected. Local purchasing • obviously implies the existence of appropriate local firms with which the subsidiary can interact. This brings us to the ability of local firms to meet the quality, design and delivery requirements of the TNC. Companies seeking to outsource use a multitude of criteria to assess supplier, and they constantly scrutinise their make-or-buy decisions. Since small firms are usually not able to make great R&D efforts or to satisfy the quantity requirements of large-scale production, they will mainly be engaged as subcontractors for smaller or less complex parts and components. Small firms, however, benefit from their low costs in relation to administration and labour costs, as well as from their flexibility, whether this is actively based on rapid responses, decision-making and the recognition of new market niches, or is passively based on their ability to vary their productive capacity through lay-offs, use of temporary workers and overtime working (Semlinger, 1993).

In summary, the interorganisational or differential approach to the study of TNCs acknowledges that their restructuring in the face of intensifying global competition and changing political pressures do have profound implications for local areas. But, in contrast to Gereffi, the local impact must be seen within the precise roles that are performed within a particular corporate network, rather than such influence being deduced from stereotypes of export roles. The two perspectives, that of global commodity chains and that of the embeddedness of TNCs, are seen here as complementing each other as a framework for analysing

the externalisation of knowledge from transnational corporations to local firms in Thailand. The externalisation of knowledge to local suppliers in this regard is determined by the co-ordination of TNC strategies on a global scale, their embeddedness in local social and institutional structures, and the capacity of local firms.

The global commodity chain perspective will therefore be used empirically to analyse global production networks in the automotive and garment industries and the incorporation of Thai firms within such networks, given the particular competitive and technological conditions in Thailand. The embeddedness perspective on transnational corporations, on the other hand, will be applied to a case study of how particular transnational corporations carry out their activities in Thailand, and the magnitude and character of their links with Thai firms. Actual knowledge transfer by transnational corporations is discussed further in the next section, the emphasis being on the character of the concrete relationships between TNC units and Thai suppliers.

Socialisation

The basic assumption of the network model is that the activities of firms in a network complement each other, and that the individual firm is dependent on resources controlled by other firms. Therefore their activities need to be coordinated and regulated to adjust the exchange of goods and services and the timing of such exchanges. According to Granovetter (1985; 1992) business relationships are determined neither by institutions nor by the existence of a collective morality. The character of the particular relationship is rather a consequence of the interaction or socialisation between the participating firms. As **socialisation** is a process of sharing experiences between the individuals engaged in a transaction, the main analytical level is the concrete interaction between actors (Nonaka and Takeuchi, 1995) in contrast to theories of externalisation, which have focused on the international structuring of a particular industry or the nation as the context of knowledge creation. In contrast to theories focusing on the more abstract contextual level, the argument is that shared norms, conventions, values, expectations and routines, which are essential to the production and sharing of knowledge, arise from shared experiences between firms. Co-operation between business partners is thus moulded by the dyadic and ongoing relationships between the actors involved.

Granovetter is especially occupied with how **trust** emerges in the interactive process between two parties and later on operates to regulate the relationship in order to avoid opportunistic behaviour. As trust plays a vital role in the coordination of economic activities, the following section elaborates on the definition and role of trust and mutuality between firms in a network. The explanation follows Granovetter's embeddedness approach, in which social influences, such as rules, norms and institutions, are seen as supporting economic behaviour in providing a basis for decision-making, expectations and belief. However, the social context is not a once-and-for-all influence but involves ongoing processes that are continually being constructed and reconstructed during interaction. In other words, the focus is on the process of organising (Grabher, 1993) both the exchange of products and the development of a social context between partners. In order to apply some structure to the presentation, two interrelated processes, notably the **exchange process** and the **adaptation process**, will be employed as a framework for analysing relationships between two business partners (Forsgren et. al., 1995; Forsgren and Johanson, 1992).

The first process presented as a means of analysing the mechanism of socialisation is the exchange process. This implies that the two parties to the relationship try to obtain more knowledge about each other, as is required for the exchange of goods and services. Three aspects of exchange can be applied in order to demarcate the exchange process: product exchange, information exchange and social exchange. First, the primary aspect of business relationships is usually the exchange of products or parts. Product exchange can be divided up into a number of dimensions in relation to the characteristics of the product, such as value, technological complexity, service content and frequency of delivery. Secondly, in order to make product exchange possible, there needs to be a parallel process of information exchange. It can be expected that the higher the value of the products, the more technologically complex they are, and the higher the frequency of delivery, the more information needs to be exchanged. Information thus serves to secure the planning and organisation of smooth co-operation and ensures that emerging problems are solved relatively smoothly too (Forsgren et al, 1995). The exchange process typically implies the exchange of formal knowledge, such as machinery, blueprints, production and quality-control manuals, and product and service specifications, which help the partners produce and adjust the products in accordance with the required standards. However, interaction between business partners also implies the transfer of more informal types of knowledge through training, observation and problem solving (Ernst and Kim, 2002). Thirdly, it is through **social exchange** that business partners build up trust in each other and transfer more tacit forms of knowledge. Social exchange is thus regarded as the most efficient and reliable source of exchange, and as a critical element in the development of lasting business relationships.

The necessity of **trust and trustworthy behaviour** for the normal functioning of economic action – that is, the avoidance of mistrust and malfeasance – has become a central theme in economic sociology. Without trust, it is unlikely that a business relationship can be created in uncertain environments. Trust thus has an important function in facilitating co-operation. In general, trust is defined as an expectation or belief concerning the likely behaviour of others. Asking why individuals act in economic transactions as they are supposed to (i.e. in a

trustworthy manner), Granovetter answers, from an embeddedness point of view, 'that the actors do so as a part of the regularised expectations that characterise their personal relations with their transaction partner' (Granovetter, 1992: 42). Trust is therefore based to a large extent on strong expectations that one's partner will abstain from opportunism.

The main question is, what guarantees that partners will not exploit the vulnerabilities created by long-term co-operation? Predictability, which, according to many economists, is chiefly secured through the application of formal contracts, is an important indicator of trust. Contractual trust refers to the mutual expectation that promises, whether based on written or oral contracts, are kept. Suppliers, for example, normally agree to produce and deliver according to written or orally communicated orders, in the expectation that they will be paid within an agreed period of time after delivery (Seko, 1998). However, formal contracts, it is argued, are not a perfect indicator of trust. First of all, trust relates to situations where the complexity of the relationship, or the fact that it is marked by unanticipated contingencies, makes it impossible for formal contracts with third-party enforcement to eliminate all uncertainties (Lazaric and Lorenz, 1998). Secondly, a formal contract is rarely used in practice because their use in concrete situations indicates that one does not trust one's partner. The enforcement of formal contracts in problem or conflict situations thus endangers the relationship and casts the litigator in an unfavourable light in the wider business community. Disputes are therefore frequently settled without reference to the contract (Granovetter, 1992). This is not to imply that formal contracts do not have a purpose, but rather that they cannot eliminate all uncertainty and that they are rarely used to settle disputes.

Instead, Granovetter and others emphasise the role of concrete personal relations and the structure (or networks) of such relations in generating trust and discouraging malfeasance. Continuing **social relations** make behaviour predictable, as predictability arises from the information that business partners obtain through their personal experience in repeated dealings with each other. Information acquired from personal experience is regarded as being cheap and reliable in comparison with generalised information, for example, reputation about someone's trustworthiness, which is only applied when nothing better is available (Granovetter, 1985). It is implicit in the above that social relationships must have a certain duration before much trust can be generated. Networks are exactly defined by repeated transactions and the establishment of a balance between the partners over the entire range of exchanges, in contrast to market relations, in which a balance has to found in every single exchange (Grabher, 1993).

This is not to say, however, that business relationships contain trust from the very beginning. Rather, trust is built up between the parties in parallel with the exchange process. Social exchange relations evolve gradually as two parties, between whom there is no initial trust, progressively demonstrate their

trustworthiness to each other. Initially, small investments are made in connection with the particular relationship, and if the initial trust is not abused through opportunistic behaviour, the parties progressively risk larger investments by starting new rounds of information-sharing and social exchange. The generation of trust is obviously a lengthy process, one that is encouraged by the intensity of the information exchange, the frequency of social exchange and the duration of the relationship (Lorenzen and Romme, 1994). Gradually, the relationship becomes overlaid with a social content that carries strong expectations of trust and of abstention from opportunism. Top executives of two firms, for example, may come to know each other well because the same two individuals may have dealt with each other for the past five to 25 years or sit on the same business committees. At meetings they might exchange gossip about other competitors, information about price increases or occasionally share a meal together (Granovetter, 1985). Frequent social interaction encourages the business partners to develop a private language and to rely on implicit understandings. This direct experience between the agents involved in a relationship comes to function as a form of social regulation or as a relational dimension of trust. 'In most cases the only way we can form a rational judgement concerning the trustworthiness of an individual is through what we have learned from our interaction with him [which enables us to] interpret the implicit dimensions of his commitments' (Lazaric and Lorenz, 1998: 4).

What are then the indicators of trust? It is undoubtedly more difficult to observe the existence of trust between two parties, as this has a more intangible nature than a formal contract. Over the long term, however, the gradual buildup of trust between two parties will make large mutual commitments and large relation-specific investments possible, which can be taken as signs that there is trust between them. Seko (1998) calls the diffuse kind of trust found in social exchange goodwill trust, which is defined as a mutual expectation of open commitment to each other. Open commitment implies the willingness of an actor to respond to a wide range of requests and to take initiatives whenever opportunities for mutual benefit arise. Successfully exploiting opportunities for improvements would thus be interpreted as a manifestation of goodwill trust. What distinguishes goodwill trust from contractual trust is the expectation in the former that trading partners are committed to taking initiatives to exploit new opportunities over and above what was originally promised. Withholding important information, for example, is a breach of goodwill trust, but not necessarily a breach of contractual trust. The willingness and desire to make large investments as part of the particular relationship can be taken as another sign of the existence of trust. Transaction-specific investments only yield a profit if the transaction is repeated several times. Large investments thus indicate that the investor is willing to risk committing himself because he trusts that his partners will not behave opportunistically and that he will not suffer as a result of the investment (Lorenzen and Romme, 1994). Trust thus arises over time as part of a virtuous circle of mutual gains and revised judgements

concerning trustworthiness, as further knowledge is gained about a trading partner. However, Lazaric and Lorenz (1998) warn that nothing precludes errors of judgement and that a provisional judgement of trust may turn into suspicion and mistrust. There is thus a lack of finality in judgements of trust, related to the limits of our rationality in a world characterised by surprise and unanticipated complexity.

The second process, which acts as a framework for analysing the socialisation mechanism, is the adaptation process, in which the parties adapt to each other in various ways. The parties can adapt by **modifying products** or **production** processes. Firms may, for example, co-ordinate their stock levels, transport systems, organisational planning or administrative routines, or develop joint delivery systems. Adaptations generally occur through continuously pursued practices in day-to-day operations, but they may also occur in the shape of larger investments in relationship-specific machinery or through the introduction of collective organisational systems. Firms might also adopt the more **social aspects** of a relationship. Mutual orientation or reciprocity is an important consolidating element in the relationship. Mutual orientation implies that the firms are prepared to interact, develop mutual knowledge about and trust in each other, are aware of each other's interests, and are prepared to pay attention to them (Forsgren et al, 1995). According to Grabher (1993), mutual orientation is consolidated by the development of a common understanding of technical matters, rules and attitudes, and through the standardisation of processes, products and routines. Mutual orientation is developed, modified and intensified through interaction, while at the same time acting as a framework for subsequent co-operation and interaction between the firms.

The process of adaptation between two firms implies that the interaction becomes progressively more efficient and that the social bonds between them are strengthened. At the same time, however, the firms become more interdependent, especially if large relationship-specific investments have been made. The stronger the interdependence between two firms, and the more they risk losing if the relationship is dissolved, the more they are inclined to make business with each other (ibid.). Because the firms therefore become dependent on the continued fulfilment of the exchange relationship, the parties generally chose to solve emerging disagreements and problems through communication instead of trying to replace their exchange partners (Nielsen, 1993). In other words, as trust gradually builds up between the parties and the relationship lasts longer and longer, the less incentive there will be to break the relationship or display opportunistic behaviour. In other words, 'voice' is preferred to 'exit' as a mechanism of conflict-resolution. The development of a common understanding, however, does not necessarily imply that a balance of power exists between the firms: the power structure is determined by the relative importance of the firms to each other. In every network, different firms have different capacities to act and to influence the structure of the network (Forsgren et al., 1995; Grabher, 1993).
In the relationship between a subcontractor and a customer, the adaptation process occasionally involves elements of technical assistance, which is important for the subcontractor's development and learning potential. The customer will often choose to assist the subcontractor with quality control or the development of the design of the component or product, give advice in relation to technical matters, or undertake the concrete transfer of material or machines in order to ensure that the subcontractor is able to produce components of the required quality at the right price. However, it is essential for the extent and quality of the assistance that the component produced by the supplier is technically comparable with the products produced by the customer. Technically comparable activities are based on common scientific, engineering and production experience, while technically heterogeneous activities draw upon different sorts of technical knowledge and different specialisations. Technical assistance will thus be minimal in terms of subcontractors producing products which technically are very different from the customer's products. On the other hand, the customer will be better able to give advice on products and processes when the technology being applied is similar to his own. Furthermore, small subcontractors with limited technological knowledge will need greater assistance than large, advanced subcontractors with brand recognition. In the last case, the exchange of assistance is more of a two-way process (Lall, 1985). The function and role of the customer will also be crucial in the extent to which the company is able to transfer any kind of assistance to the subcontractor. In the case of transnational corporations located where they are mainly to assemble products for the local market, there might be a marked degree of 'hollowing out' of functions, resulting in limited knowledge that can be transferred to local subcontractors. The frequency of delivery and the importance of the component to the customer in terms of volumes and value will also influence the character of the assistance (Semlinger, 1993).

Beside providing assistance, the customer will probably also set out **requirements** in terms of frequent delivery, a large variety of components, high product quality and a high level of service, for example lengthy credits. If the subcontractor is to fulfil such requirements, this may require relationship-specific investments and often also improvements in the organisational structure. The long-term aspect in network relationships will provide beneficial circumstances for knowledge and information exchange because the stability and mutual dependence between the partners will make such adjustments less risky and will involve a learning effect in connection with routine exchanges (Grabher, 1993). There is thus a large potential for the supplier to upgrade and improve in all respects, though the supplier will at the same time become more dependent on the customer and thereby increase the risk of loss (Semlinger, 1993).

Partners engaged in long-term business relationships and exchanges of technical information can also acquire more intangible forms of knowledge.

The transfer of tacit knowledge implies that the partners must have some form of shared experience in order for it to be projected into each other's thinking. Examples of a sharing of tacit knowledge are learning from experts through observation, imitation and practice, or through experience and observation, for example, in training situations. The product development process between customers and subcontractors before market introduction is an example of a process in which tacit knowledge is shared and ideas created for improvement. Informal meetings for detailed discussion to solve difficult problems – which are often held in connection with other activities, such as sharing meals or participating in other informal activities – are also important sources in the exchange of tacit knowledge (Nonaka and Takeuchi, 1995). As tacit knowledge cannot be separated from the person or organisation containing it, firms wanting to access the knowledge base of other firms need to possess networking abilities. In other words, they need to assure the other party that they are capable of fulfilling his promise technically as well as managerially and socially, which Seko (1998) refers to as competence trust. In the case of a supplier-buyer relationship, for example, it has been conventional for the buyer to inspect the components on delivery in order to ascertain whether they meet the required quality standards and in other ways to monitor carefully the supplier for breach of competence trust.

A common national or cultural background is emphasised in the literature on knowledge and learning as being important in generating mutual understanding and trust as a precondition for organisational learning. If at least some degree of trust is not established between business parties, organisational learning and change become problematic. Given limited foresight and the possibility of opportunistic behaviour, agents will be uncertain whether the proposed changes are designed to bring about mutual benefits or only to benefit one party at the other's expense. Mistrust of the intentions of others can lead members of organisations to resist even relatively simple changes that promise mutual advantage (Lazaric and Lorenz, 1998). In the case of relationships between a unit of a TNC and local suppliers, this pre-existing common institutional and cultural framework is lacking, which may complicate the process of interactive learning because common code keys are needed for communication. Cultural differences associated with differences in nationality are often singled out as the main cause of problems in international business relationships, since nationality is the most clear-cut distinction, indicating that the partners do not have a common framework for understanding (Sandström, 1992). For these reasons, TNCs may prefer to co-operate with firms of the same national and cultural background. As global and local actors are embedded in different social and maybe also different territorial contexts, the process of socialisation is ascribed a much more vital role in the generation of a common framework of understanding in such border-crossing or cross-cultural relationships. The initial establishment of the relationship therefore requires a certain degree of faith, since lack of information about or trust in a potential partner creates a degree of uncertainty. Business relationships, however, are

about exchanges between people, and people can adapt their attitudes and views to the relationship as they gradually develop rules, trust and mutual orientation to co-ordinate it. Each relationship has its own characteristics, rules, language and atmosphere, which indicate what can or must be done in the relationship. New expectations, based on the particular atmosphere, are developed that replace expectations based on national characteristics. The parties are allowed to express cultural characteristics as long as these do not interfere in the exchange relationship. However, cultural differences may remain an obstacle when the parties to a relationship fail to develop common rules to guide it properly.

In summary, socialisation is a process in which relationships between business partners, such as customers and suppliers, are developed over time. The socialisation process involves interactive learning between firms through which the parties gradually learn about each other's needs, capabilities and strategies, and come to trust each other and adapt to each other's ways of performing operations, as well as to each other's ways of communicating. The benefit of long-term relationships is the prospect of both parties learning how to work together, which provides firms with access to the knowledge of other firms and individuals. Through long-term relationships, firms adapt to each other in terms of, for example, customised products, just-in-time delivery systems and quality-assurance programs, learn about each other's way of performing activities, and transfer knowledge embedded in organisational practices that need to be mobilised through socialisation (Forsgren and Johanson, 1992).

Internalisation

Access to external sources of knowledge and social interaction with global and local actors is without doubt critical to the transfer of knowledge and the incentive to upgrade the skill structure and improve the production system. However, even if a firm can gain access to an external pool of knowledge, knowledge transfer does not happen automatically, and learning does not take place unless the external knowledge is assimilated to the knowledge base and the organisational structure of the firm. Or, in the words of Israelit and Cross (2000: xi-xii), 'When we say organisations can learn ... we are interested in the way in which knowledge becomes embedded in business processes, formal reporting structures, performance management systems and resource allocation processes that guide the overall direction of the firm'. This involves a process of internalisation, which is the third important mechanism in the knowledge conversion process. However, this has largely been disregarded in the bulk of literature on and studies of knowledge creation and learning, which have been more concerned with the socialisation process. Internalisation takes place when new knowledge accumulated from the outside is shared widely within the organisation, stored as part of the company's knowledge base, and applied to

develop new products and processes. This is a costly and time-consuming learning process (Nonaka and Takeuchi, 1995; Ernst and Lundvall, 1997).

The application of external knowledge to organisational means and commercial ends is considered essential to the competitive advantage of firms (Cross and Israelit, 2000), their innovative performance (Cohen and Levinthal, 2000) and their ability to adapt quickly to changing opportunities (Prahalad and Hamel, 2000). But the transfer of knowledge alone does not produce anything. The value of knowledge can only be created when knowledge leads to action, for example, increased creativity, innovation and flexibility in connection with an effort to create an organisation capable of responding to changed expectations and demands on behalf of competitors, consumers, suppliers and legislators (Hildebrandt and Brandi, 1998). Internalisation is the dynamic aspect of learning, as it is a process which changes the state of knowledge – both the knowledge base within a firm and the way the firm uses its existing knowledge (Sanchez and Heene, 2000). Consequently, the internalisation process is of great importance to this study as an indicator of organisational transformation. Firms may have varying abilities to apply different forms of knowledge to carry out actions that help the firm accomplish its goals. Learning may therefore change not only what kind of knowledge a firm has, but also the level of mastery at which the firm knows and can act on what it knows (Sanchez and Heene, 2000). It is suggested that the capacity of a firm to internalise or absorb new, external knowledge, assimilate it and exploit it for new ends is a function of its prior knowledge (Cohen and Levinthal, 2000), its organisational structure (Nonaka and Takeuchi, 1995) and the motivation and commitment of the members of the organisation (Nonaka, 2000).

First, **prior knowledge** in general refers to the basic competencies possessed by a firm, but it may also include knowledge of the most recent scientific or technological developments in a given field. The holding of prior knowledge increases the ability to put new knowledge into memory (acquisition of knowledge), as well as the ability to recall and use it. Simple exposure to complex knowledge is not sufficient to understand it: a large body of knowledge must first be accumulated before the new knowledge can be learned. The accumulation of a large pool of prior knowledge thus enhances the learning process because new knowledge is stored by establishing links with pre-existing concepts and practices, thus permitting individuals to make sense of and acquire new knowledge. The more that practices, patterns and concepts are stored in the knowledge base of the organisation, the more readily is new information about these constructs acquired. Learning is thus cumulative, in the sense that new knowledge presupposes a certain level of existing knowledge. Experience or performance regarding one learning task may influence and improve performance in respect of some subsequent learning task. If an organisation has accumulated an abundance of prior knowledge, this provides 'insights', that is, the sorts of association and conceptual links that may never have been considered before, thus permitting the organisation to attain a given

level of performance or to solve emerging problems with less effort. The more effort is put in to learning one task, the better its later retrieval will be. Therefore, considerable time and effort should be spent on simple problems before moving on to more complex problems. Important aspects of learning, such as how to solve problems, are built up through many trials on related problems. Therefore, if practice with a particular type of problem is discontinued before it has been reliably learned, then little transfer will occur to the next series of problems. In addition, learning performance is greatest when the object of learning is related to what is already known. As a result, learning is more difficult in novel domains. This suggests that a diversity of knowledge plays an important role. A diverse background provides a more robust basis for learning because it increases the prospect that incoming information will relate to what is already known. Therefore, the group as a whole must have some level of relevant background knowledge.

The above suggests that an early lack of investment in a particular area of expertise may foreclose the future acquisition and development of knowledge in that area. One means whereby a firm may invest in a capacity to internalise knowledge is to send personnel for advanced technical training, upgrade the skills structure or invest in new machinery. In particular, however, it is argued that a firm's ability to exploit external knowledge is generated as a by-product of its R&D activities. Firms that conduct their own R&D are particularly able to acquire and use externally available information and knowledge. However, internalisation capacity may also be developed simply as a by-product of a firm's manufacturing operations. Through direct involvement in manufacturing, a firm becomes able to recognise and exploit the relevance of new knowledge to a particular product market. Thus, production experience provides the firm with the background necessary to recognise the value of methods of reorganising or automating particular manufacturing processes and to implement them (Cohen and Levinthal, 2000).

Secondly, establishing a synergy between the various functions within a company is crucial to the development of its internalisation capacity, which highlights the importance of the **organisational structure.** It is not sufficient for the internalisation of knowledge that new information is accumulated in the head of one person, or in only one department. The efficiency of knowledge accumulation activities, such as research activities, within a corporation is enhanced by close interaction within the production process, such as on-the-job and formal training (Antonelli, 1999). As such, an organisation's internalisation capacity is not resident in any single individual but depends on links across a mosaic of individual capacities (Nelson and Winter, 1982). This depends on the transfer of knowledge across and within subunits that may be far removed from the original point of interface with the external environment. In other words, the firm's ability to turn outside knowledge into inside knowledge reflects the way it is organised (Johnson and Lundvall, 1994; Nonaka and Takeuchi, 1995; Hildebrandt and Brandi, 1998). The organisational structure is crucial to the

creation and diffusion of knowledge, as this can promote or hinder interaction and communication within and between different functions and sections of the organisation. How the various functions and groups relate to each other greatly affects the efficiency of knowledge diffusion and internalisation (Nonaka et al., 2000). Although an open organisation promotes interaction, multilevel hierarchies and strict boundaries between various functions and sections work as barriers to the efficient diffusion and internalisation of knowledge. If, for example, the acquisition of knowledge is extremely centralised and decisionmaking is top-down, the percolation of knowledge through the organisation will be very weak (Antonelli, 1999). Thus, 'the way an organisation is structured and the routines followed will have a major effect on the rate of learning' (Lundvall 1999: 12). The level of interaction and communication between the various functions and subunits of the firm is of particular importance to its internalisation capacity.

Communication systems may rely on specialised actors who are in charge of transferring new information from the outside environment. This interface function may be diffused across individuals taking care of subunits within the firm or may be quite centralised. Centralising this 'gatekeeper function' may be problematic under conditions of rapid and uncertain technical change, or when the information coming in is random and it is not clear where in the firm or subunit a piece of outside knowledge is best applied. It is best for the organisation to expose a fairly broad range of prospective 'receptors' to the environment under such circumstances, when the requirements of action cannot be broken down and distributed among specialist roles within a clearly defined hierarchy. In general, a broad learning interface is preferred, as internalisation capacity is not only a function of the gatekeeper's abilities, but also of the expertise of those individuals to whom the gatekeeper is transmitting the information. To enhance communication within a firm, a certain level of shared knowledge and expertise is essential. Thus, some overlap of knowledge across individuals is necessary for internal communication, and a division of labour promoting the gains of specialisation should not be pushed so far that communication is undermined (Cohen and Levinthal, 2000).

In order for individual knowledge to become organisational knowledge through communication, a **high-density field of interaction** must be created, so that members can meet and exchange ideas, and share knowledge through direct personal interaction across R&D, design, manufacturing and marketing functions. The Japanese practices of team organisation, regular meetings and rotating personal among functions, for example, operate to create knowledge overlaps and develop code keys, or shared organisational language, which is necessary for qualified communication. Nonaka and Takeuchi (1995) ascribe to middle managers the essential role of mediating knowledge from the top (what should be) to the bottom (what is) and vice versa. The internalisation of new knowledge, which is complex and difficult, requires a conducive organisational structure, and more prior knowledge has to have been accumulated for the

learning process to be effective. If common code keys, extensive communication and interaction among the various functions or a large pool of prior knowledge do not exist, a firm might benefit from applying a structure to knowledge through codification to ease the sharing of knowledge within the organisation.

Thirdly, the motivation and commitment of the members of the organisation is particularly important in mobilising knowledge-creating activities. According to Nonaka et al. (2000), the factors determining the rate of knowledge creation in a firm are knowledge vision, the incentive system, the corporate culture, and organisational routines and leadership. Nonaka and Takeuchi (1995) emphasise the importance of the social ability of the leader to encourage employees by drawing up a corporate strategy. The most critical element in a corporate strategy is the ability to develop a vision about what kind of knowledge should be developed, or, in other words, to decide what is the basic understanding or core competence of the firm. The benefit of a vision of knowledge is that it synchronises the entire organisation regarding what kind of knowledge it has to create, and fosters spontaneous commitment on the part of the individuals and groups that are involved in knowledge creation (Nonaka et. al., 2000). Thus, it is essential for the management to spend a significant amount of time developing a corporate-wide 'strategic architecture' to establish objectives for commitment and competence building. Strategic planning and a corporate vision creates a definition of the company and the markets it serves, which provides a template for allocating decisions by top management, and creates a managerial culture and a willingness to think long term. Without a focus, on the other hand, there is a danger that an organisation will learn in a path-dependent fashion, and thus potentially develop a suboptimal knowledge base, which might evolve into suboptimal markets or capacities (Prahalad and Hamel, 2000).

According to Cohen and Levinthal (2000), the possession of related expertise and a large pool of prior knowledge will permit a firm to understand and evaluate better the benefits and opportunities of new knowledge or of a new technological development. If the firm does not develop its internationalisation capacity in some initial period, then its beliefs about the technological opportunities that are present in a given field will tend not to change over time. When new opportunities subsequently emerge, therefore, the firm may not recognise them for what they are. The lack of early investment in internalisation capacity makes it more costly to develop a given level of expertise at a subsequent period and diminishes the attractiveness of investing, even if the firm becomes aware of technological opportunities, so that the firm becomes 'locked out' of subsequent technological developments. According to Cross and Israelit (2000), however, organisations are generally quick to invest in technology, the more challenging problems being instead to develop the appropriate skills and tools so that the firm can learn from important events at all organisational levels. This requires recognition of the core competencies of

the firm and the development of a clear organisational vision and planning strategy. The level of internalisation capacity affects the extent to which the firm is proactive or reactive in developing organisational goals, as well as its level of aspiration. The greater its organisational expertise and associated internalisation capacity, the more sensitive the firm is likely to be to emerging technological opportunities, and the more likely that its aspiration level will be defined in terms of the opportunities present in the technical environment rather than strictly in terms of performance measures.

Organisational routines that are specific to the firm are also an important dimension in organisational knowledge creation. A firm's comparative efficiency comes from the formation of a firm-specific language and routines that both enhance the performance of an activity itself and aid in ensuring its efficient governance. Knowledge creation is greatly affected by the extent to which the members of the firm interact with one another. Care, trust and commitment among organisational members, for example, form the foundation of knowledge creation. At the same time, however, an organisation is subject to inertia and may find it difficult to diverge from the course set by its previous experiences. Therefore, current practices may both impel and constrain future learning and the actions of a firm (Nonaka et. al, 2000). As Gertler (2001) notes, the local embeddedness of practices might be more important for the ability to absorb externally derived knowledge than for the sharing of knowledge per se. That is, the accumulation of knowledge is path-dependent, and it is important to take history seriously in order to understand how newly acquired knowledge is put to use. Thus, how the cumulative learning process began, how the organisation has been structured historically, and the amount of accumulated investment is crucial to the present pattern of knowledge acquisition and internalisation.

This emphasis on firm-specific routines relates to the question of whether internalisation capacity can be developed externally through, for example, the hiring of new personnel, contracting for consulting services or corporate acquisition. It suggests that, while externally derived knowledge is crucial to knowledge accumulation, new knowledge can only be absorbed through organisational experience. That is, new knowledge needs to be integrated with the firm's other activities because detailed knowledge of organisational routines and objectives is tacit and therefore firm specific. To integrate certain classes of complex and sophisticated technological knowledge successfully into a firm's activities, it therefore requires an existing internal staff of technologists and scientists who are both competent in their fields and are familiar with the firm's idiosyncratic needs, organisational procedures, routines, complementary capacities and external relationships (Cohen and Levinthal, 2000). It is thus important for the firm to acquire qualified workers and managers, to keep them in the firm for a long time, and to train and motivate them to develop firmspecific skills.

Consequently, the **incentive system and leadership** are important criteria of knowledge creation. Owners of knowledge should be motivated to share their knowledge through co-operation and communication with other members of the firm and the development of various incentive schemes. Monetary compensation is not the only type of incentive. Measures such as peer recognition, a sense of belonging, the loyalty of the employees and regular meetings, career-planning and planned rotation programmes are also important incentives for sharing knowledge widely. The importance of leadership cannot be understated in this regard, since it integrates the above-mentioned factors and gives direction to the firm. It is crucial that top management shows a strong commitment to the creation of a company's vision and objectives and is able to operationalise this as a management system for implementation. This visible support provides the first step in persuading members to commit themselves to the firm. Synergistic interactions among top, middle and frontline knowledge practitioners are important. The middle managers, who are at the intersection of the vertical and horizontal flows of information, are especially crucial to this process. Furthermore, it is the responsible of management to develop a knowledge crew – that is, to attract good talent and develop human resources (Nonaka and Takeuchi, 1995; Nonaka et al., 2000).

To sum up, Nonaka et al. (2000) suggest that knowledge creation is shaped like a spiral connecting the three modes of knowledge creation: externalisation, socialisation and internalisation. The spiral form suggests that there is no end to the knowledge creation of an organisation. As soon as new knowledge has been created, new rounds of externalisation, socialisation and internalisation begin in a never-ending process, as there is no equilibrium to be reached. There is a certain symbiosis between the three mechanisms of knowledge creation: excessive dominance by one or the other will be dysfunctional. For example, it is evident that both inward-looking and outward-looking internalisation capacities are necessary for effective organisational learning. If all actors in the organisation share the same specialised language, although they will be effective in communicating with one another, they may not be able to tap into diverse external knowledge sources, and vice versa. Critical knowledge does not simply include substantive, technical knowledge: it also includes awareness of where useful complementary expertise resides both within and outside the organisation (Cohen and Levinthal, 2000). Knowledge of the type, 'Who knows what?' or 'Who can help with what problem?' and close relationships with both buyers and suppliers, are as important to knowledge creation as the firm's internal organisational form and routines, knowledge vision, incentive system and leadership.

Recalling the questions raised in Chapter 1, it was claimed there that knowledge is becoming more and more important in an increasingly global economy, though at the same time it is becoming more difficult for local producers to access and use it for competitive purposes in a world characterised by ever greater competition between individual economies and actors.

Following this theoretical conceptualisation and reconceptualisation, the question of how and whether local Thai firms are managing to survive in the light of increased global competition can be regarded as involving these three mechanisms: externalisation, socialisation and internalisation. Externalisation is understood as the possibility to link up with foreign lead firms, which are regarded as the main factors of knowledge creation in firms in late industrialised economies. The externalisation mechanism does not describe any actual transfer of knowledge, only its possibility: that is, who are the losers and who are the winners in terms of creating links with global lead firms, and why? This is seen as being a consequence of the restructuring tendencies of global lead firms, especially in relation to supplier strategies, the extent to which they are becoming embedded in Thai structures, and the technological and organisational ability of Thai firms. The socialisation mechanism, on the other hand, describes what kinds of knowledge, both tacit and explicit, are being transferred in actual relationships between Thai suppliers and their foreign customers. This is understood as a consequence of how relationships develop over time in relation to both product exchange and personal exchange. Personal interaction is regarded as the main medium for the creation of a framework of mutual understanding and trust, which is supposed to enhance the process of knowledge transfer. However, it is through internalisation mechanisms that knowledge is created and used, through the adaptation of explicit and tacit forms of knowledge to the specific knowledge base of the company. The internalisation of knowledge is regarded as resulting from prior investment in knowledge-creating activities, such as R&D activities and a skilled workforce, of the organisational structure of the company, such as how knowledge is communicated between different individuals and functions, and of the commitment and motivation of the leadership. In this regard, pre-existing structures, such as dysfunctional lines of communication, may act as barriers for the diffusion of knowledge. Thus, the internalisation mechanisms are decisive for the outcome of the globalisation process – that is, whether Thai firms are able to adapt foreign sources of knowledge to their organisational structure and transform the organisation so that it can manage in an increasingly competitive environment. The three mechanisms thus extend the research by raising more specific questions and hypotheses with which to guide the empirical research.

Chapter Three

Methodological Considerations

Introduction

After outlining the research questions, it is necessary to consider the kind of methodological¹ guidelines that will be useful in the theoretical and empirical research. Methodological approaches to study of the social world will always be a matter of the discourses available and of the ideas, material and concepts we understand the world as being mediated through. As explanations of the dynamics of economic and social action, in this study depart from the embeddedness perspective, the **critical-realist theory** has been chosen subjectively as the methodological approach that will inform the design of the theoretical and empirical research. Critical realism is a dynamic perspective, since it deals with underlying mechanisms of change using a network perspective, that is, taking into account the social relationships between actors and the context of their interactions as important elements in the explanation of events.

In the first section, the scientific lines of thought in critical realism are presented. The remaining part of this chapter is meant to assist the reader in moving from the theoretical to the empirical part of this study. The aim is to discuss the methodological process involved in moving from theory to the field, and to discuss the core concepts in relation to the specific issues that are being analysed. The main use of the theoretical part is to ask questions, review the existing literature on the subject, list the issues to be examined, and design fieldwork-related and empirical questions. Naturally, since the language in the empirical part is not as abstract as that in the theoretical part, theoretical concepts must be applied to the specific case. In the process of translating the theory to into practice, some of the concepts are changed in relation to the specific context, some are left out, as they only refer to the abstract level, and some are invented empirically. In the second section, the design of the case study is presented from a realist perspective. In the third section, the transformation of the theoretical concepts for empirical use in the context of Thailand is discussed. In the fourth section, finally, the interview and interpretation process is presented and any problems arising discussed.

3.1 Critical realism

Critical realism has been developed as a relatively new method in the social sciences in opposition to positivism or empiricism. In natural science, the real nature of the world can be discovered by experience, making it possible to

¹ According to Yeung (2003), methodology refers to the entire process of practising research and the specific methods of research.

predict events and test hypotheses. In other words, science should be subject to falsification in the tradition of Popper. According to Sayer (1992), social systems are, by contrast, open systems, in which objects are not always as they seem because of underlying social patterns, interacting structures and mechanisms. The world exists independently of our knowledge of it, and our knowledge of that world is fallible and theory-laden. Social systems commonly involve 'dependencies or combinations which causally affect the elements or aspects, and the form and structure of the whole' (Sayer, 1999: 7). People's roles and identities are often internally related, so that what one person or institution is or can do depends on their relationships with others. Furthermore, social phenomena rarely have the durability of many of the objects studied by natural science – they are only relatively enduring. Thus, in contrast to natural theory, social theories of the world have limited explanatory strength and do not respond to either falsification or experimentation, because particular processes cannot be isolated for experiments. As a consequence, social science is more about developing better concepts than discovering the truth or real nature of the world, as we cannot expect descriptions to remain stable or unproblematic across time and space: a preoccupation with conceptualisation is therefore regarded as vital to social research (Sayer, 1992; 1999). Scholars such as Andrew Sayer (1992; 1999) and Yeung (1997) have developed useful methods for researching social science in practice, and for the most the research strategy exploited in this study adheres to their work.

Key concepts and features of critical realism

One of the most distinctive features of critical realism is the **analysis of causation**. The orthodox or positivist view of causation states that a direct relationship exists between discrete events (cause and effect), and that causation is a matter of regularities in relationships between such events (see Fig. 3.1).



Figure 3.1. Positivist and Critical-Realist views of causation (Sayer, 1999: 16-17).

Social science, however, has been unsuccessful in discovering law-like regularities, which are only likely to occur under special conditions in 'closed systems'. What causes an event has nothing to do with the number of times it has been observed to occur, and nothing to do with whether we happen to be able to predict it. Instead, it is argued that objects and social relations have causal powers, which may or may not produce regularities. Events arise from the working of mechanisms, which are again derived from the structures of objects, and take place within specific geo-historical contexts (Sayer, 1999). Consequently, events cannot be pre-determined before they happen, because they depend on contingent conditions, implying that things could go in one of many different directions. Hypotheses testing thus find no place in criticalrealist method.

To explain requires causal analysis of what makes a certain event happen, and of how change occurs. In critical realism, causality is not a matter of the relationship between cause and effect, but is rather concerned with the causal powers or liabilities of objects or relations, or more generally their ways of acting (mechanisms). Objects are, or are part of, structures. The notion of structure suggests a set of internally related elements, whose causal powers, when combined, emerge from those of their constituents. Cups, for example, (have the power to) hold tea, bicycles to transport their riders etc., because of their internal structure. Thus certain events or outcomes are explained in terms of other kinds of things, notably structures. Social structures are understood to consist of mechanisms such as rules, relations and positions. These social rules or relations are conceptualised as something other than the patterned behaviour they govern. The motorist who does not stop at red light, for example, does not cause us to doubt our understanding of the rule. Thus, the rule is not and cannot be evaluated as a prediction of actual behaviour; it is something different in kind. The understanding of social structures, such as relations and positions, is reached once it is accepted that different rules, rights, obligations etc., are not equally applicable to all. The sorts of activities allowed or constrained for a foreman are different from those for a manager or worker. Each has different responsibilities and rights in virtue of the position or power, they occupy. Two objects are what they are by virtue of the relationships in which they stand to each other. Thus the basic building blocks of society are positions which depend upon, or are constituted by, social rules, rights and obligations defined in relation to other positions, which are open to change by individuals (Lawson, 1999).

Social structures thus possess causal powers, regardless of whether they are being exercised. Causality, then, is not about regularities between events, but about what an object is like and what it can do, and only derivatively about what it will do in any particular situation. It follows that the nature or constitution of an object and its causal powers are internally or **necessarily** related. A necessary relation means that one object is dependent on its relation to another. However, whether a causal power is actually activated on any occasion depends on conditions whose presence and configuration are external or **contingent**, which implies that either object can exists without the other. So, although causal powers exist necessarily by virtue of the nature of the objects, whether they are ever activated is a contingent matter. When they are activated, the actual effects or events of causal mechanisms will again depend on the conditions under which they work. **Conditions** refer to other objects having their own causal powers. The relationship between causal powers or mechanisms and their effects is therefore not fixed but contingent, as a certain effect can be caused by different mechanisms activated under various contingent conditions (Sayer, 1992). As Wad argues (2001), a mechanism may, for example, block the bringing into effect of other mechanisms and thus render them outside the domain of the empirical world. The above arguments are illustrated by Fig. 3.2.



Figure 3.2. The structures of causal explanations (Sayer, 1992: 109).

The figure indicates that an object X, having the structure S, necessarily possess the causal powers P1, P2 and P3. Whether the causal powers are activated or not depends on the specific condition C. When the powers of structures are activated, they become a mechanism and produce an effect. Various conditions will affect the object in different ways. Under one condition the causal power may not be activated at all, hence producing no change (E1), while under another condition the causal power will lead to one type of change (E2), a third condition will produce change of type E2 etc. (Sayer, 1992). The explanatory framework of realism thus acknowledges and incorporates preexisting structures, their interplay with other objects possessing causal powers proper to them, and non-predictable but nonetheless explicable outcomes arising from interactions taking place in the open system (Archer, 1995). Archer argues that what is left to be done is to specify how structural influences are transmitted to particular agents in determinate positions and situations (the who, the when and the where). She also discusses how pre-existing structures are **transformed** through their interactions with other objects in a feedback process (the morphogenetic cycle). Processes of change usually involve several causal mechanisms, which may be only contingently related on one another. Not surprisingly, then, depending on the conditions, the operation of the same mechanisms can produce quite different results, while, alternatively, different mechanisms may produce the same empirical result. Inevitably, the exercise of causal mechanisms is often unclear from patterns of empirical events. Counteracting forces can override and conceal the effects of the operation of a particular mechanism, which means that the discovery of what a given mechanism can and cannot do requires considerable effort.

As the above makes clear, it is not possible to predict the result, because any event is activated in a specific **context**. Besides identifying the immediate causes of events, explanations must include references to the necessary conditions for the existence of mechanisms. What is the specific condition that enabled it to happen? Without regard to context, society, for example, is rendered atomistic, unstructured and unhistorical. Contexts or causal groups are rarely just background: exploration of how the context is structured and how the key agents under study fit into it – how they interact with it and constitute it – is vital for explanation. We need to know not only what were the main strategies of the actors, but what it was about the context which enabled them to be successful or otherwise (Sayer, 1992). Furthermore, what actors do at a given time is likely to be affected by dispositions or pre-existing structures which have been 'sedimented' at some earlier stage in a different context.

The notion of context is thus historically, socially and spatially determined. In contrast to space, which is regarded as a matter of how things are arranged 'in space' or how they assume a specific form, context is more concerned with relations and thus refers to the social or historical content of space. Whether causal powers are activated depends on their context or condition, that is, on the objects with which they are in contact, which in turn depends upon spatial form. Thus, space as well as context is crucial for explanations invoking critical realism. Since social structure exists on a variety of scales, from the interpersonal to the international, intensive studies of their reproduction, transformation and effects need not be merely local in their interest. Causal powers can be activated at a distance, provided there are intervening media (Sayer, 1999).

This emphasis on context leads to a consideration of the view of critical realism on the structure-actor problem. Dimensions such as relations and change are central to critical realism. People's roles and identities are internally related, so what one person or institution is or can do depends on its relation to others. According to Sayer (1992), one of the commonest errors in social science is the lack of awareness of the internally related nature of human action. In so far as many actions are context-dependent, they involve internal, necessary relations: they are rule-governed and presuppose other prior and expected actions, events and surroundings, often in particular spatial-temporal sequences. Yet there is no action without structure: people reproduce or transform structures through their actions, which in turn are constrained and enabled by existing structures. Social structures have certain endurance, but they only endure when people reproduce them, which normally do not happen automatically and rarely intentionally. It should be noted, however, that although structures are invariant under certain conditions and often difficult to displace, this does not mean that they cannot be transformed gradually from within, as balances of power and practices change.

In sum, critical realism warns us against stressing rule-governed and constrained action, as well as retreating to voluntarism. Rather, action is embedded in interpersonal relations and context-specific structures that make it very difficult for actors not to reproduce structures, though at the same time structures are prone to processes of change usually involving several causal mechanisms. In line with Granovetter, critical realism thus overcomes the structure–actor problem by focusing on mediating network processes, which might lead to either the reproduction or a transformation of social structures, depending on the nature of the relationships involved and the specific context. The remaining sections focus on the application of critical realism in theoretical and empirical research.

3.2 From theory to case and back

The critical realist method entails some practical recommendations for the **design** of the study on both theoretical and empirical grounds. One methodological avenue is presented in Figure 3, inspired by Yeung (1997: 66), though adapted to the present case.

According to Sayer (1992; 1999), the first step in all research should be a process of abstracting out important objects, their causal powers and generative mechanisms. Sayer (1992: 248) suggests that the **abstraction should** start with an extensive method, namely to build up background descriptive information through existing cases and theories, and then to abstract and conceptualise the relevant objects. The conceptualisation should entail an **immanent critique** of the existing work in relation to the specific purpose of the study. If there are serious theoretical and empirical gaps in the existing literature, then a **reconceptualisation** is needed, which may take the form of a search for a theoretical framework, or a combination of theories, to inform the study (Yeung, 1997). After explaining the object through a process of conceptualisation, the potential generative mechanisms and the conditional context of these mechanisms must be explained (Wad, 2001).

In a realist vein, the **object** of the present study is the firm understood as a social system and how the structures of the firm are changed under certain given conditions. Or, in more concrete terms, the object of research is how practices relating to the knowledge base of Thai firms are reproduced or transformed through their interactions with global actors and processes. The **mechanisms** that are analysed as catalysts for transformation constitute how knowledge is externalised away from global lead firms, how it is socialised between Thai firms and various holders of knowledge, and how it is internalised as a result of the social rules and relationships within the structure of Thai firms and of pre-existing structures that have previously been sedimented. The **outcome** – the reproduction or transformation of the practices of Thai firms – is, however, conditioned by the context. It is not possible to allow for all eventual **conditions and historical contingencies** that might

influence the outcome, such as favourable relationships with powerful resource-controllers in the military or government institutions that the owners of firms might have, for example. What are regarded as being of particular importance to the outcome – as it is conceivable that it may contribute to the production of different outcomes – are variations in the governance structure within the various industries in Gereffi's understanding. This is why the present study compares regulation and restructuring tendencies within the garment and automotive industries.



Figure 3.3 the practical application of realist theory

This process of conceptualisation and reconceptualisation was the subject of the preceding theoretical chapter. But the process of abstraction is summarised schematically below in relation to the present case, recalling Figure 3.1 (the realist view of causation) and Figure 2.1 (mechanisms of learning).

Knowledge converting mechanisms Externalisation, socialisation, internalisation



Figure 3.4 Abstraction in practice

Having abstracted out important concepts and mechanisms, the next step in the research process according to Figure 3.3 is empirical validation. Sayer (1992) argues that to carry out realist research, it is important to integrate extensive and intensive research methods to inform the study. The two methods are complementary rather than competing. Extensive research is concerned with discovering common properties and general patterns, for example, what are the common patterns and distinguishing features of a population? The method generally takes the character of large-scale surveys, statistical analysis, formal questionnaires, or standardised interviews asking each respondent the same questions under controlled conditions, thus rendering comparison possible. While extensive methods are concerned with the context and empirical patterns, intensive methods are more concerned with how underlying causal processes work themselves out in a particular case or a limited number of cases. What has produced a particular change, and what did the agents actually do? The information concerns processes, activities, relations and episodes of events, rather than statistics concerning particular characteristics. The concrete method may take the form of a study of individual agents in their causal contexts, interactive interviews, ethnography or qualitative analysis. With such less formal, less standardised and more interactive kinds of interview, the researcher has a much better chance to learn from the respondents what the different circumstances mean for them. The respondents are not forced into an artificial, one-way mode of communication, in which they can only answer in terms of the conceptual grid given to them by the researcher.

The externalisation mechanism is analysed empirically in Chapter 4 by means of both extensive and intensive methods. The extensive part first analyses the global restructuring tendencies of TNCs and their repercussions on local Thai suppliers, following the framework of the global commodity chain perspective. The method of data collection has been to review literature on industrial development within the two industries, conduct interviews with key individuals in supporting institutes, and statistical data. Chapter 4 also contains a more intensive case study, which analyses the connection between the global strategies of lead firms and their inclination to externalise and transfer knowledge to local firms through the creation of linkages. The method used was to carry out interviews with the purchasing manager in charge of buying parts and components from local firms (and others) within the automotive industry, or, in the garment industry, with intermediate buying agencies in charge of finding local firms and providing them with orders. The subject of Chapter 5 is to present the empirical analysis of the socialisation process, thus contributing to knowledge-creation in Thai firms. The method was to carry out intensive interviews with the managers of Thai-owned firms within the two industries. The process of internalisation, which is presented in Chapter 6, analyses the extent to which Thai firms have been transformed. The intensive interviews with Thai firms also form the basis for the empirical validation of this chapter. However, in order to reveal the mechanism of internalisation, interviews were also conducted with various institutes concerned with the implementation of different quality and standardisation programmes in Thai automotive and garment firms.

The research strategy used in this study is the **case study**, or multiple case studies. This is concerned to analyse the way underlying causal processes work out in a particular case or a limited number of cases. The usefulness of the case study is not that it calculates frequencies, as in more quantitative, hypotheticaldeductive methods, but that it illuminates a particular set of decisions, processes or events, asking the why, how and with what result of a contemporary phenomenon. Certainly the ability to generalise case studies has been questioned. However, the present purpose is not to generalise according to population or universes or to test a clearly defined hypothesis, but to provide an insight into the workings of globalisation and to formulate and expand theories (See Yin, 1989: 21). Sayer (1992: 249) also argues that it is possible to generalise on the abstract level to a certain extent, but not on the concrete, analytical level. Using intensive concrete methods, for example qualitative interviews, concerning how a particular causal process works out in a particular case or a limited number of cases, there is no guarantee that the results will be representative. That is applies to generalisation. A generalisation is an approximate quantitative measure of the numbers of objects belonging to some class or a statement about certain common properties of objects. However, it is not an objective in critical realist research primarily because generalisations dehistoricise their objects, which are actually historically specific or culture bound. Although at the level of concrete events the results may be unique, in so far as intensive methods identify structures into which individuals are locked abstract knowledge of these may be more generally applicable. Analysing a case study provides one with more than knowledge about one small case, because this case is embedded in the wider society and is related to processes within and outside itself. Thus, being part of the whole, one case study should provide an insight into larger understandings.

Having collected the data through both extensive and intensive methods and reviewed them, the next challenge is to analyse them in relation to realist methodology. According to Sayer (1992: 236) a useful method with which to analyse qualitative data is **iterative abstraction**, which mediates between theory and practice, between the abstract and the concrete. This method is driven by a quest for theory by grounding realist theories of causal mechanisms in concrete phenomena (grounded theory), rather than by pure empiricism. If the theoretical framework is lost somewhere along the way, causal relations and tendencies between the empirical categories are also lost, and there is a danger of empiricism. Although causal categories may emerge from the data, relations among them cannot be 'read off' straight from the data, but must be abstracted in conjunction with substantive theorisation and immanent review. A combination of the methods of both abstraction and grounded theory is recommended, as this helps uncover the causal mechanisms of concrete phenomena through empirical research.

Thus, the realist method of theory construction is simultaneously deductive and inductive. On the one hand, a realist researcher must constantly resort to critical abstraction that is deductive in nature. On the other hand, this abstraction and subsequent theoretical construct should not determine the entirety of the concrete research, which should remain open and flexible. The role of the realist researcher is to achieve a harmonious synchronisation between deductive abstraction and the inductive grounding of generative mechanisms. The most practically feasible method of theorisation is an iterative process of abstractions in concrete data (Yeung, 1997). At the heart of this method is thus the iterative interplay of data collection and analysis, fulfilling Sayer's requirements to move repeatedly between the concrete and the abstract, between particular empirical cases and general theory.

In order to try to fulfil this recommendation in realist research, interview guides were first made on the basis of the theoretical framework and the aim of the study. Then interviews with various categories of respondents were carried out in order to observe actors' strategies in particular circumstances. In the process of analysing, the empirical data were first read off - or grounded on their own premises. That is, the data were arranged into the various categories which emerged from the interviews. The empirical material is presented on this very concrete conceptual level. The aim is to be open to all the kinds of information that emerged from the interviews, instead of confirming a hypothesis simply by checking the numbers of instances found, which provides no greater understanding of the specific conditions under which the events occurred.² To reach a state of interplay between theoretical concepts and empirical data, the causal mechanisms or determinants were identified as a result of the actual interplay between various actors and diverse conditions. A summary of the ways in which the mechanisms of externalisation, socialisation and internalisation respectively have been activated to produce the actual outcomes under the actual conditions is provided at the end of each empirical chapter. Sayer $(1992)^3$ warns that explanations as to which mechanisms produce certain events are always relatively incomplete, approximate and contestable. Any explanation, whether of natural or social phenomena, is incomplete, for the

² On the grounding of empirical data, see Turner (1981), Yeung (1997).

³ See Sayer (1992: 237) on the relationship between different kinds of research.

epistemological reason that all knowledge is revisable, but explanations of social phenomena are also incomplete, for the ontological reason that the objects of study are undergoing continuous historical, and not merely evolutionary change.

To avoid becoming guilty of empirical generalisation, the collected data are triangulated. That is, the final explanatory part (Chapter 7) analyses and reviews the various data and causal explanations according to how the various methods can be used to inform the study in order to develop a composite or triangulated outcome (Turner, 1981). The developments in the automotive and garment industries also complement and inform the final conclusions in revealing different facets of the industrial environment of Thai firms. The aim is to integrate the different components of knowledge creation and transformation in Thai firms, that is, to reveal the chief mechanisms of change and the conditions under which they have been activated. Where possible, the results are also compared with previous research on industrial development in the automotive and garment industries in Thailand. Furthermore, the aim is to establish a dialogue between the theoretical and empirical chapters on a more abstract level and to determine whether the theoretically developed concepts have any empirical relevance. It is hoped that the findings of the study will contribute to further theoretical development of the knowledge and learning literature. The next section describes how the theoretical framework developed here was applied to the particular context.

3. 3. From theoretical concepts to practical application

The three knowledge-conversion mechanisms have acted as important guidelines for the configuration of the various interview guides. This section concerns how the various analyses were structured. For an overview, the operationalisation of the analytical concepts is presented schematically in Table 3.1. In reality, however, not all the questions can be ordered according to strict categories. There are some overlaps, as some questions refer to more than one mechanism. The implementation of new machinery, for example, not only implies buying the machine, but also interaction in connection with information searches, installation and training. Thus, the empirical analysis does not, in the first instance, differentiate between tacit and explicit knowledge, since the same process of knowledge-creation might involve both dimensions. The implementation of new machinery not only implies explicit knowledge related to manuals and knowledge embedded in the machines, but also tacit knowledge connected with training employees how to operate, maintain and repair the machinery as embodied in the skills of individuals. Furthermore, the practical application of the theoretical concepts often implies that the latter have been translated into the everyday language used in the firms. Thus, the abstract theoretical concepts are not always reflected in the empirical presentation.

Externalisation	
Extensive analysis guided by the framework of the global commodity perspective.	The way global commodity chains are governed in the case of the garment and automotive industries in Thailand. The extent to which linkages are created between global actors and Thai firms, given the institutional context and changes in the global economic environment.
Intensive interview with global actors guided by the interorganisational and differentiated-network approaches to the analysis of TNC strategies.	Firm-internal network:The way the parent company co-ordinates the activities,localisation strategies, the position, autonomy and functionof the local unit.Firm-external network:The policy of the parent company towards externalisation.The extent to which outsourcing is exercised locally.The existence of appropriate local firms.
Socialisation	
Intensive interview with Thai owned firms: General issues.	The activities and size of the firm, the position of the person interviewed and length of employment.
Search for knowledge, information and production technology.	Interaction with other actions in relation to how firms obtain initial knowledge Interaction with other actors in relation to the search for information and technology.
Vertical networks Based on intensive interviews	<u>The exchange process:</u> The development of the relationship in terms of product exchange, information exchange, and the trust and power
with Thai firms and global lead firms	<u>The adaptation process</u> : Patterns of communication, and the extent of social interaction and adaptation of organisational structures. Upgrading related to <u>assistance and requirements</u> of customers.
Horizontal relationships	The importance of networks with other firms, friends and families for knowledge creation. Information and technology search. The extent to which such networks emerges out of social or functional purpose. Points of interaction. The importance of extra-firm networks in terms of the provision of information, skilled labour, technology and knowledge.
Internalisation	
Intensive interviews with Thai firms Prior knowledge	Initial knowledge through education and experience. Operational capacities. Minor capacities for change.
Organisational structure	Ownership and control structures. History of the firm.
Motivation, visions and commitment	Future strategies, expectations, and visions. Concrete restructuring plans.
Intensive interviews with supporting institutions	Experience with the implementation of process technology in Thai garment and automotive firms.

 Table 3.1 The operationalisation of analytical concepts

 Externalisation

The first mechanism to be uncovered is **externalisation**, which is dealt with analytically and empirically in Chapter 4. This chapter has two main sections. The first section focuses on how the automotive and garment industries have developed, how Thai firms have been integrated into this industrial development, and how links have been created to foreign lead firms. This section mainly takes the form of industrial structure analysis, based on Gereffi's focus on the restructuring tendencies of global lead firms on a global scale, and the pressures, incentives and potentials this holds for local firms linked to these global lead firms through production chains. Restructuring tendencies, and the extent to which global lead firms co-operate with local firms, are regarded as a consequence of global changes related to competition, technological change and liberalisation, as well as to the specific institutional conditions prevailing in Thailand. That is, industrial development within the garment and automotive industries in Thailand is considered on a broader basis than in Gereffi's analysis in that it takes the institutional framework of the industries into account. All in all, this section is very comprehensive.

First, global restructuring tendencies within the two industries are described, emphasising the supplier strategies of global lead firms. Secondly, consideration is given to how these tendencies have been established, given the particular circumstances of the Thai context. Of particular importance in this regard is how Thai firms have become linked to global lead firms. The main method of data collection for this first section of Chapter 4 is **extensive**. That is, it is based on secondary sources of literature regarding developments within the garment and automotive industries in general and in Thailand in particular. Furthermore, interviews with respondents from various institutes in Thailand whose aim is to support local garment and automotive suppliers were carried out.⁴ The main insight obtained from these interviews was an understanding of the production structure of Thai firms, the problems faced by Thai suppliers, and access to the 'language of the firms' in terms of production and chain management. This was helpful in guiding further research, especially in drawing up the interview guides at the level of the firm.

The second section of Chapter 4 goes into the actual supplier strategies of the global lead firms, which have linkages with Thai suppliers within the automotive and garment industries. A more **intensive** method was applied to this section, the aim of which was to establish the ability and willingness to transfer knowledge to Thai suppliers, and the kinds of knowledge that were actually transferred. For this purpose, interviews were carried out with respondents from global lead firms in Thailand. To be more specific, interviews were conducted with representatives of seven automotive assemblers in Thailand and with three buying agencies within the garment industry, representing the strategies of the global buyers.⁵ The interview was guided by

⁴ For a list of the supporting institutes interviewed, see Appendix 1.

⁵ See Appendix 2 for the interview guide with global lead firms.

the inter-organisational and differentiated network approach to the study of TNCs, which regards the strategies of TNCs as being dependent on the social and institutional structure of the environment in which the TNC is operating and on the corporate management of the parent company. According to this framework, the supplier strategies and practices of global lead firms are seen as a product of its internal network in terms of different dimensions, such as how the parent company co-ordinates activities and localisation strategies, and the position, autonomy and function of the local unit. In order to cover these dimensions, the representatives of global lead firms were interviewed about the overall production and investment structure of the company, the reason for investing in Thailand, the degree to which decisions, especially regarding purchasing strategies, are delegated to the Thai unit, and the extent to which the subsidiary is embedded in both Thai production structures and society at large. Furthermore, the dimensions of the external network – that is, the company's relationships with various actors – also influence supplier strategies. Such dimensions include the policy of the parent company towards externalisation, the extent to which outsourcing is exercised locally, and the existence of suitable local firms. Thus the representatives were asked about their supplier strategies and rates of localisation. According to Dicken et al. (1994), the supplier strategy is determined first and foremost by the existence of suitable local firms with which the subsidiary can interact. In the automotive industry, the procurement strategy of assemblers is determined by the choice between importation and local procurement, based on a comparison between local and import prices, and taking into account product quality and transportation costs. Next, the assemblers have to choose whether they want to make the parts in house or to outsource as much as possible. This is determined largely by the manufacturing structure of the parent company and by the price, delivery and especially quality standards of local suppliers (Buranathanung, 1997). Representatives of global lead firms were also interviewed about how relationships with local firms are initiated, their attitude towards the transfer of assistance to local firms, and the extent to which they have changed supplier strategies in relation to the crisis or to changes to regulatory and institutional frameworks. From an embeddedness perspective, we should expect to see great variations in the supplier and investment strategies of global lead firms according to home country, reasons for the investment, the position and autonomy of the local unit in relation to the group in general, and the extent to which the firm is pursuing a global sourcing or local procurement strategy. Such differences are regarded as being crucial to the extent to which knowledge is being externalised from global firms and transferred to local suppliers.

Socialisation

The next mechanism for knowledge development in Thai firms is the **socialisation** process. The generation of knowledge through socialisation is viewed as resulting from the ability to tap into knowledge networks, the creation of close links with customers, suppliers and other actors, and the quality of communication channels between actors participating in the learning process. It is thus essential first to examine the networks that Thai firms might be embedded in and which therefore might influence the action and practices of the firms. With respect to the present study, three forms of network can be identified,⁶ which are used to structure the empirical presentation.

First, Thai firms are embedded in and influenced by networks composed of firms related by the exchange of goods and services or the **vertical network**. In the present case, Thai firms are linked to global lead firms through the function they perform as subcontractors of parts or finished goods. The structure of the relationships between global lead firms and Thai firms is regarded as being especially crucial to knowledge creation in Thai firms, as firms in developing countries depend upon external sources of knowledge.

Secondly, Thai firms are bound together with other firms through horizontal networks, which may be formed for both formal and informal purposes. The focus is on how economic action and organisation are mediated through and moulded by social relationships that have evolved historically. The structure of such inter-firm relationships, as reflected in the history of the relationships, the power structure and degrees of trust and mutuality, have had considerable implications for the economic behaviour and organisation of firms. In many countries and regions, such as Japan, Latin America, Pakistan and East Asia, industrial development is mediated through various kinds of social business network (Granovetter, 1994). As shown in Chapter 1, overseas Chinese networks characterise business systems in large parts of East and Southeast Asia, including Thailand. Activities in the overseas Chinese networks are embedded in social relations, which are highly particularistic or organised utilising family ties. The main function of social networks is to encourage personal trust, which then encourages relations of dependency, co-operation, loyalty and relative stability (Thrift and Olds, 1996). In this perspective, the emerging networks and the process of building trust are commonly nourished by prior normative or associational commitments, as in the case of relationships between friends and families, or between members of clan or language groups. A particular type of horizontal network in which Thai firms are embedded is the extra-firm network. Unlike other kinds of networks, where the individual actors are engaged in direct interaction with other actors, this perspective focuses on the institutional context, which influences economic action in various ways. In relation to the creation of knowledge in Thai firms, this dimension focuses on the 'institutional incentive structure', which consists of present-day institutions, such as state regulation and labour, technology and

⁶ Inspired by Jeong & Wad 1999.

financial factor markets, as well as supporting institutions at the national level that are crucial for the capacity of firms to upgrade and innovate.

The aim of Chapter 5 is thus to analyse empirically the process of interactive learning or socialisation which involves the linkages of Thai firms with global and local actors, as well as with the technological infrastructure, associations etc. The main questions to ask in this regard is who local firms co-operate with and about what they do so, how this co-operation is co-ordinated, and the kind of knowledge that is transferred. As became evident in Chapter 2, knowledge creation and upgrading in Thai firms as a result of linkages with other actors depends not only on the character of the exchange of goods, but also on the structure of the relationships between the actors involved. Because of their different structure, aim and content, it is expected that networks with a high social content – for example, those based on prolonged social interaction, friendship or relations of kinship – differ from networks, which are strictly functionally and based more on professional considerations in the extent to which they encourage knowledge creation and learning. The generation of a set of common experiences, expectations and beliefs serves as the context for the network, while at the same time providing a secure playground for transactions and placing constraints on their behaviour. Consequently, the specific network that firms are embedded in is of major importance in understanding their behaviour and performance, as well as in estimating their potential for knowledge creation and upgrading. As the development of social content in a relationship cannot be understood from the analysis of a single transaction alone, the focus is on the process of organising the relationships.

The point of departure for the interview guide is thus the framework for analysing relationships developed by, among others, Forsgren et al. (1995), which apply two interrelated processes: the **exchange of products,** and the development of the **social context** (adaptation). The interview guide that was developed was used to analyse the relationship between Thai-owned firms and their customers (vertical networks), friends and business partners (horizontal networks) and extra-firm networks.⁷ In all, representatives of six Thai-owned firms in the automotive and garment industries respectively were interviewed. The same interview guide was used in examining the internalisation mechanism in knowledge creation.⁸ The following section discusses the categories used in analysing the process of socialisation.

The first group of questions concern **general issues**, such as the activities and size of the firm, the position of the person interviewed, his or her period of employment etc. These questions are not necessarily represented in the empirical part, but they proved useful in informing the researcher about the

⁷ See Appendix 3.

⁸ The questions in the interview guide are organised so that the interviews flow in a logical way, and not necessarily according to the groups of questions presented in the following discussion or to the mechanisms of socialisation and internalisation.

nature of the firm and in focusing attention on the formulation of questions and on what questions were relevant and of particular importance. It also provided an idea about the level of knowledge of the person interviewed concerning the strategies of the firm.

