International Business Geography

Case studies of corporate firms

Edited by Piet Pellenbarg and Egbert Wever

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International Business Geography

The economic environment in which major companies operate is subject to rapid changes. This new book focuses on case studies of well known international companies such as Philips, Volvo, MacMillan Bloedel, Intel, Toyota, Texas Instruments and GlaxoSmithKline and considers how these changes in the international economic environment affect the strategy of companies and the location of economic activities.

The authors of these essays adopt a micro-approach to concentrate on the issues, looking in detail at the policies and decisions within specific individual companies. The findings reveal that the links between international environment, firm strategy and the location of economic activities are often more complex than popular concepts such as product cycle, cluster and international division of labor will allow. This book points to the differences and variations between firms and encourages alternative methodological formulations.

This book will be of great interest to students and researchers engaged with international economics and globalization, as well as practitioners interested in the firm and its environment and internal business strategies.

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Preface

Large firms have always been a source of interest for economic geographers and scholars in related scientific disciplines. The reason for this interest is the structuring effect these firms have on the regions in which they are located. During Western Europe's 'economic miracle', in the fifties and sixties, big firms created many new jobs in depressed areas, but contemporary effects go across national borders as well. Discussions about the effects of the globalization process deal with the spatial behavior of big firms such as their tendency to look for cheap locations abroad or to outsource more and more of their activities. Both tendencies have an impact on our thinking about changes in the spatial pattern of economic activities.

However, we know that big firms, even those active in more or less the same fields, often pursue different spatial strategies. It is also known that the reasons underlying many spatial changes in patterns of activities or the employment of a big firm are primarily non-spatial in character. These two lines of thought (i.e. the influence of the different regional conditions on the strategy of the firm and the impact of the firm's strategy on the region) are the focus of this book. Individual companies have been selected as case studies in order to illustrate the differences in strategies pursued and the spatial effects these strategies have. In fact, the book deals with three components: the strategy pursued by big firms, the business environment in which big firms nowadays operate and the spatial effects of the behavior of the big firms.

Making generalized conclusions on the basis of case studies is problematic. However, it is not our intention to formulate such conclusions. Instead, we want to confront popular theories or concepts with what is really going on in individual firms. The outcome of this confrontation is that too many theories or concepts turn out to be too simplistic, too far removed from the concrete reality of the big firm. The cases presented here can hopefully contribute to an adjustment of the theories and concepts, and make them more realistic.

This book is a follow-up of an edition published in 1990 by Marc de Smidt and Egbert Wever. That book had the same intention. Colleagues who had researched specific individual firms for a long time wrote the case studies in that edition. A number of contributions in this book are written by the same authors, dealing with the same firms. But based on critical remarks made by Peter Dicken

in his epilogue of the 1990 edition, we chose partly for new firms, and as a consequence for some new authors.

The editors want to gratefully acknowledge the co-operation of all the colleagues who contributed to this volume. They are thankful that Peter Dicken agreed to write the epilogue for this edition as well. They dedicate the book to Marc de Smidt, who died in 1992 at the age of 61.

Piet Pellenbarg
Egbert Wever

1 The corporate firm in a spatial context

Piet Pellenbarg and Egbert Wever

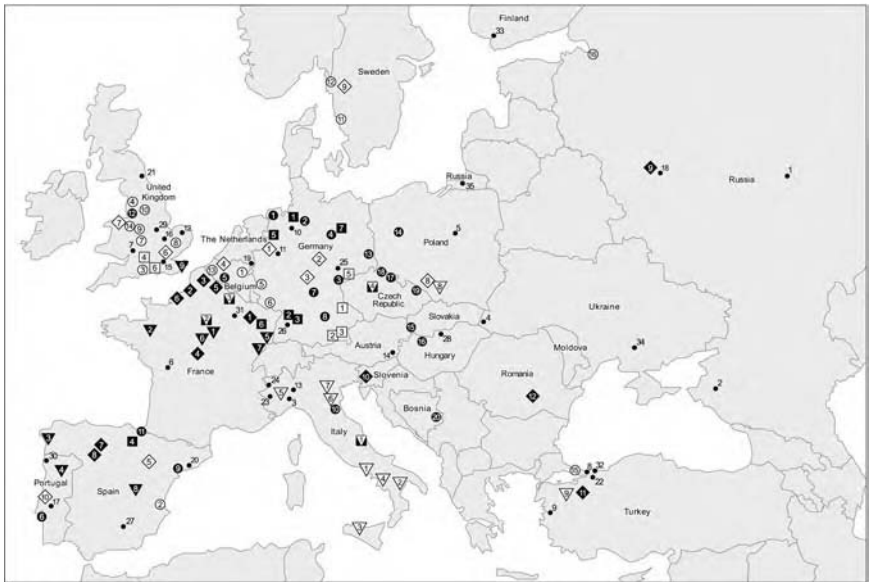
Introduction

Firms continually face changes in their business environment. Their reactions to these changes can have far-reaching consequences for the geographical organization of their activities, and therefore also for the regions in which their activities are located and for their workers. Ample examples of these dynamics can be found in daily newspapers. A random sample from recent Dutch newspapers, for example, offers a dazzling variety of news items about the international movements of corporate activities.

- An increasing number of Dutch multinational firms are nowadays aware of the attractive conditions for carrying out specific activities in India. (The headline says "Workers in India work hard and we in the Netherlands will notice that!") In the beginning of 2005 already 36,000 East Indians were employed by food producer Unilever. The ABN AMRO Bank hired more than 4,000 East Indian workers and Philips more than 3,000. These figures suggest that jobs are disappearing from the Netherlands – at least that is the consent among the Dutch. Other news items seem to confirm this idea: for example, fine chemicals producer DSM closed a penicillin plant in the Netherlands and opened new ones in India and China.
- When, on the first of January 2005, the last EU trade restrictions for clothing and textiles were abolished, a newspaper reported on this issue under the headline "Landslide in textiles". The article discussed the intention of France and Italy, the biggest European producers, to sign a strategic arrangement in order to protect the European textile industry against imports from China.
- Since the crumbling of the Iron Curtain, an increasing part of the spatial rearrangement of Western European multinational firms' activities is taking place in Central and Eastern Europe. A newspaper article announced that "Poland is becoming the bookkeeper for Europe", emphasizing Poland as an increasingly tough competitor for a country like India. The article also mentioned that Philips and Lufthansa have already established administrative centers, respectively in Lodz and Krakow.

- A report titled "The car industry is moving to East Europe", lists a number of plants now located in Poland, the Czech Republic, Slovakia, Hungary, Romania, Bosnia and Slovenia. Figure 1.1 depicts this flight of the car industry to Eastern Europe in more detail.
- The flight of jobs concerns all sectors, not only manufacturing; and all continents, not only South and Southeast Asia. Newspapers reported, for example, that AHOLD, the biggest Dutch retail company (worldwide ranked fourth after Walmart, Carrefour and Metro), has a customer service call centre in Cape Town, South Africa.
- International movements are not exclusively motivated by the pursuit of cost efficiency. One newspaper reported, for example, about Inalfa, a Dutch company of sliding roofs and metal components for cars. This company opened a new assembly line in Grand Blanc in the state of Michigan, USA, a line that will work with and for companies such as Chrysler and Dodge.
- The business landscape changes as a result of the reallocation of activities, but even more in terms of ownership, as many newspaper articles show. We can easily grab half a dozen examples: the French TV producer Thomson stepped into a joint venture with TCL, the biggest Chinese producer of TVs and mobile telephones. A few years earlier, TCL had already bought the German TV producer Schneider. Lenovo from China took over the pc activities of IBM. The Russian firm, Amtel, took over the Dutch producer of expensive car tires, Vredestein. The co-operative dairy companies: Arla (from Denmark) and Campina (from the Netherlands), considered a merger that would make them the biggest in the world after Nestlé. The merger did not materialize. Mittal Steel from India, now the biggest steel company in the world, succeeded in taking over Arcelor, number two in the global steel sector, and announced their wish to move their international head office from Rotterdam to Luxemburg. The states of Kuwait and the emirate Dubai belong to the major shareholders of the German–American company DaimlerChrysler.

All of the companies in these examples deal with international competition and changing 'firm external' conditions, but some sub-categories can be identified. One of them deals with specific conditions of locations, such as low costs. The car factories in Eastern Europe and the expected changes in the shoe and textile landscapes are examples of the influence of such 'firm external' factors. Firms can also improve their competitive position by penetrating into new markets. Inalfa entering the US market, is a clear example, but at least part of the presence of Dutch banks in India, and the new production facilities of DSM and Philips in India and China can also be explained by the opportunities offered by the emerging markets over there. This argument also holds for the Chinese, Indian, and Middle Eastern firms taking over or buying shares in 'western' companies. They buy market positions, sometimes including strong brand names. A third category in the newspaper reports has a link with 'firm internal' arguments. The considered merger of Arla and Campina is an example, as is the takeover of Vredestein by Amtel. In these cases, firms anticipate that collaboration, using



1 BMW
1. Regensburg, BMW
2. München, BMW
3. Dingolfing, BMW
4. Oxford, Mini
5. Leipzig, BMW
6. Goodwood, Rolls-Royce

2 DaimlerChrysler
1. Bremen, Mercedes
2. Rastatt, Mercedes
3. Sindelfingen, Mercedes, Maybach
4. Vitoria, Mercedes
5. Düsseldorf, Mercedes
6. Hambach, Smart
7. Ludwigsfelde, Mercedes

▽ Fiat Groep
1. Cassino, Fiat
2. Sata Melfi, Fiat
3. Termini Imerese, Fiat
4. Pomigliano d'Arco, Alfa Romeo
5. Mirafiori, Fiat, Alfa Romeo, Lancia
6. Maranello, Ferrari
7. Modena, Maserati
8. Tychy, Fiat
9. Bursa, Fiat

① Ford
1. Genk, Ford
2. Valencia, Ford
3. Southampton, Ford
4. Halewood, Jaguar
5. Keulen, Ford
6. Saarbrücken, Ford
7. Gaydon, Aston Martin
8. Newport Pagnell, Aston Martin
9. Coventry, Jaguar, Daimler
10. Castle Bromwich, Jaguar
11. Gotenburg, Volvo
12. Uddevalla, Volvo
13. Gent, Volvo
14. Solihull, Landrover
15. Istanbul, Ford
16. St. Petersburg, Ford

◇ General Motors
1. Bochum, Opel
2. Eisenach, Opel
3. Rüsselsheim, Opel
4. Antwerpen, Opel
5. Zaragoza, Opel
6. Luton, Opel/Vauxhall
7. Ellesmere, Opel/Vauxhall
8. Gliwice, Opel
9. Trollhättan, Saab
10. Azambuja, Opel

▼ PSA/Peugot-Citroën
1. Aulnay-sous-Bois, Citroën, Peugot
2. Rennes-la-Jannais, Citroën, Peugot
3. Vigo, Citroën, Peugot
4. Mangualde, Citroën, Peugot
5. Mulhouse, Citroën, Peugot
6. Poissy, Peugot
7. Sochaux, Peugot
8. Madrid-Villaverde, Citroën
9. Ryton, Peugot

◆ Renault
1. Batilly, Reanult
2. Dieppe, Renault
3. Douai, Renault
4. Flins, Renault
5. Mauberge, Renault
6. Sandouville, Renault
7. Palencia, Renault
8. Valladolid, Renault
9. Moskou, Renault
10. Novo Mesto, Renault
11. Oyak-Bursa, Renault
12. Pitesti, Renault

❶ Volkswagen
1. Emden, Volkswagen
2. Hannover, Volkswagen
3. Mosel, Volkswagen
4. Wolfsburg, Volkswagen
5. Brussel, Volkswagen, Audi
6. Setubal, Volkswagen, Seat, Ford
7. Neckarsulm, Audi
8. Ingolstadt, Audi
9. Martorell, Seat
10. Sant'Agata Bolognese, Lamborghini
11. Pamplona, Volkswagen
12. Crewe, Bentley
13. Dresden, Volkswagen
14. Poznan, Volkswagen
15. Bratislava, Volkswagen, Seat, Porsche
16. Gyor, Audi
17. Kvasiny, Skoda
18. Mlada Boleslav, Skoda
19. Vrchlabi, Skoda
20. Sarajevo, Skoda, Volkswagen

▽ Joint Venture
1. San Benedetto Val di Sangro, Fiat, Citroën, Peugot
2. Lieu Daint-Armand, Fiat, Citroën, Peugot
3. Hordain, Peugot, Citroën, Lancia
4. Kolin, Toyota, Peugot, Citroën

• Overig
1. Nizjni Novgorod, AvtoGAZ
2. Togliatti, Samara, AvtoGAZ
3. Grugliasco, Bertone
4. Solomovo, Evrocar
5. Warschau, FSO
6. Cerizay, Heuliez
7. Swindon, Honda
8. Gebze, Honda
9. Izmir Alikhya, Hyundai
10. Osnabrück, Karmann
11. Rheine, Karmann
12. Norwich, Lotus
13. Chivasso, Maggiora
14. Graz, Magna Steyr
15. Woking, Mc Laren
16. Longbridge, MG Rover
17. Tramagal, Mitsubishi
18. Moskou, Moskvich
19. Born, Nedcar
20. Barcelona, Nissan
21. Sunderland, Nissan
22. Arifiye, Otokar
23. San Giorgio Canavese, Pininfarina
24. Bairo Canavese, Pininfarina
25. Leipzig, Porsche
26. Stuttgart, Porsche
27. Linares, Santana
28. Esztergom, Suzuki
29. Burnaston, Toyota
30. Ovar, Toyota
31. Valenciennes, Toyota
32. Adapazari, Toyota
33. Uusikaupunki-Nystand, Valmet Automotive
34. Zaporizja, ZAZ
35. Kaliningrad, ZAO Avtotor

Figure 1.1 The flight of car manufacturing to Eastern Europe (source: NRC/Automotive News Europe 2005).

complementary competences (technology, finance, and marketing) and reducing costs because of scale economies, will enable them to cope better with growing international competition. But there too, the interplay between internal and external changes is relevant. Changes in the 'firm external' environment may lead to changes in the internal structure of firms, as exemplified by the case studies in the first edition of this book (de Smidt and Wever 1990) and proven again by some of the cases in this volume.

How can we more fully understand the complex changes in the global patterns of production as exemplified by the newspaper reports and the cases treated in this book? The obvious thing to do is to watch what happens on the level of the individual firm. Firms can be seen as the "containers of production" (Walker 2003, p. 119). When spatial production patterns change we may expect to find the explanations within the decision-making units of these 'containers'. But that raises the question: what exactly is a 'firm'? Firms appear in many shapes: small and big, single plant and multi-plant, private and public (state-owned). In this book, we concentrate mostly on corporate firms, more particularly multinational corporations, as they are at the core of the internationally oriented 'enterprise approach' since that approach was formulated half a century ago by economic geographer McNee (1958, 1960). Because our case studies are so evidently focused on the three related categories of 'firm', 'place' and 'replacement of activities' economic geography seems the most natural discipline to derive conceptual bases and relevant theories.

The theory of the firm

Reviewing "the concept of the firm in economic geography", Taylor and Asheim (2001, p. 315) argue that economic geographers have left 'the category of firms … ambiguous because it has rarely been defined with precision'. According to these authors the lack of precision seems to emanate from a lack of real interest in the nature of the firm itself. Quoting Nooteboom (1999), Taylor (1984) and Dicken and Thrift (1992), they point out that economic geographers usually conceptualize the firm as "a phenotype instead of a genotype": "just a site where social and economic processes meet and interact", "a game board rather than a player in the game". However, depending on the paradigm that was chosen as the point of departure, there are a number of different looking 'game boards'. Taylor and Asheim (2001, p. 316) identify no less than nine, yet overlapping, conceptualizations of the firm.

The neoclassical *view treats firms as 'black boxes' that change place as a rational way of responding to changes in factor prices*

In neoclassical theory, rooted in the work of Adam Smith, a firm is an entity run by a well-informed management that essentially makes rational choices on the allocation of resources. A firm is completely characterized by its production function, in fact it "is a phantom, a production function endowed with perfect

knowledge and set to maximize" (Taylor and Asheim 2001, p. 317). Minimizing costs and maximizing sales and profits are marked elements of any firm's behavior, including its spatial choice behavior. Among well-known authors of theories on location choice working from a neoclassical basis are Von Thünen (1826), Weber (1909), Christaller (1933), Lösch (1944), Hoover (1948) and Smith (1971). The general principles of neoclassical theory were outlined by Isard (1956). Although considered out of date by most economic geographers, neoclassical principles are still frequently used, especially in quantitative models of industrial location used in spatial economics.

The behavioral *view accepts rationality as a background for less optimal reactions on changes in the firm's environment*

The new principles of bounded rationality and sub-optimal 'satisfying' behavior (as an opposite of maximizing behavior) were developed by Nobel prize winner Herbert Simon in the 1950s (Simon 1960). The most well-known translation of these new concepts to location choice behavior is Pred's 'behavioral matrix' in which the level of information and the ability to use information have replaced the classical primary location factors of transportation costs, labor costs and agglomeration advantages (Pred 1967). The acceptance of location choices, often based on incomplete information and less rational arguing, led to interesting studies on the 'mental map' of entrepreneurs (i.e. Meester and Pellenbarg 2006), but a major new location theory based on behavioral principles never developed.

The structuralist *view sees the firm as less important as the pressures of class and capital*

The structuralist theory draws on the Marxist view that capitalism tends to exploit labor and creates class divisions. In this paradigm, the industrial location pattern is understood as the result of the clash of labor and capital, a clash in which businesses and governments are in fact just passive players (Massey 1979). The location choice or change is only interesting in terms of the effects it has on employment, income and the structures of power rather than in and of itself. Like the neoclassical and behavioral approaches, the structuralist approach is now outside the main flow of economic geographic thinking (especially after the communist economies in Eastern Europe collapsed), but still has its defenders (Swyngedouw 2003).

The institutionalist *view defines the firm as a site of rules and routines rather than as a place of work*

The institutionalist approach tries to understand the activities of firms within wider social, economic and political structures. This approach focuses on the role that is played by systems of rules, procedures and conventions, both formal (laws, regulations) and informal (standards, values, and conventions). Institutions aim to

reduce transaction costs and in doing so, help develop successful local and regional economies; this is considered to be more important than the transport conditions and localized production factors that figure more prominently in the neoclassical approach. Veblen (1899) is often mentioned as the founding father of the institutionalist approach, but fundamental additions were made by Polyani (1944) and later Granovetter (1985). The latter developed a sociological view on institutionalism, as well as the concept of 'embeddedness' as an indicator of the degree in which firms are rooted in social, economic and political structures.

The network *perspective sees the firm as an organization embedded in socially constructed networks of reciprocity and interdependence*

The use of the term 'embedded', which highlights the way in which firms are "enmeshed in loosely coupled networks of reciprocity, interdependence and unequal power relations" (Taylor and Asheim 2001, p. 320), already suggests that the network approach is primarily an elaboration of the institutional approach. Following the institutional view, there is a particular interest in the embeddedness of economic networks into social networks. Within economic geography, the network view had a substantial influence on research and publications in the past two decades in the area of new and popular concepts such as 'new industrial spaces', 'industrial districts', regional innovation systems', and 'innovative milieus' (Scott 1988; Asheim 1994; Braczyk *et al.* 1998).

The learning *firm concept views the firm as a gathering of learning capabilities, embodied in its workers*

The concept of the firm as a learning organization has many fathers (see Taylor and Asheim 2001) but according to Atzema *et al.* (2002) it is rooted, at least in part, in the ideas of the Danish economist Lundvall (1992). Following Schumpeter, Lundvall regards innovation as a process, but not merely a process experienced by the entrepreneur as a person, but as a collective learning process involving larger groups of individuals within the organization. Innovation, in his view, is not so much the expected outcome of investment in research and development (henceforth referred to as R&D) departments of big firms, but the result of 'learning-by-doing', 'learning-by-using' and 'learning-by-interacting'. Authors like Florida (1995) and Morgan (1997) transferred the same idea to regions (calling them 'learning regions') arguing that the learning capability of firms in a region where firms have more than average mutual relations can form the basis of intensive knowledge dissemination and innovative performance.

The competence *view defines the firm as a research base: material resources as well as technologies and know-how*

The competence view of the firm is also known as the *resource-based* view of the firm. According to Taylor and Asheim, it rests on the seminal work of

Edith Penrose (1959) who argued that firms do not survive and grow because of exogenous factors such as market size, industry characteristics (or location conditions, we may add) but first of all because of 'firm internal' factors. Traditionally 'firm internal' factors are interpreted as production factors (land, labor, capital) but also technical or organizational routines, and learning capabilities belong to the firm's endowment with resources that make the essential difference between going up or down in the competitive process. The importance of firm routines such as the organization's 'memory' and 'continuity' is also recognized in the newly emerging evolutionary view of the firm that is closely allied to the competence view of the firm (Boschma *et al.* 2002).

The **discursive** *view looks at the firm as a system of social relations in which the actors involved are entrenched or embedded*

The discursive view takes the firm as a 'discourse of managerialism' (Taylor and Asheim 2001) meaning that the firm's activities primarily arise from information exchange and discussion between entrepreneurial people within the organization, and the resultant strategic decisions. A detailed description of this process is given by O'Neill and Gibson-Graham (1999). The relationship with firm external factors and conditions is less clear here, it is more about people than about places.

The **coalition** *view sees a firm as the structure that result from essentially temporary coalitions of (groups of) actors*

The coalition view is a variation of the discursive view, but the accent is more on groups than on individuals. The view is based on empirical evidence concerning the success of portfolio entrepreneurship in small and medium-sized enterprises and the role of teams in creating successful small firms (Taylor 1999; Taylor and Asheim 2001). Businesses, in this view, are to be regarded as temporary coalitions of entrepreneurial people whose activities and relationships come and go with changing social and economic circumstances and institutional changes. As in the institutional approach, the 'mother' of all of the last five views, networks of social relations are the breeding ground for the formation of the coalitions in question.

In the list of nine approaches, the first three views are the more traditional ways of conceptualizing the firm. The latter six could be classified as 'contemporary' approaches and the last five may lose their importance in the future. They represent related ways of thinking, and all are essentially spin-offs from institutionalism. History might re-categorize them as mere aspects of the institutional approach, or re-arrange them between the institutional and the (now evolving) 'evolutionary approach'. This last approach could in fact be added (to Taylor and Asheim's list) as a tenth theoretical basis for conceptualizing the firm. The evolutionary approach in economic geography (which developed from evolutionary economics, see Nelson and Winter 1982) is based on the idea that

the behavior of a firm is constrained by its past, both at the level of the firm itself as well as at the level of the location, a constraint referred to as 'path dependency'. Path dependence creates firm routines on the local level that can be transferred – when strong enough – to branches of the firm at totally different places (Boschma and Lambooy 1999). Interestingly, the evolutionary approach returns to the behavioralist's view of 'bounded rationality' as one of the basic assumptions about the ways in which firms make decisions.

Theories versus case studies: the aggregation problem

Elements of the various conceptualizations, especially the contemporary ones, can be traced in the chapters of this book. Anticipating a more elaborate introduction of these chapters, we observe the institutionalist view (especially the concepts of transaction costs and embeddedness) in the analysis of GlaxoSmithKline's activities in Poland, the network view (especially subcontracting relationships) in the Flanders study, and the case of Volvo. The learning firm adagio (in the sense of an upgrading of a firm's establishments) and the competence view (the availability of resources) are recognizable in the Volkswagen and MacMillan Bloedel stories. The discursive view is employed in the Smartville case. The coalition view as such is lacking, but an evolutionary perspective (indicating 'path dependency' and 'lock in' as recognizable elements in the development of TNCs) is employed in the descriptions of the Volkswagen and Philips cases.

One of the aspects worth considering is, if and how the firm case studies demonstrate possibilities of linking the various concepts to the multi-locational nature of the firms. Taylor and Asheim (2001, p. 317) argue that thus far all different conceptualizations of the firm have as a common problem that "they never quite come to grips with issues of multilocationality". One of the problems to solve here is that a location optimization strategy for the total organization may include (several) sub-optimal locations for individual plants. To a degree, the Pamplona location of Volkswagen can be seen as an example. The Philips case shows examples of another kind of sub-optimality, i.e. sub-optimal locations continuing their existence as a result of slow corporate reactions to changing circumstances.

New impulses for a 'spatial theory of the firm' may be expected from the 'new economic geography' (NEG) that developed in the past decade within economics, as a reaction on publications by Porter and Krugman (Porter 1990; Krugman 1995; see also Brakman *et al.* 2001). The NEG, similar to Taylor and Asheim (2001), criticizes economic geography for lacking a micro theoretical basis for firm location. The NEG's ambition is to develop such a theoretical basis. Additionally, it offers an interesting new spatial development model with 'multiple equilibria', that explains how small local events can have massive consequences in terms of regional clustering of economic activities. In our series of case studies, Smartville and the GlaxoSmithKline company in Poznan are examples of this. But there are also drawbacks to the NEG approach. A weak

point is that the NEG's models are still based on (old-fashioned) neoclassical thinking, and from an economic-geographical viewpoint, the NEG is wrong in her lack of interest for empirical studies. Nijkamp (2001) quotes Leontieff on this issue: "without solid applied work based on real-world observations economic analysis tends to lead to speculation based on non-observed facts". We may add to this that the NEG's analyses tend to be on the level of countries, much more than regions, although occasionally large cities are considered (Brakman *et al.* 2001). 'Real-world observation' of the individual firm is even further out of sight. In this book we take another standpoint. We depart from the actions of the individual firm.

The contradictory insights from the 'original' and 'new' economic geographies typify the difference between an empirical and a theoretical oriented discipline. But it is also illustrative for the ever-present tension between scientific findings concerning the strategic choice behavior of firms on micro, meso and macro spatial levels. This presents us with an aggregation problem. On the one hand, a scholarly approach concerning the strategic choices of firms aims to aggregate empirical findings into general rules and theories. On the other, generalization might lead us to seriously misinterpret reality. In this book, the Philips case and the case study of the semiconductor business are ready examples of the necessity to avoid this pitfall.

Is there a research tool available that helps to step around the aggregation problem? The so-called 'demography of firms approach' is a set of methods used to analyze the relationship between developments on different spatial, and thus generalization levels (Van Dijk and Pellenbarg 1999), but this methodology cannot explain the relationships in question. Sure, in order to get more insights into the main cause of regional economic growth or decline in a statistical way of speaking it can be useful to unravel the components of economic change (i.e. firm start-ups, firm closures, firm migrations, growth and decline of existing firms) since such an unraveling can bring more clarity to which one of the demographic events, and on which spatial level, is the main course. But a pure demographic-calculative approach gives no clue about the 'event histories'. It has to be combined with research methods adopted from the behavioral and institutional approaches, searching for rational as well as irrational impulses for spatial choices made by entrepreneurs. These choices are not in all cases inspired by circumstances on the same spatial level they affect. Sometimes, local or regional events can only be understood from a global change perspective, as many of the cases in this book illustrate. At other times, local developments can only be explained from essentially local conditions and local, personal relationships, a viewpoint that receives much attention in the new evolutionary approach in economics and in today's economic geography. For example, some of the largest geographical clusters of economic activities resulted from rather accidental decisions of entrepreneurs, for instance the automotive cluster around Detroit, USA (Klepper 2002) and the semiconductor industry in Silicon Valley (De Jong 1987). In both cases, the crucial development factor was a process of spin-offs generated by early starters (Olds, Buick/General Motors, Cadillac and Ford in

the Detroit case, Fairchild and Hewlett-Packard in the Silicon Valley case). The case studies in this book present examples of the same process. The spin-off process receives special interest in Chapter 5, dealing with sponsored corporate spin-offs in Sweden. There too, the spin-offs tend to settle not far from their incubator. Still, that doesn't prove that distance is the decisive factor in all circumstances where firms have intensive relations. For instance, distance is generally less important for firms considering material purchases; here procurement patterns tend to be worldwide, as shown in the chapter about firm networks in Flanders, and in the chapter about the global semiconductor sector. Especially strategic goods or parts tend to travel far to their buyers, provided they represent the best quality available. When material deliveries are accompanied by intensive knowledge exchange, spatial proximity becomes more important. The same is true for services, which generally are preferred to be delivered from shorter distances. In this book, the GlaxoSmithKline story is an example.

Theories of transnational firms

In the preceding section, we concentrated on the economic geographer's view of the firm. Yet the disciplines of economy and management have also seen an unmistakable upsurge of interest in the firm and much work has been done, particularly in the nineteen eighties, by economists, management scientists and geographers in the activities of large and transnational companies (TNCs). This interest produced, among other things, a series of now well-known models of the international spatial behavior of TNCs, such as Håkanson's corporate growth

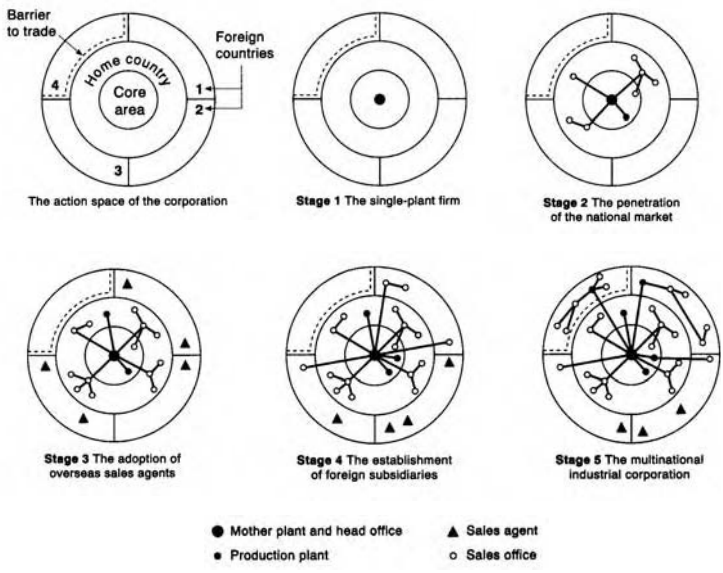


Figure 1.2 Håkanson's model of the spatial evolution of firms (source: Hayter 1997, p.100).

model, Dicken's spatial change model, Dunning's OLI paradigm, and Vernon's product life cycle theory. We will only shortly describe a few of the main features of these models, because many of them can be recognized quite well in the firm cases treated in this book.

Håkanson and Dicken both describe the stepwise growth of a firm from its initial location to a gradually expanding pattern of sales agencies, sales offices and branch plants in more and more regions and countries. Figure 1.2 shows Håkanson's model that refers among others to the cases of Philips and Glaxo-SmithKline in this book. Dunning concentrates on the forces that drive the expansion, arguing that foreign establishments are only realized when ownership-specific advantages (O), location-specific advantages (L) and internalization advantages (I) can be realized. Vernon's product life cycle (PLC) theory (Figure 1.3) relates the international location strategies of firms to the development stages of their products; it can be found back in the Philips and the semiconductor case as well.

When these concepts and theories were formulated, McNee's 'geography of enterprise' was re-coined as a relevant approach for studying the international activities of TNCs, and redefined by Hayter and Watts (1983, p. 157) as "the study of the influence of the policies and structures of multi-product, multi-plant enterprises on changes in industrial location and on processes of regional economic development". This is definitely a definition that puts the focus on large and multi-plant firms only, a standpoint that has been questioned since then. For instance in his 'epilogue' in the earlier edition of this book (de Smidt and Wever 1990) Dicken suggests to "move away from a total preoccupation with the large

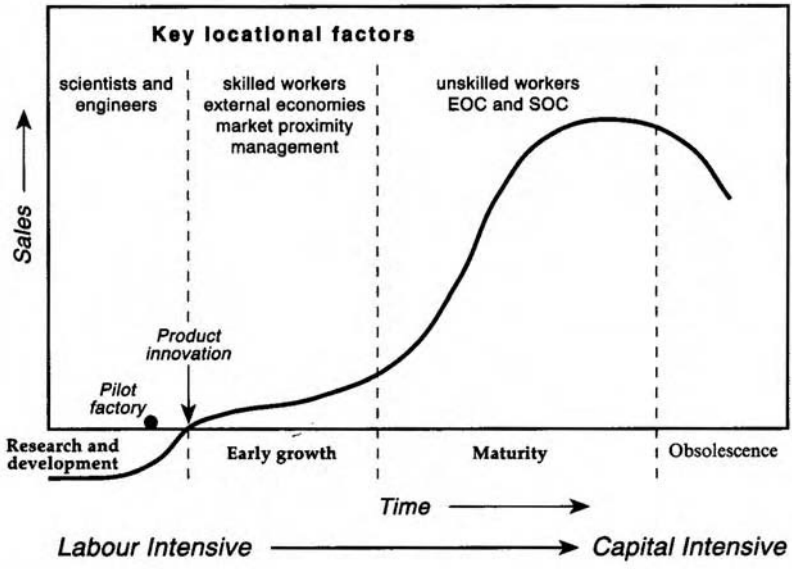


Figure 1.3 The product life-cycle model (source: Hayter 1997, p.100).

corporate enterprise" and to "emphasize research in enterprises of all types and sizes and especially, the complex interrelationships between them" (Dicken 1990, p. 235).

In a way, this suggestion has been followed by what we now know as the institutional approach in economics and in economic geography. Inspired (says Dicken) by the Coasian view that the cost of internalizing or externalizing transactions is the crucial factor for a firm's organization structure (integrated or disintegrated) the institutionalists show great interest for the nature and operation of production networks. It puts the attention for subjects like 'corporate networks', 'spin-offs' and 'subcontracting relations' in the heart of the discipline, and consequently, a number of the firm case studies in this book are dedicated to these subjects. This concerns more especially the chapters on networks of firms in Flanders, corporate spin-offs of firms in Sweden, and networks of subcontractor relations around such firms as Volvo, Smart and GlaxoSmithKline.

The geography of enterprise and the case study approach

Is it wise to try to build up structured knowledge about the spatial organization of TNCs through a case study approach? This is a questioned approach too, just like the focus on the multi-plant firm. There is the cautioning example of the behavioral approach in economic geography, which ran aground in the nineteen seventies in a mist of interesting case studies, and missed the chance to develop a sound new body of theory based on behavioral assumptions. The geography of enterprise could run aground as well if it should continue a practice of case studies only. Dicken, quoting Michael Taylor as saying "the geography of enterprise requires a theory of enterprise" (Dicken 1990, p. 235), wrote in the 1990 issue of this book: "Perhaps enough 'facts' have been discovered. Perhaps it is time to step back, stressing theoretical coherence and consistency to a higher degree".

The warnings are clear enough but we nevertheless think that a continuation of empirical, case-study oriented research is necessary to reach a full understanding of the changing activities of TNCs in the changing world production system, and in the end, to reach a sound theoretical view on this system. The case studies clearly illustrate the danger of inferring theoretical assumptions from too generalized, statistical datasets. Such sources cannot, for example, reveal the importance of individuals for changes in corporate policies, as exemplified in the studies for MacMillan Bloedel (with CEO Stephens) and Philips (with CEO Timmer). More generally, contemporary case studies will always be needed to infer hypotheses for new theorizing, and to avoid theories lingering on the basis of aging case study sources.

Meanwhile, theoretical progress in the geography of enterprise has certainly been made. Theoretical models have been developed more often than not on the basis of case study material! They aptly describe the different organizational form of 'multinational', 'international', 'global' and 'integrated network' organizations, corresponding with varying degrees of personal, administrative and operational control over decentralized establishments. In Chapter 9, these models are

used to describe changes in the Philips organization. Other new theoretical models of the TNC organization take a market-oriented approach, like the one by Dicken (Figure 1.4) that shows different possibilities of organizing spatially separated production facilities in accordance with different systems of serving international markets.