The next group of questions focuses on the more intangible dimensions of the firm's practices, such as social capacities and how practices have been moulded by vertical and horizontal networks with other firms and organisations acting as a framework for the transfer of knowledge. First, the interaction of Thai firms with other actors in the search for information and production technology was analysed. Vertical relationships⁹ with customers were analysed next, guided by the interrelated processes of exchange and adaptation. The focus of the exchange process was on how the relationship was established, its subsequent development in terms of product and information exchange, and changes in the variety of products manufactured and the frequency of delivery. Regarding the exchange of goods, questions were also asked about quality and cost, and whether there were any problems in fulfilling customers' requirements in this regard. The process of launching a new product was also analysed, since this involves an intensive period of interaction regarding the exchange of information, for example, in relation to technological knowledge of products and processing equipment, including engineering blueprints and designs, material specifications, and quality assurance criteria (Ernst and Kim, 2002).

Social exchange was analysed in terms of how trust has been built up and maintained between firms, the form of trust and cases of mistrust, and whether the supplier has made any investments in order to serve a particular customer. The trust and power structures are the most important indicators of the extent to which mutual orientation has been consolidated, giving rise to the development of a common framework for understanding technical and social matters. Such issues were revealed through questions about people's personal experiences of how the relationships had developed thus far, the propensity to trust particular types of individuals, expectations concerning the future behaviour of customers (in relation to expected changes in the business environment as such), and experiences of bad behaviour leading to distrust. Asymmetries in the relationship were revealed through questions about price negotiations. Regarding cross-cultural relationships, one interesting issue in connection with the development of mutual understanding was whether it proved possible to overcome cultural and national differences between the parties through a longtermed process of socialisation. Besides the cultural issue, questions were asked concerning whether 'distance' in terms of location influences the socialisation process and the transfer of knowledge.

⁹ The interviews with global lead firms regarding the development of and framework for their relationships with Thai suppliers have been included as a source of data collection for this section.

The adaptation process analyses the atmosphere of the relationship and its connections with the patterns of communication between the firms and the extent and form of social interaction. The process of adaptation also relates to the length of the relationships andhow emergent problems are solved. The structure and history of the relationship is very influential in assessing the upgrading and learning potential. To reveal the extent of social exchange, questions were asked about the time perspective of the relationship and the character of the social exchange, which acts as a framework for how practices, norms and mutual expectations are shaped within the relationships and for the related transfer of knowledge and assistance. In more concrete terms, questions were asked about the information exchange between the partners, the main line of communication, the frequency of interactions, the extent to which the parties were committed to each other, and the social content of the relationship. A social framework is best consolidated through personal, social interactions, for example, when engineers and the managers of local suppliers are invited by the customer to observe how actual production systems work and to receive systematic training, or when the customer sends engineers to solve problems that have arisen in the manufacturing system of the suppliers, to control product quality, or to ensure that the supplier meets the technical specifications (Ernst and Kim, 2001). Besides social adaptation, the firms must also adapt to the administrative routines, organisational planning and delivery systems for the relationship to run smoothly. In this regard, the firms were asked whether they had implemented new organisational systems in order to adjust to their customers' production systems, for example, such as just-in-time systems, and whether this organisational adaptation has been successfully.

Finally, the upgrading activities of the firms were analysed in relation to the level of **assistance from and requirements of** the customers. Questions were asked about the involvement of customers in the upgrading process. Do customers help with the upgrading process mainly through sophisticated demands and requests regarding the quality and cost structures, or do they assist the suppliers more directly in any way in upgrading activities, for example, through training programmes? What kinds of knowledge are transferred in this way?

Horizontal networks were analysed with the aim of examining their importance. Are horizontal networks involving friends and firms in the same line of business important for the survival of firms? Are they more important now than at the time the firm was founded? Do firms co-operate with each other by building on prior relationships originating through friendship, kinship, associational solidarity or ties within Chinese community? What is the extent of information and knowledge exchange? Are relationships purely informal, or is there any evidence of functional co-operation in, for example, product development? What is the point of interaction? For example, are associations important in generating horizontal networks among firms? The social development of the relationships was analysed along the same lines as the vertical relationships, except for questions about the importance for social exchange of competition among firms in the same business. Finally the respondents were asked about **extra-firm networks** in order to analyse the importance of the institutional context for firms. The respondents were mainly asked about the role of the supporting environment in terms of the provision of information, skilled labour, technology and knowledge, and other kind of support. Furthermore, how recent changes in the environment, such as increased liberalisation and the economic crisis, have effected firms' strategies was analysed, as well as the role of formal institutions in this regard. Questions concerning extra-firm networks built upon the knowledge obtained of the role of associations and national and sectoral support institutions in upgrading the local automotive and garment manufacturers that will be discussed in Chapter 5.

Internalisation

Chapter 6 presents the empirical results of the **internalisation mechanism**. Internalisation is the process whereby knowledge becomes embedded in the production processes and management systems that guide the overall direction of the firm and contribute to the firm-specific competencies that act as a basis for the firm's competitive advantage. If the knowledge obtained from external sources is successfully distributed throughout the organisation and adapted to the knowledge base, the practices and routines that are being followed will most likely be transformed. Transformation is thus the key indicator of learning. The internalisation process refers to many aspects of a firm's behaviour. As noted in the theoretical chapter, the level and diversity of the knowledge that has already been accumulated in the firm, the organisational structure and routines followed in terms of communication and co-ordination between functions, the decision-making structure, regular meetings and jobrotation etc. will all have a major effect on the firm's internalisation capacity or rate of learning. Also vital to the internalisation process are the motivation and commitment of the members of the firm, the corporate culture, leadership and the formulation of a knowledge vision guiding investments and strategies. Preexisting structures may act as barriers to learning, since it is difficult to unlearn habits and routines embedded in the organisation, or because of a lack of investment in technology or expertise early on. Thus, the process of absorbing new knowledge raises a wide set of empirical questions relating to the organisation and production structures, investment, level of expertise, and whether a transformation has taken place or existing practices have been reproduced that constitute a barrier to learning. To clarify these issues, the representatives of the automotive and garment firms were interviewed about the following categories of questions.¹⁰

¹⁰ See Appendix 3.

First they were asked whether the **initial knowledge** necessary to set up a firm had been gained through education or through working experience. In this regard, the importance of networks involving friends and kin in the financing of the firm and its knowledge accumulation was analysed. The next set of questions concerned the **ownership and control structure** of the firm in order to determine whether such pre-existing structures worked as a barrier to the diffusion of knowledge in the firm or, in other ways, to the transformation of practices and strategies. These questions mainly concerned the routines and organisation of the firm, its reliance on family members, the influence of Chinese strategies on management practices, and the extent to which such practices have been changed in relation to, for example, generational or environmental changes.

Questions relating to investments in existing knowledge and the accumulation of knowledge in terms of the skills and education of the members of the organisation were the theme of the third group of questions. To analyse this category, the questions were inspired by the notion of product capabilities (Lall, 1999; Kamaruding, 1994). First, production or operational capabilities, which refer to knowledge embedded in machines and the knowledge and skills used in their operation, were analysed. Types of activities in this regard involved production engineering, the repair and maintenance of physical capital, and shop-floor experience (Ernst et al., 1998: 18). In concrete terms, the respondents were questioned about the level of technology in the firm. Had they introduced new machinery, if so of what kind, and what level of capitalintensity had they reached? To supplement these technical aspects, questions were asked about how information about the best machinery was sought, whether the skill structure had changed in relation to the investment, and whether the firm was able to maintain and repair the machinery in house, or must call in outside assistance in this regard. The second dimension of production capabilities analysed is minor change capabilities, that is, the ability of firms to improve and continuously adapt its products and processes. It refers to the vast area of adaptive engineering and organisational adjustment involved in the incremental upgrading of process technology and product design (ibid. 22), which is primarily human embodied technology. To cover this aspect, respondents were asked how the firm obtained the initial technological and managerial know-how to firmest itself up, and what steps have been taken to build on this initial knowledge. For analytical purposes, the category of product capabilities is divided into a technological and a human dimension. The latter dimension also entails questions about the general level of skills and expertise, problems in acquiring qualified personnel, and problems relating to the high turnover rate and the deliberate development of skills and knowledge through training programmes and research. The latter dimension also refers to the implementation of process technology, such as quality control systems and ISO standards, which turned out to be an important area of upgrading in many firms, whose customers are increasingly demanding official certificates as proof of the mastery of quality, management etc. Process

upgrading became very important in many interviews, as most firms and their supporting institutions were very occupied with this issue at the time of interviewing. This was therefore the most visible example of improvement and training. The underlying question in relation to product capabilities is whether the firm acquired the ability to develop the technological and human embodied know-how further and to use it in other areas of the firm.

Finally, respondents were interviewed about how they have confronted the challenges facing the organisation in relation to changes in the competitive environment and restructuring tendencies on the part of the global lead firms. The purpose of these questions was to obtain a better picture of how management or the owner understands the competitive situation, market situation and demands of the firm's customers, as well as its willingness to invest and take risks. This includes more abstract questions related to **future strategies, expectations and visions,** as well as concrete **restructuring plans** and the kinds of solution that are applied in order to solve the problems that arise.

In general, it is problematic to ask firms directly about problems concerning the internalisation mechanism because questions relating to how the owner manages his company might sound critical in the interview situation. In order to reach a proper understanding of the organisational structure and distribution of knowledge between different function and levels, interviews with employees at all levels should ideally be included. This would be a very comprehensive task, and it is doubtful whether any company owner would allow the time to do this. Instead the process of internalising new knowledge, and how the organisational structure and pre-existing structures worked in this regard, were revealed through interviews in institutions with experience of introducing processing technology in Thai garment and automotive firms.¹¹ Although the Thai Automotive Institute (TAI) has introduced productivity and management programmes in private firms, it concentrates on the implementation of QS 9000 standards, for which firms are subsidised by the government. Regarding technical knowledge and training in management programmes, Japanese experts are called in, being provided free of charge by JICA and JETRO [spell these out?]. At the time of writing, 25 such experts were active, generally retired managing directors or engineers from automotive makers. The Thai Garment Development Foundation (TGDF) is the training division of the Thai Garment Manufacturers Association. The TGDF is responsible for the implementation of ISO 9000 and the five S's programme. To implement the ISO, garment firms can apply for funding from the government to use the TGDF as a consultant. The consultants themselves have learned about ISO by joining certain projects and through experience and self-learning. The division does not use experts from outside the organisation. The Department of

¹¹ Thus, the experience of the institutes about how firms absorb the programmes refers to the industries in more general terms than is the case in the rest of Chapter 6, and do not necessarily refer to the companies in the survey, which have a relatively high status among Thai firms.

Engineering at Kasetsart University (DEKU) also has a unit that acts as a consultant for private companies with government support. The Department generally arranges seminars, which have also been attached to the Toyota Co-operation Club to act as a consultant in supporting suppliers in reducing costs and with quality improvement programmes. All three institutes have substantial experience of the implementation of various programmes in Thai firms. The implementation of ISO or QS [spell out both?] systems, for example, takes around one year and involves about ten visits from institute staff to prepare, train and evaluate implementation. Finally the systems are assessed and approved by a certification body.

3.4 From interview to interpretation

Fieldwork in progress

This section provides a brief description of the method used in contacting, selecting and interviewing representatives of firms and institutions, and the problems encountered in the process. In selecting local firm for interviews, it was not intended that the local Thai firms in the survey should be **representative** of the whole group of automotive firms and garment manufacturers in Thailand. Instead, selection was based on firms' relationships with global lead firms within the two industries, building on Gereffi's assumption about how firms in developing countries are linked to global production structures. That is, the local Thai automotives firms in the survey were chosen because they perform a role as first-tier suppliers to global automotive assemblers, the Thai garment firms because they were exporters of ready-made garments. Otherwise, the only criterion was that firms should be a hundred percent owned by Thais, so that the influence of globalisation on local production structures could be assessed. In the case of joint ventures, production is often taken care of by the foreign partner with technology owned by its parent company, while the Thai partner often takes care of the administrative aspects of running a company.

Having specified the **category of firms** for the interviews, information about the firms was gathered from various directories, from literature about the development of the two industries in Thailand, the *Bangkok Post*, visits to exhibitions etc., in order to accumulate as much prior knowledge about the firms as possible, and preferably the name of a suitable contact. Next the firms were **contacted** by fax explaining the purpose of the interview and the main categories of questions that would be asked, following this up with a subsequent phone call. It proved to be quite easy to find representatives of the automotive assemblers and the various supporting institutions to interview, as these organisations devote many resources to information about their activities. It was more difficult to contact the buying agencies within the garment industry, as the approach was made at a time of the year when buyers visit

Thailand to talk with agencies and the main suppliers: it was therefore hard for the agencies to find any time to be interviewed. Making contact with Thai firms proved to be a very time-consuming process: managing directors were frequently very difficult to reach, either being out, in the middle of a meeting or 'walking the factory', and it often took many phone calls every day for weeks to arrange an interview. Often, the addresses, fax numbers etc. listed in directories proved to be wrong, and one interview was actually arranged with a company producing wigs before the mistake was discovered. Initially a local assistant was hired to take care of contacting firms, as their receptionists often only speak Thai, but they quickly gave him the brush off. It was not so easy to brush off a foreigner, and in many instances the title of Ph.D. candidate actually opened doors, especially in cases where the managing director had a Ph.D. degree himself. The individuals ultimately interviewed in Thai firms were most often the managing director or other leading members of the owning family: in only one case was the representative a professional manager. Private Thai firms were promised anonymity in the interviewing.

The result of the contacting process was appointments with representatives of twelve institutes and associations supporting the two industries, the purchasing managers of seven auto-assemblers located in Thailand, and personnel from three buying agencies. These interviews were all conducted in the spring of 2000. The seven assemblers can be said to represent a wide range of those active in Thailand, while the number of garment-buying agencies is somewhat limited, but still of use in providing an insight into the variety of strategies used in dealing with local suppliers in the garment industry. The next fieldwork period was conducted in the spring 2001 and consisted in interviewing the managers of six garment and six automotive manufacturers respectively, as well as three institutes working on implementing process upgrading systems in Thai firms. The Thai automotive firms that were interviewed represent a large proportion of those firms that survived the crisis relatively intact – that is, they were still Thai, still first-tier suppliers and still automotive manufacturers. Practically all the firms on the list of possible automotive firms were contacted (a list of suppliers handed out by some of the assemblers proved to be very helpful), but many were in the middle of a restructuring period, being taken over or closing down, and were not willing to be interviewed. Unlike the automotive companies, the garment firms cannot be said to be representative of their sector in Thailand, as only the largest, export-oriented firms belong to the associations and are thus listed in their directories. The firms chosen for interview were those who produced relatively sophisticated clothes, such as jackets and children's wear for Western markets, as opposed to firms producing T-shirts for non-quota markets.

Both garment and automotives firm can thus be said to represent a **critical case** in being among the most successful firms: the garment firms, in being relatively large and export-oriented manufacturers of finished garments; and the automotive firms, in being among the relatively few first-tier, Thai-owned suppliers to survive the economic crisis. A critical case in this connection refers to probabilities in a negative sense. That is, if the relatively successful firm in the case study did not succeed in implementing knowledge obtained from foreign sources and use it to upgrade products, processes and the organisational structure, none or very few other firms would have been able to upgrade, given their limited access to foreign sources of knowledge and their more limited resources (see Flyvbjerg, 1991: 151).

Interviews with global lead firms and local Thai suppliers concerning decision-making strategies, processes, events and relationships were loosely structured in order to establish how the person interviewed experienced or acted in certain situations in relation to the three underlying causal mechanisms. Questions were asked in a clear fashion without a preconceived opinion, thus allowing for open-ended answers covering interesting topics which might arise in relation to the particular subject. Probing was used as a method in cases where the person interviewed was silent about an issue or did not have an immediate answer. That is, various ways of acting were suggested based on the accumulation of knowledge about strategies in the automotive or garment industry (see Appendixes 2 and 3). Some issues were commonly raised, as a strategy proved to be the same in all firms, for example, how a relationship between a customer and supplier was initiated. As the aim was not to make a representative sample but instead to gain some depth of understanding, interviews could vary, as it was not necessary to ask all the companies the same relatively trivial questions. The limited time available was used instead to go into details about themes about which there was less clarity, or to talk about issues that the person interviewed appeared especially interested in. Another method used in interviews with private firms was observation in connection with 'walks around the factory', which were sometime suggested. This was particular useful in obtaining information about the technical aspects of the production process and it provided an opportunity to ask questions clarifying the nature of both products and processes. Interviews with key individuals in institutes or trade associations were usually quite non-standardized, as a new interview guide was made for each interview, specifying the important issues that the person interviewed was meant to cover.

Local assistants were not used for translation during the first period of fieldwork, as the representatives of global lead firms (the purchasing manager) might be of Thai nationality or Japanese or English. The interviews with representatives of global lead firms and Thai associations and supporting institutions were thus conducted in English, which only proved to be a problem in one or two cases, because the person being interviewed did not know English very well. However, as in the case with Ford it was evident that it was an advantage for the respondent to know English well and thus to be able to talk in detail about the various issues involved. In the next fieldwork period, local assistants were used for translation in interviewing Thai firms and institutions, as well as to transcript tapes. They were given instructions

concerning the goals of the research, and concepts were explained. Again, it proved to be an advantage when respondents were allowed to answer in their native language, but many representatives of Thai firms opted to speak in English in order to dispense with a translation.

Overall, the **dialogue** with the various representatives took place on the basis of equality. Nonetheless, respondents were naturally much more knowledgeable about their situation and the workings of the industry. The role of the researcher was therefore to try and understand the issues being examined and to obtain the information required to answer the questions posed by the research. Some representatives were very eager to discuss particular problems, especially issues that had a severe impact on the survival of the firm, for example the financial crisis. Others, on the other hand, found such issues too difficult to deal with or discuss, and chose to focus on the solutions instead. In general, however, the questions were not tactless or referred to sensitive or very personal issues, and no special arrangements had to be made in this regard. The **data** from the interviews were taped and transcribed into text, after which they were labelled and re-organised into relevant categories, according to underlying mechanisms analysed in accordance with the method recommended by Turner (1981) and Yeung (1997). The various but complementary methods of extensive and intensive research and textual and experiential data, which revealed different aspects of the research questions, have been used to validate the results, in a process of triangulation. The logic of triangulation rests on the fallibility of any single method in bringing together different approaches with a common purpose to offer a deeper insight (Yeung, 2003). The interviews with representatives of supporting institutions, for example, have not been used directly in the empirical presentation to any great extent, but interviewing multiple observers about the same phenomenon have been used to question and clarify the results. An alternative type of triangulation, which has been applied to this study where the data collected has allowed, is to compare and contrast different findings addressing the same phenomenon.¹²

Problems encountered

However, some issues proved **problematic** to analyse. The **supporting environment** for the upgrading of Thai firms formed a very comprehensive part of the research. It has been argued that formal and informal institutions are very influential in respect of the behaviour of private firms according to the theoretical framework, which in general focuses on analysing aggregate levels of interaction such as national business systems (Whitley, 1992), the national system of production (Hollingworth and Boyer, 1997) and national innovation systems (Lundvall, 1992). However, in the intensive interviews, the national supporting framework did not prove to be very important to the firms, as private–public co-operation and the supporting role of national institutions

¹² See Yeung (2003: 455) for an elaboration of the various forms of triangulation.

played a very limited role in all areas of upgrading. Thus, the empirical part focuses mainly on the more informal, social institutions, which support the learning process in and between firms by acting as guidelines for economic behaviour. But, even if the importance of the institutional framework in terms of learning and upgrading is not evident in the interviews with Thai firms, the industrial policy of the government and the factors markets in terms of provision of capital, infrastructure, a skilled work force and so on have without doubt been important elements in firms' strategic decision-making. The institutional framework, which influences firms on the macroeconomic level, is therefore, presented in Appendix 4, which is inspired by Lall's (1999) incentive structure framework. Related to the institutional context, the notion of local in this study is a matter of the relational and of the social embeddedness of relationships, rather than territorially defined assets or institutional embeddedness. That is, local does not refer to a certain area, such as national or local industrial districts, but to how global processes influence the performance, action and transformation of local Thai firms in networks.¹³ Downstream vertical linkages that Thai firms have with the suppliers of various inputs also proved to be unimportant to the learning process. Such linkages are therefore not analysed in the empirical part.

The **notion of the network** was another problematic of the analysis, as it was very difficult to obtain detailed and insightful information about horizontal networks, these being taken for granted rather than being subject to attentive reflection. Thus the answer to questions about networks was often very concise, along the lines of, 'Yes, we know everybody', and 'We help each other with everything'. In a Thai context, the term 'network', used with reference to relationships formed with a functional purpose, for example, in order to cooperate in product development, also proved to be indistinct. Instead, the term 'connection', in the meaning of knowing someone, made a lot more sense to most people, since representatives of Thai firms prefer to co-operate with people they already know on a more informal basis. Contacts with other firms, institutions, politicians, friends and family are more important for the survival of a firm than formal networks. What matters is whom you know, as the representative of DEKU explained: 'we have the term "connection", but not "networking". It is different. It is totally different. Connection means, "I know you"...very much connection rather than networking. It should be networking'. Consequently, whenever the term 'network' was used in the questionnaire, its meaning was not always understood, because co-operation between firms is more informal and personal. Besides the problems mentioned above, it was very difficult to cover all the issues with the representatives of local Thai firms during the two to four hours available for the interview. As already mentioned, this problem was solved by focusing on the issues that were documented the least in the previous interviews.

¹³ However, the siting of the garment and automotive industries is restricted to certain areas or industrial estates, the location of which have shifted according to the incentive structure and the provision of infrastructure.
Finally, a note is in order concerning the **time perspective** of the analysis. The actual interviews and other methods of data collection were conducted in two periods, in spring 2000 and spring 2001. The interviews focus on firm's strategies at the time of interviewing. However, the purpose of the analysis is to detect the transformation in practices and strategies by referring to the ongoing process of learning in Thai firm. Consequently, the interviews also refer to firms' founding strategies and how they initially obtained finance and knowledge, as well as to the various changes which have been made in relation to the product structure and technological process, as well as to changes in the environment. The crisis of 1997 in particular, and the subsequent changes in the regulatory environment, which greatly influenced the strategies of Thai firms from the beginning of the 1990s, are important causal elements of changes in Thai firms. The results of empirical analysis are presented in Chapters 4 to 6.

Chapter Four

The Externalisation of Knowledge

Introduction

The overall aim of this chapter is to **analyse the ability of global lead firms to externalise knowledge to local Thai firms mediated by supplier networks**. This is regarded as a consequence of global restructuring trends related to competition, technological change and liberalisation and specific institutional conditions in the automotive and garment industries in Thailand.¹ The extent to which knowledge is transferred in industrial networks also depends upon the specific corporate configuration of the transnational corporations and the production and operational **capabilit**ies of local firms.

The chapter consists of four sections. The aim of the first section is to analyse how global production chains governing the automotive and garment industries are configured on a global scale. TNCs are regarded as being very important actors in the process of globalisation and the most important foreign mediator in relation to knowledge creation and strategic decision-making in local firms. However, TNCs are in a process of constantly **restructuring their activities on a global scale**, and the resulting organisational patterns, strategies and specific character of the global lead firms will have a strong bearing on their propensities to transfer knowledge.

In the second section, how this restructuring process is exposing Thai firms in global production chains to various transformational pressures and influencing their potential to upgrade and learn is analysed. The theoretical reference for the analysis is the global commodity chain perspective, but it is not the intention to analyse automotive and garment chains from beginning to end, as this would involve thousand of firms and multiple localities. Rather, the perspective will be used as an analytical tool to **identify global and local actors and distinguish important differences between automotive and garments industries** in a Thai setting.

Section three examines more closely the connection between Thailand's integration into the global economy and the opportunities for knowledge creation in Thai firms. This is achieved through an **intensive analysis** of the specific strategies of global lead firms engaged with local Thai firms through supplier arrangements. Using the embedded perspective as the theoretical framework, semi-structured interviews were carried out with automobile

¹ However, the focus in the chapter is on the level of the firms, the institutional structure only being mentioned when it directly influences their strategies. See Appendix 4 for an overview of the institutional incentives and barriers that influence the transformation and upgrading of Thai firms.

assemblers and garment-buying agencies located in Thailand in order to determine how and **to what extent knowledge is being externalised from global lead firms and transferred to local firms**. Finally, the strategies of lead firms within the automotive and garment industries and their **potential to externalise and transfer knowledge to local firms** is summarised in section four, which also relates these findings to the initial assumptions emerging from the global commodity chain perspective.

4.1 Global automotive and garment chains

As already mentioned, the global commodity perspective regards governance structures as the main dimension that determines how lead firms co-ordinate the individual links in the commodity chain and how developing countries are integrated into global production networks. The central characteristics of the different types of governance in relation to automobile and garment production in Thailand are illustrated schematically in Table 4.1. This framework will be applied in what follows in order to analyse how global production networks within automobile and garment industries are being restructured internationally.

	Automotive	Garment	
Governance structure	Producer-driven	Buyer-driven	
Industry characteristics	Standardised mass-	Flexible. Low	
	production. Technology- and	technology and labour-	
	capital intensive	intensive	
Main controlling firm	Industrial capital –	Commercial capital	
	transnational corporations	retailers, big brand	
		names	
Core competencies	R&D and production	Design and marketing	
Value-added activities	At the point of production	At buyer or retailer level	
Ownership of	Transnational firms	Local firms in	
manufacturing activities		developing countries	
Role manufacturers in	International subcontractors	Original equipment	
developing countries		manufacturers	
Barriers to entry	High	Low	
Degree of centralisation	Centralised to take advantage	Decentralised to take	
	of location advantages	advantage of low costs	
Role of the government in	Interventionist ISI strategy	Non-interventionist	
developing countries		EOI-strategy	

Table 4.1 Characteristics of automobile and garment chains. Based on Table 1 in Gereffi 1999a

Global restructuring of the automotive industry

Automobile manufacturing is the world's largest manufacturing activity, with about seventy million new vehicles being produced each year. The industry is scale-intensive and subject to rapid changes in technology and customer tastes. The industry's activities are dispersed globally to a wide range of localities, but dominated by relatively few transnational corporations (Tyndall, 2001). Nevertheless, the automobile industry enjoys strong potential for the generation of linkages, as a car consists of thousands of parts, which is why many developing countries have identified the automobile industry as a potential strategic engine of industrial growth. However, the industry also confronts newcomers with enormous barriers to entry. Production strategies have been restructured radically within the last couple of decades, with an alleged shift from 'Fordist' to 'lean' production,² a boom in international mergers and alliances, and the development of new production sites. These changes are presented below with an emphasis on changes in the co-ordination of the supply chain and the opportunities and challenges of global restructuring for firms in developing countries.

As is generally recognised, the automobile industry was driven for more than fifty years by a system of mass-production invented and developed by Henry Ford at the beginning of the twentieth century. The innovation that made **Ford's production system** more successful than his competitors was first and foremost elimination of the skilled craft-worker. This was achieved by using the same gauging or tooling system throughout the manufacturing process, allowing the assembler to perform one single task instead of, as before, fitting and assembling a large part of the car himself. Ford's next step was to introduce the moving assembly line, which spared workers from moving from task to task. He also developed dedicated machinery, which could only do one task at the time, but could be operated by unskilled labour simply by pushing a button, thus dramatically reduced the set-up time. The result of the standardised mass-production system was that Ford was able to produce more than two million cars in 1923 and, at the same time, lower the price.

However, there were some built-in limits to the system, mostly organisational in nature. As the assembler on the production line did not have to think about how all the parts came together, new 'knowledge workers' were assigned to do specialised tasks, such as quality checking, assembly-line operation, designing machines etc. Furthermore, production was centralised to an extreme extent, as almost everything from the basic raw materials to the finished car was made inhouse. This system of almost complete division of labour and vertical integration caused irresolvable bureaucratic problems, especially in relation to shipping and service because the whole world had to be supplied from one production site. But the system also revealed a serious deficiency in terms of

 $^{^{2}}$ This discussion of the shift from Fordist to lean production methods and the parallel development in the organisation of supplier relationships builds on Womack et al. (1990).

the number of defects in the fully assembled car. The primary goal of fulfilling the production target as quickly as possible and de-skilling the workers meant that the quality of parts and components could not be checked during the assembly process. As a result, the number of defects in fully assembled cars rose dramatically, meaning that 25 per cent of total man hours had to be devoted to reworking cars at the end of the line. Thus the cost of producing to scale proved to be a highly inflexible and organisationally inefficient production system. Alfred Sloan of General Motors (GM) solved some management problems by decentralising production into separate profit centres or divisions. He also managed to combine the different requirements for standardisation and diversification by producing many mechanical items with dedicated production tools and at the same time altering the external appearance of the cars annually. However, he did nothing to change the fundamental idea of how mass production should be organised.

The system invented by Ford and Sloan was partly adopted in and adapted to most European and North American automobile activities and a wide range of other industries, becoming overall the most successful method of mass production for the next fifty years. Yet, pioneered by Toyota, a new model of mass production, so-called 'lean' production', became prominent in Japan in the 1950s and 1960s.³ At that time, the Japanese economy was seriously suffering from war damage and was starved for capital, which limited its ability to set up full-scale mass production in line with the Western model. Instead, Toyota came up with small batch production as a solution by developing a new die-changing technique that made it possible to change dies every two to three hours, as compared with two to three months in the Fordist system. This new system had the advantage of eliminating the cost of huge inventories and caused stamping errors to show up instantly because only a few parts were made before the car was assembled. Toyota developed this initial organisational invention to perfection, which entailed re-skilling the workers. The assembly workers were giving the responsibility to do minor repairs and quality checking, making many specialists redundant. Workers were grouped into teams, were given the task of collectively discussing ways to improve the process, and were taught to trace every error back to the ultimate cause and fix the problem immediately. This *kaizen* system, known in the West as 'quality circles', benefited from the experience and knowledge of those who had the best knowledge of the production process, namely the workers. Employees were also guaranteed lifetime employment, which gave them an incentive to come up with information, while simultaneously encouraging the company to enhance the skills of its workers continually.

The most striking difference between Fordist and lean automobile production is **how the supply chain is co-ordinated**. In reality, assembling only accounts for about fifteen percent of the total process of automotive manufacturing. The

³ Lean production is lean because it uses less human effort, manufacturing space and investment in tools, and also has fewer defects (Womack et al. 1990).

bulk of the production involves manufacturing the more than 10,000 parts involved in making a car and assembling them into about 100 major components, such as engines, steering gear and suspension systems. The task of co-ordinating the process so that everything comes together at the right time at the lowest possible cost is ideally solved in one of two ways: either through a fully integrated system of production, where all the parts are developed and designed in house, or by outsourcing all the parts and components to suppliers. In reality, most companies lie somewhere between these two extremes. Initially Ford and GM manufactured all parts in house before eventually making the decision to outsource some parts. However, they still relied on their own design, simply handing out the drawings to the suppliers. Potential suppliers were asked to bid for manufacturing a given number of parts of a given quality, the lowest bid being accepted. Playing suppliers off against each other left the supplier with a small profit margin and limited room to improve quality or organisation. It also blocked the flow of information, as the suppliers concealed information on actual costs from the assembler. Besides, working to blueprints also meant that there was little incentive for a supplier to improve production designs on the basis of his own experience. Relationships with suppliers were mainly short-term because of changing market conditions and because suppliers were used as a buffer, being laid off when the car market slumped. To avoid delays and complaints from the assemblers, the suppliers had to build up a large stock of finished parts, with the result that defects were not detected from the outset.

By contrast, Toyota and some of the other Japanese car manufacturers experimented with another system involving even greater outsourcing of parts and components. The suppliers were organised into 'tiers', so that the first-tier suppliers were made responsible for the product development of larger components in line with the assembler's quality specifications. The second-(and third-) tier suppliers were manufacturing specialist fabricating the individual parts without much expertise in product engineering. The first-tier suppliers were neither fully integrated nor disintegrated. Instead, they were organised into supplier clubs, in which the assembler acquired a fraction of the equity of each member of the club and encouraged the suppliers to take equity in each other's companies to ensure horizontal co-operation among them. As a result of the interlocking equity system, the supplier practically shares the destiny of the assembler. This arrangement encourages the two parties to work closely together for their mutual benefit and to share sensitive information about production, costs and quality. The price of a part is determined through 'value engineering techniques' that break down the cost of each stage of production. Finally a price is agreed on, which still provides the supplier with a reasonable profit. The suppliers are not selected on the basis of bids, but on their proven record of performance, and are usually long-term members of an assemblers' supplier club. The system of sharing the profits of joint activities gives suppliers an incentive to improve products and processes constantly because they can keep all profits derived from their own cost-saving

innovations. Supplier clubs also act as forums where the suppliers meet to share new findings and production concepts, which improve the performance of the whole group. Such co-operation could not work in a supply system based on market principles, because rivalry between suppliers would hinder information sharing. However, lean assemblers ensure that their suppliers continually improve and work hard by using more than one supplier for every part or component and by maintaining a supplier grading system. This does not mean that a supplier is immediately sacked if he performs badly. In fact, the assembler and the suppliers work very closely together to solve problems as soon as they appear, which involves frequent visits to each other's factories. As a consequence of the mutual and co-operative character of lean production, the learning curve is much steeper than in traditional mass production.

A final feature of lean production is the development of a new day-to-day system to co-ordinate the flow of parts, the so-called kanban or 'just-in-time' system (JIT). The idea was to eliminate all inventories by increasing the frequency with which parts were supplied. This forced every member of the production process to anticipate problems before they became sufficiently serious to stop production. Because the JIT system is characterised by extraordinary flexibility, since production can be changed with a few hours notice, this supply system became the major strength of the lean production system (Womack et al., 1990). Differences between American and Japanese make-or-buy decisions are reflected in procurement methods. Japanese automotive manufacturers procure about 75 percent of parts and components from subcontractors by value, while the corresponding figure for American car producers is 55 percent. Moreover, American assemblers use a larger number of independent suppliers than their Japanese counterparts. Toyota, for example, procures parts from 172 suppliers belonging to their supplier club, while a typical GM factory source parts from about 800 suppliers, indicating that Japanese assemblers co-operate more closely with their suppliers (Poapongsakorn and Fuller, 1998).

In theory, Japanese and American supplier strategies differ in terms of the extent to which the supplies are involved in **long-term co-operation** with the assemblers. American assemblers tend to rely on large, independent suppliers competing for business. Japanese assembler–supplier relationships, on the other hand, are associated with the formation of supplier networks promoting information-sharing, co-operation and mutual obligations on a long-term basis that is designed to improve quality. The importance of quick delivery and close ties led to the creation of spatially concentrated networks, where the suppliers were linked to a particular automobile manufacturer through equity ownership. This network is known in Japan as the *keiretsu*' system, which is typified by the Toyota City model (Humphrey, 2000). Thus, American and Japanese systems for organising workflows and supplier chains resemble different ways of coping with uncertainties. However, the two systems are also geared towards different production environments. Being less capital-intensive and more

flexible, the Japanese lean production system is better suited to the production of various models in smaller markets, while American automotive production is adapted to mass production for larger markets.

During the 1970s and 1980s, American and European manufacturers experienced a decline in demand caused by the fuel crisis and the general saturation of the market, while Japanese automobile production exceeded thirteen million units at the beginning of the 1990s, making it the largest in the world (Shimokawa, 1994). The upsurge of Japanese carmakers has resulted in fierce competition between carmakers in the three major regions and led to a spread of lean manufacturing strategies. As lean production proved to be the most effective system, Western manufacturers incorporated many of its methods and technologies. However, in current automobile production it is hard to find Fordist or lean production in their pure form. Most production systems are a mixture of the two, and European production methods have actually always been different from mass production, simply because the assemblers are smaller and more numerous. Nonetheless, the typology of Fordist and lean production provides a helpful background for analysing recent global production and can be used for understanding the organisational strategies of TNCs in a Thai context. This applies whether the organisational structure is vertically integrated or horizontally externalised, involves mass production or customised batch production, uses dedicated machinery or flexible, is just-in-case or just-in-time in nature, or is characterised by the global sourcing of components based on the lowest prices or long-term co-operation with suppliers.

The automotive industry has been shifting from a focus on national strategies **to restructuring on a global scale**. The stagnation or even decline of major markets, rapid technological changes and increased trade restrictions mean that it is no longer possible to withstand global competition by supplying the world entirely from national production bases. Consequently, foreign direct investment in major national markets has resulted in a geographical spread of production, while a series of mergers and alliances between major manufacturers has further blurred the organisation of purely national production systems.

In 1926, Ford was already operating assembly plants in nineteen countries, and it is still the most globalised company, with design and production facilities located in all major markets. Japanese assemblers, on the other hand, preferred for a long time to serve the international market from a national production base in order to take advantage of local production techniques. Lean production requires that all activities, from design to assembly, occur in the same place in order to take advantage of the proximity of units to obtain the highest possible quality and flexibility. However, as the US and Europe began to introduce barrier to Japanese exports, Japanese automobile assemblers began to invest directly in these markets at the beginning of 1980s. Furthermore, the appreciation of the Yen through the Plaza Accord agreement of 1985 made Japanese exports comparatively expensive, this being the driving force behind an upsurge in Japanese investment overseas. With an increasing number of Japanese automobile assemblers active in foreign markets, Japanese makers of parts also found it profitable to set up production facilities in the US, Europe and Asia (Shimokawa, 1994).

While the major markets have become saturated, annual production in Southeast Asia grew between 1991 and 1997 by an average of 12.5 per cent and sales sharply by an average of 14.0 percent, and Latin American countries reflected similarly rapid growth. Although production and sales rose steadily in the ASEAN region during the 1990s, production remains only about 2 per cent of world share. Increased investments in the ASEAN⁴ region are attributed by some commentators to the increase in global competition, which forced Japanese automobile assemblers to relocate low-tech production to offshore sites and to shift to manufacturing high-tech, high value-added production at home (Buranathanung, 1997). Other commentators regard the remarkable growth of the ASEAN markets from 700,000 vehicles in 1991 to a peak of 1.5 million vehicles in 1996 as having been driven mainly by rising income levels, the most important pull factor (Tyndall, 2001). The latter point is underlined by the fact that Japanese carmakers have tended to set up production facilities in each country independently, and some assemblers have even invested in all four ASEAN countries in order to serve local markets. Moreover, investment in the ASEAN region does not entail a shift from domestic to overseas production, since production in Japan has only recently started to decrease in response to market saturation. The major reason why Japanese assemblers do not set up facilities abroad aimed at re-export to Japan is that cost differentials between domestic production and production in other East Asian countries have never been large enough to justify such efforts (Itami, 1998). In other words, the main reason for Japanese assemblers to invest in the ASEAN region was the penetration of new growth markets. The expansion of the ASEAN markets was abruptly halted by the financial crisis of 1997, which led to a sharp decline in demand and a severe cut in capital formation. However, the scope for a further expansion of sales is far from exhausted, as passenger-car densities in 1998 were 98 persons per car in Malaysia, 800 in Thailand, 1000 in the Philippines and 7692 in Indonesia (Rasiah, 1999).

Japanese producers have spearheaded automotive production in ASEAN countries, about 20 percent of Japanese offshore production being located in the region in 1992 (Buranathanung, 1997). Many Japanese assemblers have production facilities in all four ASEAN countries, among them Toyota, Mitsubishi, Honda and Isuzu. As a result of the massive presence of Japanese production, Japanese vehicles totally dominate the ASEAN market. Makers of auto parts, especially Japanese, are also very well represented in the region, as

⁴ The Association of Southeast Asian Nations. The reference here is to ASEAN-4, that is, Malaysia, Thailand, the Philippines and Indonesia.

they have relocated to serve Japanese assemblers in their attempt to meet regulations concerning local content. In the late 1990s, US firms also made strong inroads into the region, spurred on by trade liberalisation and the abolition of local content requirements. However, the ASEAN market is comparably small, and numerous assemblers have relocated in order to gain a foothold in the region. Consequently, **the market for components and parts is highly fragmented**, as many brands and models are being manufactured in every country, despite low capacity and inefficiency (Doner, 1992).

ASEAN governments have tried to make up for such deficiencies by setting up a regional parts and components market, thus allowing member countries unrestricted access to each other's markets. The ASEAN industrial cooperation scheme (AICO),⁵ approved in November 1996, is the latest attempt to allow auto parts to pass more freely between member countries. Participants benefit from import duties as low as 0.5 percent for intra-regional trade in parts and components. To qualify for participation in AICO, companies must prove that they have co-operative or resource-sharing arrangements with companies in other ASEAN countries, that they use at least forty percent regional content, and that local capital participation is at least thirty percent. The basic idea behind AICO is to help exploit complementarities between member countries by allowing parts manufacturers to achieve economies of scale by specialising in specific parts, and to help increase export volumes. In theory, the AICO scheme was to be implemented gradually to reach the 0.5 percent tariff rate by 2002 under the Common Effective Preferential Tariff (CEPT) agreement, providing for the creation of a free trade zone in the ASEAN area. In practice, however, the AICO scheme is encumbered with red tape, as the ASEAN countries have conflicting interests due to the different ways in which their automobile industries are organised. Furthermore, since auto-parts firms in the four countries are presently producing the same range of products, the automotive structures of the different member countries is not complementary but very similar and thus competitive. As every country wants to develop its own automobile industry, it is likely that liberalisation will be postponed and high tariffs remain. Malaysia and Indonesia are seen as especially reluctant partners, since they are pursuing 'national car' strategies dependent on the protection of various trade barriers. In fact, Malaysia has already succeeded in postponing the inclusion of the automobile industry into the CEPT scheme because of the financial crisis (Auto Asia, October1997; Tyndall, 2001). The assemblers, however, have already started to restructure their partsmanufacturing activities on a regional basis using the earlier brand-to-brand scheme in the expectation that a freer regional market for the automotive trade would develop (Buranathanung, 1997). Thus, steps toward increased regionalisation are in reality being taken by automotive assemblers through intra-firm arrangements rather than by governments.

⁵ Its predecessor, the 'brand-to-brand complementation (BBC) scheme' was too narrow in scope, as it only promoted intra-company transactions.

Another development that has increased the international nature of the automobile industry is the many **mergers and alliances** between major car manufacturers that occurred in the 1980s and 1990s respectively. Technological innovations happen so fast that no company can expect to excel in design, product and component technologies on their own. Thus, automobile manufacturers are being led to conclude international alliances to take advantage of joint design and product development and market access (Wad and Jeong, 1999). Takeovers, alliances and coalitions have transformed previously national production bases, implying fewer and more powerful global players. Daimler-Benz and the Chrysler Corporation, for instance, have formed a coalition that subsequently bought part of Mitsubishi. Ford has taken over Volvo's car division, Renault now controls Nissan, GM has bought SAAB, and Korea's carmakers were taken over by Western firms when they failed to recover after the 1997 financial crisis.

The harsh competitive environment is also driving automobile manufacturers to start **rationalisation processes** to streamline production and reduce costs by trimming the range of models and reducing the number of parts used. As a part of this strategy, assemblers are developing the idea of a 'global platform' where different models can share major parts, thus lowering production costs due to the increased standardisation of base components and achieving economies of scale. The automotive industry is also undergoing a process of revitalisation, as the development of new technologies has cut labour costs to about twenty percent of the total cost of developing and producing a new vehicle. This means that the focus is shifting from production to research and design, and that developing countries are no longer so attractive because of their low labour costs (Shimokawa, 1994; Poaponsakorn and Wangdee, 2000). These trends in restructuring have created a more competitive automotive industry, but have also created raising entry barriers to newcomers.

Restructuring efforts on behalf of the assemblers also entail changing sourcing strategies, as there is a tendency to shift toward suppliers with the ability to develop and supply complete models or systems, such as brake systems, steering systems and dashboards, rather than individual components. As suppliers take on greater responsibilities for sub-assembling, assemblers are able to cut down the number of suppliers they deal with directly, as the first-tier supplier becomes responsible for the management of the second-tier suppliers. Assemblers have also started to focus more on assembling and marketing activities, entrusting suppliers increasingly with the development and design of individual parts. In the future, assemblers will probably restrict themselves to the provision of specifications concerning overall performance criteria and information about the interface of the particular part with the rest of the car, instead of providing precise drawings and samples. Thus, suppliers must be able to develop and design the so-called black-box parts using their own technology. These shifts in strategy, implying that the assembler will use fewer suppliers, but ones capable of carrying out research and development, have led

to a process of mergers and take-overs among suppliers. Major component suppliers have thus risen to become global players and important acquirers of technology in their own right (Humphrey, 2000).

Global restructuring of the garment industry

In contrast to automobile production, many observers see the garment industry as a dying industry in economically advanced countries. This interpretation stems from the characteristics of the industry, which is highly labour-intensive, subject to little technological change, and having very low entry barriers, investment amounting to little more than the need to purchase sewing machines. Given these characteristics, the garment industry often allowed many peasant economies to make the transition into the age of industrialisation, based on low wages and traditional household skills. Thus, developing countries have already taken the lead in the world market for garment exports, rising from fifteen per cent in 1965 to 56 per cent in 1990 (figures from Abernathy et al., 1999). However, since design, marketing and retail are the most profitable activities, they continue to be located in the industrially advanced countries. Furthermore, the garment industry is presently undergoing a substantial restructuring process, with a greater emphasis on flexibility and shorter leadtimes, which may lead to substantial shifts in the localisation of the industry. This trend is being intensified by deregulation in international trade policy. These trends in restructuring will be discussed below, with an emphasis on their impact on garment producers in developing countries. The garment commodity chain can be said to consist of the textiles, garment and retail sectors. This section focuses on how changes in the retail trade, caused by developments in information technology and consumer tastes, have been driving changes in the garment industry, as well as altering relationships between retailers and producers.

Up until the late 1980s, retailers usually procured the products far in advance of the selling season because the garment suppliers charged less for large runs and long lead times with long periods of advanced commitment. Subsequently, the procurement was based on the retailer's best guess or 'feel' for what would sell. Such deals were typically made eight to ten months before the goods appeared on the shelves and involved large shipments, usually once a season. Once delivered, the **retailer stored the products as stock**, from which the goods on the sales floor were replenished. Stock control relied on manual comparisons between sales records and physical counts of items on the sales floor and in the storeroom. Overstocks were marked down for clearance or sold to discount retailers. The most successful retailers were those who at the same time revealed a feel for consumer taste and marketed their products the best. These were often retailers with brand-name recognition like Lévi-Strauss or private labels such as J. C. Penny and The Gap. However, large-scale retailing was identified with growing costs and risks associated with holding stocks of unwanted products on the one hand, and running out of stocks of popular items on the other hand. Two developments have made this model of retailing outdated. First, consumers increasingly demanded a greater variety of products. American society has experienced demographic and life-style changes with the sharp increase in numbers of working women, single-person households and two-income families. This has meant that retailers must offer more specialised goods in greater variety, and consequently they face increasing inventory costs for goods that will not sell, as well as lost sales if a they run out of a line that sells unexpectedly well. Secondly, the construction of shopping malls exploded in the 1980s, far outpacing the overall growth in consumer expenditure, resulting in serious retail over-capacity. Overall, this created an intensely competitive environment leading to a series of bankruptcies in the late 1980s and early 1990s, especially among giant department stores, such as Macys and Fifth Avenue.

The downward trend was not ended until another retail system began to occur in the late 1980s, involving the use of new technology and management methods, but especially a change in market-like relationships with manufacturers. This 'lean retailing' adhered to the same principles of low production costs, product variety and good marketing as the traditional system. What was different, however, was that they also focused on continuous adjustments in the supply of products offered to consumers in order to match actual levels of demand, thus reducing their exposure to the risks of overstocking and running out of stock. Instead of ordering large shipments, the lean retailer requires frequent deliveries determined by real-time sales. The relevant sales information is collected from the stores based on style, size and colour perhaps every week, orders being transmitted electronically immediately to the appropriate suppliers, the products ordered being shipped back again within days. This system requires several building blocks in order to be viable. Industry standards for identifying products must be in place, as must as the introduction of an extensive system of information technology capable of integrating computer technologies and automation. The most important new technology is electronic data interchange facilitating business-to-business communication, which requires business partners to have common software systems. What is revolutionary about the new system is thus a greater emphasis on logistics. A retailer's success now depends not only on low labour costs and the right merchandise, but also on efficient inventory management, transportation and delivery systems. The transition to lean retailing has introduced greater integration between the retail and manufacturing sectors because orders are more frequent, allowing the retailer to co-ordinate the entire flow of products to a greater extent than before.

Garment manufacturing has also been subject to restructuring in terms of **technical innovations related to the pre-assembly processes** that must be performed before the cloth is sewn into garments, such as design, marker-

making and cutting activities. Most garments are now designed using computer-aided design (CAD). Instead of drawing sketches on paper and water-colouring them by hand, the designer is now allowed to sketch the design with a computer pen and make the computer do the water colouring, change the material or pattern, and produce a storyboard for presentation, all within minutes. After management has approved the design, the computer is able to make the final garment pattern, ready to be cut. The layout of the pattern before cutting (marker-making) is also now assisted by computer systems in order to obtain the highest possible use of textiles. Computer-controlled cutting systems and even laser systems have also been developed, but they are not yet widespread, as this is a big investment demanding large-scale operations and skilled operators capable of guiding the knife precisely. However, automation of the sewing operation itself has not proved to be effective. The way production in the factory is organised usually comes down to bundling the cut parts together for the operators, who sew the individual parts together. Generally, each worker specialises in very few sewing operations. The sewing operation is very complex because the cutting almost never is perfect, which means that the two seam lines to be joined are rarely of exactly the same length. Sewing thus requires trained operators who are able to overcome minor errors in cutting by stretching the two pieces of cloth differently in the assembly process. This need to make adjustments by hand makes it very difficult to automate, and garment operation thus remains labour-intensive. As a consequence, garment assembly is usually farmed out to lower-cost firms, while retailers and brand-name companies take care of the more technically intensive profitable activities (Abernathy et al., 1999).

Buyers use their purchasing power to purchase garments at very low costs through international subcontracting. Instead of investing in their own factory facilities in low-wage countries, retailers turned to using contractors for the assembly process. This system grew to global levels in the 1970s and 1980s, the most rapid period of globalisation being between 1963 and 1973, when world exports of garments grew nearly six-fold. As a consequence, garment production has undergone several migrations, first from Western Europe to Japan in the early 1960s, and then from Japan to Hong Kong, Taiwan and South Korea. This group (the Big Three) dominated garment exports in the 1970s and 1980s. In the late 1980s, production shifted to a number of other developing countries, mainly Mainland China and Southeast Asia. In the 1990s, South Asia and Latin America emerged as significant garment producers (Applebaum et al., 1995). As more and more developing countries enter garment production, competition becomes intense. Globalisation means that the pace of change has quickened, and garment exporters now have shorter periods in which to exploit their competitive advantage. However, there is no simple reason for these shifts, as low wages are not the only explanation for them. Trade and currency policies, quotas and preferential tariffs, as well as the trend toward lean retailing, have also had a great influence on patterns of localisation.

Lean retailing involves the pursuit of **organisational flexibility** and requires suppliers to operate with lead times measured in days or weeks rather than months. Although low labour costs may still be a principal factor in the sourcing of garment products, speed and proximity to markets are other key factors. These changes in retail-producer relationships have had several consequences for sourcing practices and localisation patterns, leading to a shift in US sourcing from Asia to Mexico, and thus increased regionalisation. The increased importance of frequent delivery has thus led to an increase in intraregional trade in garments, which has happened simultaneously in all major regions. Three global regions are emerging, each involving advanced economies with skilled and capital-intensive activities plus developing areas continuing to supply low-cost assembly activities: the United States plus Mexico and the Caribbean countries; Japan plus East and Southeast Asia; and Western Europe plus Eastern Europe and North Africa. The deregulation of trade structures and the establishment of the North American Free Trade Agreement (NAFTA) have stimulated these developments.

The textile and garment industries are governed internationally by the Multi-Fibre Agreement (MFA), which allows countries to negotiate bilateral agreements and to place import quotas on trade. The MFA thus operates outside the General Agreement on Tariffs and Trade (GATT), with the result that garment and textile manufacturing are one of the most highly protected industries. The MFA came into existence in 1974 as a way of protecting textile and garment manufacturing in developed countries by allowing them to raise tariffs and quotas against imports from countries with low-cost labour advantages. However, the United States has departed from the general system of protection by giving the Caribbean countries and Mexico preferential treatment. First, the US has introduced partial exemptions of duty for the importation of articles assembled abroad using American-made textiles and other material under the Caribbean Basin Economic Recovery Act of 1983 (as amended in 1990).⁶ Secondly, **NAFTA**, the regional trade agreement between Canada, Mexico, and the US implemented in 1994, provides for the phasing out, over a ten-year period, of most tariffs and non-tariff barriers on textiles and garment items that have a regional content. These arrangements have contributed to an increase in US garment imports from Mexico, Central America and the Caribbean countries from 6 percent in 1983 to 28 percent in 2001, of which 13 percent is imported from Mexico. In the same period, the share of US garment imports from China, Hong Kong, Taiwan and South Korea declined from 76 percent to 43 percent of all imports. China, however, still remains the largest country providing garment imports to the US. Even though Hong Kong, Taiwan, Korea and Macao, which historically accounted

⁶ The structure of the trade laws, combined with the strength of the US textile sector, means that a significant percentage of these products are made from American textiles. In 1997 total textile exports from the US to Mexico amounted to 28 percent of the value of garment imports back into the US. By contrast, the same figure for China equalled about 0.8 percent of the value of US garment imports from China.

for a significant share of US imports, have declined substantially in importance, they still contributed 29 percent of US garment imports in 2001.⁷ Southeast Asia increased its share of US garment imports from 8 to 13 percent between 1983 to 1998. In 2001, however, this decreased to 12 percent, in line with the shift in the sourcing strategies of US towards Mexico and the Caribbean (Gereffi and Memedovic, 2003).

Changes in consumer tastes and buyer strategies, and the emphasis on quick responses, have had a direct influence on garment manufacturers. First, buyers now tend to rely on a smaller number of suppliers, with whom they maintain closer relationships. Secondly, instead of specified orders placed far in advance of delivery time, suppliers must now learn how to deal with variations in demand and the requirement to provide quick delivery. This involves a complete restructuring of factories, changed management practices and vast investments. The internal structure of the sewing room might have to be changed in the process. The traditional organisation of the sewing process incorporated buffers between individual assembly operations to minimise downtime. This creates a large amount of in-process inventory, since a given piece of a garment may go through forty operations. This bundling system is not very flexible, since orders take a long time to fulfil, and changes in production cannot be introduced quickly. Furthermore, in order to communicate with retailers in a lean way, suppliers must adapt to industry standards and invest in new information technology. All this requires changed management practices, as management has to be able to handle electronic orders, and forecast and plan the production in a more flexible manner. The adoption of these practices thus increases the costs of entry for newcomers. If it is not possible to change the production process in order to reduce lead-time, the supplier must carry a larger stock of finished goods in order to be able to respond rapidly to new orders. Consequently, risks hitherto associated with the retail sector have now been transferred to the suppliers.

However, as buyers tend to buy **different products from different locations**, high-wage countries may stay in business if they are able to upgrade their production, as, for example, Hong Kong and South Korea have done. More expensive and complicated items, for example, demand greater skills that cannot be sourced in the low-cost countries. Similarly, men's clothing is generally made in long production runs, with only small variations among styles in a given year and relatively little changes from year to year. By contrast, women's clothing is characterised by its greater diversity of styles and shorter production runs: it therefore has to be purchased from nearby, usually small contractors. Global buyers likewise display a **wide range of strategies**. Fashion-oriented retailers with designer products obtain their expensive

⁷ However, the East Asian countries have changed from relying on low wages to focusing on the more profitable design and marketing areas (Gereffi and Memedovic, 2003). These countries are thus an example of learning and upgrading through trade-led commodity chains from the assembly phase through OEM export to design of their own brand name, which involves the control of production networks in the Asian and Latin American regions.

branded goods from high value-added exporting countries such as Italy, France and Japan. Department stores, by contrast, are confronted with a great demand for variation in styling and material: they are therefore most actively involved in global sourcing, using numerous overseas factories. J. C. Penney, for instance, had about 4,000 suppliers worldwide in 1993. Mass merchandisers with lower priced store brands buy from medium to low-cost exporters producing medium quality clothing, while large-volume discount stores most often import from countries such as China, Bangladesh, Indonesia and the Dominican Republic (Gereffi, 1994).

4.2 The automotive and garment commodity chains in the Thai context

This section analyses how global lead firms are structuring their activities in Thailand as a consequence of international regulation, competition and market forces on the one hand, and industrial policy regulations and local market conditions on the other hand. The **development and production structure of the automotive and garment industries** is outlined **and the role played by various global and local actors** determined. The aim is to assess how the structure and strategies of global firms influence local firms in choosing to develop and upgrade.

The automotive industry in Thailand

Given the large size of many assembly firms and their considerable potential for creating links with many industries, such as base metal, plastic, rubber and electronics, it is to be expected that foreign automotive plants have the ability to transfer technology and know-how to local suppliers. Thus, the Thai government has been very interested in promoting the establishment of an automobile industry in Thailand, and the automotive sector has in fact been one of the few Thai industries with **specific sector goals and policies**. Government policies have shaped the direction and growth of the automotive industry since the 1960s using a wide range of regulative protective measures, such as local content requirements, import restrictions, tariffs and restrictions on models. In the 1990s, automobile-industry policies have shifted from high to low protective measures and from an inward to a more export-oriented strategy (Kamaruding, 2001).

Historically, policy regulations regarding the development of the Thai automobile industry can be divided into three phases: establishment, localisation and liberalisation. First, the automobile industry started with an **import substitution policy** in 1962. Under the Industrial Investment Act, the government began to attract foreign direct investment with the goal of shifting from the importation of completely built-up (CBU) vehicles from Japan to domestic assembly. Promotional measures consisted of a fifty-percent reduction on tariffs and business taxes on imported inputs, supplemented with

high tariffs on CBUs to protect domestic production. The opening up of the market for foreign investors resulted in the setting up of four European and American assemblers and five Japanese. The typical method of production was to import completely knock-down (CKD) kits and assemble the vehicles in Thailand entirely directed to the domestic market. However, uncontrolled investment by foreign firms soon led to over-capacity and import dependency (Lim and Fong, 1991).

Secondly, in response, the Automotive Industry Development Committee was established in 1969 to regulate the automotive industry to make it more beneficial for the domestic economy and manufacturers. In 1971 the committee announced a comprehensive plan for the reform of the industry, notably a limitation on the number of vehicle types and models manufactured and the introduction of a local content requirement (LCR) of 25 percent, effective from 1974. The localisation scheme stimulated the parts and components industry, but the rationalisation plan was not effective, as eight new assembly plants were set up between 1972 and 1979. This led to inefficiency and high costs of production for local parts-makers, since the market was very fragmented, limiting the possibility of achieving economies of scale. To circumvent such limitations, the automobile industry was again reformed in 1978-80, with a partial ban on CBU imports and on new assembly plants and vehicle models. The localisation scheme was strengthened, as local content requirements increased to fifty percent and the localisation of a range of parts produced locally was made mandatory (Doner, 1991). The local content requirement was again increased to 54 percent for passenger cars and 61 percent for pick-ups in 1988.

Thirdly, this policy continued as a basic framework for the development of the Thai automotive industry until 1991, when the industry was liberalised. As the production prices of automobiles in general decreased significantly, the government decided to put the industry to the test by intensifying the competition (Terdudomtham, 1997). The government had hitherto maintained steep tariff duties on component imports for both CKDs (112 percent) and CBUs (400-600 percent). But in 1991 tariffs on CBUs were lowered to 42 percent and the tax on imported CDK kits to 20 percent in order to give local firms an incentive to innovate and improve production efficiency and produce higher quality cars to meet international standards for export. The reform also eliminated all restrictions on the number of models and types that could be produced locally. Thailand's entry into the WTO and the opening up of the ASEAN Free Trade Area led to a reassessment of the import duty structure and to a plan for the gradual phasing out of LCR and the implementation of the ASEAN Brand-to-Brand Complementation and Industrial Joint Venture programs. Export-orientation was promoted from 1993, with the setting up of a free trade zone, and the restrictions on foreign equity shares in automotive assembly firms were abandoned (BOI, 1995; Bangkok Bank, 1996; Kamaruding, 2001). The government launched the Automobile Industry Export Promotion Project in 1996-2000, under which export projects were given board of investment (BOI) incentives (Terdudomtham, 1997).

From a total **production** of about 30-40,000 vehicles a year in the early years of development, production reached a peak of 559,400 units in 1996 (statistics from JETRO, 2000). The most rapid growth in production happened from the mid-1980s, and total output grew more than six-fold in the decade between mid-1980s and mid-1990s. Between 1986 and 1990, sales grew at an average annual rate of forty percent. Production has been stimulated by the expanding demand caused by the overwhelming rise in incomes and standards of living. The rise in demand peaked in 1990-93, and slowed down again in the mid-1990s. The sales record made assemblers and parts-makers invest heavily in additional capacity in expectations of market growth to one million units in 2000 (Maxton, 1996). The auto-parts industry developed in parallel with the production of vehicles. Initially the parts industry developed to provide substitutes for imports in the aftermarket (REM), but accelerated with the introduction of local content requirements (Japanese International Cooperation Agency, 1995).

However, the parts industry has been much more successful than the automobile industry in terms of **export figures**. More than a third of locally manufactured items were exported in the late 1980s, while the production of finished cars was still aimed mainly at the domestic market. However, with the financial crisis, the export of vehicles overtook the export of parts, many assemblers seeing this as a way to survive the crisis, as the devaluation of the Baht made Thai production cheaper in foreign markets. Mitsubishi was the first company to begin to export its Lancer model mainly to the European market, with the result that Thailand became Mitsubishi's major export base, as ninety percent of production were exported to 138 counties in 1999. In contrast to other assemblers, Mitsubishi's shift to export implied that the assembler had succeeded in maintaining production volumes in the crisis years. The arrival of western assemblers after the crisis also indicates the beginning of a new export era in Thai automobile production, as Ford and GM, for example, plan to sell half of their production in the domestic market and to export the rest (AutoAsia, Dec. 1997; Lim and Fong, 1991). As a result of the new focus on exports, exports of vehicles and parts from Thailand totalled 60.1 billion Baht (US\$ 1,58 billion) in 1999, 9.9 billion Baht worth of parts, and 50.2 billion Baht worth of CBUs, corresponding to the export of 125,702 vehicles (Industry analysis, 2000).

Thailand has become the most important assembly and parts production base in the Southeast Asian region (*Auto Asia*, Oct 1997). The advantages of Thailand for assemblers are first and foremost the fact that the country is the biggest market in Southeast Asia, still with great demand potential. But the fact that Thailand does not have a national car project to protect, like Malaysia, is also very influential, as well as political stability and liberalisation measures.

Consequentially, **Thailand is assemblers' favourite production base** in the region. Such developments have created great optimism, and it is expected that Thailand will develop to be the regional base for production for export to the ASEAN market of more than 330 million people (Bangkok Bank, 1996). Consequently, writings on Thai automotive production are now beginning to call Thailand 'the Detroit of Southeast Asia'. The auto industry has thus developed tremendously since 1962, but its importance for the domestic economy is not that great. In 1992 the automotive industry's value added accounted for only 6.5 percent of total value added of all manufacturing. Furthermore, the auto industry in Thailand is one of the largest contributors to the negative balance of trade in the country, as imports of vehicles and parts is fifteen times exports (Japanese International Cooperation Agency, 1995).

Local capital has been active in forming partnerships with foreign assemblers or setting up assembly facilities on their own to produce under license. The Viriyaphands family, for instance, established the wholly Thai-owned Thonburi Automotive Assembly Plant Company in 1957 in order to assembly and distribute Mercedes Benz vehicles in the country (Doner, 1988). A Japanese–Thai joint venture, Bangchan, was established in 1970 to assemble various models on license, most recently Chrysler and Honda models. Local producers are most often large conglomerates with ethnic Chinese ties and favourable business and government connections. Notable local conglomerates engaged in the automotive industry include, for example, the Leeissaranukul family, who has joined with Mitsubishi (MMC Sittipol), and the Phornprapha family assembling Nissan automobiles (the Siam Motor group); both groups are also engaged in automotive parts production (*Bangkok Post*, 1996). However, none of the Thai firms has developed their own brand, apart from the Tuk-tuk, based on a motorbike construction.

Domestic capital, however, has greater foothold **in the auto-part industry** than in assembly because of the smaller scale of investment and less advanced technology needed to start production. Thai firms have established technical links with foreign parts suppliers, but tend to maintain local equity control. The holding of equity in nine of the largest eleven parts firms established during the 1960s was at least ninety percent Thai. Leading the development have been a number of prominent large conglomerates, among them Siam Cement, the largest industrial group in Thailand; the Sarasin and Srifuengfung families, who have joined with several foreign business firms in parts production; and the Phornprapha family, with Siam Auto (Doner, 1988; 1992; *Bangkok Post*, 1996). The most recent statistics of the structure of auto-parts manufacturers in Thailand estimates that there are 1,700 auto-parts firms in operation, of which 709 are first-tier suppliers. Purely Thai companies consist of 354 small and medium enterprises, there are 68 joint venture with a Thai majority holding,

and the remaining 287 joint ventures have foreign majority holding (Kamaruding, 2003).⁸

The auto-parts industry in Thailand started with the **production** of peripheral parts like starters, filters, radiators and safety glass. However, Thai-owned firms such as the Siam Nawaloha Foundry in the Siam Cement Group and the Somboon group made considerable progress in more complex items like brake drums, jigs and dies, and flywheels (Doner, 1992). Pressed body parts and nonmetal companies have also grown significantly, with the establishment of Union Plastic and Inoue Rubber. Between 1978 and 1986, only a few new parts companies were set up, but existing projects were expanded. Larger components such as fuel, brake, exhaust and suspension systems, as well as pressed parts and interior trim, are likewise locally manufactured or assembled (BOI, 1995). Even though local auto-parts producers have expanded intensively, most of the expansion in domestic parts manufacturing has been in relatively simple, labour-intensive products such as nuts and bolts, batteries, radiators and wire harness, or items using Thailand's natural resources. Complex components, which include high precision components or components requiring costly machinery, and equipment and technology, are not yet being produced in Thailand by either Thai or foreign-owned firms, and thus have to be imported.

The successful achievement of a high level of local content indicates that domestic firms are approaching international standards. However, during the shift towards export promotion in the late 1980s, it became evident that very few Thai firms had reached productivity levels that would allow them to compete in global markets. Most of the high value added parts are imported, manufactured in house by assemblers or supplied by locally based foreign companies affiliated with the assemblers. However, the export value of labourintensive auto-parts, such as ignition and wiring harnesses, rubber tubes, pipes and hoses, and clutch components, is continually expanding (BOI, 1995). The local content policy has thus been effective in widening and strengthening the supply base, though the quality and price of parts purchased from domestic suppliers are not yet adequate to serve the international market.

Several **obstacles** stand in the way of the smooth upgrading and development of the domestic auto-parts industry. The small size of the local market and the over-abundance of types and models make it difficult to achieve economies of scale. Part-makers continue to be dependent on imported materials, and costs are higher in Thailand than in Indonesia and Malaysia, due to the higher import tariffs and the shortage of plastic, steel and aluminium, which has resulted in uncompetitive production. In addition, the processing of plastics and basic

⁸ The number of first-tier suppliers includes suppliers of both cars and motorcycles. 508 first-tier suppliers supply the foreign assemblers (of which 122 supply both to car and motorcycle assemblers). A study by the JICA study group (1995) identified 148 enterprises as primary, first-tier, suppliers. Of these, 53.7 percent were fully Thai-owned.

industries such as casting, forging, heat treatment and machine processing require upgrading. Furthermore, most local parts-makers have lacked incentives to pursue export markets, since for a long time the local content requirement allowed them to make handsome profits with little risks. Assemblers complain that the protected market and the rapid growth of the automobile industry has created a seller's market, with rising costs and quality problems in relation to local procurement (Japanese International Cooperation Agency, 1995).

In January 2000, GATT regulations resulted in the abolition of local content requirements. The Thai government also implemented a range of policies as a response to the financial crisis, which have had detrimental effects on the local parts industry, meaning that assembly firms are free to pursue a strategy of creating regional supplier networks instead of using local parts suppliers. The Thai auto-parts industry is thus entering an era of increased liberalisation and competition, exacerbated by the new wave of investment by western Original Equipment Manufacturers (OEM) established to serve the new investments of Ford, GM and Chrysler. Local parts producers will encounter great difficulties in competing with global suppliers, as they have not yet reached international technology standards. With the lifting of measures protecting local firms through ownership and the local content requirement, and with the export push and establishment of many new foreign investors within the assembly and parts production, the overall strategy of the Thai government seems to be to stimulate greater foreign-led expansion to benefit from the regional Southeast Asian market (Kamaruding, 2001; Rashia, 2001).

The **financial crisis** starting in July 1997 hit the automotive industry particularly hard, as luxury items are the first to be cut back in times of economic hardship. The demand for vehicles slackened, as is reflected in a contraction of automobile production by fifty percent in 1997 and seventy percent in 1998 respectively (Business Thailand, August 1999: 20). As a result of the dramatic decrease in sales, the assemblers either cut down production or completely shut down product lines temporarily. As a result, 44 percent of the workforce in the automotive industry was laid off (Kamaruding, 2003). Ford, for instance, delayed hiring a second shift of workers, and GM downsized the first year's output to 40,000 units against an original plan for 100,000. As assemblers and parts-makers had invested heavily in expectation of demand figures of about one million items in 2000, the economic woes could not have been worse. However, vehicle production bottomed out at 139,000 cars in 1998, and the market started to grow again in the beginning of 1999, and it is predicted that production will be back to pre-crisis levels in 2005 (JETRO statistics, 2000). In spite of the crisis, there is no evidence of footloose strategies among the assemblers, as none of them have chosen to shut down their investments in Thailand in favour for another location in Southeast Asia. Instead, assemblers attempt to compensate for losses caused by lower domestic consumption by turning toward exports, as the weak Baht made the Thai

automobile industry more cost-competitive in the international market (Industry analysis, 2000).

The crisis caused many more problems for the auto-parts manufacturers. As the assemblers cut production or shut down lines completely, the market for parts and components declined sharply. As parts production was cut by half or more, suppliers had a hard time finding the money required to meet the company's immediate cash needs for corporate restructuring. Many Thai-owned firms were thus taken over by their Japanese partners or chose to withdraw from auto-parts production to concentrate on their core activities. Projects owned by Thais declined in importance as foreign investors were allowed to increase their shareholding up to a hundred percent (Bangkok Post, 1998). Thus, many TNCs took the opportunity to invest in crisis-affected companies to increase their assets. Honda, for instance, took full control of its indisposed Thai subsidiary by buying out local shareholders for 4.2 million Bath and thus increased its stake from 49 to 97 percent. Among Honda's Thai shareholders was the Crown Property Bureau (Auto Asia, May/June 1998). Siam Cement chose to withdraw from the automotive business completely and sold its stakes in such notable parts companies as the Siam Nawloha Foundry and Thai Engineering Products. The Somboon Group, one of Thailand's top three autoparts manufacturers owned by the Kitipanich family, has been compelled to sell its interest in six out of nine subsidiaries to Japanese companies, thus concentrating its activities. Some groups, like the Thai Rung family auto group, decided to join foreign partners to keep their stakes in their subsidiaries. It is estimated that more than six hundred auto-parts firms were closed or taken over by foreign firms as a consequence of the crisis (Krienkrai, 2003).⁹ Other possibilities for the crisis-ridden Thai parts manufacturers are to move to REM production, which have less strict delivery schedules and research and design requirements, and less need to keep up with the latest technologies, or to become secondary or tertiary suppliers.

The garment industry in Thailand

Although Thailand has a long tradition of **textile production**, activities such as the hand weaving of cotton and silk largely remained cottage industries up until the early 1960s. Prior to 1961, Chinese investors, with a background in importing textile or commercial banking, set up pioneering modern textile companies. However, such early attempts to establish a viable textile industry in Thailand failed due to the limited local market, simple technology, competition from protected textile companies in Pakistan, and lack of experience and capital funds. The restructuring of the economy under Sarit favoured the promotion of private investment in manufacturing under the

⁹ This is, however, contradicted by figures of Lecler (2002), which state that Thailand had 1.095 establishments engaged in the car industry before the crisis and 958 after the crisis. The explanation to this disagreement may be that the study of Krienkrai (2003) includes more levels of suppliers.

Industry Investment Promotion Act, which was introduced in 1960. Protective measures in the form of high tariffs on imports of textiles and import duty exemptions or reductions finally got industrial development going. Manufacturing of cotton increased 8.5 times between 1960 and 1979, and man-made fabrics, such as polyester and rayon, jumped in production by 242 times between 1965 and 1979. Besides government protection, another important factor behind this impressive growth was the influx of Japanese textile companies making a net shift in production from Japan to overseas locations in order to escape the high tariff barriers (Suehiro, 1983).

While the textile sector was developing as an import substitution industry, the garment industry made a slow start due to the very low level of domestic demand. In the 1970s, however, it finally began to develop, as a group of Chinese investors in Hong Kong and Taiwan began to shift their production base to Thailand and set up joint ventures with local partners (ibid.). The garment industry was divided into two areas, one to meet domestic demand, the other which, from the very start, was aimed at the export sector. The export drive was assisted by a shift towards export promotion in 1972, stimulated by the worsening balance of payments. Export-oriented production was granted promotional privileges in the form of a drawback system, which allowed export-oriented companies tax refunds on import taxes and tariffs for use in export-oriented production. Export credit has also been available from the Bank of Thailand, which the textile industries have exploited the most. Even though garments are regarded as an export commodity, they still enjoy the protection of high tariffs. In 1994 the tariff rate was 60 percent, though this was cut to 45 percent in 1995 in preparation for AFTA (Srichom et al., 1996). The industry also enjoys BOI promotional privileges. BOI incentives were cut for a short period, as the garment was regarded as very competitive, but the garment association managed to have garments put back on the promotional list, arguing that the garment industry was exposed to very harsh competition (personal interview with a representative of BOI, 2000). In the latter half of the 1980s, garment exports were stimulated by devaluations of the Thai Baht in 1981 and 1984. The competitiveness of the garment industries in the NICs declined due to a rise in wage levels and because of the Plaza Accord Agreement in 1985 (Japanese International Cooperation Agency, 1989; Poapongsakorn and Thonguthai, 1998; Suphachalasai, 1994). These developments led to a sharp rise in Thai garment exports, increasing from 0.3 billion dollars in 1980 to a peak of 4.3 billion dollars in 1995 (Thai Textile Institute, statistics 1998).

The Thai textile and garment industry comprised 4,654 companies in 1998, of which 2,742 are garment companies (Thai Garment Manufacturers Association). However, only garment companies with more than thirty sewing machines are required to be registered, and it is estimated that the industry consist of at least 20,000 units. The most capital-intensive companies are in the upstream part of the textile industry in spinning and man-made fibres, while companies in garments and weaving are more labour-intensive. The textile

industry is highly concentrated, as a small number of large companies possess 74 percent of the industry's capacity, while the garment sub-sector is much more fragmented, with many very small companies. However, seven large garment producers account for fifteen percent of the total garment export. An overwhelming 95 percent of garment companies are of small and medium size, with fewer than 200 employees, many being small tailor's shops (DEP, 1995; Doner and Ramsay, 1993).

As a result of the fragmented structure of Thai garment firms, a hierarchical structure of subcontractors has emerged. Small firms are mainly engaged in sub-contracting, and many secondary, tertiary, quaternary and still lowerranked subcontractors have no direct contact with the final customer, as they mostly produce for local contractors. Only the primary subcontractors work for the export markets and are in direct contact with their contractors. According to Dulbecco and Vagneron (2001), relationships among subcontractors in the garment sector in Thailand resemble an industrial district mode of organisation, with the clustering of mainly small and medium-sized enterprises spatially concentrated and sectorally specialised working very closely together in longtermed relationships between contractors and subcontractors as well as between the subcontractors. 92 percent of the firms are located in Bangkok, and even within the city these firms are concentrated in a few well-known clusters located close to the main wholesale markets, such as Pratunam or Bobae. Because of the high concentration of enterprises in a small area, the entrepreneurs know each other and know who produces which items. Each of the numerous small firms are generally specialised in a single or very small number of steps or functions, and transactions among firms are repeated over a long period, involving the exchange of information, codes, routines, strategies, ideas and knowledge alongside the exchange of goods. Rotation saving schemes, which finance the activities, play a crucial role, especially during firms' start-ups. Very few entrepreneurs finance their business through formal credit institutions, resorting instead to their own savings or to help from family and friends. The degree of instability in the market makes it almost impossible for sub-contractors to be efficient individually, because of either a lack of orders or a lack of workers. This is solved by a collective response to the variations in demand through the sharing of orders, information, workers and machines in a highly flexible manner. However, the textile and garment industries are not very well integrated, as only a handful of textile conglomerates have also undertaken garment production. Among them are the Boonnumsaps family (Thai Rung Textiles), Darakanonda family (owner of Saha Union) and Photiratanankul family, who own the largest textile group in Thailand (Thai Blanket industry) (Bangkok Post, 1996).

After the Industry Investment Promotion Act was introduced, initially, at the beginning of the 1970s, there was a large influx of Japanese firms aiming to serve the increasingly protected domestic market with fibres. Most of them, however, pulled out during the oil shocks of the 1980s. In the mid-1980s,

however, investments from Hong Kong and South Korea increased, as companies from these countries began to locate overseas in order to reduce costs, and, more importantly, to make use of Thailand's export quotas, having used up their own. However, it is estimated that eighty percent of firms in the textile and garment industry, including the larger, fully integrated ones, are **owned by domestic capital**, though many of the entrepreneurs have Chinese roots. Some Thai textile companies at the top end of production have joined with foreign capital in order to move into more advanced forms of production through technology transfer (personal interviews with representatives of BOI, 2000; TID, 2000 and THTI, 2000).

Within the garment industry, the main mode of production is subcontracting for foreign buyers, that is, production on the basis of orders to designs specified by the customers. US garment manufacturers moved to subcontract finished cloth overseas, particular in Southeast Asia, due to the high value of the US dollar in the 1980s. Very few Thai firms have developed their own design or brand for the export market. However, some Thai brands, such as Fly Now, Teens and Co. and UFO, serve the domestic market. The garment industry requires relatively small initial investment, and an abundant supply of low-cost female labour. Some of the large export-oriented companies have invested in advanced technology, such as computerised machines for pattern making, cutting, and grading. However, product expansion is mainly led by the expansion of capacity, that is, simply buying more machines. Garment production is largely organised according to the progressive bundle system, in which the workers specialise in only one or two tasks, rather than the more flexible modular systems, in which workers are trained in multiple skills. The facilities are mainly outdated because most machines are old-style models imported from Taiwan, South Korea and Japan. The productivity of the Thai garment industry is between a half and a tenth that of Japanese firms, due to the low level of modernised facilities and machinery, as well as the underdeveloped management system for time and motion studies. Companies focusing on non-quota markets are particularly concentrated in the product segment with low prices and low quality (Japanese International Cooperation Agency, 1989; Poapongsakorn and Thonguthai, 1998).

The textile and garment industries are very **important to the Thai economy**, the garment industry being the number one export earner in 1990, after overtaking rice as the most important export. However, garment exports have declined in importance since then, and in 2000 the industry only ranked number five in terms of export earnings, electronic machinery ranking number one. In 1995 the textile and garment industry accounted for sixteen percent of the GDP originating from the manufacturing sector, and contributed 26 percent of total employment in 1996, of which garments alone accounted for twenty percent or 877,000 people. Exports of garments reached US\$4.1 billion in 1994, 68.2 percent of textile exports and 13.3 percent of total exports. The total export value of Thai garment production ranks number ten in the world market, with a

market share of about 3.2 percent in 1995. China ranks number one with fifteen percent, Hong Kong number two with fourteen percent, and Italy comes third with nine percent of world production (Thailand Textile Institute, statistics 1998; Gereffi and Memedovic, 2003). The most important **markets** for Thai textile and garment products are still the US and Europe, but non-quota markets are increasing in importance. The ASEAN market is still small due to the high tariffs and similar production structures. But exports to other ASEAN countries are growing and can be expected to increase even more as a result of AFTA, which is aimed at promoting intra-ASEAN trade and increasing specialisation. Although the domestic market is expanding, exports as a percentage of the total value of garment production accounted for 44 percent in 1987. However, it is estimated that border trade with neighbouring countries, such as Burma, Laos and Malaysia, accounts for around twenty percent of what is counted as domestic consumption.

The Thai textile and garment industry is thus very successful when measured by its export performance, with outstanding growth in garment exports in particular. However, at the beginning of the 1990s, Thailand's competitiveness in labour-intensive exports began to decline in response to both internal and external changes. The main internal factors were a sharp increase in real wages from a one percent annual rise between 1978 and 1986 to a 5.4 percent rise between 1987 and 1991 (Phonpaichit and Baker, 1998). Of external factors, the shift of US sourcing of garment production from Southeast and East Asia to Latin American countries has had serious consequences for the ability of Thai garment firms to become suppliers. But the most serious threat stems from the growing competition from countries with lower wage levels, such as Indonesia and China, which has prevented Thailand from maintaining its competitiveness in the most labour-intensive segment of garment manufacturing (Poapongsakorn and Thonguthai, 1998). Thus, since 1991, Thai textile and garment production and exports have grown at a slower rate than in the past. In 1992 and 1993, the value of textile and garment exports increased by 3.6 and 3.3 percent respectively, which is very slow when compared to the average rate of 34 percent between 1987 and 1991 (DEP, 1995). Reaching a peak of US\$4.3 billion in 1995, the value of garment exports actually fell drastically in 1996, by 21.4 percent. The slowdown in Thai garment exports indicates that Thailand's competitiveness has been undermined by competition from Mexico and China, the slowdown in world-trade, increases in real wages and the introduction of VAT (Lauridsen, 1999; personal interview a representative of TGMA, 2000).

The **Multi-Fibre Agreement** influences the structure of the textile industry to a large extent, as the system of **export quota allocation** in Thailand favours large companies. Quotas are allocated on the basis of past export performance and criteria such as use of domestically produced inputs, price per unit, and time between order and delivery dates. Small firms and newcomers normally begin by producing in the low value added segment and thus cannot compete

for quotas with already established companies (Suphachalasai, 1994). Even if the MFA is made responsible for a loss of welfare due to the restrictions on export (ibid.), quotas have paradoxically helped manufacturers upgrade to higher value-added products. When Thailand started to fill its quotas in the 1980s, export-oriented companies upgraded to more value-added products, thus yielding more profit for the same volume.¹⁰ The value of garment exports grew by 36 percent a year on average between 1977 and 1987, while volume grew by 22 percent a year, indicating that Thai garment companies have improved their efficiency and product quality through an increase in capital intensity. In addition, the industry has in reality been protected by the quota system under the MFA, which disguises the actual level of competitiveness. The allocation of quotas to Thailand has been gentle compared with East Asian countries, and quotas have been expanding every year, while newcomer countries to the garment business or non-MFA members have had their access to the quota markets restricted. However, the quota system is currently being phased out, as the textile industry is being integrated into the WTO on 1 January 2005. Without the quotas, Thailand will have to compete on equal terms with China and other South and Southeast Asian countries.

Naturally, the financial crisis had a harmful influence on Thai garment producers, as the debt burden rose because the currency devaluation led to a steep rise in input costs and income level dropped. Manufacturers who had speculated in land and real estate development during the 1986 to 1991 period, because they found that the return on invested profits from speculation were much higher than reinvesting in production, were especially vulnerable. Conversely, the depreciation of the currency has enabled the Thai textile and garment industry to reduce the dollar value of its export prices. The devaluation of the Thai Baht by 33 percent has enabled textile manufacturers to win export orders away from rivals in China and Vietnam, even if this is only a short-term gain (Anson and Simpson, 1998: 41). Actually, garment exports enjoyed an outstanding performance, with growth figures of 21 percent and 27 percent in 1997 and 1998 respectively (Thailand Textile Institute, statistics, 1998). Nonquota markets, such as Saudi Arabia, Singapore and the United Arabic Emirates, experienced a decline, while the US and European markets experienced an overall growth. The Middle East market fell from almost 20 percent of the Thai garment export to account for only 8.2 percent between 1995-1998, and the ASEAN market fell from 4.8 percent to 1.7 in the same period. The US market, on the contrary, rose, from 27.9 percent in 1995 to 64.2 percent in 1998, proving its position as the most important export market, accounting for more than half of all garment exports, as is illustrated in Table 4.2.

The upward turn in exports is largely due to the currency devaluations, which cannot be expected to sustain this trend in the long run. As is evident from the stagnation and decline of export figures in the early 1990s, the industry is

¹⁰ MFA quota is measured in million square yard equivalent.

	Value in Million Baht					
		Percent gro	wth (percentag	ge share)		
Markets	1995	1996	1997	1998		
USA		27.896	29.894	42.858	64.244	
		Na. (26.6)	7.2 (36.2)	43.4 (42.9)	49.9 (50.6)	
EU		18.139	17.585	22.339	27.822	
		Na. (17.3)	-3.1 (21.3)	27.0 (22.4)	24.5 (21.9)	
Middle East		20.830	9.118	8.405	8.246	
		Na. (19.9)	-55.9 (11.1)	-7.8 (8.4)	-1.9 (6.5)	
ASEAN		4.848	1.658	1.829	1.664	
		Na. (4.6)	-65.8 (2.0)	10.3 (1.8)	-9.0 (1.3)	
Others		33.234	24.245	24.400	25.063	
		Na. (31.7)	27.0 (29.4)	0.6 (24.4)	16.0 (22.9)	
TOTAL		104.947	82.500	99.831	127.039	
		Na. (100)	-21.4 (100)	21.0 (100)	27.3 (100)	

facing severe competition. Labour-intensive production and expanding capacity alone cannot secure future success in export markets.

Table 4.2. Garment Exports Classified by Markets. Source: Thai Textile Statistics, 1998.

4.3 Global strategies and knowledge spill over to Thai firms

This section focuses on the organisation of global lead firms, their activities, their embeddedness in the local environment and the creation of relationships with Thai firms. The purpose of this case study is to assess the opportunities that Thai firms in the auto-parts and garment sub-sectors have to link up with global lead firms and to subtract valuable knowledge from these relationships in the present environment of increased competition and weak institutional support. The case study is theoretically based on the inter-organisational or differential approach to the study of TNCs, which, in contrast to Gereffi, argues that the local impact of TNCs has to be set within the precise roles performed within a particular corporate network, rather than being deduced from stereotypical export roles. Indicators in this regard are the type of TNC operation, its policy towards externalisation and supplier strategies, and the extent to which capable local partners exist (see Chapter 2). The empirical data are mainly based on personal interviews with purchasing managers from seven automotive assemblers and three representatives from buying agencies in the garment business in Thailand. The interviews were carried out between February and April 2000.

The strategies of global lead firms in the automotive industry

In all, twelve vehicle assemblers are located in Thailand, together with some assemblers of trucks and buses. Automobile production is to a large extent dominated by Japanese brands. All major Japanese carmakers have production facilities in Thailand, and these companies lead the market, with more than ninety percent of sales. Toyota, Honda and Mitsubishi are market leaders in sales of passenger cars, Isuzu and Toyota for pickups. Korean brands were being produced in small numbers on license before the crisis, though Hyundai was planning to invest in a 100,000 unit capacity factory in Thailand to produce its Asian car, Accent. However, the Korean car factories experienced great difficulties in relation to the crisis and completely pulled out of Thailand until the economy should recover. Toyota and Ford were among the first companies to set up in the country in the early 1960s. However, the western companies withdrew with the introduction of local content requirements and because of the increasing instability in the region. Since then, North American and European brands have mainly been made on license by small assemblers. The local assembler, Thonburi Automotive, for instance, has assembled and distributed Mercedes Benz vehicles since 1967, while GM's Holden model was previously assembled in conjunction with the Jungsanguanportnsuk family. However, western assemblers returned to Thailand in the late 1990s, taking advantage of the cheap currency and deregulation measures to produce for a larger market. Ford (in alliance with Mazda) and GM began operations at Rayong in 1998 and 2000 respectively. BMW is constructing a new factory in the same area to establish a foothold in the region, while Chrysler is still at the planning stage at the time of writing. Similarly, Japanese companies invested in new facilities and large expansions of existing facilities in the mid-1990s in expectation of growing demand in Thailand and neighbouring countries. This implies that capacity in the Thai automobile assembly industry far exceeds current sales.

Japanese assemblers have mainly entered the Thai market though joint investments with large local business groups. This is partly due to the requirement at that time demanding a majority Thai **ownership** for production aimed at the domestic market. But the assemblers have also benefited from important political and economic ties with local partners. Such protective ties have been vital to establish market access and for the success of Japanese assemblers. The latter are, according to Doner (1991), more willing to accept local equity ownership than US companies, who much prefer majority ownership. Thai shareholders saw ties with foreign assemblers as an opportunity to shift from the import and distribution of vehicles towards their assembly. Beside being majority shareholder partners with foreign carmakers, Thai industrial groups have set up their own assembly facilities to assemble various Japanese and western vehicles from CKD kits. Thus, Thai interests initially gained a strong foothold in the assembling business. However, as can be seen from Table 4.3, the participation of domestic industry has decreased as a result of two developments. First, in many instances the parent companies chose to set up their own production facilities and are thus downscaling or completely shutting down their production at local assemblers. Many small assemblers are therefore under-utilising their plant capacity – a trend that is worsening because of the crisis. One prime example is Bangchan, which has a capacity of 35,000 units a year: since Honda, the Japanese shareholder, set up its own assembly facility, the number of cars being assembled at the Bangchan factory has been very small.

Name of assembler and plants	Ownership	Start-		Models
_	(%)	up		
Toyota			240,000	
Samrong Plant	Th 10, Jp 90	1964	140,000	Hilux Tiger, Camry
New Gateway Plant		1996	100,000	Soluna, Corolla
Isuzu			120,000	
Isuzu Motors Co. (Thailand)	Th 20, Jp 80	1965	120,000	Space Cap, Rodeo, Holden (GM), trucks
Planned Gateway plant (with GM)		2002	20,000	Trucks
Honda			N.a.	
Honda Cars Manufacturing Co.		1992	N.a.	
Asian Honda Motor Co	Th 10, Jp 90	1996	90,000	City, Civic, Accord, CR-V
(Ayutthaya)				
Nissan			140,000	1,600-2,000 cc, 3,000 cc, pick-ups
Siam Nissan Automobile Co.	Th 75, Jp 25	1977	120,000	(small amount of Suzuki and Nissan
Siam Motors (Nissan) Co.	Th 75, Jp 25	1962	20,000?	trucks)
Mitsubishi			220,000	
Bangkok?	Th 60, Jp 40	1973	Small	Strada pick-up, Lancer, Mirage, Galant.
MMC Sittipol Co.	Jp. 100	1993	100,000	Trucks
'3^{th'} plant		1996	100,000	
Auto Alliance (Thailand) Co.	US 48, Jp 45	1998	135,000	Ford (Ranger)/Mazda (Fighter) pick-ups
(Ford and Mazda)	local int. 7			Ford Laser, passenger cars
General Motor	US 100?	2000	100,000	Zafira mini-MPV (Opel Astra)
Bangchang General Assembly Co.	Th 66, Jp 34	1970	35,000	Civic, Jeep Grand Cherokee (Hyundai)
Thai-Swedish Assembly Co.	Sw 80, Fr 20	N.a.	10,000	800-900-series, Jeep Cherokee, Renault
Thonburi Automotive Assem. Co.	Th 100	1967	5,600	Mercedes C-Class/E-Class, buses
Thai Rung Union Car Public Co.	Th 100?	N.a.	10,000	Wanderer (based on Isuzu pick-up)
YMC Assembly Co.	Th	N.a.	12,000	BMW 3-series/5-series, Peugeot 306/405

Table 4.3 Characteristics of Automobile Assemblers in Thailand¹¹

The parent companies have also taken over sale and distribution to strengthen after-sales service, quality controls and pricing strategies. Because of this, the Leenuthaphong family lost the dealership status of BMW, and Ford has also established its own distribution, which was once in the hands of Yontrakit (*Bangkok Post*, 10 May 1998). Secondly, in relation to the liberalisation process of the early 1990s, the Thai government authorised 100 percent foreign ownership of automobile assembly firms. During the crisis, foreign investors took advantage of this opportunity to take over the shares of their local partners, who were unable to provide the new investment necessary for restructuring. As a result, Thai industrial groups almost completely withdrew

¹¹ Source: personal interviews, company profiles, AutoAsia country survey Oct. 1997. The total capacity of automobile assemblers of 1.117.600 units is within comparison with the study of Krienkrai (2003), listing the total automobile assemblers production capacity in 2001 to 996.800.

from assembly activities to concentrate on other businesses. Siam Cement, for instance, withdrew almost all its investments in Toyota Motors when the crisis took hold. Nissan is an exception to this general picture, since the majority of the shares still are in Thai hands. At present, however, the company is planning to invite Nissan Motors (Japan) to invest more in order to have access to the latest technology. Even if ownership is being concentrated in foreign hands, the ownership structure is not straightforward, given the trend towards crosscutting ownership and alliances in Thailand. One example is a recent joint investment between Mazda (Japan) and Ford (US) in a large assembly plant producing pick-up trucks. General Motors also holds 37.5 percent of the Japanese shares in Isuzu.

Most of the major car manufacturers can be said to employ both multinational and global **market strategies**, in the sense that they are present in all the major markets, though trying to develop basic models that will sell globally. The purchasing manager of Auto Alliance explained the importance of such global strategies:

Our next model will be the same basic model made in Europe, North America and also in Japan. We are becoming more and more global.... A major new product may cost billions of dollars to develop. So volume is very important. If you only sell a million cars, and it sounds like a lot, but if you only sell a million cars and it costs a billion to develop, then a 1000 dollars on every vehicle is development costs. So that means that it's expensive. If you could achieve a volume of two million, then you save 500 dollars on every vehicle. And 500 dollars may make a difference between a sale and not a sale – or profit or not a profit. [...] We spend a lot of effort to increase profit by looking at the world as one market.

Such efforts by car manufacturers to standardise production and cut down product differentiation globally are reflected in the strategies of their subsidiaries in Thailand. In the early 1980s, the eleven assemblers were manufacturing more than a hundred models (Doner, 1992). This led to a very fragmented market, with limited opportunities for either assemblers or partmakers to obtain economies of scale. By comparison, the six major assemblers presently produce about 25 models, which have resulted in a less fragmented market. According to the Japanese International Cooperation Agency (1995), the major car assemblers are also taking steps to standardise components for their products between markets and use fewer parts for each model.

The **localisation** of production facilities is more regionalised. The main strategy is to produce a small number of models in every plant in order to serve the domestic market and eventually export to the regional market, and in few cases even the world market. However, the strategy also depends on the size of the manufacturer. Toyota, the largest automobile manufacturer in Japan, has an operations base in almost every major country and produces mainly for the domestic market in each. Conversely, Isuzu only has plants in Japan, the USA (in partnership with Subaru), England, Thailand and China: it therefore serves the various markets from regional bases. In Thailand, Isuzu is still mainly focused on the domestic market, where it is being very successful in sales of pick-up trucks. In Thailand, Isuzu is the third largest manufacturer in terms of sales, even though the company only ranks number ten on the Japanese market.

Because they are still geared largely towards the domestic markets, the assemblers increasingly regard the ASEAN region as a single market and are employing various strategies to restructure future production on a regional basis. In order to reach the large regional market, some automobile companies in Thailand, like Honda and Toyota, have developed an 'Asian car' built on the cheap, family car concept, using parts procured locally. With the aim of reducing costs, the assemblers have also spearheaded regionalisation by establishing complementary parts networks between their subsidiaries in various ASEAN countries under the framework of the BBC scheme. Components such as engine blocks, transmissions, steering gears and bumpers are therefore completed using parts from various Asian countries in order to achieve the more appropriate level of scale that such components demand.

The major assemblers in the survey have production facilities in several Asian countries, but with a capacity of a million vehicles, Thailand is assuming the lead in the region. This is reflected in **the key position that Thailand enjoys in the internal corporate networks** of most parent firms, being the regional hub for production in Southeast Asia. In 1993, for instance, Mitsubishi decided to move all of its pick-up assembly to Thailand in acknowledgement of the potentials of the market and the existence of a well-developed supplier base for pick-ups. With the establishment of Asian Honda Motors, Thailand has also become Honda's second largest manufacturing base in Asia outside Japan and is regarded as the ASEAN headquarters of the company. Thailand has now become the largest OEM parts base in the region, and the large supplier base has become an important incentive for assemblers to locate in the country, alongside market access.

As already noted, Thai automobile production slowed considerably due to the crisis. As the demand for vehicles took a steep downward direction, production slumped. Most plants tried to cope with the crisis by increasing investments, downsizing manufacturing and sales operations, and laying off workers. Some producers, such as Nissan, completely stopped whole assembly lines. In order to restructure the cost burden, Toyota increased its registered capital by 4.5 billion Baht, which indicates that investment in crisis management was a costly affair. However, no car manufacturer pulled out of Thailand, and they turned instead to exports as a solution to these developments in the domestic market. Conversely, the aftermath of the crisis has seen increased investments in the automotive industry.

The export success of Thai-produced vehicles, mentioned earlier, reflects the increasing **technology level** in Thai assembly plants. Most new plants are very modern and capital-intensive, and integrate processes such as stamping, body construction, painting and engine assembly. World-class production technology is widely used, such as high-precision robots and quality inspection, equalling the most modern production facilities and thus meeting export standards. However, not all of the Thai-owned assemblers, which produce on license, have such advanced technology, but mostly receive CKD parts and assemble them using adjustments by hand. Using such methods, it is only possible to assemble a very low volume of vehicles.

The main function of the automotive subsidiaries in Thailand is the assembling of parts and components into finished vehicles. But the plants take on quite a lot of other functions, such as pressing, processing and engine assembly. Some of these activities are not performed in house but through affiliated companies in which the assembler hold shares. Other affiliated companies may be dealers, training centres or companies serving the local community in building schools, for instance. Research and development activities are still limited, but increasing in importance. Honda and Toyota have both established R&D centres that take care of minor trimming to adjust for the local market. But the main function of the R&D department is to gather information about consumer behaviour in the region in order to report back to Japan what the most suitable products are for the Thai market. Toyota, for example, developed its Asian car, the Soluna, on the basis of such information. However, all design and development is still done in Japan. Other assemblers do not have R&D departments, though the purchasing manager of Siam Nissan Automobile acknowledged the learning potential of R&D:

If we can do it on our own, I think it is very useful for our production. For instance, in Taiwan, there is a Nissan assembly also, but they have their own R&D department. Their product sells strongly and increases year by year. Why? Because they tried to find out what is the best for them, based on the taste of the customers, and then they developed by themselves. They can do design and modify from the original to serve the customer's satisfaction – why, the trend of the sales increases every year. [...] Yes, [we plan to establish R&D here], but it is a lot of investment that our company has to think about.

Changes are normally implemented initially in the parent company, whose headquarters takes care of the introduction of technology and know-how, decides which models to produce and co-ordinates the corporate network. The management in Thailand follows the headquarters' policy, but it has sufficient **autonomy to take decisions** about day-to-day affairs in relation to production and most often handles local demand and the selection of local suppliers itself. The managers of the Thai subsidiary can also recommend certain actions that seem desirable to them. Reacting to the crisis, for instance, some management teams in Thailand suggested that their parent companies accelerate exports to third countries to keep production running and secure a volume just sufficient to help the suppliers survive. In fact, since for many TNCs Thailand constitutes a new investment market that headquarters has no previous knowledge of, local management seems to be given much more autonomy than in other markets, as in the case of Ford:

Ford has the general philosophy that if you can create shareholder value by doing something, then you can do it. So we are a management team discussing what parts we will make next. And what we choose to push will be what will come out here. We have an influence on what we make and what direction the company is going in. So yes, we have an influence, even at this level. More influence than perhaps I would have if I were back in Europe (Auto Alliance).

Decisions made in the subsidiary in Thailand are also influenced by the fact that most managers have Thai nationality. Toyota, in fact, has an implicit **'Thai-isation'** policy, and has recently replaced the top-level management – that is, the Vice-president, Chairman and Managing Director – with Thais. In most cases, however, such top-level positions continue to be monopolised by non-Thai. In newly established plants, the next layer of managers – that is, the heads of section, for example the purchasing managers – are also likely to be expatriates. After a certain period, however, Thai managers generally replace them. One simple reason is that expatriates are very expensive compared to local managers. On the other hand, it is somewhat difficult to find qualified Thai personnel with the necessary experience.

Given the relatively large size of the automobile assembly plants, they have a significant impact on their local environment. The assemblers in the survey employed between 2,000 and -4,000 workers.¹² Besides employing a large number of people and supplying firms, the automobile manufactures have established various other links with the local environment and the wider society. In order to generate goodwill, most companies contribute to social programmes by, for example, providing student uniforms, lunch programmes and school buildings to the local community. Funding also includes local development projects benefiting the workers and environmental programmes. Most of the major assemblers help fund public and community educational and training programmes and have links with technical universities. Toyota, for instance, has established an education and training centre for automotive education and supports the automotive engineering department at Chulalongkorn University. Donations are made sponsoring students, lecturing, and the financing and transfer of vehicles and other equipment to technical schools as means of technical learning.

¹² However, most assemblers downsized the workforce after the crisis and went on working with only one shift.

Auto-manufacturers in Thailand are generally members of various automotive associations and trade chambers. Most assemblers participate in the assemblers association as part of the Federation of Thai Industry (FTI). The objective is to influence government decisions regarding automotive policy. The main goals are to influence tax policy and force the government to respond more quickly and launch new policies more effectively. However, on big issues, the assemblers lobby the government more directly, through the various government agencies. Such lobbying efforts are very institutionalised. Ford, for instance, has its own office in Bangkok, which, with the assistance of Thai experts, aims to affect government policy to Ford's advantage.

It is widely assumed that Japanese automobile assemblers are more embedded in Thai society than western companies. The reason is primarily that to a large extent Japanese companies comply with government policy, such as local content requirements and Import Substitution Industrialisation (ISI) and Export Oriented Industrialisation (EOI), while western companies pull out if their investment does not pay off in the short term. Besides, it is acknowledged that Japanese expatriates attempt to learn about the local culture and language and become familiar with Thai economic and political structures (Doner, 1991). Another difference is that while the Japanese have focused mainly on the local market, western firms invest in the country to serve both the domestic and regional markets. The Japanese have more local contacts with customers, suppliers and officials, which is accentuated by their long presence in the region and their wide network of Japanese suppliers. However, this is not to say that western assemblers locate to Thailand mainly to take advantage of low labour costs or that they are foot-loose. Recent western investment has been huge, its aim being to obtain a foothold in the ASEAN market. But it is clear that Japanese manufacturers regard the ASEAN countries as the backyard of Japanese production to a larger extent, especially after the devaluation of the yen in 1985.

Supplier strategies of global lead firms in the automotive industry

Major car manufacturers in Thailand, such as Auto Alliance, Honda and Toyota, have large integrated production facilities, where the whole process, from pressing the body parts to the finished vehicle and in some cases assembling the engine, is done in house. Such processes amount to 20-37 percent of the value of the vehicle. Beside metal bending and assembling activities, the manufacturing of parts is externalised, indicating a **fairly high localisation rate**. Most input and materials are obtained from local sources, as between seventy and eighty percent (in terms of value) of the externalised parts are procured in Thailand, depending on the model. Relatively new investments, by firms such as Auto Alliance, Mitsubishi and Honda, localise a little less than well-established companies like Toyota and Isuzu. The abolition of local
content rules did not immediately lead to more global sourcing. Assemblers generally aim to use as much local content as possible, because it is more costefficient to source locally than to import and also makes sense from a tax point of view. After the abolition of local content rules, the tax on imported CKDs went up from 20 to 33 percent, giving local suppliers a 33 percent cost efficiency advantage over overseas suppliers.

However, assemblers, which manufacture mainly for export markets, as with the recent US investments, reveal another side to the story. The use of the bonded warehouse system¹³ means that suppliers must be cost effective per se. This means, for example, that Mitsubishi's export model, the Lancer, only has 33 percent local content, while the model built for the domestic market has 54 percent local content (Lim and Fong, 1991). This indicates that locally produced parts are not yet up to international standards. The extent to which parts and components are bought locally depends, however, on price competitiveness and whether the products are produced in Thailand. Fuel injection pumps, exhaust emission equipment, safety parts and automatic transmission, for instance, cannot yet be produced in Thailand. The assemblers in the survey each use between 100 and 130 local part-makers, of which twenty to thirty percent are Thai-owned.¹⁴ The rest are mainly joint ventures with Thai equity. Many of the Thai-owned suppliers have entered into technical licensing and technical support relationships with foreign companies. Thaiowned suppliers, who supply many assemblers, mainly produce small metal press and plastic products. The value of parts procured from Thai-owned suppliers is limited, since, in terms of value added, the bulk of local procurement is mainly sub-contracted from affiliated companies or Japanese related firms.¹⁵ This trend increased after the mid 1980s as the appreciation of the Yen encouraged a new wave of Japanese suppliers to invest in Thailand (Japanese international Cooperation Agency, 1995; Buranathanung, 1996).

The **procedure for selecting new suppliers** is very strict. Suppliers that tender for the business are evaluated for quality, delivery and costs, and the products are thoroughly tested before the supplier is added to the list of approved suppliers. Quality is the most important requirement, and the supplier must have appropriate procedures for controlling parts. First and foremost, the assemblers check the cost and quality of the product and the supplier's ability to deliver on time. However, they also analyse the background of the company, the abilities of the management and whether the firm have cost reduction plans such a VAVE (Value Analysis, Value Engineering). The assemblers normally provide the drawings and specifications of the products and sometimes a prototype, which the suppliers convert into detailed drawings for machining

¹³ The bonded warehouse system allows exporters to claim a tax rebate on imported parts and materials. ¹⁴ This figure is comparable with figures produced by Buranathanung (1996), which indicates that transactions with affiliates or Japanese suppliers are a high 77 percent of local procurement.

¹⁵ This is confirmed by Lecler's study (2002). In 1999, the procurement of Toyota from purely local suppliers, who did not have a technical agreement with Japanese parts-makers, contributed to fifteen percent of supplying firms, but only accounted for one percent of the total purchasing value.

and mould making. The suppliers then send a prototype to the customer for confirmation and suggestions for further modifications. Depending on the part, the process of choosing a new supplier takes about one and a half to two years. Data about suppliers come from various sources. Mostly knowledge about new suppliers comes from the automotive society itself through information concerning which suppliers are used by other assemblers and who has the know-how to produce a given product. But the information is also collected from databases and applications handed in by the suppliers themselves. Concerning applications from the suppliers, assemblers complain that suppliers are not always aware of which parts the assemblers need, and that applications do not always contain the right technical information.

In general, assemblers do not prefer any particular nationality, but there appear to be clear differences between Thai and Japanese (or joint venture) suppliers in terms of organisation and quality. All assemblers complain that many **Thai suppliers do not have the ability to make their own designs or develop new products**. This is a problem because the assemblers favour suppliers which are capable of taking part in the joint development of new parts and components. One of the main requirements of customers when they choose suppliers is that the quality of the parts be guaranteed. That is, assemblers normally only choose Thai suppliers who have technical assistance agreements with a reputable part supplier or are joint ventures. As the purchasing manger of Auto Alliance explained:

We do not prefer any nationality; we take the best suppliers. But I have to be honest and say it helps if people have a connection with an engineering centre. During the production development process, we need the involvement of the supplier. And if the supplier has no presence in some engineering centre, it is going to be so difficult to engineer that it costs us more money. Because, when our engineers have to come and visit them, which is more expensive, it means more expats coming. It puts them at a disadvantage.... We generally work with suppliers who help us design parts. We are not in the business of drawing the part and then the supplier makes it.... Most parts in the car are now designed jointly between Ford and the suppliers. We have many 'black box' items. This means that we define the specification and then the supplier defines the design. For example, we say that a black box item should not be noisy, that it has to be able to transmit a certain amount of power without damage or breaking. It has to last a certain time. And we do the testing, and then the insides of that part, they design. We do not look at the insides of that black box. When you buy a tape recorder, you just specify certain qualities; you do not go into the audio shop and say, 'I would like one which has all of these components inside'. They have to be able to make the design.

The growing focus on export for the international markets has also led car manufacturers to demand international standards of their suppliers in order to ensure the quality of the products. Quality is, however, another issue where Thai-owned suppliers sometimes fall short of international parts manufacturers. Thai suppliers have come up to acceptable standards, but the quality of their products is not yet at the same level as that of Japanese suppliers. Thai-made parts simply have too many defects. Isuzu, among other Japanese assemblers, evaluates the performance of the suppliers in terms of the amount of defective parts per million (PPM) as a way of making suppliers compete among themselves. The acceptable defect rate for the pick-up is set at 40 PPM on average, but is in effect much lower for Japanese parts manufacturers (11.4). Thus, the acceptable rate is set to take into account the poorer performance of Thai suppliers. Altogether, a general trend towards greater use of suppliers with design and development capabilities, and the relatively poor quality of parts made by purely Thai suppliers, means that the latter are declining in importance as direct suppliers for the foreign assemblers. In order to obtain suitable parts, the assemblers instead encourage or require their suppliers to localise in Thailand. In relation to the investment of GM, for instance, at least thirty of its US and European suppliers have set up business in Thailand (Auto Asia, Special Report, Thailand, October 1997).

In general, Japanese assemblers located in Thailand make an effort to **transfer the organisational structure** contained in the Japanese supplier system when they invest overseas. However, it has proved difficult to transfer all parts of that system to Thailand. Japanese assemblers, for example, do not have equity shares in their Thai suppliers. Due to the limited market, suppliers are not linked to just one assembler, as in Japan, but are allowed to pursue economies of scale by supplying to many customers. The essence of the Japanese production system is to pursue **long-termed subcontracting and close co-operation** with the suppliers in terms of production quality etc. This strategy has also been introduced in Thailand. Supplier relationships with Japanese assemblers involve the sharing of information and very close communication in order to work together on production plans and parts development. Long-term relationships based on personal knowledge and frequent meetings are the building block of supplier relationships. The purchasing group at Toyota explained the principles it follows in working with suppliers as follows:

When the supplier has been approved, we think they are our partners – we go together. So when there are some misunderstandings, some problems happen, we inform them what they should improve, and what are the future trends and points we consider. [...]. If they need support, we can support them. We have something we call the Toyota Cooperation Club, of which major suppliers [are members]...now there are ninety companies. For this we have many activities – improvement activities. Sometimes we invite professors and experts from the local university, sometime we invite our Japanese experts to teach them about the Toyota production system in order to save costs and produce parts with fewer defects and ask them to carry out the concept to improve operational area in their own factories that produce for Toyota. Toyota has invested a lot in this, maybe over twenty years. And after implementation, we do the comparison. I mean, if we have four companies jointly involved in activities, we will find the outstanding improvement among those four companies to promote improvement and competition among them.... Many times we invite the managers to observe our current operation, and we also send somebody to them. We do not transfer machinery, but we suggest or recommend them to the expertise companies in Japan and ask them to request the system of that company. So we are sometimes the co-ordinators. We are also involved in building the research stage, e.g. for some body parts. We are involved in the design stage for the tooling and die making in order to get the optimum number of the process with the minimum costs and suitable in order to operate. We also try to educate the suppliers.... In order to communicate closely with the suppliers, especially since the crisis, the purchasing centre will inform them every week. Every month the top management of the suppliers comes here, so we can announce the market situation, forecast sales and the major policy for our requisition to them and open to the floor if they have some questions. Our top management and suppliers, they can talk together. Yes, we know all the suppliers personally.... In purchasing we provide the support function. There are now four people to be the co-ordinators about the planning and the channel to contact the local suppliers. Anytime they can contact us, sometimes by telephone, sometimes they come here to a meeting, and sometimes we visit them.

These relationships are not governed by a contract, but a purchasing agreement is made and renewed every year. Once a supplier receives an order, it is normally guaranteed that it will supply the part. Unless the model is phased out, the supplier will normally receive a new order whenever a new model is released. If problems emerge, the assembler will choose to assist the supplier to improve instead of dropping him immediately. Supplier co-operation clubs, which have been set up by all the assemblers in the survey except Ford, work to support the close relationships between customers and suppliers. The majority of the suppliers, who supply directly to the assemblers, belong to these clubs, in which the members' top management meet occasionally to discuss the market situation, future policy and the suppliers' requirements, as the main objective of the club is the diffusion of information. The close co-operation within the framework of the supplier clubs, long-term relationships and frequent meetings generate a great deal of personal trust between the assemblers and the suppliers. However, trust largely rests on a functional basis and is built up deliberately over many years:

Most of our automotive society knows each other. Actually, we generally know who has the know-how to produce any product.... Half of them I know personally because I have worked in the purchasing department many years. But as for the new suppliers, I don't know them. I think in general we have a close relationship and we have close communication.... I trust them, because for our business, if he does any tricks, he will lose reliability. Our business is mass production. If we lose any reliability for our suppliers, it will make me hurt because it means that our products also have a problem. So I trust them, but we have to know everything he already has done. There are no unforgettable situations. I mean, we do not have any risks in this business. (Isuzu)

Assistance and requirements of global lead firms in the automotive industry

All the assemblers in the survey provide the suppliers with technical assistance, and they also put forward various requirements and complaints about how suppliers should ideally run their business. However, such demands are followed up by training management and organisation. Quality improvement is the most important issue, especially training in the application of ISO 9000. The training of suppliers in subjects such as delivery on time, safety and environmental topics is also important. Japanese supplier clubs act as the framework for various forms of assistance to the suppliers. Thus, members of supplier clubs, usually core or first-tier suppliers, are given strong encouragement to upgrade and develop. Club members participate in frequent training courses in order to learn the Japanese production system and upgrade the quality of their products. Occasionally, Japanese experts or professors from Thai universities are invited to teach the suppliers specific skills. However, assemblers rarely transfer machinery and materials to suppliers or assist them with design, and they only assist with tooling in few cases. The main reason is that the assemblers do not have in-house knowledge about such issues, as they mainly carry out assembly activities. Instead, the assemblers have a coordinating role in suggesting which are the expert companies that have the necessary knowledge to produce, develop and design specific parts.

We do not support them in design, because we also do not have knowhow for the design of the parts. We have some ideas and explain them to them, but we also buy the parts from specialists. The know-how of the products comes from them. We give suppliers some details that are needed for the production, but we get such descriptions from Japan. Maybe we help the suppliers with technical problems concerning related products. (Isuzu)

Just as Japanese assemblers transfer Japanese production practices to Thailand, they also make an effort to **transfer Japanese supplier practices** to their Thai

suppliers. Japanese assemblers, for example, divide suppliers into first-tier, core firms with whom they deal directly, and second- and third-tier firms. They also introduce various processes and organisational practices, such as the justin-time system and quality circles, into the production system of their Thai suppliers. The just-in-time system involves bulky parts being delivered at least once a day, and especially important parts such as engines are delivered every hour. In practice however, Thai suppliers do not find it easy to implement the Japanese production system. This is not because they are unwilling to do so, but because they do not operate them as effectively as the Japanese suppliers. As the purchasing manager of Mitsubishi explains: 'The Japanese are OK, it is in their hearts. But the Thais, we have to teach the managers [how to] organise'. This means that Thai suppliers are not always able to deliver on time, and that they have a higher rate of defective parts than Japanese suppliers. Apart from the fact that Japanese practices are not easily understood and implemented in Thai companies, another problem seems to be that some Thai suppliers do not understand commitment in the same way as the Japanese: 'Thais are very keen on compromise and harmony and commitment. They always commit to what you want, and then they cannot deliver. The Japanese would not commit until they are sure they can do it and then they will do it' (Ford). Another reason why Japanese strategies do not work in Thai firms is that the assemblers must hand over product-development drawings to the suppliers, instead of black-box specifications. 'For Thai suppliers, we have to supply everything... Right now we provide Thai-owned firms with the necessary production plans and design descriptions. But now we are trying to improve that.... And we hope – sorry, believe – that in the future they can provide themselves' (Toyota). Thai suppliers do not have their own engineering departments, which means that they experience great difficulties in teaming up with Japanese assemblers to develop and design products jointly. The difference between Japanese and Thai suppliers thus has repercussions on the relationship between assemblers and local suppliers because Thai firms need greater assistance and more product specifications.

Auto Alliance, the only Western company in the survey, does not tier suppliers and prefers to keep them at a distance, even though in general they work with their suppliers on a long-term basis. The purchasing manager of Auto Alliance is of the opinion that the Japanese system of close partnership with suppliers is a matter of living on borrowed time, because the increase in competition has made the system obsolete. There is already evidence of such shifts in Japanese supplier strategies. In Japan as well as in Japanese production facilities overseas, there is a trend towards giving up close relationships and moving more in the direction of the western system of **global sourcing** because competition has put pressure on car manufacturers to use the cheapest suppliers globally. Mitsubishi, for instance, has openly acknowledged that traditional strategies may be obsolete when seen from the perspective of recent increases in competition: MMC has no option but to go for the best and cheapest parts regardless of country of origin. That may mean some long-standing relationships with ASEAN vendors are terminated. The key for our survival is global sourcing from the best suppliers in terms of quality, cost and delivery without being restricted by territorial barriers. [...] We will use the new BGS policy – Best Global Sourcing. (F. Yoshimi, leader of Mitsubishi's strategies in the ASEAN region. Cited in *Auto Asia*, September/October 1998)

It is not only the search for cheaper parts that is inducing carmakers to move towards a more global strategy. The assemblers will have to rely much more on large suppliers with specialist knowledge and the ability to design and develop larger system components (e.g. exhaust or brake systems). A shift towards use of such '**system or module suppliers**' implies that assemblers only have to deal with a few suppliers directly and are therefore able to concentrate on the development and design of new vehicles, marketing and assembly. These trends were mentioned by the assemblers in the survey. They acknowledged that circumstances have changed, and that competition has put pressure on them to open up suppliers clubs to the best suppliers on a global scale.

Strategies of global lead firms in the garment industry

As Thai garment producers are linked to global lead firms mainly through export, this section, on the strategies of lead firms in the garment industry, is organised somewhat differently from the corresponding section on the automotive industry. The main difference is that the leading actors in the global garment commodity chain, notably the retailers, are represented in Thailand through buying agencies. Since they are not located in Thailand as the automobile assemblers are, it is not relevant to talk about their position in corporate networks or the extent to which their subsidiaries are embedded in Thailand. Instead, information about buyers' strategies has been collected through interviews with mediating buying agencies, which are located in Thailand and represent foreign buyers.

There are numerous buying agencies in Bangkok pursuing a wide range of different strategies. The smaller ones, which act as commissioners, are mostly used when the quantity of garments being purchased in Thailand is small. There are some 25 to 30 very large agencies representing the big brand name retailers in the US and Europe. In between are smaller agencies representing manufacturers that lack brand-name recognition. The three agencies in the survey follow different basic strategies. First, AMC acts as the agent for several large retailers, 95 percent of which are American. The main customer of AMC is Target, the second largest retailer in US, and AMC also represents well-known retailers such as Bloomindales and Sixth Avenue. AMC is a worldwide organisation with offices in 27 countries all around the world. The office in

Thailand was set up in 1991, but AMC has been operating through a commissioner since 1985. Secondly, J.C. Penny exclusively represents J.C. Penny, one of the four largest US-based retailing chains. Like AMC, J.C. Penny has offices all over the world, with offices in Thailand, Singapore, Hong Kong, Taiwan, China and South Korea in Asia alone. The third buying agency in the survey, Hereford, represents only three or four smaller buyers, mainly European. Hereford used to serve American buyers, but they have all changed to production sites such as China, Bangladesh and Indonesia in search of lower prices. In contrast to AMC and J.C. Penny, Hereford represent retailers selling cheaper cloth without a brand name such as the large wholesaling chain Metro. Hereford is a domestically owned and run company in the hands of a Chinese family, and has operated in Thailand since 1975.

The main role of these agencies is to act as **intermediates between foreign buyers and local garment manufacturers.** Their main role is to search for suitable garment manufacturers, place orders and monitor the garments being shipped back to the buyer as cheaply as possible and on time. In between ordering and shipping, the office takes care of quality control in the manufacturing process and follows up orders to ensure that they will be delivered on time. However, it is the manufacturers that take care of material sourcing, cutting and assembly, and the actual shipment of the finished cloth. Another reason why many of the major retailers have their own representative office in Thailand it to obtain market information about countries in the Mekong area. Thailand has become a central localisation from which to study business opportunities and launch operations in Burma, Laos, Vietnam and Cambodia. Buying offices located in Thailand also sometimes source from neighbouring countries.

In general, the agencies source all kind of garments in Thailand, from fashion to garments produced for discount stores. However, it is emphasised that the country's strength lies in producing children's wear and complicated items consisting of many parts, such as jackets. These items are very difficult to assemble and thus require very good skills. As far as children's wear is concerned, the presence of supporting industries – for instance providing embroidery and patchwork - is very important, as is the fact that Thailand has abundant quotas for children's wear. However, Thailand is not a good market for fashion, as the lead-time for such items is very short. The variety and quality of locally made fabrics is very limited and must be imported from South Korea or Taiwan, which increases the delivery time from one month to three or four months and raises the price considerably. Moreover, it takes about twenty days to ship the finished cloth to the markets -too long a horizon for fashion brands. Thailand still has a competitive advantage in producing basic items that are not constantly being replaced and that can be made of local fabrics. Buyers are therefore able to get good value for money if they source small and complicated items that require good skills.

The **quality** of Thai garments is very good, as in general factories possess adequate facilities for making quality goods. AMC's office in Thailand, for example, was regarded in 1999 as the best of AMC's worldwide offices, due to the very low number of claims against bad quality. The main complaints made by buying agents relate to **high prices and delivery deficiencies**. Thailand is no longer a low-cost country. The average salary is about US\$150 a month, while the monthly average in China is only US\$30 and in Bangladesh it is even lower.

The importance of low prices is evident from the flight of buyers, who increasingly source from countries with lower labour costs. However, despite the crisis, orders began to pour into Thailand again after the Baht was devalued. But this competitive factor is thought unlikely to last. Making deliveries on time is another problem. According to the AMC representative, delays are partly due to the inflexibility of Thai managers. If a factory is late in fulfilling an order, the managers ask for more time instead of shipping the collection by air. However, one important reason for high costs and late delivery are problems in sourcing the fabric and other materials. A lack of quotas can also be a problem for manufacturers when very large orders are placed. This problem can be solved if the manager applies for more quotas, or it may be possible to buy them from a firm that has some to spare. However, this increases costs. As a result of these circumstances, Thailand is primarily positioned in the garment industry as a manufacturer of both basic and complicated quality garments.

Supplier strategies of global lead firms in the garment industry

When selecting new manufacturers, information about suitable vendors comes from various places, such as the Thai Garment Manufacturers Association and the Department of Export Promotion. Information also often comes from the manufactures themselves or from other offices, as the major agencies have monthly lunch meetings in order to exchange information. However, the representative agencies have normally been working with the manufacturers for a long time and thus know the good from the bad, and – most importantly – who has quotas. The criteria for selecting new manufacturers are first price, and then delivery and flexibility. Quality is not the main requirement because in general this not a problem. Buyers with a brand name also have to consider their reputation and therefore screen suppliers for certain legal rights, such as human rights and reasonable working conditions. The procedure for selecting a new supplier normally takes about a month. A prospective supplier first of all gives a price for the order based on sketches, a description of the garment and quality requirements. If this is approved, the supplier normally makes a small sample of the garment, which is evaluated on quality terms by the representative office and the foreign buyer. If this is approved in all respects, the supplier is placed on the list of approved suppliers and is trusted with larger

orders. Buying agencies normally co-operate with these **key suppliers** and do not have a large number to select from. J.C. Penney has about forty suppliers in Thailand, AMC only seven or eight.

The garment manufacturers are mainly **Thai-owned**, but they may also be based in Taiwan or Hong Kong. Thai firms are usually owned by families of Chinese origin. It is common for the second generation, who are normally trained in the textile business and in many cases have studied abroad, to take over. All the garment factories that work for the three buying agencies interviewed are export-oriented. The orders are relatively large, ranging from 100,000 to 500,000 items, and the manufacturers are consequently very large, employing several thousand workers. The garment factories selected by the buying agencies are technologically quite advanced. The manufacturers use new technologies, such as computer markers and are constantly trying to improve their productivity. Faced with a decline in competitive strength, many manufacturers have invested in new automatic machines with the money they made from the upsurge of orders following the crisis. This has enabled them to improve their performance and to supply at a lower price. The benefit, however, is transferred to the buyer, as stiff competition means that manufacturers are constantly being required to give buyers more for the same or even a lower price.

Foreign buyers maintain a **hands-off strategy** in their relations with garment manufacturers. They only visit the garment factories once or twice a year, when they are in Thailand to deal with the buying offices and place orders. In general, however, they do not interfere with the operations of their suppliers. Generally, the buyers just approve garment samples and send orders. Replacement orders can be sent by e-mail. An order contains a sketch and a sample of the desired fabric, together with requirements regarding quantity, size and colour. Discount retailers might not even have their own design facilities. Instead they just give the manufacturer a sample of a particular garment, sometimes bought in Italy or France, and ask them to copy it in stated quantities of different sizes and colours. In that case it is up to the manufacturer to find out how to make the garment. Some factories producing for discount chains have a collection of the products they make for different customers, so buyers can come and choose what they want from this collection.

As buyers only come to Thailand once or twice a year, **contact with suppliers** is managed by the buying agencies in Thailand. Everyday communication is done by phone or e-mail, and even sketches and specifications are send by e-mail. However, the agencies normally visit the suppliers many times during one order, usually working with the same suppliers for a long time if they prove to be reliable, and they acknowledge the value of having good relationships with key suppliers. The relationship is not governed by a contract, but when an order is placed it works as a contract with a year-long horizon. One result of this long-term co-operation is that representatives of the buying office and garment

manufacturers come to know and trust each other very well, building up mutual commitments. The buying agency usually informs the manufacturers about future orders and changes, and the manufacturers in exchange make sure that they reserve enough quotas for their customers:

They have to make sure that they can ensure the quotas. That is loyalty – if they are loyal to you, we are loyal to them. We do not shop around really, because we want the quality, we want human rights to be protected and we want delivery on time.... It is not really a personal relationship, but we have been in the industry for a long time, so we are friends to each other anyway. I think the factory and we make it our business to get to know each other. (J.C. Penney)

The buying agencies do not provide suppliers with specific **assistance**, and they do not in general train the management or workers in the garment factories. However, J.C. Penney and AMC have teams of technicians who spend all their time in different factories. The main purpose is to ensure that quality meets the required standards and to check that the delivery will be on time. But the technicians also make **demands** on the manufacturers, for example to change production lines, adjust machines or follow new procedures for testing, in order to improve productivity and quality. The suppliers, however, do not receive any help or financial assistance for their efforts to improve. As the technicians receive technical training and operate in various factories, they obtain knowledge about efficient production systems, which they use to recommend certain action to other companies. Accordingly, assistance mostly adds up to an exchange of information.

The three buying agencies agreed that suppliers would have to upgrade their production to survive **competition** from countries with lower labour costs. China is regarded as a powerful competitor after her acceptance into the WTO, and buyers will have no incentive to keep buying in Thailand if Thai garment manufacturers keep producing basic items. Many garment producers already have made considerable improvements in terms of the implementation of new machines, and they have achieved very high quality standards. However, there is still room for an improvement of technical skills, and especially for the development of their own design capabilities and upgrading towards the higher value-added fashion market. Thai garment manufacturers also need to be more flexible, as buyers are demanding increasingly shorter lead times. In both cases, the standard of local fabrics constitutes a huge barrier. Textile producers in Thailand mainly produce basic materials and are not able to develop fashion materials, which require new fabrics to be developed every month or so. There is also a serious lack of design schools, apart from short courses based on French techniques. Thus, it is necessary to go abroad to learn about design. Another option open to Thai garment producers in the future is to relocate their production facilities to lower-cost areas close to the major markets. This has, for instance, been the strategy of South Korean producers, which has resulted

in Korean factories carrying out about sixty percent of their production in the Caribbean. The main reason is not cheap labour costs, but the unlimited possibility to deliver to the US within days. Thai garment producers, however, have not been following similar strategies. According to AMC this is due to the conservatism of the family-run firms, who are reluctant to invest the money needed to go overseas, do not have any managers within the family who are willing to go abroad, and do not train professional managers for the task.

4.4 The potential of knowledge transfer from global lead firms

The aim of this section is to draw conclusions from the preceding sections concerning the potential of knowledge transfer through links between Thai suppliers and global lead firms in the automotive and garment industries.

According to the global commodity chain perspective, the most important indicator of the potential of local firms to learn from global lead firms is the extent to which separate industries are integrated into the international economy. Both the automotive and garment industries in Thailand are **integrated into the global economy to a very significant extent**, but in very different ways. Thailand is very well positioned in the international automotive production chain, as Japanese and Western car manufacturers have been located there in great numbers since the late 1960s to serve the local market. High production figures and a diversified supplier base have made Thailand the automotive hub of the ASEAN region. The Thai garment industry has also managed very well in the past three decades and has been successfully integrated into the international economy, as reflected in its remarkable export growth.

Manufacturers in both industries have actively used domestic capital. Thai auto-parts firms have been linked to localised, mainly Japanese assemblers through subcontracting arrangements. The growth of Thai manufacturers in the auto-part business has largely been due to the local content regulations and the fact that foreign assemblers have been working in a highly protected market based on short production runs, which have provided Thai firms with favourable conditions and a relatively guaranteed market. Most Thai-owned firms, however, produce simple products or work in the replacement market, though a few have made it as first-tier suppliers. The shift towards a more export-oriented strategy by assemblers has provided Thai parts manufacturers with a chance to exploit economies of scale.

The Thai garment industry has been dominated by domestic firms, which have been linked to the global economy through the export of finished garments to markets located mainly in North America and Europe. Thai garment manufacturers have managed to improve the productivity and diversify products and markets, and exports have gradually been upgraded to more value-added products. But manufacturers have not been able to develop their own design or brand names, and they are still heavily dependent on subcontracting for foreign buyers, especially US customers.

Thai manufacturers integrated into global automotive and garment commodity chains show certain similarities. Both auto-part and garment firms are tied to global lead firms through subcontracting, and, being OEM producers, they also rely on the specifications provided by their customers. However, they differ in most other regards, mainly because of the technological requirements of the production and the extent to which they are integrated into their customers' production structures. One main difference is that garment producers' competitive advantage rests to a large extent on low labour costs, while the auto-part firms compete more on the quality of the products and technological capabilities, as the labour costs only contribute about twenty percent of the total costs of producing a new car. This means that the learning period for garment production is considerably lower than for the production of automotive parts. Another important difference is that the garment producers are international subcontractors, while the auto-part firms largely operate on the domestic market. These differences mean that suppliers in the two industries have to develop different skills to be competitive. Furthermore, it is mainly Japanese producers that drive the automotive chain, while Western firms control the garment chain. This provides different learning opportunities for partners that are linked to global lead firms. While US firms tend to apply a more marketoriented approach to their suppliers, with industry networks reflecting a high degree of globalisation, Japanese firms usually co-operate closely with their suppliers as part of their 'lean production' structure, which involves a higher learning potential than traditional mass production.