Next to spatially oriented models which emphasize corporate control and marketing strategies, the geography of enterprise developed an interest in the modeling of how transnational companies constantly restructure their portfolio of activities (including the spatial dimension of that portfolio) in order to strengthen their market position and as a consequence, their profits. Such restructuring implies upgrading and innovation, as can be seen in the Volkswagen case in Spain. Some new trends can be mentioned too, i.e. the various case studies in this book indicate a decline of in-house R&D, a growth of strategic alliances aiming for innovation, and even the direct purchase of technology (the Philips case for medical activities). But the restructuring theme covers more than the subjects of control, markets, profits and innovation. It also implies attention for the organizational and spatial con-

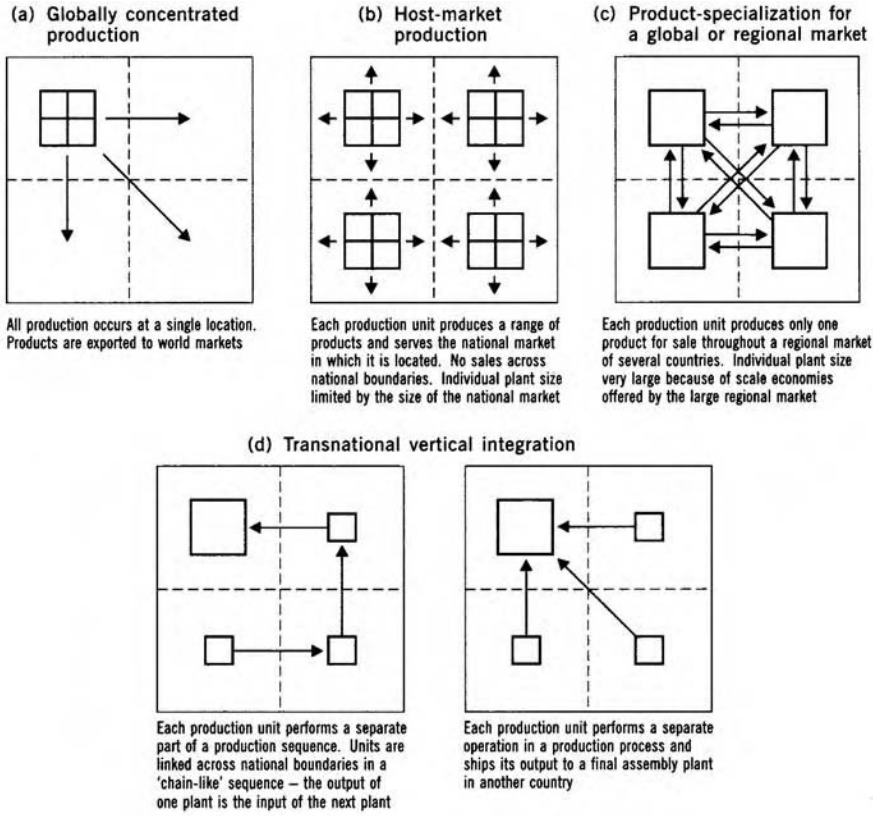


Figure 1.4 Models of spatial organization of TNC production (source: Dicken 2004, p. 246).

sequences of mergers and takeovers, the consequences of different ownership models, and the variations between different economic sectors. For instance, what happens to 'local champions' and the regions where these 'champions' used to dominate the economy, when they become subjects of a takeover as in the case of MacMillan Bloedel? How do co-operative structures influence a TNCs development and spatial organization, as in the case of AVEBE? Are the patterns and trends we observe in the world of production mirrored in the world of services, for example, in a real estate investor like ING?

One aspect that tends to be overlooked in the current practice of restructuring analysis and modeling is the influence of restructuring on local embeddedness – a theme that receives growing attention, especially in the institutional approach of firm behavior. Firm start-ups and fast growing survivors ('gazelles') are known to have a high degree of embeddedness in local social and economic networks; this is even believed to be one of the explanations of their successful performance and their unwillingness to leave their region (Stam 2003). Mature firms may also owe their growth to embeddedness in local networks but the 'punishment' for fast growth, whether it concerns a young or a mature firm, is often a takeover by a larger player, who is interested in the other firm's resources (as in the case of MacMillan Bloedel), its knowledge (witness the Philips strategy) or its market share (GlaxoSmithKline in Poland). As the case studies of the firms in question show, the degree of local embeddedness of the firms that are taken over tends to diminish within the context of the larger, transnational organization.

The firm and the region

Regardless of the chosen approach or underlying theory, all authors who write or have written about the spatial organization of firms have to deal with the fact that location choice is a double-sided coin. On the one hand, the company wants the best location or set of locations for its activities. To find this or these, the company considers existing spatial varying investment climates, that is to say, the availability of sites and infrastructures, labor, sources of capital and technology. On the other hand, the location and surrounding area witness a change in investment conditions as a result of a new firm establishment. Watching the same event – a firm choosing a location – from either of the two angles – the firm or the region – creates a totally different view.

Originally, based on the work of the founding fathers of traditional neoclassical location theory such as Weber, Lösch, Greenhut and Hoover in the first half of the twentieth century, the prime focus was on the location choice theme, i.e. the viewpoint of the firm and the manager that makes the decision. Later on, the other side of the firm-environment relationship started to become more important. Especially in the course of the 1990s the regional viewpoint has received more and more interest. A well-known representative of this viewpoint is Alan Scott, who stressed the importance for economic geography of 'new industrial spaces'. His work led to a host of publications on 'industrial districts'. The institutional approach explicitly focused on the regional 'embeddedness' of

firms, being one of the most crucial success factors for these firms, as well as the regions involved.

It is important for the geography of enterprise to make a distinction between the 'firm' and 'region' viewpoint. Vaessen (1993) links both viewpoints to two separate streams in the geography of enterprise, "one focusing primarily on the adjustment behavior of (large) firms in response to environmental (location) conditions" and "the other oriented towards the regional impact of the structure and behavior of large firms" (Vaessen 1993, p. 26). In the case studies in this book, we try to pay attention to both viewpoints, or streams, as it may raise the interest from both spatially oriented scientists and practitioners of economic and management sciences.

It is possible to enumerate a number of changes that are taking place, both in the firm in the region/environment, and to link these changes to the case studies in the book. Seen from the firm, three categories of change are observable in all case studies. First, a process of vertical de-concentration and the creation of a network structure for the firm; second, the concentration on core activities ('back to basics') and a striving to contract out as many as possible other activities; and third, ongoing processes of company restructuring, resulting in change and renewal of the production portfolio. Trend number one is clearly observable in the Smartville and Philips cases; trend number two in the Philips, Volvo and GlaxoSmithKline cases; and trend number three can be traced back in the cases of Philips and Volvo again, but also in the MacMillan Bloedel and AVEBE cases. The spatial consequences of all trends, especially the spatial pattern of network relationships, are diverse, and sometimes the reverse of what one expects at first sight. In the Smartville case for instance, we observe a fully integrated local production complex, but with remarkably little local relationships outside of that complex itself. On the other hand, the second automobile production case in this book, Volvo, shows not a local but a worldwide network of suppliers, but some of the (buying) car factories in this network are much more embedded in local networks than the Smartville complex. The Volvo case illustrates too that geography matters. The regional network of Volvo suppliers differs in intensity in different parts of the world: small in Mexico but extensive in China, owing to the obligations concerning the inclusion of Chinese suppliers imposed by the Chinese government.

In the region, we witness first, an accelerated pace of change of comparative advantages; second, a lower level of transaction costs and costs of fluctuating exchange rates, and third, as a consequence of the lower transaction costs *and* the use of ICT applications: a general reduction of the counteracting influence of distance on the internationalization of business activities. Trend number one is most clearly observable in Europe, where the collapse of the communist system has produced a totally different pattern of location conditions, with low wage countries as well as emerging markets located within less than a day's drive now from the traditional West European core regions. The European pattern of car production settlements (Figure 1.1) is an example of the quick adaptation to the new situation, but the change affects firms in all sectors; in our series of case

studies GlaxoSmithKline is another example. Trend number two is, of course, related to the development of the WTO, the formation and expansion of macro regional co-operation schemes such as the EU, NAFTA and ASEAN, and, especially in Europe, the introduction of the Euro as a new common currency. Finally trend number three, the reduction of the influence of distance, mainly applies to the easier flow of material goods.

Aspects of corporate firm behavior; the structure of this book

The main structure

In the preceding sections, we mentioned some of the case studies in this book. However, we did not yet give a full overview (Figure 1.5). Neither did we give our considerations for choosing just those companies and countries as being good examples of the areas and subjects of interest of the geography of enterprise. First of all, the case studies are chosen from a variety of economic sectors and countries, to get a broad view of possible reactions of TNCs on the changing international business environment in a wide variety of geographic settings. Second, we made the choice to *not* maintain a strict and 'uniform' thematic framework for all contributions. We preferred that they illustrate a variety of *different* themes. The resulting thematic variety of the cases (see the third column in Figure 1.5) is meant as a survey of the present experiences of 'the corporate firm in a spatial context'. Third, we tried to place the examples as much as possible in a network perspective, looking at them from both the 'firm' and the 'region' point of view. All cases can in fact be thought of as being positioned in a triangle with 'firm', 'region' and 'network' as the angular points.

The first group of chapters following this introduction (Chapters 2–5) stresses the network perspective. To this group belongs the highly empirical analysis of firm networks in Flanders (Belgium), two quite different networks of subcontracting in the automobile sector, concerning the Smart factory ('Smartville') in France and the international activities of the Swedish Volvo, and lastly the networks of corporate spin-offs in Sweden.

In the second group of chapters (6–9) the focus is more on the corporate 'firms' themselves. The cases in this second part are different in nature: the Philips company and the international semiconductor branch versus a real estate investor and management company (ING), and an atypical co-operative company in the food industry sector (AVEBE). But the message hidden in all four case histories is the same: we should be very cautious to formulate general conclusions regarding the behavior of TNCs. Similar circumstances can lead different firms to totally different reactions. Some firms are so unique in their products and strategies that they can hardly be compared with any other firm at all!

In the third group of chapters (10–12) we move (within the conceptual triangle) a little bit more to the 'regional' viewpoint. Here we meet three case studies (Volkswagen in Pamplona/Spain, MacMillan Bloedel in British Colum-

Author	*Firm/sector*	*Focus*
01 Pellenbarg and Wever		Introduction
02 Vanneste and Cabus	Firms in Flanders	Corporate networks
03 Ivarsson and Alvastam	Volvo/automobiles	Local subcontracting and location choice
04 Dörrenbächer and Schulz	Smart/automobiles	Corporate subcontractor relations
05 Lindholm Dahlstrand and Wallin	Firms in Sweden	Corporate spin-offs
06 Nozeman	ING/financial services	Internationalization of real estate investment and development
07 Arita and McCann	Semiconductor firms	Spatial organization of innovative activities
08 Strijker	Avebe/food industry	Co-operative structures
09 Atzema, Wever and Krol	Philips/electronics	Corporate restructuring and its spatial impact
10 Fuchs	Volkswagen/automobiles	Upgrading peripheral plants and internal competition
11 Hayter	MacMillan Bloedel/ forest industry	'Local champions' and spatial consequences of takeovers
12 Stryjakiewicz	GlaxoSmithKline pharmaceuticals	Local and regional networks
13 Dicken	Relational approach	Epilogue

Figure 1.5 The structure of this book.

bia, and GlaxoSmithKline in Poland) that focus on the relationship between the firm and the region in which it is located.

The chapters

In the first 'network' chapter, dealing with corporate networks in Flanders, some of the questions most frequently discussed nowadays in the geography of enterprise are addressed:

a What is the role of distance?
b Do we observe regional clusters?
c Do we see a process of learning within inter-firm networks?

The 'local dimension' is quite visible, in the shape of the specific Flanders context. But also the differences between Belgium and foreign firms, between small and big firms.

The chapter on Volvo emphasizes the process of continuing restructuring of this company, a process that is driven by the increasing level of internationalization.

In this case, the network perspective highlights the difference between 'domestic suppliers' and 'local content requirements' in different parts of the world. This illustrates the chapter authors' argument:

> that detailed studies at the firm level can reveal a number of aspects that, in a generalized form, can contribute to the understanding of the world production system, that conventional approaches using secondary data from official statistical sources at an aggregate level may not be able to observe, identify, describe and explain.

This is the same argument we presented earlier in favor of the case study approach.

The Smartville story in Chapter 4 is again about inter-firm networks, but deals with a unique case. Smartville (in Hambach, France) is the absolute opposite of the former vertically integrated mass-producing automobile factory. It is in fact an extremely disintegrated 'cluster', consisting of many independent firms that together act as one car-producing firm in which the central firm can be seen as a 'hollow company', that concentrates exclusively on management. The cluster as a whole is hardly embedded in the region, one even could call it a 'cathedral in the desert'. That might imply a threat for that region. Without local or regional 'anchors' (other than the employees) regional economic flag-ships like Smartville can easily sail away.

The contribution about corporate spin-offs in Sweden (Chapter 5) confirms earlier findings on the co-location of the big, older parent organizations and spin-offs. At the same time, the authors stress that in case new venture ideas were brought up from multiple sources, a somewhat more complex picture was created about the role of small and big companies in innovation than the picture that could be expected, on the basis of what the 'young' and 'older' Schumpeter has told us. In this chapter too, a difference was found in the strategy of two important Swedish companies, Saab and Volvo, concerning their spin-off activities.

With the Philips story in Chapter 9 we turn from 'network-oriented' to 'firm-oriented' cases. The Philips story is, in fact, similar to Smartville, yet in a totally different way, an illustration of the transition of a vertically integrated company to a disintegrated company, where even innovation is no longer exclusively driven by in-house R&D. Knowledge-oriented strategic alliances and takeovers are becoming more important here. But just like the Volvo story, the Philips story illustrates how the understanding of a TNCs development needs insights in its internal structures and strategies. That development cannot be read purely from figures, but requires insights that include the importance of individual persons, as we argued before. In the case of Philips, the company had to re-orientate in the early 1990s, when its financial performance was extremely poor. But it needed a very strong CEO like Timmer to change Philips' internal culture, which was a time-consuming process. Large TNCs prove to be like an oil tanker; it is difficult to change their course in a short time.

Like the Philips and Volvo studies the descriptions of developments in the semiconductor industry in Chapter 7 demonstrate that general rules and theories can give no full explanations for the spatial patterns of the TNCs in this sector. Different players like Intel, Philips, Texas Instruments and Toshiba choose quite different strategies. These strategies do not correspond to the logic of a simple product life cycle model.

AVEBE offers a totally different picture again. This case is interesting because it includes a comparison within the potato starch sector between developments in the sphere of private and co-operative firms. Interestingly, the private firms started an internationalization strategy a full century before the co-operatives adopted such a strategy, but not a single one of them survived, whereas the co-operatives (now united in AVEBE) are still alive, albeit not without problems. Strangely enough, the late acceptance of the need to internationalize has saved the firm and its employment for its home region, which is one of the most persistent problem areas of the Netherlands, without much alternative sources of employment.

The final case study with a 'firm-focus', about the real estate activities of bank insurance company ING (International Netherlands Group) turns to the business service sector. ING Real Estate offers a remarkable example of the rising trend of internalization in the financing of real estate development, construction and management. The essence of ING's success is to be found in the (in their view unique) combination of developing, financing, and investment management, a focus on quality, and consequently taking research as a basis for decision making. Vulnerabilities are to be found in the ups and downs of the world economic tide and the level of interest rates, and possible new and less profitable accounting regulations.

The third ('region-oriented') part of the book starts with the chapter about the Volkswagen plant in Pamplona. It concentrates on the events in one single production plant of the VW company. For that Pamplona plant a totally different perspective emerged when a shift in the international business environment changed its location in Spain from a cheap peripheral location into a more expensive central location. Upgrading of the Pamplona activities became a necessity to survive, in fact the same process that the Philips production facilities in the Netherlands had to face. The Volkswagen case also shows that competition is not only to be found between transnational companies, but also within one and the same TNC. When VW took over other car producers it became the owner of some brands that were real competitors for the Polo produced in Pamplona.

Turning to the MacMillan Bloedel company discussed in Chapter 11, we have another case of a firm that had a very dominant employment function in its region (what is Navarra for Volkswagen, was British Columbia for MacMillan Bloedel) but as the author of the MMB chapter states, business-environment relations in resource peripheries are very different from those found in industrial cores. There are resemblances between MMB with the Philips case: here too a 'lock-in' causing the delay of strategic decisions and 'local factors' being an important cause for this 'lock in' (i.e. political developments in the MMB case, and institutional reluctance to firm closures in Western Europe in the Philips case). But there are differences between both firms as well. In the MMB case

there were strategic internal mistakes, in the Philips case there was the excessive degree of independence of national divisions.

The last chapter deals with GlaxoSmithKline. The author stresses that within the global strategy of this pharmaceutical company, the business conditions existing in Poznan are not important at all. Nevertheless, GSK is pretty well embedded in the Poznan region. As a result, the author sees positive effects for the firm as well as for that region. In the description of this case some of the elements of the well-known 'old' growth pole theory can be traced.

In closing

We realize that certainly not all relevant themes for the study of the corporate firm in a changing local, national and international business environment have been covered in the case studies of this book. We will not deal with this aspect too long. Peter Dicken pays attention to this and other aspects in his final chapter, especially the relational approach of TNCs. However, one factor we want to stress ourselves is the cultural factor. It is well-known that differences between a firm's internal culture and the culture in the region where it is established or wants to locate, creates problems for the management of the firm involved. Ideally, the internal culture of a firm should fit more or less with the culture of the region or nation where the firm is located. Hofstede (2001) made considerable progress in explaining the dimensions of such cultural differences. Brons (2005) showed that cultural differences do exist as well, between regions within the Netherlands. Unfortunately, the results of Hofstede's work have not yet been recognizably incorporated in the geography of enterprise literature. Although not completely absent in the individual case stories (the Smartville and VW cases, and Philips), this cultural factor could certainly have got more attention. If the theme of corporate governance would have been more central in this book, attention for the culture factor would even have been an obligation. But in that case, we would have chosen to describe firms that were more 'comparable' in their range of activities, thus making the influence of culture more visible. We chose, however, to depict 'different' types of firms, to illustrate a variety of themes and pose a variety of related questions. In the following chapters, at least some of the answers to such questions will be found.

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2 Networks of firms in Flanders, Belgium

Characteristics and territorial impacts

Dominique Vanneste and Peter Cabus

Introduction

Interfirm networks, with focus on supplier choices, location strategies, and the integration of local firms in local and supra-local networked territories, have been subject to a burgeoning field of inquiry in the literature. However, the network paradigm, while recognizing that global competition occurs increasingly between networks of firms, is complex and research is incomplete. Theory is fairly consistent about the reasons, conditions and outcomes of (successful) networking, but empirical studies show a plethora of (geographical) structures making it difficult to draw lessons, e.g. for industrial policy objectives. A striking example is presented in the special issue of Regional Studies (1999) about "Regional networking, collective learning and innovation in high technology SMEs in Europe" and in the Blackwell cultural economy reader (Amin and Thrift 2004).

Our aim is to make a contribution in understanding firm networks and firm networking in the specific contextual setting of the relatively small region of Flanders (Figure 2.1). This context may be of interest since the Flemish economy is characterized by an important share of highly specialized SMEs, together with big (multinational) firms. In literature it is claimed that this combination is particularly suitable for developing networks. Furthermore, SMEs depend on networking to deal with international competition and survival.

Being a small region and highly export oriented, Flanders has also to deal with international influences especially from the surrounding highly dynamic regions. This setting does not make a coherent industrial and regional economic policy easy, because this has to be set up in a very competitive environment. Finally, the impact of foreign capital in Flanders' economy is high. There are 4,500 foreign companies (57 percent of all foreign companies in Belgium), with *c*. 240,000 jobs and responsible for another 130,000 jobs in indirect employment. In sum, foreign firms are responsible for *c*. 20 percent of total employment in Flanders. In manufacturing industry this figure rises up to more than 50 percent (Vanneste *et al.* 2003, pp. 111, 128, 166). This international orientation offers opportunities as well as threats for regional networking.

Our research had to serve both firms and institutional organizations, since previous research had pointed out two major findings. First, networking is mostly a

Figure 2.1 The federal structure of Belgium (source: Vanneste 2005, ISEG, KULeuven).

posterior event while it has the potential to be an a priori location factor e.g. for foreign companies (Vanneste *et al.* 2003). Second, "in a corporate strategy, 'local' is certainly not the same as it is to socio-political entity(ies) concerned" (Cabus 2000, p. 91).

In its essence, networking has to do with core business and outsourcing. In this context, we first focus on the networking of Flemish firms as core players, with their first-tier players (supplying goods and services) and the spatial aspects of this networking (the networked territory). Second, we explore the impact of networking on the firm's location choice (in its different appearances such as the presence of suppliers and business services, clusters, trust between companies, the importance of specific regional know-how, etc.). Finally, a brief discussion is made on the degree to which institutional organizations act as partners in networking and partnership initiatives. All this is investigated from the corporate perspective.

In Figure 2.2 the analytical framework is presented, where it is made clear that especially the relationships between core players and the first-tier firms are investigated. Networking is looked at from four viewpoints:

a the type of activity;
b the type of location;
c the decision making process leading to outsourcing; and finally
d the way in which the network is established.

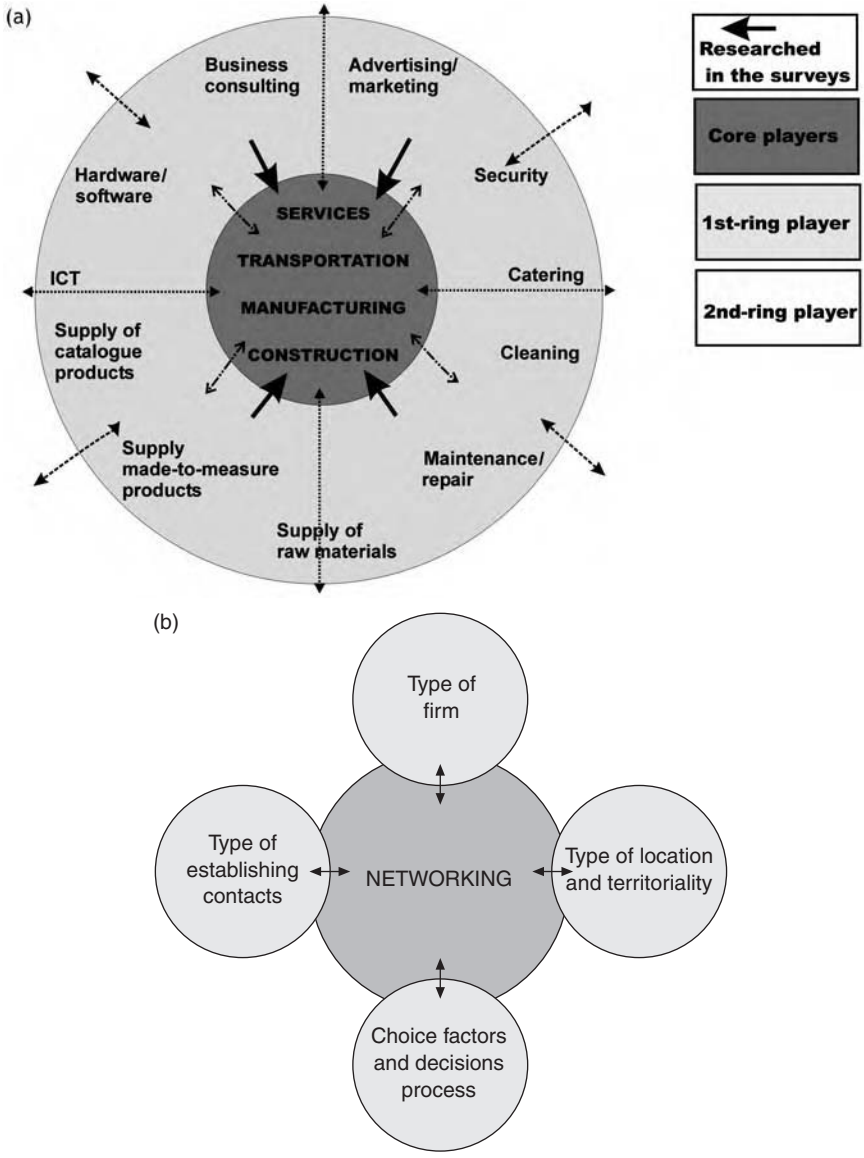

Figure 2.2 The surveys' analytical framework (source: own design after the terminology in Storper and Harrison 1992).

With this analytical framework, we want to confront networking as it is developed in the literature with day-to-day corporate strategies. Not the development of new typologies but trying to understand real networks of firms in Flanders is the goal of this contribution. This is performed by analyzing some typical cases.

Theoretical background

Before presenting the research context and the empirical results, some theoretical concepts are presented. Literature about the topic is overwhelming and therefore the elements presented below are not exhaustive.

Clarification of the network concept

The organizations in a network are mutually dependent upon resources controlled by each other, and there are benefits to be gained by pooling their resources. Thus, in network forms of resource allocation, firms do not operate on an individual basis but relative to the (some of the) corporate organizations in their network (Nohria and Eccles 1992; Cooke and Morgan 1993). Firms can be a member of different (types of) networks at the same time. The need for participation in networks is underlined by the statement that network advantage is "a real club good, achieved only by those economic actors who are partners in the economic and spatial network" (Capello 2000, p. 1925).

Yeung (2000, p. 302) structures the literature (in economic geography) about firms and networks according to three spatial scales of analysis:

1 the organization of networks;
2 firms and networks in geographical agglomerations; and
3 the impact of networks on flexible production systems.

Most of the definitions of networks – the notion itself is vague and the literature a terminological jungle (Nohria and Eccles 1992) – go beyond the corporate perspective. In this respect, Yeung (2000, p. 302) affirms:

> I view networks as both a governance structure and a process of socialization through which disparate actors and organizations are connected in a coherent manner for mutual benefits and synergies. Defined in this way, there can be many types of networks, ranging from business networks to supplier commodity chains, production networks and innovative networks.

From the corporative perspective, networking and especially the aspect of outsourcing, is a matter of cost efficiency in the first place (Lorenzoni and Lipparini 1999). Networks are the intricate links – based on trust and reciprocal patterns of communication and exchange – between producers and clients that are necessary to ensure economic capability, responsiveness and creativity (Grabher 1993; Steiner 2002). Second, it is argued that networks are "a base of common or shared knowledge among individuals (individual firms) making up a productive system which allows them to co-ordinate their actions in the resolution of the technological and organizational problems they confront" (Lorenz in: Keeble and Wilkinson 1999, p. 296). As such, the network is a platform for collective learning, aimed at developing synergies with a particular innovative milieu. The perspective from which firms are eager to participate in networks and

networking is resource-based, or even resource-dependent, or knowledge-based (Ahuja 2000; Jones and Macpherson 2004). In other words, "networks and dependencies may be within, between and outside firms and although they may not be traded (or even tradable) they may have significant effects on the competitive performance of organizations" (Keeble and Wilkinson 1999, p. 300).

When uncertainty is high and constant innovation is crucial to remain competitive, network forms of co-ordination are a key to achieve or to improve economic performance since they reinforce flexible specialization (Vincent 2005). Therefore, Camagni (2002, p. 2405) states:

> Local firms rely not only on public goods, human capital and social overhead capital, but increasingly on selected external assets and 'specific resources' that cannot be easily obtained via spontaneous market developments. Therefore, firms, are increasingly engaged in a co-operative process with other firms, (collective) actors and the public administration for the conception and provision of these resources.

Inter-firm networks

Clustering among small firms to bring about economic growth through productivity gains based on collaboration, is a first topic in literature. Krugman (1996) itemized the advantages of co-location by firms. First, a concentration of producers supports local suppliers of specialized inputs who thus help generate external economies of scale effects. Second, agglomerations generate localized skills-pools benefiting workers' and firms' flexible labor market opportunities. Third, information spillovers are implied by the existence of agglomeration (Saxenian 1994; Storper and Scott 1995; Malmberg and Maskell 1997).

The networking idea has been especially attractive as a means by which small and medium-sized firms can collaborate to compete more effectively in the global marketplace. The premise is that networking provides smaller firms with the potential to achieve collectively more than they could individually, in accessing and competing in world markets. Through inter-firm linkages, smaller firms can build the capabilities of scale and scope that were once the domain only of large firms (Arzeni and Pellegrin 1997).

As identified, the world economy is being characterized by an increasing 'globalization' which means also worldwide networks of large enterprises sharing several features such as large scale foreign direct investment (like overseas production plants, joint ventures) or major participation in local companies and increasing ability and desire to co-operate and to network. For large firms, often original equipment manufacturers (OEMs), networking consists of a strategy for cost minimization while keeping full control. Lack of knowledge of particular markets – mostly related to non-economic determinants of social and cultural nature – could be underpinned by collaboration with local firms. Although it has been stated that smaller and medium-sized enterprises are the types of firms who benefit the most from networking (but also have the most to lose), they are the

ones who can service or supply the activities/needs of the major corporations. This is especially the case in manufacturing, and has been shown to be the case in, for example, the motor car industry (Cabus 1999, 2000).

On the other hand, service firms may respond to somewhat different logics. According to Cravens *et al.* (1994, 1996), two dimensions are dominating network relations. The first is the volatility of the external conditions; high volatility implies that relations have to be adjusted at short notice. The second consists of the degree of (real) collaboration, with purely transactional links (without collaboration) on the one extreme of a continuum and highly collaborative permanent links on the other extreme. The combination of both, results in four types of networks. The value added network is rather typical for a transactional network in a low-volatility setting while the flexible network is typical for strong collaborative networking in a rapidly changing economic environment. The latter does not imply that all relations are collaborative; the relationship with the end user is often transactional, such as in the sector of tourism.

Distance and externalities: global/local

In the global network economy, space, or rather distance, seems of no importance (Cairncross 1997; Mérenne-Schoumaker 2002), since large transnational corporations are able (and willing) to produce everywhere as long as location factors are favorable. Ever since, this opinion has been contested – "the revenge of geography" (*The Economist*, 3–15–2005) – through the debate about the global-local paradox and 'glocalization' (Swyngedouw 1997), and about the importance of spatial agglomerations (Malmberg 1996) and the principles of nodes in global networks (Amin and Thrift 1994). An extreme local point of view in this respect concerns business services networks which were seen to be fundamentally local affairs (Bennett and McCoshan 1993), although the theory on global cities does not agree on this point of view (Sassen 2000; Taylor *et al.* 2002).

It is clear that local economies are all, to a certain degree linked with the global economy, meaning that also in the service sector globalization is taking place. This is especially the case for highly specialized business services, although specific local conditions have their impact too. This is observed by the sociologist O'Riain (2004, pp. 17–25) with software development teams within an international network:

> Global connections bring the pressures of the world economy into the heart of the workplaces. However, these pressures actually make local space and social context all the more important.… This is because the importance of local social relations to innovation creates a dilemma for the global corporations that rely on this innovation. The local character of their teams is essential to their efficiency but also poses a problem of regulating such localized relations from a distance … Global (informational) workplaces are characterized not by the disappearance of time and space as realities of work, but by their increasing importance and intensification.… Members of

> such teams are usually located in close proximity to one another, as this allows the team to handle the complex interdependencies among them through easy and constant communication and allows them to build a coherent collective identity, which becomes the basis of co-operation within the team.… Clearly, face-to-face interaction does not guarantee good communication or co-operative working relationships. However, it makes it a lot easier than trying to achieve these across (several) time zones and numerous digital interactions.… In many ways even the human paradigms of the global economy are global locals bringing distinct 'local' cultures to the global stage and remaking both global and local social relations in the process.

Agglomeration economies

The ever-increasing number of inter-firm relationships is a consequence of the growing popularity of the network enterprise. Most economic interactions – material linkages as well as information flows – are influenced by the proximity of the economic actors involved. In most filières some of the firms involved prefer to work with partners that are located in their proximity to save on transaction costs. A vast amount of literature has been produced on agglomeration economies. This is especially the case in the last 25 years, where theories mainly have been developed within a global/local discourse, focusing on the role of the 'local' in the local economic development (Cabus 2001). This boost was encouraged by the discussion on post-fordist flexible specialization (Piore and Sabel 1984), the re-emergence of regional 'Marshallian' economies (Becattini 1992), the upcoming globalization and the focus on regions (e.g. Storper 1995, 1997, 1999; Ohmae 1996). In reducing transaction costs agglomerations are a geographic tool by which the firms achieve external economies.

Territorial clustering is not only triggered by reduced transaction costs, but also by minimizing uncertainty (Scott 1990). On the one hand, the fragmentation process of the production chain results in risk reduction because the number of partners involved increases. At the same time, however, uncertainties in terms of continuity of the production process are growing. Therefore, fragmentation also may necessitate geographic proximity to overcome these uncertainties and to compensate for the loss of internal scale economies. This is especially true for just-in-time and just-in-sequence delivery systems because the greater the distance the greater the risks in disrupting the production process (Reid 1995).

Finally in more recent work there is a shift in focus from reducing transaction costs towards knowledge accumulation that is only possible within specific socio-cultural conditions (e.g. Asheim 1996, 1998, 1999; Malmberg and Maskell 1997; Storper 1995, 1999). The cluster approach of Porter (1998) is also inspired by these ideas. This debate considers acquired knowledge, skills and attitudes as an integral part of the social capital of a specific locality. In conclusion, the advantage of proximity translates itself in an agglomeration of companies and institutions linked together in a learning process. In turn this process attracts other economic activities. As is the case with traditional agglomeration economies,

these economies are internal to the agglomeration, but external to the individual firm (Malmberg and Maskell 1997; Cabus and Vanhaverbeke 2006).

Networking and location factors

As networking and business partnerships become critical, the network in itself and the location of the network partners, become important elements of the external environment. Porter (1990) was one of the first to underline the importance of this factor for explaining the economic success or failure of regions. As a result of the increasing importance of the network economy on the one hand, and the remaining importance of the local on the other, studies about factor endowments and local and regional factors may gain importance in exploring and explaining the relationship between structure, functioning, location choices and networking of the individual corporate organization and the external environment.

From the obvious observation that even in the context of a very mobile network economy, the network partners are always located in a place, location is a crucial component, even in the context of large-scale foreign investments and worldwide transactions, or in the words of Keating and Loughlin (1997), territory "still matters".

Economists such as Krugman (1998), proponents of the new endogenous growth theory, emphasize the importance of increasing returns that result from cumulative economic advantages which, in turn, arise from the process of growth itself rather than initial factor endowments. Camagni (2002, pp. 2395–2396), among others, does not follow this thesis. He asserts that "the concept of territorial competitiveness is theoretically sound, considering not only the role that territory plays in providing competitive 'environmental' tools to individual companies, but especially the role that it plays in [e.g.] … models of co-operation" [and in] "learning processes … inherently localized and cumulative, as they are embedded in human capital, interpersonal networks, specialized and highly skilled labor markets and local innovative milieux" (ibid. p. 2397).

The OECD (1994) identifies the major factors behind the locational choices of TNCs (the mainstay of the exogenous element within economic development) as production cost estimates, potential market position advantages and local support services. Particularly, in the cases of high-end high value added operations the decisions are said to be very complex. One has to take into consideration all kinds of 'soft' social and institutional factors, such as the educational structure of the location, the availability of skilled workers, the concentration of small local component manufacturers at the location, general sub-contractors, and service providers and trainers. It is striking that many of the enumerated characteristics imply networks and networking. Therefore, networks can be related to location factors, even for TNCs.

Institutional networking

Since networks are recognized as a basis for competitiveness, it is not surprising that networking has made it into the economic development orthodoxy in recent

decades. Indeed, constructing networks of entrepreneurs is seen as a critical aspect of public (innovation) policy in the globalized economy (Nohria and Eccles 1992; Cooke and Morgan 1993; Porter 1998; Hassink 2001).

As competition has intensified internationally and governments have sought to address structural deficiencies that inhibit the competitiveness of their industrial bases, cluster development and network programs have gained credence as policy measures to stimulate economic growth. Morgan (in: Stoker 1999) claims that these networks/this networking is the best framework for analyzing current economic development practice (and RDA policy agenda formulation).