In comparison with Table 4.1, it is clear that the automotive industry in Thailand does not confirm **Gereffi's hypothesis** in all respects. In the automotive industry, Japanese production facilities do not resemble mass production, but rely on flexible batch production, which allows them to locate in small markets. As a result, Japanese car manufacturers have a large presence in Thailand, and the Thai market is not served from centralised, global production hubs. The automotive industry in Thailand and in other ASEAN countries is localised in order to serve local markets. Nor are suppliers international subcontractors, as the assemblers mainly source parts and components from localised OEM suppliers, both foreign and Thai-owned. As such, automotive business is based on national systems, where the independent countries and producers are integrated into Japanese or US production networks. Government policy has been very influential in structuring the industry, especially the regulation of local content requirements, as characterised by an ISI strategy. However, the government has liberalised the industry extensively in order to push towards an EOI strategy. Although there are signs that increased regionalisation is being pushed through the AICO scheme by the assemblers, as well as attempts being made to standardise production and increase transactions between ASEAN countries, the production structure cannot yet be said to be global or even regional in scope. Furthermore, foreign automotive investment in Thailand shows no signs of following a footloose strategy.

The structure of the Thai garment industry reflects more closely the hypothesis of the global commodity chain perspective. Global buyers possess the design and marketing nodes, and have decentralised production to local firms in developing countries in order to take advantage of the low costs of such producers. Thus, **Thai garment producers are global exporters**. Furthermore, they are not integrated into the production structure of the buyer, as most often global buyers do not own any production facilities. However, because of the harsh competition prevailing in the garment business, the Thai government has maintained high tax barriers to protect the local industry, which is not the strategy of a real EOI policy.

The fact that Thai garment producers are not linked to the production structure of international industrial networks implies that garment producers must learn independently about production and marketing, handle the supply chain, obtain economies of scale and get the finished garment to the customer on time on their own, or else find alternative sources of knowledge. Gereffi ascribes to such 'full-packets suppliers' a greater ability to cope with a steep learning curve than OEM suppliers, such as the Thai auto-parts firms. The argument here, however, is that what is decisive for knowledge transfer is not the extent to which Thai suppliers have been integrated into the global economy, or the extent to which they must manage production on their own, but the extent to which they have been integrated into the production structures of the global lead firms. In this regard, the auto-parts suppliers have much more potential to learn than the garment firms. The effect of knowledge transfer from global lead firms to local producers thus depends on the quality of the linkages created between the different units of a TNC and their environment. That is, the function of the global lead firms, the extent to which they participate in local economic and social networks, and how they co-ordinate such networks are essential to the outcome. The policy of externalising functions and the presence of appropriate local firms able to fulfil the requirements of the global lead firms is especially important for the learning potential.

In the automotive industry, **the potential for a transfer of knowledge between foreign assemblers and Thai subcontractors seems quite high**. This is due first and foremost to the fact that the assemblers are embedded in the local environment to a very large extent. Even though subsidiaries in Thailand may be limited in autonomy and size, the Thai unit enjoys a very important position in the internal corporate structure of the TNCs as the most important production centre in the ASEAN region, since it is from here that consumer tastes in the region are researched and market strategies developed. The assemblers are localised mainly to serve the domestic market, they employ many Thai middle managers and even top managers, they enjoy substantial cooperation with local institutions, and most importantly, they have externalised most of their parts and component production, which is subsequently procured mainly on the local market. Furthermore, because the ASEAN region is regarded as being Japan's productive backyard, Japanese assemblers have a great incentive to transfer knowledge to local subsidiaries and partners, as overseas production is closely integrated with Japan's domestic production. The organisational structure of Japanese assemblers is, furthermore, very conducive for learning, as Japanese assemblers try to implement lean production structures in their co-operative relationships with suppliers in Thailand. This involves very close co-operation, diffusion of information, frequent visits, and on-the-job training concerning quality circles, just-in-time systems etc. The supplier clubs also act as frameworks for the exchange of information with other suppliers, seminars on technical matters and assistance in respect of, for example, implementing cost-reducing measures. However, as Japanese assemblers mainly concentrate on design and assembly functions, increasingly leaving design and development to capable component suppliers, there has in essence been a 'hollowing out' of functions. Thus, the assemblers do not know much about the development of parts, and the transfer of technical knowledge is limited. But overall, the potential of knowledge transfer from foreign assemblers to local Thai parts producers is quite good. The transfer of knowledge through supplier linkages involves both explicit and tacit knowledge in the form of manuals and product specifications, as well as the training of employees and frequent visits.

Thai garment manufacturers have also succeeded in creating substantial links with global lead firms, mainly to customers in North America and Europe. However, the customers have not moved any production facilities to Thailand, and in many instances they do not have any production facilities at all. This means that Thai producers operate substantially independently of the production structures of the foreign lead firms to whom they are linked through export, **the potential of knowledge transfer accordingly being very limited**. The buying agencies, which function as intermediaries between the foreign customers and Thai manufacturers, occasionally visit the factory to check quality and work facilities, but this does not involve any particular technical assistance or training regarding product and process development. However, the buying agency may be an important distributor of information, and the technicians may suggest certain actions, though the interaction is limited to the transfer of explicit forms of knowledge, such as information exchange.

However, the opportunity to learn through links with global actors has been weakened as a consequence of **restructuring tendencies** within the two industries, which 'hollow out' the presence of a local supplier base consisting of Thai-owned firms able to fulfil the requirements of global lead firms. Cuts in tariffs and the liberalisation of the ownership structure in the early 1990s, as well as the abolition of local content regulations in 2000 in accordance with

WTO rules, have substantially changed the status of the Thai automotive industry and forced it in a more competitive and export-active direction. The financial crisis meant that the market for parts and components slumped. As many parts producers had invested heavily in an expansion of the capacity in expectation of a growing market, the economic hardship led many manufacturers either to close or sell their shares to foreign investors, as they had limited capital with which to make new investments. Thai parts producers have also been subject to increased competition due to the changing strategies of the assemblers. Within the framework of the AICO scheme, the assemblers are moving away from strategies based on a small protected market towards regionalisation, which means that each ASEAN country will specialise in the production of certain parts and vehicle models leading to increased transactions between the countries involved. Thai manufacturers thus face open competition with parts producers in the other ASEAN countries and are confronted with more stringent requirements on the part of the assemblers in order to satisfy export markets. In order to establish a regional division of labour between the ASEAN countries, Thai manufacturers must begin a process of standardisation of quality, control techniques, management and products, as well as meet global standards. Furthermore, since the assemblers themselves are subject to increased global competition, they are restructuring their supplier strategies on a more global scale. Consequently, there is a tendency for Japanese assemblers to move away from the system of the co-design and development of the parts in close co-operation with their suppliers. Instead, they are seeking suppliers that are capable of developing and sub-assembling the parts into larger components independently. The assemblers will thus concentrate on the design of the car and to a large extent leave the design of parts and components to fewer, but more competent suppliers.

Thai garment firms are also exposed to increasing competitive pressures due to restructuring strategies on the part of global buyers and changes in the international governance of the industry. However, it was primarily the rapid rise in wage levels, which made low value added segments of the Thai garment industry unable to compete with neighbouring countries with lower labour costs, that led the industry to run out of steam in the mid-1990s. This tendency was enhanced by the change in sourcing strategies of US buyers from Asia to Mexico and the Caribbean as a response to changing market structures. More recently, the competitiveness of Thai garment producers has come under pressure from the gradual integration of the textile and garment industry into the WTO, as a result of which the garment industry in Thailand will lose its privileged status and face even more competition.

It is obvious that Thai-owned firms in both industries **will face many problems in meeting the fierce competition** in the future. Thai auto-parts firms are clearly inferior to foreign suppliers in terms of quality, technological ability and organisation. Even though the assemblers have outsourced a remarkable high percentage of their procurement of parts to the local market, domestic suppliers mostly deliver simple press parts and many lack the technological ability to develop their own products. Operating largely on the relatively small domestic market, Thai suppliers must also develop marketing skills, learn how to achieve economies of scale and produce products in accordance with international standards in order to exploit the opportunities of the opening regional market. The purchasing management team at Toyota summed up the **challenges facing Thai auto-part suppliers** in this way:

First is human resource development. That should be stronger because in the future that is what suppliers have to generate in order to be able to compete with unique technology, so the key is human resource development (HRD): they have to invest more. They have to consider strengthening their competitive advance. What is their comparative advantage? Of course, first is the cost, right? Second, are have to control the defect rate...and they must find out how they can create their own unique and special technology in order to compete with global firms. Maybe they have to form alliances. I mean, what can they do? They have to do something in order to survive and sustain themselves. I suppose some suppliers will switch to another sector, for instance, the spare parts business, both domestic and export. Or they can become the second tier or the third tier of the major players, or they switch to another business sector...the competition is tough.

Thai garment firms are unable compete with countries like China and Indonesia on low prices. In order for the industry to become more competitive and flexible, a wholesale change in its present approach is required, from upgrading product quality, developing design capability and investing in multifunctional machines such as CAD in order to raise productivity, to adaptability to 'lean retailing' involving more multi-skilling and the implementation of just-in-time systems. Garment manufacturers must also overcome the barriers to communication and co-ordination within the textile sector. As Thailand is not competitive in the low value-added segments of the industry, one possibility is to imitate the experience of South Korea and Hong Kong and promote the fashion industry, develop brand names and specialise in particular niche production. An alternative and more defensive strategy for staying in business would be to shift the production base to countries with lower labour costs, which some producers already have done.

The commodity chain approach has proved very **useful** in analysing the influence of the global restructuring of industrial activities on firms linked to these chains in various ways. It is evident that the restructuring tendencies of TNCs have serious implications for firms in developing countries in terms of competitiveness and the opportunity to draw on global lead firms for upgrading and knowledge diffusion. The global commodity chain approach also explains the integration of global and local actors within the same framework and applies implicit power structures. The emphasis on dynamic change and the

analysis of the specific activities and linkages that connect a country to the global economy contributes to the understanding that different industrial segments exhibit different organisational structures. At the same time, however, the **analytical tools** provided by the global commodity chain approach seem too narrow in scope. First, Gereffi distinguishes between two governance structures, the producer-driven and buyer-driven commodity chains, which provide the overall framework for comparing the different ways in which countries and firms are integrated into the international economy. Different segments of the same industry, however, may be governed differently according to market orientation, the nationality of the main actors, and the level of technology and the character of what are produced.¹⁶ Secondly, as the analysis above shows, industries with different governance structures begin to resemble each other in various respects, as the liberalisation process forces global lead firms in the automotive industry to become more specialised and to apply more market-based strategies. The analytical framework thus needs to be enlarged to employ less stereotypical descriptions of how various industrial segments are governed globally. Thirdly, the global commodity chain approach mainly analyses the position of countries and firms from a global perspective, since the main analytical dimension is how global lead firms co-ordinate their activities internationally according to dynamic changes in markets and technology. Focusing on the behaviour of global lead firms and on vertical linkages encourages neglect of the importance of the local institutional environment and horizontal networks for organisational outcomes and knowledge creation. Thus, the global commodity chain approach cannot explain why the automotive industry in Thailand has performed better according to a wide range of criteria than in other ASEAN countries, which have been exposed to the same global influences. Finally, the learning potential involved in the various types of business links is precluded because of the very stereotypical export roles that are performed by domestic firms. The argument here is that to understand the learning potential of links between local and global firms, it is necessary to analyse the specific function and characteristics of the global lead firms, and the opportunities to create links between a TNC unit and the local environment. The character of the relationship between global lead firms and local Thai producers – that is, the socialisation process – is the focus of the next chapter.

¹⁶ Furthermore, industries governed by the same overall structure might manifest themselves in very different organisational structures. The electronics and automotive chains, for example, are governed in very different ways in the Thai context, even though the producer-driven commodity chain governs both industries. Automotive production is much more embedded in local structures than electronics, which can best be described as an export enclave with a very shallow local supplier base (See Poapongsakorn and Fuller, 1998).

Chapter Five

The Socialisation of Knowledge

Introduction

In this chapter, the focus moves from the industrial level to the level of concrete interaction between firms in order to analyse the process of interactive learning between global and local actors. Being late industrialisers, Thai firms need to learn from others and to apply this learning to their own organisation in order to become successful actors in the global economy. Thus, the aim is to analyse **how, from whom and in what context Thai firms obtain the knowledge** they require to become efficient producers. The question is whether Thai firms are able to extract valuable knowledge and overcome increased competition and liberalisation through socialisation with global as well as local actors. In other words, how do Thai firms organise and manage their activities in the field, caught as they are between the demands of their customers and the challenges of the global economy?

The chapter consists of three sections. The first section describes how firms gain access to relevant knowledge, information and technologies that are used in their operations and by their management. The main question in this regard is who assists firms in this respect. The second section offers an empirical analysis of the socialisation process. The focus here is on the ability of Thai firms to create networks with other, mainly foreign actors, and the context in which such relationships take place. The socialisation process is analysed in terms of the exchange of products and information, as well as social exchange in terms of the development of trust, mutuality and power. One interesting element in the socialisation process is changes in these relationships due to the restructuring tendencies of global actors and the global competitive environment. Networks created horizontally between firms are also analysed in order to assess the network competence of Thai firms, the availability of local resources and the differences in function, social content and learning potential between networks established with global and local firms. Finally, how Thai firms manage the socialisation process on the firm level is summarised and discussed in relation to the theoretical concepts laid out in Chapter 2. That is, what kind of knowledge is transferred from global to local actors, and are the relationships structured in a way that leads to improved local practices? The differences observed between the automotive and garment industries are also outlined and discussed.

5.1 The search process for knowledge, information and technology

The search for initial experience and know-how.

This section discusses how Thai firms obtained initial experience and accumulated knowledge in their field of operation, these having been important aspects in starting up and running a firm.¹ The interviews revealed that **family relationships or connections with friends and overseas Chinese firms** were very important elements in this respect. These are key features of garment and auto-parts companies, the general pattern being that the founders obtained initial know-how and experience by working in companies owned by friends or family members. However, the founders' aspiration was to set up their own companies, which they did as soon as the opportunity arose and the investment could be secured. How the founder of AUTO5 learned about the automotive business illustrates this pattern:

My grandfather, I think maybe fifty years ago, came from China to Thailand, and he was a friend of the head founder of Siam Nissan automobiles. They are good friends and they have known each other for a long time. He asked my grandfather to come over and help him with his business, and my grandfather has been a sales manager for Nissan. So, after he had worked with Siam Nissan for a couple of years, he wanted to start his own business, and he chose to make spare parts here in Thailand instead of importing them from other countries. You know, in the automotive business at that time, you had to import the whole car from Japan, and therefore we had problems with shortages of spare parts. So he could see the opportunity. My grandfather was the first one to make leaf springs here in Thailand.

As this example indicates, Thai firms have established and expanded their enterprises through **kinship and friendship relations**. Networks of Chinese residing throughout Asia have also been very important as a way of obtaining know-how. Connections with overseas Chinese have been an extremely important means of acquiring the necessary experience, especially in the garment business, but also for some auto-parts firms. Practically all **garment firms** learned about mass production and marketing from the Taiwanese and Hong Kong-based firms that invested in Thailand in the early stages of garment production. In this regard, it is not surprising that all the garment firms were founded around the same time in the late 1970s and early 1980s, when the opportunity arose to establish garment manufacturing facilities when exportoriented garment production started in Thailand. Before that, garment

¹ This section also refers to the internalisation process, as how initial knowledge and experience have been obtained involves a consideration of prior knowledge. However, this is described under the socialisation process, as it also concerns interaction with various types of actors.

production in Thailand mainly took the form of handicrafts or tailoring, in which Thailand has a long tradition:

Garments for export started in Thailand 33 years ago. Back then, Thai people had no experience in this kind of industry for garment export and mass production. We did it like tailors domestically. Then a Hong Kong company came to invest in Thailand and then many companies came. First, we had Thai Garment from Hong Kong, Thai Euro from Japan, and then some Taiwanese [firms] in knitting. Only three sources. Most of the Thai people, some are my friends, were working in these firms. Then they had their own business later. Most of the garment [manufacturing] here started from this – like me.... I used to work in a Hong Kong-based company, and I got experience from there. I worked there for seven years, and I saw the future of this kind of industry. And then I started this business with some friends. (GARMENT1)

This example illustrates the significance of foreign firms in providing access to know-how and gaining experience. The skills learned by the founders in foreign firms with Chinese roots were crucial for the opportunity to start operating a garment firm. The respondents reported that the most important skills they picked up from working in foreign owned firms were marketing and administration. This initial knowledge constituted the basis on which they accumulated knowledge by means of experience of garment production in their own firm. As the respondent from GARMENT4 remarked: 'when I came here, Mr [name of the owner] had just started. I think for the first year, he just learned about the garments'. The general growth pattern for the garment firms was that they started to produce with very few machines, growing gradually as they acquired more experience. The small investments and the very little competition at that time gave them some leeway and the time to learn the business. Another common way of obtaining access to know-how, which many firms pursued, was to send supervisors or managers abroad to be trained in garment production. The representative of GARMENT5, for example, learned garment production from overseas producers: 'The company send a group, including me, to the USA for three months to study under a job-training program in a garment factory, because at that time garments were very much needed, but very new to us'. Also, auto-part firms acquired knowledge initially from foreign sources. As the representative of AUTO6 explains:

We established a small family company with eight people in 1973. At that time the mother [of the founders], who was from a successful family in Thailand, knew some people who had the know-how that they introduced to the firm. So their friends from Hong Kong helped [them] start with the techniques for chrome plating. It was only a small industry, but a few years afterwards, after they have got some experience, the television [production], which needed chrome plating, started in Thailand. And after that they build the factory.

The search for information and production technology

The firms in the analysis normally take the decision to invest in new machinery and equipment in relation to market and product changes and the financial situation of the company. **Information about market changes** comes from many sources, such as the Thai Auto Part Manufacturing Association (TAPMA), and Thai Garment Manufacturers Association (TGMA), as well as friends and customers. The Internet is becoming more widespread as a source of information, and companies use it to obtain quick access to information provided by government agencies, associations and customers in order to keep up with the latest information about changes in the rules and regulations, as well as movements of customers and competitors. The owner of GARMENT3 explained:

We have many sources [of] and access to information. The computer is one of the main sources, because we must keep pace with the situation. There are a lot of websites where we can access information – also from government agencies or from clients. We have to know what Bangladesh, Sri Lanka or Myanmar is doing. We must know about the WTO, and what conditions are applied to China. And countries like Sri Lanka have signed bilateral agreements with the EU. This is important. We must know what is going on in the world in order to adjust ourselves quickly to fit into the situation.

When the owner decides to invest in new machinery or equipment, he starts searching to find the best technology. Firms obtain information about new machines and equipment from other companies, friends, journals, trade associations and customers, or visit factories, often abroad, to inform themselves about technological trends. One of the key means of acquiring information is to visit exhibitions and to meet with and talk to machinery suppliers. Two large exhibitions are held every year in the **garment industry**, one in Cologne, Germany, and the other in Japan, where managers can go to obtain information about the new technologies.

Auto-part firms purchase practically all their machinery from Germany or Japan. This may be because both countries have set up automotive institutes in Thailand, which help private firms with technical matters, disseminate information, and arrange training and seminars. Decisions about where to source the technology from are also a matter of managers' **personal contacts**. AUTO4, for instance, has a Japanese vice-president, who has worked in the company for twenty years, having previously worked with the technology provider. Consequently, he has very good knowledge about new machines and personal contacts with Japanese machine suppliers. Overall, personal connections are important in making decisions to invest in new machines in both industries. This is the case for GARMENT4, where the owner prefers to buy new machines from a friend in Hong Kong, who imports and sells machines, provided the price is right. In general, however, **garment producers** source new technology through the buying agencies located around Bangkok, which also provide training regarding machine operation and repair. Such machines are usually imported from Hong Kong or Japan. When garment firms apply additional knowledge to the production structure, they often do so through the manager's participation in formal seminars arranged by TGMA concerning, for example, management, maintenance and quality. Product information is obtained from technical books, magazines and training courses, through visits to other companies, and by hiring experienced workers and managers.

The auto-parts suppliers are **engaged in arrangements with providers of technical knowledge,** because in general they are unable to develop the products on their own. Such firms are usually Japanese and often established suppliers or affiliates of the assemblers. The learning process involved with partners to technical agreements takes a long time, depending on the product. One of the most essential though a difficult and expensive item to produce is dies, which are crucial in the manufacture of all body, plastic and press parts. However, the learning process involved in making dies is long and costly:

To be OEM, you have to get know-how from Toyota or whatever. You pay them money every year – a lot of money. You pay the people, the engineers, to work with you and provide them with an apartment, car, chauffeur, everything. A lot of money every year. OK, you get the know-how, they tell you how to make the product the way they want. And after that they leave [the know-how] with you. But every two years they change to a new one [new model]. It has been like that for nearly twenty years. (AUTO5)

As is evident from the quote above, it takes many years of learning from foreign firms before companies are able to produce the products themselves. In fact, only a few auto-parts firms, such as AUTO1 and AUTO5, have reached the stage where they can produce their own engineering drawings and develop their customers' products on their own. Even so, these firms are still receiving technical assistance, though now to a limited degree.

5.2 Networks with global and local actors

This section examines the character of relationships between the companies in the survey and both their customers (vertical) and other firms and institutions (horizontal), as well as the kind and quality of knowledge transferred in such relationships. The data were mainly collected empirically through semistructured interviews with six garment manufacturers and six auto-parts producers, all Thai-owned. Statements by representatives of the TNCs interviewed will be used to supplement the data. However, it is important to note that while representatives of TNCs are talking about supplier relationships in general, the representatives of Thai firms are discussing specific relationships.

Networks between Thai auto-parts firms and their customers

The **auto-part manufacturers** in the survey each have between five and seven assemblers as their customers. These customers are mainly Japanese assemblers, who dominate the market, but Ford and GM have also increased their sourcing from Thai suppliers. It is a privilege on the part of Thai-owned companies to supply to more assemblers, which they can do because they are not regarded as the affiliates of particular assemblers. However, they must agree to maintain commercial secrecy, as the representative of AUTO5 put it: 'we work for everybody, but there are some very strict rules. If you want to come as a visitor to go around our company, we have to make sure where you are coming from. And if you are from Toyota, and we are doing a job for Honda, you are never going to see that. It's secret'. Even though some parts manufacturers have many customers, most of them have one large customer on whom they are dependent.

The suppliers **deliver** the parts at least once a day, but some deliver many times every day. AUTO1, for example, delivers parts to Toyota three times a day at 10 a.m., 1 p.m. and 3 p.m. AUTO1 does not have any problems with this justin-time system, but most of the other suppliers have to keep a large stock of parts in order to be able to deliver on time. The assemblers confirm that most Thai suppliers have problems with just-in-time systems, which they implement but do not manage effectively. This means that they have not incorporated the required flexibility into their production system. If the suppliers are unable to adapt to the JIT system, this means that the problem of keeping stocks is transferred to them. AUTO6, for example, explained that because Toyota demands that they deliver every day, they have to keep a large stock of all parts. They deliver, for example, 100 pieces of a particular part, but to make a profit have to make at least a 1000 pieces in one go.

Generally the **relationship between the Thai suppliers and the assemblers** is very close due to the long-term co-operation, their readiness to transfer knowledge and exchange information on behalf of the assemblers, and the large degree of trust that grows up between the partners. As already mentioned, the general philosophy underlying relationships with suppliers is that the assemblers transfer a great deal of knowledge and assistance to suppliers while requiring suppliers to upgrade and improve themselves constantly. In general, the amount and type of assistance transferred to the suppliers in the survey confirms the information provided by the assemblers in Chapter 4.

Relationships with assemblers are an important way of upgrading for many Thai auto-parts firms because they receive training and other **upgrading** **incentives** from their customers. AUTO3, who started producing cinema chairs and replacement parts, stated that:

What made us go into OEM was that we could improve ourselves by learning the know-how from them – from the automobile companies. When we make some parts for them, we have to try to improve the quality. They need good quality. We have got a lot of know-how from Isuzu. Sometimes they come to teach us and sometimes we visit Isuzu and learn. They don't mind teaching us or letting us know. They show the process, so that other companies can provide a lot for them.

AUTO1 provide another example of a firm in which strict requirements in relation to performance and demands for advanced, high-quality products helped the supplier to improve and upgrade:

We already changed from being labour-intensive six to seven years ago... Mostly [the reason to develop] is because of incentives from customers. Because, when you deal with high-tech customers, you need the ability to produce high-tech products. And also, when customers ask us to produce new things that we have never done before, we always say yes, when they give us the opportunity. We are willing to invest more to supply a better product for the customers. So we change and expand ourselves all the time.

Customers increasingly require the suppliers to implement quality measures in the workflow process. European and US carmakers are very strict about suppliers having authorised quality standards, such as ISO and QS respectively. Thus, as western automotive manufacturers increasingly invest in Thailand, suppliers must have ISO and QS certificates to have any hope of becoming involved with western customers. As one auto-parts firm explained: 'we never deal with GM, because they require QS 9000. Right now our company is not ready to deal, but after we get QS 9000, we will go and discuss [with them]' (AUTO6). Thus, obtaining ISO and QS certificates has become the most important ambition for the auto-parts suppliers and is something they boast about in company profiles and by holding big celebrations connected with the certification process to which they invite prominent guests, such as the Minister for Industry. Japanese assemblers are not so concerned about such certificates, as they operate with their own process standards, such as the fives S's and Kaizen production system, which focuses on practically all aspects of production, including efficiency, productivity, cost, delivery and quality control. The Implementing such Japanese practices has been part of working with Japanese assemblers for a long time. But because of the increase in exports to the US and European markets, Japanese assemblers have also started to demand ISO and QS certification. Consequently, in order to ensure consistency in quality, all auto-parts firms have introduced or are in the process

of introducing ISO 9002 and QS 9000 quality standards, and some have also started to implement the environmental standard ISO1401.

As mentioned in Chapter 4, Japanese assemblers are beginning to change the way they usually co-operate with suppliers. Instead of providing engineering drawings and substantial assistance, now they **only provide specification and prototype drawings**. Consequently, suppliers must now be able to develop the products themselves. The fact that many suppliers do not have sufficient knowhow regarding product development places them in an unfortunate position. In order to keep supplying parts for the big assemblers, they must arrange for an engineering company to do the design, but without transferring that knowledge to the suppliers:

Normally customers supply engineering drawing and we make it [with technical agreement partners]. From June 1998...the assembler announced to the supplier this new style they call codesign. Suppliers must now develop the products by themselves. This is our problem...they only give the specification we call prototype drawing. But we do not have the know-how to develop. We started this development four years ago with Siam Nissan. Nissan give me the prototype drawing, and we bought the knowhow from the Kansai Corporation. We have to buy it product by product. Not to teach our company – never. We buy and they process it by themselves, and after processing they go to Nissan and discuss it themselves if they have a problem or to check if the result is OK. At the same time, if we produce for Toyota, we need to go to Kosei in Japan and buy the technical assistance from them. They have the people with the knowledge. (AUTO6)

The suppliers are not automatically dismissed if they have problems in developing new parts, but they are asked to make improvements, on which future orders will depend. As already mentioned, Japanese assemblers have so-called **supplier co-operation clubs**, of which the most important first-tier suppliers are members. The auto-parts firms in the survey are all members of at least one of these supplier clubs. Members of a club are given points in accordance with their performance in respect of, for example, delivery and quality. The performance of each member – for example how many rejects he has had per thousand parts – is announced to the whole group. The worst performer will probably lose some orders, while the companies that have improved will be offered more orders. AUTO6 is among the companies to have improved the best: 'Last year we were the winners for the most improved company. That means this year, Toyota sends me more parts, so we can quote the price for them'. This carrot and stick system thus acts as an incentive for the suppliers to improve themselves.

The supplier clubs also act as a **framework for the exchange of information**, **seminars and training.**² The assemblers inform the suppliers about their future plans and policies and about the new products they are launching, and they arrange seminars to inform suppliers about new methods of, for example, improving efficiency. However, this is theoretical information, implementation being in practice the responsibility of the parts manufacturers themselves.

The suppliers are mostly in charge of the training in the supplier club themselves. Each company is allocated the responsibility for a particular activity in which they train new producers or act as a consultant to them. However, the assemblers also train their suppliers and the latter's employees in various issues such as stock control, cost-reduction measures and quality improvements at the suppliers' request. AUTO6, for example, has received training in the 'Kaizen' system from Nissan and in 'QS' improvement from Toyota. The assemblers do not implement new systems themselves, but only introduce them in a model group or model area. The suppliers usually pay for such training or subtract the cost from the price they charge for the parts. Apart from assistance related to the launching of a new model or within the framework of the supplier clubs, the assemblers occasionally help the suppliers with any problems that arise. During the financial crisis, for example, Isuzu and Toyota assisted their Thai suppliers financially by buying input in advance or sometimes buying materials for the suppliers if they did not have the money, which the suppliers paid back with products. These various forms of assistance indicate that the survival of the Thai suppliers is essential to the smooth and continued operation of the assemblers. However, not all assemblers did anything to help their suppliers, and those who did mainly concentrated on the most important suppliers.

The **amount of trust** between Thai suppliers and their foreign customers is quite high. Even though Japanese assemblers in Thailand do not have equity shares in their suppliers' firms, they generally transfer the philosophy of maintaining long-term, close relationships with their suppliers to Thailand. As mentioned in Chapter 4, long-term relationships, during which the partners demonstrate their trustworthiness and commitment to each other and get to know each other, are a prerequisite in building trust. Since the two parties do not know each other at the beginning of the relationship, the trust is build up gradually. The normal procedure is that the assemblers first try out the supplier with smaller orders, and when the latter has proved his worth he is trusted with larger orders: 'We send a try-out lot to them first. If some companies want us to be a maker they will try to search and make sure that we can really make it for them' (AUTO3). Commitment is an important aspect of a good relationship, and suppliers must commit themselves a hundred percent to an order, which

² According to Buranathanung (1996) the suppliers in the co-operation clubs are almost exclusively Japanese joint ventures or local firms. The activities of the Toyota co-operation club, for example, include lectures, factory visits, overseas seminars (every other year), training in quality assurance, cost-reduction, quality control and presentation. Social activities, such as a golf tournament and a sports day, also form part of the co-operation.

means striving to deliver the exact amount of parts, of the agreed quality, on time. If they cannot fulfil the arrangement to which they have committed themselves, it might make it difficult for them to obtain further orders. In general, however, Thai suppliers find that there is a great deal of stability in doing business with Japanese assemblers. AUTO1, for example, does not even have a marketing department because the company has co-operated with Toyota for some twenty years and is always among the suppliers selected to tender when Toyota needs a new part. Of course, Toyota also requires suppliers to improve themselves constantly, but if the suppliers satisfy these requirements, the assemblers are also likely to commit themselves to the supplier:

Even if you do not win the auction, you still get something to do. If they know that you do not have many orders at this time, they can distribute some work for you – you still do something for each other just to keep up the contact. (AUTO1)

It is very important for the trust-building process that the partners get to know each other personally. Formal meetings are only held about once every month, or less for companies producing less complicated parts. But the partners often meet in order to exchange technical information or to discuss any problems that arise. It seems to be important for personal interactions for the supplier to be located close to the assembly plant: 'we see the assembler at least once a week. But there are many departments in Toyota that we have to deal with also. But because we are close we can just drive and drop by for ten minutes to talk and then just come back to work here. It is convenient' (AUTO1). Similarly, AUTO3 started to co-operate with Toyota initially because they are located right next to the Samrong plant. However, proximity is not a prerequisite for co-operation, as suppliers are willing to drive for one and a half to two hours to deliver parts or if they have something to discuss. In general, they also have many customers spread over a wide area and do not just serve one or two customers in the immediate surroundings. Social proximity seems to be more important for maintaining co-operation than simply distance.

Communication mainly takes place by telephone or through personal visits, so that the partners get to know each other personally, which suppliers emphasise as very important. Mutual understanding is increased by the fact that Thai suppliers normally deal with purchasing managers who are Thai nationals. Besides frequent visits to discuss emerging issues and frequent communication, further **personal interaction** occurs at clearly defined social events arranged by the Japanese assemblers within the framework of the supplier clubs. Members of a club meet officially twice a year to play golf or bowls, executives and lower level staff separately. Business is not normally discussed on such occasions, but it makes it easier to talk business later on because the executives have met each other face to face. The supplier clubs also act as frameworks for the socialisation process, as the members meet for training,

seminars and social events, such as dinner parties attended by the executives. Some of the larger Thai suppliers may arrange social events to entertain Japanese customers. However, if they already know each other and have cooperated for a long time, such arrangements are not really necessary in order to be given orders in the future. When a trustworthy relationship is established, other issues, such as quality improvements, become more important.

As is evident, trust between suppliers and assemblers is strong because of the long-term nature of relationships and the personal content that goes into them. Trust is also seen in the fact that the parties **do not need a formal contract** to protect themselves against opportunistic behaviour. However, suppliers and assemblers both emphasise that the relationship is a matter of business alone and does not involve real friendships: 'if they have been close to us for a long time, they look like friends. But friends I know from business.... The relationship between our customers and us is business' (AUTO6). That is, the main constituents in building trust are long-term co-operation between companies and demonstrations of trustworthy behaviour. For example, a supplier cannot afford to indulge in opportunistic behaviour, as everybody in the automotive community would instantly know about it. But even though the chance of fraud in the relationship is small, assemblers also screen their suppliers every way they can because they cannot afford to run the risk of having badly performing suppliers.

Besides, many suppliers have reservations about the relationship with their assemblers because of cultural differences and the dominant position of the assemblers in price negotiations. Thai suppliers feel strongly that the Japanese prefer to work with Japanese suppliers, which makes it very difficult for Thai suppliers to be accepted by Japanese customers, especially newcomers who still have many Japanese executives in leading positions. AUTO3, for example, has been contacted and screened by Honda, but the managing director does not think that this will lead to them becoming a first-tier supplier for Honda: 'If you are not a Japanese company, and you are new to Honda, it is difficult. OK, you can discuss the price, you can offer the price and everything, they are open, but you will never get the order. I do not know what is going on. We have no problem with Toyota, because we have been going to Toyota for a long time over the years'. Cultural differences may therefore hinder the development of a relationship of trust and also imply a lack of mutual understanding. The representative of AUTO5, for example, tried to play along with what she regarded as the Japanese way of doing business. But the general feeling is that the two parties never really managed to understand each other:

I think among themselves, Japanese people and their own suppliers, who are Japanese, they get together after work. They believe in each other, they are from the same culture, and I think they understand each other better. Thai people – some get many projects from the Japanese, but you have to send some people to look after them or be with them, spend time

after work with them, play golf with them. That is part of the job, you do not do it for fun, you do it for the job.... If you work with the Japanese, you've got to understand them. OK, this is how they think, this is their way of thinking. But I do not expect them to understand us. They are customers; we have to be more flexible in terms of wanting to work with them.

AUTO6 has been confronted with the difference in **power** between themselves and the Japanese assemblers, which means that the manager feels the company is in a weak position when it comes to negotiations. AUTO6 deals with a Thai purchasing manager, with whom the company has a very good relationship. However, the top manager in the purchasing department at Toyota is a Japanese, which means that the person with whom AUTO6 normally deals does not have the power to give the supplier the orders. As AUTO6 is comparatively unimportant to the customer, it will never have a chance to deal directly with the Japanese purchasing manager who is in overall charge:

The relationship between our customer and us is one of business. Toyota has the power. The man who is in control, who has the power, is Japanese. They talk only with Japanese sub-suppliers. According to the routine, the man who does the purchasing [with us] is Thai.... Sometimes we are really close to that person, but he cannot help me with more orders. This is a problem for Thai [people].... We cannot deal closely with the person who has the power. This person does not touch me.... Some firms can do like the Summit and Somboon groups, because they have so many companies, and some of them are joint ventures with the Japanese. And they also have the money to recruit Japanese staff, and they can get in touch directly with the big guys at Toyota. For me it is difficult – possible, but difficult.

Even if the suppliers do not feel completely secure in their relationship with the Japanese assemblers, they still have a very close relationship with them and feel that the Japanese are genuinely interested in helping them upgrade and improve. Relationships with Japanese assemblers are generally close and long-term and involve quite a lot of knowledge transfer. Conversely, relationships with **Ford and GM** are based more on market mechanisms. This means that suppliers do not feel safe when they invest so that they can produce for western assemblers because they cannot be sure that the assemblers will not withdraw an order if they find a supplier offering lower prices. This indicates that cultural differences exist, and also that building up trust takes time.

Japanese companies, we just go together. They do not distinguish whether this company is an affiliated company or not. We just go and grow together. To do business with the Japanese, once you've started, you will go together, no matter whether it is a big or small business. But western companies, you can be cut out over time. Ford will screen out. It is a matter of culture. It is more about assistance and affiliation, doing business with the Japanese. It is like a family. In Asian culture, if you have nothing to eat you can come to eat at my house. But in Western culture, once you've grown up you must look after yourself. (AUTO1)

However, western assemblers also go to great lengths to provide their suppliers with training on quality, safety and environmental standards, and they also run classes to teach suppliers the practical aspects of their operations. They also adapt to the local system. The purchasing manager of Ford, for instance, has much more personal contact with his suppliers than he would have in Europe or the US. Moreover, as already indicated in Chapter 4, there has been a **change in the strategies of Japanese assemblers** in the direction of western supplier strategies. Japanese assemblers are planning to abolish the supplier clubs and to select suppliers more on the basis of market forces than of personal knowledge and trust. They also intend to be more rigid regarding suppliers' capabilities, especially regarding the latter's ability to develop products. In fact, Japanese assemblers have already started to imitate the western practice of holding auctions, which means that low price has become a very important determinant in selecting new suppliers.

In the past, you had multi-dimensional relationships, both as business and as friends. But today it is changing. It is more profit-driven, more about business.... We treat them as friends, but we are not sure whether they treat us as friends too... It has just changed, only four or five years ago. Right now, we need to go through an auction process, and four or five competitors are trying to offer a better deal for Toyota. Before it was just a list [of orders] they gave to the company. But this system of auction, it is operated by European and American businesses. Now the competition is very intense. In the past, we had only five or six companies doing auto-parts, but right now we have more than ten companies. Each company has its own connections with other large Japanese firms. So in the future it might be harder to make a profit in this kind of business. (AUTO1)

Thai suppliers realise that their business has become more profit-driven, and they experience **tough competition** everyday as a result of the inflow of foreign suppliers, who have invested in order to serve Japanese and western assemblers. This has made it difficult for Thai firms to maintain market share. However, the increased emphasis on price has weakened the trust they previously had in Japanese assemblers: 'The Japanese companies are pressing our price down now. They say that every year the competition is more and more and ask us to lower the price – they press our profit down' (AUTO3). Even though Japanese assemblers inform their suppliers about their future planning and market strategies, the suppliers do not think that their customers are telling them everything about their future purchasing strategies, and they do not feel secure about future co-operation. They never know when the assemblers will cut the relationship. However, they do not belief that Japanese assemblers will start to search globally, as many Japanese assemblers have announced publicly that it is their policy to use a hundred percent ASEAN content.

Networks between Thai garment firms and their customers

Like the Thai auto-parts manufacturers, the **Thai garment manufacturers** each have about three or four large customers with whom they have cooperated for a long time. They are restricted from taking on more customers because of their capacity and the number of quotas they possess. Their customers are mainly from Europe and the US, among them well known brand names and stores like Nike and J.C. Penny, who have two or three suppliers for each type of garment distributed over different countries. In contrast to the auto-parts firms, the way to make contact with a new customer here is to go through one of the buying agencies located in Bangkok rather than by direct communication. The discussions, sample making, evaluation and price negotiations related to the process of starting to deal with a new customer take around six months. It is normally the agencies that approach the factories to make the agreements. The garment companies do not normally search for new customers, though they occasionally meet them at trade fairs. However, the owner of GARMENT4 occasionally sends an employee to agents in Hong Kong or the US to find new customers.

The companies make garments to order. That is, they receive an order for a certain quantity of garments and, after making them, they ship them to the customer. The lead time, that is, the time from when the order is issued to the time the finished garment reaches the customer, is around three to four months, depending on the order and garment. Some buyers are beginning to demand a shorter lead-time, but they do not put much pressure on the manufacturers, because, as GARMENT2 said, 'the customers know the limitations of Asia". Only GARMENT5's customers are experimenting with new ways of reducing the long lead-time. Rather than keeping stocks, customers sometimes prefer to pay more for the goods to have them send airfreight instead of by ship. GARMENT5 also has a large stock of standardised garments such as jeans, which means that they can send the goods whenever the customers want them. In this way, the company can reduce the lead-time to six weeks, but this means that they risk never getting the finished goods sold when the customers change the collection. According to GARMENT5 customers try to avoid holding any stocks themselves:

Now, we reserve the capacity for the next four to five months for them. We buy the material and fabric, but the customers do not give us the size and exact styling, so we will not cut, because we don't know the size. The customers have to book their customers first as well as style and colour, and then they give us the information. It is different from [the last] twenty years. It is just like everything should be on time. No one wants to keep storage. They ask for storage from the suppliers [instead].

The relationship between the garment manufacturers and their buyers are not as close and do not contain as much **transfer of assistance** as in the case of the automotive industry, apart from suggestions or recommendations made by the buying agencies' quality assurance teams. QA team members, however, are rarely educated in garment manufacturing, having acquired their knowledge from visits to other firms. Even if the assistance provided by customers is generally small, there are exceptions to this rule. GARMENT2 received assistance in training garment techniques from their European customer when the relationship started:

I think we learn from our customers, because they are very, very good. Customers from Italy, they come and see some basic [garment] we do. For the advanced work, they send some technicians to teach us and to train. So that knowledge is packed in the factory. [They teach] some details, garments are all about details, so they teach, like, when you handle the fabric in a particular way, how will it affect the garment.

GARMENT6 also learned about production techniques from their English customers. Apart from these examples, however, daily interaction with customers is limited to visits from the buying agencies, which come to monitor the work process, safety measures, environmental standards and quality.³ The limited assistance is also due to the fact that the buyers in many instances do not have any production facilities, and, thus, they do not have any practical experience to transfer:

Sometimes the customers give us the sample, if they have a supporting team. But sometimes they do not have a team – they do not even have a factory. They only give the idea and sometimes they use freelancers. In the US they use freelancers to produce samples for them, sometimes even for patterns. They do not give a salary to those people. They just say 'OK, one piece, how much can you do it for?' and that's it (GARMENT2).

Relationships in the garment industry also differ from the automotive case in being **based on more formal contracts**. The penalties that suppliers will incur if they are late with the delivery or there are claims against quality are recorded in writing. If the delivery is delayed, for example, the normal procedure is for the customer to ask the Thai manufacturer to pay the difference between

³ Using an example from the footwear industry, a study of Schmitz and Knorringa (2000) support the findings that the transfer of knowledge from global buyers to producers is limited apart from quality inspections. However, they also note that the buyers in their survey assisted new producers to reach international quality and delivery standards by maintaining a substantial staff with technical and organisational know-how, as was the case for GARMENT2 in the present study.

shipping and airfreight. **Communication** is quite frequent, but it is generally handled by fax or e-mail rather than being based on personal interaction. However, supplier relationships in the garment industry are far from being only market-based. GARMENT6, for example, has worked with the same three customers since it was set up.

The buying agencies and their Thai suppliers actually **trust** each other a great deal, mainly because they keep their promises, are open and honest, and exchange information on a frequent basis about forecast orders and the market situation in general. The garment companies are also highly committed to the relationships because they are afraid of receiving a bad reputation that might effect their quota allocation. However, there are also many examples of opportunistic behaviour on the part of customers, which hinder building up trust. Some buyers, for example, try to put down thirty percent of the price as payment and then disappear. Other examples of bad behaviour are frequent, such as customers cancelling the order or demanding many changes in the middle of the process or trying to reduce the price further by referring to the price they can obtain in China or other low-cost countries. Consequently the manufacturers have to learn whom they can trust and whom they cannot. As in the automotive industry, trust is built up gradually: 'it is a normal procedure in this business and also in other businesses. For new buyers, the first order is the trial order. They never give you a hundred percent. And after the second season, if it is good, they will give you more. It is a long-term business' (GARMENT1).⁴

The relationships are also overlaid with a certain **social content**, mainly because of the long-term relationships that exist between the agencies and the Thai garment firms. The buying agencies visit the supplier two or three times in connection with each order. Besides this, they also have frequent contact with the suppliers to share information about changes in requirements or to discuss any problems that may arise in the manufacturing process. The buyers normally just place the order with the agency, which then takes care of communications and co-ordination with the suppliers. However, the customers visit Thailand every season. This is a big event because all the customers arrive at around the same time of the year. They come mainly to inspect the management and working conditions of the factories, but they normally also have dinner with their suppliers, so over the years they come to know one another. The suppliers emphasise the importance of personal relationships in doing business.

It creates a good relationship. For a human being, if you sit and talk closely, it is better than communication all the time by e-mail and seeing only the name, but not knowing the face. You do not know how they

⁴ The study by Schmitz and Knorringa (2000) also confirmed that relationships between buyers and producers, which were driven more by price than by quality concerns, were characterised by 'obligational' relationships, in which trust was not absent, but the mutual commitment of buyers and producers was less strong.

look or how they think. I prefer [doing business face-to-face] – I think it is much better. (GARMENT2)

However, in many cases, the suppliers do not know the end-customers, and therefore depend on building up a good personal relationship with the agency in order to keep receiving orders. The suppliers agree that there is a very large difference between American and European customers. It is more difficult to build up a personal relationship with the American buyers, because they are larger and more professional and will negotiate the price until they reach their target price. American customers also prefer to work through an agency and never meet the suppliers in person. European customers, however, are often smaller entrepreneurs with their own companies, and they prefer to come and close the deal themselves. They buy smaller quantities of each garment and are therefore willing to pay a higher price. GARMENT6, for example, has a very close relationship with an English customer, who has a married couple stationed in Thailand to work with them because they regard this as a way of improving their image among consumers. In general, therefore, suppliers have more intimate social relationships with their smaller European customers, while the larger customers prove tougher in **price negotiations**, which have costs on the personal side.

There are two types of customer. One is the customer from a department store or big firm. To create a personal relationship with them is very difficult because it is a big organisation and the personnel keep changing. And their organisation does not allow them to get too close to the suppliers. They are not even allowed to receive gifts worth more than US\$50. So, to build a personal relationship is not possible; strictly business relationship. The other type of client is a personally owned company. With them we can have a personal relationship as friends. Still, friendship is friendship, business is business. It is very difficult to mix the two up. It is not like in the old days. Then they might place their personal interest before their business interest. But now the business interest comes before the personal interest. Although you have a personal relationship, and you know each other, and you know their family name, the business is still a business. It is impossible to link the two because the competition is very high these days. If they cannot buy more cheaply, they cannot survive. That is why they have to sacrifice personal friendships for business interests.... About twenty years ago, friends were friends. Even if someone [else] offered them a cheap price, friends would still help you. And the other way round, if the clients had some problems, you would still help them. Now, it's different. (GARMENT3)

As the quote above indicates, competition has increased tremendously because of the tougher price competition among garment manufacturers in Asia. This has had a huge influence on supplier relationships. Even though they frequently regard their European customers as friends, all buyers are in contact with a wide range of manufacturers in Asia, making it possible for buyers to keep pressing down prices and changing suppliers frequently if they can have a garment produced more cheaply somewhere else. The increased price competition has made it difficult to maintain friendships in the garment business. Before, the customers would sometimes prefer to keep an expensive supplier if they had built up a long-term relationship and were good friends, but this has now changed:

Before it was easy, easy. Nowadays, they come and say, 'too expensive'. And you have to follow them, though you do not have enough money. We have to fight against time, price – we have to find ways to work close to the target price.... Now they have no relationship with anyone. Big buyers always compare. They never stick to anyone in particular. Otherwise, they cannot sell [the goods] in the store. They run around. They say, 'This year I want to buy it 25 percent or 10 percent cheaper.' So many problems. Nowadays it is not like before. I see the future very dark.... I've got some very good friends I have done business with for a long time. But they say 'a friend is a friend', 'a price is a price'. If they can buy it more cheaply from others, buying more cheaply is the priority. No favours. If you are good friends, this does not mean that you get the business. My friend from New York comes and has dinner with me. He asks me sometimes, 'Can you give me the Bangladesh price?' (GARMENT1)

Horizontal networks in the garment and auto-parts industries

This section discusses the relationships that the Thai firms in the survey⁵ have with friends, family members and business associates as a source of information, knowledge and assistance. As mentioned in the methodological chapter, the meaning of the 'network' as a concept was not always understood, because co-operation between firms is in general informal and personal, which the Thais recognised as 'connections' rather than 'networks'. Furthermore, it proved very difficult to obtain detailed and insightful information about horizontal networks, as these are taken for granted and not subjected to careful reflection. Thus the answers to questions about networks was often very concise, of the kind: 'Yes, we know everybody', and 'We help each other with everything'.

Connections with friends and family are, as mentioned at the beginning of the chapter, a very important way of obtaining initial knowledge. Furthermore, personal networks are crucial in the initial start-up phase in order to obtain the necessary financial means. This reflects the preference to invest on the basis of family money and the strong inclination to enter into partnership with friends

⁵ Garment and auto-parts firms are discussed together in this section, as the horizontal networks reveal many common features between the two industries.
or family members.⁶ In most cases, the firm's owner enters into **alliances or partnerships with his family and friends** when he sets up the firm in order to finance the investment. The founder of AUTO4, for example, invested with his brother, the founder of GARMENT1 invested initially with some friends, and AUTO2 was also set up with money from an uncle of the founder. This practice is also common when further investment is required. Very soon after entering into partnership, however, a founder will prefer to buy out his partners or to sell shares to be able to finance a business of his own. The way AUTO5 was established illustrates this:

He [my grandfather] established two affiliates with two friends. They are friends from China. That is how we got the name. The name [of the company] means 'Three Friends'. But my grandfather is the one who runs the business. The other two just provided the money – they also have their own business. They just helped him with the investment.

The tendency to solidify the control exercised by the core family is confirmed in a study by Suehiro (1993), which describes how Thai groups formed by coalitions of a number of families and their friends moved in the direction of exclusive control by one family as part of the process of enterprise expansion. It is evident from the study that firm-owners, especially in the garment industry, have a strong wish to **manage the company independently**. In many interviews, the respondents frequently referred to the entrepreneurial spirit of the Chinese capitalist in explaining this inclination to manage everything independently. In the words of the owner of GARMENT1: 'I planned everything the Chinese way. Mostly I did everything by myself; I thought, I planned, and I was, so to speak, the head'.

The initially labour-intensive nature of production in both industries made it possible to raise money for the initial investment from the family or individual savings. Loans from friends and the family are thus an important way of obtaining access to finance for both industries. But such loans are short-term, and there was no evidence of systematic financial networking among friends. In line with the need to expand and finance large investments in new machinery or buildings, the **auto-parts firms** mainly turned to the banks as a source of finance: 'We started with family money, but as the business developed, we asked for more loans from the banks' (AUTO1). Being exporters, the garment firms have traditionally had relatively easy access to bank loans and government finance to make large investments and acquire lines of credit. However, unlike the more capital-intensive auto-parts firms, most owners of garment firms prefer to manage their affairs independently of the banks and to grow gradually as the revenues increase. Consequently, they rarely obtain loans from the banks, as was the case with the manager of GARMENT3, who stated: 'Whenever I made some profits, I expanded'. The importance of networks based on friendship or kinship as means of financing activities diminishes as

⁶ See Chapter 6.

the firm expands. Nonetheless, such networks remain important after the initial establishing phase as sources of information exchange:

My father still has good contacts and close relationships with his friends, who are not in the same business at all. They are in the perfume business or in the rubber business or whatever. They help each other out one way or the other, they go and have lunch, they have meetings, exchange some economic information, join up; they do that. It's important. (AUTO5)

After the initial start-up phase, relationships with friends and family members diminish in importance in relation to knowledge about the particular product niches the firms are engaged in. Relationships with representatives in the same business were thus revealed to be extremely important as a way of obtaining information and know-how and in solving any problems that arise. Companies use their contacts with other firms in the same industry to obtain information about most things that they do not know about themselves. As they know practically everybody in the relatively small automotive and garment communities, they always know who has knowledge about what, or, as the manager of GARMENT3 said: 'If I do not know who has the knowledge, I ask somebody'. The respondents regarded this as being very important, because it is impossible for a firm to survive without this network: 'it is important. One way or another, you cannot do everything by yourself. You are good at something, but you are not good at another thing. Maybe your business friend is good at something and you and them together can make a profit' (AUTO5). It is therefore important to keep a good reputation in business circles and for managers to be capable of forming ties with other people. If a company has demonstrated bad behaviour in some way – for example, committing themselves to doing something they cannot -news about it travels fast and nobody will want to work with this particular firm. 'In this circle information is very easy to spread. For example, if a company has a financial problem, every company will get to know about it' (GARMENT6).

Companies generally share information about customers, markets and ways to ship goods, as well as discussing changes in government policy and other general topics related to the present situation and future prospects of the industry. Such information is very valuable for firms in making preparations for such changes. As the manager of AUTO2 indicated: 'Such as import tax, we know from July last year that the government will be announcing a tax reduction, so we can plan what to do. This is one way of making profit'.

Information exchange is the most important form of co-operation. Besides, companies **help each other in other ways** with favours, borrowing equipment and money from each other, or calling on each other for assistance if they run into a problem they cannot solve on their own: 'OK, I will give you an example of something I have just done. My friend accepted the same order as I did, but

he did not have enough financial capacity. So we gave them the facilities to open a Letter of Credit for the customers, and then he took the order' (GARMENT2). They may also use the facilities of other firms if they have limited machining capacity. AUTO4, for example, often uses the machining facilities of other firms. The firms also often join forces to service a very large order.

We know each other and help each other. Sometimes we are not longterm friends, but we have the same customers. The customers from the state are very, very big – huge. So, you take one order, maybe it can keep you going all year. We sometimes join up to accept an order, especially a very big one, like Gap; they can give you an order like one million pants. Can you do that [on your own]? No, you cannot. So that means we have to split it up. I mean, I will take 200,000, you take 200,00, and someone else takes 300,000. Altogether it is OK, we can take this order; otherwise the order will fly off to India. (GARMENT2)

Thus, when different firms are supplying the same assembler or buyer, they come to know each other and often co-operate over an order. This has a positive side effect in that the suppliers check each other's price level, thus increasing their bargaining power when dealing with the buyers: 'It is better to join together two or three of us. We will have more power to bargain. Sometimes in terms of the price, some of the agencies have a trick, like they say, "This company gives me this price; how much can you offer?"" (GARMENT2). Furthermore, business associates often function **as mediators** because they recommend each other to their customers or introduce each other to potential partners. GARMENT3, for example, was introduced to his partner from Hong Kong through a common friend who recommended him. Garment firms also help each other if they do not have enough quotas. If one firm does not have enough, it can exchange, borrow or buy them from other firms, whom they are aware have excess capacity.

In order to obtain know-how and information about new production methods, it is common for managers to **visit other firms to see their manufacturing facilities,** and they also open their doors to other companies. The auto-parts firms often visit well-established Japanese component producers to acquire ideas for improvements in their own companies. AUTO4, for example, visited Denso to obtain information about the Toyota Productivity Management System. Firms also exchange technical information about new machinery: 'we just exchange information. For example, I call my friend and ask about a machine. "How is it working? Is it any good? The guy says, "Oh, it's very good. It's worth paying for." Before I come to a conclusion I can call my friends. They can tell me right away, "Go ahead and buy it"" (GARMENT3). However, it is not common for suppliers to co-operate over product development unless they are joint ventures or have entered into technical agreements with one another. As already noted, industry networks generally have a very **informal character**: 'it is an informal community. It is not an organised community. We meet informally and help and exchange with each other. Maybe it is part of Thai ways of doing business. You do not regard the other as competitors. We do not like competition. It is a Thai way of thinking of helping each other and compromising' (AUTO1). But in order to be able to link up with other firms, some **points of interaction** are vital. **Trade associations** are often the most popular places to meet and interact with other firms because they arrange regular meetings of members and seminars for them. All firms belong to at least one association that acts as a framework for exchanges of information about trends in the business and as a place to get to know others:

The association is good in terms of helping you to get together. Because that is the one way to get together, to exchange information and to learn from each other and to know each other – who is new in the market or whatever? You just need to be open, open your mind... In this field you will recognise one another by the fact that you know this company is good at something like that. (AUTO5)

Thus, in order to have an opportunity to link up with other firms, managers must be open to new contacts. Some managers, however, are lonely riders and prefer to solve everything by themselves, and they do not often go to meetings. The manager of AUTO3, for example, does not go to meetings very often, and is therefore not able to make links with other firms. Thus, AUTO3 does not cooperate with anyone and does not normally contact other firms. If the firm encounters problems they cannot solve on their own, the manager will instead contact the assemblers or make use of other personal contacts, for example the teacher of a brother who is studying engineering.

Besides the trade associations, other places where firms go to exchange information and meet are trade exhibitions arranged by the Department of Export Promotion and meetings with the government, while the auto-parts firms also associate with each other through the supplier clubs run by the Japanese assemblers. All the **auto-parts firms** in the survey are regarded as 'core' suppliers and therefore as members of a supplier club, which acts as a formal framework for co-operation between suppliers:

In this club, we get chance to see each other. We actually get a chance to be allowed to go into each other's factories to see how good they are and we can compare and improve ourselves. In the past, it was not possible to go to look at the factory of your competitors. But through this club it is possible. In the club we have many kinds of activities, and each company will be appointed as the activity leader for each activity. And this company is in charge of training programmes in the QC centre. We train new producers and act as a consultant to new companies as well. (AUTO1)

When the contacts have been established, the managers of the auto-parts and garments firms often communicate with others within the business or meet informally to exchange information and gossip: 'Usually I know people like the owner or general manager of the other companies. Sometime we telephone and sometime we play golf or sometimes we go to dinner together' (AUTO6). Managers might also organize trade fairs together to sell their products jointly or go to a trade fair together and share the costs and the hotel. As will be evident, managers use personal connections for various purposes. However, only one example was encountered of an attempt to set up a more formalised co-operative network, notably to create joint sales channels. After AUTO5 started to export its own products, its sales manager began to co-operate with other OEM suppliers, who were keen to export their own products. As the other firms do not have their own export departments, they sell the products to AUTO5, who benefits from this arrangement because it can then fill a whole container. As the quantity of goods exported is still relatively small, AUTO5 would not have been able to fulfil an order without this co-operation, as the cost of sending the products separately would have been too high. However, the sales manager stated that it is important for her to know the people she is co-operating with, and that they can understand each other and communicate on the same wavelength so that she can be confident of the cost and quality standards of the other firms.

Consequently, companies do not co-operate with everybody, but they have **a circle of firms they trust** and with whom they co-operate closely. The manager of AUTO1, for example, has four or five firms he turns to in connection with making dies, as well as five firms with whom he co-operates over the production of auto-parts. They help each other whenever they need to: 'We helped them produce when they had problems with their machines or have a lot of work that they cannot finish on time'. Among this small group of companies, colleagues meet to arrange social events, to co-operate, or to exchange gossip and information. Firms in the same business generally regard each other as **colleagues rather than competitors** because no firm can manage entirely on its own, even though it may prefer to remain independent. It is necessary for co-operation that firms are not engaged in fierce competition with each other:

Ten years ago, we competed with each other within the country. Now we compete with manufacturers outside Thailand. We are confronting the same enemy. We do not compete with each other anymore. If I want to sell at US\$8, my colleague next door will not be able to sell for US\$7. This is impossible, because our costs are about the same. But our competitors outside Thailand, like Vietnam, Bangladesh or Sri Lanka, can sell for US\$6. Secondly, we do not have enough quotas. Even though we would like to sell more cheaply, the quotas are insufficient. So, the price level in Thailand is about the same. I have never heard that, if a firm misses an order from a customer, that order will go to my friend in Thailand. It will go to someone outside Thailand... And because we have the association, people get to know each other and become very close to each other, helping each other. So we never compete with each other.

Even if they become very close, business partners rarely regard each other as real friends. Generally there is a very **sharp distinction between real friends and business friends.** Business friends are only approached in order to exchange information or if the company needs assistance. Such relationships are formed on the basis of mutual expectations, which is not the case with real friends, as one representative states:

We may co-operate with them, but in terms of give and take. If I give you this much, you have to give me this much.... We normally talk business and we talk maybe about the government or financial matters, maybe banking - we talk business. Because, you know, when you know them, you know them as a business friend, not like a friend from school, you know, because you have grown up together. That part of my life is after work – it is not added to it. I do not believe that relationships like that can grow into friendships like what you used to have when you were smaller, because we do not get any benefit from that. But real friends, we know each other and we do not have any expectations from each other, that is different... We might know each other for a long time. They are good people and we like to keep it that way. But I do not think for that part it can grow into a friend like you had when you are maybe in kindergarten or school – it is a different feeling, I think. There is a certain distance. I don't know, I give it myself up to a point. After work, of course, maybe we have a meeting and after that we go for a drink, we have fun and we go, whatever. We do that, and sometimes we have to go on a trip to Europe together, and we know each other more and more. We are in the same room for seven nights, and when we come back to Thailand I take my family, my husband and my daughter, and they take their family, and we go to have dinner together or something like that, we do that. But they are business friends. (AUTO5)

When asked, most of the firms answered that it does not matter whether the firms they co-operate with are Thai, Sino-Thai or foreign, or are a particular type of firm. However, they seem to have a closer relationship with people with whom they have something in common or have known for a very long time:

It is easier if you have something in common. Of course, I will not contact Indian people. There are some people from India in this industry... It is a bit of a circle; the people in this industry are about the

same age. It is the second generation, ranging from the owner to managers who are forty to fifty years of age... Chinese roots are not an important issue in Thailand, as they are in Indonesia or Malaysia. But, of course, if you can speak Chinese and they know you are Chinese, it helps. (GARMENT3)

Managers therefore seem to prefer to co-operate with former employees who have set up their own business, or people of the same age or professional level as themselves. The manager of GARMENT5, for example, does not co-operate with the new generation of garment firms because he is more familiar with their fathers. Likewise, the sales manager of AUTO5 stated that her father has extensive co-operation and information exchange with other general managers of the same age:

They know each other very well; they can just pick up the phone. Some people may work in another firm and want to work with us, and my father will call or they will call and ask: 'What are these people like, why do they not work with you any more, what do you recommend?'

Thus auto-parts and garment firms generally both have extensive horizontal industrial networks. But while the auto-parts firms co-operate with both local and foreign firms, the garment firms are mainly connected with other local firms. This is due to the fact that the automotive industry is influenced more by foreign firms and because of the formalised industrial networks that have emerged within the framework of the supplier clubs. **The garment community**, on the other hand, is almost exclusively **dominated by Thaiowned firms**, which also have Chinese roots. Thus the garment firms are more embedded in local networks, and their business environment has a more local character than is the case with the auto-parts firms. The associations, however, which act as an important point of social interaction in both industries, are controlled by local representatives of the business community in both industries.

All the firms are members of at least one **branch association**, most being members of their respective Auto-parts Association or the Garment manufacturers Association. The auto-parts firms are also often members of other associations, depending on their particular product niche, such as plastics or mouldings. Many firms in both industries take a very active part in meetings and even belong to the boards of directors. The representative of AUTO4, for example, is a director of the Auto-parts Association, the representative of GARMENT3 is currently the president of the Garment Manufacturers Association, and the representative of AUTO6 has been a director of the Plastics Association. The most important aspect of being a member is that one receives new information about government policy, quotas etc., and meets other producers at the monthly meetings. But, apart from working as points of interaction, horizontal networks involving associations and government

institutions have **limited importance in terms of learning**, as the training provided by the associations does not appear to be of great importance for the firms that belong to them.

Interaction with government institutions is, in general, limited. The Department of Export Promotion is mentioned by many respondents as being the most efficient government institution, though it is regarded as being far behind similar institutions in Malaysia or China, and most companies find their customers on their own. Some auto-parts firms use the testing facilities of various government institutions to a limited extent, and there are a few examples of companies who have received specific training from government institutions. AUTO6, for example, has received training in order to improve its mould-making process. This assistance was arranged by the Bureau of Supporting Industry Development, but was actually provided by Japanese experts. The most visible support from the various government institutions is often finding Japanese experts for private firms. AUTO4 had two Japanese experts attached to the company for a period of six months to improve productivity and upgrade quality. The garment firms have generally not received any government support, except for GARMENT5, whose manager has a personal relationship with a high-ranking government official, which the manager sometimes exploits in order to speed up official procedures. The general opinion in both industries is that government support is too limited and too slow. Furthermore, it is often stated that government officials do not know how to run a business and do not understand the industry's problems. Consequently, any knowledge that is provided is generally out of date:

We just rely on ourselves and on co-operation from other car producers... In the industrial sector, we are always ahead of the government. Even if you go to that government institute, you only find files of outdated products. So there is no point in going there. We still rely on the government sector in some fundamental ways, like when we order minerals from outside and want to check the chemical compound of such minerals, we go the government asking for help using the tools. But in terms of looking forward to the future or developing new sophisticated technology, we do not rely on the government.

The most important role of the government is to **provide information about policy**. However, producers find it a serious problem that government policy keeps changing, or that positions in the ministry constantly rotate, which means that ministry directors lack experience, and it is impossible to evolve any longterm policy plans. The respondents stated that they have become tired of discussing the same problems over and over again with new people and have therefore lost interest in going to meetings with government representatives. The information provided often overlaps with other sources of information, as all the information basically comes from the same sources and can be read in the newspapers just as easily. The auto-parts firms are particularly **careful** **about trusting government information** because once they got their fingers burned by planning according to the rosy prognoses of the government:

I think we have to help ourselves. We cannot depend on government sources or data. I think we got hurt from that. Because, before the crisis, if you believed government data [as we did], that you should invest more and more.... I don't know where they got the data from, but everything seemed so good, and they do not give you, like, second thoughts or anything.... And then the economy collapsed. You would see a lot of new machines still at the port. People just left them there, because what do you want to use them for? [...] I mean, they have always given us the wrong data in the past ten years, the figures are all imagined, they are not the facts. Our economy is not as strong as the government has been saying for the past ten years. [...] At least it is not too late for us, because we are still alive. But for other businesses, they have closed, you know. That is why I never believe that kind of data – I use my own data. (AUTO5)

Most of the firms in both industries either receive or have received investment promotion privileges through **Board of Investment** (BOI). But they feel that the government is more interested in promoting large firms, especially foreign ones, in order to secure foreign exchange. Thus, the representatives of the autoparts firms are bitter that BOI privileges are given to large foreign firms that produce the same products as Thai firms, making them strong competitors of Thai manufacturers. Many respondents compared the support they receive from the Thai government with that provided by the government to auto-parts manufacturers in, for example, Malaysia and Taiwan, and they complain that the Thai government has liberalised the economy too rapidly, instead of supporting the local industry.

The target of the BOI is to bring more investment to Thailand, and they give BOI privileges to foreign companies making the same product. But they don't have to pay taxes in the first ten years, and the raw materials they import, they don't have to pay taxes on. They got many, many benefits in terms of costs... The products made by Thais just cannot compete. Not because the products are no good, but because the benefits are different. For this, I think the Malaysian government is very good. They protect their own economy, their own people, before they open the door to foreigners, until they are ready for it. But Thais, we are, you know, we open the door right away, no questions asked, no nothing. We have to help ourselves. (AUTO5)

Many auto-parts firms have joined the **BUILD programme** under the BOI and participate in the relevant meetings, but the payoff in terms of new contracts has not yet materialised. The manager of AUTO4 even went to Germany to visit BMW as part of a vendor-meet-customer scheme. But only a few Germans

actually participated, and the firms that went did not win any new contracts. The feeling was that, in its task of introducing Thai companies properly to German assemblers, BUILD performed badly.

Respondents in both industries consider government support important for the survival of Thai-owned firms. In particular, they would like greater support in terms of human resource development and training, as the most serious problem that Thai firms are confronted with is the lack of qualified, higheducated people. Firms must therefore educate their employees themselves, only to find that those employees find other, better-paid jobs after they have been trained in specific skills. The auto-parts firms are in urgent need of automotive engineers, while the garment firms need assistance to improve design skills. The garment firms also hope that technological levels in the textile industry might be improved through the establishment of a new textile university, as the quality of the textile industry is very important to a downstream industry like garments. When discussing government support for R&D and human resource development, respondents often refer to government policy in those countries that are Thailand's main competitors, by comparison with which the Thai government falls short on all counts. After the crisis, the textile and automotive institutes were established to help companies upgrade and compete. But the impact of these institutes has yet to be felt, and the expectations in terms of them producing any benefits are not very great. This is partly because a lot of money needs to be invested in them, and partly because implementing projects in Thai firms requires people with a lot of knowledge of the problems at hand. Respondents did not have high expectations of this new development on any of these counts.

5.3 Knowledge transfer through socialisation with global and local actors

In summary, **Thai firms in both industries** have displayed an **ability to tap** into various sources of knowledge through the creation and maintenance of effective functional and social relationships, vertical as well as horizontal, through which knowledge is mediated. Regarding vertical relationships with customers, Thai firms in both industries have a substantial learning interface, as they benefit from a diversified customer base, in sharp contrast to the captive supplier relationships common in Japanese customer-supplier relationships within the automotive industry. Before relationships are established, suppliers are placed on probation in order to prove that they are able to fulfil all technical, managerial and financial requirements. Such relationships constitute functional networks, since they rest on a foundation of mutual commitment. That is, the customers provide the suppliers with orders as long as the suppliers keep upgrading and improving themselves and supply a quality product. The development of a certain degree of mutual commitment between the trading parties implies that the relationships all have had certain duration, which provides a framework for the development of trust and subsequent learning. As a result of long-term relationships and mutual commitment, a relatively

high degree of trust is developed, although this is inevitably based on expectations of mutual gains rather than loyalty. However, the long-term perspective does not provide any guarantee that learning will occur in these relationships, as is evident from the different ways in which knowledge has been transferred between global lead firms and Thai firms in both the garment and auto-parts industries. The differences in transferring knowledge are due to the different structures of relationships that the respective industries typically enter into, which have provided them with different incentives to change and upgrade, and to differences regarding the various **degrees of social proximity** between the two industries.

Being exporters of ready-made cloth, the garment firms are not directly integrated into the production structure of the lead firms, which implies that the transfer of knowledge concerning production techniques is very limited, and that there are no strict **requirements** that would cause suppliers to change. In general, buyers are not concerned about product quality, which is reputed to be very good. Customers are more concerned about safety measures and human rights, such as the use of child labour, as a response to the increased interest of end-consumers in working conditions in third-world factories. In order to meet quality standards, however, most garment firms have acquired a fairly high level of technology, having introduced computer-aided pattern grading and marker making.⁷ Since the buyers are not located in Thailand, rarely have any production facilities themselves and only rarely interact with their suppliers, the transfer of knowledge is generally limited to information relating to orders and the information and advice provided by the buying agencies. That is, the transfer of knowledge from global lead firms to Thai garment manufacturers is limited to codified forms of knowledge.

Being integrated more directly into the production structure of the global lead firms, the auto-parts firms have close personal contacts, which involve a higher degree of knowledge transfer than in the garment industry. The autoparts firms benefit from their relationships with the assemblers in two respects, requirements and assistance. The strict requirements imposed by the global lead firms not only relate to the product – which has to fulfil certain quality standard, especially in relation to the export market – but also refers to most other aspects of running a firm, such as the production process, delivery standards etc. As a result, Thai auto-parts firms have upgraded technologically and have been induced to apply just-in-time delivery standards and other quality standards to the production process,⁸ as the assemblers are constantly demanding improvements from the suppliers. Thai firms have been compelled to make an effort to adapt to the demands and production structure of the assemblers in order to keep the orders coming in. The embedded ness of foreign, particularly Japanese assemblers in the Thai production structure means that the assemblers are willing to assist their Thai suppliers in more

⁷ See Chapter 6.

⁸ See Chapter 6.

respects, since they are highly dependent on product quality and on-time delivery. Basically, the assemblers provide the suppliers with engineering drawings and substantial information regarding product development. Besides the frequent exchange of goods and information in relation to the launching of a new model, the assemblers train and teach their suppliers in practical skills concerning quality control, stock control, new production methods and costreduction measures. Consequently, the knowledge transferred through these relationships can be described as exploiting the carrot-and-stick principle, in which the assemblers transfer a great deal of knowledge and assistance, while in exchange the suppliers constantly upgrade and improve their quality and delivery performance. However, the assemblers have limited in-house production and do not generally assist their suppliers with technical knowledge about product development, nor do they transfer machinery, as they do not possess specific knowledge about component development. Membership of one or more of the supplier clubs, which contribute to co-operation with Japanese assemblers, is thus often more conducive to learning, as within this framework suppliers can assist each other in various ways in relation to parts and component production.

Relationships with foreign assemblers thus lead to many aspects of production coming under scrutiny. **Knowledge transferred involves both codified and tacit forms of knowledge**, in contrast to the garment industry. The close and frequent social interaction between the assemblers and Thai suppliers involves tacit knowledge transfer, both directly and indirectly. Direct transfer involves the provision of various kinds of training, as well as problem solving, in which the assembler's staff are appointed to assist the suppliers. Indirect transfer is a matter of inter-firm training and viewing manufacturing facilities within the framework of the supplier clubs. However, knowledge obtained in such face-to-face situations tends to be restricted, as **cultural and national differences** between customers and suppliers are usually not overcome entirely. Mutual orientation by Thai firms has not really been consolidated sufficiently for them to learn foreign methods like the just-in-time system, since they do not always understand the technical language, rules and attitudes involved in implementing the Japanese system.

Thus, relationships between Thai firms and foreign customers involve knowledge transfer to various degrees. However, relationships with customers, based on OEM, also close the door to other learning opportunities. Suppliers have grown used to receive blueprints and technical specifications from the lead firms and have not bothered very much about in-house product development. As a consequence, they risk missing out on the chance to learn from the innovation process, which involves the most comprehensive type of learning, as it constitutes a dynamic knowledge-creation process. Because they lack the ability to develop products on their own, suppliers become **very dependent** on the particular relationships they have with their present customers. If such relationships are dissolved, this may cause great losses for suppliers if they have neglected to develop other opportunities in terms of new markets or product niches. The garment firms in particular have underestimated the need to evolve product development capabilities. The difference in power between the Thai suppliers and their customers also means that lead firms are able to put pressure on price, especially in relation to low value-added products, leaving suppliers with little opportunity to invest in upgrading. This difference in power and in the restructuring of relationships as a result of changed global circumstances also means that trust that has been build up over the long terms as a guarantee of commitment can easily break down. In the garment industry, the emphasis of the lead firms on lower prices and shorter time spans between ordering and delivery, as well as the removal of the quota system planned for 2005, means that Thai firms risk losing orders to countries which are closer to the market and/or have lower wage levels. In the automotive industry, the practice of Japanese assemblers in maintaining very close co-operative relationships with suppliers is shifting towards developing more market-based relationships, which entail using more competent or cheaper suppliers. The abolition of the local content requirement by the Thai government means that Thai auto-parts firms can no longer be certain about their relationship with global lead firms, even though a high degree of trust and commitment has been characteristic of these relationships. In the future, therefore, suppliers must expect to be competing with suppliers inside as well as outside Thailand on the basis of criteria such as price and product development capabilities.

Thai firms have other means of learning, notably their **wide horizontal network interface**, which is of great importance to firms' operations and provides functional as well as social networks. However, extra-firm networks involving supporting institutions are of limited use for knowledge accumulation in Thai firms.

Even if the horizontal networks have a more informal character than the vertical ones, the Thai firms included in the survey have a large business network, which emerged for a **functional** purpose, in which business contacts are approached mainly when the firm is in need of information or assistance. As such, these relationships are based on mutual expectations, in which it is expected that a favour will have to be returned. In general, the managers know practically everyone in the relatively small communities of the automotive and garment industries, and they always know who has knowledge about what, or whom to contact to find out. Such networks consist of other firms in the same business, and they generally know each other from trade associations, the education system, trade fairs, supplier clubs, or sharing the same customers. In Thai business circles, what matters is whom you know, and it is therefore important to have a good reputation and to keep channels of communication with others open. Firms in these networks generally exchange information about customers, markets and new policies, as well as helping each other with financial assistance or use of machinery, lending a hand in case of capacity

problems, machine stops or a lack of quotas. They also frequently visit each other's manufacturing sites to observe new methods and machines at work. However, there seems to be no joint product or design development. The networks are usually long-term and based on personal knowledge, with a certain degree of social interaction and trust. Firms in the same line of business regard each other as colleagues, as they are not engaged in direct competition with each other. The garment firms are more embedded in local networks, as it mainly is local Thai people with Chinese roots who control the garment firms and associations. Foreign firms, on the contrary, influence the automotive community, more, as only a small percentage of the first-tier auto-parts firms are Thai-owned. Beside the networks that have their roots in the Thai garment and auto-parts industries, the auto-parts firms have other functional networks with technical agreement partners their purpose being to develop components and technical devices. Technical agreement partners, however, normally conduct the design and development completely independently, and little knowledge diffusion is implied in such relationships.

The **social networks** are particularly important in the establishment phase, since they provide some of the financing for the investment, as well as initial sources of knowledge about how to operate and manage a firm. Partnerships with and loans from friends and family members have been an extremely important way of obtaining access to finance in the investment phase. Furthermore, trusted friends have very often been decisive in allowing the managers of Thai firms in the two industries to seize opportunities to establish their firms, as they obtained initial knowledge and experience of the respective trade by working in firms owned by friends. Such networks are often owned by foreigners, but linked by having common ethnic Chinese roots. In general, social networks lose their importance after the initial investment stage, as the firms need more specific information and knowledge in relation to their own particular product niche. Most managers, however, maintain social networks with friends based on prior commitments, which they use to overcome limitations, such as a lack of finance, to obtain information about government regulations, and so on.

Regarding **extra-firm networks**, in one case a garment firm benefits from certain personal connections with government officials. But in general, the supportive role of the government is limited to investment and trade issues. Some of the auto-parts firms have benefited in a few cases from specific training provided through government institutes, though financed and implemented by Japanese experts, who are often paid for by the Japanese government. The garment firms have not received any such assistance. Their representatives are generally very dissatisfied with the role of the government,

⁹ Besides the limited knowledge transferred and the time-consuming and expensive process involved in technical agreements, Kamaruding (2003) also mentions other negative impacts on local auto-parts firms, as those with the technology impose restrictions on the activities of local producers, such as prohibitions on exporting the parts and on the purchase of manufacturing equipment, material or parts.

as they regard the service it provides as too limited and outdated, and they do not trust the information it provides.

For knowledge diffused through vertical and horizontal networks to become part of the knowledge base of Thai firms requires them to be active and motivated to learn and to have introduced a learning capacity into the organisational structure of their firms. This is the subject of the next chapter.

Chapter Six

The Internalisation of Knowledge

Introduction

The empirical part of the study has so far focused upon how local Thai firms tap into external sources of knowledge and how this knowledge is transferred through a process of socialisation between various actors. The focus has been on inter-organisational interactions: how and with whom do the firms interact to obtain the necessary knowledge about products and processes and to overcome changes in the economic environment? However, the knowledge they obtain through interaction with other people and institutions is worth very little if it is not internalised to become organisational knowledge. That is, knowledge has to be absorbed, adapted to the organisational structure and diffused among different levels and groups in the company. Not until the knowledge has become an organisational asset of the firm can it be used for new developments and change the organisation. The ability to turn outside knowledge into inside knowledge reflects the extent to which the firm has invested in a suitable knowledge base and the way it is organised. The various aspects of the organisational structure of Thai firms, such as the ownership structure, the decision-making process, the corporate culture and employee motivation, can be beneficial mechanisms for, as well as barriers to, effective knowledge distribution. Thus, this chapter concerns how Thai firms internalise the knowledge obtained from outside sources and the extent to which organisational practices and the existing knowledge structure serve as an advantages or disadvantages in this process.

The chapter is divided into four sections. The first section concerns how **prior** knowledge has been build up and describes the organisational structure of the firms, which constitutes an important base on which further knowledge can be accumulated. The discussion concerning prior knowledge focuses on the educational background of the founders of Thai firms and the firms' technological level in terms of 'operational' knowledge and 'minor change' knowledge. The analysis of the organisational structure involves an assessment of the ownership and control structure of the Thai firms, thus providing an important background for the decision-making structure in and growth pattern of the firms. In section two, the actual process of internalising new **knowledge** in terms of the implementation of new processes is analysed. The question asked here is whether the organisational structure acts as a barrier to the process of knowledge internalisation. Section three examines more closely how Thai managers have restructured their organisations in relation to the present challenges they are confronted with as a consequence of the liberalisation of investment and trade, increased competition and the recent

economic crisis. The purpose of this is to identify the **corporate strategy and vision of Thai managers**, and to evaluate **the position of Thai firms** within the auto-part and garment industries. Finally, section four summarises how knowledge has been internalised into the knowledge base of Thai firms.

6.1 Prior knowledge and organisational background

Training background

The training that owners of Thai **garment firms** acquire is generally **in retail and commerce**. Consequently, they have only a limited knowledge about the actual production process. Only one owner of a garment firm has a degree in engineering, while another is the son of a tailor. All the other owners or managers have been educated in business administration rather than production management and do not come from a tradition of family garment production. The story of the manager of GARMENT5 is significant here:

I am not an engineer but I have a bachelor's degree and an MBA. I got the experience from training, but I do not know much about production. I know just the management.

By contrast, the founders of the **auto-part firms** all had **a technical or engineering training** before founding their firms. The founders of AUTO1 and AUTO5, moreover, were very entrepreneurial and innovative, as they both developed the original products themselves. The manager of AUTO1 talked about his father, who founded the firm:

He did not have any connections with any group. He took initiative regarding the technicalities and machines himself. That is why he invented the radiator for the first time in Thailand. He made it himself and acquired entrepreneurial skills later. When he saw things he did business with it. He seized opportunities.

Likewise, the founder of AUTO5, founded as far back as 1959, was trained as a managerial engineer and was the first manufacturer in Thailand to make leaf springs for the replacement market based on his own innovation. In fact, all the auto-parts manufacturers have engineering degrees. After they graduated, they saw an opportunity in the automotive industry, which was a growing business when they launched their firms, that is mainly in the period between 1975 and 1985. Furthermore, the owners and managers of auto-parts firms have **often been educated and trained in Japan** over an extended period.

After acquiring their initial knowledge of the business, the founders expanded gradually on the basis of their acquired knowledge. AUTO4, for example, developed from a small retail shop selling automotive parts and subsequently

developed into a group with nine auto-part manufacturing firms. AUTO3, however, moved into the manufacturing of auto parts after acquiring experience from related businesses:

He [my father] had no direct knowledge about automotives, only about steel. At the beginning we made cinema seats for about ten years. Then the video came in, and the cinema business went down, so we had to change the business in 1980. I think, according to his visions in the past, he saw that there were a lot of pick-up cars in Thailand. Maybe he thought that this kind of business was growing in Thailand, that people needed replacement parts. Because, in the automotive business, we are dealing with steel, and the cinema seats are made of steel as well – it did not change so much.

Operational knowledge

Operational knowledge relates to **the knowledge and skills used in plant operation**. Types of activities involve production engineering, repairing and maintaining physical capital and shop floor experience. Learning by doing plays an important role in acquiring operational knowledge, as only a small part of the necessary knowledge is embodied in machines. Mostly it lies in the skills of people, in behavioural patterns, and in organisational structures and procedures.

The level of technology it is fairly high in the garment firms. Most firms have introduced computer-aided pattern grading and marker making, while cutting is still done manually. Less technological innovations have been applied to the process of garment assembly itself, though specialist machines are sometimes used. Consequently, the sewing process itself is still very labour intensive. In the auto-part firms, on the contrary, the production process is becoming quite capital intensive. All the companies invested greatly in new and sophisticated machinery as a response to market expansion in the-mid 1990s in expectation of even more market growth. The owner of one auto-part firm explained how changes in the market were linked to the increased use of capital: 'when you reach the volume of 10,000 body parts a day, all machines are already automatic. We have changed from being labour-intensive to technology intensive six to -seven years ago'. As a consequence, the entire production process of the three largest auto-part firms, AUTO5, AUTO4 and AUTO1, are fully automated. AUTO4, for example, has more than a hundred CNC machines and some very sophisticated robots. The three smaller auto-part firms still have some labour-intensive sections, but are in the process of introducing more sophisticated machinery. The advantages of robots and computercontrolled machinery are not just improved productivity, but also a higher level of precision, which is very important to obtain the high quality of parts that assemblers demand, especially for the export market.

When new machinery is introduced, the **skill structure** changes. On the one hand, it is obvious that investment in new advanced machines leads to deskilling, as employees with limited formal qualifications can handle automatic machines. However, when new technology is introduced, workers are trained in its use. In the **auto-part firms**, employees are sometimes singled out for special training in how to operate the machine, either being trained by the German or Japanese technology holders on site or being send abroad for this purpose. Thus, the company becomes very dependent on its machine operators, who in fact do not need to have a broad knowledge about products and processes, and do not necessarily contribute to further improvements or upgrading. On the other hand, more skilled technicians are required to maintain and repair the machines:

When we have the machine we need less experts and less skills because the machines are advanced and they are quite easy to use it. So we trained those workers how to use the machine. Now we have thirteen robots and they can replace those technicians.... This robot, for instance, can do the connecting task, so the technicians doing the iron connection are not needed anymore because this robot can do their job.... But in terms of technical staff, we use more and better technical staff to take care of the machine. When we have more machines. We focus on hiring more high-level technicians instead of unskilled ones. (AUTO1)

The **maintenance and repair** of new investments often constitutes a problem.¹ **Both auto-part and garment firms** have installed repair and maintenance units, or at least have a plan to train operators of machine to repair them too. But in many cases, firms still have serious problems with machine breakdowns that they cannot repair. GARMENT5 solves the problem by employing a technician from Hong Kong to operate and repair the pattern-maker machine. The other firms depend on calling for outside assistance when problems occur, for which they often draw on personal connections, or else they solve maintenance problems with the help of the machine's supplier, who occasionally comes to inspect the machines:

We have a maintenance section, but we have a lot of problems with machine stops. Some machines stop for a very long time. We have to repair it as soon as possible, but it is very complicated to repair and maintain machines imported from Germany. So, the teacher of my brother or maybe a repair company must come to help. (AUTO3)

¹ This section also has relevance to the socialisation process, as maintenance and repair often involve interaction with various actors.

'Minor change' knowledge

'Soft' technological capabilities or 'minor change' knowledge refers to the **firm's ability to improve and adapt its products and processes continually**. This is a matter of the vast area of adaptive engineering and organisational adjustment involved in the incremental upgrading of process technology and of product design. The ability to carry out incremental upgrading is exclusively human-embodied and involves administration technology in the production process, such as quality control, as well as the directed development of skills and knowledge through training and research activities.

All firms in the survey in both sectors are **suppliers of original equipment**. That is, they produce products based on the orders and product specifications they receive from their customers. The knowledge needed in this regard involves learning how to produce the products on the basis of the prototypes, drawings and specifications, and to develop the skills required to manage the process. In general, **garment firms** are not very concerned about product development or design, as they make the garment on the basis of the drawings they receive from customers. It is more important to learn about the technical aspects of the production process in order to improve productivity and carry out minor changes. The main way of learning about such issues is through experience, which implies a deepening of the initial knowledge obtained from working in foreign firms. As the owner of GARMENT1 put it:

In Thailand, frankly speaking, in the past twenty years, we did not have schools or institutes teaching about mass production. For me, technically speaking, I do not know because I am not a technician, so I do not have any technical knowledge. But in the past, when foreigners came to invest in Thailand, we had a lot of Thai people who worked with them.... For the technically wise, of course, it is easy for Thai people to get the techniques from foreign technicians, because they have to transfer the techniques to Thai technicians, otherwise the work cannot go on. This is good, because when some industries come to stay in Thailand, and we have a chance to work with them, we can gain the experience. And from the experience, we can start teaching other people. When I came out to start, I used those people and some friends to train in my firm.... So, sooner or later our people learn more and more. We get more technicians, more sewing machines, and then we have pattern makers, cutting sections, people who control the quality – so many sections concerned... Thai people actually already have got the basics for making garments, but not as an industrial one. I think every country has tailors, but a tailor can only make it one by one – slowly. To make it in mass production or as a factory, it requires experience, how to control, and how to separate the parts – very important.

As the quotation above indicates, the main concern is not how to make the garment, as actual production is technically rather simple. The main concern is management: how to produce to scale, how to set up the process, how to control, and how to increase productivity and quality. The main way of learning production management is through experience, that is, to develop already existing knowledge instead of applying new knowledge. **Learning through in-house, on-the-job experience** not only concerns management, but tasks at all functional levels in the firm. The pattern maker at GARMENT4, for instance, received only three months training about garments. But after fifteen years experience, she is now able to make all kinds of patterns by simply looking at a picture or drawing, and she even makes some changes in design for the firm's customers.

The workers generally do not have any formal qualifications and are trained on the job by supervisors. The initial training only lasts a few days, and subsequently knowledge is acquired through experience. But the garment manufacturers are highly dependent on the acquired skills of their workers to be able to produce the more advanced and complicated items. As the owner of GARMENT4 explained, the company has always produced jackets, but they have been able to produce more and more complicated and fashionable jackets, as their workers gradually gained experience. Consequently, firms are very dependent on the loyalty of their experienced workers. However, in the boom years for Thai industry, workers had opportunities to work in the many department stores or electronic companies that emerged around Bangkok, and the garment industry experienced a shortage of workers. The lack of labour is also a reason why many garment firms moved to the northern regions of Thailand or to Laos. Another way of solving the problem of a lack of workers is to subcontract many tasks to smaller companies or private homes, as GARMENT2 does.² Garment firms rarely employ any engineers and in general only a few technicians who have received some education in repair and maintenance or as machine operators.

Unlike the garment firms, the **auto-part firms** are much more concerned with product and process development, because of the much more complicated learning process involved in the production of parts. Consequently, they require employees with high formal qualifications who can solve technical problems and take care of difficult processes such as forging, mouldings and product development. Thus, auto-part firms employ many engineers and technicians, as in the case of AUTO5, which employs more than a hundred engineers. Because of the complex technology applied and the need for skilled people, auto-part firms **suffer greatly from the notorious lack of engineers** in Thailand. It is especially difficult to find qualified people who have the appropriate knowledge of automotive products and production. Consequently, some

² This confirms the existence of a hierarchical structure in the garment industry, in which smaller firms work as sub-contractors for the larger garment producers, which have a sub-contracting arrangement with foreign customers (see Dulbecco and Vagneron in Chapter 4, above).

companies train employees in-house. AUTO5, for example, has a programme in co-operation with a technical university to train technicians in engineering. Every year, about forty candidates from different departments are selected for training, and for a two-year period, they leave work early to study part-time for a degree. The company pays for tuition and costs. When there is a lack of engineers, it is also important to motivate employees to stay in the firm by providing good working conditions and attractive salaries. This is difficult for some of the smaller firms, which have very paternalistic working conditions and are unable to offer as much as the larger Thai firms or than foreign firms. Thus, they often have a very high staff turnover rate.

The auto-part firms demand more specific production-relevant training than the garment firms do. AUTO6, for example, participates in formal training with respect to mould making or mould-design techniques arranged by the universities, Thai-German Institute or Plastics Association. As all firms have their own particular needs, they are not always pleased with the selection and level of seminars. AUTO3, for example, complained that: 'many seminars cannot work for us. It is too broad topics, so they cannot help. [We] cannot get specific technical information from anywhere'.

Even though technological learning is an important issue for the firms, none of the auto-part firms have actually developed the necessary knowledge to develop the parts themselves, as the assemblers provide prototypes or engineering drawings.³ However, some auto-part firms have been able to develop their own brands of minor products. An important explanation for why some firms have succeeded in developing their own products while most have not may be that the former actually started to produce their own products before becoming OEM suppliers. The **existence of a fundamental knowledge base** has proved vital in applying new know-how obtained from partners to technical agreements to one's own firm. The successful firms are also very entrepreneurial and have been highly motivated towards using and developing their own technology from the start. AUTO5, for example, is involved in **research and development activities**, which is why they have been able to develop some body parts under their own brand name, besides their OEM production:

We also have our own brand for the domestic market and export – using our own technology. We use the know-how, which is derived from the training in connection with dies. So my father thought, we should use this know-how to come up with our own products – our own market and brand name. We can make different types of body parts on special orders by our own design. We use three percent of our turnover for research and development. This is why we stayed alive and why we are still in the business... I can say that you have to start from the technical

³ As mentioned in Chapter 5, the auto-part firms are engaged in arrangements with partners to technical agreements, who in essence develop the products.

providers and then you learn and grow by yourself. I mean, you have to grow by yourself. Otherwise, if you learn from them, and you do not get your own know-how and adapt it, you are never going to be a success.

Unlike some of the larger companies, many of the smaller OEM suppliers do not see the need to invest in research and development, as they receive engineering drawings from the assemblers. This implies that they have not yet built up any know-how of their own about product development and design. Some of them are able to develop replacement products for the after sales market, but this is most often done by copying mature products, and the quality is not as high as with the original parts.

For both garment and auto-part firms, their position as OEM suppliers has not been a motivating factor for developing the product or design. Furthermore, being an OEM supplier also acts as a barrier to dynamic interaction with the market. Because they have been working with the same customers for long periods of time, few companies have built up marketing capabilities. As a consequence, they have only limited knowledge about the market and potential new customers: 'we export 100 percent. We do not have know-how to sell locally. Because we started in export, we keep doing the export' (GARMENT1). As the market is already there, most companies do not even have a marketing department and are not engaged in PR, so that they lack basic knowledge and experience of marketing. Recently, one of the auto-part firms began to build up marketing functions, as the devaluation of the Baht and the declining domestic market in relation to the crisis made the export market very attractive. AUTO5 have been exporting spare parts for twenty years, but after the crisis they started to export their own products, their target being to export thirty percent of their total production. However, if they go down this route, many auto-part firms have to start building up marketing capabilities from zero.

Auto-part firms have also become indirect exporters because assemblers increasingly exploit the export market from Thailand. Such developments place higher demands on the suppliers to comply with international requirements and standards in relation to product quality, as is the case for AUTO3: 'Isuzu also export, and it is different quality. For example, Isuzu send two orders; one is for the local and the other is for the export market. For the export market we have to be strict on quality. The steel is the same – the difference lies in how strict the quality checking is'. However, not all assemblers work to different quality is embodied in the machines. Computer-controlled laser machines, for example, are necessary to produce very precise and accurate products. This constitutes a problem for smaller producers, as such equipment demands high investment and thus requires a large volume in order to be cost-effective.

Ownership and management structure

Regarding the ownership structure of firms, the findings reveal three points. First, **family-owned enterprises predominate**. Secondly, the importance of **Sino-Thai entrepreneurs** cannot be overstated. Thirdly, firms are generally **part of a larger business group** under the control of one family.

The importance of family firms is evident, as both auto-part and garment manufacturers in the survey were managed on a family basis, and the respondents themselves often refer to their firms as family firms. A family firm was understood by respondents as an entity belonging to and controlled exclusively by the founding family and managed by family members. The respondent for AUTO1, for example, stated that: 'This group of companies are family firms and the parent company is owned by my father'. Generally the founder or descendants of the founder act as both the owner and the general manager of the firm. In some cases, ownership may be extremely centralised around one man, as in the case of AUTO5, in which the owner controls 73 percent of all facilities in China and Thailand. The concept of a family firm also implies that the members of the family, for example wives and grown-up children, are to be found among the top managers. In GARMENT6, for instance, the wife and two sons of the owner work in the firm; in AUTO4, six sons and two daughters of the owner have high positions in various firms; in AUTO5, all brothers and sisters and in-laws are employed in different companies; and in GARMENT4, GARMENT1 and GARMENT2, the wives of the owners work as marketing or general managers. This is a strategy that has been carefully planned, as the founders intentionally provide their offspring with relevant education, so that they can be placed later on at strategic positions in the firm. In the **auto-part firms**, while the sons of the founders are generally send to Japan to be trained as automotive engineers, the daughters are send to study marketing in the US.

In all the companies except AUTO6 and GARMENT5, the owner of the firm is also the **top manager**. In AUTO6 and GARMENT5, exceptionally, the general managers are professionals, that is, they do not belong to the founding family. However, members of the family are still involved as presidents and members of the board and thus control all major decisions. In both cases, the owner family has several companies and cannot manage all of them on a day-to-day basis. Even where the owner and members of his family are as the top managers, most firms, particularly the larger ones, engage professional middle managers or top managers if no one in the family possesses the necessary know-how.

As already mentioned, the owner and founding family strictly control the firms. It is a general feature of the family firms that only members of the family and friends are placed on the boards. Among the board of directors in AUTO4, for instance, only family members are listed. In AUTO6, 85 percent of board

members are relatives of the founder, the remaining 15 percent friends of the family. GARMENT5 differs from the rest in this regard too, as the group was reorganised into a stockholding company in 1975. However, family control is still maintained, as the family owns the majority 93 percent of the shares. Another seven individuals own the remaining 7 percent, as is required by Thai law for the firm to be a limited company. Members of the owner's family, such as uncles, cousins, sons and daughters, are appointed to the boards of the stockholding company. But board composition also shows that political connections are important in the operation of a business in Thailand, as former Thai prime ministers can be found listed as members.

All the firms are one hundred percent Thai-owned, which was one of the criteria followed in selecting firms for interview. However, besides being fully Thai-owned, all the firms have historical roots in Mainland China. In all cases, either the founder himself or his father had emigrated from China, which underlines the overall importance of ethnic Chinese in these industries. The interviews suggest that the dominance of Sino-Thais in both the automotive and garment industries might be linked to how these firms were established. Many Chinese came to Thailand in the wake of the Communist Revolution in China in the late 1940s to look for business opportunities. As the **automotive** industry was a growing industry at that time, Chinese emigrants found employment there, acquired experience and later set up their own businesses. Chinese garment manufacturers benefited from relationships with overseas Chinese from Hong Kong and Taiwan, who invested in Thailand in the early period of garment manufacturing, as already explained. Thai nationals may have found it considerably more difficult to enter into alliances with Chinese garment manufacturers.

Even though they are of Chinese origin, respondents considered themselves to be completely **integrated into Thai society**, especially when compared with Chinese in other Southeast Asian countries. They have, for example, taken Thai nationality and Thai names. However, interviews also indicate that they have still not come completely Thai in two respects. First, they conceive being Chinese as working more in accordance with a given practice in any organisation. That is, they know the practices of Chinese firms by heart, while Thais must have everything written down. Secondly, they regard the Chinese people as being more industrious, prepared to take risks and innovative Thais:

Every Chinese is looking for business, and Thai people go into politics or work as a teacher or something like that. The life is different, and they are not so creative. This is the reason why the Chinese are different from Thais because of creativity. Like me, I go into a new business, which is normal for Chinese. For Thais they think that there is no need for changes. (AUTO6) The respondents did not regard themselves as being particularly Chinese, but they confirmed that certain **Chinese features** still exist when asked whether original Chinese traditions influence firm strategies. As mentioned earlier, to start from a small, family firm, and expand by means of one's own experience and investment is regarded as being particularly Chinese. Besides, they emphasise organisational structures, such as top-down management, family ownership and paternalistic authority structures, as being the remnants of original Chinese organisation.⁴ Hierarchical social structures are clearly evident in Sino-Thai firms, and especially in how the older generation manage their firms. **Management is a top-down affair** in which the owner takes all major decisions himself, expecting the younger generation to respect and obey his decisions without any discussion. On the other hand, there are also examples of reciprocal relationships between the owner and his employees, where the owner takes care of his employees in return for loyalty. The existence of employee charities is an example of this:

Our company provides good welfare. We provide a dormitory if they want to stay at the factory. If they do not want to live in the factory we provide them with transportation. They can borrow money from the corporation. The welfare cost is around 500 Baht per month per person. (GARMENT5)

Relationships between an owner and his employees are often structured as if they were a family, with the family patriarch taking care of the employees. The present owner of GARMENT2 noted: 'my father was a very kind man. So he managed the factory in the father-and -son way. It is good in one way, but not good in another way. As for me, in the organisational aspect, I separated the jobs, duties and levels of workers'.

As will be evident from the above quotation, paternalistic and hierarchical strategies are something that **the younger generation** often find disagreeable and inappropriate, as the long distance between top and bottom is unproductive and makes communication unclear.⁵ The traditional way of organising things is especially likely to be questioned if the younger generation has been educated abroad. At present the favoured destinations for studying abroad are the US, Japan and Australia, and the new generation learns the managerial and

⁴ It is not easy to differentiate between traditional Chinese and Thai traditions as both societies were build up in a very hierarchical way. As Dubey-Villinger (2001) notes, the mentioned structures, which are said to be specifically Chinese, are also features of traditional Thai practice. The Thai society is very hierarchical structured, the roots of which should be found in the strong feudal agricultural society. The Buddhist philosophy of *Karma* is also said to promote a structured society as one's position is predetermined or destined and of a static nature. Such a hierarchical difference is acknowledged and accepted, but at the same time it is expected that certain norms and practices associated with being an employer is followed. In any relationship, the person in power holds certain duties and responsibilities in terms of caring for subordinates and to know what their needs and concerns are (p. 106-10).

⁵ As will be seen later, such structures often work as barriers to the internalisation of new knowledge in Thai firms.

organisational skills of these countries. In the words of the granddaughter of the founder of AUTO5: 'I had been abroad to study in the US, and then I had to come back to work here. Ten years ago, I found it very difficult to accept some systems that had been in the business for over thirty years at the time I joined the business'. As a consequence, the younger generation gradually introduces changes in the organisational structure of a firm when they take it over, mainly decentralizing the decision-making process, improving lines of communication and upgrading the quality of company management:

My father's work was very family-oriented. He would make a decision, and every employee had to come to him [for advice]. He would solve every single thing himself. But right now, after my father passed away, we tried to change from being family-oriented to becoming professional. So we hired more professional people. And for the family members who work in the firm, they have to have some qualifications. For example, my brother is an engineer and I have been in the banking sector, so I will look more at the finance and at export. And we are responsible for our own line of business. So it is not a family involvement forever. (AUTO4)

As mentioned, most of the firms are part of a larger group of firms or conglomerate, which might be diversified into various unrelated sectors. This pattern is also confirmed in the study by Suehiro (1993), which shows that as an enterprise expands, surplus capital is used to invest in other companies, retaining, however, firm family control. GARMENT5 is an example of such a conglomerate. Originally, the activities of the parent firm were centred on textiles, garments and accessories, but at present the group is involved in such unrelated activities as petrochemicals, plastics and rubber, electronics and computers, as well as energy production. The group comprises 58 companies, including overseas investments in China. The other garment firms in the survey are also part of a larger group under the same ownership. However, their activities are mainly concentrated in one sector. In the **automotive industry**, AUTO5, AUTO4 and AUTO1 are some of the largest wholly Thai-owned groups in Thailand. AUTO1 belongs to a group of ten companies, while the AUTO5 motor group consists of five affiliates in Thailand, five production units in Mainland China and a sales office in the US. The AUTO4 group has nine auto-part companies under its wings, but only three firms are fully owned by the family, the rest being joint ventures with Japanese firms. At the time of writing, AUTO4 is restructuring the group in order to recover from the crisis. The idea is to focus on core activities in the three companies owned by the family and to sell off their investments in joint venture companies to the Japanese.⁶ While automotive groups choose to establish new firms in order to

⁶ The strategy of keeping only core activities in which the company has know-how turned out to be a common strategy in the wake of the crisis. Siam Cement, for instance, one of the largest conglomerates in Thailand, sold off all its automotive companies to concentrate on its core business, which is construction.

produce new or related products, **garment firms** have a much more defensive strategy. The main reason why garment firms sometimes choose to set up more than one firm is usually to reduce labour costs. This can be achieved by setting up investments in nearby countries, often Laos, or in northern Thailand, where wages are lower and firms are given concessions by the BOI to promote decentralisation. All garment firms have pursued this defensive strategy. GARMENT2, however, have set up two garment companies in order to serve the export and domestic markets respectively.

Some of the affiliates in the groups are **joint venture companies**. For the garment firms, such structures are mostly temporary arrangements to encourage expansion into a new market. GARMENT1, for instance, has set up a factory in Laos with some friends from Hong Kong. The main reason for auto-part firms to become involved in joint ventures with Japanese multinationals is to obtain know-how and access to the export market. However, it is very important for them to keep the business in family hands:

We know that in the near future pure Thai companies will find it harder to survive, but we would like to maintain this company as a Thai company. We want to struggle as a pure Thai company and we have done this since the beginning. We do have joint ventures as a small part of our business, but in the big picture, we want to maintain this company as a pure Thai company. (AUTO1)

The above example illustrates that family ownership is not just temporarily maintained until the company has matured and expanded sufficiently to become reorganised into a limited company. Actually, only AUTO5 has given any thought to the idea of shared ownership through the stock market. **Family ownership has a permanent value** among owners of Thai companies. Furthermore, the expansion of the family business through the group structure is another traditional tactic used to expand the family's total fortunes and to minimize risks. However, it is acknowledged that it might be necessary to join with foreign partners in the future. 'I think [that] in the near future maybe this kind of concept might have to change. The competition is growing very, very fast, and in order to be a big player not everyone can just protect their domestic company' (AUTO4).

6.2 The knowledge-internalisation process

A large part of this section is based on **interviews with institutions** that help implement workflow programmes in Thai garment and auto-part firms.⁷ The **Thai Automotive Institute (TAI)** supplies productivity and management programmes to private firms, but it concentrates on the implementation of QS

⁷ Thus, the experience of the institutes with how firms absorb the programmes refers to industry more generally than in the rest of this chapter, not necessarily to the companies in the survey, which are relatively high-ranking among Thai firms.

9000 standards, for which they are subsidised by the government. For technical knowledge and training in management programmes, firms turn to Japanese experts, who are provided free of charge by JICA and JETRO. In the spring of 2001, these two organizations had 25 such experts, usually retired managing directors or engineers from automotive manufacturers. The Thai Garment Development Foundation (TGDF) is the training division of the Thai Garment Manufacturers Association. The TGDF is responsible for the implementation of ISO 9000 and the five S's programme. To implement ISO 9000, garment firms can receive funding from the government to use the TGDF as a consultant. The consultants themselves have learned about ISO 9000 by joining projects and through experience and self-learning. The division does not use experts from outside the organisation. The Department of Engineering at Kasetsart University (DEKU) also has a unit that acts as a consultant for private companies with government support. The Department generally arranges seminars, but they have also been attached to the Toyota Cooperation Club as a consultant to support suppliers with cost reduction and quality improvement programmes. All three institutes have substantial experience in implementing various programmes in Thai firms. Implementation of ISO or QS systems, for example, takes around one year and involves about ten visits by representatives of the institutes to prepare, train and evaluate systems. Finally, the systems are assessed and approved by a certification body.

Barriers to implementation

The institutes all agree that Thai firms are quite **capable of learning technical skills**, for example, how to operate a new machine: 'They have moved up to the middle level, which involves using higher level advanced tools. This is all applied' (DEKU). However, the successful implementation of management training, such as the QS and ISO systems, depends greatly on the experience of the firm, its management and motivation. Especially the **skills and motivation of the management are emphasised as a barrier** to the proper implementation and adaptation of the various programmes. As a representative of TAI stated: 'The management is the one key I think is most important'. This attitude was echoed by the TGDF: 'The attitudes and practices of owners and managers are the main problems'.

One main problem regarding management relates to **the top-down decisionmaking structure** that exists in most firms. The problem of this top-down structure in relation to family control is that the owner often looks after all aspects of the company, such as planning, marketing and production, singlehandedly. This has the consequence that **knowledge and information become locked in the top manager's head** and are not distributed to or shared with employees. This implies that, if the owner or executive manager is not present, there will be no one around to take a decision: And another point is that most of the management here of Thai firms, they work hard in the marketing area, so that they do not have enough time to work in the factory. Actually, most of the firms here, they have top-down management, so most of them spend a lot of time working outside the companies, and they do not have enough time to make a decision inside the company. So when we try to implement systems such as the QS or ISO 9000 system, nobody can decide, nobody can make a decision in the companies. So this is one of the problems. (TGDF)

If the owner looks after marketing, production, sales and planning himself instead of leaving it to the professionals, it often leads to **decisions being made in an ad hoc fashion**. This in its turn leads to a lack of planning and vision, and an inability to cope with training and investment requirements. Absent managers are also not receptive to new proposals about new programmes, training or methods. As will be evident from the quote below, respondents did not regard this indifference as originating entirely from insufficient education, but rather as an attitude problem:

When we have training, some managers will just accept new things that they know from training and adapt it and develop. But for some, they just do not accept it because they believe in what they have been doing. They believe that they know everything and what they know is actually correct. You can find this kind of one-man show in many family firms. But if it is a one-man show, which really knows the correct things, it will be fine – the company will grow. But if it is not, it is a problem. But at the same time, these managers must learn new technology as well, since this industry is quite fast growing. We do not think that background is as important as experience because we know many managers who have an MBA or other higher education, but this does not mean that they will do well in administering that business. That is, it depends on whether they will accept new things and adapt them to their needs or not.... Because in this business, they are mostly family businesses, and many companies did not have production planning before, so they just produce day by day. The common problem is that they usually have orders beyond their capacity to produce. So every time when orders come in, they just accept them first and do not care whether they can produce them or not. And if they cannot do it, they just subcontract later. That is lack of production planning which can be traced to people in this business.... One thing that I learned from them is that because many orders are coming in, so they concentrate on producing those orders rather than thinking about strategic planning. They need to think about how can they deliver their goods on time. (TGDF)

Proper **communication between levels and sections** in the company is also inhibited by the top-down management structure. In order for individual knowledge to become an organisational asset, it is essential to create a highdensity field of interaction, so members can meet to exchange ideas and share knowledge. Regular meetings, team organisation and interaction between functional levels are therefore fundamental. The reality in these companies is that there is very little experience of job rotation, multi-skilling or team organisation. Formally, some companies have regular and quite frequent meetings between various staff members. However, such meetings are often cancelled if other areas of importance emerge or participants are busy. Many smaller firms have meetings, but only very informally. They do not have experience of holding staff meetings or keeping minutes. Instead they summon their workers to inform them about something or simply go round the factory to inform them. This attitude shows that the managers do not have any real understanding of the importance of meetings. The aim of interaction between employees is not only to distribute information, but also to share knowledge and develop a common knowledge base in the firm.

One function of **middle managers** is to mediate knowledge from top to bottom and vice versa. However, because of the limited commitment of middle managers and entrusting of responsibility to them, lines of communication become blurred along the way. As the owner of AUTO2 says: 'that the communication is not so good is my mistake. After I give them the policy, I never check if the lower levels know my policy or not. Sometimes, in the middle they change something. Such as I tell them ten, and at the lower level, they hear 100'. The fact that one person often takes all the important decisions also implies that managers do not understand the needs of their employees and therefore have difficulties in finding relevant training and in motivating their workers. This contributes negatively to the learning process. Thus, in many firms the top-down management structure works as a barrier to communication and consequently to the distribution of knowledge:

If one person centralises everything, information will not be disseminated to others at the lower levels. In many companies, it will be the boss who knows everything, has all the information, and knows all the customers. So when the boss is away, customers cannot contact anyone else in the organisation because it is only the boss who knows anything. Many companies are like that. The boss wants to do everything himself or herself. They want to participate in everything. They do not want to delegate responsibility and depend on employees. So the result of having such a boss is that employees in the companies are indecisive. They do not dare make a decision. Because if they make a wrong decision, they have to carry a high responsibility for that. So the easy way out is to throw everything at the boss and let him make the judgements. And that kind of organisation is not a learning organisation. That is why we have the ISO project and ISO requires decentralisation of information and also delegation of responsibility. (TGDF) In family firms, the relationship between the owner and the employees often resembles a family relationship, as is reflected in the lines of communication. This can work as an advantage to the learning process because the employees are more loyal to and have more respect for the owner than is the case in large organisations, while, on the other hand, the owner cares for his employees. As the respondent of DEKU put it: 'they do not command, they request – they ask. They say, "Can you please come to this training?" However, many problems concerning the top-down management structure are linked to family ownership. Being family-controlled, many companies focus more on developing the skills of the members of the family but do not give their employees, who are not part of their family, similar opportunities. **Family ownership** is not a problem so long as the firm has limited activities. However, as the firm grows, this might turn into a problem, especially if the firm continues to be reluctant to employ professionals.

It is always the barrier to learning if you...you see all the companies are original from one single person. But...developing the company is just like climbing up the stairs. It started as a very small company, just maybe maintenance of motorbikes. Your skills in maintenance are so good, fixing the motorbike – and people are coming in with more work. And the next step you have to think of is that you hire more people, you open up a bigger maintenance shop. And then you find out - maybe not maintenance! Maybe I need to make some machines as well. You have to jump up the next level. It is always the decision to grow. Do you want to grow or do you not want to grow? The next step that you grow, you can still maintain the family linkage. You can still ask your uncle, your cousin or your nephew to come and join you. But it is the next step, growing demand more and more. It is difficult to make the decisions, it means it is expanding beyond your two arms' reach. Then the next moment, you will have to make the decision: can I trust the next person I employ, who has no relation whatsoever with my family? It is the fact – it is a natural law. But this is the Thai culture – even if you become public, you still retain the larger portion of the shares; you are the major shareholder, so you still have control of the company – very much Chinese business, isn't it? Is it a barrier to learning? Maybe in a way! (DEKU)

Family ownership can thus prove a barrier to learning when it is coupled with short-term planning, a lack of willingness to provide training or opportunities for employees, centralized decision-making and problematic communication. However, some respondents regarded it as being a generational problem: 'Family ownership, I think, is not the point. Some families support, some not. It depends on the person. Some are very young, they are very supporting; some are very old, they are very conservative' (TGDF). Once the second or third generation takes over the management of a family firm, there is a good chance that the firm will become more committed to introducing real changes. **The**

younger generation are more familiar with foreign methods, since in many cases they have been educated abroad. They are also more technology-oriented and thus keener to invest in new technologies.

The advantage will be the willingness of the new generation of employees to learn. Actually, the new generation of employees wants to learn about new things. They want to have career progress. They want to have promotion. And they realise that in order to progress in the career path, they need to have more knowledge and that they really need to know what they have to do. That's why they have a willingness to learn. When compared, the old generation of employees, who have worked with the company for a long time, they are less willing to learn. And indeed, they do not like to learn because they believe that they have enough experience. But for the new generation, they are open-minded to learn. This is an advantage. (TGDF)

If the management team is powerful and committed, implementation is generally successful. The executives must show commitment and must be really supportive of the project and demonstrate clear objectives and the vision to motivate other employees in the organisation to work for its implementation. However, the **motivation and commitment of the management** is one of the main barriers to proper learning and the internalisation of new programmes and ideas. There are many reasons why firms are not committed to implementing new programmes. The most often cited barrier is that implementation may be cancelled if something else comes along.

Often they do not understand the details of the training programmes or they do not allow the workers time off for training because they have a large order. Even though they pay lip service that they want to implement ISO, at the end of the day, if they get a new order from customers, they will just stop on ISO and rush to finish producing orders. (TGDF)

However, many managers, especially in the garment industry, are not really committed to implementing ISO or QS programmes in the first place, because having quality assurance systems is often more a matter of show for the customers rather than a deeply felt need for change. Even though customers do not always request it, certificates have become a decisive factor in maintaining competitiveness, one that is displayed in company profiles and celebrated intensively to let everybody know that the firm has been certificated. Consequently, although many companies **aspire to obtain a certificate**, they do not really make any effort to implement the whole system.

We have some problems with this point, because the companies ask us to do the ISO or QS 9000. Because, if the parts makers do not have a certificate, the customers do not accept them: you cannot come to make business with us. On the other hand, all their competitors have the certificate. So this means that many parts makers try to get the certificate. To get the certificate, but not the quality system. So, I have to tell you the truth. Many companies in Asia try to implement, or to fulfil the entire requirement to get the certificate, without understanding the concept of quality management. Sometimes I go to the company who already has ISO 9000, but they do not know anything about analysing data to solve the problem. They still make mistakes all the time, they have high levels of rejects and they got a record that they have got high rejects, but they cannot solve the problem. So we try to help them solve the problem. Because the problem sometimes is a technical problem. They do it the wrong way or they have to move the machine or they have to clean up some of the equipment, they have to change the way they work. But if they just make a manual they will get it – the ISO 9000 certificate. (TAI)

Most companies do not make a real effort to **motivate their employees** either. Apart from providing dormitories, transport and maybe a canteen, support is not provided to persuade employees to show commitment to the company. Where a company has tried to develop a corporate culture, this is directed towards the customers by emphasising price, delivery and quality rather than internal efficiency. **In garment firms** particularly, the organisation of the work process itself does not contribute to motivating employees to learn or become involved in the company. Garment workers are only skilled in a few tasks, and the work is very monotonous. Instead of organising production more flexibly and upgrading the skills of the workers, the garment association prefers to promote the expansion of taylorist methods. This implies that motivation is mainly a matter of salaries and not something that is incorporated into company culture, values and practices, or into the organisational structure of the firm.

For methods of improving productivity, we will do work measurement in the first stage. We want to set the standard time, target time. We use MTM, Method Time Measurement, to set the target time. And in the second stage, we will do motion studies. We will implement this stage simultaneously with work-place engineering. But apart from doing things in terms of the engineering aspect, we have to implement the system in terms of the psychological aspect as well. So we have an incentive system, such as piece-rate system. You pay them by the piece; the more you produce the more you get, or there is a bonus system to give them a psychological incentive to meet the target set in the first place. All of these are fundamentals that every factory must do first before moving to other things. (TGDF)

For both industries, one of the main problems in terms of learning new programmes and processes is the **low skill level** of both workers and higher-level staff. The ability of employees with a low level of education to learn is

quite limited. In order to implement quality systems properly, workers must be able to take responsibility for quality inspection themselves and write reports on the results and any problems. However, it is often quite difficult for them to understand quality standards, which are mainly phrased in legal terms or in formal language. Another problem is that they are not allowed the time off required for learning. Nor are supervisors or higher-level staff always well educated. Because there is a great lack of engineers etc., supervisors have often not been educated above high-school level. The lack of technical knowledge means that the supervisors often have difficulties learning the English vocabulary used in the courses.

In our business we have got some problems with the discipline of the workers. That's one point. Another point is the management skills of the firms. And another reason for development is that we have to improve our engineering knowledge. I think there is a lack of this kind of knowledge in Asia – also in Asia. I think, because most of the companies here, when they start the business, they just buy the machines and technology from foreigners, what we call turnkey – and we cannot develop it further than that. So the point is right now, when we have to compete with our neighbours, Malaysia, Indonesia and also China. The quality is very easy to follow, but the costs and the skills of the management and productivity, these we have to improve. (TAI)

As already noted, a few companies in the survey, such as AUTO5, are making great efforts to educate and motivate employees and engineers. However, most firms find it hard to attract and keep educated and talented employees. For various reasons, ranging from salaries, better offers, outdated practices in the companies and the ambitions of employees to start a company of their own, most companies have a **very high staff turnover rate**. This is a serious problem for two reasons. First, companies are very reluctant to invest in upgrading the skills of employees if they are not confident that they are going to stay with the firm. This, of course, inhibits further learning in the firm. Secondly, the higher-level employees often take the knowledge with them as they leave, because the particular knowledge they possess has not been widely distributed.

The problem is, when we implement a new machine, Thai firms always have to assign someone to take care of that machine, and they go and study how to operate this machine and maintenance and everything. And all the knowledge gets stuck in his head. Sometimes he cannot explain to anyone else, he cannot teach anyone else to work like him, and when he resigns or moves to another area, it causes a lot of trouble. When the machine breaks down or they have to adjust it, the manager always calls this guy to set it up again and again. So that is another point, that most of the knowledge gets stuck with one person. (TAI)

Changing outdated practices

Learning entails a **fundamental change in the organisation**, which implies changing people's minds. For learning to take place, new methods must be embedded in the routines and practices of the firm. However, the old practices and habits of employees are often a hindrance when it comes to implementing new systems. For the employees, it is very difficult to learn a new system based on manuals and written procedures which they are not used to. If management does not implement the system consistently and check it all the time, the employees will very often fall back on the old ways of working. As mentioned above, many companies are only interested in obtaining ISO and QS certificates and therefore fail to incorporate the programmes themselves in their daily practices. The **attitude of management** and lower level employees toward the new project may also act as a barrier to proper implementation.

If the management says that the company has to do it, everything can be done. We shorten the time if the management commits itself. But if the management does not commit, it takes a long time.... Maybe you can come to any company for six months, and you can change it within six months. But after the six months, what happens? They come back to the old style again.... It is like I teach him that the 'five S's' system is good, so he does it for six months. And after that I go to another company, and he goes back to the same. He is happy, that is the problem.... Or they just freeze at the last stage, and they cannot improve further.... they are quite willing to introduce the new practice after we pointed out all the benefits they will get from changing old practices. But it is difficult to change habits; it is quite difficult.... The root cause is people and their attitudes, because you have to persuade them and convince them to see what you see as beneficial for them. And you have to change and persuade people in every level in the factory.... And the other thing is that, even though such a project was implemented, it is still very difficult for it to be maintained after it was launched in the factory as well, given the people and their attitude against it. After this system has been implemented, some people might feel insecure about their jobs. So it is about job security. If they do not perform according to the new standards, they can be laid off. So this increased the negative feeling of people towards this system. (TGDF)

The fact that the new practices that are being introduced to Thai firms originate from Japan or the US can also be a barrier to implementation because their methods are different from Thai ways of working. The companies themselves say that there are great differences between Japanese and US practices.⁸ While the Japanese Kaizen system is implemented through learning

⁸ While ISO is primarily a quality tool for management, QS also involves the work process and involves system analysis, statistical process control and problem solving. *Kaizen* is the most thorough
by doing, the ISO and QS systems are based on scientific data and documents and implemented through the use of manuals.

To get ISO or QS 9000, you have to produce many documents to show the certifying body. But for Kaizen you just keep it in the head – that's OK. I think the different point between Kaizen and the QS 9000 is for the Kaizen they use the common sense of the worker to improve by comparing today with yesterday. But for QS 9000 we have to keep a record or use the statistics or techniques to analyse and show everything in scientific data. So it is totally different. So in the Japanese style, they can improve their worker from the skills level. But for QS 9000, they have to show the data to the customers. (TAI)

The **auto-part firms** are actually quite accustomed to Japanese practices because they have worked very closely with Japanese assemblers for a long time. Thus they have tried to **implement Japanese practices** such as just in time, five S's and Kaizen. But the Kaizen system has not been accepted by car manufacturers who export their models, because the Kaizen system is not measurable and therefore not certifiable. However, many auto-part firms already have a basic understanding and they merely need to learn how to draw up the documentation. Most firms and institutes agree that it is easier for firms to learn Japanese systems than the American ones, as they consider it very difficult to learn and implement western standards, manuals and documents. Japanese practices might be easier to implement for the simple reason that the Japanese have been in Thailand longer, but also the Japanese systems as widely regarded being more suitable for Thai culture and working practices.

We do not really design different programs for Thai firms. Basically, we just do the ISO for every Thai firm. But from my experience talking with people from another department who design different kinds of programs for Thai firms, they say that programs that come from Japan are more suitable for Thai firms than those programs from western countries. Programs from Japan, such as the 5 S's system, are easier for Thai firms to adapt to and to implement than western standards, such as ISO 9000, ISO 14000 and SA 8000, because they are mainly from an eastern culture and we are an eastern country, so culture is important. Japanese-style training may be more suitable to Thai ways of doing things. In the western system, they set objectives and you do it and then we evaluate whether you meet the objectives or not and that's it. But Thai culture is a 'we-can-talk culture'. Thai executives do not just sit in the office but they will go into the factories to talk to their employees about what happens, what is your problem. This is a 'we-can-talk' way of doing things. And even though the manager sets the objectives and the workers do not meet them, if they have a good reason and can

quality system, as it involves most aspects of working, including productivity and cost structures as well as quality.

explain, it is forgivable and it can be discussed. We can talk and compromise on that. So our way of doing things is quite different from the western style. We are not saying that the western style is not good, but just that we are quite similar to the Japanese style. (TGDF)

The respondents from the three institutions agreed that Thai firms are very tolerant towards other people with different ideas, behaviour and religion, and thus very open and **adaptive towards the practices** of foreign firms.

Thai people have a very adaptive culture. We are so adaptive that sometimes people would think that we do not have any standpoint at all because we adapt to westerners, we adapt to the Japanese. But actually, we are a friendly culture, we are accommodating. We do not want to quarrel. Quarrels make our life miserable. So if you come this way, you are forcing us. OK we go along with you, we go along – we may not agree, but we go along. That is Thai culture. I would say that, thanks to the Japanese, we have learned how to be more disciplined. Because in the Thai culture we are not so disciplined. The Japanese helped us shape us up, thanks to them.... (DEKU)

As already noted, language and cultural differences may act as a barrier to the transfer of practices. Japanese experts do not speak Thai and often only a little English. It is therefore very practical for Thai **auto-part firms** to have some of their engineers educated in Japan, since they can then speak Japanese and they understand the organisational structure of Japanese firms. The **garment firms** also need to have staff that can speak English in order to understand western customers, or they else have to hire English-speaking staff. Because Hong Kong is the centre for garments in the region, it is also very useful for the firms to be able to speak Chinese, preferable Mandarin or Cantonese. Besides differences in language, organisational practice can also be a hindrance to the transfer of foreign systems. The **auto-part firms**, for example, find it difficult and sometimes undesirable to apply Japanese practices because they find Japanese ways too disciplined:

Half of the implementation lies in the Japanese system. Japanese people work very hard – serious people. Japanese people are very serious. The working atmosphere is not very good. Everything is control, everything is paper, and everything is system. You draw a frame, you know, and everything is to the line. Myself, I find it difficult. Maybe because I myself got my education in the US. (AUTO5)

As a result, many companies **never fully understand Japanese working methods** and cannot implement them successfully. This, for example, is the case with the implementation of just-in-time systems in Thai firms, as mentioned earlier. As the respondent from AUTO1 maintained, 'Because the Japanese are confident in their techniques already, the documentation is secondary'. However, the tacit nature of Japanese practices constitutes a problem for transferring knowledge. On the one hand, Japanese companies might not be able to transfer the practices they themselves know by heart to other companies. On the other hand, being confident in the use of Japanese quality systems demands that the particular knowledge is embedded in the mind and practised daily by both management and employees.

The implementation of Japanese practices based on person-embodied knowledge thus requires an organisational structure dedicated to this. That is, the company must have implemented a fund of prior knowledge as a basis on which to develop and upgrade, have invested in motivated and responsible employees, must have a visionary and initiative management team, and must demand that foreign practices are implemented consistently at every step in the production process. If, however, quality management, evaluation and problemsolving abilities and inter-firm channels of communication are weak, ten there are many benefits in implementing quality systems based on standardised systems.⁹ As already mentioned, planning and control are often done in an ad hoc fashion, thus creating many non-value-added activities and many production stops. If instead all practices are written down in reports and manuals, the company is able to do the evaluation itself and gain a much better understanding of why problems occur. Used consistently, the company might end up being able to repair the machines itself and thus avoid long production stops through having to call in outside assistance. Consequently, formal systems contribute to raising the awareness of managers and employees, not only in finding the root cause of the problems and finding ways to solve it, but also to prevent problems from occurring. Standardizing work instructions will also contribute to circumventing problems connected with a high turnover rate. If the practices and problems associated with the operation of particular machines are written down for the guidance of other employees, the operator does not take all the knowledge with him when he leaves. The companies in the survey have started to recognise the benefits of documentation:

Usually, Thai people do not like the documents. We just like to listen. It is easy. Listen and build it. But it is not effective in the long run because you may forget and you can make mistakes quite easily. But for the manuals, if you follow it step by step, it is better... So the difference [from the earlier system of quality control] will be on documentation. Before, we had meetings informally for discussion. But for the QS and ISO you need to put it in writing, and sometimes we have the audit or summaries of those, and you can check who has attended, and then you need to put in the paper. And also customers have to audit the documents. (AUTO4)

⁹ One important conclusion of one study of technology transfer between Japanese assemblers and Thai auto-part manufacturers (Krienkrai, 2003) is that to maintain the effects of training, 'codification' strategies, in which trainees are requested to articulate their understanding of the aspects of the work for which they were trained, are increasingly being applied.

Whether Thai firms can develop further knowledge and practices transferred from other actors and prove capable of making changes to processes and products on their own seems to depend to a large extent on the **background and experience of both the owner and the employees**. As already mentioned, some of the auto-part firms in the survey have been able to use technologies and practices learned from Japanese companies and experts to develop their own products. However, firms only learn the basic knowledge from their Japanese customers and other experts. Only a few of the **auto-part companies** in the survey have been able to use this knowledge, apply it to their own organisational knowledge base, and develop products of their own. This shift requires experienced and innovative technical staff, which is able to incorporate outside knowledge and apply it to the needs of the company.

Fundamentals, everything we learned from the Japanese. But when we developed into the second or the third stage of technology, we developed by ourselves. When we sent someone to be trained in Japan, those people would focus on the fundamental knowledge, and then, when they came back, they tried to apply the knowledge to suit this factory. It is different from the concept of the pure Japanese company or joint ventures in Thailand because those companies copy everything from Japan, but this company relies on adaptation. Actually, at first, we started from our own technology because the president invested and invented things himself. But later, we became close to the Japanese. So, in terms of years, we did it in parallel. We did both continually. When you learn from the Japanese, you have to learn to apply it at the same time. (AUTO1)

The **garment industry**, on the other hand, has so far neglected the need to employ technicians and engineers. This implies that firms only know how to operate the machines, not how to upgrade or improve production, and they must even call in outside assistance to repair and maintain machines. That means that, in terms of efficiency, productivity and skills, the garment industry is far behind 'best practice' in industrially advanced countries. But Thai firms must be able to upgrade themselves in order to stay competitive.

The root cause is because garment factories did not pay much attention to having an engineer in the factory before. They thought it was not that important. But right now they started to realise the importance, so they have just started to hire newly graduated engineers during this couple of years. But these newly graduated engineers are not familiar with the products and processes they are working with, so they also lack creativity as well, since all they can do is to copy from what they have seen in the video or what they have seen in other factories. That is why they need to continue to improve their productivity and experience in order to learn more. The learning process is very slow at the beginning since these engineers lack experience. But once they learn or get knowledge and experience, they can move up to be able to better develop and adapt what they have learned. In the beginning stage, it takes so long. (TGDF)

After the crisis, the firms in the survey experienced a lot of structural problems and started to implement quality and productivity improving programmes more whole-heartedly. As a result, almost all of the firms interviewed have **started to improve their organisations to meet the challenges ahead**. They are making an effort to organise their workers more into groups and teams, hold more formal meetings, rotate staff and managers between tasks, decentralise the decision-making structure, and provide the middle managers with more responsibility. They are also implementing new systems to improve quality, the cost structure and productivity. Such measures should help ease communications between different sections, share knowledge more widely, and improve flexibility and products. As the companies already have very advanced machinery, it is particularly human resources they are aiming to develop.

I myself, I just came to this company. Before 1997, we hired an MD to take care of things. Everything was OK in respect of profits, and before 1997 the auto business was very good. So he did not know the problems. Everything everybody did made money, so they could not see the problem. When the economy went down, many problems occurred, and he could not control the firm any more. The system, the control and everything were not good... Like workers they were lazy, no discipline [because] they were familiar with the old system.... When I came, I tried to change everything; it is very difficult to change. Before 1997, there was a bias in the management system. We had to change and turn the organisation into small groups and teams. Actually, I prefer management by participation. (AUTO2)

AUTO6 have started to implement a new system with the help of a Japanese consultancy company. The aim is to make workers more aware of errors and problems and to make them capable of repairing machines in case of problems. Previously, the company had to call in an outside company to fix the machines, production meanwhile coming to a complete stop. Because the workers are unskilled and find it very difficult to learn how to write reports, the process has taken a long time, but nonetheless product quality and productivity have both been improved.