A consensus has formed amongst many writers that exceptional regional economies tend to display certain common features. Amongst the most important of these are agglomeration economies, collaborative advantages, growth coalitions which all have to do with networking (Cooke 2001; Malmberg and Maskell 1997; Crevoisier 1997; Edquist 1997; Amin and Thomas 1996). From that, the notion of 'institutional thickness' appeared. Indeed, studies of economically successful regions suggest that success depends on a structure with a number of overlapping 'layers' where a (large) number of (regional) institutions and firms engage in the sharing of knowledge and expertise and promote co-operative activity (Amin and Thrift 1994). This networking process results in a certain socialization. Indeed, economic agents lose a certain part of their autonomy by interacting with local social practices (Conti 1993). It is argued that the presence and combinations of firms, business and trade associations, innovation centers, trade unions and agencies such as RDAs is capable of facilitating economic development. Institutional thickness is expected to provide a safe and supportive base for mobile and fixed factors to land on a city or a region. Institutions have to secure enough interaction and trust among them. Cabus (2000, p. 96) argues:

> the developments of policies for this purpose must be seen from the point of view of the socio-political entity that defends the local interests by attempting to unite the firms' interests with their own interests. It is clear that this concept of local interests is precisely the missing link in the global/local models.

Of course, the notion of embeddedness is used in this context (Granovetter 1985; Boschma *et al.* 2001) but, again, the position of the (networked) firm for that matter or the relationship between embeddedness and non-local embeddedness (Markusen 1997) is hardly explored or problematized.

The question can be raised whether or not policy can stimulate networking in a context of a weak collaborative reflex among the economic and institutional actors. Piore and Sabel (1984, pp. 283–284) mentioned as early as 1984:

> In countries where collaboration is the natural response to adversity … an economy that has started down the path of flexible specialization will probably accelerate its advance as competition grows.… If you have in mind the zaibatsu, the système Motte, or the Italian industrial district, both kinds of

> corporate reform express a single theme: the need for collaboration in which all the parties share a goal … but they are not so tightly integrated as to lose the competitive spirit of integration.

Therefore, attention is also drawn to the uncertainty about how to stimulate networking and co-operative behavior in locations without an existing network culture or to create conditions for growth unless basic structures for co-operation are already in place (Piore and Sabel 1984; Amin 1999). Public authorities and other institutional actors are very much aware of these principles. The very fact that our research was ordered by the Ministry of the Flemish Government (Department of Economy) is an example of that awareness and concern but at the same time, questions are asked: How do Flemish firms network? What is the kind of networking we should stimulate? What is the territorial impact of this networking? In other words, does an area-based, regional-level approach make any sense? What is the role of the institutional actors?

The research context: a survey and cases

As pointed out before, the results presented further on in this chapter, originate from a project aimed at exploring networks of firms in Flanders in order to learn more about their specific structures and structuring factors. Especially the supply of goods and services and the collaboration for R&D on the firms' level, were the research topics.

In theory, the reconstruction of supplier networks is possible to derive from input/output tables. However, due to Belgian privacy law, these data are not available for the research of individual firms, therefore, our information was gathered by a survey. We prepared a rather large questionnaire and chose to question the firms face-to-face. This qualitative approach was inspired by previous research. Indeed, questions about networking are easily misunderstood or left open when nobody is able to provide explanations to the respondent. Furthermore, these face-to-face contacts offered the opportunity to talk over some issues and to extend the survey as an interview. This was particularly interesting because, with this informal information, it was possible to re-assess the answers of the survey. It became clear that different interpretations were possible. This was particularly the case for the notion of distance.

The questionnaire was based on four topics:

1. general information about the firm, including activity, date of birth or acquisition, belonging to a group, market area;
2. networking for supply of services, supply of goods and common product development, with information gathered about the nature and frequency of supply and also about the supplier (his location, scale of his market area, etc.);
3. reasons for networking and criteria for the network partner choice; and finally

4 location factors and especially the importance of network opportunities and distance (to suppliers) as location factors as well as the importance or role of institutional organizations for their networking.

The objective was to gather information about 100 firms. Firms were selected from the database of the National Bank of Belgium (balance sheets of companies) and a database from the Flemish Administrative Department of Economy, according to a stratification taking into account activity class, size of the firm and location within Flanders. From previous research (Vanneste *et al.* 2003) we knew that the response rate in that type of research was about 10 percent. Therefore, 1,000 firms were selected and contacted and, indeed, 101 firms finally participated in this survey. From literature (and confirmed in the same research) we learned that some sectors (especially manufacturing industries) and some dimension classes (especially the larger firms) show more diversified and interesting results. Therefore, these type of firms were deliberately over-represented in the original selection of 1,000 firms and are still over-represented in the final survey results as indicated in Tables 2.1 and 2.2. While the initial selection of firms aimed at an equal part of each of the five provinces, the final set of respondents corresponds more or less to that objective with a maximum of 24 percent in the province of Antwerp and a minimum of 13 percent in the province of Limburg. All the firms in this survey are endogenous, since previous research had already dealt with foreign firms (Vanneste *et al.* 2003).

Within the context of this chapter we focus on the major findings of the research, where we are able to show the territorial structure of supplier networks as the results of behavior characteristics and firm strategies.

It is not easy to get direct information on network partners. Former inquiries learned that most of the companies consider their networks of strategic importance. Nevertheless, on top of the general results, it was possible to get detailed information on the networks of ten firms (out of the 101 respondents).

Table 2.1 Stratification of the survey according to activity class

Sector	*Activity*	*Number of firms*	*Proportion (%)*	*Proportion (%) in the overall economy*
Secondary	Total	70	69.3	23.0
	Manufacturing	59[a]	58.4	11.3
	Construction	11	10.9	11.7
Tertiary	Total	31	30.7	77.0
	Services	19	18.8	43.1
	Sales/retail	9	8.9	28.9
	Logistics	3	3.0	4.9
Total		101	100.0	100.0

Note

a 11 in food, eight in metal, six in textiles and clothes, six in printing and publishing, six in chemicals, six in furniture and design, five in the car industry, two in paper, nine others.

Table 2.2 Stratification of the survey according to dimension class

Number of workers	*Number of firms*	*Proportion (%)*	*Proportion (%) in the overall economy*
5–49[a]	35	34.7	88.1
50–499	48	47.5	11.2
500 and more	18	17.8	0.7
Total	101	100.0	100.0

Source: Vanneste *et al.* (2003).

Note
a The category of very small firms (1–4 workers) was not taken into account in this survey.

In the following sections some general results are discussed from the survey of the 101 firms in Flanders. Next, we consider networks as a location factor. Finally, we will analyze in depth some of the ten cases that are typical examples or that show some particular characteristics.

Results from the surveys

The networking tested in the survey has especially to do with the supply of goods and services and R&D collaboration. We defined a network, as it was also communicated towards the respondents as follows:

> A network is a (long-term) structural relationship (with a certain regularity and frequency) with other companies or institutions. Occasional contacts with firms or institutions are not to be taken into account. These networks are established with firms that supply business services, products. These products may be parts, intermediate goods or sub-systems, specifically manufactured for your unit/company or from catalogue.[1] Also common (product) development (R&D, …) is considered to be a network relationship.

As has been mentioned before, the firms in the survey are endogenous from origin. Since there has been a previous (but not completely comparable) survey of foreign firms in Belgium (Vanneste et al. 2003), we will make comparisons where possible and of interest.

Belgian and foreign supplies

Networking has grown to be a common firm strategy. However, despite the globalization of the economy, a lot of companies in Flanders participate in networking within the national territory (Table 2.3). This is of course important for the estimation of the significance of the networking for the Belgian economy.

The following figures summarize the proportions of the networking for different types of supply.

Table 2.3 Location of suppliers

	Number of suppliers	*%*
Belgium	1,377	77.0[a]
Neighboring countries	256	14.3
Rest of Europe	86	4.8
Outside Europe	70	3.9
Total	1,789	100.0

Source: Survey ISEG (2003) ($N=101$).

Note

a From this 77 percent: 85 percent in the Flemish, Dutch-speaking region; 3 percent in the Walloon French-speaking region; 12 percent in the Brussels, bilingual region.

- All companies in the survey do have some form of networking; 77 percent of the network partners are situated within Belgium. Most of the firms have more than one partner for the same type of job/supply.
- 89 percent of the firms appeal to routine services (in order of importance: cleaning, laundry and surveillance). All have at least one supplier located in Belgium.
- 98 percent have suppliers of high-quality services (in order of importance: wages administration, information and legal services). Again, 95 percent have at least one supplier located in Belgium.
- 80 percent appeal to firms providing logistics; from these, 96 percent have (also) network partners situated within the Belgian territory.
- 78 percent of all responding firms indicate they have goods delivered on a regular and structural basis. For manufacturing companies this share rises up to 98 percent. From these, 96 percent have (also) Belgian suppliers.
- 32 percent of the respondents appeals to other organizations for common R&D of which 74 percent choose (also) Belgian network partners.

One could argue that the importance of networking within national boundaries is so high due to the fact that all selected firms in the survey were endogenous. However, comparison with results about foreign firms in Belgium (Vanneste *et al.* 2003, $N=148$) show that the proportions for networking mentioned above are only slightly lower for foreign firms in Belgium than for endogenous firms (except for logistics). Almost all networking foreign firms have (also) Belgian partners (95 percent). The most important difference is about R&D; only 21 percent of foreign firms in Belgium collaborate with other firms or institutions for R&D of which only about 60 percent have a R&D partner within Belgium. This conclusion does not mean that networking is a local affair. Network research indicates that there is always a combination of local, supra-local and crucial international networking (Cabus and Vanhaverbeke 2006).

On average, the Flemish firms in the survey have several network partners for services: four for routine services, also four for high-quality services and three for

logistics. For the supply of goods the average number of suppliers rises up to seven. Of course, one must be careful about the nature of these network partners. In some cases the partner may be nothing more than a sales office. Yet, it has been established that, on average, 80 percent of the product suppliers are really involved with production. There is a difference between younger and older companies. For older key players (companies created before 1980) the share of the sales offices for supply of goods is about 15 percent. For younger companies though, this share rises up to 30 percent. The fact that young companies might not have the maturity to deal in a direct way with the production companies, is a possible explanation. On the other hand, it might also be a sign of a new tendency in networking, in the sense that production is centralized in a few production plants. Distribution of the products is then organized from country-based sales offices.

The cases with common R&D are rather limited ($N=32/101$), but when they occur, the number of network partners is nearly three, in most cases other firms, rather than universities. This may be an interesting result from a policy point of view, and confirms findings from other research (e.g. Wever and Stam 1999). Also foreign firms in Belgium prefer collaboration for R&D with other firms rather than with universities. When they do collaborate with universities, Belgian universities are preferred over foreign universities. Of course, one has to bear in mind that these results do not apply to the mother companies.

Networking for supply of goods as well as services *within* the same group is not common (<10 percent) although 67 percent of the firms in the survey belong to a (international operating) group. When this occurs, network partners are often situated abroad. This is quite different from foreign firms in Belgium since these firms are, by definition, part of a group. This goes along with stronger relationships with sister or mother companies. However, notwithstanding intense in-group supply structures, 90 percent of the foreign companies networking for high-quality services, also have partners from outside the group and most of them are located within Belgium. The same goes for foreign manufacturing companies as far as material supplies for goods are concerned. In this perspective, foreign firms follow the network behavior of endogenous firms.

Table 2.4 R&D partners ($N=32$)

Type of partner	*Total of partners for R&D*	*%*	*In Belgium*	*Abroad*
Supplier	22	28.6	10	9
University	16	20.8	14	2
Company – same sector	13	16.9	4	7
Customer	12	15.6	1	7
Private research office	8	10.4	4	3
(Semi) public institution	1	1.3	1	0
Total (inclusive other types and unknown)	93	100.0		

Source: Survey ISEG (2003).

Table 2.5 Share of suppliers versus share of turnover for two endogenous firms

	Firm A (large, secondary sector, before 1980, global group, European market area)		*Firm B (small, secondary sector, after 1980, Belgian group, European market area)*	
	Suppliers of goods only (%) (N = 47)	*Turnover (%)*	*All suppliers (%) (N = 51)*	*Turnover (%)*
Belgium	41	33	56	63
Outside Belgium	59	67	44	37

Source: Survey ISEG (2003).

Besides the possibility of the network partner to be a sales office, there is another point of attention. Indeed the *number* of suppliers and their origin does not tell much about the real value and strength of the network. Other variables are more pertinent for measuring the importance of supply relations in networks, such as quantities or values (in percentage of turnover). Unfortunately, we could not use these indicators for the simple reason that data about the value of input/output between firms exist but are not open for use on an individual basis (as has been mentioned earlier). Also most of the firms were not willing to deliver such information due to 'strategic reasons'. Only two firms – wanting to stay anonymous – revealed the distribution of the value of the supply per supplier. Table 2.5 gives a summary of this information.

The two firms are somewhat comparable because, although different in size and age, they belong to the same sector, both have an international market area and about the same number of suppliers (although the first firm only communicated suppliers for goods and the second, all partners in their supply network). Nevertheless, the smaller, younger and more embedded one (a Belgian group), shows a tendency to spend a larger percentage of the supplies in Belgium, while the larger, older and more internationalized one (a global group) spends a larger part abroad. Of course, these firms are only two examples, but it proves that the impact for the local and regional economy is not the same in terms of numbers of partners or the value of supplies. For foreign firms in Belgium, the number of Belgian partners is high, what can be considered as an important contribution to the Belgian economy. On the other hand, the major share of the value of the supplies is coming from abroad, due to the preferential relation with the mother economy. This has been confirmed during the interviews (Vanneste *et al.* 2003, pp. 167–170).

General characteristics of supplier networks: location and scale of the supplier and the location of the core player

Figure 2.3 considers more in detail the location of the first-ring players (see Figure 2.1). Suppliers of routine services obviously have a close location to the core

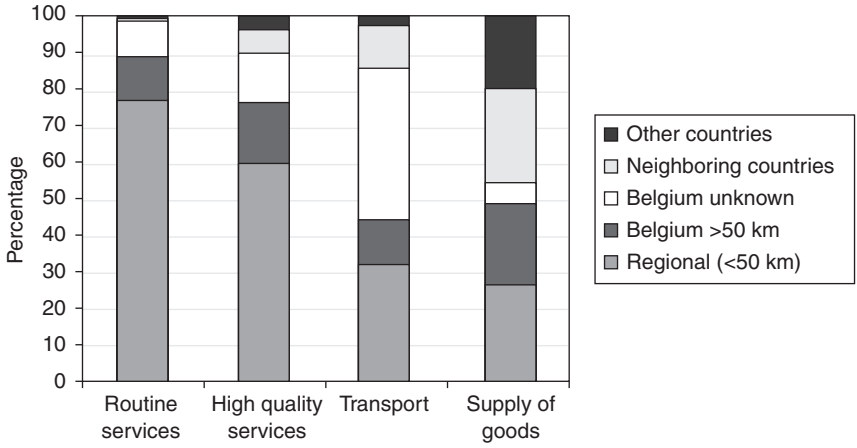

Figure 2.3 Location of suppliers (first ring players); (source: Survey ISEG 2003 (N=101)).

player. This confirms the thesis of Bennett and McCoshan (1993) that services stay local affairs, although the spatial level of high quality services is less local than routine services, which confirms the findings of Illeris (1994). Transportation partners are local and regional. The high number for 'location not known' shows that the distance to the suppliers matters less for transportation than for the supply of services. Furthermore, local and regional carriers are frequently contacted for short distance transport and delivery, while long distance transportation is often handled by firms from abroad (especially Eastern European carriers). Foreign firms in Belgium appeal more to foreign firms for transportation than endogenous firms. However, although having foreign transportation partners, 96 percent of the foreign firms in Belgium tend to work also with Belgian firms for transportation and courier services.

Suppliers situated abroad work by definition on an international scale. Also, an important share of the first-ring players with location in Belgium have an international orientation. More than 40 percent of the Belgian service suppliers have an international market area and about 25 percent only work on a local scale. First-ring Belgian manufacturers work for about 65 percent on an international scale. Only about 5 percent of them work locally.

There is a strong relationship between the scale of the market area of service suppliers and the frequency of delivery. Contrary to what one might expect, the higher frequencies (deliveries at least once a week) are typical for suppliers that work on an international scale. More than 80 percent of them have a frequent supply. Service suppliers with a market area restricted to the national, regional or local scale only have about 50 percent of frequent deliveries. The former are often foreign firms in origin, who came to Belgium (among other places) following international customers (e.g. car producers). Now they also respond to the demands of endogenous firms. There is no relationship between market range and the frequency of delivery of goods.

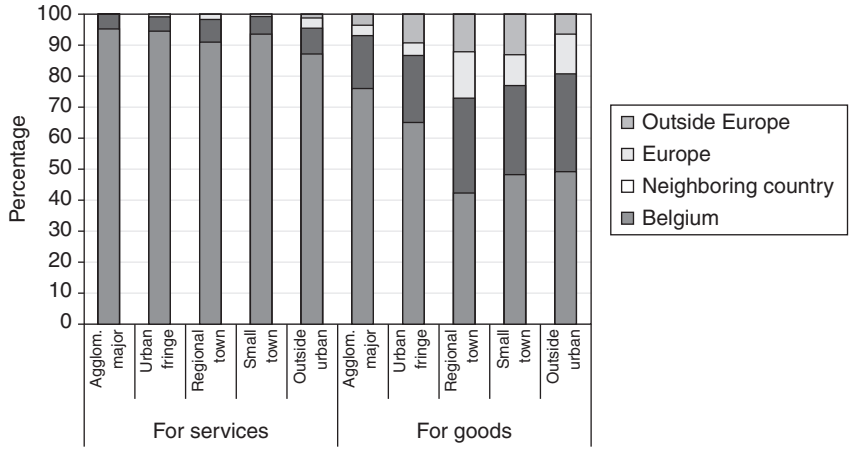

Figure 2.4 Location of the core player (according to the degree of urbanization) versus location/origin of the supplier (first ring player); (source: (Survey ISEG 2003 (N=101)).

The degree of urbanity also plays an important role in shaping the network. Firms with a location in major urban regions (agglomerations or urban fringe of major cities) appeal less to first-ring players from abroad than companies located in smaller cities or in a non-urban location (Figure 2.4). During the interviews some firms witnessed that their location in major urban regions gave them the opportunity of finding many specialized suppliers, especially for services, and therefore there was no need to look any further (literally). This is a clear case of agglomeration economies at work. At the same time, the same 'urban' firms distinctly network more with suppliers who work on an international scale (Figure 2.5). As a result, the international suppliers of these urban core players consist mainly of two groups: highly specialized international suppliers situated at 'short' distance and international suppliers situated much further away (even abroad). In order to keep the network system running, the accessibility (by car) is important, resulting in many cases in a location alongside the infrastructure corridors. Both topics raise the question of location factors – this location factor is picked up later on.

Impact of size, activity class, life cycle

Large companies network more with first-ring players who have an international market area. This is especially the case for manufactured supply, but is also the case for business services. For the supply of business services, it is possible to define 'standard packages' of services, for routine services that standard package is a combination of cleaning, together with one of the following services: maintenance, surveillance or leasing. For high quality services, the standard package consists of wage administration and information services and/or accounting and/or legal services. For transportation, the standard is a full outsourcing of

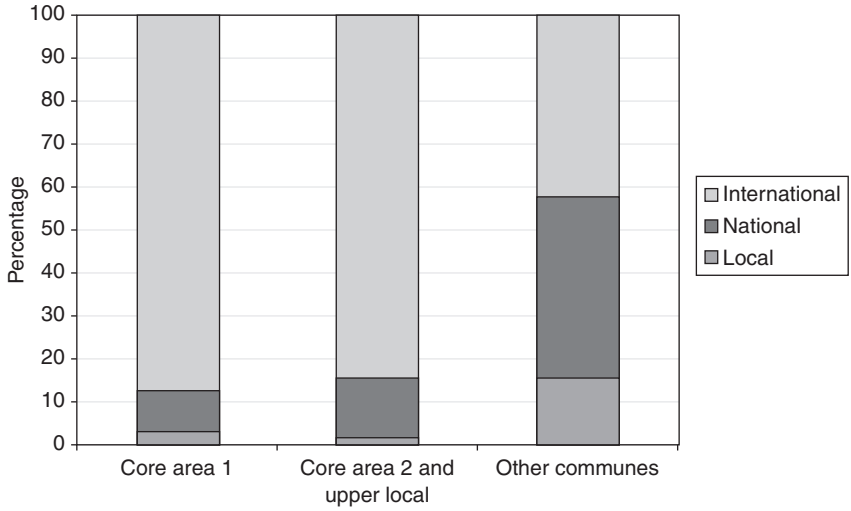

Figure 2.5 Location of the core player (according to the degree of economic performance[a]) versus the extent of the suppliers' market area (source: Survey ISEG 2003 (N=101)).

Note

a Zones of economic performance as distinguished within the main spatial economic structure of the 'Ruimtelijk Structuurplan Vlaanderen' (Spatial Structure Plan).

the physical movement of goods. In some cases there is a less than standard situation, with a combination of transportation by own means and partial outsourcing. In other cases, there is a more than standard situation, when other logistic services and/or storage are involved. It is clear that especially large firms show a 'more than standard' outsource behavior (Figures 2.6 and 2.7).

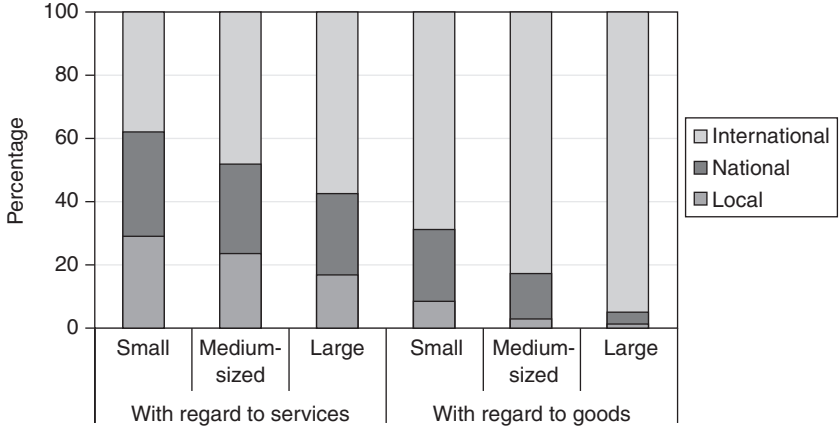

Figure 2.6 Relationships between the size of the core company and the scale of suppliers (source: Survey ISEG 2003 (N=101)).

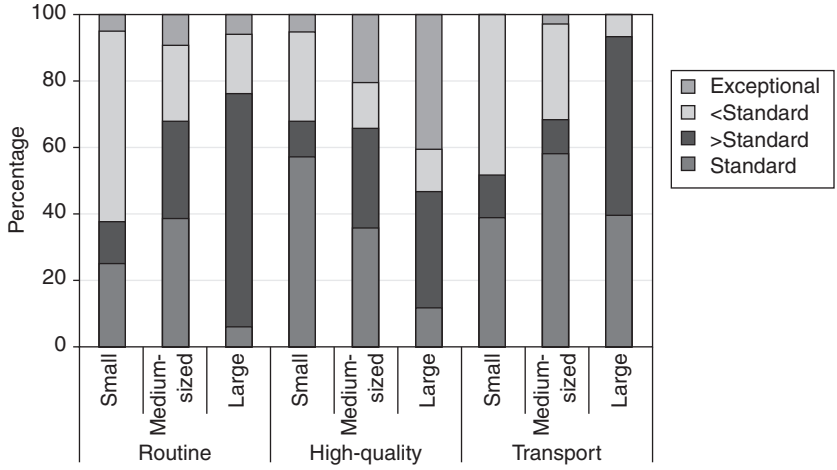

Figure 2.7 Size of the core company versus the quantity and the type of services that are contracted out (source: Survey ISEG 2003 (N=101)).

The activity class of the core player has no real influence on the geographical scale of the supply network of services. For goods, it is clear that the territorial dimension of the network is larger when the core player belongs to the manufacturing industry or to the sector of sale and trade. Companies active in construction and services look for suppliers within a closer range, even when they need industrial supply (Figure 2.8).

The age of the firm barely matters as far as supply of services is concerned. For industrial supply, in contrast, young companies tend to stay more 'in the

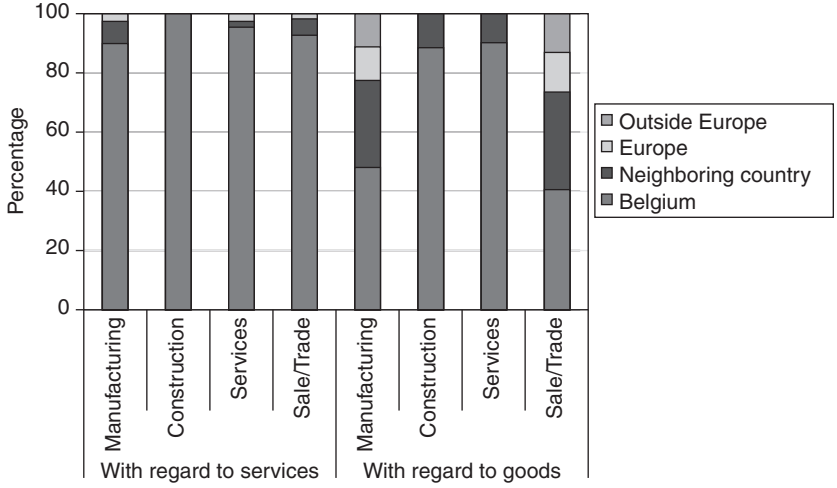

Figure 2.8 Relationship between activity class of core company and country of location of suppliers (source: Survey ISEG 2003 (N=101)).

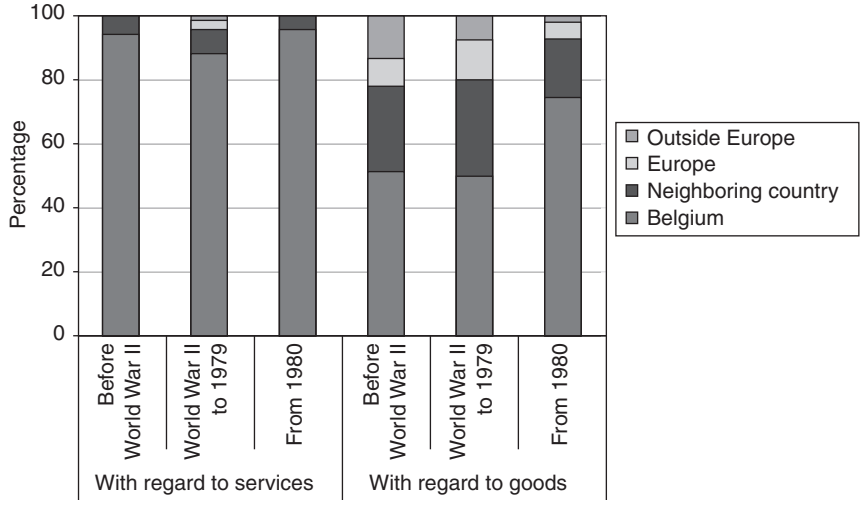

Figure 2.9 Relationship between date of foundation of core company and country of location of suppliers (source: Survey ISEG 2003 (*N* 01)).

neighborhood' for networking. The older the firm, the more first-ring players can be found in the neighboring countries, in other European countries and even outside Europe (Figure 2.9). Even in this case, there is a dominance of suppliers with a location in Belgium and the neighboring countries.

The impact of institutional organizations

Finally, we checked out the impact of institutional 'thickness' – a topic in international literature – for networking and the construction of (international) networks. Our survey verified the influence on networking by (some) institutions; especially, the influence of a membership of sector organizations or Chambers of Commerce was researched. It is striking that 85 percent of the firms that are members of a sector organization have industrial suppliers that work on an international scale. This figure is only 60 percent for the firms that have no membership. The same difference exists when looking at the membership of a Chamber of Commerce (almost 90 percent against *c*. 75 percent for non-members). Finally, firms that have a clear positive opinion on the role and task of public authorities in networking, have again, a more international network (almost 85 percent against less than 60 percent for firms with a rather negative opinion about the role of public authorities).

From the interviews, it is not possible to know whether or not there is a linear relationship between membership or attitude towards public authorities and network characteristics. From the Chambers of Commerce it was said they play a positive role in stimulating networking by taking formal as well as informal initiatives that bring together potential network partners (regardless on what

scale they work). As a hypothesis, we may suppose that perhaps membership or participation in network activities may attract already open-minded firms (firms, working themselves on an international scale and working with internationally oriented network partners). Therefore, one can advance that these institutional organizations stimulate especially those already involved in highly competitive international networking.

As an overall conclusion from the survey, it is certain that there are connections between network features and the characteristics of the core-player, its location, and its attitude towards institutional elements. But this does not mean that there is a clear typology; the bottom line of course is still cost cutting and to buy in expertise that is too expensive or too specialized to develop in-house. But even within a set of 101 firms there is a high complexity and variability. One of the elements in explaining this complexity is that the same firm is in many cases a member of different networks. In the one case it can be a core player, while in the other it can be a first, second, etc., tier player. Therefore, it seems that the type and structure of networks are so diverse and the number of influencing factors so numerous, that there is no real standard network to define. This does not mean that nothing can be learned from specific cases. Before analyzing them, we will explore the (possible) significance of networks as a location factor in the next section.

Networks and networking as a location factor and selection criterion for network partners

Firms do not rely on one factor for their (re)location decision. They simultaneously take into account a complex set of elements. Therefore, the survey assessed the significance of networks and networking alongside other location factors. The results are presented in Table 2.6 with a complete overview of location factors among which the network factors are in italics. The list shows the relative importance of all location factors for the investigated firms and their degree of adequacy according to the respondents.

It becomes immediately clear that, with the exception of 'high regional dynamics', the network location factors are not considered to be important location factors. They have not played an important role in choosing the present site. Even the factor 'presence of suppliers and business services' was only mentioned by 35 percent of the respondents. Nevertheless, firms are pleased with the adequacy of the factor. Of course, the small size of Belgium and the dense infrastructure of motorways enable many firms to continue networking with the same network partners even after relocation. The same goes for employees. This is also on par with some findings in Table 2.7, namely that, despite literature mentioning the importance of specialization in a network economy, only a limited number of firms put forward 'specialty' as a selection criterion. Specialty is mentioned at the minimum for routine services, goods and transportation (*c*. 3 percent) and at the maximum for high-quality services (8 percent). Specialty is mentioned in about one-third of all cases related to R&D. During the interviews it became clear that some elements were taken for granted, many firms just assumed at the beginning of a location

Table 2.6 Location factors for (endogenous) firms in Flanders (Belgium)

Factor	*Importance*						*If important (1 or 2) then adequate?*	*If not adequate, reason for relocation?*
	2[a]	*1*[b]	*–1*[c]	*–2*[d]	*%+*[e]	*%–*[e]	*% yes*	*% yes*
Theme 1: Infrastructure							79.8	18.7
Accessibility by car	63	31	5	1	94	6	85.1	42.9
Accessibility by public transport	16	21	43	20	37	63	64.9	7.7
Proximity of harbor/airport	11	23	26	40	34	66	90.9	0
Possibilities for enlargement	30	46	16	8	76	24	66.2	53.8
Land price/rental price for buildings	21	43	15	14	64	29	71.4	26.3
Presence of suppliers/business services	9	26	39	26	35	65	93.9	0
Theme 2: Environmental factors							87.0	14.6
Proximity of/presence in a major city	15	23	41	21	38	62	89.2	0
High regional dynamics	19	40	29	11	59	40	89.7	16.7
Good image of the region	15	54	21	10	69	31	91.2	16.7
Good quality of housing	7	42	37	14	49	51	93.6	33.3
Green environment	6	23	53	17	29	70	75.9	14.3
Attractive architectural design	2	25	47	26	27	73	84.6	0
Specific (historical basis of) know-how	11	28	38	22	39	60	94.7	50

Atmosphere of trust among firms	9	30	42	19	39	61	94.7	0
Presence of a cluster	4	9	55	29	13	84	69.2	0
Theme 3: Labor market							69.3	18.7
Size of the labor market	53	33	8	5	86	13	61.2	12.1
Presence of highly educated workers	24	33	31	11	57	42	80.4	9.1
Labor cost	40	33	19	6	73	25	51.4	43.8
High productivity	41	31	17	4	72	21	84.1	10
Theme 4: Public authorities and institutions							41.0	21.7
Possibility of obtaining subsidies	25	38	21	10	63	31	43.6	21.4
Local fiscal regime	21	31	29	9	52	38	30.4	31.3
Good reception/provision of information	15	39	30	9	54	39	48.9	12.5

Source: Survey ISEG (2003) (N=101).

Notes
a Very important.
b Important.
c Not important.
d Completely insignificant.
e The sum of %+ and %– may be different from 100 percent if firms answered they didn't know.

Table 2.7 Selection criteria mentioned by firms in Belgium for choosing their network partners (results of an open question)

Criteria	*Choice for business services*		*Choice for suppliers of goods*	*Choice for common R&D*
	Routine	*High quality*		
Abs. number of criteria mentioned	196	224	244	43
Price and/or Quality[a]	49%	38%	49%	5%
Habit	7%	12%	3%	14%
Distance	4%	3%	3%	0%
Knowledge/specialty	3%	9%	3%	35%
Service	19%	18%	18%	0%
Reliability	6%	6%	7%	9%
Efficiency	2%	0%	3%	0%
Other	10%	14%	14%	37%
Total	100%	100%	100%	100%

Sources: Survey ISEG (2001) ($N = 148$) and (2003) ($N = 101$).

Note

a Price and quality are taken together since most respondents mention the price/quality ratio.

decision process that finding 'adequate' supply within 'reasonable' distance would not be a problem whatever the chosen location would be.

It is clear from Table 2.7 that 'distance' also does not really matter. Only 4 percent of all mentioned criteria for the choice of a network partner (result of an open question) referred to distance. This goes for foreign companies as well as for endogenous core players. In terms of choosing a supplier for only 30 percent of the (endogenous) core players, distance was decisive (with only small differences for routine services, high quality services, transportation and delivery of goods). However, from the in-depth interviews, it is clear that distance does matter; many firms confess that distance might be a problem if some of their network partners were too far away. In general, this problem has not occurred until now because of the presence of a satisfactory offer of supply at a feasible distance. Furthermore, it appeared that some respondents were embarrassed to mention distance as an important factor because they consider it 'not done' for a modern firm in a globalized economy. Finally, some consider 'distance' and especially 'time distance' (31 percent of the firms in the survey) important, because of the relationship with flexibility and reliability. This was especially the case for the supply of services (embodied services and material transfer of important documents). Comments afterwards show that cultural distance is still avoided, expressing itself in looking for business partners with the same mentality in the (sub)region if the quality/price ratio is satisfactory. Language is still an important distance-creating factor. Dutch-speaking Belgian firms prefer networking with Dutch-speaking firms in the Netherlands, rather than with French-speaking firms in the Walloon region (see Table 2.3 and later in this chapter).

Besides the network conclusions, one could spot in Table 2.6 a contradiction with statements of the respondents in other parts of the questionnaire. We would like to refer to Figure 2.4 where firms witnessed that their location in major urban regions gave them the opportunity of finding many specialized suppliers. In connection with this, it is also surprising that the factor 'the proximity of or presence in a major city' is not considered to be an important location factor either. It is our hypothesis that these location factors are taken for granted. Belgium, and especially Flanders, is characterized by high densities (445 inhabitants per km^2) and is highly urbanized (59 percent of the surface and 73 percent of the population are situated within urban regions). Therefore, it is not difficult to be situated near or within an urban region. Furthermore, our percentages are related to revealed importance for their actual location and are not a stated importance for an ideal situation. Some endogenous firms are simply linked with the home of the founder, implying that there was no real location strategy. This explains the difference with foreign firms in Belgium, of which 54 percent mention the proximity of, or presence in a major city, as an important location factor on the regional scale.

The spatial dimension and structure of real networks: some cases

As we have very detailed information for about ten firms, we will deal with some of them below, each as an example of a particular type of network according to the typology of Storper and Harrison (1992). As mentioned in Table 2.8, Storper and Harrison distinguish four types of networking.

Most of our cases can be attributed to one of these types. Most of them belong to the intermediate type (2), which is the core-ring with a co-ordinating firm as a core player. Therefore, we will deal first with the extremes: the core-ring with a lead firm, for which Bekaert Textiles is an example, and the all core–no ring type (or is it an all ring, no core type?) for which Dolmen Computer Applications can be considered as illustrative to some extent.

Table 2.8 Types of networks according to governance structure

Governance structure	*Definition*
All ring, no core	There is no systematic lead firm, or a rotating leader. There is no hierarchy.
Core-ring, with co-ordinating firms	The co-ordinating firm is the lead, systematic agent in the input-output system, but the co-ordinating firm cannot function on its own, nor determine the existence of other firms in the system. There is some hierarchy.
Core-ring, with lead firm	The lead firm is substantially independent of its ring of suppliers and subcontractors, that is, it has the ability to reconfigure at least part of its ring. Power is asymmetrical; there is considerable hierarchy.
All core, no ring	The vertically integrated firm.

Source: Storper and Harrison (1992, p. 412). In: Cabus and Hess (2000, p. 78).

A 'core-ring with lead firm': Bekaert Textiles

Bekaert Textiles was founded in 1891 and is still located in the south-western corner of Flanders, which has, from the Middle Ages on, been a region specializing in textiles. Bekaert Textiles produces a special fabric for mattresses, curtains and wall-lining and, since 1993, has belonged to the global Gamma Holding group (the Sleep Care Fabrics division), with headquarters in the Netherlands. Bekaert Textiles is a group in itself with approximately 1,200 employees, of which about 700 work in the firm of Bekaert Textiles which we are studying here. At the present (2003), the firm has several daughter companies: two (Flanders Spinning Mills and Bekaert Decoration Textiles) situated in the vicinity and several daughter companies in Germany, Czech Republic, USA, Australia and China. The local or regional market can be neglected and the national market is estimated at about 2 percent. This means that this firm produces for an international market, especially Europe and the USA. The original and present location is not the same, although they are quite close – the firm left the original site in the 1960s because of a lack of space and because a motorway was planned along the present site. No relocation or delocation is foreseen in the near future. (The question provoked a smile from the respondent: "Moving? Not possible with such a firm".) There is a centralization of services (e.g. accountancy) going on within the group and it is possible that, in the medium term, other subsidiaries within the group might disappear. The same goes for some small firms in surrounding municipalities that have been taken-over in the past, and which might close since they do not fulfill environmental standards. It has to be mentioned that the activity sector is typical for the sub-region, but as far as size is concerned, this firm is rather an exception in this SME dominated sub-region.

In terms of location factors, there is not that much to say since the present location is almost the residential place of the founder. Nevertheless, elements such as accessibility by car and price of parcels and buildings (both judged adequate) and possibilities for expansion (not adequate), are mentioned as important factors. From the local endowments factors, not one was considered important, except historical know-how of the region. Labor market elements (quantity of local labor, labor cost and productivity) were considered important, especially since the firm experiences problems finding enough medium-high technically skilled workers. Surprisingly, highly educated workers are not considered 'important' as a location factor, not because the firm does not need them but because "they are always available since these people are prepared to commute".

The networking of Bekaert Textiles and the spatial structure of this network can be considered a typical example of a hierarchical core-ring structure, with a lead firm that is substantially independent of its ring of suppliers and subcontractors. The subcontractors, however, may be highly dependent on the core player. The exclusive relationship of, e.g. Flanders Spinning Mills, which produces yarn for Bekaert Textiles only, is an example. We found seven suppliers of routine services (security, cleaning, catering, dedusting and maintenance of overalls), six suppliers of high-quality services (especially promotion and marketing), and four

for logistics (complementary to its own transportation division). They also have 25 structural, very important suppliers of goods for production. It was stated that the total number of suppliers was about a thousand; there was no collaboration of any kind for product development. From this list, we produced a map that offers an idea about the networked territory of this firm (Figure 2.10).

Routine services are almost exclusively supplied locally (within a radius of 15 km). The distance from suppliers of high-quality services is somewhat bigger, but even this supply is quite regional. Except for a specialized consultancy firm in Brussels, all high-quality services are to be found in a range of about 30 km in Flanders, and although the regional border is very close, there are no suppliers in Wallonia.

As far as industrial supply is concerned, the networked territory is clearly international, with suppliers all over Europe and in Asia. From the 25 most important suppliers, in terms of supplied value, nine are Belgian (of which two are daughter companies). They have a share of 39 percent of the value represented by these 25. Four suppliers have a location in Germany (of which one is a daughter company), with a share of 22 percent and five are situated in other European countries, with a share of 9.5 percent. Finally there are seven suppliers located in Asia, with a share of 29 percent. For the 25 most important ones, the share of the Belgian suppliers is rather high, but it was indicated by the respondent that they got "high value supplies from abroad". This means that these 25 represent only a small portion of the supplied value. Only three of the 25 important suppliers are business services (consultancy, insurance and logistics).

The reasons why services are outsourced are the traditional ones: easier and cheaper since one needs no qualified people in-house for that particular task and nobody has to take responsibility. The selection criteria are the price/quality

Figure 2.10 Location of first-ring players of Bekaert Textiles (source: Vanneste, D. 2003, ISEG, KULeuven).

ratio for routine services and the quality and image for the high-standard services. Distance to and location of the supplier is only important for routine services ("we seek automatically for solutions within the local area") while the market area of the supplier is said to have no impact ("as long as the firm is organized in an excellent way"). For the supply of goods, reasons for outsourcing are (lack of) in-house capacity and (lack of) in-house technology for certain specialized components. Therefore specialization is the first and most important selection criterion, followed by 'member of the same group' and price. Distance is said to be no decisive factor, although socio-cultural distance matters. Indeed, the respondent stressed that most suppliers are located in regions with historical know-how in textiles and with many characteristics and, although smaller in scale, are similar to the well-known Italian industrial districts.

The firm is a member of a sector organization (Febeltex) and of organizations of employers just to make sure that it is represented on such platforms and to take advantage of exchange of knowledge and lobbying possibilities. They do have spontaneous contacts with other firms in the region. The respondent puts it like this: "we all know each other, we are like family". This confirms studies about this region, describing ties between firms that go beyond business. The 'us knows us' feeling is actively present (Puype 2002). Links with public local or regional authorities are only project-based, for example, a recent water provision project. The respondent stresses that the firm is not expecting public authorities to be more involved in the establishment of networking.

'All core, no ring'/'all ring, no core': Dolmen – ICT

Dolmen Computer Applications is part of a Belgian group (Colruyt) and was founded in 1982 by the Colruyt family who still owns 75 percent of the company. Dolmen is a service firm active in ICT, and focusses on integrated solutions for specific needs of specific customers. It is promoting itself as a firm capable of executing full ICT-outsourcing projects (www.domen.be). This customer orientation is visible in the structure of the firm, with 300 workers in the establishment we are studying, about 100 in different affiliates, and about 450 that are insourced with customers. The limited network of Dolmen is illustrated by Figure 2.11.

Combining Figure 2.11 with the fact that all respondents are considered to be a core player (see Figure 2.2), it seems that Dolmen is an 'all core, no ring type' network. This type implies a highly vertically integrated firm, however, Dolmen is not such a firm. On the contrary, Dolmen is not on top, not even part of a hierarchy. Rather, it is characterized by its work for rotating leaders on a project basis. In fact, Dolmen is probably a typical example of a firm that is functioning in an 'all ring, no core' network, characteristic for many service businesses in ICT but also in legal services, marketing and publicity, design etc.

The few suppliers of services and goods have a location in the vicinity. The respondent stressed that the choice for nearby routine services is deliberate, since Colruyt was only a small business not so long ago and the Colruyt family still holds onto a tradition for local and regional networking. Furthermore, Dolmen

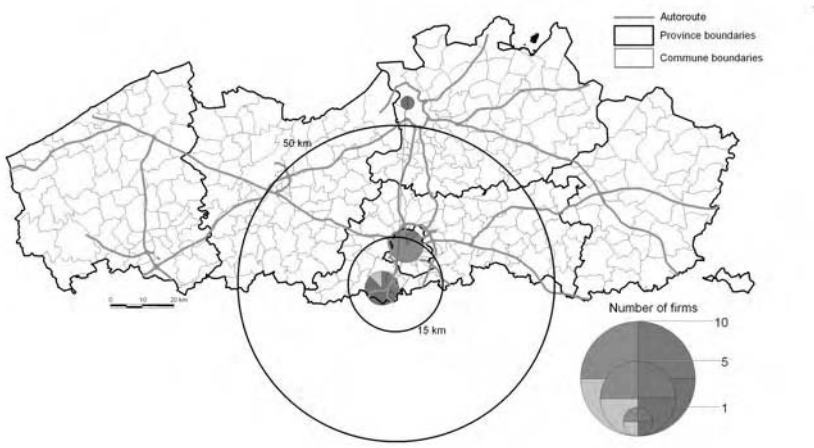

Figure 2.11 Location of first-ring players of Dolmen Computer Applications (source: Vanneste 2005, ISEG, KULeuven).

and the Colruyt group in general, are considered to be important by local firms, which gives the former an interesting position for negotiation. For high-quality services the policy is internalization and centralization within the Colruyt group. When outsourcing is inevitable, expertise is the one and only selection criterion but, since Dolmen is situated very close to Brussels, one can find specialized services in the neighborhood.

All material supply is hardware and software. The main criterion is that these suppliers have to be market leaders in their field. Therefore the scale of the supplier matters, since there is a relationship between the scale and the reputation of the supplier. These suppliers are sometimes asked to participate in product development.

Dolmen is a member of VICTORI, an association for ICT in public organizations but in general, it is the Colruyt group itself that is a member of different lobbying and promoting organizations. Contacts with other companies are less focused on networking and more on stimulating contacts and organizing events and demos to gain new customers and to make the public acquainted with the company's name and reputation. The respondent is not interested in public institutions being or getting involved in networking: "Let the companies take the initiative, public institutions should not intervene; there is enough e.g. 'First Tuesday' as a communication forum between entrepreneurs in our kind of business".

The present location is not the original, but the former site was also in the Flemish fringe of Brussels. Reasons for relocation were a lack of space and, above all, creating a distinct identity, apart from Colruyt, since Dolmen is quotated on the stock exchange. Physical distance as well as time distance are considered very important, and matter as location factors. It is expected that for many non-core activities, centralization (within the Colruyt group) and more outsourcing (via

Colruyt) will take place in the near future. This means also that the number of network partners of Dolmen will not increase, unless the Colruyt group decide to sell Dolmen which would leave Dolmen independent choices about networking and network partners.

As was the case with Bekaert Textiles, there was no real location strategy since the firm is still situated close to the residential place of the founder. Nevertheless, the firm relocated and so there was an opportunity to optimize the location. The most important advantages of the Brussels fringe are the cheaper prices for land and buildings (as compared to Brussels) and somewhat lower wages for the high-skilled employees they need. Also, accessibility is less problematic than within Brussels. Nevertheless, according to the respondent, from a business network perspective, a location in Brussels itself would have been better, because the image of being a Brussels firm, can be very helpful to establish new contracts, especially in their type of business.

Finally, it is remarkable that our respondent mentioned the presence of suppliers and business services and trust between companies to be very important location factors for his type of activity, while their own network is very restricted.

A 'core-ring with a co-ordinating firm': Omexco – printing textiles

As has been mentioned before, most of our firms can be categorized as a type 2 'core-ring, with co-ordinating firm'. We choose to present Omexco in detail for two reasons.

1 This is a firm in the same sector as Bekaert Textiles, since Omexco is specialized in printing textiles for wall-covering.
2 While Bekaert Textiles is a large firm, Omexo is rather small, with only 29 employees.

This offers an interesting opportunity for comparison. Its market area is almost completely international (93 percent of the sales in 45 countries).

Omexco has no location in a typical textile region but is located in a region with a highly innovative learning environment, with the research departments of the Universities of Leuven and Brussels in the vicinity. Omexco was created in 1976 and has one affiliate in France. The location was studied very carefully, taking into account the following factors: accessibility by car, proximity of an international airport (because of the international customers), opportunities for spatial extension, feasible prices for land and real estate ("that was the case in the seventies but not anymore"), presence of suppliers and business services ("we wanted to focus on our core activity from the beginning"), proximity of a larger city ("in fact, for us, this implied the proximity of Brussels because of the international airport"). Other location factors were: good living quality, presence of know-how, characteristics of the labor market (quality and quantity of labor, cost of labor and productivity) and policy factors such as subsidies and local

taxes. All could be found at the present location and are satisfactory except for local taxes ("the local fiscal regime could be better but we realize that each city has its local taxes nowadays") and local know-how on textiles ("the local know-how about textiles is not adequate but that is no reason to move: we simply get it from specialized regions elsewhere in Flanders").

Omexco, although being a small firm, has many suppliers and a geographically extended network. This is explained by the strategic option to focus, from the start, on the core business. Its vast networked territory includes important local, regional and international partners (Figure 2.12).

There are 46 suppliers on the suppliers list of Omexco that respond to our network definition. In terms of supplied value, 62 percent originates from Belgian suppliers and 38 percent from suppliers abroad.

From the Belgian suppliers, a remarkable part (13 out of 29) is involved in services and logistics. The main criterion for choosing a service supplier is the price/quality ratio. Neither distance nor the scale of the suppliers play a part in the choice, but it is clear from the map that one seeks (and finds) services more or less within a range of about 50 km. The proximity of Brussels offers possibilities but it is clear that even high-quality services are not exclusively related to Brussels. Business services account for about 20 percent of total supplied value, but when one omits the amount for insurance, the share drops to 12 percent.

Sixteen suppliers of goods have a location in Belgium; 17 have a location abroad. Most of the foreign suppliers can be found in the neighboring countries (12 out of 17) while the others are situated in some other European countries and in Korea and Hong Kong. Industrial supply represents 80 percent (88 percent without insurance) of the total supplied value; 53 percent of the industrial supply originates from Belgium; and 47 percent from suppliers abroad.

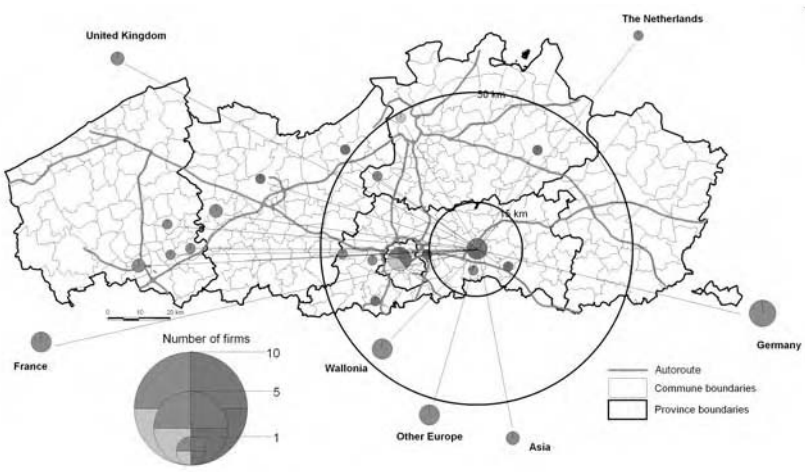

Figure 2.12 Location of first-ring players of Omexco (source: Vanneste 2005, ISEG, KULeuven).

It is striking that the share of Belgian industrial supply in term of numbers as well as in terms of value, is much higher than for the large, long established firm of Bekaert Textiles (39 percent of total supplied value). Of course, one has to be careful since Bekaert only gave the most important suppliers while the list of Omexco is far more complete. Focusing on the most important suppliers these figures are much closer. Indeed, the five most important industrial suppliers represent 64 percent of the total supplied value of the goods and from these 'big five', three are situated abroad (France, Korea, Hong Kong).

The reasons for industrial supply is very simply that Omexco does not have the suitable machinery and the supplies are too specialized. Therefore the criteria are specialization ("for some goods there isn't much choice") and the price/quality ratio. Distance is an element taken into account, because "having to wait two or three days for a delivery is (too) much". There is no networking for common product development. The respondent states: "we do have a lot of (informal) contacts, mostly with suppliers, sometimes with competitors but there is no collaboration". Sector organizations are important (e.g. membership of Febeltex), because of exchange of knowledge (about environmental issues, about new processes in the sector, about standards, etc.). And there is even more:

> This organization [Febeltex] has a think-tank; it is important that they do so because we don't have the time for that and it has some influence on [economic] policy such as the Maribel-bis operation [a public support project for the textile sector]. Our Chamber of Commerce is important too since they organize seminars e.g. about fiscal matters … not about textiles; in a sense we are strangers here … and we don't seek much contact.

Nevertheless, the respondent didn't see the need for the involvement of public authorities as far as networking was/is concerned.

Some conclusions

In the strategy for profit maximization, firms are very much aware that networking is an effective strategy. First, outsourcing can be a tool for cost minimization; next, the division of tasks can take advantage of the international division of labor; also, learning effects are generated or synergies are created by taking advantage of each others' specialization, etc.

Bearing in mind the importance of networking, one might suppose that the existence of networks of suppliers and business services and regional concentrations of specialized firms (clusters) are considered (important) location factors by individual firms. It should also produce a geographically recognizable structure.

At first glance, in the Belgian practice one cannot detect that recognizable structure. But looking through the different pictures of the sample firms there is some logic to detect. First, one has to be aware of the fact that the local economic portfolio is rather 'thick'. This means that, as a result of global economic development in Flanders and Belgium, and more in general in Western Europe,

economic diversity and institutional structures are simply there. Even when firms do not mention them as being important, they play an important role in location decisions of firms. Second, looking at the different geographical structures of the networks, there is always a combination of local, supra-local and international networking (Cabus and Vanhaverbeke 2006). In this structure, agglomeration economies are at work, especially for business services, while specialization is the basis for the more distant (industrial) network partners. Local, as well as non-local embeddedness, is also a fact (Markusen 1997).

Focusing on the limited co-operation for common R&D in many cases to companies from the same group; it is clear strategic knowledge that is obviously protected. Even our projects suffered from this distrust since many firms refused to collaborate because they considered their network of suppliers confidential and of strategic importance, not to be shared with the 'exterior world'. Even when the firms did collaborate with the researchers, the large majority refused to give any information beyond the number of suppliers. In searching for an explanation, Simmie (2004) finds that the majority of the knowledge used by firms to produce market-leading innovations is concentrated within the firm itself. Echoing Cabus (2001), he claims that it is unlikely that the firms involved will be willing to share it with a local community because strategic knowledge is precisely the foundation of their competitive advantage. He finds that external sources for the most highly rated knowledge tend to be non-spatialised. These results are in line with recent publications about the MNE success in knowledge intensive industries: high-tech companies have to tap in different, geographically bounded knowledge sources around the world (Doz *et al.* 2001).

Looking at the importance of institutional 'thickness', it has to be said that the perception of the impact of public authorities and regional development institutions was quite negative. The role public authorities should and could play in a networking environment is undefined. For example, our results seem to suggest that the mere presence of an inter-firm network is insufficient to foster a learning process. It depends on co-ordinating actors to stimulate networking and to promote the upgrading of suppliers. From the literature, one could expect this is where the RDA comes into the picture, but we did not find much evidence that the firms in Flanders share this viewpoint. In general, (endogenous) firms do not expect an incentive to networking by the regional or local policy actors. It seems that a crucial element in all this is a lack of focused information. Without wanting to overemphasize the potential effect of a more intensive reception and information policy for internationally operating companies, it seems that the (Belgian/Flemish) government should make work of this for embedding economic actors and activities.

In the study, it was shown how firms, both foreign and endogenous, have extended networks that cover regional as well as international exchange. One can postulate that, since much activity takes place across borders, and especially in the case of a small country surrounded by foreign territory, there is a need for transnational governance alongside layers of national, regional and local governance. There is also a need for strengthening economic policies aimed at

supporting firms to integrate into international networks, but also to learn about the opportunities within the 'local' territory (e.g. western versus eastern Flanders; Flanders versus Wallonia).

The network efforts made by public institutions and organizations such as the Chambers of Commerce, are not considered to be of great importance by the firms. The important result of our research in this respect is that networking is a part of the 'glocalization' strategy. Networking takes place in the context of a competitive and international economy. To link local with international sourcing is certainly a subject for policy concern. The detected vast amount of local sourcing, together with the international links, creates opportunities for public authorities and institutional organizations to have more influence on the global network economy.

Looking at the combination of local and international sourcing, the question also arises about the importance of distance. From the questionnaires the indication is that distance is a neglectable factor. However, the discourse during in-depth interviews points out that distance (both physical and cultural) is a latent factor and is taken into account sometimes as a final factor in the decision process. Moreover, it became clear that the firms would not declare in writing that distance, and especially cultural distance, is a factor that may matter since, in the context of an international economy and a global world, this is 'not done'. Therefore it is not surprising that the pattern of networking is more local and regional than one would expect in an international economy, with internationally oriented firms. This explains also why values (share of turnover) show a different picture to the patterns in terms of numbers of suppliers, especially as far as foreign firms are concerned.

This empirical research did not lead to a typology. This should probably not have been expected: since "variety and diversity are the main forces of economic progress in the context of a competition-oriented market economy" (Steiner 2002, p. 213). This is perhaps bad news for those who assigned this research about networks in Flanders (Ministry of the Flemish Government – Department of Economy) to us, since they were looking for the mainstream and not for the outlier firms and networks for policy purposes. Therefore, the conclusion of Steiner (2002, p. 213) for clusters is our conclusion for networks: "policy-making has to look not for optimality but for variety and diversity. One principal concern therefore is the difference in the behavior of firms and the resulting variety of experiments". The development of a network policy as a real or presumed answer to globalization threats is not obvious as clusters and networks stay "obscure objects of desire" (Steiner 2002, p. 208). We learned a lot about networks and networking and were convinced that the more elaborated networks of firms are, the less their survival depends on it, because they are members of several networks and they play different roles in the different networks.

It is perhaps interesting to look at our results as the outcome of a successful survival strategy. But what can be learned from these networks in terms of the ongoing process, linking networking and survival? Maybe we should look at more restricted and more exclusive kinds of networking of the 'all ring, no core

type' such as franchise chains or co-operations or other alliances in, for example, the tourism sector with a large number of independent travel agents fighting for survival (Hatton 2003).

It is clear that (large) networks are modeled by (all sorts of) transactional exchanges in the first place. As a hypothesis we advance that even (especially) in the context of international competition, networking (and networks) needed by those firms has to be more relational. This does not mean that firms with large and international networks should not get attention. On the contrary, they can help to develop networking. This is already the case, e.g. in the Plato-project (mentioned earlier) in which 'godfather' companies help small and young companies with networking among others. But there is more.

The commitment of these large companies with widely developed networks may have a positive effect on their commitment to a long-term alliance with the local community. As Piore and Sabel (1984, p.288) mentioned: "Although these firms [in Massachusetts] are rooted in a particular geographical area and their success depends – to an extent that industry leaders themselves probably cannot assess – on its location, they are constantly threatening to leave if their various demands are not met". Although 20 years have passed and we are in another geographical context, much of what Piore and Sabel stated, stays true. Networking, only based on efficient transactions is certainly enhancing footlooseness, while relational networking may enhance embeddedness. But is the latter wishful thinking?

Note

1 Supplies or deliveries of raw materials are not considered to be a network relationship.

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3 Global production and trade systems

The Volvo case

Inge Ivarsson and Claes G. Alvstam

Introduction

The neoclassical theory of international trade is one of the best-established approaches to understanding economic transactions between states. The Ricardian notion of comparative advantages of production has dominated thinking over the last 200 years. This way of explaining international economy was later improved and extended through the Heckscher-Ohlin theory of factor proportions. Samuelson in turn, elaborated on this theory, which was, during the last decades of the twentieth century, further modified when Helpman, Krugman and others (Fujita *et al.* 1999; Helpman and Krugman 1985; Krugman 1990, 1991) introduced concepts such as intra-industry trade, and increasing returns to scale.

Despite radical changes in the business environment, relatively few attempts have been made to understand geographical patterns of world production and trade through an exploration of the ways in which transnational firms (TNCs) adapt to these continuous changes in their environment regarding international transactions. Nor have many attempts been made to unravel the ways in which the global strategy of a firm affects the location of manufacturing, assembly, subcontracting and shipments (Buckley and Ghauri 2004). These aspects appear to have been neglected in both the discipline of international business and that of economic geography. McCann and Mudambi (2005) have pointed out that economic geographic firm-location theory is ignored in traditional international business and trade theory.

Adopting a transaction costs perspective of organizations, boundaries and linkages of a firm is a common approach in the international business literature but much less common in trade literature (Markusen 2002) and not known at all in economic geography (McCann and Mudambi 2005). Within economic geography itself there is an obvious need to further conceptualize the nature of the firm within a geographical context (Dicken and Malmberg 2001; Maskell 2001; Taylor and Asheim 2001). A rough estimate shows that at least two thirds of the global trade turnover today consists of intermediate products (i.e. semi-manufactured goods, investment goods, and other products that are on their way through the value chain), compared to around fifteen percent in 1950. Another often quoted approximate is that, depending on the definition, between one third and two

thirds of the value of world trade is derived from intra-corporate transfers, rather than from arm's length transactions between independent actors (UNCTAD 2002; Dicken 2003).

Although the classic Ricardian observation of the importance of relative production costs and efficiency still holds, it is now generally accepted that other factors should be brought into the analyses as well. Moreover, it is now generally accepted that the optimal location of production from the cost and productivity viewpoint may differ largely from an optimal global production pattern when these other factors are included in the analysis as well. Markusen (2002) contends that most general equilibrium trade input–output models still assume single firms who produce single goods at a single location, suggesting no involvement of multinationals and multi-plant firms (McCann and Mudambi 2005). Very little attention has been paid to the sub-national regional location behavior of the TNC (de Smidt and Wever 1990). Geography is defined simply in terms of home country versus host country. Furthermore, while the process of internationalization and the formulation of global corporate strategies are well researched, there are relatively few studies that integrate theories of foreign entry strategies of the TNC with logistics and supply chain management theories, and with theories of the political economy of trade and international investment. The complex and intricate interactions within a kind of 'bargaining process', between the TNC and the nation-states in which they invest, a relationship that contains both conflict and co-operation (Dicken 1990), is another field that requires more attention in order to understand the logic of global production networks.

'Grounded theory' is an eclectic approach, which takes advantage of theories from several of the fields mentioned above, and departs from the geographical behavior of the transnational, multi-plant firm. Based on these case studies, the grounded theory approach develops general ideas. This contribution is an attempt to apply this grounded theory in a case study on AB Volvo. Using detailed firm-level data, this study aims to explore how AB Volvo, a large Swedish transnational manufacturing company, maintains its basic objective to create added value for customers and shareholders in its global operations by optimizing production efficiency and available production capacity within its global production system, in co-operation or severe competition with supporting and related firms. The research includes extensive field-studies at Volvo's plants in Brazil, China, India and Mexico. Primary data regarding production and supplier relations were collected through interviews with managers at the purchasing departments in the respective plants, and with senior representatives of the Volvo group in Sweden. In addition, 50 suppliers to Volvo in the four countries were interviewed regarding their relations to Volvo (Ivarsson and Alvstam 2004a,b, 2005a,b). Based on these experiences, we argue that the transnational company is continuously adjusting its global strategies in response to short- and long-term changes in the external business environment. We also argue that these adjustments and adaptations involve many factors others than those commonly researched in academic studies about companies, which rely mostly on secondary data or information at a more aggregate description level.

The geographical pattern of manufacturing plants in a TNC at any given time is the result of a vast number of historical decisions at the corporate level, regarding investments, acquisitions and mergers. Even though these decisions may have made sense at that time, continuous changes in technology and demand may have contributed to a less than optimal production pattern today. Nevertheless, by lack of a better alternative, many plants are maintained and sometimes even expanded. The growing number of mergers and acquisitions among globally oriented firms has contributed to a pattern of production that may appear confusing to an external viewer. Acquisitions are often based on the aim of gaining control over a certain production technique or to increase the market in a special geographical area, but they may be accompanied by a number of plants that were not the main target in the acquisition. Yet these plants are kept and utilized until a suitable opportunity of divestment or closure arises. Apart from mergers and acquisitions, other new organizational forms, e.g. strategic alliances, joint ventures, and more loosely connected inter-firm networks, differ significantly from the hierarchical control of a vertically integrated firm, resulting in different spatial configurations of economic activities (Yeung 2005). In addition, the regulations imposed by the host-country government concerning local-content requirements (LCRs) and other aspects related to tariffs and cross-border trade may also explain foreign direct investments which are, while possibly not optimal in a world without national trade barriers, logical, given the specific circumstances under which the foreign firm operates.

The current composition of domestic and foreign suppliers to an assembly plant is the result of a vast number of historical circumstances, as well as of the institutional framework of the host-country within which the TNC operates. Even though the company aims at maximizing its global profits through cost-efficient and productive modes of organization, the politics of its external business environment does not always allow it to live up to these ambitions. We argue that detailed studies at the firm-level can reveal a number of aspects, that in a generalized form, can contribute to the understanding of the world production system. Conventional approaches using secondary data from official statistical sources at an aggregate level may not be able to observe, identify, describe or explain these aspects.

Volvo: a global actor in the production of heavy commercial vehicles

AB Volvo is Sweden's largest manufacturing company with 81,000 employees worldwide and a global turnover of 28.6 billion US$ (2004), holding rank 180 on the Fortune Global 500 list (*Fortune*, July 25, 2005). It is the world's second largest producer of heavy-duty trucks (>16 tons) through Volvo Truck Corporation (VTC), and through Volvo Bus Corporation (VBC) also the world's second largest producer of city- and long-haul coach buses. AB Volvo is one of the major producers of construction equipment through Volvo Construction Equipment (VCE), as well as of marine and aircraft engines (Volvo Penta and Volvo

Aero respectively). In 2005, AB Volvo boasted a market capitalization value larger than it was before it sold its passenger car division, Volvo Car Corporation (VCC) to Ford in 1999. The company has radically changed its general strategy since the mid-1980s, when its important business areas within trading and energy as well as in food production made it very diverse (Alvstam and Ellegård 1990). After the sale of VCC, it has become almost solely focused on heavy vehicles and equipment to industrial customers.

Volvo now has operations in over 185 countries, and about 60 plants in 25 countries. The biggest share of the distribution of sales by market in 2004 was in Europe with 56 percent, followed by North America, 26 percent, Asia 10 percent, and South America 4 percent. The two largest manufacturing sites for trucks are located near Göteborg in Sweden, close to the birthplace of the company, and in Ghent in Belgium.

The Ghent plant was built in the early 1960s during a time when it was expected that Sweden would not join the EEC customs union within the foreseeable future, and when Volvo needed production capacity within the common market borders in order to serve its EEC customers. The decision to built this plant in Ghent gave rise to an accelerated pace of internationalization in Volvo's truck and passenger car sales in foreign markets, but also resulted in decreased exports of completely-built-up units (CBUs) from Sweden. When it came to exports of parts and components, on the other hand, there was less growth than might have been expected, due to the tendency among larger subcontractors to act as 'follow source'-suppliers, investing in new plants close to the foreign assembly. In addition, specialized manufacturers of parts and components, who had previously acted as subcontractors to other foreign assembly plants in Belgium, became serious competitors to Volvo's original suppliers, thereby also contributing to the lower level of cross-border transactions, despite the obviously higher level of internationalization of the company.

In the late 1970s, Volvo decided to enter the Brazilian truck and bus market through a greenfield investment in Curitiba, Paraná, around 450 km south of the main Brazilian automotive hub in the São Paulo region. Volvo's original motive in building its own plant in Brazil was to avoid the high tariff barriers on CBU imports, which had also forced other main actors within the same segment, including German Daimler Benz (now Daimler Chrysler), and Sweden's Scania, to commence their own production in Brazil (Alvstam and Ellegård 1991). The Curitiba location was necessitated by federal government measures to develop an industrial infrastructure outside the overheated São Paulo region (Geiger and Davidovich 1986). Volvo obtained access to a more stable labor market through this location, and also received a number of favors in the interpretation of the state regulations of LCRs. That a certain amount of the gross output value in industrial production emanates from the value added by domestic manufacturers is made obligatory through the LCRs. This requirement has made LCRs an essential tool in the Brazilian trade policy and compelled Volvo, as well as other foreign actors, to use local subcontractors rather than to optimize their internal global supplier organization. The main idea behind the LCR is to support the

growth and development of domestic industries in order to make them more competitive towards specialized global suppliers. The LCR-system has been gradually softened, in line with WTO requirements, and today the competitive price and quality of the local suppliers is the main reason for the high share of domestically produced parts. However, national LCRs, valued at about 60 percent of the production costs, are still required for Brazilian customers to gain benefits from various governmental finance and investment programs (Ivarsson and Alvstam 2005a). To take advantage of such benefits, small or medium-sized haulers often have to choose between competing foreign truck brands. From time to time, governmental measures have helped Volvo to join re-export requirement programs (RER), imposed by the federal government – an arrangement that particularly boasted exports to other Latin American countries, but also to other parts of the world, including Sweden. The Curitiba plant is a 'main factory', when compared to Volvo's other manufacturing sites outside Europe and the US, which are 'kit factories', i.e. assemblers of imported completely-knocked-down units (CKDs). A main factory produces CBUs, including chassis, engines, transmissions and truck cabins. Volvo do Brasil (VdB) even has its own design and engineering departments. However, the design of the major models is done in Sweden (Linder and Martinez Majander 2003).

The 1990s was a decade of rapid expansion of foreign production within all Volvo business divisions. The added production capacity during these years consisted of four components:

a existing units within acquired companies;
b existing units provided by joint venture partners;
c existing units originally created within other business areas, usually passenger cars; and
d pure greenfield investments.

Volvo seemed to have preferred growth at existing units. This preference restricted flexibility with regard to geographical locations and production design, but generated immediate access to a higher production capacity. Additionally, growth at existing units enabled Volvo to continue to use well-established distribution organizations and networks of local sub-contractors.

During the political transitions in Central and Eastern Europe, Volvo was keen to scrutinize various investment alternatives in order to gain early access to new markets in the former centrally planned economies. The final choice of country of establishment was Poland, being the largest potential market. Volvo started a joint venture in 1993 with the big truck and bus maker, Jelcz, near Wroclaw in Lower Silesia. However, this engagement lasted only one year because of a failure to agree on employment levels. Subsequently, Volvo started production on a greenfield site, about 30 km away. Between 1995 and 1998, the company invested in developing bus and truck assembly, but in 1998, it changed its strategy. It made the production site the centre of bus production for the whole of Central, Eastern and Southern Europe, and invested in a 'main factory'

to build complete buses (Hardy 2002, p. 278).[1] The Wroclaw location was later also utilized by VCE to produce parts and components, as well as various types of commercial vehicles, thereby taking advantage of synergy effects between neighboring business divisions.

Volvo also set up small-scale assembly operations for trucks in passenger car assembly plants in Malaysia and Thailand. The main reasons for these investments were once again high local import tariffs for CBU units. A joint venture – Volvo Silverbus – was formed in 1994 near Xi'an, in China, to build luxury-coach buses in co-operation with a state-owned manufacturer of military aircraft, Xi'an Aircraft Company (XAC). Neither the location nor the joint venture partner were chosen by Volvo, but by the official authorities, even though economic benefits provided by the central as well as the provincial and local governments contributed to the final investment decision (Devidal and Han 2002; Ivarsson and Alvstam 2005a,b). The joint-venture contract included agreements on local purchasing, and XAC was given a privileged position as the preferred supplier (Ivarsson and Alvstam 2005a). The inland location in the central Shaanxi Province, about 1,200 km from the nearest seaport, Lianyungang, and 1,500 km from Shanghai, has furthermore contributed to the dominance of local and/or domestic suppliers. A few years later, Volvo commenced negotiations with the Chinese government to form another joint venture to produce heavy trucks at Jinan, in Shandong province. These talks became immensely drawn-out in time, and it was not until 2004 that the first vehicles were delivered. In the meantime, another joint venture, Volvo Sunwin Bus Corporation, which built city buses, was formed in Shanghai (Osmancevic and Zhao 2002).