The Japanese style is that they implement differently. They set one engineering group to inspect each section on how to do it, and implement it for the workers. They go to the line and make everyone understand how to do it. They set the system and the standard for productivity improvement and maintenance. They start by asking how to succeed. All rejects are a loss, stop of machines is a loss. So the idea is to set the loss at zero, which means that everybody in the company must respond. The workers become responsible for the machines, and if the machine loses a screw, there is no need to go the machine operator. Only one minute and it is finished. We started this already last year. It has taken nine months... Our big problem is that the workers and supervisors are undergraduates. (AUTO6)

As is the case with the implementation of process upgrades, the success of the new initiative to focus on human resource development depends to a high degree on the experience, willingness and visions of the owners. This is unfortunately a point that is often overlooked in Thai firms. It is taken up in the next section.

6.3 Position, vision and restructuring strategies

Challenges and solutions in the automotive industry

The end of the 1990s and the beginning the new millennium has signified a wind of change for the auto-part firms. In the mid-1990s, an atmosphere of optimism developed, as the automotive market kept growing and everybody talked about Thailand as the 'Detroit' of Southeast Asia. Thai auto-part firms enjoyed a good position because the growing market kept most firms busy, even though they were mostly not large, high-tech companies. In addition, they were protected by the local content requirement. Being confident of a bright future, many auto-part firms took loans and invested heavily to increase their productive capacity and the quality of their products around the-mid 1990s. This optimism was based on information from the customers and government agencies to the effect that the market would expand from less than a half million in 1995 to more than a million vehicles sold in 2000. AUTO6, for instance, decided to concentrate its efforts on the automotive business rather than electronic parts and invested more than 150 million Baht to supply plastic parts for the new Nissan model. In 1995, when the investment was made, 35 percent of production consisted of automotive products. The plan was to raise this to 60 percent by 1999. When the crisis hit the industry, the company's automotive production declined to 20 percent of the total production, leading to large losses for a number of years. Overall, the crisis has created a rather pessimistic tone among auto-part producers.

To cope with the losses, all the auto-part firms began **to restructure their activities** one way or another in order to cut the costs, or else attempted to concentrate their efforts on other activities than manufacturing OEM products. AUTO4 has gone through the most comprehensive restructuring process, selling off all activities that the firm did not consider core activities. Consequently, it sold its shares in six joint-venture companies and only retained the three companies that are fully owned by the family. Other restructuring measures, which all firms have gone through, have involved a huge cut in the number of employees and managers and a downsizing of activities. The crisis affected the OEM market more than the after sales market, which means that some companies have turned their attention to spare parts rather than focusing on the slim OEM market. AUTO5, for example, decided to use its technical know-how to produce spare parts and equipment for the agricultural market in order to reduce its dependence on the automotive sector. The auto-part firms have also become more aware of how to reduce costs, trying especially to detect loss-making activities leading to interruptions in production. To reduce production costs, AUTO6 has used the assistance of a consultant company to introduce a productivity system, which turned the attention to inaccuracies and faults that the manager had not been aware off:

The productivity is not so good. We have a big loss. And we have a big gap to improve in our company if we use the normal technique [i.e. without investing in new technology]. I looked at all the sections concerning efficiency. For some sections it is only 49 percent, so we have a 51 percent gap. It is not possible with 100 percent, but if [we reach a target of] 85 percent it means we can avoid losses. We asked the consultant to train the workers and the managers in order to change the working system, to reduce the losses and improve the productivity, and in some areas we have solved the problem.

The crisis also turned attention on to hitherto neglected problems in production, especially **human resource development**. Because of the problems of increased competition and increased demands for quality and product development capabilities, firms have become increasingly aware that they must upgrade their workers' skills. There is especially a focus on the skills of individual workers in connection with the implementation of quality upgrading and productivity programmes. This means that every worker must acquire greater awareness of his or her role in problem solving and quality control. Most firms already have a human resource department to acquire information about training programmes and to suggest relevant training for individual highlevel workers and management. But human resource development has become more urgent since the crisis: 'since the crisis we have been thinking about human resource development. [The workers] are very important to develop quality, so we start on that' (AUTO4).

The restructuring process is much needed, as the crisis is not the only challenge that the auto-part suppliers face. As one assembler (Ford) said: 'The suppliers who did not survive the crisis were the ones who would have disappeared anyway'. Before the crisis, suppliers did not really compete against each other, as the Japanese production system meant that every assembler had their own suppliers affiliated to that particular company. However, when the western assemblers started to invest, they **selected suppliers based on market criteria**, such as competence and price, rather than working closely with them like the Japanese assemblers. As a result, suppliers started to compete with each other to produce for Ford and the other western assemblers. Another change introduced by the customers is that they increasingly **require suppliers to be flexible**, which places demands on the suppliers to upgrade skills and development capabilities, as well as to change production processes:

The market has changed. Before, when we made some products, we had to talk in terms of quantity, large numbers. Everything was called standards, you know, standard specification, standard type, standard know-how, you know, whatever. For instance, a standard AUTO5 dump truck – exactly the same thing, seven to eight hundred units a month. We talk about maybe 300 million Baht monthly income from the same product. But right now, everything is getting smaller. Instead of making one standard, we have to make maybe ten standards or types. We have to change to fit the demands of the market, so the volume gets smaller. And if the volume gets smaller the costs get higher. They say, I want something like this, but I do not want this steel. I want something lighter. But you cannot just say, 'OK, I'll use lighter steel'. You have to go back to the engineering and technical departments, calculation, purchasing and everything. [...] Actually, we do not have to invest in new machinery. We just have to make sure that the people who work with us understand how business is changing, how marketing is changing, how the expectations of people are changing, and they have to try to make it fit with the style of working. We cannot set up an assembly system like we used to, you know, make it standard. They have to set up maybe ten production lines with smaller standards instead of one. (AUTO5)

The survival of Thai suppliers is also under threat from the **immense inflow of foreign suppliers** who are increasingly investing in Thailand to serve the assemblers. This development has been stimulated by the liberalisation of ownership structures introduced by the government after the crisis and the abolition of the local content requirement. Firms aiming at the domestic market are now allowed to be fully foreign-owned, which was not the case before. As a consequence, after the crisis, foreign component producers took over the shares of many capital-starved Thai firms as a way of entering the market. However, the effect of the abolition of the local content requirement has not yet worked through because assemblers will only change suppliers when they start producing a new model. Thai suppliers nevertheless find it **increasingly difficult to maintain their position as first-tier suppliers** because the assemblers are beginning to demand that supplier develop their own parts and assemble them into larger modules before delivery. All things being considered, the situation of Thai suppliers is changing:

Ten years ago, the world was not moving around. I think that ten years ago, it was better. We like to live the simple life that we used to. But because the world keeps changing and moving, I think that we need to be moving and to compete to be in the better position... The assemblers require more high technology. (AUTO4)

Without a doubt, the crisis is the one factor that most threatens the survival of the auto-part firms. But even if the auto-part firms recover from the crisis, they will find that **the world has changed**. The market is becoming increasingly liberalised. Large component producers, with a global reach, large supporting networks and the ability to develop their own products, will be investing in Thailand to an even greater extent. Thus, the competition will probably become even more intense.

In 2005, even if the market comes to that level [the level of 1996], it does not mean that we will have the same market share as in 1995-96, because nowadays we have free trade, so everyone can come to get our piece of the cake. (AUTO4)

At the same time, assemblers are changing their strategies, putting pressure on the auto-part firms to upgrade their skills, technology and production processes. Hence, **the crisis has also acted as a wake-up call** for Thai suppliers to upgrade and improve production by turning their attention to hitherto neglected problems in the production process. This raises the question as to what strategies Thai-owned suppliers must pursue in the future in order to survive.

Some suppliers put their trust in the possibility that Japanese assemblers will keep the same suppliers and work closely with them under circumstances of 'business as usual'. AUTO4, for instance, stated that: 'This customer is our customer for this part; OK'. The belief that customers will keep the same suppliers they have been co-operating with for such a long period already means that AUTO4 has chosen not to make a great effort to produce its own products. Instead, the company is continuing with technical assistance and placing greater emphasis on cutting production costs in order to cope with the increased competition. Many suppliers are also optimistic because of Toyota's announcement that they will start to produce the Hilux model with a hundred percent local content. Other suppliers are more aware of the problems, but have not yet decided what to do. There seem to be several possibilities that the autopart firms can pursue. They can invest in new technology, training and skill development in order eventually to reach the stage where they can produce the parts themselves. They can choose to produce simple OEM parts, which are not difficult to develop, but on the other hand not very profitable either. They can also go into joint ventures with a foreign component supplier in order to obtain the technical know-how they need to be able to produce and develop their own parts. They can become a second-tier supplier and supply parts to the large foreign component producers instead of directly to the assembler. Or they can just make an effort to reduce production costs and carry on combining (some of) the above-mentioned possibilities.

AUTO1 and AUTO5 are in the top position among Thai firms, as they have very advanced machinery, high-quality, experienced personnel, and the ability to develop jigs and dies and to carry out some product design themselves. The reason why these companies have reached this level of development is their determination to be among the first to introduce the newest production and process technologies and because of the **vision and skills of their owners.** The managers possess a pioneering spirit and were among the first entrepreneurs in Thailand to develop their own products. The companies have built upon this technical know-how ever since and gradually invested in research and development in order to produce more complicated products. They have also been working with the assemblers since the latter first established themselves in Thailand, and this has been an incentive to develop constantly:

The technology of the company is advanced right now. It is so advanced that if the customers come in with the disc or the design, we can produce it according to the disc.... We also have CNC laser machines, so this company has a readiness to produce quality products regardless of small or big volume.... We want to develop ourselves. That is why we do not buy things that much but try to create them ourselves. And also, we have high-quality personnel, most of them have experience and skills of work, and they have stayed here for a long time. And we started using the robots in 1992. So, by this time, our employees are familiar with the robots already. So the robots are not a new thing or high technology for them anymore.... This company is fast already. Like the CNC laser machine, we are the first company in ASEAN to use it, as well as in terms of robots – we are the first company to use robots. (AUTO1)

The result of these efforts is that AUTO1 and AUTO5 are the only companies in the survey with confidence in the future, provided they can continue to maintain their present cost structures or even improve them. Of the other autopart firms, only AUTO6 has been giving serious thought to **investing in a research and development department**, with investments in training and technology. However, they are not certain that Toyota will keep them as a firsttier supplier until the investments pays off, that is, until they are able to develop their own products. This implies that the company is caught in a dilemma because continuing to be an OEM supplier is very insecure at present, while at the same time the company does not have the know-how to produce their own products.

Firms like AUTO2 and AUTO3, **who produce simpler press parts**, can continue as OEM suppliers because the products are not that difficult to produce. However, there is not much value-added associated with producing simple parts. As anyone can make them, competitiveness depends only on price. For such items, assemblers simply calculate the price based on the cost on the raw material. After the crisis, the market became very price competitive, as many firms cut their prices in an effort to survive. As AUTO6 explains: 'if

we cut down the price then we can get the job, but we cannot make the profit. We have already cut, because in Thailand so many companies are nearly dead so they sell out, and the customers are happy'. Thus, there is no future in being a supplier of simple products, as may well end in cutthroat competition. AUTO3 therefore plans to focus more on replacement parts instead of OEM parts. AUTO2 will upgrade its production process by investing in machines that can deal with more than one process and can produce more advanced products. However, it is widely agreed that being a manufacturer of original equipment it is not a viable strategy for the years to come:

You know, to be an OEM supplier, I do not think you can grow that way. Your company cannot get bigger by being an OEM supplier. Because what they say is 'I'll give you a job'. And the next day they say, 'I am not going to give you any more; I have somebody else'. So to be able to get bigger, to stay alive, you have to have our own market, your own products. You cannot depend only on the OEM products. And my father could see that ten years ago. OK, we have to keep the OEM and maybe in the future we will reduce it so it gets smaller and smaller. But we have to become bigger through our own brand name, our own marketing, and our own sales channels. (AUTO5)

In order to obtain more high-tech technology, AUTO3 plans to **go into a joint venture with a Japanese company.** AUTO4 is also thinking about going into a joint venture, as they regard the ability to develop and design their own products as the only option available to them in becoming a leader in the automotive industry. In the meantime, the company is trying to exploit the opportunity provided by new wave of investment by western component suppliers. They have started to discuss with a big German engine producer the possibility of producing parts for them and thus turning into a second-tier supplier: 'My competitor in Malaysia mentioned on my last visit that they are doing the same thing that I do. But they are tied to an American firm. So everybody knows what to do – everyone tries to grab a giant' (AUTO4). However, most auto-part firms **do not have a clear plan about how to meet the challenges ahead**. The following quote sums up the dilemma in which many Thai auto-part firms find themselves at the moment:

We do not know how to develop. We do not have the potential to produce the products and car design with the carmaker... There are two ways. One way is that we develop ourselves. This implies improvements to our company. The other way is that we go down one step. Normally, we are first-tier if we supply to Toyota. But being first-tier means that in the future we need the potential to support Toyota with a development section. If we can do it, yes, it means we are the supplier – for a long time, maybe. But if we cannot, it means maybe Toyota will cut us off. I do not know when yet. What will happen if Toyota cuts us off? This means maybe Toyota orders with TGT in Thailand instead, and we can be the subcontractor – the second tier.... At this time, we need to take a decision about what to do with the automotive parts. To change to the second tier, or stand on the first tier. If the decision is to stand on the first tier, how do we do this? We may need investment or need training – I have no idea yet what will be the result. Because it is a question if the return is big enough to make the investment [worth while].... Maybe some day Toyota comes here and they cut me off, because a new supplier has come, and it is not safe for me. So now we are thinking about how to make our own products. Maybe thirty percent we can produce our own products and maybe seventy percent we can produce for OEM. It is maybe the possible future for me. But now we have no idea about what products we will produce. The automotive industry is not possible, because we cannot. Electricals, we have some possibility to make.... But if we produce electricals on our own, that means we will lose some [OEM] business, because we will become the competitor. It is not easy. Now we have no idea, we are looking for some products... I do not know what will happen, we have not made the decision yet. (AUTO6)

As is evident from the above, the firms are at a crossroad. On the one hand, the future **offers new opportunities,** as more assemblers and component producers are investing in Thailand and the ASEAN market is gradually opening up new markets. But **competition will also become much more intense**, and greater demands will be placed on suppliers, which means they have to upgrade and improve themselves. This process will probably separate the sheep from the goats, and it is possible that there will only be a handful of Thai-owned firms among first-tier suppliers in the years to come.

Challenges and solutions in the garment industry

Unlike the automotive sector, the garment firms have generally experienced increased competitiveness in the otherwise stagnant or declining market for ready-made garments. The changed exchange rate led to decline in real wages to the level it was about fifteen years earlier. This means that the firms have been able to lower their prices relatively speaking, and they have won more orders. However, production is **still based on price competition**, as producers have to meet the target price of the items they produce, which is set in accordance with the devalued currency. That is, Thai firms have not gained much profit from the currency devaluations: 'they know the money is down. Before they bought things for five dollars, now they ask for four dollars. However, the import of fabric is more expensive' (GARMENT2).

Thus, the change in the Baht-Dollar exchange rate is only a short-term solution to the many challenges that Thai garment producers face in the coming years. They are already experiencing a decline in orders, as the US and European

producers start to source in Mexico and South Africa because the short leadtime to the market has become an important issue in making buying decisions. Thailand is also losing ground because producers are meeting tough competition from other South and Southeast Asian countries. China is currently a serious competitor, but the outlook will be even bleaker when China becomes a member of WTO, after which they will have benefit of low tariffs in entering the US market. The gradual phasing out of the quota system means that Thailand will be thrown into open price competition with countries with very low labour costs, such as China, Laos and Vietnam. At the moment, Thailand can claim some competitive advantage in its ability to produce high value added and more complicated items. In addition, Thai garment firms are very conscious about human right issues, which can be considered a form of non-tariff barrier. However, such advantages will be very short term, as the other Southeast Asian countries are quickly closing the skills and production capabilities gaps. Thus, many garment manufacturers are very pessimistic about the future of garment production in Thailand:

I see the future that, in 2005, there will be no quotas in the world. This is a big disaster for Thailand. If there are no quotas, buyers will go to China or they may go to India. China and India have all the material and manpower, because garment making is not high-tech business like making autos or computers. So today, even if they are not experienced, tomorrow they will be. Garments in Thailand are for sure a sunset industry. (GARMENT1)

Like the auto-parts firms, the pessimistic outlook for the future means that the garment firms have very vague and unclear ideas about how to solve the problems they are faced with. GARMENT1 does not plan to increase efficiency or improve delivery, quality and productivity as the garment association recommends, because, as already indicated, the owner does not believe that garment production has a future in Thailand. Instead, the owner has a vague plan to make high value-added, fashion items in small quantities. The idea is to manufacture a small quantity of fashion clothes that he can offer to small shops in European countries. In this way, he will not make to order and the main focus will not be on the price. On the contrary, he intends to 'put the buyers in the opposite way'. However, the plan is far from ready to be carried out, as he does not have any contacts in Europe. Instead, he imagines that he can use the Internet to sell his clothes directly to the customers. GARMENT2 plans to produce higher value-added products such as evening dresses, but this strategy has led to further dependence on imports, as Thailand does not produce high quality fabrics. In addition, GARMENT2 will concentrate more on the local market, a process that has already started with the establishment of a company that is directed entirely at this market. Likewise, GARMENT4 and GARMENT3 are also aiming at the local market, which they regard as promising due to the growing spending power of the Thai population.

Besides these vague ideas, Thai garment manufacturers are mainly choosing to meet the challenges ahead by pursuing a **defensive strategy**, either by using **subcontractors** in order to push down the cost of labour, or to **relocate** to a region or country with lower labour costs. As mentioned earlier, most firms already have production facilities in the north of Thailand, where wages are lower, and some have invested in neighbouring countries. Relocation to Bangladesh, Laos, Vietnam and Cambodia is regarded as the most feasible solution when the industry is finally liberalized. The respondents regarded it as natural for garment manufacturing to relocate in accordance with the comparative advantages offered by other countries, which in this case are labour costs.

Cost reduction also implies a **restructuring of the size of firms**. While GARMENT4 plans to increase its capacity to obtain economies of scale as a way of reducing costs, GARMENT1, GARMENT2 and GARMENT6 are planning to downsize their activities. They regard economies of scale as a barrier to price competition because they see large organisations as being very inflexible in terms of costs. Consequently, they want to downsize the numbers of workers in the factory and make greater use of sub-contractors, who are easy to lay off when orders are few. Thus, production will become more flexible and cost effective. As already mentioned, GARMENT2 is already using the subcontracting system:

We only have five hundred people, of which only half work in the factory, the rest being our subcontracting factories. We do not have enough [capacity] here, so we set up contracts in private homes or small shops. We invest in machines and [provide] the money and make small sewing lines. After we have cut the pattern here, we send it to be sewn out there. This means we have a little bit more productivity and we have some less fixed costs, less people and less nice things. If you are a big company, you have to invest in some nice things, but we are not nice.

Firms are concentrating their efforts on fulfilling their customers' minimum requirements, such as quality assurance and human rights, as well as introducing cost-cutting measures, such as preparing the initial pattern making and improved and quicker cutting. They have also invested a great deal in new technology, though mostly in the pre-assembly process. As the owner of GARMENT2 remarked: 'we know how to make it, but we want to make it faster, more correctly and more efficiently... We invest [in technology] if the output is high enough'. Only the owner of GARMENT3, who also happens to be the president of the Thai Garment Manufacturers Association, regards efforts to improve productivity and to change outdated practices as a solution to the challenges the industry is facing. However, he too is focusing mainly on the **application of more high-tech machinery** instead of investment in human resource development:

The way to improve productivity is through technology. Our labour is already cheap due to the devaluation. But expenditure, administration and selling costs remain the same. So, if we produce more units within the same period of time, we can save costs per unit. So, the answer is that we have to use automation. A lot of factories in Thailand are automated, and this will gradually improve the productivity of the manufacturers.... A lot of things have changed. In the old days, Chinese people were very hard working. They worked harder than local people did, and they earned more. They became rich. [But now,] just working hard is not the way to succeed because now, in the new age, it is the age of technology and knowledge. It is a knowledge-based economy. Nowadays we must know as quickly as other people or not less than other people, or before other people, in order to win. This is very important. It is not that you have to work hard. Of course you have to work hard, but that's not the point. The point is now technology.

However, improvements of the organisational structure and upgrading of management and marketing capabilities are not issues that are discussed widely. As already mentioned, companies have made only minor changes in the organisation, such as checking the quality of the process rather than once the garment has been finished. However, the organisation of the firms still resembles the organisational structure they learned by working in foreign firms more than twenty years ago. The workers in GARMENT4, for example, are very specialised, as they have only learned to do two or three tasks. This means that it takes a long time to make larger items such as jackets, which have to go through the hands of many workers. Instead of changing the organisation over to a more flexible production structure – which would involve hiring more multi-skilled workers - in order to produce more advanced garments more quickly and more cost effectively, they chose to achieve flexibility by hiring and firing workers when needed. Normally, they do not regard the upgrading of skills and marketing capabilities as a forward strategy in itself: 'the organisation is the same... no one competes based on that' (GARMENT2).

Such rigid forms of organisation work as a barrier to flexibility and the improvement of productivity, which is a contributory reason why garment companies are **unable to meet 'quick response' standards**. The garment firms now ought to be fighting against time, but no profound changes have been made, even though firms realize that they are losing orders to Mexico and South Africa and that buyers are demanding lead times shortened from the current three months to two. The companies are mainly trying to solve the problem by purchasing accessories from a faster supplier to speed their processes up a little. They have a defeatist attitude towards the problem because shipping to the US market takes 21 days, which make 'just-in-time' production impossible in practice. In addition, they cannot get around the problem by producing garments that have long lead times because these are normally basic items like five-pocket jeans, in which Thailand no longer has

the same competitive advantage as China. However, finding a way to ship the goods to the customer by airfreight at a reasonable cost is not discussed. Likewise, the problem of shorter lead-times has only recently been taken up by the TGMA. As already mentioned, the association recommends time and motion studies in a tayloristic manner in order to assure consistency and ease in developing and applying incentives to reduce direct labour costs and permit the accurate costing of products.

All the garment manufacturers are OEM suppliers for American and European brand names, meaning that they produce ready-made garments according to their customer's designs. Consequently, they lack product development capabilities. But in general, the owners of garment firms do not regard the production and development of their own brand names as a possible way ahead. Even though many garment producers have introduced computer-aided design equipment, this is only used to make markers. None of the companies had trained workers to use the equipment for design purposes, which is partly also due to the lack of institutions and universities that offer courses in fashion design. The status of OEM producer also acts as a major barrier for firms to begin selling their own designs because in practice they lack marketing experience. As they deal through buying agencies, garment manufacturers have little direct contact with their customers. The lack of marketing capabilities has wide consequences, as it means that companies have difficulties in targeting and contacting potential new customers in the US market, as well as complicating market diversification. Likewise, the companies have no knowledge of the local market, as they export practically all of their production. Being OEM suppliers is thus acting as a major barrier to any kind of restructuring and inhibiting dynamic market effects.

6.4 Internalisation of knowledge

The subject of this chapter has been the extent to which the knowledge gained through mechanisms of externalisation and socialisation is adapted to the organisational structure of Thai firms. It is argued that the result of this process of internationalisation largely reflects the organisational structure of the firms and their investment in existing knowledge. In summary, many local practices embedded in the traditional Thai or Sino-Thai business system still remain. These organisational survivals entail the use of personal connections to obtain initial knowledge and also reflect the ownership structure, with its top-down decision-making structure combined with a patron-client type of relationship between the owner and the employees. Some elements of the organisational structure, such as open organisations and large personal networks, have proved conducive to learning as a way of acquiring the initial skills. Personal connections with foreign actors with knowledge of product development, mass production and marketing skills have proved extremely important. It can be argued that the personal nature of employer-employee relationships is also conducive to leaning, as in general employees are quite loyal.

However, many firm-internal organisational practices work as barriers to the acquisition and use of new knowledge, as they prevent links being created between individuals both within and between the various sub-units in the firm. These links are crucial to the transmission of knowledge and information in connection with daily routines and practices. The top-down decision making structure was especially mentioned by respondents as being a barrier to the distribution of learning. As the owner-manager takes all the decisions regarding planning, marketing and production, knowledge and information are usually not distributed to his employees. As the knowledge is stored in the owner's head, no one will assume the responsibility of taking decisions in the owner's absence, and decision-making tends to proceed in an ad-hoc fashion, without strategic planning. The top-down decision-making structure is often coupled with little understanding of the role of regular meetings and communication in distributing knowledge. Since firms have very little experience of job rotation, multi-skilling or team organisation, effective communication between the various levels and functions of the firm is prevented. In such cases, when knowledge is not distributed from the top management and proper communication channels do not exist, tacit forms of knowledge become very difficult to transmit throughout the organisation. That is, it is easier for Thai firms to internalise knowledge based on manuals and other formal and systematic types of knowledge, which can be transmitted in the form of codified procedures, than to implement organisational practices.¹⁰ However, to become a competitive actor in the global economy requires the development of know-how embedded in organisational routines and collective skills and production procedures, rather than just the imitation of existing knowledge.

Family ownership also acts as a hindrance to the learning process, especially if the firm is allowed to grow without properly adapting the organisation and employee structure to the needs of the firm. In practice, all the firms in the survey are still struggling with organisational barriers to knowledge transmission. However, the extent to which firms have **invested in existing knowledge** is a decisive factor in determining whether they can be labelled learning organisations or not. Once we remember that existing knowledge refers to the skill structure, the manager's vision for the development of future core competencies, and the demonstration of a commitment to implement new methods and invest in R&D activities, it becomes apparent that **Thai garment firms are not learning organisations.** Even though they are quick to invest in new technology in relation to the pre-assembling process, they have neglected the need to invest in human resource development or to hire technical staff. As a result, garment manufacturers are still struggling with poorly skilled workers

¹⁰ Such findings are confirmed by Håkanson (2002), who argues that articulation –(the process whereby tacit knowledge becomes articulated) and codification (the process of rendering articulated knowledge in fixed, standardised and easily replicable form) are both significant for the speed of innovation and knowledge-creating processes.

and managers, who find it difficult to understand the details of the new methods and training programmes, and have only a limited background knowledge on which to build new knowledge. The organisation of the work process in most garment firms does not motivate their employees to engage in problem-solving or learning, as the work itself is very monotonous and inflexible, being organised in a taylorist way, with time measurement, motion studies and the introduction of a piece rate system.

Motivation is thus only a matter of one's salary and not something that is ordinarily incorporated into the company's culture, values or practices. One result of this taylorist work organisation is a high staff turnover rate. Given the low level of knowledge transmission between workers and the high degree of specialisation of the individual worker, this means that the experienced workers are taking a large part of the company's knowledge with them whenever they leave. In general, owners of garment firms have an educational background in retail and commerce, but limited knowledge about production, as a consequence often not realizing the need for new training programmes and new work processes. The application of quality assurance systems, for example, is more often a show put on for one's customers rather than a deeply felt need to change the company's practices. As companies in general only aspire to obtain certification to show their customers, they make no effort to implement the full system. Without leadership and commitment on the part of the owner, implementation is often terminated if more important work comes along, and it is easy for employees to fall back on old routines and practices when the implementation period is over. Another serious obstacle to the learning capacity of the garment firms is that their owners have been immersed in the firm's success so much that they have neglected to renew the knowledge base or to search for, identify and develop competencies, products and markets on which the future competitiveness of the firm can rest. As a result, firms tend to learn in a path-dependent fashion, building on outdated practices which might prove to be less than ideal in facing future challenges. For example, managers have failed to produce any plan regarding which alternatives to pursue when, as is expected, the current OEM strategy fails to yield a profit. They thus tend become engaged in a desperate search at times when the direction is unclear, since no investment has been made in any of the wide range of possible solutions available.

Being integrated more directly into the production structure of the global lead firms, the **auto-part firms are more motivated to learn and change** their organisation. As part of their co-operation with Japanese assemblers, Japanese practices such as the Kaizen production system have been implemented. Furthermore, ISO and QS certification has become an important ambition for auto-part suppliers, as their customers are increasingly requiring them to implement quality measures in the work process in line with the increase in exports to US and European markets. In contrast to the garment firms, the owners of auto-part firm generally have technical or engineering training on which further technical knowledge has been build, which has helped the mangers to satisfy their organisational needs. This, however, does not mean that the auto-part firms in general can be described as learning organisations. Most of them are struggling with the same problems as the garment firms, such as the high staff turnover rate, the lack of skilled workers and engineers, limited investment in human resource development and R&D activities, machine stops that cannot be overcome with the available means, and a lack of visionary alternatives to the current OEM strategy. They have become used to receiving the engineering drawings from the assemblers and have not seen any need to build up any product development and design capabilities of their own. This is placing them in an unfortunate position, as the assemblers are changing their supplier strategies and only providing suppliers with the part specifications, leaving them with the responsibility for actual product development.

The large investment that the auto-part firms have recently made in preparation for an increasing OEM market makes it unlikely that they can change to an entirely different product structure. The lack of product development capabilities thus means that suppliers must pay engineering companies to do the design for them. However, this does not involve any transfer of knowledge, as these companies co-operate directly with the assemblers on product development. Only two or three of the auto-part firms in the survey have reached the stage where they are able to produce engineering drawings and develop simple products. This ability is based on the development of basic engineering knowledge obtained through co-operation with foreign assemblers, relevant training, and investment in research and development activities, which enabled them to apply new knowledge to their organisational requirements. Another characteristic of these learning organisations is that, from the start, their owners have been very innovative and determined to cultivate a knowledge base, focusing on the constant development of the skill structure through in-house training. Furthermore, they have used time and money to search for new alternatives in terms of products and capabilities, even in periods when the OEM strategy was working very successfully. Where the younger generation have taken over, they are planning ways to share management with non-family members by decentralizing the decision-making process and employing more professional managers. In general they are more willing to delegate management than the older generation, as they come to recognize the benefits of a flatter organisational structure through having received part of their education abroad.

Chapter Seven

Conclusions

7.1 Empirical conclusions

The first part of the research question aimed to answer whether the practices and strategies of local Thai firms have been transformed through their links with global lead firms and local actors and institutions, and whether this transformation has enabled firms to survive the increase in global competition. These questions will be answered in the following two sections.

Transformation

As mentioned in Chapter 2, learning implies that knowledge obtained from global lead firms and other actors is successfully spread through the organisation and adapted to the knowledge base, leading to a transformation of the organisational structure and the practices followed. Consequently, this section evaluates **the extent to which practices in Thai garment and auto-parts firms have been transformed** as a consequence of their integration into global production chains and subsequent learning.

Compared with the description of the traditional business system provided in Chapter 1, the **Thai garment manufacturers** have mainly changed in terms of **the size** of the companies and the gradual introduction of more value-added products of **increased quality** to meet customer demand. These improvements have largely been made through the gradual implementation of new technology, such as computer-aided design, computer-controlled cutting and computer-controlled monitoring of the process. New technology has been applied in the day-to-day business using trial and error. Since this approach requires experienced machine operators, garment manufacturers are dependent on the skills of such workers. But in general the automation of the process has not contributed to increasing the skills of workers on the shop floor. On the contrary, as Taplin and Winterton (1998) also warn, implementing new computer-controlled machinery tends to depress wages.

While a great deal of effort has been put into the intensification of 'hard technology', **less technology and fewer efforts have been applied to the development of 'soft technology',** such as the development of delivery and design competencies, organisational changes and the upgrading of human resources. The general way to enhance such competencies is to learn through experience of daily operations, formal education in management and attending training courses. In general, however, there is a lack of planning concerning training at the level of the workers. Furthermore production management is

mainly done in an ad hoc fashion, as owners try to manage all the steps in the production process independently. Planning and control measures are largely carried out without documentation, and only a little time and few resources are devoted to the effective implementation of upgrading working practices, such as quality control. Regarding marketing management, the managers try to maintain the focus on the US and European markets, but lack a sense of vision regarding the development of alternative strategies. In summary, changes in the Thai garment firms amount to increased production efficiency and the development of higher value-added product achieved by intensifying technological applications. The production process has been improved through everyday experience, but the changes are only incremental, as the usual organisational routines and practices not have been questioned. The knowledge base is thus reproduced through 'learning by doing', resulting in 'pathdependent' learning as an outcome of rather unintended and unconscious management, in which little effort is made to expand the knowledge base with qualitatively new knowledge. With reference to Chapter 2, the changes involved can be described as transmission rather than transformation.

The Thai auto-parts firms have made considerable changes in their organisations. Like the garment firms, they initially became more capitalintensive through the application of advanced machinery, in particular since the late 1990s, in expectation of a growing market. As a result, many of these firms have become fully automated through robots as well as computercontrolled machinery. This sort of technological upgrading guarantees increased productivity, better product quality and higher levels of precision. In contrast to the garment firms, the auto-parts firms have also been very active in relation to the implementation of **new process technology**, such as quality control, ISO standards and the improvement of delivery systems, in an effort to adapt their production system to the needs of their customers. These efforts entail the involvement and training of the workers, and thus an upgrading of the skill structure in general. The auto-parts firms have also been very focused on the hiring of technicians, engineers and professional managers, in acknowledgement of the very demanding technology involved in the production process. But because of a serious lack of engineers in Thailand, especially engineers with knowledge of the automotive industry, the auto-parts firms have not always achieved a desirable level of skills. Some firms solve the problem by training technicians in house. The firms' owners often have a very good understanding of the technological aspects of the production process, as they have been educated in engineering themselves and in general have long experience in the automotive industry. They have also focused on providing their children with relevant knowledge through overseas education or else have hired professional managers when needed. As a result of professional production management and investment in process upgrading, firms have been able to undertake more complex and demanding technological tasks. However, most firms still suffer from many non-value-added activities, frequent machine stops, which cannot be solved in house, and a large

productivity gap. They also have limited knowledge of and experience in marketing, and relatively **little attention have been given to product development capabilities and investment in research and development activities**. In response to the financial crisis, a greater focus has been placed on the development of human resources and the improvement of product development and marketing capabilities, and some firms are beginning to experiment with organisational changes, such as decentralisation of the management structure.

Overall, with the implementation of new processes in order to achieve the objective of adapting the production structure to the demands and needs of global assemblers, Thai auto-parts firms have managed to make fundamental organisational changes. Basic routines have been questioned and changed, and new methods have been embedded in the knowledge base of these firms. As a consequence, transformation of the organisations has been achieved through organisational learning,¹ to refer to Chapter 2. However, learning capacity reaches very different levels in the various auto-parts firms in the survey, suggesting that firms have been **transformed to varying extents**. About half the firms have made a serious effort to implement the changes required to keep their position as a first-tier supplier, but have not been guided by any vision regarding the development of future competitive core competencies. These firms often lack the necessary skills and technology to implement new knowledge consistently, and they risk falling back on old practices and routines if new methods are not distributed and understood by all levels of employees. As a result, the transformation of these organisations is only partial. The remaining two or three auto-parts firm can more genuinely be described as learning organisations, since they have been able to play a more active role in the further development of the knowledge transferred to them through subcontracting arrangements. This successful learning process is based on a clear vision of future objectives, engineering and innovative insights, and the investment in a prior knowledge base, comprising both research and development activities and the training of employees, on which the new knowledge is built. As a result, the transformation of these companies is more fundamental, as some design and product development capabilities as

¹The learning capacity of Thai auto-parts firms seems to contradict the findings of Intarakamnerd et al. (2001). Focusing on the national innovation system of Thailand, they conclude that Thai firms have grown without deepening their technological capabilities and that their technological learning has been very slow and passive. Their argument largely rests on firms' reliance on imported technology rather than their investment in R&D activities and the failure of the government to support technological development in industrial firms. They do not, however, go into detail about the actual learning process in Thai firms and the barriers to learning and change. Focusing implicitly on developing a framework for analysing the learning of local firms in international alliances in the context of Thailand (Kulsiri, 1999) supports the findings that Thai firms tend to recognise learning more in terms of production efficiency and changes in conduct and understandings than in terms of new product design development. Being based mainly on statistical data, however, the analysis is not directly comparable with the results of this study.

well as marketing capabilities have been achieved, besides the implementation of new process technology.

As will be evident, the transformational forces of globalisation have changed various features of the traditional Thai –or Chinese – business system. However, **both garment and auto parts firms maintain many traditional features** that have not been reshaped by globalisation. Partnerships with friends or family members are still the preferred way to establish a new business, and close networks with friends have also turned out to be very important in acquiring an initial knowledge of the trade. Family ownership is still a prevailing characteristic of Thai businesses, as is the group structure and the dominance of Sino-Chinese entrepreneurs. The internal structure also resembles family structures in the respect shown to rank and hierarchy and in the authorial, top-down line of communication. The management structure especially has proved to be a hindrance to more fundamental transformation.

Successful adaptation to global change?

There are notably changes in the way that Thai garment and auto-parts firms have been transformed through the process of learning. While the garment firms have only been engaged in incremental changes, the auto-parts firms have experienced a more profound transformation. But a successful transformation is not necessarily one in which the firms involved have reached the end-point of the learning process, resulting in a fundamental change in all elements of the knowledge base. **Successful learning**, however, describes a stage in which firms are able to survive and remain competitive in their specific environments.

The practices employed by both the garment and auto-parts firms have worked successfully for a long period, in various ways these firms have been protected from competition from abroad. While the success of the garment firms is based on their privileged access to markets in the US and Europe, that of local autoparts firms depends on the continued support of the Japanese assemblers, as well as on the local content requirement and ownership restrictions. As a consequence, firms have not been active in the search for new routines or alternative strategies. However, the circumstances under which Thai firms have been happily producing have changed dramatically since the late 1990s, threatening the survival of local firms in both industries. The abolition of the quota system under the Multi-Fibre Agreement in 2005 will place Thai garment manufacturers in open price competition with countries with lower labour costs. Furthermore, the US and European customers have already started to source from nearby countries such as Mexico and South Africa, because 'quick response' has become an important imperative in buyers' decisions. Such changes in the competitive environment have made it doubtful whether any of the garment exporters in the survey will be able to survive if they continue existing practices. The situation in the **automotive industry** is not

very promising either. The restructuring of the TNCs' strategies towards an increased use of global component suppliers suggests that the strategies of Japanese assemblers in handing out engineering drawings and working with preferred suppliers within the framework of the supplier clubs have become redundant. Thai firms are faced with a choice either to upgrade to be able to compete in the global market or to change direction. Given the lack of product design competencies, the firms in the survey will find it difficult to keep their position as first-tier suppliers in the future.² Furthermore, competition between auto-part producers within Thailand itself has increased significantly following the liberalisation of the ownership structure in the wake of the crisis, the increased investment of global suppliers in Thailand and the opening up of the ASEAN market.³ The auto-parts firms in the survey have so far managed to keep their firms in Thai hands by restructuring their activities within their respective groups. But they are still struggling to recover from the effect of the low demand during the crisis by trying to reorganise their organisational strategies. In summary, increased competitiveness and the new requirements of global lead firms have made the hitherto successful practices of Thai firms outdated, and the continued survival of local suppliers requires a comprehensive renewal of the knowledge base in both industries.

For various reasons, however, for firms to achieve radical changes in the organisational structure and knowledge base or to change to a new line of business is fraught with difficulties. As will have been evident from Chapter 6, the garment firms especially, but also many of the auto-parts firms, have neglected to invest continuously in an appropriate knowledge base in terms of research and development activities and the human resources required on which to build further knowledge. This is the main reason why the firms find it difficult to re-adjust to the new circumstances, which require managers to be more innovative and visionary than before. Being able to imitate the practices of others and to rely on the assistance of customers is not an efficient solution anymore. But the loss of flexibility is another issue that contributes to the difficult reorganisation process. As mentioned in Chapter 1, the traditional family firm was characterised by flexibility due to its small size, limited investment and extensive networks based on strong personal links of family and business relationships. Flexibility was thus a strong competitive advantage, which allowed firms to adapt quickly to new situations or emerging

² This conclusion is supported by Kamaruding (2003), according to whom no 100-percent Thai-owned auto parts firms have become first-tier suppliers to the new US and European investors, as these car manufacturers have applied the new modular production system from the outset and introduced their own foreign suppliers. Similar denationalisation tendencies are evident in Brazil, India, Poland, Czechoslovakia (Humphrey and Memedovic, 2003) and South Africa (Barnes and Kaplinsky, 2000), where major local-owned component suppliers are taken over by foreigners, as they are unable to cope with increased competition and increased demands regarding production standards.

³ These developments reflect the liberal policy in which the state increasingly relies on foreign investments and market forces, suggesting that the state has retained few policy instruments to support the competitiveness of local parts makers. In contrast, the policy in Malaysia is characterised by strong state intervention with the important aim of upgrading local assemblers and parts makers (Kamaruding, 1999).

opportunities, for example by shifting to another line of business with more promising prospects. The adaptation of routines, products and processes to a specific purpose and the large technological investments which have been undertaken have made it unlikely that firms can easily change the production structure once it has been decided. As Maskell and Malmberg (1999) argue, knowledge creation is strongly path-dependent, as sunk costs and investments in one technological route will make it unlikely that the firm will develop along an entirely different path.

The increase in size and functions has also taken place without corresponding changes in the organisational structure. Indeed, managers have tried to retain the top-down decision-making structure found in the traditional business system. But the preference for making all decisions single-handedly is unsuitable in the case of increases in production and functions. Unless responsibility is delegated to middle managers, changes seem to take place in a non-optimal fashion, as more and more decisions have to be taken and more and more problems arise in the production process. There is thus a negative aspect in respect of bringing more and more activities into the firm without changing organisational practices. As already mentioned, workers have been deskilled, especially in the garment firms, in order to keep wage levels down. Even if it could be argued that it is unnecessary for the workers to learn, as they know the essentials of the workflow process, the low skills of the workers contribute to the inflexibility of the firms. For the garment firms to become capable of fulfilling the 'quick-response' demands of their customers, workers' skills still need to be upgraded, so that each worker can do more operations. In the present system, each worker is specialised in just one or two operations, which means that one piece of a garment may have to go through many hands and can be in progress for a long time (see Chapter 4). Furthermore, the knowledge and insights of the various workers become lost because of the lack of channels of communication. Overall, the ability to adapt quickly to changes in the competitive environment, which constituted a competitive advantage in the traditional business system, has been sacrificed in order to achieve economies of scale.

Beside the lack of prior investment in the knowledge base and the loss of flexibility, firms' **position as OEM suppliers** also works as a barrier to change. By passively receiving product specifications, investment in product development, design and marketing capabilities have largely been ignored. As a consequence, Thai suppliers have become quite dependent on on-going co-operation with current customers, since great losses are involved when such relationships are terminated. The future seems gloomy for Thai garment and auto-parts producers, as only a few firms will be able to upgrade the production process and product development capabilities to the extent that they are able to create the unique advantages needed to manage global competition. This conclusion is supported by a study by Richard Doner (2002), who, from an institutional point of view, argues that Thai-owned garment and auto-parts

firms have neglected to invest in upgrading activities, which he regards as being especially important for middle-income developing countries. The Thai garment industry suffers particularly from an inability to solve problems of collective action and severe shortages of highly educated employees, which are necessary to be able to fulfil customers' demands for a quick response. The first-tier auto-parts industry also risks denationalisation, as the Thai suppliers are unable to develop their own products or to restructure their production towards more flexible methods. In the theoretical section, the various mechanisms, viewed on different geographical dimensions, which have contributed to this meagre outlook for Thai firms are summarised.

7.2 Theoretical conclusions

The second part of the conclusion is concerned with the theoretical framework for the analysis. The aim was to develop a theoretical framework for analysing global–local interactions from a learning and knowledge perspective. In conclusion, the question is **whether the theoretically developed concepts have any empirical relevance, and whether the framework proposed is useful in the context of developing countries**. Or the other way around, can the theory be informed by the empirical results? In the first section, the intent is to discuss the kind of **mechanisms that have been decisive** in producing the specific outcome of global–local interactions in the context of Thailand. The next section concerns whether the empirical analysis contributes to the theoretical elaboration and redefinition of theoretical concepts.

Decisive mechanisms

A conceptual framework was suggested in Chapter 2, aiming to integrate global and local perspectives on the development of economic activities in order to fill up the theoretical vacuum in research on the effect of the international spread of production on the formation of local knowledge. Analytically, the point of departure was the externalisation, socialisation and internalisation mechanisms, consideration of which led to the analysis of various dynamics on different geographical dimensions, the combination of which is regarded as having decisive impact on the organisational learning and transformation of Thai firms. But have these theoretically abstracted mechanisms proved to have any empirical relevance?

First, **externalisation** was defined as the potential of global lead firms to create linkages to local firms by taking account of their embeddedness in host-country structures and how global lead firms change strategies as a consequence of global restructuring trends. The externalisation mechanism was treated empirically in Chapter 4. The first requirement for knowledge to be externalised from global lead firms is that **linkages have to be established** between the global and local actors. The chapter shows that foreign lead firms in the garment and automotive industries have created linkages with Thai firms, although it is also evident that such linkages are based not only on the production capacity of local firms, but also on protective measures, such as quotas and the local content requirement.

The chapter also demonstrated that Gereffi is partly correct in saying that there is a great variety in the learning potential, as distinct industries are not integrated into the international economy to the same extent. More accurately, the various industries are integrated differently. In Thailand, both garment and auto-parts producers are integrated into the international economy to a considerable extent through their linkages with foreign customers. Garment manufacturers are integrated into the global economy through their role as subcontractors for customers located in the North American and European markets. The auto-parts firms, however, are much more integrated into the production structure of the global assemblers because they are embedded into local structures and have developed substantial linkages with Thai suppliers. Even though local firms in both industries have managed to create linkages with foreign lead firms, the differences in the extent to which local firms are part of the production structure of global lead firms and global lead firms are embedded in local structures have had a great impact on the extent to which knowledge is transferred between global and local actors.

The focus on how foreign lead firms are **changing supplier strategies** on a global scale in response to increased global competition also proved to be very important for the opportunity of local firms to exploit knowledge diffused from the activities of transnational corporations. In this respect, the global lead firms have started to place demands on their suppliers that Thai firms will find it very difficult to fulfil. This implies that linkages between global lead firms and Thai firms in the garment and auto-parts industries will probably become fewer in future.

The impact of the trends in globalisation mentioned above has been aggravated by the **economic crisis**. This crisis caused increased competition from the inflows of foreign investment, substantial take-overs of crisis-ridden Thai firms, further restrictions on the liberty of action of the government, and further restructuring of the strategies of transnational companies in the region. The crisis has, in other words, accelerated the opening up of the Thai economy, as it has exposed the structural weaknesses of the Thai economic and provided a context for change and reforms at both the institutional level and the level of private Thai firms.

In summary, globalisation in terms of the opportunity for Thai firms to exploit knowledge diffused from global lead firms has a **double impact**. On the one hand, the global diffusion of activities of transnational corporations has resulted in networks being created which provide Thai producers with increased opportunities in terms of markets and the diffusion of knowledge and information. On the other hand, globalisation is bringing about increased competition in parallel with the increased demands placed on the Thai suppliers, which threatens to squeeze them out from access to global lead firms and markets.

Secondly, **socialisation** was defined as how knowledge becomes released from global lead firms and transferred to local firms through long-term interactive learning processes in co-operative networks. Pointing to the parallel processes of exchange and adaptation, socialisation worked as the guiding mechanism of Chapter 5. In order to benefit from the spread of TNC activities, local firms must engage in a lengthy socialisation process, which involves the exchange of products as well as trust, information and knowledge. The Thai firms in the two industries being examined here have demonstrated their very **good network capabilities**, as they have maintained long-term relationships with the global lead firms. They have also adapted their organisational structures to the global organisations in terms of the expansion of production capabilities and investments in new machinery, with the specific purpose of being able to supply their customers. The auto-parts firms have also adapted their production processes, such as the delivery system and the quality-control system, to the organisational structure of the customers.

However, the pattern of social interaction between the suppliers and their customers **differs substantially between the two industries**, as is reflected in the extent to which knowledge is transferred from the global actors to local suppliers. Even though the relationships with the buyers have been long-termed, the transfer of knowledge in the garment industry has been limited to an exchange of information concerning orders and the disciplinary effect of quality and safety requirements. The assemblers, on the other hand, have made a great effort to assist the suppliers with upgrading when launching a new product, by providing engineering drawings and by suggesting stringent requirements so that, in upgrading, suppliers can meet the required standard, quality and price through training and seminars. Furthermore, knowledge is transferred indirectly in terms of achieving interaction with other producers through the supplier clubs.

The difference between the two industries is not due to the length of these relationships, but rather their content. Relationships between Thai auto-parts firms and assemblers are characterised by frequent personal interactions, a large degree of trust and knowledge transfers in relation to process upgrading: these are not found in relationships in the garment industry. These differences are due to the **different extent to which Thai firms are integrated into the production structure of the global lead firms, the extent to which the global actors possess knowledge relevant to the production, and the degree of embeddedness in the Asian region.** The mainly western buyers of garments are 'manufacturers without factories' and can thus be regarded as 'hollow' organisations in the extent to which they are able to transfer knowledge regarding production. Being located in home countries, they do not take an interest in the product development capabilities of the region, but are mainly concerned to seek out the best and cheapest products globally. Assemblers, especially Japanese ones, are more willing and motivated to transfer some forms of knowledge to local suppliers, as the operation in Thailand is regarded as being very important for the Japanese strategy in the ASEAN region. They are, furthermore, located in Thailand, which increases the chances of social interaction. The global dispersal of TNC functions, however, implies that to some extent the assemblers can be regarded as 'hollow organisations', as they mostly focus on the assembling function and lack specific technological knowledge thus focuses on the development of the process capabilities of the suppliers, rather than the product development capabilities that are their core competencies.

Chapter 5 also indicates that the knowledge of local Thai firms is not always the result of knowledge transferred from foreign lead firms. On the contrary, fundamental knowledge is most often transferred through horizontal networks. Horizontal networks with friends and family members were extremely important in the early phase of industrialisation as a source of both capital and initial knowledge about production. Such networks are still very important in the exchange of information, the co-ordination of action and to reduce uncertainties in the context of weak formal institutions. Social organisations and trade associations are especially significant as points of interaction. The fact that global processes do not reshape such structures indicates that the behaviour of a firm is not only determined by its position in global commodity chains. To be able to compete in global markets, however, embeddedness in local structures and social networks is not sufficient for success, and Thai firms must be able to form social ties with foreign firms in order to generate the necessary knowledge embedded in their organisational structures.

Thirdly, **internalisation** was defined as how knowledge transferred from others is diffused within local firms to become internalised in the organisation's knowledge base in order for it to be used for further developments. The success of this strategy depends on the local institutions and networks in which the firms are embedded and which act as mechanisms for the production and reproduction of organisational practices and routines. Chapter 6 describes empirically how Thai firms internalise the knowledge obtained from external sources into firm-specific organisational and productive competencies. The fact that only a few of the auto-parts firms included in the analysis have been able to carry out any transformations regarding their organisational structures or product development capabilities reflects the limited degree to which these firms generally have internalised knowledge obtained from foreign sources into the knowledge base of their firms. In order to comply with the demands of their customers, Thai firms have been quick to implement new machinery and to learn how to operate it, as well as to meet the quality demands of the market and other minimum requirements of the customers. The difference between the garment firms and the auto-parts firms in this regard mainly reflects the extent to which their customers are prepared to intervene in the internal organisational structure of the firms. Being protected by the quota system, high tariff barriers and local content requirements, however, Thai firms have not felt compelled to make substantial efforts to transform their organisations, and they have been very slow to invest in the development of more extensive technological capabilities. Thai firms can thus be regarded as 'imitators' rather than 'innovators'.

The failure in terms of successful transformation reflects the fact that the traditional 'Chinese business system' has not evolved in line with increased size and capital intensity or transformed to response to increased competition and requirements. There are thus **many built-in structural barriers to the transfer of knowledge**. The authoritarian control of the decision-making process, for example, hinders the diffusion of knowledge between the various organisational levels and functions in the firms, leading to an 'ad hoc' or 'opportunistic' form of leadership where the focus on the development of core competencies is lost. However, firms' developments in terms of the successful elements of the traditional business system, notably independence, the reliance on personal networks and flexibility. Flexibility and independence in particular have been sacrificed, as firms have adapted their production structure to one specific purpose in exchange for achieving economies of scale.

As mentioned in the theoretical chapter, **Gereffi (1999b) regards the opportunity to learn and upgrade associated with a firm's relationship with global lead firms as being more extensive in the garment industry than in producer-driven commodity chains,** because the garment manufacturers must learn how to do everything themselves, as only limited knowledge is transferred from the buyers. Gereffi's hypothesis, however, presupposes that the garment firms are investing in the physical, human and social capital required to become learning organisations. While it is correct that Thai garment firms receive very little knowledge from the buyers, they have not been active in searching for new knowledge, but instead have developed knowledge obtained through horizontal networks in terms of learning by doing and investment in physical resources. Investing in new technology rather than in human resources and organisational change has led to deskilling, in which each worker has only limited knowledge of the entire production process, thus limiting the ability of the firm to learn.⁴ Thus, Thai garment producers have not

⁴Humphrey and Schmitz (2000) also question the notion of upgrading in the global commodity chain approach developed by Gereffi. They argue that upgrading involves more active efforts by producers than simple 'learning by doing' or 'learning by exporting, and that upgrading strategies, which result in producers switching to new buyers, may conflict with buyers' interests. They suggest that the global commodity chain approach should look more closely at the process of upgrading to develop less simplified models of commodity chains.

been able to move up the learning curve in the time they have been given for learning before being confronted by competition from other developing countries. In contrast, the auto-parts firms have developed their organisations to a greater extent, largely because of pressure from their customers and the learning opportunities implied in such relationships. Thus, the conclusion is that, in the context of Thailand, the learning opportunity associated with relationships with global customers is more extensive in producer-driven chains than in buyer-driven chains.

In order to cope with an increasingly competitive environment, Thai firms must focus on the application of tacit knowledge in firm-internal organisational structures. Thus, the internalisation of knowledge obtained from global customers and the ability to develop this knowledge further through a firm's own organisational methods requires an increased focus on the human factor in production. That is, the knowledge of the various levels of workers must be upgraded and knowledge channels created in terms of enhanced interaction between employees. The differences in learning capacity between different auto-parts firms demonstrate that it is not enough just to copy the practices of the lead firms. The creation of firm-internal product and design capabilities demands investment in a broad knowledge base and a determination to focus on constant upgrading, even if this leads to the old practices and the traditional organisational structure coming to an end. In other words, globalisation only rewards the adaptable. In a critical realist vein, the mechanism of internalisation may in some cases block the operation of knowledge transfer through the mechanisms of externalisation and socialisation.

In summary, it is claimed that the theoretical framework has fulfilled its aim. Given the focus on processes, networks and actors, it has proved possible to integrate the global within the local, which has led to the unfolding of various causal mechanisms, which clarified concrete results at various levels of the analysis grounded in empirical evidence. As such, the theory has provided the conceptual framework required to design the fieldwork and has produced results in accordance with the concrete mechanisms and conditions that have activated them. Empirically, the theory points to the various processes of globalisation that have changed the situation of the Thai firms dramatically in a situation where competition is more intense and greater demands are being made by global customers. To obtain knowledge through linkages with transnational companies depends on the ability of Thai firms to maintain both their 'network capabilities' and the structure of such relationships. Furthermore, the various globalisation processes only work for Thai firms as mechanisms of transformation when they are acted upon, that is, when firms make an effort to change organisational structures and upgrade production capabilities to adapt to the changed demands and to internalise the knowledge that is transferred to them. In other words, the precise outcome of processes of globalisation depends on the local response in terms of socialisation and internalisation. As a consequence, all the relevant issues in terms of the

opportunity of local firms to exploit the increased spread of knowledge would not have been revealed if the three mechanisms had been analysed separately. Certainly the global production chains approach is a useful theoretical tool for bridging global and local actors and processes, but it does not deal adequately with the issues of learning and the transformation of local firms. To be able to assess whether local firms have benefited from the spread of economic activities, consideration of the socialisation and internalisation mechanisms is indispensable.

The relevance of the theoretical framework for developing countries

The theoretical framework has provided a great deal of insight into how knowledge is transferred between global and local actors. However, the empirical analysis can also enrich the theory with respect to the specific context of developing countries. First, the theory regarding knowledge and learning is highly optimistic concerning the opportunity of firms in developing countries to exploit the knowledge distributed by transnational corporations. Ernst and Kim (2001), for example, suggest that recent changes in the global economy have lead to an increase in the mobility of knowledge within global production networks and thus created new opportunities for international knowledge diffusion, which are open to suppliers in developing countries to exploit. However, TNCs rarely relocate activities to developing countries in order to exploit an existing pool of knowledge, as is the case with knowledge clusters such as Silicon Valley. On the contrary, local firms in developing countries must fulfil a wide range of requirements in order to have any hope of creating supplier linkages with foreign lead firms. It is often easier for TNCs to talk internationally recognised suppliers into relocating their activities in order to serve the new investment than to work with local suppliers. Furthermore, the fragmentation of TNC activities may lead to a hollowing out of the specialised technological knowledge that local suppliers need to obtain in order to upgrade and learn. That is, global lead firms are not always the most important way for firms in developing countries to obtain the necessary knowledge. As was seen in the empirical analysis, links with friends and families are a very important source of finance and production knowledge in the establishment phase of firms. In later stages, however, firms in developing countries become dependent on foreign firms for the transfer of knowledge and information in order to close the technology gap. It is therefore essential that local producers are able to use networks in a flexible way in order to be able to draw initially upon the resources of family and friends, while attempting to form broader linkages beyond primordial ties, as their need for more sophisticated inputs and larger markets expands.

It is also evident from the empirical analysis that **the understanding of TNCs** as simply providing foreign direct investment is inadequate. Firms in developing countries may be linked to, and thus influenced by, global lead

firms in multiple ways. Local Thai garment manufacturers, for example, are linked to global lead firms in Europe or the US via export linkages, while the auto-parts firms are linked to foreign investors in a more traditional sense. In the case of both types of linkage, the TNC or global lead firm is able to exercise power over and influence practices in local firms through such linkages, no matter where they are located. For local suppliers, however, the learning opportunity involved is very different. The types of TNC activities involved, the containment of knowledge, the willingness to transfer knowledge, the extent to which the TNC is embedded in local structures, and its interest in the region as such, as well as the local structures and institutions, are decisive factors in the extent to which TNCs can be regarded as providing a successful learning strategy.

Secondly, regarding the socialisation mechanism, the importance of tacit knowledge for firms in developing countries is exaggerated. The most important concern for firms in developing countries is to catch up rather than to become technological front-runners, and in this context the knowledge literature should be less concerned with the distinction between explicit and tacit knowledge. As late industrialisers are involved in a learning process, the focus should be on how to obtain and use existing knowledge rather than on the creation of new knowledge through in-house innovations, at least until the knowledge gap has been closed. Furthermore, explicit forms of knowledge are often more easily diffused in organisations in which the organisational structure is not conducive to learning. Even if tacit forms of knowledge can be transferred through, for example, training and observation, as in the automotive industry, differences between the actors involved in terms of organisational structure and national background may work as a hindrance to knowledge transfer. As has been seen, late industrialisers tend to focus on expanding production by implementing new technology, but they often overlook the importance of visionary management and the development of core competencies. They must also struggle with many residuals from the traditional business system which have not been adapted to changed structural conditions and thus undermine the benefits of tacit knowledge. Such firms might benefit more from explicit knowledge transferred through standardised processes and the recording of practices in manuals. The implementation of ISO, for example, forces firms to convert their established routines and practices into explicit knowledge.

However, **tacit knowledge is extremely important for the internalisation process.** In order to become more receptive to knowledge transferred from firm-external sources and to be able to use it in later stages of industrialisation in order to develop firm-internal competencies that are more sophisticated than just copying, firms in developing countries must make considerable changes in the firm-internal organisation. The internalisation of knowledge demands wholesale changes in traditional practices and is the weakest link in the learning process. The internalisation mechanism should therefore be strongly emphasised in the theory of knowledge and learning. With reference to industrialisation in an Asian context, Hobday (2003), following Gerschenkron, notes that development in late industrialised countries usually relies on a mixture of 'strategic innovation' and imitation. That is, latecomers need to 'catch up' through incremental improvements to existing products and processes, which requires investment in technical and engineering skills in order to assimilate and improve on existing technology, rather than to move the innovation frontier forward through R&D. But as imitation is not a sufficient strategy in catching up, 'strategic innovations' must be introduced as well. The phrase strategic innovations refers to the introduction and implementation of a wide variety of development paths and experimentation in terms of new ideas, new institutions, new governmental policies and experimental business strategies related to patterns of industrial ownership, firm size and mechanisms for acquiring technology and entering export markets. Thus, there is no trickledown effect of foreign investment if this is not linked to local capacity building, which is adapted to the (constantly changing) circumstances facing latecomers and the particular opportunities and barriers that exist in individual countries.

Related to the form and definition of knowledge, but of more general application, it should be more clearly explained theoretically exactly how knowledge relates to the upgrading of a firm's activities and production. The theories are very much concerned with the definition of knowledge along various analytical dimensions and in various forms, and with the connection between institutions within and outside an organisation and knowledge creation. But when it comes to how concepts such as knowledge, networks and institutions lead to the upgrading of a firm's activities, learning is usually linked to the intensity of social interaction. That is, it is simply a matter of 'getting social relations right'. As will have been evident, however, linkages with global lead firms might strictly refer to trade linkages, which do not necessarily involve learning and upgrading; indeed, linkages with external actors do not automatically lead to successful learning. In fact, such networks might even constrain the upgrading of local firms, as they tend to imply inflexibility, dependence and a limited focus on the creation of dynamic core competencies. Conversely, technological upgrading in the form of increased productivity, better product quality and higher precision does not necessarily result in learning, as learning requires skilled workers with knowledge of the full production process and channels to diffuse individual knowledge in order to improve production further. There is thus a need for the theories to be sharper on the relationship between learning and upgrading in explaining how a supplier can benefit from knowledge transfer through trade linkages. Furthermore, as is evident from the empirical conclusion, it is not exactly clear when a firm becomes a learning organisation, as there are many steps in the learning process and the knowledge base of a company consists of many elements. The various steps in the learning process thus require clarification.

Thirdly, the concepts of networks and institutions also need to be redefined in the context of developing countries. The role of institutions in the conceptual framework has largely emerged from theories which aimed to explain the competitive advantage of regions such as the Third Italy and Silicon Valley. In this regard, the aim was to pinpoint the cultural and social underpinning of the region in order to determine what constituted the success of the region in comparison with other regions (within the same nation state). Attention has thus been focused on institutions which are 'in the air', such as conventions, 'institutional thickness' and untraded interdependencies, rather than on national institutions, such as the role of local governance in relation to upgrading. The role of institutions in developing countries, however, is different. Here the concern is to maximise the effect of transnational corporations and to assist local firms in the catching up phase, as local firms will be unable to compete with global firms on equal terms in this learning period. In this regard, supplyside initiatives are essential, for example the circulation of information, the generation of industry-specific education and training, especially in engineering capabilities, investment in public R&D activities and joint publicprivate product-development programmes. The relational focus in the theoretical framework has led to an analysis at the firm level and thus a tendency to neglect the role of the state. Empirically, the firms in the present case have not made use of formal institutions directly as a source of learning and upgrading, as the institutional context is very weak regarding the existence of firm-relevant seminars and training activities. This, however, does not imply that the role of the state is not essential, something that needs to be spelled out in more concrete terms. In this regard, the knowledge and learning literature would have more relevance in the context of developing countries if it were complemented by the literature on political economy – a very powerful and rich tradition in the Asian context.

The theoretical framework was built up around **the concept of the network**. In general, using a network approach creates a very broad and complex analysis, as networks are in practice not easily observed, highly flexible, unpredictable and highly opaque. In order to study networks appropriately, research would benefit from concentrating on a very narrow research question, for example following a specific development project in a particular firm. Furthermore, learning is in general regarded as a collective activity embedded in the social dynamics and structures that exist in a specific place that links firms and other organisations through mechanisms of nothing more complicated than distance. But, in the context of firms in developing countries that are embedded in weak local institutions and local networks containing limited industry-relevant knowledge, it is not appropriate to refer to industrial districts, innovation systems or clusters. As local networks usually play a limited role in knowledge creation in the catching-up phase, the idea of networks should be extended beyond physical and cultural borders to include non-local actors and organisations. In the case of overseas linkages, however, the glue that binds the members of the network together is not the social cohesion found between actors with a similar cultural inheritance, but a process of socialisation or trust building which provides the network with its stability. The network can be regarded as a governance structure and a process of socialisation through which various actors and organisations are connected. Thus, the concept of the network needs to be broadened in order to be relevant in the context of developing countries.

Finally, a remark is in order on the **impact of globalisation** on local industrial structures. It is clear that globalisation does not lead to a fundamental reshaping of local institutions and business strategies, because only a few actors are actually integrated into the global economy and because of a certain institutional resistance to the incorporation of knowledge that does not form part of the local structures. Furthermore, globalisation processes only have a strong impact if they interact with strong and adaptive local structures. It is the impact of the interplay between global and local structures and processes on both the firm and the institutional level that is decisive in the opportunities for transformation and development in the country in question. The challenge for firms and countries is thus to find an appropriate composition of global and local structures – that is, to take advantage of global knowledge diffusion, but not to lose sight of the competitive advantages of local networks and institutions in the process. The task of defining how the increased functional integration of global economic activities has transformed local practices is a very complex one. It must be analysed as a dynamic process which takes place at various overlapping levels, such as the market, the state and the firm, and must take both global restructuring and local responses into account. In the present study, the theoretical framework, which has focused on the interaction of global and local processes and actors from a knowledge and learning perspective, has fulfilled the aim of identifying important decisive causal mechanisms. But there is also a need for a further definition of concepts and further refinements of the analytical framework.
Learning in Global Networks?