Volvo Bus de México (VBM) was established in 1998 through a 100 percent acquisition of the country's largest bus manufacturer, Mexicana de Autobuses SA de CV (MASA), a manufacturer with a major plant in a northern suburb of Mexico City. Two models of city buses are produced: one top model based on Volvo's global design, and one standard bus, a former local MASA-model, re-engineered and upgraded by Volvo. As in China, VBM is a kit factory, where all the vital details are imported, normally in CKD kits. These kits are imported from Sweden, but also from external suppliers worldwide, including smaller engines for the local MASA model from the US. In addition, components are also sourced from local suppliers after approval from Sweden. The body is produced 'in-house' (Ivarsson and Alvstam 2005b). The global production network, part of which is the Mexican plant, also incorporated deliveries from other foreign plants formerly acquired by Volvo, e.g. Prévost and NovaBus in Canada, Carrus in Finland, as well as German Drögmöller. The exports and imports of parts and components, as well as of assembled vehicles between Mexico and the rest of the world, is regulated in detail within NAFTA, APEC and the EU–Mexico Free Trade Agreement. NAFTA, in particular, changed the business environment of the Mexican automotive sector. It allowed for a rapid expansion of production capacities in Mexico, and enhanced specialization and division of labor between plants in Canada, USA and Mexico (Karamehic and Tsiogka 2003). On the other hand, LCRs and other technical barriers to trade have also

given rise to less efficient production and trade networks, since they allow firms to satisfy their local content requirement through exporting instead of using automotive parts and components for domestic needs. This reverse of a regional free trade agreement has also been observed by traditional neoclassical economists, commenting that:

> U.S. auto firms operating in Mexico have chosen to export some components from Mexico to the U.S., even though these components could be produced in the U.S. more cheaply, because this allows them to use less Mexican content in producing cars in Mexico for Mexico's market.
>
> (Krugman and Obstfeld 2006, p. 193)

Mexico's membership of APEC had an impact on Volvo's organization of the production of parts and components in plants in China, Korea, Malaysia and Thailand. The efforts to create an all-American free trade agreement, uniting NAFTA and Mercosur will, in case of realization, be important for the division of labor between domestic suppliers and assembly plants in Mexico and Brazil. VBM has already far-reaching plans to further 'upward strategic migration' of the plant to change it into a chassis part number factory (Salvador and Yakob 2003). This move would strengthen the competitive edge of domestic suppliers to the Mexican assembly within Volvo's global production networks even further, and enhance Volvo's opportunities to export to other brands within the automotive industry.

In another part of the world, in the same year, 1998, Volvo opened, by way of a greenfield investment, a wholly owned assembly plant for heavy trucks near Bangalore in India. The models produced there are also based on Volvo's global design, with key parts delivered in CKD kits from Sweden. In addition, some parts and components are procured from local suppliers after approval from the headquarters (Ivarsson and Alvstam 2005b). The Bangalore plant is also used for bus assembly in order for Volvo to gain access to the huge market potential in India, and to avoid high entry barriers. Furthermore, Karnataka state tax policy was advantageous for VTC. The Indian authorities provided VTC with the property and a ten-year tax-exemption when starting the business. Initially, VTC's operation in India was supported through imports of necessary components. However, as a result of VTC's global sourcing strategy and India's high import tariffs for parts and components, the company started to increase its supplies from local manufacturers. In order to achieve efficient operations and establish high quality in the final product, it became important to develop a strong relationship with these suppliers (Robye and Rosander 2002; Ivarsson and Alvstam 2004a,b).

The divestment of the highly successful Volvo Car Corporation to American Ford Motor Corporation in 1999 was a strategic move, which enabled Volvo to concentrate on those business areas where it already had a major market position. While being one of the largest global actors in heavy trucks, buses and construction equipment, it remained a minor player in the passenger car upmarket segment. The future investments in research and development of new and broader

model ranges were considered too heavy a burden for a company manufacturing less than 500,000 cars per year. An attempt in the late 1980s to merge Volvo with French Renault in both the car and the truck production had failed, due to resistance among the Swedish owners. Volvo's increased liquidity after selling off VCC to Ford was used to advance research and development on the new generation of engines and to strengthen Volvo's position in the field of commercial vehicles. Volvo's first move to do so was to plan the acquisition of its local archrival, Scania. Scania held, with a similar product range of buses, the fifth position in the world within the field of heavy trucks. The joint force of the two successful Swedish makers of commercial vehicles was considered essential to meet future technical and commercial challenges at the global level. However, the acquisition was never realized. After a long and commercially harmful judicial process, it was rejected based on EU regulations on dominant market position. Volvo's minority ownership in Scania, amounting to about 30 percent of the voting strength, had to be liquidated – a process that was not finalized until 2005.

Volvo then tried to gain a majority in 2001 of Renault Véhicules Industriels (RVI), the state-owned French company with which Volvo had been previously involved during the years of co-operation 1989–1993. This purchase also included RVI's American subsidiary, Mack Trucks Inc. Despite the fact that the purchase might have been seen as a second-best after the Scania failure, there was a good industrial as well as commercial logic behind this strategic decision. The technical co-operation between VTC and RVI was already in process and had advanced a long way towards co-ordinating and assessing mutual activities, strengths and weaknesses during the four years of involvement. It was a widespread secret that the technical co-operation between the two truck companies was smoother than between VCC and Renault's passenger car division. There was also an obvious geographical synergy between the three brands, as VTC had traditionally had a weaker market position in France, Southern Europe, and Africa, where Renault has been the market leader. VTC is stronger in many Asian countries, but Renault also has a long tradition of presence in the Chinese market. Berliet, one of the companies that later became a part of RVI, had already established co-operation with the Chinese government as early as the 1960s. In 2002, Renault Trucks signed a contract with Dong Feng Motors Group to produce Renault engines locally, and a signing of a joint-venture agreement at the beginning of 2004 enlarged this co-operation even further.

The acquisition of Mack generated access to an extensive North American production and distribution network. VTC had already tried to gain a foothold in North America through the acquisition of White Trucks Inc. in 1981. Mack also operated an assembly plant in Brisbane, Australia, where VTC had also started assembly operations. The production of Mack trucks was transferred to the Volvo plant, and as a result, both brands are currently assembled in one site. The programs of rationalization and efficiency enhancement were implemented by VTC in order to achieve synergies during integration (Benito and Gireva 2003).

Thus, the worldwide production geography of Volvo today (Figure 3.1 and Table 3.1) is the compound result of a continuous process of organic growth,

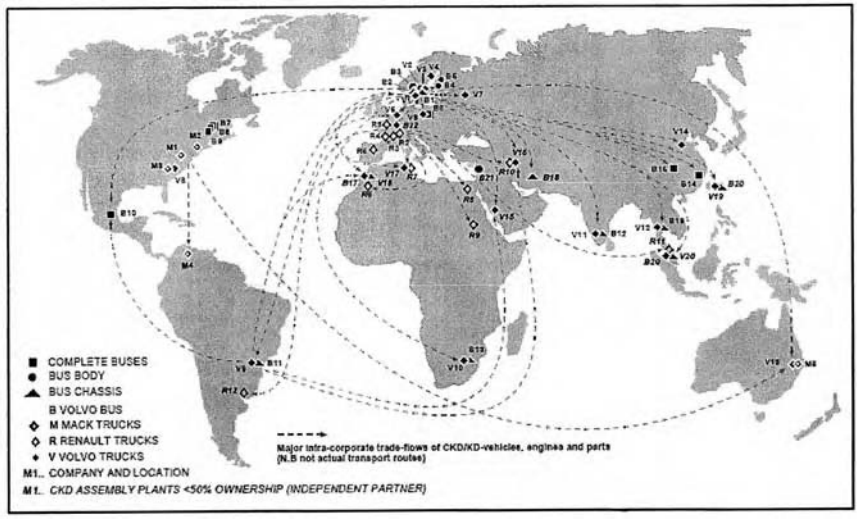

Figure 3.1 Major production sites and intra-corporate trade-flows by Volvo Bus and Trucks, 2005 (source: survey-data compiled at AB Volvo and open information accessed at: www.volvo.com).

mergers and acquisitions – sometimes co-ordinated between separate business areas, and sometimes completely independent (Table 3.2). The intra-corporate trade-flows shown in the figure reveal a pattern of shipments of parts and components between the different plants in the global production network. It can be argued that there has been no comprehensive and long-lasting expansion strategy that can explain the entire picture. Rather, there was an eternal chain of separate events, that from time to time played a role in constituting the geographical pattern of production and intra-trade that we observe today.

The managerial challenge is to increase the compound efficiency, productivity and profitability within a given global production network, taking a vast number of considerations outside the strict economic and financial factors into account, and at the same time promote the technical development and quality standards, not only at Volvo's own plants, but to an increasing extent also at its suppliers.

The integration of acquired truck companies – a long-term process

Volvo's initial aim after the acquisition of RVI and Mack by VTC was to consolidate the three companies within one organizational unit. The potential synergy effects were to be assessed and evaluated and far-reaching specialization and division of production was to be initiated with the objective of creating a worldwide system of production and distribution of various truck models with distinct profiles for each brand: Volvo Global Trucks. These plans, however, were scratched after only a short time, due to insurmountable cultural

Table 3.1 Major production sites of Volvo trucks and buses, 2005. Wholly-owned and in collaboration with independent partners (IP)

Production site	*Operations*	*Major intra-corporate trade-flows*
Mack Trucks		
M1 Hagerstown, MD, USA	Engine and transmission production	Exports of CKD-chassis and CBU engines to Venez and Australia
M2 Allentown, PA, USA	Assembly and painting cabs; assembly of trucks	–
M3 Dublin, VA, USA	Assembly of trucks	–
M4 Caracas, Venezuela	Assembly of truck cabs, chassis and engines	Imports of CKD chassis and CBU-engines from USA
M5 Brisbane, Australia	Production of truck cabs and engines; assembly of trucks	Imports of CKD chassis and CBU-engines from USA
Renault Trucks		
R1 Blainville-sur-Orne, France	Pressing, assembly and painting of truck cabs; truck-assembly	–
R2 Bourg-en Bresse, France	Assembly of trucks	–
R3 Limoges, France	Production of engines, gearboxes and components	–
R4 Vénissieux, France	Foundry, production of engines, axles	Exports of CKD-chassis and CBU-engines worldwide
R5 Villaverde, Spain	Production of transmission components	Exports of components to Fra
R6 Casablanca, Morocco (IP)	Assembly of cabs, chassis and engines	Imports of CKD-chassis from Fra, CBU-engines from Fra, Swe
R7 Tunis, Tunisia (IP)	Assembly of cabs, chassis and engines	Imports of CKD-chassis from Fra, CBU-engines from Fra, Swe
R8 Cairo, Egypt (IP)	Assembly of cabs, chassis and engines	Imports of CKD-chassis from Fra, CBU-engines from Fra, Swe
R9 Khartoum, Sudan (IP)	Assembly of cabs, chassis and engines	Imports of CKD-chassis from Fra, CBU-engines from Fra, Swe
R10 Teheran, Iran (IP)	Assembly of cabs, chassis and engines	Imports of CKD-chassis from Fra, CBU-engines from Fra, Swe
R11 Kuala Lumpur, Malaysia (IP)	Assembly of cabs, chassis and engines	Imports of CKD-chassis from Fra, CBU-engines from Fra, Swe
R12 Montevideo, Uruguay (IP)	Assembly of cabs, chassis and engines	Imports of CKD-chassis from Fra, CBU-engines from Fra, Swe

Volvo Trucks		
V1 Göteborg, Sweden	Assembly of trucks; production of frames; painting of axles	Exports of CKD-trucks/chassis worldwide, imports of cabs from Bra
V2 Skövde, Sweden	Foundry; engine production	Exports of CBU/CKD-engines worldwide
V3 Köping, Sweden	Production of gearboxes, rear axles and drives	Exports of power-train parts worldwide
V4 Umeå, Sweden	Pressing, assembly and painting of truck cabs	Exports of cabs/CKD-cabs worldwide
V5 Ghent, Belgium	Assembly of trucks (cabs, engines and chassis)	Imports of CBU-chassis/cabs from Swe, CBU-engines from Swe, Fra, Bra
V6 Wroclaw, Poland	Assembly of trucks (cabs, engines and chassis)	Imports of CBU-chassis/cabs from Swe, CBU-engines from Swe, Fra
V7 Moscow, Russia	Assembly of trucks (cabs, engines and chassis)	Imports of CBU-chassis/cabs from Swe, CBU-engines from Swe, Fra
V8 Dublin,VA, USA	Assembly and painting of truck cabs; assembly of trucks	–
V9 Curitiba, Brazil	Production of truck cabs and engines; assembly of trucks	Exports of truck cabs to Sweden, engines to Belgium, Iran, Saudi Arab
V10 Gabarone, Botswana[a]	Assembly of cabs, chassis and engines	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra
V11 Bangalore, India	Production of trucks and trailers	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra
V12 Bangkok, Thailand	Assembly of cabs, chassis and engines	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra
V13 Brisbane, Australia	Production of truck cabs and engines; assembly of trucks	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra
V14 Jinan, China	Assembly of cabs, chassis and engines	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra
V15 Jeddah, Saudi Arabia (IP)	Assembly of cabs, chassis and engines	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra, Bra
V16 Teheran, Iran (IP)	Assembly of cabs, chassis and engines	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra, Bra
V17 Tunis, Tunisia (IP)	Assembly of cabs, chassis and engines	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra
V18 Casablanca, Morocco (IP)	Assembly of cabs, chassis and engines	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra

(*Continued*)

Table 3.1 Continued

Production site	*Operations*	*Major intra-corporate trade-flows*
V19 Taipei, Taiwan (IP)	Assembly of cabs, chassis and engines	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra
V20 Kuala Lumpur, Malaysia (IP)	Assembly of cabs, chassis and engines	Imports of CKD-cabs/chassis from Swe, CBU-engines from Swe, Fra
Volvo Bus		
B1 Borås, Sweden	Assembly of bus chassis	Exports of CBU/CKD-chassis, CBU-engines worldwide
B2 Uddevalla, Sweden	Production of busframes	–
B3 Säffle, Sweden	Production of bus bodies; assembly of buses.	–
B4 Turku, Finland	Production of bus bodies; assembly of buses.	Imports of CBU-chassis from Swe, CBU engines from Swe, Fra and Ger
B5 Tampere, Finland	Production of bus bodies; assembly of buses.	Imports of CBU-chassis from Swe, CBU engines from Swe, Fra and Ger
B6 Wroclaw, Poland	Production of bus bodies; assembly of buses.	Imports of CBU-chassis from Swe, CBU engines from Swe, Fra and Ger
B7 St Claire, Canada	Production of complete (bodied) buses	–
B8 St-Eustache, Canada	Production of complete (bodied) buses	–
B9 St-François-du-Lac, Canada	Production of bus chassis	–
B10 Mexico City, Mexico	Production of complete (bodied) buses	Imports of CKD-chassis from Swe, CBU engines from Swe, Fra, Ger, Bra

B11 Curitiba, Brazil	Production of engines; assembly of bus chassis	Exports of engines to Mex, Morocco
B12 Bangalore, India	Assembly of bus chassis and engines	Imports of CKD-chassis from Swe, CBU engines from Swe, Fra, Ger
B13 Gabarone, Botswana[a]	Assembly of bus chassis and engines	Imports of CKD-chassis from Swe, CBU engines from Swe, Fra, Ger
B14 Shanghai, China	Final assembly of buses	Imports of CKD-chassis from Swe, CBU engines from Swe, Fra, Ger
B15 Xian, China	Production of bus bodies; assembly of buses	Imports of CKD-chassis from Swe, CBU engines from Swe, Fra, Ger
B16 Bangkok, Thailand	Assembly of bus chassis and engines	Imports of CKD-chassis from Swe, CBU engines from Swe, Fra, Ger
B17 Casablanca, Morocco (IP)	Assembly of bus chassis and engines	Imports of CKD-chassis from Swe, Bra, CBU engines from Swe, Fra, Ger, Bra
B18 Save, Iran (IP)	Assembly of bus chassis and engines	Imports of CKD-chassis from Swe, CBU engines from Swe, Fra, Ger
B19 Kuala Lumpur, Malaysia (IP)	Assembly of bus chassis and engines	Imports of CKD-chassis from Swe, CBU engines from Swe, Fra, Ger
B20 Taipei, Taiwan (IP)	Assembly of bus chassis and engines	Imports of CKD-chassis from Swe, CBU engines from Swe, Fra, Ger
B21 Caesarea, Israel (IP)	Body production	Imports of CKD-chassis from Swe, CBU engines from Swe, Fra, Ger
B22 Cologne, Germany (IP)	Production of engines	Exports of CBU-engines to Sweden and worldwide

Source: AB Volvo.

Note

a To be relocated to Durban, South Africa by January 2006.

Table 3.2 Main acquisitions of truck and bus companies, made by Volvo, 1981–2001

Acquired company	*Operation*	*Year*
Säffle Karosseri AB, Sweden	Bus body	1981
Leyland Bus, UK	Buses	1988 (closed 1993)
Aabenraa, Denmark	Bus body	1994
Drögmöller Karosserien GmbH, Germany	Bus body	1994 (closed 2005)
Prévost Car, Canada	Buses	1995
Carrus OY, Finland	Bus body	1998
Nova Bus, USA	Buses	1998
Mexicana de Autobuses SA de CV (MASA), Mexico	Buses	1998
Mack Trucks, USA	Trucks	2001
Renault Véhicules Industriels (RVI)	Trucks	2001

Source: Survey data compiled at AB Volvo and open information accessed at: www.volvo.com.

and other differences between the three companies. Instead, each company ended up operating in a separate business unit, each with a profile that in many ways was the same as the one developed before consolidation within the Volvo Group. The only remaining element from the initial aims of creating a world-wide organization was a business unit called 'Volvo 3P', that, effective from 2001, became responsible for the product planning, product development, purchasing and product range management for the three companies (Table 3.3).

The 3P unit aims to offer its three partners innovative and customized solutions that make, in an optimal way, use of the size, volumes and resources of the three truck companies, while at the same time preserving the unique distinction and characteristics of each brand. The challenge for the 3P unit is to balance the need to establish synergy in the functions of the three companies on the one hand, and maintaining three separate brands on the other (Linder and Martinez Majander 2003). It is quite clear that the long-term objective is to gradually co-ordinate the production and purchasing activities between the three truck companies. This process will inevitably lead to a number of compromises. In the near future there

Table 3.3 Common business units, serving different business areas within the Volvo Group, 2005

Equipment	*Trucks*	*Volvo Trucks*	*Renault Trucks*	*Mack Buses*	*Construction*			
					Equipments	*Penta*	*Aero*	*Finance*
3 P	x	x	x					
Powertrain	x	x	x	x	x	x		
Parts	x	x	x	x	x	x		
Technology	x	x	x	x	x	x	x	
Logistics	x	x	x	x	x	x	x	
Information technology	x	x	x	x	x	x	x	x

Source: Survey data compiled at AB Volvo and open information accessed at: www.volvo.com.

is still the challenge to reduce parallel triple work and to increase efficiency in the global purchasing and product-planning unit. Volvo is the largest of the three with 97,000 delivered vehicles in 2004, followed by Renault with 70,000 units, while Mack delivered 25,000 units. The Volvo 3P acts close to the main manufacturing operations, with offices near Volvo Trucks in Göteborg, Brussels and Curitiba, close to Renault Trucks in Lyon, and close to Mack's head office in Allentown, PA. Volvo 3P also operates in the vicinity of both Volvo and Mack's assembly operations in Greensboro NC and close to newly established plants in overseas markets, with offices in Bangalore, Shanghai, and Brisbane.

Another separate business unit within the group, Volvo Powertrain, has the task of co-ordinating Volvo's driveline activities (mainly engine and transmission) and to supply the three truck companies, as well as Volvo Buses, Volvo Penta, and Volvo Construction Equipment, with driveline components, such as diesel engines, transmission systems and axles, which are either developed and manufactured by Volvo Powertrain itself, or purchased from outside.

Powertrain faces the same balancing challenge in their work with the three truck companies as 3P. Their long-term task is to develop the different engine manufacturing plants of Volvo, Renault and Mack into specialized plants. This involves the development of different types of engines in different sizes for different markets and for different applications. Powertrain has to balance this objective with the aim to identify and exploit synergy effects between engines and transmissions for trucks, buses and various types of construction equipment.

Volvo Parts is the business unit that is mainly responsible for the aftermarket. It runs four types of warehouses. The central warehouse delivers the full range of parts to support warehouses, importer warehouses, supplies dealers and customers directly. The regional warehouse distributes stock and emergency orders to warehouses and dealers in the region. Support warehouses distribute emergency orders to dealers. In addition, there are separate warehouses in many markets, serving as the link between the central warehouse and the dealer. As is illustrated in Figure 3.2, there are globally only eight central warehouses. The Asian markets are normally served by regional warehouses.

The task of Volvo Parts within the global production network is to optimize logistical solutions from warehouse to consumer. Consumer satisfaction is top priority in the fulfillment of this task. The geographical network of commodity flows operated by Volvo Parts does not reflect the supposed comparative advantages of those countries from which exports take place, but is rather a combination of suitable geographical locations within a logistics network.

Domestic suppliers within the global suppliers' network

The current pattern of suppliers to Volvo, within each of the host markets in which manufacturing and final assembly take place, is a complex mix of different types of suppliers. Here, we will identify seven different types of suppliers:

- inherited 'in-house' subcontractors co-operating with acquired domestic companies;

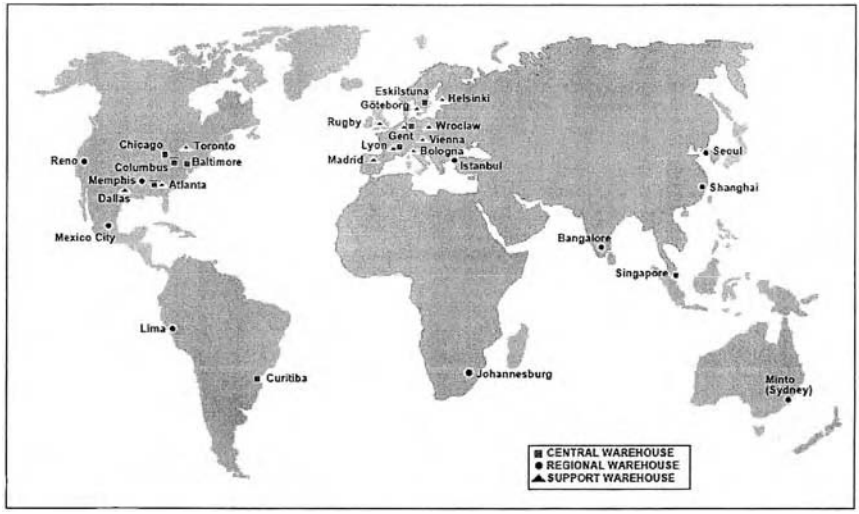

Figure 3.2 Volvo warehouse locations, 2005. Central warehouses, regional warehouses and support warehouses (source: survey-data compiled at AB Volvo and open information accessed at: www.volvo.com).

- subcontractors who have been more or less forced on the company by the host country government at the time of negotiating a joint venture or a greenfield investment;
- domestic suppliers chosen by Volvo, but under circumstances of LCRs, prohibitive import tariffs or other trade-policy arrangements;
- domestically located, but globally organized follow-source suppliers, serving Volvo as well as its competitors;
- domestic suppliers selected by Volvo after the establishment of its own local assembly production;
- suppliers, located abroad, operating within the global production network of Volvo, e.g. suppliers to other Volvo companies;
- completely independent specialized global supplier companies.

The amount of local content among Volvo's truck and bus operations ranges from around one-third of the gross value added in India, to around 50 percent in Mexico, and almost two-thirds in China and Brazil. The local-content share of the Mexican models that are based on local design exceeds even 80 percent (Ivarsson and Alvstam 2005b). Volvo selected only one-third of the suppliers in China after the establishment of the joint venture, while the others are 'in-house' or external suppliers to the joint venture partner. Over 80 percent of Volvo's suppliers in Mexico are inherited from the acquired national company. On the other hand, Volvo selected all suppliers in India and Brazil at the beginning of its greenfield operations. The main objective of Volvo, as well as its competitors,

both historically and currently, has been to adjust to the external non-influenceable circumstances, and to find technical solutions that minimize production and distribution costs, while not compromising on quality and customer value. The reorganization of supply chains to cut costs and to support efficient production has led to a sharp reduction in the number of first-tier systems suppliers, who increasingly are large globally-oriented actors. They have an independent responsibility for the design and production of the most technology-intensive parts and components, as well as for the co-ordination of second- and third-tier suppliers. The latter increasingly consist of smaller, domestic companies who manufacture low-technology parts and components (Humphrey *et al.* 2000; Ivarsson and Alvstam 2005b, p. 1329; UNCTAD 2000, 2001). Only those of these domestic suppliers who successfully upgrade their operations in order to meet the global standards of leading Original Equipment Manufacturers (OEMs) and/or their first-tier suppliers can improve their (domestic and international) market position (Ivarsson and Alvstam 2005b; Quadros 2003; UNCTAD 2000, 2002).

In line with its policy of adapting to local market conditions in those countries in which it has manufacturing plants, Volvo carried out a substantial program with a two-fold objective. Firstly, to promote technical and knowledge transfer to its domestic suppliers in order to increase the general quality level, and secondly, to identify candidates that are able to deliver parts and components to other Volvo plants worldwide as well. Around 10 percent of suppliers in Mexico, India and Brazil belong to this category, while the local suppliers in China so far only serve the domestic assembly operation (Ivarsson and Alvstam 2005b). To accomplish this ambitious objective of creating global suppliers, the company adopted a Supplier Evaluation Manual (SEM). By means of the SEM, each individual supplier can be assessed on a number of key areas such as ownership profile, global ability, management structure, quality systems, logistics, after-market services, product and process competence, product development and finance (Edström and Ifwarsson 2001; Ivarsson and Alvstam 2005b).

In Brazil, where Volvo has been active since the late 1970s, the number of first-tier suppliers decreased from around 400 to 150 between 1999 and 2002. In Mexico, the number has declined from 430 to 99 during the same time. In China, around one-third of the suppliers have been introduced after the joint-venture agreement, while many of Volvo's originally selected suppliers have been excluded since the start of operations, due to inferior quality standards or other reasons (Ivarsson and Alvstam 2005b).

Local purchases are concentrated on a relatively small number of dominant suppliers. The ten largest in each country are responsible for 65–75 percent of domestic purchases. The highest share is recorded in China, followed by Mexico and India, while it is much lower in Brazil (Table 3.4). Suppliers operating on international markets, with the exception of those in China, have a higher proportion of local purchasing than can be expected from their numbers. This is especially true in Brazil, where such suppliers account for 72 percent of local purchases, and in India, where they have captured 55 percent

Table 3.4 Purchases from domestic and TNC-suppliers to Volvo in Mexico, China, India, and Brazil, 2001–2002 (%)

Ownership	*Mexico (N = 99)*		*China (N = 73)*		*India (N = 64)*		*Brazil (N = 153)*	
	Suppliers	*Purchases*	*Suppliers*	*Purchases*	*Suppliers*	*Purchases*	*Suppliers*	*Purchases*
Domestic	73	65	85	90	70	45	46	28
TNCs/JV	27	35	15	10	30	55	54	72
(Follow-source)	(24)	(30)	(8)	(6)	(30)	(55)	(54)	(72)
Total	100	100	100	100	100	100	100	100

Source: Survey data compiled by Ivarsson and Alvstam (2005b, p. 1335).

of the local procurement. In China, by contrast, international suppliers represent only 10 percent of purchases.

Almost all international suppliers are of the 'follow-source' category. In Brazil and India, they all belong to this group, while non-follow-source suppliers have taken smaller shares of local purchases in Mexico and China.

Summary and conclusions

Over the years, Volvo has built up a complex global production and distribution network within its different business areas (heavy trucks, buses, construction equipment, marine and industrial engines). Volvo recently withdrew from the production of passenger cars. The remaining business areas manufacture different finished products, although with certain essential common parts and components. The present geographical pattern of its production and distribution chain is a mix of manufacturing plants located by Volvo itself at greenfield sites, acquired and/or merged companies, inherited and independently selected first-tier suppliers, distributors, warehouses and retailers.

A substantial share of Volvo's global sales of almost 30 billion US$ per year emanates from various cross-border transactions of parts and components, as well as of CBU units for direct consumer delivery. An equally substantial share of the global production network is organized through international intra-corporate transfers between different units of production. These transfers are mainly controlled by the company itself, but are partly outside its influence, due to (non-)tariff rules and regulations of home and host country governments. These rules and regulations are embedded within the framework of global multilateral agreements, such as the World Trade Organization, or through regional and bilateral trade agreements at various host-markets. In addition, there are a number of formal and informal rules and regulations that affect manufacturing production and upstream and downstream services related to production. There are also logistical conditions and restraints within the global supply chain and distribution system. The managerial aspect of manufacturing production is a crucial point in understanding how Volvo's global production network is formed and transformed. Parameters that are difficult to quantify and estimate within formal economic modeling, e.g. maintaining and improving strict quality standards, as well as the dynamic process of technology and knowledge transfer between the TNC and its local suppliers in host-market production, seem to explain the otherwise confusing patterns of supply chains and 'weird' commodity flows. Thus, in-depth case studies such as the one carried out within the Volvo Group, contribute to a 'grounded theory' of the spatial pattern of a global production network. Such a network incorporates a number of decision-factors that are given less attention in studies using secondary data from official statistics at an aggregate level. Furthermore, the experiences of Volvo's global competition in the automotive industries demonstrate the difficulties surrounding efforts to consolidate merged and acquired companies. These difficulties may

mean that the company has to tolerate a suboptimal production and supply system for a longer time than anticipated. This in turn may give rise to geographical inertia. These aspects of suboptimal behavior should not be understated in our attempts to understand the dynamics of industrial transformation worldwide. Volvo is seemingly very representative of the way in which a TNC is functioning while undergoing continuous global and local adaptations and adjustments, since Volvo's production chain includes a vast number of products from almost all groups of raw materials and semi-manufactured products, and its customers represent many different sectors of economic activity.

The standard and undying problem of generalizing experiences from one single company shall, finally, not refrain us from using the company level in order to reveal aspects of decision-making that may be hidden in more conventional studies. Traditional research in economics as well as in economic geography and international business tends to think in terms of products rather than in production systems, in uniformity rather than in models and varieties, and in short-term costs and prices rather than in customer trust, technical quality requirements, suppliers' commitments and reliability, or after-sales services. How the spatial impacts of numerous minor managerial decisions at the shop-floor level can be generalized and interpreted in a wider context remains, however, a challenge for the geography of enterprise.

Note

1 Volvo's name is not revealed in the quoted source.

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4 The organization of the production process

The case of Smartville

H. Peter Dörrenbächer and Christian Schulz

Introduction

At least for the car manufacturing sector, the conception of the Smart car and its production site can be regarded as one of the most remarkable industrial projects in Europe over the past two decades (Table 4.1). Starting with the idea of the Swiss designer Nicholas G. Hayek (Swatch watches) to design a small city car in 1987, a new production concept based on Japanese flexible manufacturing organization (just in sequence, see below) was developed in a joint venture with Daimler-Benz AG (Micro Compact Car GmbH/MCC). A decade later, in 1998, mass production began in the so-called 'Smartville' plant in Hambach, France. By November 1998, Hayek left MCC which thus was completely taken over by DaimlerChrysler. In 1999 it was renamed MCC Smart GmbH. A further change to Smart GmbH took place in 2002 with a merger with its French subsidiary Smart S.A.S. The company has its headquarters in Böblingen near Stuttgart, Germany from where it co-ordinates the production activities in Hambach. The 'Roadster' model (launched in 2003, see below) as well as the 'Forfour' model (launched in 2004) are toll-manufactured at Mitsubishi's NedCar plant in Born, the Netherlands. Since the creation of the Smart-Brabus joint venture in 2002, Smart is also co-operating with a tuning specialist to modify approximately 2 percent of the standard models according to specific client requirements, and to develop special model editions as well as accessories.

In 2004, Smart sold 125,100 cars, representing an increase of about 22 percent compared with 2003. The most important markets are Germany and Italy. The Smart company employs 900 people in Hambach and 1,100 in Böblingen. The first-tier suppliers in Smartville count about 1,200 employees. By April 2005, Smart decided to stop the production of the 'Roadster' due to lack of success. At the same time, the projected all-terrain vehicle 'Formore' was stopped, which was supposed to be produced in a third production plant in Juiz de Fora, Brazil. This underlines the new reorganization strategy focusing on the original 'Fortwo' model which will be relaunched in 2007. While this new model will meet American safety requirements, which presently hinder the export to this attractive market, a final decision whether Smart will enter the US market was postponed until spring 2006 (FTD 2005) and is still pending.

Table 4.1 History of the Smart Car

01/1993	Feasibility study commissioned by Mercedes-Benz
12/1994	Decision to locate the assembly plant in Hambach/France
04/1994	Creation of the Micro Compact Car AG; shareholders: Daimler-Benz (51%) and SMH/Swatch (49%)
10/1997	Inauguration of Smartville
07/1998	Production start of the Smart City Coupé
11/1998	Takeover of MCC by Daimler-Benz
03/2000	Launch of the Smart Cabrio model
04/2002	Joint venture with tuning specialist Brabus creating Smart-Brabus GmbH
09/2002	MCC Smart becomes Smart GmbH
04/2003	Launch of the Smart Roadster and Smart Roadster-Coupé models
01/2004	Renaming of the Smart City Coupé/Cabrio into Fortwo Coupé/Cabrio
04/2004	Opening of the Smart-Brabus headquarters in Bottrop/Germany
04/2004	Launch of the Smart Forfour model
04/2005	Decision to abandon the production of the Roadster models

Although sales and turnover are increasing considerably, DaimlerChrysler is currently facing serious difficulties with the Mercedes Car Group, which lost approximately €940 million in the first half of 2005. This loss was mainly caused by quality problems, most of them occurring with the Smart models. During the same period, the mother company invested more than €1 million in the reorganization of Smart (see below).

The main objectives of this chapter are twofold. First, we document the locational choice for the production site in Hambach. Second, we explain the particular characteristics of the production process implemented by Smart, including a discussion on its impact regarding regional development and current economic restructuring.

The choice to locate Smart in Hambach

Searching for a suitable production site, MCC screened about 70 sites in various European countries. Many regions and cities tried to attract this prestigious investment with a number of incentives. At the end of a very selective evaluation process, analyzing more than one hundred criteria, sites located primarily in France (La Rochelle, Molsheim, Alsace and Hambach, Lorraine) as well as in Germany (Lahr, Villingen-Schwenningen, Baden-Württemberg), were competing in the last stage of the decision-making process. The locational choice for the construction site in Hambach was influenced by a variety of economic, strategic and political factors. Our arguments in the following section are based on a variety of sources, in particular reports in national newspapers (*Frankfurter Allgemeine Zeitung*, *Süddeutsche Zeitung*, *Le Monde*), international journals (e.g. *The Economist*) and specialized revues and newsletters of the automotive industry. Further, impressions from interviews with corporate and regional actors as well as general observations during the implementation phase are taken into account.

Economic factors

According to *The Economist* (1999) the most obvious and thus predominantly reported location factors in favor of France were the relatively low labor cost (25 percent less compared to German standards), low prices for building land (up to ten times cheaper), and electricity rates (20 percent less). Negotiating with the German Labor Council of Daimler-Benz, which understandably objected to a location outside the company's mother country, the CEOs argued that the production of the Smart car would have been about 10 percent more expensive if manufactured in Germany (FAZ 1995). Although MCC did not receive direct subsidies for its investment from the French state government or the European Commission, it took a profit from important restructuring programs taking place in this industrially declining region, for example from the wage subsidies paid by the development agency 'Société Financière pour favoriser l'Industrialization des Régions Minières' (SOFIREM) when former coal miners were employed. The infrastructure provided by the French state government is also considered to having been influential, but certainly not as a unique advantage. At a macro-level, however, the central location in Europe has undoubtedly practical and cost advantages, given Smart's major markets in Germany, Italy and France.

Indirect cost advantages, due to the labor regime in France being more flexible with regard to working hours, have probably been more important than these pure cost factors. On the other hand, although the trade unions play a minor role in the French economy, workers' protests and strikes affected Smartville seriously during the last months (see below).