- Industrial Restructuring of Thai Manufacturers in the Automotive and Garment Commodity Chains

Summary

The overall aim of the present study is to obtain a better understanding of how globalisation is impacting on, and interacting with, organisational practices related to production processes in Thai firms. The dissertation aims to answer the following **research questions**:

- Empirically, the aim is to analyse how Thai firms manage to learn and to transform their organisations in the space between global opportunities and organisational practices embedded in the local environment. In other words, are Thai firms successful adaptors in the global economy?
- Theoretically, the aim is to develop a framework for analysing the impact of globalisation on the dynamics of local firms in developing economies, seen through the lenses of knowledge creation and learning theory, which focus on the relational aspect of global-local interactions.

Thailand has since the mid-1980s been heavily influenced by economic globalisation through the localisation of transnational corporations (TNCs) and increased export flows. This provides Thai firms with the opportunity to grow and develop through their linkages with global lead firms, but also leads to questioning whether they can survive the increased competition that follows. The main interest of the study is to examine and explain how globalisation is affecting local production structures and whether a learning process is involved, which lead to upgrading in Thai organisations and a change of outdated practices. The development of knowledge has been chosen as the analytical lens through which the impact of globalisation upon the strategies and practices of Thai firms is examined, as learning is emphasised by various scholars as the main strategy of creating industrial competitiveness in a globalised world. It is considered that a comparative study will be able to highlight different aspects of the complex configuration of globalisation in more concrete terms, and this also opens our eyes to various explanatory mechanisms and to the significance of context. In order to obtain a multifaceted perspective of the impact of globalisation, this study thus analyses how different governance structures affect local producers within the automotive and garment industries respectively.

The research questions are analysed through seven chapters. The introductory chapter considers how best to analyse the global-local interaction. Chapter two presents the

theoretical framework and chapter three the methodological perspective of the analysis. Chapter four, five and six consist of the empirical analysis. Finally, chapter seven presents the conclusions.

Chapter 1 first broadly defines the basic configuration of the Thai business system in order to acquire a better understanding of the empirical context of the study and the organisational and institutional structures of Thai firms that are influenced by globalisation. Thailand has historically been open to the outside world. Technologies, cultures and people early diffused into the Southeast Asian region, in particular the Chinese, but Western influence was also introduced through trade linkages. The inflow of foreign investment was spurred on by a shift to export-promotion policies at the beginning of the 1980s and devaluation of the Baht, which caused a veritable economic boom. However, Thai organisations maintain many of the Chinese business practices, which have been spread all over the region by the mass influx of overseas Chinese business groups, and most descriptions of Thai business organisations refer to rather static patterns of the Asian business system. The main organising principle of Chinese or Asian business systems is a network of independent firms working as the medium of economic activity. A distinct mark of Chinese business networks is that personal relationships are loaded with affection and mutual obligations and they therefore often overlap with pre-existing social networks, which actually narrows organisational possibilities and the potential for growth. Chinese business systems are largely family-owned and family-controlled firms in which both ownership and management decision-making is controlled by the family, all senior management positions being reserved for members of the owning family. To ensure family control, and as a riskmanagement method, assets are spread to various economic sectors and the capital necessary is acquired through the network of personal relationships, in order to join people and resources. Chinese business networks are to a large extent influenced by Chinese cultural values working as codes of behaviour, based on personal trust, reciprocity, longterm perspective, and harmony. Thais also show great respect for rank and are very aware of hierarchy, meaning that authority and communication are top-down affairs.

The second section addresses the concept of globalisation itself and discusses how it is expected to influence economic processes at the local or national level. On the general level, economic globalisation refers to functional integration and inter-territorial dependence through increased cross-border trade, investment and financial flows, leading to greater competition between firms in different national economies. The outcome of these developments is that competition between firms now has a more global character, meaning that it cuts across national boundaries and industrial sectors, forcing firms to compete simultaneously in all major markets. However, there is no agreement as to how the influence of economic globalisation on national economies and organisational business practices should be analysed. Two competing perspectives are sketched out. The so-called 'globalonies' and the strongly globalist perspective are based on the ideology of free trade and limited government interaction argues that global economic processes are the major forces in shaping national organisational structures, and that global flows of investment, technology, finance and information affect all levels of society and lead to uniform organisational structures. The perspective of the globalisation sceptics, on the other hand, is based on the upsurge of research on local or regional networks, which has been particularly prominent in sociology and economic geography, and which argues that economic activities are embedded in local or national institutions that are distinctive to their particular society. As a consequence, economic activity takes a myriad of forms, and globalisation is not seen as having any decisive impact on these highly localised and self-reproducing agglomerations or industrial districts.

In section three, it is argued that the two perspectives both are deficient because they neglect concrete social relationships between major actors and suffer from an inability to explain strategic action and dynamic changes at the firm level. It is the argument here that to construct an analytical and conceptual framework that integrates global and local processes requires a change from focusing exclusively on localised production systems or on globalisation as an overriding force toward a focus on processes, actors and networks and toward a more concrete analytical level to understand what is going on inside a particular country, industry or firm. Globalisation is thus understood in terms of multiple processes working in and through various localities in a dialectical relationship with local processes and structures, which may or may not lead to a transformation of local organisation and the appearance of qualitatively new modes of governance.

Chapter 2 constitutes the theoretical point of departure for analysing how globalisation influences local structures of production. Network theory is presented in the first section as an integrating framework for the analysis. A firm must acquire new knowledge by entering into relationships with various actors and institutions in order to learn. These relationships will influence economic action in and the behaviour of firms in various ways, depending on the structure of such relationships. As individual actors are part of and embedded in different networks at the level of the firm and the society, as well as at the international level, the various geographical dimensions are regarded as being linked through this embeddedness. The network possesses causal powers related to its structure, which can vary according to they way it emerges, the level of interaction between its members, the spatial level of networks, its dynamic and degree of openness, and the way it is mediated by relationships of trust and power and social institutions.

In the second section, the increased role of knowledge in the theory of the firm and in organisational studies is briefly discussed. The role of knowledge in the creation of industrial competitiveness has attracted a great deal of attention in the literature on industrial development since the mid-1990s. The argument is that knowledge has become an increasingly important element in the competitiveness of firms precisely because other, formerly critical factors of production have been eroded by globalisation. Global accessibility of some 'ubiquified' forms of knowledge highlights the importance of localised, firm-specific, tacit knowledge as the basis of competitive advantages. In an era of intensified global competition, the ability of the firm to learn and create new knowledge and to put it into effective use in terms of the development of new products and technologies, increased productivity and the development of better marketing skills therefore becomes

essential to successful economic development. There are several inter-connected explanations of the embedded nature of tacit knowledge and resulting benefits in terms of enhanced dynamic improvement, learning and innovation. Three explanations stand out, namely agglomeration explanations, explanations referring to the existence of a particular milieu or atmosphere, and finally explanations that take systems of innovation as their point of departure. Although the knowledge and learning literature is by no means homogeneous common underlying perspectives and concepts involve a dominant focus on territorial embeddedness, institutions and interactive learning.

Concepts and terminology are seldom used consistently, even when the various approaches share underlying perspectives. In the third section, the aim is therefore to outline and define the core concepts regarding forms of knowledge and learning at various levels. Knowledge within a firm can basically be understood by making a practical distinction between tacit and explicit knowledge, and between knowledge at the individual and organisational levels. After such basic distinctions are outlined, the section investigates in more detail the origin and main mechanisms of knowledge creation, and clarifies the individual, organisational and contextual levels at which knowledge is stored and which provide the point of origin for change. Learning is regarded as the chief mechanism in changing the state of knowledge of an individual or an organisation. While knowledge is seen as an asset or stock of beliefs - or the knowledge base – held by individuals or groups of individuals within an organisation, learning is a process representing flows that lead to a change in this knowledge base. The main mechanism in generating and developing the knowledge base and competence at the level of the firm may be described as a process of interactive learning. Accordingly, the manner in which the relevant social interactions or relationships are reproduced or transformed becomes the central focus of analysis. Interaction in social relations is heavily influenced by social institutions. The literature on knowledge and learning emphasises the 'cultural' and 'social' foundations of industrial development, such as the importance of extensive institutional support, intense inter-firm collaboration and communication, and a strong sense of common industrial purpose and social consensus as being responsible for the creation of a common framework for interaction. Even though the literature on knowledge creation and learning offers some very promising insights, the narrow focus on local or national networks and the importance of territorial embeddedness implies that it is difficult to analyse the impact of global interaction within the framework. In order to overcome such deficiencies, the existing knowledge and learning-based literature must be reconceptualised to develop a synthesis that incorporates global as well as local dimensions.

Thus, the fourth section aims to reconceptualise and discuss the proposed framework in order to apply it to studies of firms in developing countries that are linked to the international economy through linkages with foreign 'lead' firms. Operating on the level of the firm, three mechanisms of knowledge creation are applied in order to analyse how knowledge is created and practices changed in Thai firms through networks involving global actors, namely externalisation, socialisation and internalisation.

- In order to learn knowledge embedded in the organisational practices of others, this knowledge must be released from the organisation or individual holding it referred to as externalisation. The processes of externalisation focuses on the potential of global lead firms to transfer knowledge to local firms, taking into account the restructuring tendencies of the global economy and the embeddedness of such global lead firms in the social institutions of their home and host countries. The global commodity chain perspective is presented as a framework to analyse global production networks in the automotive and garment industries and the incorporation of Thai firms within such networks, given the particular competitive and technological conditions in Thailand. The embeddedness perspective on transnational corporations is presented as it focuses more implicitly on the extent to which TNCs participate in local economic and social networks. It is therefore a useful framework for analysing how particular transnational corporations carry out their activities in Thailand, and the magnitude and character of their links with Thai firms.
- Knowledge embedded in the organisational practices of global lead firms has limited mobility and cannot easily be transferred to local suppliers. In order to share such knowledge between individuals or organisations, the groups involved must be engaged in a long-term process of interactive learning in order to create a common framework for the exchange of complex knowledge. This mechanism is referred to as socialisation, and is particularly applied to inter-firm relationships. The analytical focus is on the process of organising the exchange of products and the development of a social context between partners, which are regarded as the main dimensions in transferring knowledge embedded in organisational practices.
- The last issue touched on is how knowledge obtained from others is shared widely among various functions and levels and adapted to the knowledge base of the organisation concerned. How and whether knowledge is absorbed is crucial in determining the extent to which an organisational structure is transformed and the practices of the particular organisation changed. This mechanism, which is referred to as internalisation is the dynamic aspect of learning, as it is a process which changes the state of knowledge both the knowledge base within a firm and the way the firm uses its existing knowledge, which is essential to the competitive advantage of the local firm. Firms may have varying abilities to apply different forms of knowledge, assimilate it and exploit it for new ends is a function of its prior knowledge, its organisational structure and the motivation and commitment of the members of the organisation.

The three mechanisms have been found useful in structuring the more empirical chapters.

Chapter 3 offers methodological considerations, the critical-realist approach being the point of departure. The chapter is divided into four sections. In the first section, the critical-realist approach is presented as a useful overall methodological theory, as it focuses on social relationships and contextual constraints, and thus buttresses the underlying causal mechanism of interactive learning. Sections two and three examine how critical-realism has been applied in designing the theoretical and empirical research. In the second section, the

design of the analysis is presented from a realist perspective. In the third section, how the theoretical concepts have been translated for actual use in the interviews is discussed. In the final section, the process of interviewing and interpreting the results is presented and the problems arising from this discussed.

Chapter 4 opens the empirical part of the work and deals with the mechanism of externalisation. To be more precise, it deals with how Thai firms are influenced by external pressures embedded within the structures of the particular industry. The analytical focus in this chapter is on the ability of global actors to transfer knowledge to local actors through supplier relationships, which are seen as the consequence of global restructuring tendencies relating to competition, technological change and liberalisation, as well as of specific institutional conditions.

The aim of the first section is to analyse how global production chains governing the automotive and garment industries are configured on a global scale. TNCs are regarded as being very important actors in the process of globalisation and the most important foreign mediator in relation to knowledge creation and strategic decision-making in local firms. However, TNCs are in a process of constantly restructuring their activities on a global scale, and the resulting organisational patterns, strategies and specific character of the global lead firms will have a strong bearing on their supplier strategies.

In the second section, how this restructuring process is exposing Thai firms in global production chains to various transformational pressures and influencing their potential to upgrade and learn is analysed captured by the 'global commodity chain' perspective Both the automotive and garment industries in Thailand are integrated into the global economy to a very significant extent, but in very different ways. Thailand is very well positioned in the international automotive production chain, as Japanese and Western car manufacturers have been located there in great numbers since the late 1960s to serve the local market. High production figures and a diversified supplier base have made Thailand the automotive hub of the ASEAN region. The Thai garment industry has also managed very well in the past three decades and has been successfully integrated into the international economy, as reflected in its remarkable export growth. Both auto-part and garment firms are tied to global lead firms through subcontracting, and, being OEM producers, they also rely on the specifications provided by their customers

Section three examines more closely the connection between Thailand's integration into the global economy and the opportunities for knowledge creation in Thai firms. This is achieved through an intensive case study of the specific strategies of global lead firms engaged with local Thai firms through supplier arrangements and the kinds of rules, pressures and incentives that exist within such production networks, which regulate transactions and firm strategies. Using the embeddedness perspective as the theoretical framework, semi-structured interviews were carried out with automobile assemblers and garment-buying agencies located in Thailand concerning their investment and localisation decisions, and the reorganisation of supplier strategies. The main finding is that what is

decisive for knowledge transfer is not the extent to which Thai suppliers have been integrated into the global economy, but the extent to which they have been integrated into the production structures of the global lead firms. In this regard, the auto-parts suppliers have much more potential to learn than the garment firms. In the automotive industry, the potential for a transfer of knowledge between foreign assemblers and Thai subcontractors seems quite high. This is due first and foremost to the fact that the assemblers are embedded in the local environment to serve the domestic market, they employ many Thai middle managers and even top managers, they enjoy substantial co-operation with local institutions, and most importantly, they have externalised most of their parts and component production, which is subsequently procured mainly on the local market. The organisational structure of Japanese assemblers is, furthermore, very conducive for learning, involving very close cooperation, diffusion of information, frequent visits, and on-the-job training concerning quality circles, just-in-time systems etc. In the garment industry, the customers have not moved any production facilities to Thailand, and in many instances they do not have any production facilities at all. This means that Thai producers operate substantially independently of the production structures of the foreign lead firms to whom they are linked through export, the potential of knowledge transfer accordingly being very limited. However, the opportunity to learn through links with global actors has been weakened as a consequence of restructuring tendencies within the two industries, which in various ways 'hollow out' the presence of a local supplier base consisting of Thai-owned firms able to fulfil the requirements of global lead firms.

While Chapter 4 focuses on the externalisation to others of the knowledge of global lead firms, **Chapter 5** is concerned with socialisation mechanisms. Linkages differ in the extent to which they encourage learning and change. Thus, the aim is to analyse how, from whom and in what context Thai firms obtain the knowledge they require to become efficient producers. The question is whether Thai firms are able to extract valuable knowledge and overcome increased competition and liberalisation through socialisation with global as well as local actors.

The first section describes how firms gain access to relevant knowledge, information and technologies that are used in their operations and by their management. The main question in this regard is who assists firms in this respect. The second section offers an empirical analysis of the socialisation process. The focus here is on the ability of Thai firms to create networks with other actors, and the context in which such relationships take place. Finally, how Thai firms manage the socialisation process on the firm level is summarised and discussed in relation to the theoretical concepts laid out in Chapter 2.

Thai firms in both industries have displayed an ability to tap into various sources of knowledge through the creation and maintenance of effective functional and social relationships, vertical as well as horizontal, through which knowledge is mediated. Regarding vertical relationships with customers, Thai firms in both industries have a substantial learning interface, as they benefit from a diversified customer base. As a result of long-term relationships and mutual commitment, a relatively high degree of trust is

developed, although this is inevitably based on expectations of mutual gains rather than loyalty. However, the long-term perspective does not provide any guarantee that learning will occur in these relationships, as is evident from the different ways in which knowledge has been transferred between global lead firms and Thai firms in both the garment and autoparts industries. The differences in transferring knowledge are due to the different structures of relationships that the respective industries typically enter into, which have provided them with different incentives to change and upgrade, and to differences regarding the various degrees of social proximity between the two industries. The suppliers have become very dependent on the particular relationships they have with their present customers, which have made them very vulnerable because they lack the ability to develop products on their own. Thai firms have other means of learning, notably their wide horizontal network interface, functional as well as social, which is of great importance to firms' operations. However, extra-firm networks involving supporting institutions are of limited use for knowledge accumulation in Thai firms.

Chapter 6 is also concerned with the level of the firm, but, in contrast to Chapter 5, the object of the analysis is the knowledge-creation and transformation of Thai firms through processes of internationalisation. In other words, the focus is upon how knowledge obtained from others is shared widely among various functions and levels and adapted to the firm-specific knowledge base, which provides the firm's competitive advantage.

The chapter is divided into four sections. The first section concerns how prior knowledge has been build up and describes the organisational structure of the firms, which constitutes an important base on which further knowledge can be accumulated. The discussion concerning prior knowledge focuses on the educational background of the founders of Thai firms and the firms' technological level in terms of 'operational' knowledge and 'minor change' knowledge. The analysis of the organisational structure involves an assessment of the ownership and control structure of the Thai firms, thus providing an important background for the decision-making structure in and growth pattern of the firms. In section two, the actual process of internalising new knowledge in terms of the implementation of new processes is analysed. The main question asked here is whether the organisational structure acts as a barrier to the process of knowledge internalisation. Section three examines more closely how Thai managers have restructured their organisations in relation to the present challenges they are confronted with as a consequence of the liberalisation of investment and trade, increased competition and the recent economic crisis. The purpose of this is to identify the corporate strategy and vision of Thai managers, and to evaluate the position of Thai firms within the auto-part and garment industries.

Many local practices embedded in the traditional Thai or Sino-Thai business system still remain. These organisational survivals entail the use of personal connections to obtain initial knowledge and also reflect the ownership structure, with its top-down decisionmaking structure combined with a patron–client type of relationship between the owner and the employees. Some elements of the organisational structure, such as open organisations and large personal networks, have proved conducive to learning as a way of acquiring the

initial skills. Personal connections with foreign actors with knowledge of product development, mass production and marketing skills have proved extremely important. However, many firm-internal organisational practices work as barriers to the acquisition and use of new knowledge, as they prevent links being created between individuals both within and between the various sub-units in the firm. These links are crucial to the transmission of knowledge and information in connection with daily routines and practices. The top-down decision making structure was especially mentioned by respondents as being a barrier to the distribution of learning. As the owner-manager takes all the decisions regarding planning, marketing and production, decision-making tends to proceed in an ad-hoc fashion, without strategic planning. Since firms have very little experience of job rotation, multi-skilling or team organisation, effective communication between the various levels and functions of the firm is prevented. Family ownership also acts as a hindrance to the learning process, especially if the firm is allowed to grow without properly adapting the organisation and employee structure to the needs of the firm. The extent to which firms have invested in existing knowledge is a decisive factor in determining whether they can be labelled learning organisations or not. Once we remember that existing knowledge refers to the skill structure, the manager's vision for the development of future core competencies, and the demonstration of a commitment to implement new methods and invest in R&D activities, it becomes apparent that Thai garment firms are not learning organisations. Even though they are quick to invest in new technology in relation to the pre-assembling process, they have neglected the need to invest in human resource development or to hire technical staff. The auto-part firms are more motivated to learn and change their organisation. As part of their co-operation with Japanese assemblers, Japanese practices such as the Kaizen production system have been implemented. Furthermore, ISO and QS certification has become an important ambition for auto-part suppliers. Most of the auto parts makers are, however, struggling with problems such as the high staff turnover rate, the lack of skilled workers and engineers, limited investment in human resource development and R&D activities, machine stops that cannot be overcome with the available means, and a lack of visionary alternatives to the current OEM strategy. The lack of product development capabilities thus means that suppliers must pay engineering companies to do the design for them. However, this does not involve any transfer of knowledge, as these companies co-operate directly with the assemblers on product development. Only two or three of the auto-part firms in the survey have reached the stage where they are able to produce engineering drawings and develop simple products. This ability is based on the development of basic engineering knowledge obtained through co-operation with foreign assemblers, relevant training, and investment in research and development activities, which enabled them to apply new knowledge to their organisational requirements.

The final conclusion in **chapter 7** consists of an empirical section and a theoretical section. The empirical section aims to answer whether the practices and strategies of local Thai firms have been transformed through their links with global lead firms and local actors and institutions under various structures of governance, and whether this transformation has enabled firms to survive the increase in global competition. The second part of the conclusion is concerned with the theoretical framework for the analysis. The aim was to

develop a theoretical framework for analysing global–local interactions from a learning and knowledge perspective. In conclusion, the question is whether the theoretically developed concepts have any empirical relevance, and whether the framework proposed is useful in the context of developing countries. Or the other way around, can the theory be informed by the empirical results?

References

Abernathy, F. H., Dunlop, J. T., Hammond, J. H. and Weil, D. A Stitch in Time. Lean Retailing and the Transformation of Manufacturing: Lessons from the Apparel and Textile Industries. Oxford University Press, 1999.

Amin, A. (ed.), Post-Fordism: A Reader. Blackwell, London, 1994.

Amin, A. and Robins, K. The Re-emergence of Regional Economies? The Mythical Geography of Flexible Accumulation. In *Environment and Planning: Society and Space*. Vol. 8, 1990.

Amin, A. and Thrift, N. *Globalization, Institutions, and Regional Development in Europe*. Oxford University Press, 1994.

Amin, A. and Thrift, N. Territoriality in the Global Political Economy. In Nordisk Samhällsgeografisk Tidskrift, No. 20, 1995.

Formateret: Engelsk (Storbritannien)

Amin, A. and Wilkinson, F. Learning, Proximity and Industrial Performance: An Introduction. In *Cambridge Journal of Economics*, Vol. 23, 1999. Special Issue.

Amsden, A. H. Asia's Next Giant. Oxford University Press, 1989.

Amsden, A. H. South Korea's Record Wage Rages: Labor in Late Industrialization. In *Journal of Economy and Society*. Vol. 29, No. 1, 1990.

Andersson, U., Forsgren, M. and Pedersen, T. *The MNC as a Differentiated Network: Subsidiary Technology Embeddedness and Performance.* Copenhagen Business School, 1999.

Anson, R. and Simpson, P. World Textile Trade and Production Trends. In *Textile Outlook International*, January 1998.

Antonelli, C. The Evolution of the Industrial Organisation of the Production of Knowledge. In *Cambridge Journal of Economics*, Vol. 23, 1999. Special Issue.

Appelbaum, R., Smith, D. and Christerson, B. Commodity Chains and Industrial Restructuring in the Pacific Rim: Garment Trade and Manufacturing. In Gereffi, G. and Korzeniewicz, M. (eds.), *Commodity Chains and Global Capitalism*. Greenwood Press 1994.

Archer, M. *Realist Social Theory: The Morphogenetic Approach*. Cambridge University Press, 1995.

Asheim, B. T. "Learning Regions" in a Globalised World Economy: Towards a New Competitive Advantage of Industrial Districts. In Taylor, M. and Conti, S. (eds.), *Interdependent and Uneven Development: Global–Local Perspectives*. Ashgate Publishing, 1997.

AutoAsia. Land of the Pickup. Thailand Special Report. October 1997.

AutoAsia. Ford: Global Ambition Drives a Long-Delayed Return to Asia. December 1997.

AutoAsia. Honda Takes Control of Thai Joint Venture. May/June 1998.

AutoAsia. MMC Shakes Up Vendor Base. September/October 1998.

Bangkok Bank: Industry Focus: Automobile Industry. In *Bangkok Bank Monthly*. Vol. 37, No. 10, October 1996a.

Bangkok Post. Big Business in Thailand: Profiles of Prominent Thai business groups. AMIC Co, Ltd. Bangkok, Thailand, 1996b.

Bangkok Post. Family Firm Drives Safely. 12 June 1997.

Bangkok Post. 1998 Year-end Economic Review.

Barnes, J. and Kaplinsky, R. Globalisation and the Death of the Local Firm? The Automobile Components Sector in South Africa. In *Regional Studies*, Vol. 34, No. 9, 2000.

Bathelt, H., Malmberg, A. and Maskell, P. *Cluster and Knowledge: Local Buzz, Global Pipelines and the Process of Knowledge Creation.* DRUID Working Paper No. 02-12, 2002.

Blanc, H. and Sierra, C. The Internalisation of R&D by Multinationals: A Trade-Off between External and Internal Proximity. In *Cambridge Journal of Economics*, Vol. 23, 1999. Special Issue.

BOI. Office of the Board of Investment. *Investment Opportunity Study: Automotive and Autoparts Industries in Thailand*. Office of the Board of Investment, 1995.

Boyer, R. and Hollingsworth, J. R. From National Embeddedness to Spatial and Institutional Nestedness. In Hollingsworth, J. R. and Boyer, R. (eds.), *Contemporary Capitalism: The Embeddedness of Institutions*. Cambridge University Press, 1997. Bun, C. K. State, Economy and Culture: Reflections on the Chinese Business Networks. In Bun, C. K. (ed.), *Chinese Business Networks: State, Economy and Culture*. Pearson Education Asia Pte. Ltd, Nordic Institute of Asian Studies, 2000.

Buranathanung, N. The Organization of Parts Procurement in the Thai Automobile Industry. In *Chulalongkorn Journal of Economics*, Vol. 8, No. 1, January 1996.

Buranathanung, N. Rationalization of Japan-based Multinational Enterprises' Automobile Components Production in ASEAN. In *Chulalongkorn Journal of Economics*, Vol. 9, No. 3, 1997.

Business Thailand. The Rise and Fall of Viriyapands. August 1999.

Chantramonklasri, N. Science and Technology in Thailand's Industrial Sector. In Yuthavone, Y. and Vojcik, A. M. (eds.), *Science and Technology in Thailand: Lessons from a Developing Economy*. NSTDA/UNESCO Publishing, 1997.

Chirathivat, D. and Chantrasawang, N. Current Issues of SMEs in Thailand: The Impact of the Financial Crisis and its Linkages to Foreign Affiliates. In *Chulalongkorn Journal of Economics*, Vol. 12, No. 3, 2000.

Clegg, R. R. and Redding S. G. (eds.). *Capitalism in Contrasting Cultures*. Walter de Gruyter, Berlin and New York, 1990.

Cohen, W. M. and Levinthal, D. A. Absorptive Capacity: A New Perspective on Learning and Innovation. In Cross, R. and Israelit, S. (eds.), *Strategic Learning in a Knowledge Economy: Individual, Collective, and Organisational Learning Process.* Butterworth-Heinemann, 2000.

Cooke, P. and Morgan, K. Growth Regions under Duress: Renewal Strategies in Baden-Wurttemberg and Emilia-Romagna. In Amin, A. and Thrift, N. (Eds.), *Globalization, Institutions, and Regional Development in Europe*. Oxford University Press, 1994.

Cross, R. and Israelit, S. Introduction. In Cross, R. and Israelit, S. (Eds.), *Strategic Learning in a Knowledge Economy: Individual, Collective, and Organisational Learning Process*. Butterworth-Heinemann, 2000.

DEP: Technology Adoption by Small and Medium Enterprises in Thailand. Thailand and its Textile Industry: An Overview. Department of Industrial Promotion, 1995. Deyo, F. C. and Doner, R. F. Introduction: Economic Governance and Flexible Production in East Asia. September 1999. In Deyo, F.C., Doner, R. F. and Hershberg, E. (eds.), *Economic Governance and the Challenge of Flexibility in East Asia*. Rowman and Littlefield, 2001a.

Deyo, F. C. and Doner, R. F. Dynamic Flexibility and Sectoral Governance in the Thai Auto Industry: The Enclave Problem. In Deyo, F.C. Doner, R. F. and Hershberg, E. (eds.), *Economic Governance and the Challenge of Flexibility in East Asia*. Rowman and Littlefield Publishers, INC. 2001b.

Dicken, P., Forsgren, M. and Malmberg, A. The Local Embeddedness of Transnational Corporations. In Amin, N. and Thrift, N. (eds.), *Globalization*, *Institutions, and Regional Development in Europe*. Oxford: Oxford University Press, 1994.

Dicken, P., Kelly, P. F., Olds, K. and Yeung, H. W. Chains and Networks, Territories and Scales: Towards a Relational Framework for Analysing the Global Economy. In *Global Networks*, Vol. 1, No. 2, 2001.

Dicken, P. and Yeung, H. W. Investing in the Future: East and Southeast Asian Firms in the Global Economy. In Olds, K., Dicken, P., Kelly, P. F., Kong, L. and Yeung, H. W. *Globalisation and The Asia-Pacific*. Routledge, London and New York, 1999.

Doner, R. F. Weak State, Strong Country? The Thai Automobile Case. In *Third World Quarterly*, October 1988.

Doner, R. F. Driving a Bargain: Automobile Industrialization and Japanese Firms in Southeast Asia. University of California Press, 1991.

Doner, R. F. Politics and the Growth of Local Capital in Southeast Asia: Auto Industries in the Philippines and Thailand. In McVey, R. (ed.), *Southeast Asian Capitalists*. Southeast Asia Program. Cornell University, 1992.

Doner, R. F. Institutions and Economic Upgrading: An Analytical Framework with Application to Thailand. Paper presented at the Graduate School of International Development Studies, Roskilde University Centre, 2002.

Doner, R. F. and Ramsay, A. Postimperialism and Development in Thailand. In *World Development*, Vol. 21, No. 5, 1993.

Dubey-Villinger N. Thai Business Culture: Hierarchy and Groups, Initiative and Motivation. In Kidd, J. B. et al. (eds.), *Advances in Human Resource Management in Asia*. Palgrave 2001.

Dulbecco, P and Vagneron, I. Competition, Co-operation and Subcontracting: Lessons from the Clothing Industry in Thailand. In *The European Journal of Development Research*, Vol. 13, No. 2, 2001.

Dunning, J, H. *Globalization Economic Restructuring and Development*. The Raul Prebisch Lecture. UNCTAD, 1994.

Engberg-Pedersen, L. Institutionel teori i 1990'erne. Institutionsbegrebets mange betydinger. In *Den Ny Verden*, No. 3, 1997.

Ernst, D. From Partial to Systemic Globalization: International Production Networks in the Electronics Industry. BRIE Working Paper 98, University of California at Berkeley, 1997.

Ernst, D., Ganiatsos T. and Mytelka L. Technological Capabilities in the Context of Export-Led Growth: A Conceptual Framework. In Ernst, D., Ganiatsos T. and Mytelka L. *Technological Capabilities and Export Success in Asia*. UNCTAD, Routledge, 1998.

Ernst, D. and Kim, L. Global Production Networks, Knowledge Diffusion, and Local Capability Formation. In *Research Policy*, Vol. 31, 2002.

Ernst, D. and Lundvall, B.-Å. *Information Technology in the Learning Economy: Challenges for Developing Countries*. DRUID Working Paper No. 12, 1997.

Fleming, D. and Søborg, H. Organisation and Competence as Core Priorities: Human Resource Strategies as a Technology of Governance in Danish Subsidiaries in Southeast Asia. Paper presented to the Nordisk Arbeidslivskonferense: Norden i verden, verden i Norden. Tema: Globalisering af ny teknologi Stavanger 23-26 September 1999.

Flyvbjerg, B. Rationalitet og magt Bd.1.: Det konkretes videnskab. Akademisk Forlag, København, 1991.

Forsgren, M. and Johanson, J. Managing Internationalization in Business Networks. In Forsgren, M. and Johanson, J. (eds.), *Managing Networks in International Business*. Gordon and Breach Science Publishers, 1992.

Forsgren, M., Hägg, I., Håkansson, H., Johanson, J. and Mattsson, L. G. *Firms in Networks: A New Perspective on Competitive Power*. Acta Universitatis Upsaliensis, Sweden, 1995.

Fransman, M. Information, Knowledge, Vision and Theories of the Firm. In Dosi, G., Teece, D. J. and Chytry, J. (Eds.), *Technology, Organization and*

Competitiveness: Perspectives on Industrial and Corporate Change. Oxford University Press, 1998.

Freeman, C. *The Economics of Industrial Innovation*. Frances Pinter, London 1982.

FTI. Automotive Industry Club of the Federation of Thai Industries. *Thailand Automotive Industry Directory* 1997.

Gereffi, G. The Organization of Buyer-Driven Global Commodity Chains: How US Retailers Shape Overseas Production Networks. In Gereffi, G. and Korzeniewicz, M. (eds.), *Commodity Chains and Global Capitalism*. Greenwood Press, 1994.

Gereffi, G. Global Production Systems and Third World Development. In Stallings, B. (ed.), *Global Change, Regional Response*. Cambridge University Press, 1995.

Gereffi, G. Global Commodity Chains: New Forms of Coordination and Control Among Nations and Firms. In *Competition and Change* Vol. 4, 1996.

Gereffi, G. A Commodity Chains Framework for Analyzing Global Industries. Duke University Press 1999a.

Gereffi, G. Industrial Upgrading in the Apparel Commodity Chain: What can Mexico learn from East Asia? Paper present to the International Conference on Business Transformation and Social Change in East Asia, Tunghai University Institute of East Asian Societies and Economies, Tahichung, Taiwan, 1999b.

Gereffi, G., Korzeniewicz, M. and Korzeniewicz, R. Introduction: Global Commodity Chains. In Gereffi, G. and Korzeniewicz, M. (eds.), *Commodity Chains and Global Capitalism*. Greenwood Press 1994.

Gereffi, G. and Memedovic, O. *The Global Apparel Value Chain: What Prospects for Upgrading by Developing Countries?* UNIDO, Vienna 2003.

Gereffi, G., Humphrey, J. and Surgeon, T. The Governance of Global Value Chains. In *Review of International Political Economy*. November 4, 2003.

Gertler, M. S. Tacit Knowledge and the Economy Geography of Context; or the Undefinable Tacitness of Being (There). Paper presented to the Nelson and Winter DRUID Summer Conference, Aalborg, Denmark, 12-15 June 2001.

Ghoshal, S. and Bartlett, C. A. The Multinational Corporation as an Interorganizational Network. In *Academy of Management Review*, Vol. 15, No. 4, 1990. Ghoshal, S. and Bartlett, C. A. The Multinational Corporation as an Interorganizational Network. In Ghoshal, S. and Westney, D. E. (eds.), *Organization Theory and the Multinational Corporation*. St. Martin's Press, 1993.

Grabher, G. Rediscovering the Social in the Economics of Inter-firm Relations. In Grabher, G. (Ed.), *The Embedded Firm: On the Socioeconomics of Industrial Networks*. Routledge, London and New York, 1993.

Granovetter, M. Economic action and Social Structure: The Problem of Embeddedness. In *American Journal of Sociology*, Vol. 91, 1985.

Granovetter, M. Problems of Explanation in Economic Sociology. In Nohria, N. and Eccles, R. (eds.), *Structure, Form, and Action*, Harvard, 1992.

Granovetter, M. Business Groups. In Smelser, N. J. and Swedberg, R. (eds.), *The Handbook of Economic Sociology*. Princeton University Press, New York, 1994.

Gudmundsson, G. Old Wine in New Bottles: The Concepts of Competence and Qualification. In *Global Redefining of Working Life: A New Agenda for Competence and Participation*. Nordic Council of Ministers, Copenhagen, 1998.

Hamilton, G. G. The Theoretical Significance of Asian Business Networks. In Hamilton, G. G. (ed.), *Asian Business Networks*. Walter de Gruyter, Berlin and New York, 1996.

Henderson, J., Dicken, P., Hess, M., Coe, N. and Yeung, H. W. Global Production Networks and the Analysis of Economic Development. In *Review of International Political Economy*, Vol. 9, No. 3, 2002.

Hildebrandt, S. and Brandi, S. *Lærende organisationer: erfaringer fra danske virksomheder*. Børsens Bogklub, 1998.

Hirst, P. and Thompson, G. Globalization in Question. Polity Press, 1996.

Hobday, M. Innovation in Asian Industrialization: A Gerschenkronian Perspective. In *Oxford Development Studies*, Vol. 33, No. 3, 2003.

Hollingsworth, J. R. and Boyer, R. Coordination of Economic Actors and Social Systems of Production. In Hollingsworth, J. R. and Boyer, R. (Eds.), *The Embeddedness of Institutions*. Cambridge University Press, 1997. Hudson, R. The Learning Economy, the Learning Firm and the Learning Region. In *European Urban and Regional Studies*, Vol. 6. No. 1, 1999.

Humphrey, J. Assembler–Supplier Relations in the Auto Industry: Globalisation and National Development. In *Competition and Change*, Vol. 4, No. 3, 2000.

Humphrey, J. and Memedovic, O. *The Global Automotive Industry Value Chain: What Prospects for Upgrading by Developing Countries*? UNIDO, Vienna 2003.

Humphrey, J. and Schmitz, H. Governance and Upgrading in Global Value Chains. *Paper presented to the Ballagio Value Chain Workshop*, Rockefeller Conference Centre, Bellagio 2000.

Hveem, H. Global Governance and Development: A Political EconomyPerspective. Paper presented to the Globasia Conference on Global Change,Global Governance and National Economic Restructuring, Arresødal Denmark,3-5 October 2001.

Håkanson, L. *Creating Knowledge: The Power and Logic of Articulation*. Copenhagen Business School Working Paper, 2002.

Håkansson, H. and Johanson, J. The Network as a Governance Structure. In Grabher, G. (ed.), *The Embedded Firm*, Routledge, London and New York, 1993.

Industry Analysis: Thailand: Automotive, 2000.

Intarakamnerd, P., Chairatana, P. and Tangchitpiboon, T. *National Innovation Systems in Less Successful Developing Countries: The Case of Thailand.* DRUID/IKE Group, Department of Business Studies, Aalborg University, 2001.

Itami, H. The Structural Upgrading of East Asian Economies and Industrial Networks. In Institute of Developing Economies and Japan External Trade Organisation (ed.), *Can Asia Recover its Vitality? Globalization and the Roles of Japanese and U.S. Corporations*. Institute of Developing Economies. Tokyo 1998.

Japan International Cooperation Agency (JICA). A Study on Industrial Sector Development in the Kingdom of Thailand, Japan International Cooperation Agency June 1989. Japan International Cooperation Agency (JICA). *The Study on Industrial Sector Development: Supporting Industries in the Kingdom of Thailand*. UNICO International Corporation, Tokyo, Japan 1995.

Japan International Cooperation Agency (JICA). *The Follow-up Study on Supporting Industries Development in the Kingdom of Thailand*. UNICO International Corporation, Tokyo, Japan 1999.

Jeong, J. and Wad, P. Business Relations in Crisis? The Case of the National Auto Manufacturers in South Korea and Malaysia during the East Asian Crisis. Paper presented to the International Research Conference on Business in Development: Local Companies between Social Embeddedness and Globalization, Copenhagen Business School, November 1999.

Jessop, B. Reflections on Globalisation and its (II)logic(s). In Olds, K., Dicken, P., Kelly, P. F., Kong, L. and Yeung, H. W, *Globalisation and The Asian-Pacific*. Routledge, London and New York, 1999.

Johnson, B. Institutional Learning. In Lundvall, B.-Å. (Ed.), *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning.* Pinter, London and New York, 1992.

Johnson, B. and Lundvall, B.Å. The Learning Economy. In *Journal of Industry Studies*, Vol. 1., No. 2., 1994.

Kamaruding, A. *Thailand: Industrialization through Foreign Technology. The Case of Technology Transfer to Thailand through Japanese Foreign Direct Investment.* Department of Economics at the University of Lund. Minor Field Study Series No. 52, 1994.

Kamaruding, A. Promoting Industrial and Technological Development under Contrasting Industrial Policies: The Automobile Industries in Malaysia and Thailand. In Jomo, K. S., Felker, G. and Rasiah, R. (Eds.), *Industrial Technology Development in Malaysia: Industry and Firm Studies*. Routledge, 1999.

Kamaruding, A. Government Policy, Liberalisation and Globalisation of the Automobile Industry in Thailand. In *Business and Society*, Vol. 2., No. 1, 2001.

Kamaruding, A. Building Technological Capabilities of Local Auto Parts Firms under Contrasting Industrial Policies: A Comparative Study of Malaysia and Thailand 1960-2000. Lund University, 2003.

Keller-Herzog, A. and Szabo, S. Globalization and Development. In *Development Express: Canadian International Development Agency*, No. 8, 1997.

Kelly, P. F. and Olds, K. Questions in a Crisis: The Contested Meanings of Globalisation in the Asia-Pacific. In Olds, K., Dicken, P., Kelly, P. F., Kong, L. and Yeung, H. W. *Globalisation and the Asia-Pacific*. Routledge, London and New York, 1999.

Knudsen, C. Økonomisk virksomhedsteori: Et videnskabsteoretisk studium af ortodokse og moderne forskningsprogrammer. In Davis, L., Hansen, K. M., Lotz, P. and Thomsen, S. (eds.), *Organisering af økonomiske aktiviteter*. Samfundslitteratur, 1990.

Kong, I. Globalisation, Transmigration and the Renegotiation of Ethnic Identity. In Olds, K., Dicken, P., Kelly, P. F., Kong, L. and Yeung, H. W. *Globalisation and The Asia-Pacific*. Routledge, London and New York, 1999.

Kragelund, P. Upgrading of SMEs through Technology Transfer in Ghana: A Review of the Literature. Paper presented to the Graduate School of International Development Studies, Roskilde University Centre, 2003.

Kriengkrai, T: A Study of Inter-firm Technology Transfer in the Thai Automobile Industry. Dissertation, Thammasat University, Thailand 2003.

Kulsiri, P. Local Firm's Learning in International Alliances: Selected Industries in Thailand. Ph.D Dissertation, Chulalongkorn University, 1999.

Lall, S. A Study of Multinational and Local Firm Linkages in India. In Lall, S. *Multinationals, Technology and Exports*. London: Selected Papers, 1985.

Lall, S. Promoting Industrial Competitiveness in Developing Countries: Lessons from Asia. In *Economic Papers 39*. Commonwealth Secretariat, October 1999.

Lam, A. 'Tacit Knowledge, Organisational Learning and Innovation: A Societal Perspective'. DRUID Working Paper No. 92-22, 1998a.

Lam, A. The Social Embeddedness of Knowledge: Problems of Knowledge Sharing and Organisational Learning in International High-Technology Ventures. DRUID Working Paper No. 7, 1998b.

Laothamatas, A. Business Associations and the New Political Economy of *Thailand: From Bureaucratic Polity to Liberal Corporatism.* Westview Press, Institute of Southeast Asian Studies, Singapore, 1992.

Lauridsen, L. S. Globaliseringens former og grænser: Fra teorier om kapitalens internationalisering til teorier om økononomiens globalisering. I: *Den Ny Verden*, No. 3., 1997.

Lauridsen, L. S. Økonomisk globalisering og staten i Østasien: tilfældet Taiwan. Working Papers No. 7, International Development Studies. Roskilde University 1998.

Lauridsen, L. S. *Financial Crisis, Structural Problems and Linkage Policy in Thailand in the 1990s.* Paper presented to the 7th International Conference on Thai Studies, Amsterdam, 4-8 July 1999.

Lawson, C. Towards a Competence Theory of the Region. In *Cambridge Journal of Economics*, Vol. 23, 1999. Special Issue.

Lazaric, N. and Lorenz, E. Introduction: The Learning Dynamics of Trust, Reputation and Confidence. In Lazaric, N. and Lorenz, E. (Eds.), *Trust and Economic Learning*. Edward Elgar Publishing Limited, 1998.

Lee, D. and Newby, H. *The Problem of Sociology: Introduction to the Discipline*. Unwing Hyman, 1989.

Lim, Y. C. and Fong, P. E. Foreign Investment in the Automobile Industry. In *Foreign Direct Investment and Industrialisation in Malaysia, Singapore, Taiwan and Thailand*. Development Centre Studies, OECD, 1991.

Lorentzen, A. and Granerud. L. Teknologioverførsel og teknologisk udvikling. In Teknologi på tværs. Videnstrømme mellem I- og U-lande. *Den Ny Verden*, No. 1, 1999.

Lorenzen, M. Localised Learning and Community Capabilities. On Organisation of Knowledge in Markets, Firms and communities: The Case of Danish Furniture Producers. Copenhagen: Samfundslitteratur, 1999.

Lorenzen, M. and Romme, U. Rumligt afgrænsede institutioner: Information, entreprenørånd og samarbejde mellem møbelproducenter i Sallingområdet, København: Geografisk Institut, 1994.

Lorenz, E. Models of Cognition, the Contextualisation of Knowledge and Evolutionary Organisational Theory. Paper prepared for the Nelson and Winter Conference, Aalborg, June 12-15, 2001.

Lundvall, B.-Å. Introduction. In Lundvall, B.-Å. (ed.), *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. Pinter, London and New York 1992.

Lundvall, B.-Å. Nation States, Social Capital and Economic Development: A System's Approach to Knowledge Creation and Learning. Paper presented to the International Seminar on Innovation, Competitiveness and Environment in

Central America, San José, Costa Rica, 1999. Department of Business Studies, Aalborg University, 1998.

Lundvall, B.-Å. *Knowledge Production and the Knowledge Base*. Department of Business Studies, Aalborg University, November 1999.

Lundvall, B.-Å. and Johnson, B. The Learning Economy. *Journal of Industry Studies*, Vol. 1, No. 2, 1994.

Mackie, J. The Economic Roles of the Southeast Asian Chinese: Information Gaps and Research Needs. In Bun, C. K. (ed.), *Chinese Business Networks: State, Economy and Culture*. Pearson Education Asia Pte. Ltd, Nordic Institute of Asian Studies, 2000.

Malmberg, A. Industrial Geography: Agglomeration and Local Milieu. In *Progress in Human Geography*, Vol. 20, No. 3, 1996.

Malmberg, A. Industrial Geography: Location and Learning. In *Progress in Human Geography*, Vol. 21, No. 4. 1997.

Maskell, P. Knowledge Creation and Diffusion in Geographical Clusters. In *International Journal of Innovation Management*, Vol. 5, No. 2, 2001.

Maskell, P., Eskelinen, H., Hannibalsson, I., Malmberg, A. and Vatne E. Firm Competitiveness through Knowledge Creation. In Maskell, P., Eskelinen, H., Hannibalsson, I, Malmberg, A. and Vatne, E. (eds.). *Competitiveness, Localised Learning and Regional Development: Specialisation and Prosperity in Small Open Economies*. Routledge, 1998.

Maskell, P. and Malmberg, A. Localised Learning and Industrial Competitiveness. Paper presented to the Regional Studies Association European Conference on Regional Futures, Gothenburg, 6-9 May 1995.

Maskell, P. and Malmberg, A. Localised Learning and Industrial Competitiveness. In *Cambridge Journal of Economics*, Vol. 23, 1999. Special Issue.

Maxton, G. P. The Emerging Automotive Markets of Asia Pacific. In *Research Report, The Economic Intelligence Unit*, 1996.

McKelvey, M. How do National Systems of Innovation Differ?: A Critical Analysis of Porter, Freeman, Lundvall and Nelson. In Hodgson, G. M. and Screpanti, E. (Eds.), *Rethinking Economics: Markets, Technology and Economic Evolution*. Edward Elgar Publishing, England, 1991.

Muscat, R. J. *Family Enterprise in Thailand*. Information Centre, Centres of Academic Resources, Chulalongkorn University, 1987.

Nelson, R. R. (ed.), *National Innovation Systems: A Comparative Analysis*. New York AND Oxford, Oxford University Press, 1993.

Nelson, R. R. and Winter S. G. *An Evolutionary Theory of Economic Change*. The Belknap Press of Harvard University Press. Cambridge and London, 1982.

Nielsen, K. Industrielle Netværk. Systeme/Gad, 1993.

Nonaka, I. and Takeuchi, H. *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press, 1995.

Nonaka, I. Toyama, R. and Nagata, A. A Firm as a Knowledge-creating Entity: a New Perspective on the Theory of the Firm. In *Industrial and Corporate Change*, Vol. 9, No. 1, 2000.

Nooteboom B. Innovation, Learning and Industrial Organisation. In *Cambridge Journal of Economics*, Vol. 23, 1999. Special Issue.

Nordhaug, K. Globalization and the State: Theoretical Paradigms. Paper presented to the Globasia Conference on Global Change, Global Governance and National Economic Restructuring, Arresødal Denmark, 3-5 October 2001.

Numazaki, I. The Role of Personal Networks in the Making of Taiwan's Guanxiqiye (Related Enterprises). In Hamilton, G. G. (ed.), *Asian Business Networks*. Walter de Gruyter, Berlin and New York, 1996.

Numazaki, I. Chinese Business Enterprise as Inter-family Partnership: A Comparison with the Japanese Case. In Bun, C. K. (ed.), *Chinese Business Networks: State, Economy and Culture.* Pearson Education Asia Pte. Ltd, Nordic Institute of Asian Studies, 2000.

Office of the BOI: *The Investment Environment in Thailand*: Office of the Prime Minister, Royal Thai Government, September 1997.

Orrú, M., Biggart, N. W. and Hamilton, G.G. (Eds.), *The Economic Organization of East Asian Capitalism.* London: SAGE Publications, 1997.

Page, J.M. The East Asian Miracle: An Introduction. In *World Development*, Vol. 22, No. 4, 1994.

Phongpaichit, P. and Baker, C. *Thailand, Economy and Politics*. Oxford University Press, 1995.

Phongpaichit, P. and Baker, C. Thailand's Crisis. Silkworm Books, 2000.

Piore, M.J. and Sabel, C. *The Second Industrial Divide: Possibilities for Prosperity.* Basic Books, New York, 1984.

Poapongsakorn, N. and Fuller, B. The Role of Foreign Direct Investment and Production Networks in the Development of the Thai Auto and Electronics Industries. In Institute of Developing Economies and Japan External Trade Organisation (Ed.), *Can Asia Recover its Vitality? Globalization and the Roles of Japanese and U.S. Corporations*. Institute of Developing Economies. Tokyo 1998.

Poapongsakorn, N. and Thonguthai, P. Technological Capability Building and the Sustainability of Export Success in Thailand's Textile and Electronics Industries. In Ernst, D., Ganiatsos, T and Mytelka, L. (Eds.), *Technological Capabilities and Export Success in Asia*. Routledge, 1998.

Poapongsakorn, N. and Wangdee, C. The Impact of Technological Change and Corporate Reorganization in the ASEAN Automotive Industry. Downloaded from *ASEAN Research* 2000.

Prahalad, C.K. and Hamel, G. The Core Competence of the Corporation. In Cross, L. R and Israelit, S. B. (eds.), *Strategic Learning in a Knowledge Economy: Individual, Collective and Organisational Learning Process.* Butterworth-Heinemann, 2000. Reprinted by permission of *Harvard Business Review*, May-June, 1990.

Pussarangsri, B. and Chamnivickorn, S. Trade Liberalisation and FDI Policies of ASEAN Countries. In *The Singapore Economic Review*, Vol. 40, No. 2, 1996.

Rasiah, R. Liberalization and the Car Industry in Southeast Asia. Paper prepared for the Conference on Governance, Mechanisms and Network Dynamics, Copenhagen Business School, Copenhagen 1999.

Sage, L. A. Winning the Innovation Race: Lessons from the Automotive Industry's Best Companies. Ernst and Young LLP. John Wiley & Sons, 2000.

Sanchez, R. and Heene, A. A. Competence Perspective on Strategic Learning and Knowledge Management. In Cross, L. R and Israelit, S. B. (eds.), *Strategic Learning in a Knowledge Economy: Individual, Collective and Organisational Learning Process.* Butterworth-Heinemann, 2000. Sandström, M. The Culture Influence on International Business Relationships. In Forsgren, M. and Johanson, J. (eds.), *Managing Networks in International Business*. Gordon and Breach, Philadelphia etc., 1992.

Sayer, A. *Method in Social Science: A Realist Approach*. Second Edition. Routledge, London and New York, 1992.

Sayer, A. *Realism and Social Science*. Sage Publications, London, Thousand Oaks and New Delhi, 1999.

Schaumburg-Müller, H. International Business Relations: Sourcing and intermediaries in Malaysia and Thailand. Paper for the Business in Development Conference Copenhagen Business School, 18-19 November 1999.

Schmidt, J. D. Semi-autonomy in Economic Policy-making: The Case of *Thailand*. Aalborg University: Department of Development and Planning, 1994.

Schmitz, H. and Knorringa, P. Learning from Global Buyers. In *Journal of Development Studies* Vol. 37, No. 2, 2000.

Schreffler, R. Japan's Motor Industry: Reshaping for the Future. In *Research Report: The Economist Intelligence Unit*, 1995.

Scott, A.J. *Metropolis – From Division of Labor to Urban Form.* Berkeley: University of California, 1988.

Seko, M. The Information Requirements of Trust in Supplier Relations: Evidence from Japan, Europe and the United States. In Lazaric, N. and Lorenz, E. (eds.), *Trust and Economic Learning*. Edward Elgar Publishing Limited, 1998.

Semlinger, K. Small Firms and Outsourcing as Flexibility Reservoirs of Large Firms. In Grabher, G. (ed.) *The Embedded Firm*. London and New York: Routledge, 1993.

Shimokawa, K. *The Japanese Automobile Industry: A Business History*. The Athlone Press, London and Atlantic Highlands, 1994.

Sibunruang, A. and Brimble, P. Export Oriented Industrial Collaboration: A Case Study of Thailand. Paper prepared for the United Nations Centre on Transnational Corporations, Bangkok, 1992.

Siriprachai, S. Inconsistencies and Inequities in Thai Industrialisation. In Schmidt, J. D.; Hersh, J. and Fold, N. (eds.), *Social Change in Southeast Asia*. New York: Addison Wesley Longman, 1998.

Siu-lun, W. Chinese Entrepreneurs and Business Trust. In Hamilton, G. G. (Ed.), *Asian Business Networks*. Walter de Gruyter, Berlin and New York, 1996.

Smelser, N. J. and Swedberg, R. The Sociological Perspective on the Economy. In Smelser, N. J. and Swedberg, R. (eds.), *The Handbook of Economic Sociology*. Russell Sage Foundation, published by Princeton University Press, 1994.

Soskice, D. The Institutional Infrastructure for International Competitiveness: A Comparative Analysis of the UK and Germany. In Atkinson, A. B. and Brunetta, R. (eds.), *Economics for the New Europe*. In association with the International Economic Macmillan Association, 1991.

Srichom, K. and Itoga, S. The Problems of Industrial Relations in Automobile and Textile Sector. In Piriyarangsan, S. and Itoga, S. (eds.), *Industrial Relations System in Thailand*. Institute of Developing Economies, Tokyo 1996.

Storper, M. *The Regional World: Territorial Development in a Global Economy*. The Guilford Press, 1997.

Storper, M. and Scott, A. J. The Geographical Foundation and Social Regulation of Flexible Production Complexes. In Wolch, J. and Dear, M. (eds.), *The Power of Geography*. Boston: Unwin Hyman, 1989.

Swedberg, R. and Granovetter, M. Introduction. In Swedberg, R. and Granovetter, M. (Eds.), *The Sociology of Economic Life*. Westview Press, 1992.

Suehiro, A. *Development and Structure of Textile Industry in Thailand 1946-1980.* Institute of Developing Economies, Tokyo. September 1983.

Suehiro, A. *Capital Accumulation in Thailand 1855-1985*. The Centre of East Asian Cultural Studies, Tokyo, 1989.

Suehiro, A. Family Business Reassessed: Corporate Structure and Late-Starting Industrialisation in Thailand. In *The Developing Economies*, Vol. 31, No. 4, Dec. 1993.

Suphachalasai, S. *Thailand's Clothing and Textile Export*. Occasional PaperS, No. 89. Institute of Southeast Asian Studies, 1994.

Taplin, I. and Winterton, J. Restructuring Strategies: Global Pressures, Local Responses. In. Mcdonald, F. and Thorpe, R. *Organisational Strategy and Technological Adaptation to Global Change*, Macmillan, 1998.

Terdudomtham, T. *The Automobile Industry in Thailand*. Thailand Development Research Institute, September 1997.

Thailand and Burma Handbook. Trade and Travel Publications Ltd, September 1995.

Thrift, N. The Globalisation of the System of Knowledge. In Olds, K., Dicken, P., Kelly, P. F., Kong, L. and Yeung, H. W. *Globalisation and The Asia-Pacific*. Routledge, London and New York, 1999.

Thrift, N. and Olds, K. Refiguring the Economic in Economic Geography. In *Progress in Human Geography* Vol. 20, No. 3, 1996.

The World Bank Group, 2000. On line, at www.devdata.worldbank.org

Turner, B. A. Some Practical Aspects of Qualitative Data Analysis: One Way of Organising the Cognitive Processes Associated with the Generation of Grounded Theory. In *Quality and Quantity*, Vol. 15, 1981.

Tyndall, P. S. Regional Trading and Industrial Arrangements in the ASEAN Automotive Sector. Downloaded from *ASEAN research*, 2001.

UNIDO. Industrial Development Report 2002/2003: Competing Through Innovation and Learning, Vienna, 2003.

Wad, P. Critical Realism and Comparative Sociology. Paper presented to the Fifth IACR Conference, Roskilde University Centre, 2001.

Wad, P. and Jeong, J. Business Relations in Crisis? The Case of the National Auto Manufacturers in South Korea and Malaysia during the East Asian Crisis. Paper presented to the International Research Conference on Business in Development: Local Companies between Social Embeddedness and Globalization, Copenhagen Business School, 1999.

Wade, R. Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization. Princeton: Princeton University Press, 1990.

Wade, R. Global Inequality; Winners and losers. In *The Economist*, 28 April 2001.

Warr, P. The Thai Economy. In Warr, P. (ed.), *The Thai Economy in Transition*. Cambridge University Press, 1993.

Weiss, L. *Globalization and State Power*. In Occasional Paper No. 21, International Development Studies, Roskilde University 2001.

Wei-ping, W. Transaction Cost, Cultural Values and Chinese Business Networks: An Integrated Approach. In Bun, C. K. (ed.), *Chinese Business Networks: State, Economy and Culture.* Pearson Education Asia Pte. Ltd, Nordic Institute of Asian Studies, 2000.

Whitley, R. Business Systems in East Asia: Firms, Markets and Societies. London: SAGE Publications, 1992.

Whitley, R. Business Systems and Global Commodity Chains: Competing or Complementary Forms of Economic Organisation? In *Competition and Change*, Vol. 1, 1996.

Womack, J.P., Jones, D. T. and Ross, D. *The Machine that Changed the World*. Macmillan, 1990.

Woolcock, M. Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework. In *Theory and Society*, Vol. 27, No. 2, 1998.

Yeung, H. W. Critical Reviews of Geographical Perspectives on Business Organisations and the Organisation of Production: Towards a Network Approach. In *Progress in Human Geography*, Vol. 18, No. 4, 1994.

Yeung, H. W. Critical Realism and Realist Research in Human Geography: A Method or a Philosophy in Search of a Method? In *Progress in Human Geography*, Vol. 1, No. 21, 1997.

Yeung, H. W. The Dynamics of Asian Business Systems in a Globalizing Era. In *Review of International Political Economy*, Vol. 7, No. 3, 2000.

Yeung, H. W. Towards a Relational Economic Geography: Old Wine in New Bottles? Paper Presented TO the 98th Annual Meeting of the Association of American Geographers, Los Angeles, 9-23 March 2002.

Yeung, H. W. Practising New Economic Geographies: A Methodological Examination. In *Annuals of the Association of American Geographers*. Vol. 93, No. 2, 2003.

Yin, R. K. *Case Study Research: Design and Methods*. Sage Publications, 1989.

Yoshida, M. Characteristics of Foreign Direct Investment in Thailand. In Tokunagam S. (ed.), *Japan's Foreign Investment and Asian Economic Interdependence*. University of Tokyo Press, 1992.

Yue, C. S. Foreign Direct Investment in ASEAN Economies. In Asian Development Review, Vol. 11, No. 1, 1993.

Zysman, J.; Doherty, E. and Schwartz, A. *Tales From the 'Global' Economy: Cross National Production Networks and the Re-organization of the European Economy.* BRIE Working Paper 83, University of California at Berkeley, 1996.

Statistics

JETRO, 2000. Various statistics on the development of the automotive business, obtained from JETRO through personal interview.

Textile Industry Division: Opening Ceremony of the Textile Chemistry and Quality Building and Announcement of the Project on Testing and Inspection Technology Upgrading for Textile and Garment Products. Department of Industrial Promotion, 16 March 2000.

Thai Textile Statistics. Textile Industry Division, Bureau of Industrial Sectors Development, Department of Industrial Promotion, 1998.

Toyota. Public Relations Office, Toyota Motor, Thailand Co., LTD., 2000.

UNESCO Statistical Yearbook 1999, on line. www.uniescostat.unesco.org/

www.dip.go.th. website on SME strategies. Department of Industrial Promotion.

Appendices

Appendix One

Persons Interviewed, 2000

Representatives of supporting institutions

- Auto-parts Industry Club of the Federation of Thai Industries. Interview with Mr Prakitti Siripraipan, President of Thai Radiator Mfg. Co., Ltd.
- National Science and Technology Development Agency (NSTDA). Interview with Dr Chatri Sripaipan Ph.D., Co-Director, and Dr Thanaphol Virasa, Ph.D., Chief of Industry Research.
- Office of the Board of Investment (BOI). Interview with Dr Wisan Tanthawichian, Ph.D., BUILD, Mr Salil Sisalswadi, Senior Investment Promotion Officer, and Mr Suchart Phisitvanich, Director, Investment Promotion Division 3 (garments).
- Japan International Cooperation Agency (JICA). Interview with Mr Akio Nakamoto, Assistant Resident Representative Thailand Office, and Mr Sakata Hideki, Assistant Resident Representative.
- Japan External Trade Organization (JETRO). Interview with Mr Hiroshi Yoneya, Senior Investment Advisor.
- The Brooker Group Ltd. Interview with Mr George Hooker, Managing Director.
- Bureau of Supporting Industries Development (BSID), Department of Industrial Promotion, Ministry of Industry. Interview with Mr Chakporn Oonjitt, Advanced System Laboratory.
- Textile Industry Division (TID), Bureau of Industrial Sectors Development. Interview with Mr Chanudom Athicraroenkit, Director.
- Thailand Automotive Institute. Interview with Mr Alongkot Chutinan, Executive Director, Mr Klar Chirasanta and Mr Chureerut Suwanvithaya, Director of the Technological Service Division.
- Thai Garment Manufacturers Association (TGMA). Interview with Mr Sakda Thongpalad, Deputy Director.
- Thailand Textile Institute (THTI). Interview with Mr Mana Sethaputhra, Director.
- Thai Auto-Parts Manufacturers Association (TAPMA). Interview with Mr Sookjai Leungmekul, Deputy Secretary-General.
- Thailand Development Research Institute Foundation (TDRI). Interview with Mr Nipon, Director, and Ms Chayhanit Wangdee, Researcher, Sectoral Economics Program.

Representatives of global lead firms in the automotive industry

- Honda Cars Manufacturing (Thailand) Co., Ltd. Interview with Mr Nontasak Siripoke. Purchasing Division Manager.
- Isuzu Motors Co., Ltd (Thailand). Interview with Mr Lertsak Wuttipprasittipol, GM Purchasing Administration Dept.
- Mitsubishi Motors. MSC Sittipol Co., Ltd. Interview with Mr Songkran Chuawiang, Deputy Sections Manager, Production Purchasing Division, and Mr Pinit Leekitvatana, Deputy General Manager.
- Siam Nissan Automobile Co., Ltd. Interview with Mrs Piengjai Keawsuwan, General Manager, Procurement Department, Mr Suring Songtangsuntiku, Parts Purchasing Section, and Mr Thanet Lertwikook, Parts Production Section.
- Auto Alliance (Thailand) Co., Ltd. (Ford and Mazda Joint Venture). Interview with Mr Andrew Bruell, General Manager Purchasing.
- Toyota Motor Thailand Co., Ltd. Interview with Mr Soonthorn Woradejwiseskrai, General Manager, Purchasing Department, Mr Rungsun Ittisirikoonchai, Assistant Manager, Local Parts Purchasing, and Mr Ruj Skolkanarak, Assistant Manager, Local Parts Purchasing.
- Bangchang General Assembly Co., Ltd. Interview with Kosol Surakomol, Managing Director Ph.D.

Representatives of global lead firms in the garment industry

- Associated Merchandising Corporation (AMC). Interview with Mr K.S. Yoon, Managing Director, Thailand, Vietnam.
- JC Penney. Country. Interview with Mrs Chirapan Surathep, Manager.
- Hereford Co., Ltd. Interview with Mrs Supattra Makjareonwoodhi.

Persons Interviewed, 2001

Representatives of local Thai auto parts firms February 12, Interview with the Managing Director of AUTO6. March 6, Interview with the Marketing Manager of AUTO3. March 15, Interview with the Director, Business Development and Export Department and the Managing Director of AUTO4. March 19, Interview with the Managing Director of AUTO5. April 6, Interview with the General Manager and Assistant General Manager of AUTO1. April 17, Interview with the Vice-President of AUTO2.

Representatives of local Thai garment firms:

March 14, Interview with the Managing Director of GARMENT1.

March 15, Interview with the Managing Director of GARMENT4.

March 20, Interview with the Managing Director of GARMENT5.

March 22, Interview with the President and Operation Director of GARMENT6.

March 26, Interview with the Managing Director of GARMENT3.

April 15, Interview with the Managing Director of GAMENT2.

Representatives of institutions implementing various process upgrades in Thai firms

- April 11. Interview with Mrs Rachavarn Kanjanapanyakom, Associate Professor, Faculty of Engineering, Kasetsart University.
- April 20. Thai Garment Development Foundation. Interview with Mr Panupan Praichaa, Deputy Director, Mr Santi Vatcharanurak, Quality Management Consultant, Mrs. Duangrat Chitmong, Head of Technical and Training Course Development Department, and Mr Rattiya Suwannalop, Quality Management Consultant.
- April 23. Thai Automotive Institute. Development Division.

Other key informants:

- April 9. Interview with Mr Santi Tisaykorn, General Manager of the Concrete Products and Aggregate Co., Ltd. (C Pac) (previously Thai Engineering Products), Siam Cement Industry Group.