Strategic factors

Even if one can easily prove the mathematical cost advantages of the above-mentioned factors, other aspects should not be underestimated. MCC considered France to be one of the most important markets for this new car model, and a production site in France was supposed to have a certain psychological effect on the targeted French clientele. At the same time, the fact that Hambach has a German name which could easily be confused with the much better known Hambach in Palatinate could also reduce a potential skepticism among German clients. Furthermore, Hambach's location on the French–German border region presents other advantages such as the language skills of Lorraine workers still practicing a German dialect, the proximity of the provincial capital Saarbrücken as a potential living place for high-skilled German MCC managers working in Smartville, and its accessibility to the German headquarters as well as the proximity to Daimler suppliers in Southwest Germany.

Political factors

Another factor not to be overlooked is also strategic, but includes a particular political dimension as well. In the mid-1990s, the Daimler subsidiaries: Deutsche Aerospace (DASA) and Daimler-Benz Interservices (DEBIS) were very much interested

in entering the French market and/or co-operating with French competitors. Hence, their mother company was eager to improve its relationships with France, and in doing so, was very much supported by chancellor Kohl and the German government (FAZ 1994).

Although there had been a strong competition between municipalities in Lorraine and Saarland to attract the Smart plant, once the locational decision was made regional authorities and politicians in the neighboring Saarland openly displayed their enthusiasm about the investment on the other side of the border, in the hopes of receiving positive effects on the German labor market as well. Even though only a few Germans are working for Smart in Hambach, Saarland could certainly profit from the impacts on the first- and second-tier suppliers within the region.

The concept of Smartville and the Smart production organization

Smart is one of the first car manufacturers worldwide that adopts not only a continuously just-in-time production without any stock-keeping but also maintains a customized production-on-demand approach. The Smart car itself and the production system are necessarily highly flexible and differ fundamentally from traditional vehicles and assembling operations. The production process combines innovative concepts with respect to the following:

- the contractual, technical and spatial organization of OEM-supplier relations;
- the organization of the supply-chain logistics and assembling process;
- the flexible adaptation of the process organization to the on-demand development with regard to modular production and supply-chain reorganization in the automotive sector (Volpato 2002; Lung *et al.* 1999; Jürgens 2003).

Given these concepts, the following issues are addressed:

- the idea of a communication-based and logistics-oriented production organization adopted by Smart;
- the concept of the modular Smart car and of modular production which is conducted by integrated system partners located 'on-site' at 'Smartville';
- the process organization 'smartPlus' and the underlying ideas of the 'Continuous Improvement Process' and 'Fractal Organization';
- the image of the 'Breathing Factory', allowing the adaptation to environmental change.

Communication-based and logistics-oriented production organization

The idea of customized on-demand production (within a delay of only a few weeks without any stock-keeping) necessitated the development and organization, not only of a modular product, but also of a modular production process. This process itself is part of an integrated supply chain which is based upon an

overall information system and logistics concept. In a highly sophisticated way, this system links together the (external) parts and modules suppliers, the car manufacturer, the car dealers, and the clients. Originally, even the development and management of this information system were to be the responsibility of an external service provider. But after tremendous technical problems faced by the service provider in introducing and running this system, MCC (later Smart France S.A.S.) itself took over this key element of the Smart production process.

With the exception of special small product series, Smart assembles cars only on demand. The dealers are booking the cars according to the specifications given by their clients in the Smart booking and information system. In order to stabilize the daily production program and to optimize the level of utilization of the plant equipment, the orders which have been accumulated to a weekly production volume are ordered sequentially according to product specifications and are distributed among the days of one production week (Figure 4.1). After this step, the date of car delivery can be confirmed to the client. Three days before the scheduled production, the systems and part suppliers are informed about the definite sequence of the respective car varieties in order to produce and supply the components and parts just in sequence to the production line (Block and Greif 1999, p. 17f.; Fahr *et al.* 1999). Over the entire period, from the order to the delivery, the status and process of the orders can be controlled online on both sides of the supply chain. This real-time control of the supply chain allows a fairly precise anticipation of the workload for several weeks, and the fine-tuning of the production cadence which is called the 'breathing factory' in the Smart terminology.

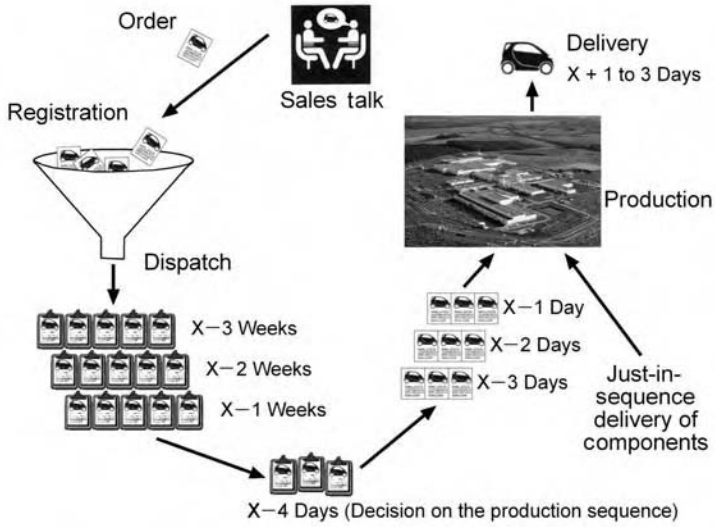

Figure 4.1 Breathing Factory, Demand–Production–Supply Schedule (source: Fahr *et al*. 1999).

Smart and Smartville: a modular product and production process

Real-time customization without large stock formation is feasible only under the following conditions:

- *Modular product design.* With regard to the specifications made by the client, the modular car is easily convertible by the combination of a limited number of different modules. Various design and equipment features can be added, removed or changed, only by a few hand grips (e.g. different colored door panels in the case of the Smart car). That means that through smart product development, perceived customization can be achieved, while at the same time, product variation and production complexity is limited (van Hoek and Weken 2002, p. 5). Modular product design allows for both customization and modularization of the production process.
- *On-side modular production.* Modular production can be optimized logistically by the spatial concentration of the module production and by an assembling process linking these production steps on-site.

Following these conceptions, MCC did not develop a modular product and production design by itself, but invited potential module suppliers at the very beginning of the product development process to send in competitive bids for a product concept (with respect to new co-development concepts in the automotive sector, see Hatchuel *et al.* 2001; Garel 1998). The potential suppliers were

Figure 4.2a Part 1: Smartville (source: Smart S.A.S. 2005).

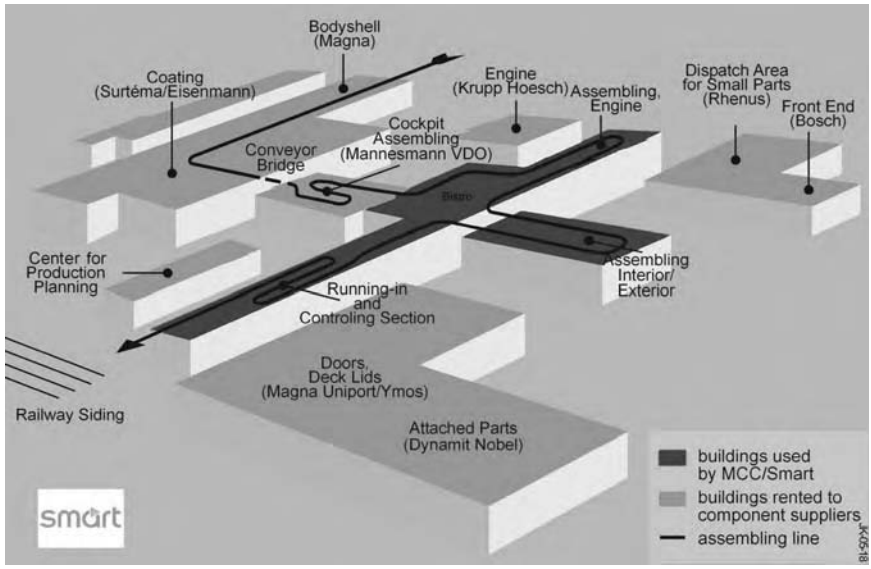

Figure 4.2b Part 2: Smartville (source: Block and Greif 1999, p. 4; own updating and additions (model)).

intensively integrated in the development process with respect to the definition of modules in terms of "function, materials, lay-out, design etc.… to production technologies, processes, logistic systems, target costs …" (van Hoek and Weken 2002, p. 16). At the same time, MCC developed a modular and fractal factory which is called Smartville.

Smartville is not only a 68 hectares greenfield but is also a new type of modular and fractal factory. It integrates the central cross-shaped assembly plant which is operated by Smart France S.A.S. with the systems suppliers which are called 'System partners' (Figure 4.2). The plant itself is surrounded by about 20 buildings that house the main first-tier system partners. MCC/Smart GmbH has invested approximately €358 million (assembly plant, including machinery) in Smartville, whereas the system suppliers at Smartville have invested around €197 million, the suppliers in the vicinity around Smartville another €150 million. Thus, prior to launching production, total investment was approximately €1.2 billion including the development of the car, the establishment of a distribution and dealer network in several European countries (€280 million), subsidies paid by the European Union and the public French development agency SOFIREM, assisting the restructuring of old French mining regions (van Hoek and Weken 2002; Smart S.A.S. 2005; authors' calculations).

When production began in 1998, seven system partners were located in Smartville who were responsible for the production and just-in-sequence delivery of the basic modules making up the Smart car (Table 4.2).[1] Not only were they responsible for the assembly of the safety body cell (so-called

'Tridion' cell), but also the dashboard and cockpit, the front module including the front axle and lighting system, the rear module driveline including the engine, the doors and the body panels. The innovative and 'environmentally friendly' powder coat paint and body protection was completed by a specialized system partner who was also integrated into the modular production process at Smartville. By 2005, the paint and body protection had been taken over by Smart itself, due to the fact that they are core competences of each car

Table 4.2 Components outsourced by Smart

Integrated direct suppliers	*Non-integrated suppliers*				
	Ordered according to production plan (JiT)		*Parts and components on-the-shelf*		*After sales parts, available at Smart Centre*
Safety body cell	Engine	Rear axle	Seat belts	Brake system	Cassette, CD-Box
Paint and Body protection (recently internalized by Smart)	Transmission	Front axle	Locking system	Drive shaft	Cup holder
Dashboard/cockpit including airbags	Exhaust system	Under shield	Carpet	ABS cable system	RPM revolution counter
Rear module driveline (incl. engine)	Front window	Cooling system	Rear light	Relays box	Etceteras
Front module (partly internalized)	Headlights	Wheel arch and sill panels	Side direction indicator	Driver pedal module	
Doors	Wheel system		Sunshade for glass roof	Fuel tank flap	
Body panels	Glass roof		Aerial (antenna)	Fog lights	
Cubic printing	Seats (including optional side airbags)		Upper interior trim	Rear window	
	Roof-module		SE-Drive unit	10–15 other components not specified	
	Fuel tanks Center console; Luggage box		Crash management system		

Source: van Hoek and Weken (2002, p. 11), own additions.

manufacturer. However, this re-internalization seems to be an exception rather than a general trend; although similar decisions could recently be observed in other automotive corporations.

External partners even provide human resource management, background information systems management, the continuous data processing of the just-in-sequence assembling process, and the logistics of the internal and external material flows along the entire production and value chain. However, the management of the central information system and the control of the material flows have been taken over and re-internalized by Smart very early, whereas the management of the transportation facilities, the logistics and operation of the small part transports within Smartville is still under the responsibility and control of an external service partner located in Smartville. The vertical integration of the Smart assembly plant is therefore only 7 percent; around 30–40 percent of the value is generated by the system partners located in Smartville (van Hoek and Weken 2002, p. 13).

Smartville is called a 'logistic-focused' factory (Block and Greif 1999), i.e. the OEM has the responsibility for, and the control over, the final assembling of the car. All other upstream and downstream steps of the value chain are completed by external partners and are logistically co-ordinated with, and controlled by an integrated information system that is now run by the central assembling plant. With respect to the material flows to the assembly line of the Smart plant, we can distinguish among four different types of delivery (Figure 4.3; Block and Greif 1999):

- *Module Delivery (MD)*. This type of delivery, guaranteed by the system partners, comprises approximately 80 percent of the total volume of material flows. The module suppliers which receive the needed parts and sub-modules by second tier suppliers deliver the assembling plant just-in-sequence and provide for a continuous assembling process.
- *Small Parts Distribution (SPD)*. Logistic service providers are transporting and distributing small parts directly to the assembly line as needed by using

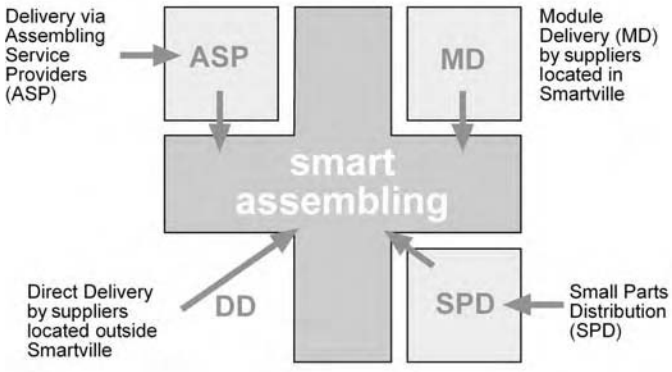

Figure 4.3 Delivery types (source: Block and Greif 1999, p. 5).

the *Kanban* system from a central warehouse located in Smartville. The warehouse is operated by the logistic partner and functions as a buffer.

- *Direct Delivery (DD)*. Bulky parts (e.g. seats) are shipped just-in-time by external suppliers. The suppliers who are not located in Smartville (see below) are using docking stations which are located no further than ten meters away from the assembly line.
- *Assembly Service Providers (ASP)*. Assembly service providers located in Smartville or in the vicinity assemble parts to sub-modules and modules (e.g. wheels) and deliver them directly to the assembly line, also by using docking stations.

With respect to the level of integration and the position within the production process, we can distinguish between integrated and non-integrated suppliers (van Hoek and Weken 2002, p. 11). Among the non-integrated suppliers we can differentiate those who are supplying mostly bulky parts on demand, usually just-in-time from those who deliver (mostly) small parts which can be stored on the shelf. Conforming with the modular design and the customization approach adopted by Smart, there are a wide range of supplementary parts which can be added after sale on demand (Figure 4.3).

'SmartPlus': 'fractal organization' and continuous improvement process

Smartville is not only a spatial manifestation of an innovative modular production process, but also stands for the sharing of responsibilities among Smart and its system partners, with regard to the development of the product itself and the mapping of the detailed supply-chain, including the description of sub-processes involved. The partners are responsible for each of the 140 assembling activities as well as the continuous improvement of the production process called 'smart-Plus'. Corresponding with the sharing of responsibilities, the system partners are paid for the supply of the components for each car by Smart only, after the respective car has been completely assembled, passed the stringent final quality check by Smart, and is sold to the final customer. Therefore, there is a mutual dependency of all partners with respect to the reliability, not only with regard to timeliness, but also to product quality. In addition to the high quality standard, which is due to the described product organization and payment system, are the objectives to continuously improve the production process. The product itself, necessitates intensive external communication among all partners (including the final assembler) and internal communication within each system partner. Both internal and external relations are institutionalized by the adopted continuous improvement process, referred to by Smart as 'progrès continu' ('ProC'). Elements of this process are standardization, teamwork and the so-called 'fractal organization'. The working teams, which are responsible for the production and/or the assembling of a specific module, act as partly autonomous structures. They can be considered as fractals of the overall production process, which are

fairly free in organizing and managing their tasks, according to the target agreements negotiated in a combined top-down/bottom-up process with the OEM. The performance of the agreement on objectives is controlled by the fractals themselves, i.e. by each working team. The agreements on objectives concern the specification of the error rate, the improvement of productivity, and of the added value as well as a so-called third objective which can be determined by the fractal itself, such as the decrease in the employee's illness rate (Block and Greif 1999, p. 7f.).

So-called 'ProC navigation meetings' (i.e. round-table discussions) take place regularly. They bring together representatives of various Smart and system partner working teams ('équipes') who discuss recent achievements of working teams, and the contribution of each team to the overall performance of the plant, with regard to the improvement of productivity and quality. High performance and the accomplishment of the working teams' target agreement, are paid for by an extra salary, the so-called 'intéressement'. The operating figures of the current production process are permanently indicated on digital displays at all workplaces throughout the assembling plant. They can even be seen from the plant restaurant and stimulate communication on the improvement of the works performance.

The location of the subcontractors outside Smartville

Only four of Smart's first-tier suppliers are not producing directly in Smartville. While the engines and axles are provided by two Daimler-owned plants in Berlin and Hamburg, the two other main subcontractors are located in Lorraine. The tires are produced by a subsidiary of Continental Inc. in Sarreguemines that existed prior to the founding of Smartville. The seats are delivered by Faurecia in Pierre-Pont (the former headquarters and main production site of Bertrand Faure S.A., recently taken over by Faurecia, Nanterre). The four cases show that Smart's sourcing strategy is either relying on established supply relationships held by its mother company DaimlerChrysler, maintaining a worldwide production network consisting of own subsidiaries and external suppliers, or taking a profit from already existing 'supplier infrastructure' within the region.

From a regional perspective, however, it has to be underlined that the headquarters of the first-tier suppliers are located outside the region. This is also true for most of the second- and third-tier suppliers. Thus, they are dependent on the decision making in their respective mother company. This might be one of the reasons why Continental and Faurecia, as well as the firms located in Smartville, are only weakly embedded in the regional economy of Saar-Lor-Lux. This lack of embeddedness can be identified in two realms:

1 Their organizational or functional embeddedness into the regional production system is limited to the supply relationship with its major client Smart (probably with the exception of some routine services and second- or third-tier parts and components purchased from regional providers).

2 More important with regard to the integration of the regional economy, they are only weakly interconnected with other firms, local authorities and industrial associations in the region.

Consequently, only a few of them take part in current initiatives to promote and to develop an 'automotive cluster' emerging from the considerable number of firms and jobs related to this industry. It is succeeding traditional activities such as coal mining as well as the iron and steel industry, and is expected to play a major role in the region as a 'new' key industry (Dörrenbächer and Schulz 2002, 2005; Schulz and Dörrenbächer 2005).

Conclusions

Without any doubt, the concept of Smartville is pioneering the current restructuring of the European automotive industry in terms of production organization, supply chain management, and flexibility. It has been a model for other greenfield developments as well as modernization of existing plants by implementing adjacent supplier parks or comparable infrastructure. It has also led to a new understanding of industrial labor relations, which can be characterized as follows:

- a fragmentation of the workforce (and the respective trade unions) into groups according to the main activity of each component supplier (i.e. some firms belonging to the plastics industry, others to the electronics industry, others to metal processing etc.);
- a certain wage gap between these different industries, and in particular between Smart's wages and those paid by its suppliers;
- the subsidiaries located in Smartville are weakly embedded regionally, but strongly embedded into their respective corporate networks. This also means that the workforce is more determined by the enterprise's individual corporate culture, strongly differing, for example, between American, German and French firms with regard to internal hierarchies and workers' participation.

The efforts undertaken by an interregional committee of German, French and Luxembourg unions – the Interregionaler Gewerkschaftsrat Saar-Lor-Lux (Interregional Union Council) – to co-ordinate the unions' and works councils' activities have had rather limited success (see Dörrenbächer and Schulz 2002).

While both the Smart car product and its production concept are innovative, further development of the brand is currently uncertain. The current reorganization of DaimlerChrysler after the retirement of CEO Jürgen Schrempp and replacement by Dieter Zetsche in 2006, has increased the pressure on Smart and has put into question not only the future of certain models like the Smart Roadster, but also the destiny of the company itself. For the region that looks to the automotive industry as the new driving force for its economic restructuring, a closure of the Smart plant would certainly be one of the worst imaginable scenarios. It would have severe consequences for the supply industry at different

levels and thus harmfully impact on the regional economy as a whole – in Lorraine as well as in the Saarland. The system partners located in Smartville, which are focused only on the Smart assembly plant, and which are not embedded in the regional economy, would be deprived completely of their basis of existence, and the few other regional suppliers, not solely oriented to Smart, would lose one of their most important customers. The development of a regional strategy remedying this dependency seems to be very difficult as this problem is an intrinsic characteristic of the production organization adopted by Smartville. However, the establishment of a regional automotive sector network, as has been developed by the government and the Chamber of Industry and Commerce in the neighboring German region of Saarland (so-called 'automotive.saarland' network and initiative) could be an important way to strengthen the position of the other (second- or even third-tier) automotive suppliers which are located in the region but which are functionally and strategically separated from each other, as well as hardly able to cope with the dependence from few customers and with the increasing competition at the global level.

Note

1 The close proximity between final assemblers and first-tier suppliers has been a more incremental process at other production sites, where externalization and management buy-out of certain parts of the production process have gradually led to locally concentrated but vertically disintegrated production complexes, co-siting 'guests' on, or adjacent to, 'host' companies, often organized as supplier parks.

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5 Internal venturing

Sponsored corporate spin-offs in Sweden

Åsa Lindholm Dahlstrand and Martin W. Wallin

Introduction

Since the beginning of the 1980s, the economic opportunities of small firms and of regions characterized by technology-based entrepreneurship have become generally recognized. Besides the importance of proximity, the firms in a regional system are often assumed to benefit from shared – or similar – cultural and institutional frameworks. This chapter will focus on the role of private corporations as sources of new ventures and sponsored spin-off firms. It will examine whether established Swedish corporations are spinning off sponsored ventures to the new Swedish stock markets and, if so, how this sponsoring is made. The aim is to analyze whether the introduction of new stock markets has facilitated the creation of sponsored spin-offs, and whether this has changed the patterns of internal venturing and spin-off processes.

Quite a number of earlier studies have found that the majority of new technology-based firms are spin-offs from existing organizations, usually established in the geographical neighborhood of the parent (Dorfman 1983; Roberts 1991; Saxenian 1994; Sternberg 1996; Keeble 1997; Lindholm Dahlstrand 1997, 2001; Lindholm Dahlstrand and Dahlander 2003). Since established corporations are responsible for a large amount of R&D in many industrialized regions and countries, they are also likely to play a key role in evolving new technologies and future growth. However, even though knowledge-intensive organizations such as large technology-based corporations and universities are often found as sources of technological innovations, they have frequently demonstrated difficulties in realizing or exploiting the full value of such innovations (Abernathy and Utterback 1978; Pavitt 1991; Bower and Christensen 1995; Rivette and Kline 2000). Reasons for this may be:

a financial, e.g. they cannot find the capital to explore further;
b organizational, e.g. the present organization is not suitable for exploitation; or
c related to opportunity recognition, i.e. the established firm cannot see an underlying opportunity that may be appropriated with its resource-base.

Under such circumstances, corporate venturing and sponsored spin-offs can sometimes be efficient tools for established industrial structures to adapt and

change. By creating a sponsored spin-off, a large corporation can retain an equity share in a new venture, and thus benefit from a continued relationship with the new venture.[1]

This discussion on the relative roles of large and small firms for innovation is related to the conflicting arguments put forward by Schumpeter (1934, 1942) on how capitalist economies operate. The early Schumpeter (1934), in the literature known as Schumpeter Mark I, argued for the importance of new and small firms led by entrepreneurs. In contrast, the late Schumpeter (1942), known as Schumpeter Mark II, held that innovation was best accommodated by large and often monopolistic firms. Trying to remedy these conflicting ideas – linking firm size, market structure and innovation – has been an important undertaking in industrial organization literature. While conceding this, Teece (1992) argues that the results are unsatisfactory and points to the lack of analysis of inter-firm and intra-firm organizational issues in both empirical and theoretical terms. Over time, the analysis has materialized into the stylized fact that established firms are associated with incremental innovation, whereas new firms are associated with radical innovation (Henderson 1993; Christensen 1997).

Admittedly, attention has been paid to co-operation between firms with regard to innovation, by joint ventures (Kogut 1988) or strategic alliances (Hagedoorn 1993), and more recently, open innovation (Chesbrough 2003) and networks between firms and communities (Dahlander and Magnusson 2005). However, less common has been the focal aim of this chapter, to investigate the role of large corporations as sources of new ventures and spin-off firms. Linking the generation of spin-offs to the strategies of established firms enables a partial unlocking of the conflicts between Schumpeter Mark I and II by incorporating the evolutionary and path-dependent dimension of innovation. Thus, the indirect role played by established firms as parents of new firms can be addressed. To a certain degree, this indirect role can be seen as a missing link in our understanding of how innovation proceeds. To conclude, this kind of theoretical framing provides the rationale for inquiring into the origin of new firms.

Large corporations are frequently found as spin-off parents, either as a result of restructuring activities, or due to internal entrepreneurial activities. For example, R&D in large corporations is often dictated by the need to develop the core businesses; hence the spinning-off of innovative ideas that fall outside the core business of the parent organization can create new business opportunities that otherwise might not have been commercialized. A private corporation may also spin off ideas when it wants to downsize its operations. To do this without causing increased unemployment and a bad reputation may be what leads large corporations sometimes to encourage spin-offs from their organizations. Examples of how large corporations try to handle new business ideas outside the scope of their core business are also found in various corporate venturing organizations that are popular among some large corporations. Corporate venturing and sponsored spin-offs are means by which a corporation can encourage entrepreneurial activities. The result of such activities, that is, the new venture, may either form the base for a future business area inside the parent corporation (a spin-in), or may be used to

generate a profit through an exit in the form of a sell-off (to an external acquirer) or an IPO (Initial Public Offering). An IPO is the occasion when a firm is introduced to be listed on a stock market. The IPO distributes ownership to several different investors, and a previously privately held firm can then be traded publicly. Usually the IPO is associated with an issue of new stock, which delivers new financial muscles to the firm.

In earlier studies of sponsored spin-offs, Ito and Rose (1994), Ito (1995) and Rose and Ito (2005) have pointed to substantial differences between Japan and the US. They argue that the spin-off arrangements in the two countries differ with respect to both the purpose and the ownership relation (Ito and Rose 1994). Thus, the regional setting and institutional context seem to affect the resulting frequency of sponsored spin-offs. While Japan is generally found to have very low entrepreneurial activity (Acs *et al.* 2004), large Japanese corporations instead, have a long tradition of introducing their own sponsored spin-offs on the stock exchange. In the USA, with its higher entrepreneurial activity, Ito (1995) reports a considerably lower frequency of sponsored spin-offs. However, since this entrepreneurial activity is measured as the number of new firm start-ups, an economy where the spin-off process is of importance to create new firms will appear to be less entrepreneurial. The reason is that experimentation and failure of early-stage ventures will take place within established firms, thus not showing up as entrepreneurial activity. Ito (1995) attributes the higher Japanese spin-off activities to the informal contacts, stable shareholders, homogeneous culture, and lack of a developed external labor market that can be found in Japan.

Despite strong influences from American business style, Sweden shares some similarities with Japan. Also in Sweden, we can for example, observe low entrepreneurial activity, a group-oriented culture and strong social networks. In an earlier study of sponsored Swedish spin-offs, Wallin and Lindholm Dahlstrand (2004) found that Swedish corporations do make use of the organizational mechanism of sponsored spin-offs. Among Swedish IPOs listed on the Stockholm Stock Exchange between 1992 and 1996, we found that almost 10 percent were sponsored spin-offs, operationalized in the same way as in the studies by Ito and Rose, i.e. where the parent firm retains partial ownership. A comparison with the 17.5 percent of all traded firms on the Tokyo stock exchange and the 1.3 percent of firms on the New York Stock Exchange (Ito 1995) suggests that, in their use of sponsored spin-offs, the large Swedish corporations are more active than their American counterparts. However, both Ito (1995) and Wallin and Lindholm Dahlstrand (2004) based their findings on studies of relatively mature firms going public, not on new entrepreneurial ventures spun off from large corporations.

In the study upon which this chapter is based, we have instead focused on less mature ventures that have been listed on the new Swedish stock markets for young and small firms. The aim is to contribute to the understanding of the linkages between the venturing activities of established corporations and the creation of new technology-based firms, i.e. the spin-off creation process. More

specifically, we are concerned with Swedish spin-offs where the parent corporation has been actively involved in developing and supporting the spin-off formation and growth, i.e. creating what is labeled a sponsored spin-off. To sponsor its own spin-offs is an alternative for a large corporation to handle restructuring, and to encourage entrepreneurial activities among its employees. But also, and perhaps more important for the parent corporations, sponsored spin-offs constitute a means for the parent to profit from such activity, for example by retaining partial ownership. Earlier research on sponsored entrepreneurial spin-offs in Sweden suggests that relatively few established firms have actively pursued this strategy (Lindholm Dahlstrand 1994). The question arises, however, whether this has changed or not. That is the focus of our paper. We think there are reasons to believe it has, because of the increased availability of venture capital and the introduction of the new Swedish stock markets for younger and smaller firms that have taken place since the mid-1990s. Owners and managers in established firms may or may not have seen the potential growth opportunity that could be unleashed by the spin-off mechanism and acted accordingly. In other words, we are analyzing the potentially changing patterns of internal venturing in established firms, with special attention to the practice of sponsored spin-offs. Our analysis is based on a sample of firms listed on some new stock markets in Sweden. Questions analyzed in the paper are:

- Are established Swedish corporations spinning off sponsored ventures to the new Swedish stock markets?
- If so, how are large Swedish corporations sponsoring their spin-offs?
- Has the introduction of new stock markets changed the patterns of internal venturing of established Swedish corporations?
- Are sponsored corporate spin-offs an important mechanism for creating successful new technology-based firms? If so, how and why?
- What is the spatial configuration of sponsored corporate spin-offs?

Corporate spin-offs

A corporate spin-off is a new firm created from the venturing activities of an established firm. The new and independent firm is created from resources previously belonging to an established firm (Woo *et al.* 1989; Woo *et al.* 1992; Lindholm Dahlstrand 1994; Ito and Rose 1994; Ito 1995; Seward and Walsh 1996). Spin-offs can be of two main types: divestment spin-offs, where the spin-off is created by parent firm management carving out a functioning unit of the parent firm; and entrepreneurial spin-offs, which are based upon activities not well enough developed to constitute a divestment spin-off. Theoretically, the entrepreneurial spin-off can be created either by employees in the parent firm or by the firm's management. This may be done through various types of corporate venturing programs or through the sponsored spin-off mechanism. In a sponsored corporate spin-off, the new firm is formed as a result of active support from the parent firm, i.e. the incubating organization (Ito 1995; Ito and Rose

1994; Rose and Ito 2005; Wallin and Lindholm Dahlstrand 2004). An illustration is presented in the description of the corporate venturing unit Saab Venture Capital Council, which later in the chapter will be contrasted with the experiences of Volvo Technology Transfer, another corporate venturing unit.

Illustration: SAAB Venture Capital Council

The Swedish aviation and military technology firm Saab has recently (2001) implemented a strategy that includes sponsored spin-offs. The corporate venturing unit Saab Venture Capital Council (VCC) was set up partly to remedy some of the negative effects of being overly focused on the military core business. Today, Saab is technologically diverse, but tries to concentrate its business efforts on defense electronics/integration and high-technology services. Around the year 2000, Saab realized that there was a potential to increase the leverage on past and present investments in R&D. Keeping a strong core focus, VCC was mandated to manage non-core venture capital activities, i.e. VCC was to function as a strategic trashcan where non-core technologies were investigated for hidden potential. During this process, where VCC tries to bundle patents, licenses and business ideas and eventually spin-offs, it was discovered that these ideas often were too early-stage to be easily communicated to external investors. Instead, VCC has to invest some limited funds, i.e. to engage in the business development process, until the point where the venture is mature enough to be handed over to a new owner. In most cases VCC will perform a sequential sponsored spin-off, divesting parts of the venture only. In concordance with such behavior, VCC continues to be partially engaged as the venture develops. For example, VCC often takes a seat on the board of the spin-off firm and signs contracts to ease the transfer of knowledge from Saab to the new and partially independent firm. As VCC ventures are non-core, a full exit from these ventures is a matter of time and timing. In conclusion, VCC wishes to be relieved from the responsibility of financing and day-to-day management decision-making, but to retain a controlling position on the board.

Before making the partial spin-off, VCC is usually heavily involved in the sponsoring of the spin-off to be. For example, in the case of an early-stage venture idea, VCC will finance the development of a business plan. The vast network of investors, suppliers and clients linked to Saab is also mediated through VCC. Sometimes Saab itself may become an important customer of the new firm. This was the case in an acoustics company nurtured by VCC. This technology was spun off through the VCC process, when it was discovered that one of the potential customers was actually Saab. In another case, a VCC venture helped to identify a new civilian market for an already in-use military technology. Saab had been carrying out research on active materials to be used in g-suits of fighter pilots. The

civilian application of this technology was licensed out to form a new medical technology firm, which makes compression therapy products.

Most of the VCC ventures are located in the geographical neighborhood of the parent firm's headquarters and main R&D facilities. Some have even been initially located within the fences of Saab's heavily guarded and sensitive military facilities, even after Saab had brought in the first external investors.

Since its start in January 2001, Saab VCC has exited 11 of its ventures (June 2005). Of these, six are sponsored corporate spin-offs and five are examples of trade sales (i.e. technology and/or projects). Saab VCC is considered a financial success; with a small annual budget of some 5 MSEK (million Swedish crowns), these spin-offs have generated a return of over 150 MSEK.

The studies on entrepreneurial spin-offs are usually rooted in the literature focusing on technical entrepreneurship and the development of regional high-technology industries (Parhankangas 1999). In the studies focusing on technical entrepreneurship, the spin-off mechanism has been seen as a significant source of entrepreneurship and innovation (Dietrich and Gibson 1990; Roberts 1991). For instance, the evolution of the Silicon Valley business community was characterized by considerable spin-off activity from Fairchild Semiconductor of both people and technology (Rothwell 1983; Mowery and Langlois 1996). The spin-off phenomenon is also a classic example of the dynamic complementarities between large and small firms. Despite the fact that the large firms dominated in basic invention in the semiconductor field, new technology-based firms played a key role in commercial exploitation. Existing large firms contributed to the development of the basic, state-of-the-art technology and provided the new firms with venture capital and technically skilled personnel (Rothwell and Zegveld 1982; Rothwell 1983).

Entrepreneurial spin-offs are reported to have higher rates of survival, growth, and technology transfer, compared to non-spin-offs (Roberts and Wainer 1968; Utterback 1974; Oakey 1995; Lindholm Dahlstrand 1997). In the venturing process, the parent firm may function as a buffer, to shield the spin-off venture from the initial risks and hazards (Ito and Rose 1994; Garnsey 1998; Parhankangas and Arenius 2003). By preserving some links with the parent, the spin-off firm can utilize some of the assets (e.g. networks) of the large firm, while still preserving the advantages associated with being small (e.g. entrepreneurial spirit). In addition, compared to other new firms, spin-offs are born with a head start in the competitive race, since they can profit from previous experiences and relations built up while still being a part of the parent organization.

Together with other financial institutions such as venture capital, corporate venturing and sponsored spin-offs may be increasingly important tools to foster entrepreneurship in specific technological and geographical areas. The combination of

large, established firms and spin-off subsidiaries might also function as a substitute for an efficient venture capital market (Ito and Rose 1994). Moreover, the continued relation between a corporate parent and a sponsored spin-off can be a basis for future interaction (including technology development and innovation) between large and small firms. The establishment and development of Volvo Technology Transfer may serve as an illustration of how a large corporation uses corporate venture capital for the development of new ventures and technologies, with a future potential for the parent corporation.

Illustration: Volvo Technology Transfer (VTT)

Volvo Corporation is a leading supplier of trucks, buses and construction equipment. The company has a number of different businesses with similar technology bases. In 1997 Volvo established a corporate venturing unit, Volvo Technology Transfer (VTT). Initially MSEK 200 was invested in the new subsidiary, but additional funding (of at least this much) was planned already from its start. The objective of VTT was, and still is, to facilitate the transfer of technology to and from Volvo. It has three main tasks:[2]

1 To bring the Volvo group closer to new technologies or new services by investing in companies and projects of technical and commercial interest.
2 To support the development of businesses based on Volvo technology with a business potential outside the Volvo group. Thereby businesses can develop in new environments and the development cost can be shared with new external customers.
3 To support the development of entrepreneurship and innovation within the Volvo group.

Because the parent organization is to focus on its auto business, and is thus more or less unable to grasp business opportunities described as non-core, VTT was set up to handle a broad range of business development tasks. The transfer of technologies into Volvo is achieved by investing in external entrepreneurial ventures that utilize technologies new to Volvo, but are considered important for the future wealth of the corporation. The majority of the ideas VTT has invested in have been of external origin, but internal ventures do exist.

This means that an important role for VTT within the Volvo group is to enlarge the technology base of Volvo. VTT invests in technologies which are strategically important but not yet ready to enter Volvo's core products. This is reflected in the fact that most of VTT's ventures are within electronics, hardware and telematics services; energy storage and conversion; and production systems and methods.

VTT supports Volvo's ventures in a variety of ways, from structuring of ownership to operational support; in addition, VTT is represented on the board like any other venture capitalist. The operational support includes bringing in technology expertise (Volvo expertise is often available at a discount price) and conveying credibility by accompanying ventures at customer visits.

One example of a venture supported by VTT is a production system firm, located close to one of Volvo's main production plants, which was spun off from Volvo in 2000. It offers products, services and complete solutions for production equipment, maintenance and service for the manufacturing industry. VTT is represented on the board and Volvo is still an important customer. Another example is from the energy sector, where VTT has been involved in a joint venture with a battery company to promote the development and subsequent production and sales of a new bi-polar battery for Hybrid Electric Vehicles. Initially the technology had been developed by the inventors together with researchers from Chalmers University of Technology, located in Gothenburg where Volvo and VTT are headquartered.

Already, when VTT was set up in 1997, some 50 internal projects with a development potential were identified. Relatively soon after the establishment, however, external investments and acquisition of new technology-based firms came to be the focus. This set-up has many similarities with how American corporations organize their corporate venture capital units. Over time, investments in external ventures have come to dominate the activities in VTT.

The main difference between VCC and VTT is that, whereas VCC is primarily focused on supporting internal ventures, VTT is supporting ventures of external origin that may become important for Volvo in the future. In other words, VCC initiates and supports internal ventures, whereas VTT does not necessarily initiate the ventures it supports – it also support ventures initiated externally to Volvo.

Through incubation, spin-offs are shielded from the initial hazards of being small and young. To realize the full potential of innovation, new firms must be created to explore and exploit opportunities not undertaken by established firms. To have an overall economic impact, these firms first of all need to survive as independent firms and subsequently grow into larger firms.

Under certain conditions, new firms can be beneficial for both society and parent corporations. However, new firms have their own drawbacks, as do the inert large firms. New independent firms often fail due to different aspects of the liability of newness (Stinchcombe 1965) or simply because their business ideas were not mirrored in a market demand. The liability of being new is displayed by difficulties of even surviving the first period of the new firm's life, not to say growing. The survival and growth difficulties are generally due to problems in

attracting necessary resources. Often the resource constraints are considered to be financial, and it is argued that financial constraints prevent these new firms from developing (Garnsey 1998).

However, financial resources are usually not directly fed into the firm development process; rather they are used to acquire necessary input resources such as equipment or personnel. This is true regardless of whether the new firm issues bonds or equity to pay for such resources. Fundamentally, it means that the constraint is not the financial or monetary resources but what these resources can enable or be transformed into. Smart firms are aware of this and pursue various forms of bootstrapping strategies (Bhide 1992; Winborg 2000) to acquire resources below their market value. In this way, new firms may acquire resources without issuing either bonds or shares. During the incubation period, spin-off firms can bootstrap their development by utilizing resources belonging to the parent firm.

Even though these resources do not necessarily constitute great value for the parent firm, they may be crucial for the new spin-off firm. To profit from this 'free-riding' tactic, the parent firm may require an equity share to allow the venture to access internal resources before and after spin-off. In this study, we will further explore how large Swedish corporations may serve as sponsors of resources for new spin-off firm formation and development. This will help us to analyze how and why sponsoring spin-offs can be important for creating successful new ventures that eventually get listed publicly.

Aim, method and sample

In order to investigate the link between venturing in established corporations and the creation of successful spin-offs, we wanted to construct a sample of firms with growth ambitions. IPO firms are firms that are expected to grow, provided that they receive new risk financing at the IPO. Firms traded on stock exchanges need to spread ownership in order to qualify for listing, thus giving away some of the control an independence-seeking entrepreneur may possess. Firms that have been scrutinized by financial institutions such as stock exchanges have at least demonstrated ability to survive up to that point. This is not to say that all going-public firms will show subsequent growth and survival. Many will not prevail, as history has shown time and again. However, an IPO sample of firms has some of the properties necessary to answer the questions of this study. First, these firms have demonstrated initial survival. Second, the firms go through some process of due diligence before accessing new capital resources. Third, new capital resources are often necessary for growth and development. Thus, identifying, characterizing and analyzing sponsored spin-offs in this population of firms should assist in answering the question whether sponsored spin-offs are an important mechanism for creating successful new technology-based firms.

Traditional stock markets, however, do not seem to be populated with new technology-based firms. Instead, sponsored spin-offs made to these markets are mostly due to strategic restructuring in parent firms, and not the result of recent

venturing activities (Wallin and Lindholm Dahlstrand 2004). With this in mind, and with the same IPO logic as above, we turn instead to the newer stock markets, such as NGM and Aktietorget in Sweden. These markets are specialized at trading new early-stage entrepreneurial firms. We will use a sample of firms listed on these new stock markets to analyze the extent to which established Swedish corporations spin off successful entrepreneurial ventures, and to what extent these spin-offs have been sponsored by their parent corporations.

This choice of sample enables us to proceed with yet another question. The establishment of these new stock markets constitutes an institutional change, as it provides new opportunities for entrepreneurial ventures to access funding. This is true for both spin-offs and non-spin-offs, which means that we expect to find both groups of firms in the sample. But such a change (i.e. the introduction of these new stock markets) may affect the strategies and venturing activities of established corporations as well. For example, the creation of these new stock markets may have encouraged the creation of internal ventures with initial ambition to be spun off. It could be argued that the mere existence of such a marketplace contributes to increased liquidity in the market for innovative ideas, which could increase the willingness of established corporations to engage in such activities. By creating sponsored spin-offs and taking an equity share in these new firms, and then putting them on one of these new stock listings, parent corporations can increase their leverage on previous related investments in R&D, production and marketing. The questions that arise are whether established firms are spinning off sponsored ventures to the new stock markets, and whether the introduction of these new stock markets has changed the patterns of sponsoring corporate ventures.

The sample of firms analyzed in this study consists of IPOs to either the New Growth Market (NGM) (former SBI, Stockholm Börsinformation) or Aktietorget. Between 1996 and 2001, a total of 142 new firms made an IPO at one of these two important new stock markets in Sweden.

In 2004, 20 of the IPO firms in the sample had been acquired (in 2005 this figure rose to 24 firms), 17 had gone out of business, and an additional two made a substantial change in their major lines of business. An electronic questionnaire was sent to the 103 remaining firms. The questionnaire was sent to one of the founders or to the CEO. After a reminder this resulted in 27 usable answers. During fall and spring 2004/2005 complementary telephone calls were made to all non-replying firms. This resulted in an additional number of 24 firms answering

Table 5.1 Sample of IPOs listed on the NGM and Aktietorget, 1996–2001

	Number
IPOs	142
Acquired firms	24 (20 in 2004)
Firms out of business	17
Firms with a substantial change of business	2
Remaining IPOs to be analyzed	99

Table 5.2 Size and growth of responding and non-responding firms

	Total sample (N = 103)	*Responding firms (= 51)*	*Non-responding firms (= 52)*[a]	*t*	*sig. (2-tailed)*
Employees in IPO year	163.34 (426.2)	178.71 (505.0)	149.39 (343.7)	–0.341	0.734
Employment growth 2000–2003	4.6 (0.401)	6.6 (0.477)	2.6 (0.308)	–0.455	0.651
Turnover in IPO year	48,082.16 (55,954)	45,829.47 (57,447)	50,817.57 (56,112)	0.244	0.809

Note
a Including four acquired firms in 2005.
Std. dev. presented in parentheses. T-test with equal variances not assumed.

the questionnaire in a telephone interview. In total, 51 of the IPO firms have answered, which correlates with a response rate of slightly over 50 percent (52 percent). Among the 48 non-replying firms still remaining in our original sample, three did not want to participate, seven answered that they did not have time to participate, and four firms were not able to answer our questions because the founder had left the firm. In as many as 34 firms we were unable to find someone who could answer or give basic information about the firm. We do not have information on whether these firms might, for example, have changed their line of business, or whether the founders had left.

Since as many as 48 percent of the firms did not respond to our questionnaire, we used some publicly available data to check whether we should suspect a serious bias between answering and non-answering firms. In a t-test, we could not find any differences in size (number of employees and turnover) or growth (in employees) for answering and non-answering firms (Table 5.2).

As can be seen in Table 5.2, the firms are diverse in terms of size and growth. On average, the firms are ten years' old and employ 163 people when they enter the stock market, but again, the standard deviation is quite large. For employment growth, the sample includes fast growers and non-growing firms as well as firms which reduced the number of employees. Figures for turnover are incomplete but the high standard deviation echoes the diversity in employment growth. As many as 70 percent of the firms were categorized as belonging to technology- and knowledge-intensive industries, as defined by the OECD.[3] A Chi-2 test reports no bias between answering and non-answering firms with regard to technology and knowledge intensiveness. Using these measures, we cannot find any reasons why the responding firms should not be a representative group of IPOs on the new Swedish stock markets.

Results: spin-offs to the new Swedish stock markets

To analyze whether established Swedish corporations are spinning off sponsored ventures to the new Swedish stock markets, a first step was to find out from

Table 5.3 Origin and frequency of spin-offs

	Frequency	*Percent*
Corporate spin-off, CSO	23	45.1
University spin-off, USO	10	19.6
External idea	8	15.7
Own idea	10	19.6
Total	51	100.0

where the listed firms had originated (Table 5.3). This was done by analyzing from where the idea upon which the venture is based had originated. Data on the importance of ideas based on:

a the founders' own university research;
b others' university research;
c the founder's university studies;
d external inventors;
e contacts with customers;
f contacts with suppliers;
g contacts with competitors;
h the founder's previous employer;
i the founder's own ideas in previous employment; and
j the founder's own idea;

were collected for all firms and recorded on a five-point scale.

Approximately two-thirds of the IPOs listed on the new Swedish stock exchanges are found to be spin-offs. The majority of these are corporate spin-offs – 45 percent – but also ten university spin-offs, corresponding to 19.6 percent, are found in the sample. The remaining IPOs are about equally distributed over the categories 'external' and 'own' idea, i.e. one-sixth and one-fifth each of the listed firms. Most of the corporate spin-offs and the university spin-offs were reported to be found in knowledge-intensive industries, although primarily not manufacturing.

In a factor analysis of the importance of the idea sources, four groups of spin-offs emerge (not reported here); two are corporate spin-offs and two are university spin-offs. The first group of corporate spin-offs (CSOs) is characterized by high dependence on the founders' own ideas originating in the previous employment. In this group the founders have also benefited from university studies and private ideas. The second group of CSOs is quite different from the first inasmuch as it is not characterized by the founders' ideas developed during former employment, but rather by ideas developed by the former employer. University education seems not to be associated with this spin-off type. Instead, the new business idea is linked to contacts with customers and competitors. Both groups of CSOs are similarly frequent (11 and 12 firms respectively).

The two groups of university spin-offs (USOs) differentiate in a similar way. The first group, where the new venture is based on research not developed by the founder himself (included among the 'external ideas' in Table 5.3), is the smallest with only three firms. Not surprisingly, the variable measuring this, is related to the dependence on external inventors. The second group of USOs includes ten firms that can be characterized as classic academic spin-offs, that is, the knowledge and idea have been developed by the researcher him/herself. Interestingly, this variable is related to the dependence on suppliers – which should perhaps come as no surprise, since for this type of USOs, the first contact with the external environment is likely to be through suppliers, as these firms might have very limited resources to begin with.

It may be noted that the knowledge generated in the context of former employment is not the dominating factor in any of the components in the factor analysis. This should be seen in light of the fact that over 50 percent of the firms state that the former employer, as well as ideas developed during former employment, are important for firm start-up (rated >3 on the five point scale). In addition, no significant growth differences (annual average growth of employees) could be found between firms rating the dependence on former corporate context as high or low. This means that in firms mature enough to make an IPO, being a spin-off is not a differentiating factor concerning growth.

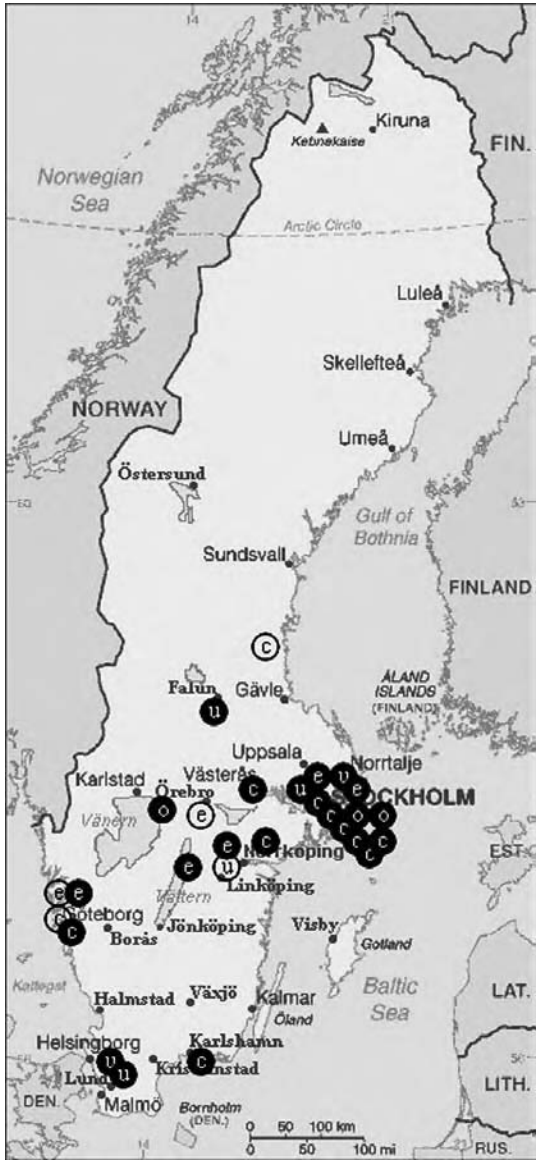
The geographical locations of the ventures are indicated in Figure 5.1. Not surprisingly, most firms are established in the most populous regions of Sweden. As suggested by earlier studies, the majority of the spin-offs are also found to be co-located with the parent organizations. Only two corporate spin-offs and one university spin-off are found to be located in a different region from the parent organization. Thus, this study confirms earlier findings on the co-location of parent and spin-off firms.

Sponsoring in the form of financing or part-ownership, from the previous employer, was found in 11 firms, or 22 percent (Table 5.4). In all these firms the previous employer was taking minority equity in the new venture. That is, financial contributions from the previous employer were only found in firms with the parent as part-owner.

Table 5.4 Previous employer being part-owner or contributing financial support

	N	*Previous employer part-owner*		*Previous employer financial support*	
		N	%	N	%
CSO	23	4	17.4	2	8.7
USO	10	1[a]	10.0	1[a]	10.0
External idea	8	3	37.5	–	–
Own idea	10	3	30.0	1	10.0
Total	51	11	21.6	4	7.8

Note
a The founder also had an earlier established firm that sponsored the new venture.



Legend
Solid black circles = spin-off and the founder's previous employer are co-located (measured as 2-digit overlapping of Swedish zip-codes, 1-digit in Stockholm, Gothenburg and Malmö).

Transparent = geographical co-location is not present;
c=corporate spin-off;
u=university spin-off;
e=external idea;
o=own idea.

Figure 5.1 Geographical dispersion of spin-offs to new stock markets in Sweden.[4]

As can be seen in Table 5.4, only four corporate spin-offs had their parent corporations as part-owners at the time of the IPO. In comparison, formal sponsoring of this kind was actually more frequent among the other categories of new ventures (except USOs). Especially, new firms based on external ideas, seem to attract minority-investments from former employers. However, these ventures

Table 5.5 IPOs receiving resources from their previous employer

	Pre IPO		*Post IPO*	
	N	*No. of CSOs included*	N	*No. of CSOs included*
Patents	5	1	2	–
Licences	3	1	1	–
Other IP	3	–	4	–
Personnel	11	6	6	2
Equipment	8	4	2	–
Facilities	8	2	3	–
Other physical	4	1	4	1
Other	11	3	11	3

did not report any financial contributions following from the minority-investments; instead, the previous employers tended to contribute other resources (Table 5.5). In total, only four of the IPOs (8 percent) had received financial contributions from the founders' previous employers. This is a very small number, which does not allow any statistical comparisons. Even so, with one USO receiving a financial contribution from the founders' own firm, Table 5.4 suggests that financial support is relatively more common among sponsored corporate spin-offs than among the other groups of IPO firms.

In total, eight CSOs received other than financial resources from their parent corporations before the IPO. Only one CSO was sponsored with both financial and other resources from the parent corporation; this firm also had the parent as a part-owner. This suggests that very few Swedish corporations have an explicit corporate venturing strategy. Taken together, the data imply that 39 percent[5] of the corporate spin-offs are sponsored by the parent. In addition, it suggests that slightly over one-sixth (nine out of 51, i.e. 17.6 percent) of the Swedish IPOs on the new stock markets are sponsored corporate spin-offs. However, only 8 percent of the IPOs were sponsored corporate spin-offs with parents as minority owners.

As can be seen in Table 5.5, it was more common for Swedish corporations to sponsor their spin-offs with other than financial resources. Altogether 22 of the IPOs received support with resources from the founders' previous employers. This also means that 14 non-spin-offs received such sponsoring, and that sponsoring with resources is more common among these groups. As many as 60 percent of the USOs and 75 percent of the firms based on an external idea received support from the founders' previous employers. Among firms based on the founders' own idea the corresponding figure is 20 percent, i.e. higher than in corporate spin-offs, but lower than in the other two categories.

The most usual way to sponsor a corporate spin-off seems to be to contribute personnel and equipment. In the corporate spin-offs, 26 percent received personnel

and 17 percent equipment from the parent corporation before the IPO. This is slightly more than in the other new ventures. Instead, in Table 5.5, contributions in the form of patents, licenses, other IP rights (intellectual property), facilities and other, were all less common in corporate spin-offs than in other ventures, before as well as after the IPO. Also, contributions to corporate spin-offs in the form of personnel and equipment declined substantially after the IPO. In fact, after the IPO the corporate spin-offs are the category receiving least contributions from the parent corporations.

Over a quarter of the corporate spin-offs had been spun off in a situation where the previous founder had to deal with some sort of crisis (laying off personnel, a financial crisis, or the parent itself being acquired). In addition, 35 percent of the corporate spin-offs were established just because of a lack of interest from the parent corporation. These figures point to the difficulties of managing sponsored corporate spin-offs. It is not surprising that a parent corporation does not invest or sponsor spin-offs under such circumstances. Nevertheless, since all analyzed ventures have been able to do an IPO they are to be considered as relatively successful new ventures, indicating that large corporations have not yet fully come to realize the potential of managing sponsored spin-offs from their own organization.

Conclusion

This chapter has reported on a study of sponsored corporate spin-offs established on the new Swedish stock markets (NGM and Aktietorget) set up in the mid-1990s. When a parent firm is actively involved in the resource mobilization and financing of the spin-off, it constitutes a sponsored spin-off. The aim of the chapter was to analyze how the new stock markets facilitate the creation of such sponsored spin-offs, and how this has changed the patterns of internal venturing and spin-off processes. The sponsoring, with financing and other resources, of the corporate spin-offs was compared to the sponsoring of other new firms listed on these stock markets. The empirical results show that established Swedish corporations are spinning off sponsored ventures to the new Swedish stock markets. We found that 39 percent of the corporate spin-offs had received sponsoring from their parents. However, it was quite unusual that large Swedish corporations became minority-owners or contributed financially to their own spin-offs. Instead, sponsoring with other resources, especially personnel and equipment, was more common. Even so, sponsoring from the founders' previous employers was found to be at least as – if not more – common among other ventures listed on the new stock markets. Especially, ventures based on external ideas, seem to attract resources from previous employers.

It can be concluded that the spin-off mechanism is important for generating successful Swedish ventures; 45 percent of the IPOs were found to be corporate spin-offs, and an additional 20 percent to be university spin-offs. Moreover, 17.6 percent of the IPOs consisted of corporate spin-offs being sponsored with resources from their parent corporations. However, sponsoring in the form of

minority-ownership in corporate spin-offs corresponds to only 7.8 percent of the IPOs. Naturally, this figure is higher than the number zero, which was previously found in Sweden during earlier decades (Lindholm Dahlstrand 1994). But it is less than the 10 percent of IPOs listed on the Stockholm Stock Exchange between 1992 and 1996, as reported by Wallin and Lindholm Dahlstrand (2006). This suggests that large Swedish corporations, with some exceptions like Saab, to a large extent, still ignore the potential of listing sponsored entrepreneurial spin-off ventures on the stock exchange, and instead focus such activities on relatively more mature spin-offs.

While there are some examples of large corporations using the new stock markets for their sponsored spin-offs, e.g. Nordifa spinning off NordiTube in 1997, this seems not to be of significant importance for Swedish corporations. Still, since earlier studies (cf. Lindholm Dahlstrand 1994) found no sponsored spin-offs where the parent firm had taken on equity shares in the new firm, it can be argued that the introduction of these markets has made the large corporations change their patterns of internal venturing. It may be that the importance of the phenomenon will increase even more in the future. Today, however, it is not possible to argue that the sponsoring of corporate spin-offs is a major and important mechanism for creating IPOs and, thus, successful new firms.

The study identified both spin-offs which were co-located with parents and others that were not. Delving into possible explanations for this fact, the importance of multiple sources of new venture ideas becomes clear. These multiple sources of new firms can be related to the classic debate on Schumpeter Mark I and Mark II, as discussed in the introduction. In addition to concluding that there are clear linkages between new small and old large firms as illustrated by the corporate venturing activities of Saab and Volvo, the issue of multiple sources brings up a somewhat more complex picture than that provided by either Schumpeter Mark I and II.

The importance of new firms is underlined when old firms either fail to initiate inventions or fail to commercialize inventions, i.e. produce innovations. This is often what established, and large corporations have trouble with, thereby hampering overall economic progress. Shareholders of established corporations should have reasons to be just as concerned as policy-makers because of the evolutionary nature of knowledge development and innovation. Innovation proceeds according to an evolutionary logic where old resources and experiences enable and constrain. Thus, ideas that could have been developed into viable innovations are a loss for shareholders. Also, ideas originating in the established corporation but commercialized outside are a loss for shareholders, but not necessarily for society at large.

The rationale to start a new firm from the entrepreneur's perspective is twofold, economic and emotional. The economic rationale may be either offensive, to increase personal wealth, or more defensive – the entrepreneur is forced into running his or her own business, which is often called necessity-based entrepreneurship. From earlier research we know that entrepreneurs are not only seeking monetary remuneration; an important motive for establishing a new and independent firm is the quest for independence. The same should be expected for spin-offs

founded by entrepreneurs who are former employees of parent corporations. In opposition to independence stands control; entrepreneurs seeking independence may be reluctant to give away control to acquire necessary resources. This resembles the pecking-order hypothesis of Myers (1984) where firms first turn to retained earnings, then to safe debt, followed by risky debt, and finally to outside equity (although Myers's argument is based on information asymmetries).

If independence is fundamental for establishing the new firm, this may impede its growth ambitions and the willingness to give up ownership to parent corporations as well as external investors. From the entrepreneur's perspective, less growth and return on investment may be outweighed by continued independence. The result is that the full potential of the innovation is not realized. Thus, it might not only be large Swedish corporations that fail to take advantage of the values in sponsoring spin-offs; the founder-entrepreneurs may also contribute to limiting the value of the process. There are numerous anecdotal examples of former employees 'stealing' or 'taking' with them innovations and ideas without the knowledge of the parent organization. As far as we are aware, however, systematic studies of this behavior are lacking, and further ones must be awaited to clarify its importance.

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Notes

1 An entrepreneurial corporate spin-off is defined as a new firm based on the transfer of rights (intellectual and/or other resources) from the founder's earlier employer, i.e. the parent firm. A sponsored corporate spin-off is a spin-off where the parent firm has actively devoted resources to nurture the development of the new firm. Also, some universities are sponsoring spin-offs. In Sweden, however, the law includes a 'teacher's exception' where the ownership of an invention belongs to the individual university researcher.
2 See: www.volvo.com/group/global/engb/Volvo+Group/our+companies/volvotechnologytransfer/Introduction.htm
3 ISIC Rev.3 2423, 30, 32, 33, 353; 24, 29, 31, 34, 352, 359; 64; 65–67;71–74;80, 85. 741 was excluded as most of the firms are holding companies, which says very little about their true activity. If a second SIC code was registered, this was used instead.
4 Unfortunately, it was only possible to collect data on where the previous employer was situated for 28 of the ventures.
5 One with financial contributions and eight with other resources.

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6 Becoming a global player

ING Real Estate

Ed Nozeman

Introduction

Over the last decade the real estate industry has become increasingly international, even reaching a global scale. Investors, no longer restricted to their home countries, have found more and sometimes better opportunities in foreign markets. Financing real estate in the construction and property management phase is also becoming less nationalistic. This partly has to do with the fact that real estate companies follow their expanding multinational clients, thus becoming multinationals themselves. Real estate consultants and agencies show the same shift.

An example of the internationalization trend within the sector, which will be described in this chapter, is ING Real Estate (ING RE), a subsidiary of the Dutch Financial Services ING Group. Its home country, the Netherlands, clearly shows the characteristics of an internationalizing real estate market. Foreign investors bought Dutch commercial real estate (mainly office space) for a total value of €2.3 billion in the first nine months of 2006, which represents no less than 41 percent of the total value of €5 billion invested in real estate in the Netherlands in that period (counting only transactions exceeding €10 million). Investors from the UK are now the main foreign party, followed by German investors (Nijboer 2006a). On the other hand, Dutch investors bought European real estate (mainly retail centers and offices) in the same period for a total value of €2.4 billion. The most important destination for this outward investment money was Germany, with France coming second. Within these Dutch flows ING RE is quite dominant in the outward flow: it accounted for 1.1 of the €2.4 billion of asset value bought in the first nine months of 2006 (Nijboer 2006b). The figures for the whole of 2006 will be even higher when ING has completed the takeover of Summit, the largest office owner in Canada, for a price of €2.4 billion.

The example of internationalizing Dutch real estate firms shows some basic characteristics that can be found in the real estate market of many developed countries elsewhere in the world. Firstly, when growing out of the national market, the main origin and destination countries for investments are initially neighbors (such as Germany, the UK and Belgium/France for the Netherlands)

after which gradually more distant markets are entered. For Dutch and other western-European real estate companies this means Central and Southern Europe, the USA, and Asia. Secondly, in order to reduce risks when entering a new foreign market, most real estate firms start with small operations. When these turn out to be successful, bigger operations or expansions are started. Thirdly, firms mostly start with only some sectors of the real estate value chain, adding other activities or even the full cycle later on. We will return to this general growth sequence in the next section. The fact is that the three trends mentioned are not really different from the developmental path we witness for most industry-based multinationals which is aptly described in models such as Håkanson's general picturing of the spatial evolution of firms, and Dunning's OLI paradigm. Other elements that correspond to the general state-of-the-art knowledge about transnational companies are also recognizable in the internationalization process of the real estate sector. We will return to this in one of the later sections of this chapter when describing the core activities of ING Real Estate.

With the ING RE case we want to illustrate the developmental path of an internationalizing real estate firm. In this case, we have a former regional market player that, within a decade, grew into a truly global player and is now one of the most important market leaders in its field. This chapter will deal with this internationalization process undergone by ING RE, however, it will start with a short description of ING RE's history, size, spatial pattern of activities and internal organization. Subsequently, we will turn to the company's business strategy, and more especially to the so-called 'center of excellence' strategy. After that, ING RE's core activities, focusing on the internationalization process, will be described in more detail. Finally, the possibilities for its future development as an international 'comprehensive' real estate player will be indicated.

ING Real Estate

History

ING Real Estate (ING RE) is a comprehensive real estate company combining three core businesses:

a real estate development (RED);
b real estate financing (REF); and
c real estate investment management (REIM).

It is a wholly owned subsidiary of the Dutch ING Group. ING RE was created in 1995. It resulted from the merger in 1991 of a commercial bank (NMB/Postbank) and an insurance company (Nationale Nederlanden) into the ING Group. NMB/Postbank and Nationale Nederlanden had both been active in the real estate sector in the Netherlands as well as internationally since the early 1960s.

When these two real estate companies became part of the same ING Group, for efficiency reasons they were combined into one new company, ING RE.

Size

In 1995 ING RE had €2.8 billion in assets under management, a profit of €45 million and offices in five countries. Ten years later the assets had grown to more than €69 billion, pre-tax profit to €397 million and there were offices in 16 countries (Figures 6.1 and 6.2). Apart from this growth there was one other big change. In 1995 the major share of these assets came from internal sources, meaning from other ING companies, while in 2005 the major share came from external sources. This change reflects the company's strategy to offer real estate expertise to institutional investors, and offering this on a global scale.

The rapid rate of expansion is also reflected in the increase in the number of employees, which quadrupled over the past ten years: from 400 in 1995 to more than 1,800 by the end of 2005 (Figure 6.3). It stands to reason that the increasing internationalization reduced the share of Dutch workers in total. Roughly one-third of the ING RE workforce is based in the Netherlands today, whereas ten years ago that share was more than 70 percent.

Spatial pattern

ING RE is now active on four continents (Europe, North America, Asia and Australia) and in quite different markets: mature, developing and emerging (Figure 6.4). This geographical picture of activities in 22 countries differs considerably from that of 1995, when ING Real Estate was only active in seven countries, located in Western Europe and North America.

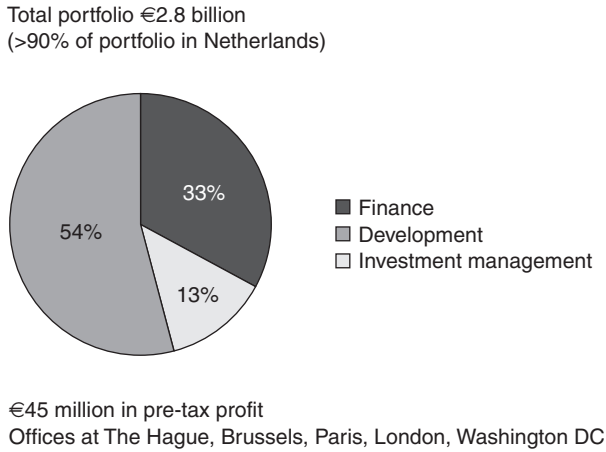

Figure 6.1 ING Real Estate, 1995.

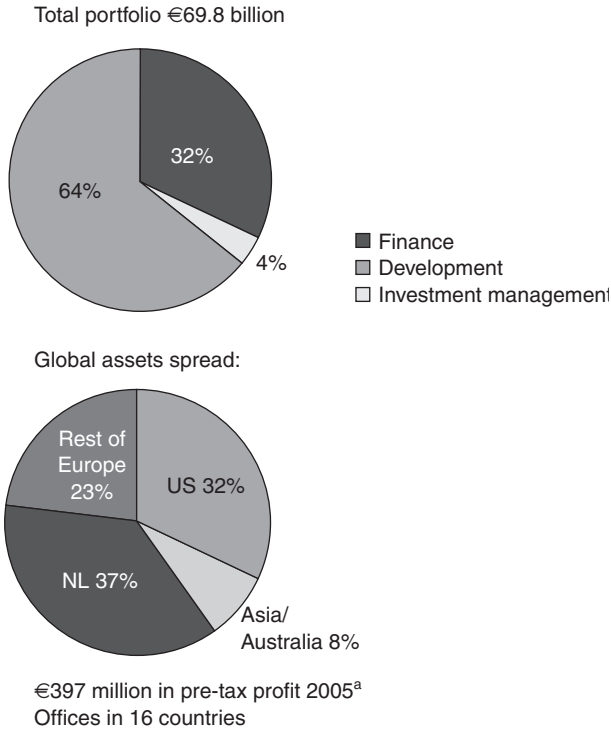

Figure 6.2 ING Real Estate, 2005.

Note
a Before Group Captial Change.

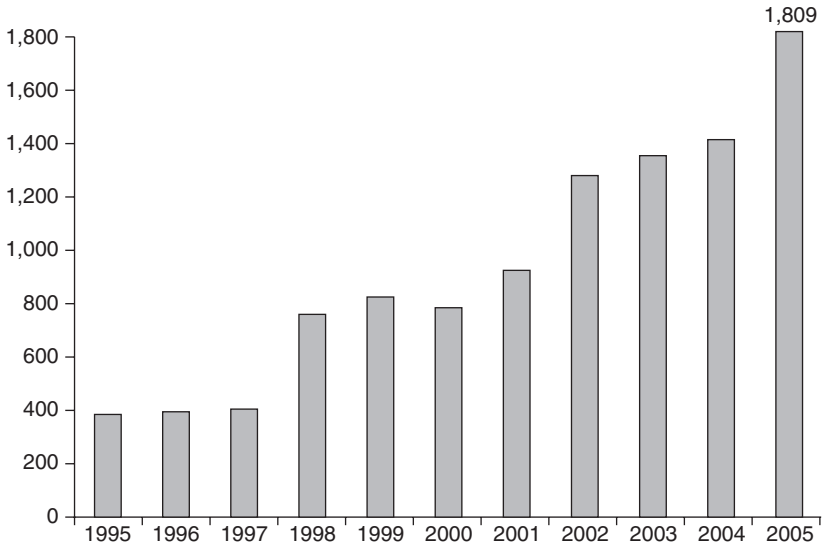

Figure 6.3 The growth of staff.

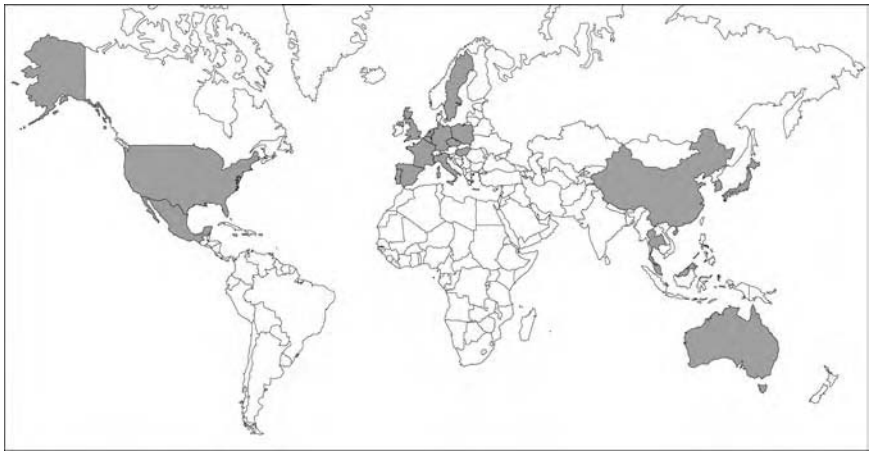

Figure 6.4 Worldwide ING Real Estate operations.

Not all three core business activities are carried out in all countries. REIM is the most widespread of the three, having assets in 21 countries; RED is carried out in 11 countries and REF in eight countries. ING RE does not aim to expand all three core business lines to all markets around the world. Just as in any other business sector the three core activities require different conditions before they can enter those markets successfully. However, where possible, the different business lines are brought together under one roof in order to benefit from operational synergies. The 'lagging behind' of REF in the internationalization process is mainly caused by its mature-market requirements, whereas REIM and RED are capable of deploying activities in less-developed markets as well.