Appendix Two

Interview guide for assemblers

Questions concerning the informant

- Name
- Position
- Educational background and experience
- How long you have been employed in (name of the firm)
- Nationality

Questions concerning production and the reason for investment

- When was (name of the company) established, and what was its aim in investing in Thailand?
- Who owns (name of the company)? If joint venture, Why?
 - Did your parent company enter into alliances with or have equity shares in other major car manufacturers?
- What do you produce? How many models?
- Units per year? Capacity?
- Is the production primarily focused on the local market?
 - If for export, which countries make up the most important export markets?
 - What are the trends and future plans for production here in Thailand?
 - Does your company plan to make further investments in Thailand?
- Why did your company choose to invest in Thailand? What advantage does Thailand have as a location for automobile production?
 - Labour costs
 - BOI incentives
 - Thailand will be the future production base for car production in Southeast Asia
 - To use Thailand as an export base for the Asian market
 - Other
 - Did your parent company in (country) put forward any requirements as a precondition for the investment? Which?
- How many employees do you have at the factory level?
- How many managers? How many of these are Thai?
- How many technicians and engineers does this company employ?
- Do Thai managers or other employees trained in this firm sometimes set up a firm of their own?

Questions concerning the position of the firm in the group (internal network)

- What kind of links do you have with your parent company in (country)?
- Does this firm have any links with other subsidiaries of the (name) group?
- Does (name of the company) have any more manufacturing subsidiaries in Thailand (besides this firm)?
- What degree of autonomy in decision-making does this firm enjoy? Which decisions are made at headquarters level and which in this firm?
 - Production plans, use of technology, marketing, strategies towards suppliers, future plans
 - Has the degree of autonomy enjoyed by this firm increased over the years?
- Does this company have any influence on decisions in the firm or other firms in the group?
- Does this company carry out any product development or R&D activities? What kind (adjustment to the local market)?
- How many technicians are involved in these activities?
- Does (name of the company) have an Asian car especially produced for the Asian market? What are the differences between this model and models produced elsewhere?

Questions concerning procurement strategies and linkages with suppliers

- How many parts and components do your models consist of (approximately)?
- How many suppliers do you have to supply these parts?

- What percentage of parts and components are produced in house (in terms of value)?
- What percentage is imported?
- What percentage (of total) is imported from the parent firm or other subsidiaries of (company name)?
- What percentage (of your local procurement) do Thai-owned firms supply?
- Could I have a copy of the suppliers list (names and products)?
- What are the strategies of the company concerning suppliers?
 - Global sourcing
 - Local procurement
- What procedure do you follow when you want to find a new supplier?
 - Where do you find information about suppliers (database, directories, through other firms, they are very known brand names, intermediate institutions e.g. BUILD)?
 - Do suppliers often contact you to try to get your company to use their products?
 - What are your requirements for accepting a supplier?
 - What is the most important determinant when you choose a new supplier?
 - Cost, quality, delivery, nationality, other
- Would you use Thai-owned suppliers if they could fulfil the requirements?
- Do you prefer to co-operate with foreign suppliers rather than with Thai-owned suppliers because of differences in culture or how business is done?
- Do you test products before an agreement is made?
- Do you draw up an official contract with the suppliers?
- Have you heard of the BOI unit for developing industrial linkages?
 - Have you used their services in finding suppliers?
- If a parts manufacturer is already supplying to one assembler, is that a hindrance to others cooperating with that particular supplier?

Questions concerning assistance and relationships with Thai-owned suppliers

- What is the nationality of the purchasing manager? If foreign, is this a problem in dealing with Thai-owned suppliers?
- Does the company have equity shares in any of the Thai-owned suppliers?
- In dealing with Thai suppliers, is it the general pattern that you provide them with design and production plans or do you normally rely on the skills and knowledge of the suppliers.
- What kind of parts and components do the Thai-owned suppliers produce?
- What are the Thai-owned suppliers able to produce and what not?
- What are the quality and standard of Thai-produced parts?
- What are the advantages of Thai suppliers in terms of capabilities?
 - Production skills, management skills, operational skills, linkages
- What are the main problems with Thai suppliers?
- Does your company assist or help Thai-owned suppliers in any way in upgrading their management and operational skills and production quality. In what ways?
 - Assist in improvement of product quality: quality control
 - Give operational guidance
 - Assist suppliers with operational knowledge and methods
 - Help upgrade the delivery system
 - Carry out training and education of employees (which group of personnel? how many, about what?)
 - Training at management level: planning, marketing, finance, administration of technology
 - Transfer of machinery, technology or other equipment
 - In what form? Licensing arrangement?
 - Teach suppliers how to handle new machinery
 - Assist in design improvements
 - Help test products
 - Provide information (product development, customers, trends...)
- In what way is the assistance provided?
 - By whom? Engineers, technicians or managers from this firm, foreign experts?

- Via written manuals or personnel visits to the supplier firms?
- Does your company have any joint product or design projects with Thai-owned suppliers?
- Do Thai suppliers in your view possess the necessary skills to absorb the knowledge and other kind of assistance you provide them with?
 - Carry out repair and maintenance without the assistance from foreign technicians
 - Carry out quality control
 - Improve products and process operations
 - Make new designs or innovations
 - Make improvements to imported technology or machines
- Do public institutions assist you financially in any way in your efforts to train and upgrade Thai suppliers?
- Do you usually have more than one supplier for each part and component?
- Does your company prefer to have long-term co-operation with its suppliers?
- How do you normally communicate with suppliers?
 - Through fax, mail, telephone, personal, face-to-face contact.
- Do you or other people in this company often meet Thai suppliers here or at the supplier's?
- Do you meet them for other purposes than business? Do you, e.g., have any social contact with suppliers?
- Would you say that mutual trust exist between yourself and the Thai suppliers?
- In what ways do relationships with Thai suppliers differ from relationships with other suppliers?
- In your opinion, is the way (company name) co-operates with suppliers different from, e.g., (western, Japanese) supplier relationships?
- What is your future plans for procurement?
 - To use more parts made locally
 - To use more parts from Thai-owned firms
 - To use fewer suppliers than today (use system or specialised component manufacturers)
- Will the recent liberalisation in terms of the abolition of the local content requirement and the decrease in tariffs on imported parts have any way influence on your present supplier strategy?

Questions concerning the Thai context and political regulations

- Has your firm succeeded in building links with and co-operating with any Thai firms and institutions apart from suppliers? E.g. universities, competitors, other firms, supporting institutions, trade associations, government officials, public and private institutions, R&D laboratories?
- Is your firm a member of any associations here in Thailand, e.g. trading associations?
- Are there any particular barriers for you to co-operation with local firms and institutions?
 - It is hard to break into dense local networks.
- Does BOI or any other governmental institution express any requirements or desire to you about your using Thai-owned suppliers?
- Does the government offer you any assistance or financial support if you use Thai suppliers?
- Is any effort made by the government to link you up with Thai suppliers?
- Does your parent company have strong links with the Thai government?
- Is Thailand the main regional base for production of (name of company)?
- In you opinion, does Thailand have a future as the 'Detroit' of Southeast Asia?
- Has your localisation in Thailand in any way influenced the strategies of your firm?
 - Are there any differences in the strategies of your company and other subsidiaries of (name of company) because of your location here in Thailand?
- How has the Asia Free Trade Agreement influenced the strategies of your firm?
 Do you benefit from the Brand-to-Brand scheme?

Questions concerning the crisis

- Has the firm made any changes in strategies or future plans because of the recent crisis?
- Did any of your former suppliers close during the crisis?
- Has the firm yet recovered from the crisis?

Interview guide for buying agencies

Questions concerning the informant

- Name, position, nationality
- Educational background and experience
- How long time have you been employed in (name of the firm)?

Questions concerning the firm

- When was (name of the company) established, and what was its aim in investing in Thailand?
- Who owns (name of the company)?
 - Joint ownership between several retailers or wholesalers
- What is the function of the agency?
 - Sourcing only, or other activities such as marketing
 - If also marketing, ask about the market in Thailand
- Do you represent one or more buyers?
 - So you act as an intermediary between foreign buyers and Thai garment-producers?

If agency represents many buyers

- How many brand names or retailers do you represent?
- What are the characteristics of these firms?
 - Brand names, fashion, low-cost cloth
 - Names of companies you represent
 - Nationality
 - Size
 - Do they have all the cloth made in Thailand and then export globally from Thailand, or do they use producers spread all over (what countries, regions)?
 - Do they still have some cloths made in the US or the country of origin?
 What type of cloth?
- When did US firms first start to source from Thailand?
- Do you know approximately how many representative agencies there are in Thailand?
- Are they all based in BKK?
- Are most specialised agencies of Asian origin (Taiwan, Hong Kong, Korea)?
- Do many brand names have their own representative office here?
 - What are the characteristics of brand names that have their own representative office here?
 - Do some of the brand names have their own manufacturing plant here, investment?
 - Is there a trend for retailers increasingly to deal directly?
- With the factories instead of using specialised traders or importers (agencies)? Is it common for brand names to allow Thai manufacturers produce on license to serve the local market?

Thai companies

- How many companies do you have contact with or use as producers?
 - Are most of them Thai-owned companies?
- From where do you obtain information about the assembly firms?
 - Trade fairs
 - Directories
 - They come knocking on your door
 - Internet
 - Through other companies
 - Other
- Do any of the owners of Thai garment firms sometimes go abroad to establish linkages?
- What are the characteristics of the Thai firms?
 - Size
 - Skill level
 - Technology, e.g. a computer-aided manufacturing system or dedicated or single-purpose machines

- Flexible, quick change
- Ownership
- Management, good marketing, good at doing business with buyers
- Innovative
- What are the locational advantages of Thailand?
 - Political stability (Indonesia versus Thailand)
 - Low labour costs
 - Favourable quotas
 - Long-term relationships
- How much do low labour costs mean to the competitiveness of the garment sector?
 But fashion and brand names are not cheap
 - Dut fusition and official numes are not cheap
- What are the disadvantages of Thai producers?
 - Lack of textiles
 - Quality: lack of quality certifications, ISO 9000
 - Management
 - Imitating firms
 - Other
- Do you know of any Thai brand names?

Questions concerning procurement strategies and links with Thai suppliers

- What are your procurement strategies?
- How does the quota system influence the strategies of the buyers?
- What type of cloth is mostly manufactured here in Thailand?
 - Mass market, small batch, fashion, or customised low cost, sportswear, underwear
 - Scale, quality
 - Compared with cloth made in e.g. Indonesia, China or Vietnam
- What are your requirements from the Thai firms you source from?
 - Quantity
 - Flexibility
 - Machinery
 - Quick response
 - IT, electronic data interchange
 - Quality certifications
 - Labour standards
- Do different types of cloth create different requirements?
 - E.g. fashion demanding organisational flexibility while standard, mass-market cloth demand, dedicated machinery
 - Discount clothing
- How is the finished cloth distributed overseas?
 - By the suppliers

Questions concerning relationships with Thai-owned suppliers

- How would you describe the relationship between the buyers and Thai garment producers?
- Do you have a contract with your Thai suppliers?
- How many years does a contract normally cover?
- Do buyers sometime visit the manufacturer, e.g. to conclude a contract or control quality and process?
- Do the buyers provide everything (design, textiles)?
- What is the role of the Thai producers (only cutting and assembling)?
- How are relationships controlled?
- How long is the period between ordering and delivery (getting shorter and shorter)?
Assistance

- Do you help suppliers upgrade their quality?
 - Do you, for example, assist the Thai assembling companies with improvement of the following?
 - Quality, management, delivery stystem, productivity
 - Product and process upgrading
 - Transfer of machinery
 - Training of workers
 - Provide them with information, e.g. market information
 - Help them obtain quotas
- Do you sometimes cooperate with the Thai companies about production or design?
- How do you normally communicate with suppliers?
 - Through fax, mail, telephone, personal, face-to-face contact.
- Do you or other people in this company often meet the personnel of the Thai firms?
- Do you meet them for other purposes than business? Do you, e.g., have any social contact with suppliers?
- Would you say that mutual trust exist between you and the Thai suppliers?
- Are relationships different for different types of cloths?
- What are the main problems in these relationships?
 - Quality, Delivery, Culture
- What do you do if the quality is not good enough or there are other constant problems?
 - Talk it over
 - Break off the relationship

Questions concerning future strategies

- Have your strategies changed in the last ten to twenty years?
 - How and why?
- In what ways will your sourcing strategies change in the future?
 - Do you think you will use Thailand more or less as a sourcing country?
 - Or use other countries with lower labour costs?
- How did the crisis influence your strategies?
 - Did you start to source more from Thailand?
- What will happen when the Thai bath is revaluated?
- How will the inclusion of textiles and garments in the WTO influence your strategies (will it influence strategies here in Thailand)?
- Have changes in taste and the shift from mass market to more personalised and customised products changed buyer strategies?
 - Towards using Thailand for clothing assembly
- Are US brand names beginning to shift their sourcing back to domestic factories because of the movement towards quick response?
 - To nearby countries
- How has the establishment of NAFTA influenced strategies?

Questions concerning the Thai context

- Is your company a member of any associations in Thailand?
- Do you have any links with associations or governmental agencies in Thailand?
 - TGMS
 - The Thai textile institute
 - The textile division under DIP
 - Other
- What in you opinion are the future prospects for Thai garment companies?
- Will US buyers continue to use them?

Appendix Three

Interview guides: garment and auto-parts firms

Introductory questions

Permission to use a tape-recorder?

- What is your name?
- Are you a professional manager, or are you also the owner of the firm?
- What is your education, experience of garment/auto-parts production? Are any of your family members engaged with the garment/automotive sector as well? Do you have a lot of friends in this sector?

Questions concerning the founding, history and ownership of the firm (internalisation)

- When was the firm founded (year)?
- Who founded the firm (why, how)?
- Why did you/the founder choose to go into this business?
- Any special knowledge/experience of these activities, opportunity, assistance, experience of work in other garment/auto parts firms
- How was the money raised for the investment?
- Bank loan or assistance from family and friends? Any other kind of assistance with setting up?
- Can you tell me a little about the history of the firm?
- Product development: What have been the major changes in production since foundation? What kinds of activities were carried out at the beginning?
- Employees: How many employees did the founder/you start with, and how many are employed now?
- Shifts in ownership: Has ownership changed (why)?
- Does that mean that the firm is now organized differently?
- Is the new owner in any way related to the founder?
- Are any members of your family employed in the firm?
- Many companies in Thailand have a Chinese origin. Do you/the present owner have any Chinese ancestors?
- In your opinion, does the fact that the firm is a (Chinese) (family) firm in any way influence strategies (regarding, for instance, investment or the search for inputs and information)?
- Does the firm belong to a group of firms (common ownership)? What other sorts of activities are carried out by the group. Any related activities?
- If a group is a garment/auto-parts manufacturer, is this the core activity of the owner/group or a peripheral activity?
- Do this mean that the owner/you invest more or less money and effort to develop knowledge and production in this activity than in other firms in the group?
- Is the firm a joint venture? Why? What are the benefits?
- Who controls which activities?
 - Is your/the owner's plan eventually to take over all the shares or to increase the foreign shareholding?
- Do you/the owner have shares in other companies?
- Do you/the owner sit on the board of other companies?
 - Who sits on the board in this company? Business people, government officials?
- Is the firm registered on the stock exchange?

Questions concerning production, the skill structure and organisation (internalisation)

Production

- What kinds of products are produced? Many different ones? What is the most important product you produce (in terms of value-added and in terms of volume)?
- Do you often introduce new models or products?
- Do you make different models/components/parts for different customers?

- What is their volume? How many items/parts do you produce a year? Is this the full capacity? Could you sell more/why do you not produce up to full capacity?
- Garments: How do you manage to obtain quotas? Does having quotas influence what you produce/export? Is a lack of quotas a barrier to increasing volumes?
- Do you specialise in certain products/processes and outsource a lot to subcontractors, or do you prefer to make as much as possible in house?
- How has production developed within the last five years? What is the trend now? Do you plan to introduce new products?
- Do you export any of the products? What are the major markets? When did you begin to export? Garments: only to quota countries or also to non-quota countries?

Process

- How would you describe the production process?
 - What kind of machinery is used? What is the most advanced technology you use? In your view, is your production process more or less advanced than the process used by your main competitors?
 - Garments: Do you use computer-aided design and pattern making? Electronically guided knifes for cutting? Do you have skilled operators to operate the machines?
 - What is the most difficult process? Machinery:
 - Standard flexible. Garments: Do you use the bundle system (specialisation of workers) or the modular system (flexible)? If modular, does that involve the multi-skilling of workers?
 - New or second-hand?
 - Do you rely on automation or craftsmanship?
 - Use computer-aided design or machines?
- What kinds of skills are required to manage the machines? Any specific skills?

Product capabilities

- What is, in your opinion, the main competitive advantage of this firm?
 - What would you say this firm is better at than your competitors?
 - Organisation, Low costs, Process technology, Marketing skills, Product development, innovations, Investment skills, Certificates, Craftsmanship
- How did you mange to excel in...? How did you mange to be so good AT...?
 - In your opinion, what is your position in relation to your main competitors?
 - What position did you hold ten years ago?
- How do you generally maintain your reputation in the business (advertise)?
- Auto-parts: How did you get the technical know-how? From assemblers, institutions, suppliers?
 - Do you have any technical assistance agreements with other firms? How did you get to know them?
- Do you design and develop any product or sub-products yourself (in house)?
 - Auto-parts: e.g. jigs and dies?
 - Or does the customer provide the drawings, samples and specifications? What processes are done in house?
 - What kinds of specifications do you receive? (Black-box specifications). How do they send you the drawings? By fax, mail, e-mail? Or do you meet to discuss it?
- Do you make product adjustments yourself? E.g. new models or models for other customers, different sizes, adaptation?
- Do you upgrade/improve the product yourself?
- Do you carry out in-house R&D? Design and development?
- Do you repair and maintain the machinery and technology yourself? Who helps?
- What kinds of problems have you experienced in relation to production and process technology? Why?
 - Excess capacity
 - Do you have unsold stock
 - Shortage of skilled personnel
 - Upstream-downstream imbalances
 - Garments: bad fabric quality

- How do you solve these problems?
- Have you introduced a system for the following?
 - Quality control, Inventory control, Management control: systematic or more informal?
 - Auto-parts: (workflow control, e.g. Kaizen)
- Do you have ISO or QS standards or other certifications?
- Are these measures a response to demands from customers or were they introduced on your own initiative?
- Did you manage to implement ... yourself?
 - If not, who assisted you? Thai/foreign, consultants, experts, institutes. How did you get to know about them?
- What kind of problems did you experience with implementation?
- Did you solve these problems yourself?
- What was the result of the following?
 - Constant quality/productivity improvement
 - Better evaluation of problems and problem-solving
 - More attention to employee training. Did you train workers and managers in skills related to this system? Did investment in new technology involve investment in new skills, information?
 - Did the employees find it easier to learn about the new system? What kinds of problems occurred?
- Have you made any major new investments within the last five to ten years? Why?
 - Technology? Upgrading?
- Have you made any changes in organisation or production within the last five to ten years?
 - A move to other product markets, higher value-added
 - Higher volumes
 - Regress to reliance on price competition
 - Closing down activities
- What was the major reason for this restructuring?
- Why did you start to look for new strategies, new information? Why were changes necessary? Why did the old practices become obsolete?
- What was the result of these changes?
 - Better competitiveness
- What kinds of problems/barriers were associated with the change in strategies?

Skills, education and training

- What kinds of specific knowledge/techniques are required to carry out the firm's activities? Who in the firm possesses such specific knowledge?
- From where did you/the management obtain this knowledge?
 - Has the owner/management acquired any experience through international education or visits to firm abroad? How have you benefited from this in your firm?
- Do you have in-house training of managers? On what?
- Who is in charge of in-house training? External or internal instructors?
- Have managers participated in seminars or training outside the firm? On what? How many seminars/courses a year?
 - Who arrange the seminars/training? Government agencies, associations, consulting firms, buyers?
 - Who told you about these courses?
 - What is your opinion about these seminars/courses?
- What is the result of this training? Have employees' skills and qualifications increased markedly?
- How is the new knowledge distributed and used in the firm? Do all managers participate in the distribution of new knowledge?
- Are there any problems regarding the distribution of new knowledge?

Organization and adaptation

- How many top and middle managers are employed in the firm? Technicians?
- What types of manager?
 - What are the educational skills, experience and qualifications of the managers?
 - Have any of the managers previously worked in other firms? How have you benefited from their experience here?

- Have the managers been working for this company for a long time? Do you have a problem with a high rate of turnover of managers?
- Is it difficult to find the people with the right qualifications? Is there a shortage of people with the right education, e.g. of engineers? What do you do then? Do you train technicians on the job/in house?
 - What do you do to keep the employees in the firm? Motivation/incentives.
- Do you normally employ managers you know already (e.g. schoolmates, friends, family), or are new managers chosen from among people who have submitted formal applications (candidates)?
 - Do you prefer to work with people you have known for a long time/know already?
- What is the structure of decision-making in the firm? As the managing director/owner, do you make all the decisions about everything, or do you delegate some management decisions?
 - Do lower-level managers, technicians, engineers or workers participate in decision-making or make suggestions about changes and strategies? Or do the middle managers make all the decisions concerning their particular area of responsibility?
 - What is the role of middle management?
- How is communication and co-ordination between different departments and levels in the firm maintained? E.g. between design, production, purchase, planning and sale?
 - How do you communicate and share information between top management, middle management and people on the shop floor/operators and workers?
 - If you want to introduce a new production system or new knowledge about the organisation of a process, do you use systematic manuals or learning by doing?
- How are managers and workers motivated to share information and knowledge? What are the incentives for managers and/or employees? Who contributes with anything extraordinary?
- Do you frequently rotate personnel between different departments or tasks?
- In your opinion, does the firm have a particular corporate culture? Please explain. Do you share information, do you care for and trust each other?
- Do you have particular company values and norms?
- Would you say that a firm-specific language and special routines have developed in this firm that are hard for outsiders to understand?
- Would you say that the organisation, production, process and way of doing business reflect 'traditional' Thai/Chinese ways of doing business?

Questions concerning the socialisation process

Search for information and finance

- How do you usually search for new information about markets, customers and new technology?
- Through personal connections, partners, friends, consultants, experts
- Books and magazines, Internet, Visits to other companies, Associations
- Seminars, international conferences
- *Sogo shoshas* or other trading companies
- How do you know who has the information you need?
- Are the people you obtain information from mainly locals or foreigners?
- Do you usually know them beforehand? From where do you know them?
- What kind of problems have you experienced in relation to the search for information?
- Is it easy to find the information you need?
- Are you increasingly using the Internet for information searches?
 - Have you invested in new IT technology?
 - Have you introduced a system of electronic data interchange to ease communications with customers?
- How did you learn about the following?
 - Production expertise, Investment expertise, Identifying market niches
 - Export markets. Do you have good contacts abroad?
- How do you usually finance new (larger) investments, e.g. for a new factory, new machinery, etc?
 - Banks, partners, savings
 - Friends/family, rotating credit
 - What is your relationship like with your financiers?
- How do you obtain new machinery/technology?

- Import capital goods fitted with specialised technology
- License foreign technology through explicit contracts
- Import second-hand technology
- Equipment transfer from a customer
- Do you have technical agreements with foreign firms? What does this involve?
 What is your relationship with those who have technology?
- How do you know where to get the best technology? Who told you?
- Do machinery and technology suppliers assist you with operational knowledge and knowledge of how to repair and maintain the machinery? If not, who assists you in this?
- How do they assist you? Through manuals, documents and handbooks, or through personal training (learning by doing), e.g. sending engineers or other experts?
 What is your relationship with them?
- What kinds of problems has your company experienced in relation to the introduction and mastery of new technology? Do you solve any problems that arise yourself?

Relationships with suppliers of inputs and materials (vertical, upstream)

- What kinds of input do you use? How do you obtain inputs and materials?
- What percentage of the fabrics and materials do you import?
- How many suppliers of materials and other inputs do you have? What do they supply?
- What is the nationality of your five most important suppliers?
- Do you have any problems in obtaining the inputs?
 - Lack of quality, Import tax structure, Too expensive, Upstream-downstream imbalance
- What do you do when you search for suppliers? What are the most important criteria for selecting suppliers?
- From where do you get information about new suppliers? Who told you?
- How do you know you can trust them? That they are good? Who told you?
- Do you generally know your suppliers already? Past experience, schoolmates, family, friends, business partners? From the same association?
- How often do they normally deliver? Just in time?
 - Problems with delivery
 - Is it important for suppliers to be located close to you? Why? Because it is easier to deliver or easier to communicate?
- What do you do if the suppliers can't deliver on time, have too many defects or have costs overruns? Any kind of sanctions?
- How do you agree the prices?
 - Do the prices often change? Why? Is it difficult to change them?
- For how long a period do you generally co-operate with your suppliers?
- Do you prefer long-term relationships? Why?
- How do you communicate? By telephone, fax, e-mail, mail
 - Which do you prefer?
 - With whom do you communicate?
- How often do you see your suppliers personally? Have you seen any of them this week/last week?
 - Do you think it is important to meet them in person?
- Do you sometimes meet suppliers privately for socialising, sports, restaurants etc., invite each other to dinner?
- What do you talk with your suppliers about? Strictly business, or do you chat about other things, gossip? Do you talk about other suppliers?
- Do you assist each other if you have any problems?
- Do you give each other advice, or do each other favours?
- What have you learned from your suppliers? What have they learned from you?
- Do you have an example of a relationship with a supplier that led to profound changes in your production, organisation, management etc.?
- What kinds of problems do you experience in general in your relationships with suppliers?
- Do you have a formal contract regarding payment, delivery, problems etc.?
- Do you have to use it? When you start to co-operate with a new supplier, do you give him a large order and share information from the start, or does he need to prove that he is reliable first?
- How do you decide that you can trust a supplier?
- Are there some suppliers you can trust more than others? Why?

- What makes a supplier a good supplier? Do you have a good example?
- What is the worst thing a supplier can do? Can you give me an example of a bad relationship? Any incidents of cheating, bluffing etc.?

Relationships with customers (vertical, downstream)

- Who are your main customers? How much do you supply to each of them?
- Do you deal with the buyers/assemblers direct or through a buying agency)?
- Do you have a marketing department? Do you actively search for new customers? How do you know your customers needs?
- What is the procedure when you start to work with a new customer?
 - Did you contact them or did they contact you?
 - Did you know each other already?
 - Were you introduced by a third person? Through an advertisement?
- How long does it take before the relationship runs smoothly?
- How do you get information about new customers? From whom?
- For how long a time have you been working with your present customers?
- How do you agree on prices? Is it difficult to change prices? Do the buyers put pressure on you to lower the costs? Do they help you with cost-cutting measures?
- Do customers generally have more than one supplier for the same kind of garment/part?
- Do you have a formal contract regarding payment, delivery, quality problems etc.?
 - Do you have to use it?
 - How often do you deliver?
 - Garments: How long is the lead-time? The time between order and delivery? Is it important to deliver quickly? Increasingly?
 - Do you keep a large stock to be able to deliver on time?
 - Is it important for you to be located close to the customer? Why? Because it is easier to deliver or easier to communicate?
- What happens if you can't deliver on time, have too many defects or have costs overruns?
- Do you give your customer a credit? For how long a time?
- Do customers make any requests regarding your production? Do they demand that you have quality control, management control, and specific certifications? Lower prices? Upgrade to produce global standards for the export market?
- Do your buyers/assemblers/ buying agency assist you in fulfilling such requirements?
- Do they assist with other things? What things? Organisation, upgrading, examining your cost structure in order to cut costs, assist with inventory control, managerial matters? Transfer of machinery? Inputs?
 - In what ways do they assist you:
 - Do they send an engineer or consult here to train your managers and workers?
 - Do you participate in seminars or courses arranged by the customer?
 - Do you send managers or workers to their factory, either here or abroad?
 - Do they use manuals and handbooks?
 - Have you experienced any problems in relation to the assistance? Technical understanding, language barriers, different ways of doing things?
- Have you made any investments in order to be able to supply to particular customers? Large investments?
- What have you learned from your customers? Do you have an example of a relationship with a customer from whom you have learned an exceptional amount?
 - Do your customers always have the knowledge you need?
- What have they learned from you?
- Do you have an example of a relationship with a customer that has led to profound changes in your production, organisation, management etc.?
- How do you communicate with your customers? With whom do you communicate?
 - Through phone, fax, e-mail, mail?
 - Which do you prefer?
 - Do you sometimes meet customers in person? How often?
 - Do you regard this as important? Why?
 - Have you seen any of your customers this week/last week?
 - Do they visit you or do you normally visit them?

- Do you sometimes meet for other purposes than business, e.g. sports events or visits to restaurant?
- Is this part of business or because you are good friends?
- Do you regard this as important? Why?
- What do you talk with your customers about? Do you only talk business and practical matters, or do you also chat about other things? What kinds of things? Do you gossip? Do you talk about other buyers? About garment/auto-parts manufacturers?
- Do you have any difficulties in communicating with customers? Because of misunderstandings due to language differences, different ways of 'doing things', different technical concepts and practices, different strategies and habits?
- Do you generally share information, that is, inform each other about new schedules, future changes or if unforeseen problems emerge?
- How do you know if they are going to change suppliers?
- Do you give each other advice, do each other favours?
- Do you generally trust your customers? Is trust important?
- Why and how do you know you can trust them?
- How is trust built up in the relationship with your buyers/assemblers? Do you try each other out before releasing full orders and information?
- Are there some customers you trust more than others? Why?
- What is trustworthy behaviour on the part of a customer? Do you have an example of a good relationship?
- Do you have an example of a relationship where the customer could not be trusted? Why? What is untrustworthy behaviour? Any incidents of bluffing or cheating?
- If you are working with different nationalities, have you experienced any differences in relationships with Japanese or western customers regarding assistance, trust, ways of doing business etc.? Who are the most demanding customers? Who assists you the most?
 - Do Japanese customers assist you more? Do they assist you in training your staff more than western firms do? Do they have different ways of teaching? (On-the-job or manuals)? Do Japanese firms interfere more with the planning and strategies in your firm than their western counterparts?

Relationships with other garment/auto-part manufacturers (horizontal)

- Do you have any kind of collaboration or co-operation with other individuals, firms, institutions, friends or family outside the firm that you regard as being important for your business?
 - Primarily local or foreign?
- Do you regard yourself as a team player, or do you prefer to do things on your own?
- What do you co-operate over?
 - Information sharing, sharing of ideas
 - Product design or development
 - Co-production agreements
 - Machinery maintenance and instruction
 - Sales co-operation
 - Quality and process improvement, design?
 - Do you support and assist each other? With what?
 - Do you help each other with problems?
 - Do you ask other garment/auto-part firms for favours/advice? Do you give favours/advice?
 - Do you borrow from each other?
- Do you sometimes subcontract production to other firms if you are too busy? Do they subcontract to you?
- What have you learned from other garment/auto-part manufacturers? Do you have an example of a relationship from which you have learned an exceptional amount?
- What have they learned from you?
- Do you have an example of a relationship with another firm that has led to profound changes in your production, organisation, management etc.?
- With whom do you co-operate? How many others?
- How do you get to know them? Associations? How do you get in contact with managers of other firms? Is it important for co-operation that they are located near by?

- How often do you meet the? Where? Do you meet many garment/auto-part manufacturers at events like trade fairs etc.?
- How do you communicate? By phone, mail, e-mail, fax? Or do you meet in person?
- Have you seen any representatives from other garment/auto-part firms in this week/last week?
- Do you see them for other reasons than business? Do you go to restaurants, sports events, invite them home for dinner etc.? Do you have many friends among other garment/auto-part manufacturers?
- Do you trust the managers of other firms? Why? How do you know you can trust them?
- Do you trust some more than others? Why?
- What is the trustworthy behaviour of a partner/collaborator? Do you have an example of a good relationship?
- Do you have an example of a relationship where the manager of another firm could not be trusted? Why? What is untrustworthy behaviour? Any incidents of bluffing or cheating?
- What kinds of sanction do you have if a person you are working with does not behave correctly?
- What does a good reputation mean in this business?
- What do you talk to other garment/auto-part manufacturers about? Only business and practical matters? Do you chat about everything, gossip? Do you also talk about other manufacturers, suppliers or customers, prices?
- Do you regard other garment/auto-part firms as your colleagues or your competitors? What determines whether you consider another manufacturer as a competitor or a colleague?
- Do you have family ties with other garment/auto-part firms?
- Do you have inter-locking directorships? Do they sit on your board and vice versa?

Auto-part firms

- Are you a member of a supplier club?
 - What benefits do you get from being a member? Do you get know-how, information training? About what?
 - Do you have any kind of co-operation with other members of the supplier club? Do you share information relating to production, improvements, and know-how?
 - Does the supplier club create a unity between the members, act to build up good relationships between members, promote mutual trust?
 - Do members of the supplier club have equity shares in each other's firms?

Relationships in general

- Do you trust certain firms or people more than others? Why?
- Under what circumstances do you think that communication with suppliers, customers, other firms runs smoothly?
 - When you co-operate with schoolmates, friends, family
 - Local people/foreigners
 - People you see frequently
 - People you know through third persons, associations etc.
 - People with a common history, the same education and background.
 - People with the right 'chemistry'
- Do such personal attitudes decide whether co-operation works or not?
- Is it important that companies you co-operate with are located close to you?
- Do you prefer to form relationships with people you know/have a common history with/ have a good reputation in business circles?
- What kinds of assistance, information etc. do foreigners in general contribute, and what information etc. do you usually obtain from locals?
- Have you experienced any major differences in working with foreigners or with locals? In what ways?
- If you have any problems, do you prefer to solve them yourself, e.g. through training/education, reading magazines or manuals, or do you use personal networks, consultants, partners etc.?

Institutional context

- Have you carried any major restructuring of the firm because of the following?
 - Changes in economic policy, Increases in real wages, Pressure for quick delivery, flexibility, increasing variability, Changes in the network structure; relationships with foreign and local

actors, Changes in technology, Increased competition, Changing market conditions, New ownership (generational changes)

- When do you start to look for new strategies, new information? Why were changes necessary? Why did the old practices become obsolete?
- What was the result of these changes?
- Recently, there have been quite a lot of changes in the external business climate, such as the recent crisis. How did the crisis affect your company?
 - In what ways did the crisis affect your firm indirectly? E.g. a financial problem because many finance corporation went bankrupt? Higher prices for imported inputs?
 - Did customers help you overcome the crisis in any way? How?
 - Did other firms, friends or family or the government assist you?

Garments

- Do you think the phasing out of the multi-fibre agreement will affect you business? How are you preparing for this?
- Competition from other ASEAN countries and China
- Increased competition from Mexico. US buyers increasingly source from e.g. Mexico because it is important to develop quick response. How will this affect your business? Exports to the US actually fell drastically in the mid-1990s offset by the crisis. What countermeasures have you undertaken?

Auto-parts

- Allowing a hundred percent foreign ownership means that many auto-part manufacturers have been taken over by foreign companies. What has that meant for your firm?
- How has the abolition of local content rules affected your company?
 - Increased competition from foreign firms investing in Thailand?
- Assemblers are increasingly choosing suppliers that can supply whole systems, not just particular parts:
 - In what ways do you expect this to affect your business? Do you need to invest in process engineering, in-house product design, and product development? Partnership with technology holders? Greater emphasis on supplying parts to first-tier suppliers?

Questions concerning supporting institutions and factor markets

- Have you used the services of any government agencies or institutions?
- Financing: the Industrial Finance Corporation of Thailand (IFCT) and Small Industry Finance Corporation (SIFC)
- Technology upgrading, certification, and testing, e.g. Thailand Productivity Institute (TPI), Thai Industrial Standards Institute (TISI)
- Human resource development
- Assistance with exports (Department of Export Promotion)
- Do you receive/ have you received BOI incentives?
- Do you know about the BOI unit for industrial linkages development? Are you in their database? Have you used their services? Successfully?
- Do you have any co-operation with the universities or other research and development institutions?

Auto-parts

- Are you using or do you plan to use the AICO scheme?
 - What is your opinion of the Thai Automotive Institute?
 - What are your expectations of it?
 - Have you attended any of their seminars or used their services in any other ways?
 - What do you want of TAI and its functions?

Garments

- What is your opinion of the new Thai Textile Institute?
 - What are your expectations of it?
 - Have you attended any of their seminars or used their services in any other ways?
 - What do you want of THTI and its functions?

• What is your opinion of the government provision of information, skilled labour (education and training), new technology and technology support, finance and infrastructure?

Relationship with the state

- What do you think of the supportive role of the state/of official economic policy?
- Do you think state policy and services agree with the needs of the industry?
- What kind of services do you want from the government? Import tariff reduction, R&D, education and training?
- What are the main problems with the following?
- Tariffs, Restrictive customs procedures, Standards
- How does your company overcome institutional barriers?
 - Manage on your own, Through networks
- Has the state, in your opinion, become more supportive of business
 - Since businessmen began to exert an influence over industrial policy (by, e.g., being elected to the parliament)?
 - Since the crisis, have import tariffs been lowered?
- How have government institutions affected your business strategies?
- Are there good communications between the private sector and the government? What is the main channel of communication?
- Are politicians, in your opinion, well qualified, honest and capable? Do you trust politicians?
- In the history of this company, have you benefited from political backing?
- Do you benefit from relationships with state officials now?

Associations

•

- Does your company belong to any branch or trade associations or chambers of commerce? FTI, the Thai garment/auto-parts association?
 - Why? What kinds of benefits do you receive?
 - What are the most important issues that associations deal with?
 - What are the most serious problems right now?
- Do you have any co-operation with business partners, suppliers, customers or other people you meet through these associations?
- Do you think associations enhance knowledge for their members and create unity between them?
- Do such associations act as a place where friendships, relationships of trust, are formed?
 - Do they promote mutual trust?
- How often do you attend meetings of these associations?

Questions concerning challenges and visions for the future (internalisation)

- What are your strategies and visions for the future?
- Do you have any long-term investment plans?
- Do you plan to upgrade investment in new technology or production lines, training, skills, management?

Garments

- Do you have plans to recruit an in-house designer?
- What do you feel about the future? Do you feel secure about your survival in this business?
- What will have to do in order to stay in business?
- What do you think is the future for domestic firms involved in garment/auto-part production?
- What barriers do you see arising to business opportunities in the future?
- Is it still worthwhile manufacturing the existing products, given the increased competition and demands for design capability, quick response, global standards, engineering and product development?
- Are you determined to confront and deal with such problems as arise?
- Have you considered changing to other kinds of activities that might require less effort or be more profitable?
 - Do you plan to diversify? Plan to invest in other countries?

Appendix four

The Thai incentive structure

Economic policy

The Thai government has been formulating objectives and priorities concerning industrial policy since 1960 through the National Economy and Social Development Board (NESDB) five-year plans. From the outset, the role of the state was designed to be a non-interventionist one, and the state did not directly interfere in the economic sector to implement the objectives.¹ Instead, industry policy, which was heavily influenced by the World Bank, from the outset left the initiative to the private sector, while the state aimed at providing macroeconomic stability, infrastructure and incentives to attract domestic and foreign investment. As with most other developing countries, the Thai state introduced an importsubstitution strategy, which entailed the introduction of import barriers to protect the domestic market. This strategy proved not to be feasible in the long run due to the relatively weak domestic market, and the NESDB consequently shifted to an export-oriented strategy as early as 1972, involving a gradual reduction of import taxes. Export promotion, however, was obstructed because the state was unwilling to let go of its most important source of revenue and because of the economic crisis at the beginning of the 1980s, which resulted in a negative balance of trade and increasing debt. However, the Thai government had to accept IMF conditions because of the crisis-ridden economy over which it was presiding, and an export-oriented strategy was introduced, leading to devaluations of the currency in 1981 and 1986 and the extensive liberalisation of trade and investment policy, followed by export incentives (Schmidt, 1994; Siriprachai, 1998; Pussarungsri and Chamnivickorn, 1996).

Partly as a result of the liberalisation of trade barriers and the export-promotion policy, and partly driven by the relocation of industry from Japan and East Asia to the ASEAN countries, Thailand experienced a genuine economic boom from the mid-1980s. Thailand was the most important recipient of foreign investments in the ASEAN region between 1961 and 1990, with Japan and the US as the key investors. Investments from the mid-1980s were primarily export-oriented, and the most substantial level of investments went into electronics, chemicals, textiles, food, and metals (Yoshida, 1992; Yue, 1993). Economic growth in Thailand reached a peak at the end of the in 1980s with double-digit growth rates, which entailed a structural transformation from agriculture to industry as the most important contributor to GNP. Export of manufactured products likewise exploded from 32.2 percent of the total in 1980 to 81.6 percent in 1996 (Kamaruding, 1994; Office of the BOI, 1997).

This impressive export performance indicates substantial competitive strength, but export data do not include use of product technology or distinguish between simple and complex processes or whether export is by local or resident foreign firms. Export figures thus do not tell us anything about the formation of local capabilities. From 1980, however, Thailand actually experienced a slightly decrease in the share of labour-intensive manufactured export and an increase in so-called technologically advanced export, such as machinery, automobiles and electronics (Lall, 1999). Nonetheless. Thailand is still among the least technologically advanced countries in East and Southeast Asia, and the technological composition of exports conceals important structural weaknesses. Advanced technology exports in many cases means largely TNC-driven assembled imported components and high-tech exports, especially in the case of electronics. Thus, the impressive growth and export performance of the manufacturing sector since the mid-1980s has actually occurred without substantial deepening of the industrial base of the economy and was founded on a weak technological base. Instead, the manufacturing sector is characterised by import-dependent processes and has become a significant net user of foreign exchange earnings (Kamaruding, 1994). This was not a serious problem as long as the economy kept growing. But in the mid-1990s the steam ran out of the export locomotive due to a slowdown in world demand, worsening terms of trade, raising wages and increased competition. The government had obviously rested on its laurels and neglected the importance of pursuing a long-term, consistent and selective industrial policy. Instead, Thailand followed the liberalisation strategies required by the IMF and was for a long time hailed as an example of the virtues of the IMF's structural-

¹ The automobile sector is an important exception to the rule, as local content requirements were maintained in this sector until 2000.

adjustment programmes. Liberalisation undoubtedly contributed to the high economic growth rates, but it also led to the development of very shallow industrialisation and a reduction in domestic financial control, which were contributory factors to the financial crisis that hit Thailand in 1997.

Factor markets

The most critical task for industrial firms is to obtain access to factor markets, such as those for capital, skilled workers, information and technology. Capital markets in many countries in Asia are regulated by the state as a means of controlling the performance of firms and guiding finance into the firms and sectors the state wishes to promote. In Thailand, however, the private banks, especially those owned by the most powerful families, have been among the most important sources of credit for entrepreneurs. In particular, the credit is often given on the basis of personal knowledge and knowledge of the local market. Before the crisis, there were four major Thai banks: the Bangkok Bank owned by the Sophonpanich family: the Thai Farmer's Bank, owned by the Lamsam family: Siam Commercial, owned by the Crown Property Bureau; and the Bank of Ayudhya, owned by the Rattanarak family. There were also nine smaller family-controlled banks. Finance companies also played an important role in the industrialisation process by financing the rapid expansion of domestic manufacturing firms, which helped to create the export boom (Phongpaichit and Baker, 1999). Firms without connections to the big banks and small and medium-sized enterprises (SMEs) found it difficult to obtain long-term financing, and the financial crisis made fund-raising by SMEs² even more difficult than before. Firms in the textiles, automotive and electronics sectors, however, obtained access to medium- and long-term financing by rolling over short-term debt (Deyo and Doner 2001b; Japanese International Cooperation Agency, 1999).

In order to keep wages down, the labour market is rather restrictive, and workers have little real influence in politics, though formal tripartite arrangements do exist. Because workers lack any real influence, labour-management relations are often conflictual, which undermines training efforts and intra-organisational collaborative upgrading programmes (Deyo and Doner, 2001b). Human resource development has been very weak, which means that most firms are experiencing a serious shortage of skilled workers and managers, which has been especially harmful in the textiles, electronics and automotive industries. In 1994 only 48 percent of pupils progressed to secondary school in Thailand, the lowest figure in the East and Southeast Asian region. As a percentage of GNP, Thailand only spend 3.8 percent on education compared with 5.3 percent in Malaysia. In terms of the quality of technical schooling, however, Thailand is among the most advanced of the Southeast Asian countries measured by skill formation relevant to manufacturing activities (Lall, 1999; World Bank Group, 2000). Even though Thai students score quite well in science and technology subjects, the generally low level of investment in human resources indicates that the Thai government has failed to provide the industrial sector with the skilled and well-educated work force necessary for the formation of strong technological capabilities. In particular, Thailand has experienced a shortage of engineers of about 5,000 annually and lacks programmes for training in practical skills. For example, the country does not have any specific programmes to train automotive or textile technologies in the technical college, and there is nowhere to learn garment design. The Rajamankhala Institute, however, has courses in textile chemistry and textile and garment technology, and there is a vocational college teaching garment subjects (personal interview with Mr Chanudom Athicraroenkit, TID). Thailand is also falling behind in terms of technicians, with in 1996 39 technicians per million inhabitants compared with 93 in Malaysia and 2,193 in South Korea (UNESCO, 1999). Education for industry is especially needed, particularly the development of skills in basic technology, supporting industries, production management and skills required for managing internationalisation. Training in practical techniques is mostly carried out with the support of foreign companies and development aid from the developed world.

Because of the limited availability of skilled workers, the Thai state actually had to invest US\$ fifteen million to establish a GM automotive technology institute in order to attract General Motors in 1997. The shortage of skilled workers has also resulted in a very high turnover rate among Thai employees in technical and managerial positions, which is clearly one of the most important problems for SMEs

² As part of the basic law, an SME is defined as having less than two hundred workers and invested capital not exceeding a hundred million Baht (<u>www.dip.go.th</u>). In 1998 SMEs with such characteristics made up 98 percent of all firms in the manufacturing sector. About 94.5 percent of SMEs are Thaiowned (Chirathivat and Chantrasawang, 2000).

(Deyo and Doner, 2001b; Japanese International Cooperation Agency, 1999). The government, funds the majority of R&D spending in Thailand with a small percentage coming from sources abroad, though the contribution from private companies is negligible. Overall, R&D spending is much lower in Thailand compared with other Asian countries (Lall, 1999). Furthermore, R&D activities in public institutes and universities are largely carried out in ways that are isolated and disconnected from the real world of production. As a result, industrial firms tend to doubt the ability and effectiveness of universities and public technical institutes to solve practical industrial problems. Similarly, there has been virtually no government support to stimulate the development of technological capabilities in industry directly, apart from various tax incentives offered by the Board of Investment for setting up R&D laboratories. Efforts to promote R&D have mainly been directed towards specialised, basic research, in the belief that development, engineering, production and application would develop automatically from this. Instead of developing their own technology, Thai firms have generally acquired technology through international technology transfers (Chantramonklasri, 1997). Such methods are time- and money-saving, but they do not contribute much to the growth in / development of local technological capabilities.

One of the greatest problems in business management for locally based SMEs is how to acquire valuable information on the procurement of industrial raw materials, investments and markets. Access to the necessary information on markets and on how to acquire technology is connected with high costs and can act as a major barrier for the establishment of new firms or in starting to export. As the government does not invest in overcoming such deficiencies, most of the marketing information currently stems from overseas investors and buyers and from large, foreign trading companies, rather than from government agencies. Thailand has a serious lack of public or collective institutions devoted to technology acquisition and diffusion-oriented technical services (Devo and Doner, 2001b). For Thai firms the main methods of acquiring technology are links with foreign firms, the licensing of foreign technology through explicit contracts, the import of capital goods and turnkey plans, and informal sources such as foreign study visits to foreign factories, copying and reverse engineering (Sibunruang and Brimble 1992; Kamaruding, 1994). Although this has helped firms establish new and modern plants, expand their productive capacity and introduce new products, very few firms have managed to raise their performance to international standards or to carry out significant improvements to their products and production systems. A large number of companies remain technologically static, as technology is simply acquired from foreign sources – and this is usually technology that only requires the minimum level of learning to operate (Chantramonklasri, 1997). Building up physical infrastructure has been a priority of the Thai government in combination with the promotion of private investment since the early 1960s. As a result, large infrastructure projects have been initiated creating an extensive system of expressways around Greater Bangkok and more recently the launching of a sky-train system that runs across the busiest business area in Bangkok. However, the economy is developing more quickly than the infrastructure is being built, which has led to the saturation of roads, airports, telecommunications and other public utilities. Information technology, which is increasingly important to industrial sourcing and marketing, is poorly developed. Only 21.6 of every 10,000 people in Thailand had a personal computer in 1998 (World Bank Group, 2000).

Supporting institutions

As will be evident from the above, Thai firms face considerable constraints in terms of opportunities for upgrading and development, given the failures in factor market conditions and an industrial policy geared mostly to the interests of large and foreign firms. This also reflects the general lack of public as well as private supporting institutions to provide various industrial services in order to overcome market failures. Several public agencies do exist to finance new loans and credits, help with technology upgrades, develop human resources, provide information about markets, promote export activities, provide testing and certification services, and strengthen vertical and horizontal ties among producers (Japanese International Cooperation Agency, 1999; www.dip.go.th). Many of these supporting institutions, however, suffer from a lack of communication and co-ordination between ministries and agencies, overlapping responsibilities, inefficiency, budgets that are too small and too few staff.

Overall, the Thai government has not been able to promote the creation of links between foreign and Thai firms which might have led to technology diffusion. A study of backward linkages measured by the imported raw material and component ratio found that export-oriented foreign firms tend to use considerably lower volumes of local inputs than Thai export-oriented firms (Sibunruang and Brimble, 1992). This reflects the lack of subcontracting arrangements between foreign firms and small Thai

firms. The Board of Investments (BOI) was established in 1960 to encourage foreign and domestic investment in Thailand by providing taxes and monetary incentives. BOI promotes projects which strengthen Thailand's industrial and technological capabilities, create employment and develop supporting industries. But not much evaluation or screening is carried out. In theory, promotion always comes with conditions attached, but these are often moderated by WTO guidelines and because big firms choose not to invest in Thailand if they are confronted with too many restrictions (personal interview with Mr Phisitvanich, Director, BOI). BOI has had only limited opportunities to deal with technology spill over from foreign firms because the board lacks the technical capacity to do so and because officials were concerned that greater regulation would discourage investment flows. BOI has in effect been undermining Thailand's ability to develop its own technology capability and introduced a bias in industrial policy towards large companies and foreign firms because exporting firms have been encouraged to import materials and components and SMEs have been cut off from promotional privileges (Kamaruding, 1994).

In 1992, BOI established a subunit, the BOI Industrial Linkage Development Programme (BUILD), whose main objectives were to create links between assemblers and parts suppliers in order to increase technological spill over and help Thai firms overcome insufficient marketing. Its main activities in this regard are the provision of information about business partners. BUILD maintains a database, which list buyers' requirements for parts and components, and items that can be produced in Thailand. In addition, BUILD arranges customer-meet-vendor seminars, trade shows and training for domestic parts manufacturers who wish to become subcontractors (personal interview with Mr Tanthawichian, BUILD). However, BUILD only has eight staff to take care of all activities, and they have no means of pressuring foreign firms to form subcontracting arrangements with local firms. In practice, BUILD can only suggest that overseas investors to go and visit potential suppliers. However, this is a doubtful strategy, as Mr Chutinan (Executive Director of TAI) explained: 'the main barrier in entering business for parts manufacturers is the marketing barrier. The auto-part industry must start from the belief of the customer that this supplier will have the ability to supply them properly. Normally they will count on the quality, price and delivery. It is a long process, and it might take a decade to convince them that they are good at supplying.'

The weak national and sectoral institutional environment also reflects the lack of public sector–private sector linkages. Especially in relation to the recent crisis, it was clear that there is a lack of joint vision between the state, the private sector, academics and investors. Although a joint public sector–private sector consultative committee, composed of the major business associations and state officials, was formed during the economic crisis of the 1980s, it has not been active since 1988. The lack of coherence in industrial policy is further exacerbated by the tendency for line agencies to maintain largely clientelistic relationships with favoured businesses. Initiatives from the private sector to introduce the collective provision of industry-relevant skills and services have also been limited. The lack of co-ordination between the public and private sectors reflects the general weakness of business associations in co-ordinating a cohesive industrial or sectoral vision (Deyo and Doner, 2001b).

There are four automotive associations - two each for assemblers and parts firms - one garment association and a number of industry-specific development agencies or institutions acting as the supporting environment for the two industries. There are two automotive clubs under the umbrella organisation, the Federation of Thai Industries (FTI), the Thai Automotive Industry Association (TAIA) for assemblers and the Auto-parts Industry Club (AIC). The AIC was established in 1976 and represents the private sector in trade and investment negotiations. The club has around forty companies registered as members (personal interview with Mr Prakitti Siripraiwan). The Thai Automotive Association (TAA) is an exclusive club for assemblers, while the Thai Auto-Part Manufacturers Association (TAMPA) is an independent association established in 1978. Besides trying to influence government policy, the objective of the association is to disseminate technical knowledge to members, carry out research and bring members together (Thailand Automotive Industry Directory, 1997). During the industry's early years, the auto-parts associations were quite successful in ensuring that locally based firms had an opportunity to supply the domestic market by having a local content requirement introduced by the government, a measure which provided the basis for significant growth in local parts firms. But the parts association did not succeed in addressing the two related objectives of rationalisation and technical development, which have undermined the capacity of local parts firms to reduce costs and increase quality and efficiency. Furthermore, there is a lack of internal cohesion in the automotive industry due to the divisions in interests between upstream and downstream firms and foreign and local producers, and because larger firms tend to deal directly with particular officials

rather than working for a consensus among the industry's members. The Thai Garment Manufacturers Association (TGMA) is one of the strongest sector associations, as it has been considered a key element in the country's export growth. However, the emphasis of the association has been on market access through quota management, information and tariff protection, and not generally on technological upgrading (Deyo and Doner, 2001b). The TGMA has, however, established the Thai Garment Development Foundation as an institution for development and upgrading of member firms (personal interview with Mr Sakda Thongpalad, Deputy Director of TGMA).

The Textile Industry Division (TID), which was set up in 1972, is the sector development agency for the textile and garment industries and comes under the Department of Industrial Promotion. The responsibilities of TID are to develop knowledge, skills and experience in industrial technology and management for the textile and garment industries, to conduct testing and inspection services, provide information and carry out research. The institute was set up by UNIDO in an effort to develop the textile industry in Thailand. At that time, engineers and science students were recruited from the universities and sent to England, the US and Japan to learn about the industry, with the intention of informing the private sector and inducing it to start manufacturing. However, this knowledge is now obsolete, and TID officials are not updated with knowledge about garment and textile manufacturing. Therefore the main way of distributing information is to arrange seminars and workshops where the private sector can meet and exchange information and invite foreign experts. TID arranges about two seminars every month with thirty to forty participants. The main objective of TID is to provide quality service on the testing and inspection of textile and garment products. The testing and inspection technology was introduced with the assistance of the Japanese International Co-operation Agency (JICA) in 1997 with the aim of upgrading the efficiency and product quality of SMEs. Japanese experts have been assigned to TID to train Thai personnel and set up machinery. However, in April 2000 this equipment was transferred to the new Thai Textile Institute, which has taken over many of TID's objectives. The agency has about fifty employees for industrial services and a budget of around six million Baht for industry activities (personal interview with Mr Athicraroenkit, Director of TID).

The Thailand Textile Institute (THTI) started operation in June 1997 with the support of JICA as an autonomous organisation. Its main role is to formulate a five-year national textile-industry development master plan, to co-ordinate activities between textile and garment companies and between the public and private sectors, and to provide testing and inspection services. The overall aim is to aid the transformation of industries from their focus on cheap labour to the production of high value-added goods, and thus to prepare Thai textile and garment companies for a free-market situation after the abolition of the Multi-Fibre Agreement. The main objectives are to replace the existing machinery with modern technology in order to achieve greater efficiency, to develop management skills to comply with ISO standards, to upgrade human resources, to establish technical linkages with foreign textile industries, and to create higher value-added products. The latter aim will be implemented through the application of proven practices in countries with highly developed textile industries, especially the implementation of 'quick response' through IT, upgrading of design and management skills, and brandname development. THTI provides marketing information, conducts technical research, has set up a channel of communications through IT and has created a database on which all textile and garment companies can introduce themselves (www.thaitextile.org). In relation to product upgrading, the Institute arranges about 25 seminars every year on technical training and energy conservation, and starts up new technical training programmes every week, which last a full year. In addition, it provides loans for machinery replacement and plans to set up a fashion design institute in Thailand. THTI has also become responsible for the testing and certification of textile products. It employs a staff of about 25 to take care of all projects, with external lecturers and experts being brought in for teaching and technical training (personal interview with Mr Sethaputra, Director of THTI).

The Metalworking and Machinery Industries Development Institute (MIDI) was founded in 1988 and reorganised in 1996 as the Bureau of Supporting Industry Department (BSID). BSID has a wide range of responsibilities and acts as the main agency to promote SMEs under the Department of Industrial Promotion (DIP). Its core activities are the development and provision of technical assistance to upgrade the capabilities of supporting industries, and the promotion of subcontracting businesses between large companies and domestic supporting companies. However, BSID mainly focuses on supporting industries in specific technological areas, such as the automotive industry and electronic parts (heat treatment, foundries, machinery, welding, plating, automation systems, products design, testing and inspection). That is, the target group is mainly the electronics, plastics and automotive parts industries. However, BSID has only been responsible for the upgrading of the automotive parts

industry since 1997, before which the industry was able to grow and manage itself without assistance. In July 1999 BSID also became responsible for the Tool and Mould Technology Development Project, whose purpose is to promote the domestic production of better-quality tools and mouldings for the plastic industries. The already existing metalworking function was thus combined with a technical centre for the plastics industry. The bureau employs around a hundred people, mostly technicians who have experience of on-the-job training and have been trained by Japanese experts as part of co-operation agreement. A number of JICA experts were working at MIDI at the time its establishment. The staff situation, however, is critical right now, as the government has been freezing the hiring of new skilled employees. Currently, since BSID only has five employees to take care of the automotive industry and the bureau, it must subcontract almost all projects to the Thai Automotive Institute. BSID also subcontracts training to Chulalongkorn University and the private training care of firms like Toyota. The future role of BSID will be to act mainly as a supporting agency taking care of funding, information and industrial studies, while the Thai Automotive Institute will be responsible for outgoing activities at company level (personal interview with Mr Oonjitt, Advanced System Laboratory, BSID).

The Thai Automotive Institute (TAI) started operations in April 1999 as an independent organisation under MOI to co-ordinate all government service activities directly affecting the automotive industries, such as distribution, inspection, testing and human resource development and training. A five-year programme of government support was approved in 1999, after which the Institute is expected to become financially independent. Its aim is to privatise services that are usually carried out by government agencies. By the same token, the role of the BISD concerning the automobile sector is presently being transferred to TAI in order to make government operations more effective and to streamline staff and command lines in government agencies. The core functions of the Institute cover policy recommendations and quality upgrading, as well as assistance to the supporting industries in order to adjust to the free market situation that will emerge after January 2000. To promote the industry, TAI provides testing and product certification, quality system management, human resource training, technical assistance and research, information, and evaluation and consultation services. Implementation includes arranging a wide selection of seminars to train managers and workers and provide extensive information collection. From April to December 1999, TAI organised four hundred training seminars with 184 courses and a total of 16,000 participants. The funding comes mainly from BSID. These seminars deal with everything from production maintenance, quality systems, production technology, human resource development and investment financing to applications of tools and dies. TAI mainly uses professors from the universities and the training institutes to conduct the seminars. TAI is also the main co-ordinating body for communications between government agencies and the automotive companies, as well as within the automotive business, since the members of the two automotive clubs under the FTI also are members of TAI. In 1999 TAI received 71 million Baht for an education programme for SMEs and 100 million for the second phase in 2000, and expects about 230 million Baht from the government for improvements in design and engineering activities. However, the budget of 72 million Baht last year, funded by MOI, is far from enough, and the Institute mainly relies on grants from foreign sources and membership fees for training and other activities. TAI also relies on foreign advisors. In all, seventeen senior experts have been dispatched from JICA to assist in the planning and implementation phases.

As will be evident from the above, the support of foreign agencies is very important to the Ministry of Industry and practically all the development agencies in terms of funding, activities and expertise development. Japanese government agencies in particular, such as JICA and JETRO, have played an important role in disseminating expertise to Thai companies and supporting institutions. These Japanese government agencies are mainly in Thailand to assist Japanese companies, but this is done indirectly by the provision of large-scale aid to the Thai support industry. Japan is, without doubt, the country's most important external economic partner, as Japan regards the Southeast Asian region as an important backyard for Japanese production. However, as regards the automotive industry, other sources of foreign investment are increasing in importance in line with the increasing amount of investment coming from western assemblers. The Thai–German Institute, for instance, supported TAI with three million marks for a quality programme (personal interview with Mr Chutinan Executive Director of TAI).

New political initiatives

In summary, the industrial sector in Thailand has benefited from fundamental incentives, such as a stable macroeconomic environment, infrastructure and investment subsidies, but basic support for industrial development and upgrading in terms of human resource development, technological upgrading and R&D activities has been limited. The industrial sector is suffering from a lack of long-term financing, conflictual industrial relations, and weak business associations stemming from the limited co-ordination between the public and private sectors. As a result, the technological development of Thai firms has been marked by shallowness, under-investment and import dependency resulting from insufficient linkages between assemblers and local suppliers. This has to a large extent been result of the development of a skewed industrial structure because industrial policy hitherto worked to the advantage of the larger firms and exporters, while small firms were mostly ignored (Lauridsen, 1999).

Confronted with an economic crisis in 1997, which revealed the structural weaknesses of the Thai economy, the Thai government has started to recognise the need to formulate and implement a real industrial policy focusing on the development of the supporting industry in Thailand. Both foreign and local agencies regard SMEs as acting as the core of future structural deepening by serving as essential parts suppliers to major industries. The creation of further links between SMEs and large companies would diminish import dependence. In January 1998, the Cabinet, its main objective being to promote and upgrade the capabilities of SMEs, approved an Industrial Restructuring Programme (IRP). In connection with this, JICA and DIP published a Follow-up Study on Supporting Industries Development in the Kingdom of Thailand, which recommended certain actions for the development of supporting industries involving a restructuring of the institutional environment (personal interview with Mr Nakamoto and Mr Hideki, JICA). The combined efforts of the IRP and the JICA-DIP study were integrated into the SME Promotion Master Plan, which was approved by the Cabinet in April 2000. The plan provided for the creation of a centralised policymaking and co-ordination institute responsible for SME development, and a comprehensive package of measures to bring the competitiveness of SMEs up to global standards in terms of quality, costs, delivery and development. Among the measures envisaged were the strengthening of financing for SMEs, the upgrading of their technological and managerial capabilities, the development of human resources, the provision of better access to markets and improvements in the business environment involving the development of information networks. The plan involved the setting up of a wide range of new institutions, including TAI, as well as the strengthening of existing supporting institutions, as exemplified by the renewed efforts to activate the linkage-creation programme under BUILD. Furthermore, investment projects that form the basis for further stages of industrial development, contribute to technological development or significantly strengthen balance of payments are given special consideration under BOI. The interests of SMEs are also taken into account, as BOI has reduced the minimum level of investment required from two to one million Baht. In addition, four types of supporting industries - mouldings and dies, jigs and fixtures, forging, and casting -were given special privileges as projects with direct involvement in technological upgrading (Lauridsen, 1999).

The SMEs Master Plan covers eleven industries, including textiles and garments, as well as the vehicles and parts industries. The formulation of supporting industry and linkage policies was left mainly to local and especially foreign consultancy firms. Funding for the implementation of the SME Master Plan largely comes from a Japanese loan under the Miasawa Plan. The Thai government also requested Mr Mizutani, the former Director-General of the Ministry of Trade and Industry in Japan, to advise it on industrial policy, and it was he who finally drafted the SME Master Plan (personal interview with Mr Nakamoto and Mr Hideki, JICA). This comprehensive plan reflects a shift in government policy from protection towards technological upgrading and quality improvements in the Thai industrial sector. The government has also become more attentive to the demands of private domestic industry. The government decision to introduce higher import duties on CKD automotive components may in part be seen as a compromise, meeting the demands of GM and other companies to implement the WTO-mandated elimination of domestic content in 2000, while at the same time responding to strong supplier lobbying through TAPMA and the FTI (Deyo and Doner, 2001b). Thus, from January 2000, the import duty on CKD was raised from 20 percent to 33 percent, which provided auto-part firms some protection from international competition (interview with Mr Salil Sisalswadi, BOI).

The implementation of the SMEs Master Plan, however, will depend on the resources available to the Thai government and the extent to which it will continue to take into account the interests of foreign firms. The government has come under tight financial and monetary control from the IMF since the

crisis, and the debt burden has risen substantially. The aftermath of the crisis saw a virtual boom in foreign private investment, annual inflows being substantially higher than during the years of economic growth. But the bulk of the investment came from foreign firms taking advantage of very low prices for ruined facilities in the finance and industrial sectors. Half of the 135 arrangements made under a special provision for foreign investors to acquire a majority stake in BOI-promoted firms were in the automotive sector, which led to a hollowing out of Thai capital. However, the largest domestic conglomerates were able to survive the crisis by selling off some of their less central activities. By early 1999, half of the local auto-part manufacturers, especially those operating in the after sales market, had closed down. The smaller ones, associated with smaller failed banks, were greatly damaged. And for firms that have failed to modernise, such as the Sukree textile group, the crisis delivered the final blow. Furthermore, the pre-crisis possibilities for Thai-owned firms to obtain loans and credits from domestic banks have disappeared. Although the four major banks managed to survive by raising the foreign-owned proportion of their capital to 49 percent, they now have much less ability to act as a mechanism to stimulate the Thai economy. Bank of Thailand or foreign banks took over all the smaller Thai banks. The financial sector has thus been internationalised in a very short period of time, and it is unlikely that foreign finance firms will take over the central role of the Thai banks in funding local firms on the basis of personal relationships and personal market knowledge (Phongpaichit and Baker, 2000).