The roll out of international operations has taken place far from accidentally. In the first phase, when considering diversifying its Dutch portfolio, the investment predecessor of ING RE (NN Vastgoed) had already decided to expand abroad. It selected a number of mature, foreign, as well as neighboring property markets. This led, in the late 1970s and 1980s, to the first cross-border activities in Belgium, France and the UK, countries all more or less bordering the Netherlands. Germany, the most important and one of its nearest neighbors was surprisingly not among the first countries to be chosen. Lower yields and a negative perception of the German business culture lay at the bottom of this fact. Subsequently, MBO, the other predecessor of RE began activities in the USA, presumably feeling it to be the closest continent. This choice confirms the ideas of Hofstede (2001) that, in general, expanding firms look for opportunities in countries or markets which are alike or comparable to the home base in terms of attitude, mentality and habits. In 1992 it decided to expand into markets in Central/Eastern and Southern Europe. When ING RE was founded in 1995, it was evident that it was concentrating on those markets already well prepared by its predecessors.

It will be clear that organic growth was a slow and difficult process in markets with which ING RE was not familiar. In such cases, acquiring a company or a portfolio can be a very efficient means. This method offers the ability to grow, based on the ING brand, coupled with the expertise of local management. Market opportunities as well as legal and fiscal transparency are always the decisive criteria for a first selection of new markets. The availability of a reliable joint venture partner, or a successful takeover candidate, along with the presence of experienced management workers, are the criteria that decide the exact moment of entry into a specific country. Within RE, nationalistic sentiments have not played a significant role when a joint venture or a takeover was at stake, as real estate is not considered to be of vital national interest by politicians. There are exceptions – a xenophobic attitude caused them to lose a competition for a project at the local level in France, for example. In addition, in some recent cases (Germany 1998, Japan 2005, Sweden 2005) the selection had a counter-cyclical character.

From its start, ING RE has always focused on a mix of mature, developing and emerging markets, in particular for RED and REIM, in order to spread risk. But the recent selection of some mature markets differs from the strategy of most of its Dutch and foreign competitors. These latter consider Germany to be a difficult market, mainly because of a gloomy economic outlook and building regulations peculiar to Germany. RED, however, considered the German retail market ripe for innovation with proven concepts. In the same way many investors consider Japan and Sweden as less interesting because of their moderate economic and demographic perspective. Here too, REIM saw some promising investment opportunities based on thorough local intelligence.

Organization

Within ING RE, the three core business lines have slightly different property types on which they focus. Nevertheless, the majority of the business, in each of the market areas, is focused on core property types, namely residential, retail, offices, parking and logistics (Figure 6.5).

Although ING RE may be considered a ‘comprehensive’ real estate company, it does not really cover all activities in the real estate value chain (Figure 6.6).

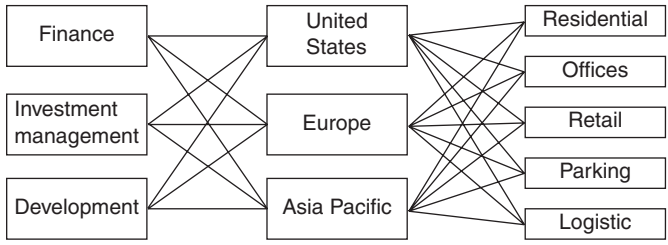

Figure 6.5 Strategic concept.

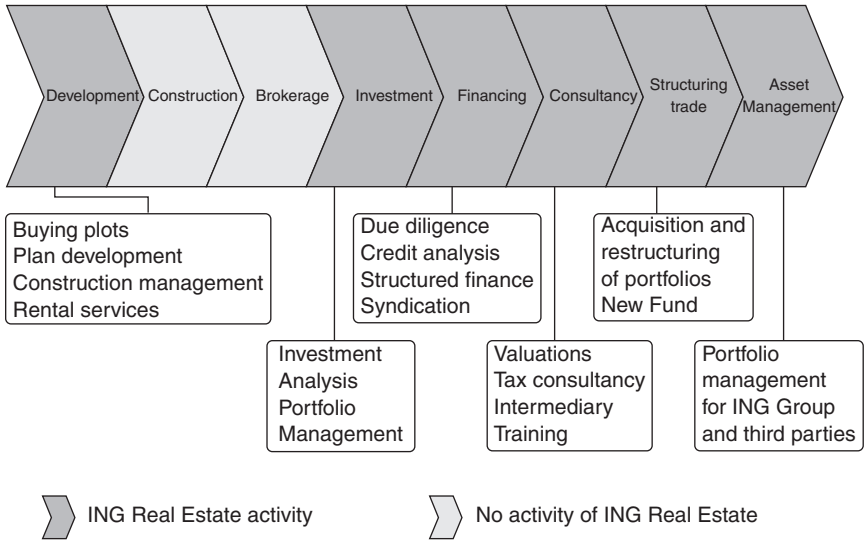

Figure 6.6 The Real Estate Value Chain.

For example, construction has never been a part of ING RE's scope. Leasing, relevant for both RED and REIM, is partly commissioned out to third parties. Property management in Europe was largely outsourced in the mid-1990s, but not in the United States where it comprises about 40 percent of the total portfolio. However, in this case property management is undertaken for the sole purpose of enhancing investment performance. It is not carried out on behalf of third party owners. The high added value of real estate activities in general and that of ING RE in particular can be illustrated in various ways. From an ING Group perspective one can simply point to the fact that a mere 1 percent of the total ING workforce earns almost 10 percent of the Group's profit.

ING's business strategy

ING's business strategy has two key characteristics:

a to become a comprehensive real estate company, and
b to become a global or international player in its market.

In 1995 neither the financial markets nor the real estate markets were familiar with the concept of a 'comprehensive real estate company' as we have sketched it in the preceding section. Investment management companies normally did not have a developer on board, or a financier. Development companies nearly always funded their projects through external sources and sold these to external market participants, and vice versa of course, as bankers did not consider development or real estate investment to be part of their core business. Merging the

three core activities, as ING RE did, meant more in-house expertise, enabling the exchange of complementary information, a broader approach to industry issues and the possibility of cross selling.

With its concept of three core activities integrated into one organization and working under one roof, ING RE was at that time ahead of others, not only in the Netherlands but around the world. Since then, several other companies in the Netherlands have adopted this concept (such as Fortis) and similar developments have taken place on the international scale (Morgan Stanley). Comprehensive real estate business is now becoming a trend, although many financial institutions still view real estate as alien.

Generally, the 'comprehensive' or 'three core activities' concept has three advantages.

The ability to share knowledge

Within ING RE, knowledge sharing is actively encouraged. Discussions between the various business lines have and will continue to put together a wealth of information in terms of market developments, opportunities to be pursued or areas/asset classes to be avoided. This should all lead to better products and a deeper understanding of clients' needs.

The absence of mandatory cross selling

Within ING RE, every business line should be cutting edge and focused on profitable business. The general line is: team up when possible, act independently when necessary. So RED sells its shopping centers both to external investors and to its sister REIM, purely based on the most attractive terms for the shareholders involved. In the same way, financing internal investments is not the exclusive right of REF. External lenders are also invited to bid, and they succeed when they are more competitive.

Integrated decision-making

Every ING RE business line has its own decision-making bodies, with clear targets and a defined mandate. However, to prevent tunnel vision and to stimulate integrated solutions, there is a general management team responsible for issues that cross the three business lines. That team decides on major investment proposals as well as on strategic business development issues.

The strategy to become a global or international player in the real estate world is ING's second focus. Since this goal can only be attained successfully when the internal organization is able to adapt to the constantly changing international business environment, we will first take a look at how ING organizes its activities so that the basic conditions for becoming an international company are fulfilled.

One of those essential preconditions is ING RE's idea that the company

should become a 'center of excellence'. A center of excellence can be understood as a company which, within its sector, excels with:

a innovating *products*;
b an innovative way of approaching the *market*; and
c an innovative type of *organization*.

A center-of-excellence company normally takes the lead and is followed or imitated later on by other companies. For ING, RE the essential factors for becoming a successful center of excellence are:

A strong and committed parent

Within the ING Group, ING RE has always been considered a real asset. Not only because of its contribution to the Group's profit, but also because it has offered synergy to the Group's other core businesses (for example, mortgages, and insurance). As a consequence, ING RE has always had its advocates on the Executive Board. Executives throughout the Group were able to bring ING RE into contact with clients that were looking for investment opportunities, for partners, or creative real estate financing structures. Moreover, ING RE's expansion process was also made easier thanks to the brand and reputation of ING as a whole. It was especially after the takeover of Barings in 1995 that the international financial and business world came to know ING. This greatly helped to open doors for ING RE. The support of the Group as a whole also implied the availability of a large pool of seed capital to fund new initiatives.

Focus on research as a dominant asset

In many real estate companies, research has been outsourced. In contrast to that viewpoint ING RE primarily considers itself to be a research-based, knowledge-driven organization. No investment product, loan or major development is launched without proper, thorough research. Research is, moreover, the driving force behind the decision to enter new markets.

Progressive Human Resource Management-policy

Human Resource Management (HRM) is the backbone of the real estate industry, which qualifies as a people business. The industry requires high levels of skill. One of the most important elements in RE's HRM-policy is the focus on hiring and creating real estate specialists. People are expected to 'breathe' real estate and to be experts. HRM receives special attention in cases of company takeovers, when two 'company cultures' have to be merged. ING RE has made several significant acquisitions over time and prepared them meticulously. For instance, the Clarion takeover was successfully kept secret for months during the due-diligence process by letting it be known that ING only wanted Clarion to

take care of its US assets. Continuity of management is one of the dominant challenges. The takeover of a company is one thing, but retaining management and making the business which has been taken over into a successful company is quite something else. It is well known that acquisitions will become failures without alignment and support from the management and staff of both companies. Skills and networks can easily be lost, ruptures in procedures can raise problems, and the loss of contact with both businesses and clients can be disastrous, making the acquisition price look far too expensive and often resulting in the downfall of both the acquirer and the acquired. For that reason, the essence of most of RE's acquisitions lies in committing to the existing management, while making time for them to integrate within the ING RE family.

Focus on quality

Creating value is one of ING RE's driving principals. Decision-making is taken with the utmost seriousness. Considerable resources are committed to ensure that the best possible judgment is applied to all decisions. Because of its reputation, and the often long-term impact of decisions, ING RE will not, and can not, run away from its commitments, even when adverse conditions arise. In order to offer high quality products RE is constantly looking for buildings that serve the users well, but also represent a landmark in their respective city or for the business card of the owner. That is why ING RE is keen to work with renowned, innovative architects and design engineers. This has resulted in the winning of many prestigious international awards over the past ten years. On the finance and asset management end the quality of products implies both meeting clients' requirements and ensuring long-term performance. Beating the relevant benchmark is the challenge within RE. This has now been done successfully over long periods of time.

Scale and efficiency

Because of the scale of ING RE's portfolio, considerable cost efficiencies can be realized, improving the company's competitiveness. Cost awareness is also a major point of attention. There is a permanent drive to ensure that revenues rise more than costs.

Autonomous growth

Unlike many other companies (BAM, Vastgoed, Bouyges, Dragados) RE's focus is on autonomous growth. Nevertheless, many acquisitions have been made, but only when they really added value, strengthened the portfolio, and provided enhanced business opportunities in markets with widely acknowledged potential. For example, the acquisition of Rodamco Asia in 2004 added €1 billion to assets under management, with less than 20 employees being brought into the Company.

Focus on asset class

One of the larger challenges is to stick with the real estate you know best. Many companies have stumbled on that pitfall to growth of starting new but unknown activities. All three ING business lines have kept to a narrow and conservative definition of real estate/asset class in order to avoid this pitfall.

As mentioned above, strict criteria have never been formulated for deciding whether a company really qualifies as a 'center of excellence', but still ING thinks it has created an organization that is well-equipped to handle the rapid changes in the international business environment.

The internationalization strategy

Being a Netherlands-based company, it stands to reason that at the start most of ING RE's revenues came from Dutch projects. That emphasis has gradually shifted. The number of non-Dutch projects now surpasses the number of Dutch (Figure 6.7). As a consequence, today, more than 50 percent of the profit comes from overseas. The size of the portfolio differs between countries, as does segmentation. For instance, in the USA the focus is on high-end residential

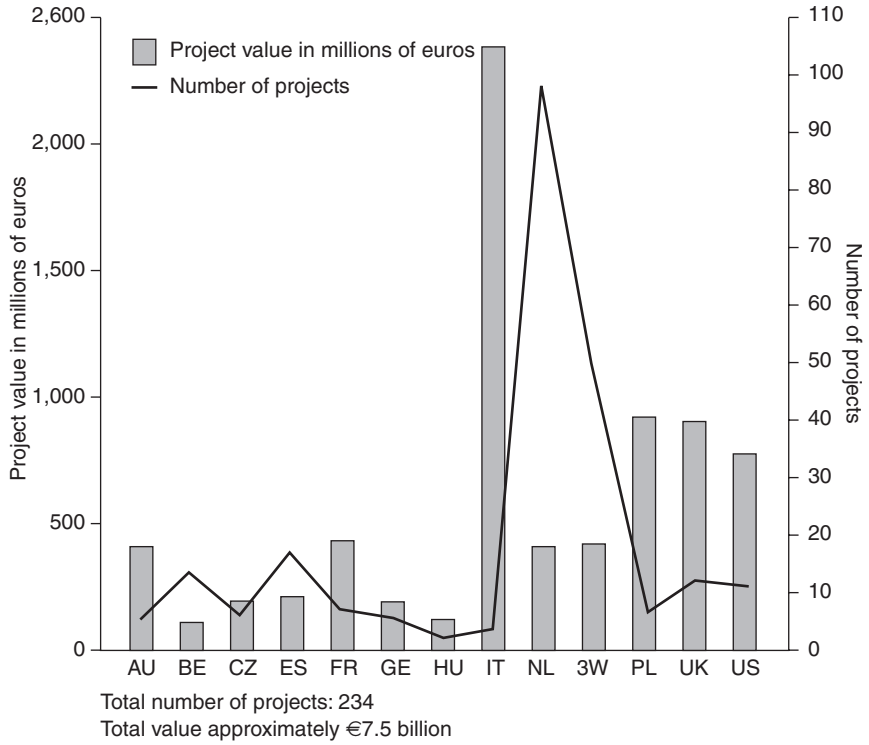

Figure 6.7 The portfolio of ING RED.

projects, while in Spain it is on large shopping centers and urban homes. Such differences are caused by differences in expertise, in presence of competitors, and in market conditions and opportunities.

There are various underlying reasons for the international expansion which had already started before the formation of ING Real Estate in 1995. These can easily be related to elements of the general theories about the internationalization of firms:

- The company had a very strong position in the home market, making a further increase in market share unrealistic. As a result, the company had to look for new opportunities abroad. This perfectly fits Håkanson's development model.
- Some successful Dutch real estate concepts were considered suitable for other markets when molded to local conditions. This corresponds with the 'ownership advantage' factor in Dunning's OLI paradigm.
- Building up a portfolio in other countries implies acting in different real estate cycles and, as a consequence, leads to less vulnerability and volatility in terms of profitability. This corresponds to the diversification strategy of industrial firms, a form of risk-averting behavior.

ING RE waged its international expansion campaign along different lines. In mature and developing markets, reliable, experienced and financially sound partners were scrutinized. In some cases, a joint venture was started which, if successful, sometimes became the basis for a long-lasting partnership, which was sometimes gradually taken over by RE. In other cases a complete takeover was planned from the very beginning. However, that turned out to be impossible in the emerging markets of Central Europe. ING RED had to operate in these markets on its own because appropriate partners were initially lacking. It is difficult to calculate the extra costs of such a strategy-from-necessity. Risks were mitigated by employing local, well-acquainted experts (Czech Republic, Hungary). Where such expertise was not available, Dutch in-house experts were employed. This did not always prove to be a success. For example, the Zlote Terazy project in Warsaw was confronted with heavy extra costs because of

Figure 6.8 The acquisitions by ING RED.

repeated delays to the completion of the project. This was probably the result of a lack of knowledge of the local real estate market.

In the course of the internationalization process the size and nature of the projects have changed too. Initially, when the majority of projects were undertaken in the Netherlands, there was a strong emphasis on shopping centers, although purpose-built office buildings also played a role in the portfolio. The portfolio has changed dramatically since then, beginning during the 1990s, first in Holland, later in other countries as well, when RE joined the general trend going from suburbanization ('greenfield') to reurbanization ('brown field'). The first change in that trend was a stronger focus on residential housing. Housing had, until then, been more or less a by-product. Beginning in the late 1990s, many housing schemes have since been completed, often with no relation to any retail development whatsoever (Avila in Spain, Cambridge in the USA). The second change is related to the size and complexity of the projects. The company has become involved in more and more mixed-use projects, often located in inner-city areas. Project development has turned gradually into area development, often implying investments well in excess of €100 million. The third change, related to the second, is an increase in the number of partnerships and joint ventures. Public–private partnerships with an unorthodox division of risk (and profit) have become more common, as public authorities need to fulfill certain objectives with projects but are only able to do so with the help of private capital and expertise. At the same time, joint ventures with competitors – and not only in Holland – also became a more regular feature of the business. The reasons for such a form of co-operation are different: pressure from the local authorities, land ownership or complementary expertise within the firms involved. For example, the 47,000 m^2 office project M7 on the Left Bank of the Seine in Paris was developed by RED together with the French developer SARI, the latter having much better access to local officials than RE.

The increasing size of the projects, and the less buoyant economy of the first years after 2000, has led to a stronger emphasis on risk management. Developers, RE as well, are today much more focused on how to reduce risks in their projects. Pre-rentals and pre-sales before construction commences are now quite common. But other risk-reduction and monitoring tools have also been implemented within RE: a separate risk-management team at headquarter-level, monthly cash flow surveys, market updates, risk-sharing partnerships and modest non-speculative land acquisitions.

Both internationalization and a more diverse portfolio have enabled ING RED especially, to become less vulnerable to the ups and downs of real estate cycles. Those cycles differ from country to country and market to market, moreover, a diverse portfolio contributes to a more even stream of revenues. For a listed company such as ING, lower earnings volatility is an important driver of stock market valuations.

The internationalization strategy of real estate financing (ING REF) offers a different picture than does the internationalization strategy of real estate development (ING RED). ING REF is involved in making commercial loans to real

estate investors and developers. This company needs to have a clear appraisal of the ability of the real estate security to generate cash flow over time. These loan products can be broadly characterized as development/construction loans (two- to three-year term) and investment mortgage loans (seven- to ten-year term).

There is a clear difference between a banker's viewpoint and that of a real estate financier. The former tends to take into account the valuation of a property, and possibly the financial situation of the current tenant, before deciding to undertake financing or not. A real estate financier first asks: "Would I like to own this property?" Based on the answer to that question a decision is made whether to make the loan or not. For the latter, the location and quality of the property are the major components to be taken into consideration. The quality of the tenant is a consideration, but more important is the assessment as to whether the property can attract other tenants if required.

As to the expansion rate, the shift in pace of REF has been impressive. Being only active within the Netherlands since 1995, a decade later its operations now extend to eight countries. Its portfolio has grown from €4 billion to €20 billion over that period. Now one-quarter of its loan portfolio is outside the Netherlands. Nearly 50 percent of new production comes from abroad (Figure 6.9). France, Spain, the UK and the USA are dominant in REF's foreign focus.

ING REF's strategy in financing real estate can be typified as an example of counter-cyclical thinking and acting, as is the strategy of RED and REIM. In the early 1990s the general banks withdrew all their foreign activities owing to the real estate crises in, among other countries, France, Germany and Spain. However, the ING-Group had confidence in the activities of REF, based on the fact that REF followed REIM and RED in their international expansion. REIM had to go abroad because its clients required it.

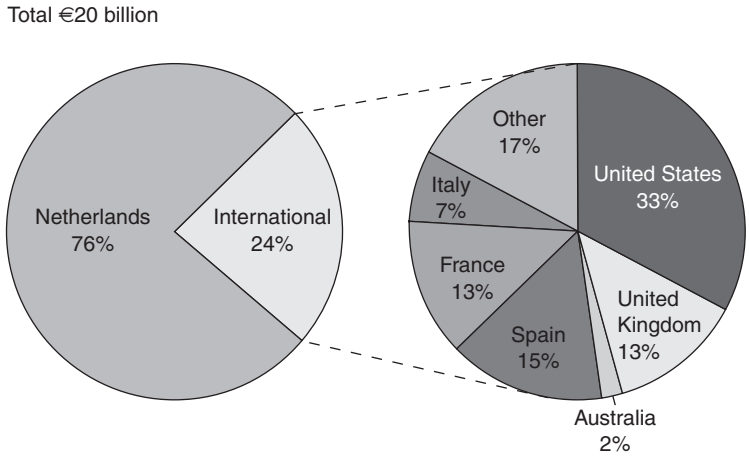

Figure 6.9 Portfolio ING REF.

2003: Westland Utrecht (Netherlands, est. 1938)
- Real estate finance company, wholly-owned by ING Group. ING Real Estate acquired corporate real estate finance portfolio and staff.

2004: Transfer of ING Bank corporate real estate finance portfolio.

Figure 6.10 Acquisitions by REF.

Apart from this internationalization REF also saw a shift from direct to indirect real estate. This led to an explosion in the number of large institutional investment funds (>€1 billion) offering opportunities for REF.

The expansion of REF differs also in another respect from that of RED and REIM. REF succeeded in merging its activities with those of the Westland/Utrecht Mortgage Bank (another ING Group Sister Company) and the commercial mortgage portfolio of ING Bank (Figure 6.10). The slower pace of internationalization of REF has apparently also been caused by the priorities posed by ING's Executive Board. Reorganizing all units engaged in commercial mortgage was considered more urgent than a rapid expansion abroad.

Finally, we turn to the internationalization strategy of ING's real estate investment management activities (ING REIM). The development of REIM has been impressive over the last decade, enabled by a broadening of the business focus (Figure 6.11). When REIM began, it mainly managed the ING portfolio. This focus was considered too limited and new investors decided to shift their focus from direct investment in, and ownership of, real estate assets to indirect investment, both domestically and internationally. This offered new opportunities for REIM, which was able to produce a range of privately held funds in both mature and developing markets. Those funds offered the best of both worlds: a geographical and a sectoral focus. Through this approach the company has launched, and currently (December 2005) manages, 57 different investment

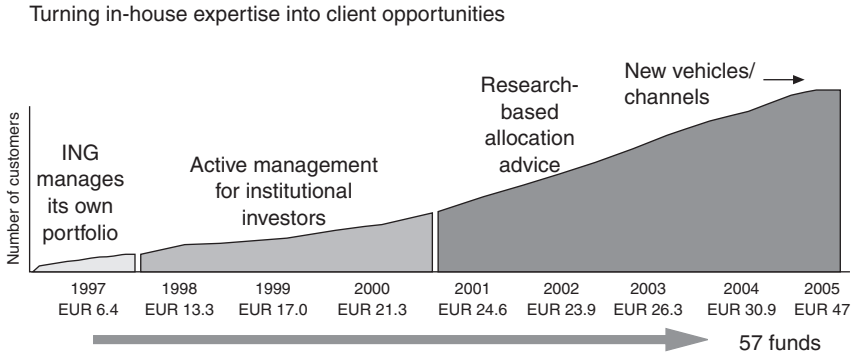

Figure 6.11 REIM's widening focus.

- 1996: Baring, Houston and Saunders (UK, est. 1980)
  - Property investment majority-owned by Barings, acquired by ING in 1995.
- 1996: Armstrong Jones (Australia)
- 1998: Clarion Partners (US, est. 1982) + CRA
- 1998: Real Estate Securities (1984)
  - Separate account business and listed real estate fund
- 2001: Purchase of remaining shares Baring, Houston and Saunders
- 2004: Rodamco Asia (Asia, est. 1999)
  - Listed real estate investment
- 2005: Gables Residential Trust (US, est. 1982)
  - Listed residential fund

Figure 6.12 REIM's acquisitions.

fund products around the world. In addition, in serving its most important clients from the institutional world, REIM has recently entered the world of individual, private investors by offering partnership structures through which they can invest. This has been successful in Holland, both with retail and residential real estate. The focus is now widening to neighboring countries. Research both into the level of competition and into legislation, should reveal whether the first market to enter will be Belgium, France or Germany.

Naturally, in its internationalization strategy ING RE has to face both threats as well as opportunities. For instance, demographic changes pose a major threat for many governments in mature markets. In the long run they will not be able to support collective pension schemes as their populations age. Forced both by aging and insufficient budgets, pension systems are moving from defined benefit schemes to defined contributions. This will imply individual responsibility and self-funding retirement with superannuation pools. This communal threat is, in fact, seen as an opportunity for an investment manager such as ING RE. Because real estate offers relatively high income yields with moderate risk, it could form a sensible part of a pensioner's retirement portfolio. The inadequacy of collective pension schemes, very urgent in Southern Europe, but in the long run also a valid issue for Western and Central Europe, presents therefore, a strong incentive for further internationalization.

Turning a threat into an opportunity has also occurred in other areas. In 2002 the ING Group was warned by ratings agencies and stock market analysts that its credit rating was not strong enough. As a result it had to sell assets to strengthen its balance sheet and regain its top-tier credit rating. ING RE was ordered to sell about €1 billion of real estate assets within a short, one-year time period, which normally would mean a considerable loss for the portfolio and in revenues. The RE management decided to launch a new fund, the Dutch residential fund. It offered this fund to several institutional investors with the promise that REIM itself would keep a modest share (10 percent) and would be in charge of the investment and asset management. In this way, ING RE succeeded in collecting

	Company	Total assets in $ bn[a]
1	ING Real Estate (REIM)	64.7
2	Prudential Real Estate Investors	45.8
3	RREEF/DB Real Estate	42.1
4	TIAA-CREF	41.6
5	Principal Real Estate Investors	29.5
6	UBS Realty Advisors	25.1
7	J.P. Morgan Fleming Asset Management	29.3
8	LaSalle Investment Management	19.5
9	CB Richard Ellis Investors	15.5
10	Morgan Stanley Investment Management	14.6
11	New York Life Investment Management	14.3

Figure 6.13 Top Real Estate investment managers, 2005.

Note
a Calculated by taxable and tax-exempt assests.

the €1 billion, thus satisfying the Executive Board of ING. At the same time, it secured a long-term fee income stream from the fund's management fees.

The internal reorganization was complemented by a number of well-planned takeovers in selected markets. Three regions were selected as being the most promising: North America; the UK; and Asia and Australia. Realization took some time (Figure 6.12). It required the careful selection of, and a diplomatic approach towards, the candidates, reaching agreement on many issues and, last but not least, a smooth transfer into the existing organization. With a focused approach and a commitment to local management teams REIM succeeded in the acquisition and integration of Barings, Houston and Saunders in the UK, Clarion Partners in the United States, Armstrong Jones in Australia and Rodamco Asia in the emerging markets of East Asia. The result of this enormous effort is reflected in the business' pole position at the top of the external rankings (Figure 6.13).

A promising future?

Many factors influence the development of the real estate industry. ING RE has to react to these in order to stay ahead. Future dynamics must be researched, analyzed and scrutinized, allowing the company to determine its strategy and to take action to serve its clients and encourage growth in their businesses.

Increasing vulnerability of the real estate market

Vulnerability has various aspects. The first one is the rise in interest rates since early 2005. This will make financing harder, jeopardizing the feasibility of projects and possibly lowering profit margins. Moreover, as far as the Netherlands is concerned there is the general expectation that the mortgage interest tax deduction will come to an end in the near future. This will impact on the housing market, and in turn, add to uncertainty for RED, although its share in the total profit is less than 10 percent.

The second aspect is the disappointing growth of the world economy, especially that of Western Europe. This has been the case since 2001, in particular in Belgium, the Netherlands, and Germany. Economic growth is one of the key fundamental drivers of real estate returns. When the economy is flourishing, so do real estate markets. It is fairly certain that the boom of the late 1990s will not return and that we will have to become accustomed to a slower pace of growth recovery after the early 2000 slump.

A third aspect of vulnerability is driven by new accounting regulations, and specifically, the effects of IFRS (International Financial Reporting Standards). Real assets and financial instruments need to be marked at market value, irrespective of which company or fund they belong to. It is highly probable that corporate real estate will be taken off corporate balance sheets because their return and balance sheet effects will be deemed undesirable. Apparently, the market value of corporate real estate will prove to be substantial, whereas attributed rent is traditionally modest as compared to market rents. As a shortened balance sheet with a high return is regarded as one of the key financial objectives of most commercial companies, disposing of corporate real estate will become a general trend. This will of course give rise to new opportunities as well, especially in Continental Europe where corporate real estate still dominates (Figure 6.14). Even retirement villages, hospitals and schools are emerging as new, suitable property types for institutional investment.

A fourth issue concerns the new financial and regulatory environment brought about by the spectacular collapse of large multinational corporations in recent years (for example, LTCM, Barings, Enron, Ahold/US Foodservice). In addition to IFRS there is the Sarbanes Oxley legislation in the USA, which applies to all public companies and their subsidiaries listed in the United States, as well as the Basel II banking regulations, to name just three. This all means increasing complexity and pressure on the efficiency of organizations. For the time being, privately held companies can escape from this as long as their financiers do not impose those rules as a *conditio sine qua non*.

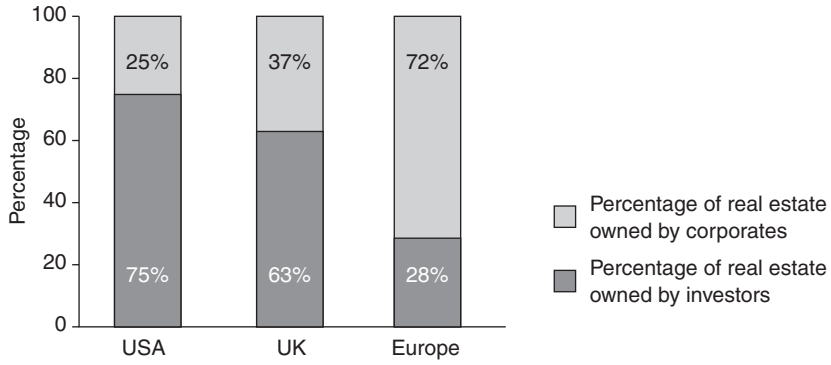

Figure 6.14 Corporate Real Estate in USA, UK and Continental Europe.

Critical success factors

Success for the real estate industry will depend on the development of some basic industry factors: benchmarking, transparency, liquidity and professionalism.

Benchmarking

Benchmarking for real estate investors has been progressing in Europe with the foundation of the Dutch ROZ-IPD index in 1995, following the example set by the UK, Ireland and Sweden, and by the National Council of Real Estate Investment Fiduciaries (NCREIF) in the USA and the National Property Council of Australia. That trend will continue and apply to other players as well. A benchmark for Dutch housing corporations is underway. The same applies for non-listed European funds such as the benchmarks being developed by INREV, the association of Investors in Non-listed Real Estate Vehicles. These indices will enable the management of companies to compare the performance for specific segments with their counterparts and with the general average.

Transparency

Transparency is the evidence of a mature market. It applies to aspects such as sharing knowledge, openness to compliance matters, the remuneration of management and the executive board, as well as the prevention and management of real and potential conflicts of interest. The more the exposure, the more there will be pressure for greater transparency.

Liquidity

In contrast to the stock market, private real estate markets remain relatively illiquid. The shift from direct to indirect investment has already brought about enhanced liquidity in the sector. The non-listed, private funds should and could, stimulate greater liquidity as well. It is expected that the need for increased liquidity will drive non-listed funds to go public over time, although at present there is little evidence of such a development in Continental Europe and the US.

Professionalism

Professionalism is a must for a mature industry. It will mean a stronger focus on permanent vocational training and an accepted code of conduct for all professionals including penalties for those who transgress. The leading firms are already setting the tone in this respect.

An increasingly dynamic market

In spite of a slowing of the world economy the real estate industry will continue to be a vibrant sector due to both external and internal changes. We are presented with a modern day paradox in today's real estate markets. On the one hand there

is a great deal of (perhaps too much?) capital available. When new funds are launched, subscriptions surpass the available supply. On the other hand there are insufficient real estate assets to satisfy the demand, leading to irrational pricing of inferior assets. Market regulators need to ensure that, through their licensing and permitting processes, they keep the market free from dishonest players.

In the development, financing and investment fields, new entrepreneurs will appear, as few markets are closed shops. Developers, financiers and investors from within and from abroad will enter, offering better deals, sharper yields, and a different approach. This will ensure that interested parties remain vigilant.

We see both an increasing and a decreasing scale in the industry. On the one hand, through increased efficiency and risk spreading, organizations will continue to amalgamate with colleagues and competitors, and small and medium-sized pension funds will continue to shift from direct to indirect real estate. On the other, companies will regularly consider their focus and rationalize fringe activities. The outsourcing of real estate functions by retail, logistics and financial corporations, is a reflection of this trend.

New markets offer attractive opportunities from a development, an investment and a financing viewpoint. New asset classes will be created. Real Estate Investment Trusts (listed investment funds) and Commercial Mortgage Backed Securities, well accepted in the USA and some EU countries, will continue to grow around the world. New countries will be entered and new products will be developed. Eastern Europe has already been 'invaded' by Austrian, Dutch, German, French, Israeli and Turkish firms, mostly connected with building conglomerates. Other western investors connected with financial institutions are looking for opportunities as well, but legislation and codes of conduct can prove to be barriers from time to time. Outside Europe emerging economies in Asia and South America show promise. ING RE has provided another example of its strategic thinking by the recent opening of offices in Stockholm and Tokyo to serve the Swedish and Japanese markets. Sweden has recently become an open market for foreign investors by allowing its own pension funds to invest abroad. For reasons of risk dispersal the latter are trying to dispose of part of their Swedish assets. Japan offers an enormous potential as a mature market for foreign investors looking for Asian opportunities with a different risk/yield ratio as compared with markets elsewhere on that continent.

In spite of physical and cultural differences, ING RE is convinced that, over time, emerging economies will increase in wealth and their property markets will benefit. With more disposable income there is more room for quality, reflected in better homes and retail provision. Mature economies offer possibilities more concerned with the presence of accumulated capital looking for profitable investments.

ING Real Estate in 2010: quo vadis*?*

Reacting to various external and internal forces is a major challenge. Which organizational model will prove most rewarding? The regional model, devolving

much of its power to the regional businesses on the four continents? Or the centralized model with power and authority concentrated at headquarters? Will ING RE still be a member of the ING family in five years time or not, because perhaps it might not be considered to fit into the Group's core business and strategy? Will RE continue to focus on its three existing core activities or will it widen its focus by in-sourcing property management on a larger scale, by participating in construction, in consulting, or in fee development? There is no shortage of options.

I consider the most likely scenario to be that ING RE will remain a part of the ING Group. The arguments for that opinion are the strong profit contribution to the Group's results, and the considerable and even increasing ability to create synergies. Synergy, being synonymous with cross-selling, brings more profit to the total company as the result of the spin-off of one business unit to other business units. Selling homes by RED and REIM means mortgages, insurance and other financial products for the other ING sections. Vice versa, the premiums of the insurance group and the further development of private-client products offer investment opportunities for ING RE. However, nothing is certain in a continually changing globalizing world. Another large Dutch real estate company, Bouwfonds MAB, was recently sold to Rabobank and SNS Bank by ABN/AMRO. This happened in spite of its good performance, albeit with a different risk profile than ING RE.

As to the organizational model, the regional one ('Business silo model') seems most probable, offering less strain on general management and more management freedom for the regional businesses. When targets and boundaries are clearly defined, people can be given responsibility for their own operations and have the authority necessary to manage them. However, that model will be constantly reviewed because the environment continues to change.

A widening focus is less plausible in my view, as the organization has little affinity with activities such as construction and property management, not to mention the fact that they are less profitable.

Undoubtedly, there are many threats to cope with. The internal ones are manifold, but in essence these can be reduced to one simple question: how to maintain the profitability of an entrepreneurial organization while at the same time keeping control and limiting bureaucratic tendencies so frequently seen in large organizations. Complacency, a 'stale' culture, and poor compliance can all be leading signals that need to be monitored carefully. Also, the loss of key executives can result in a potential drop in passion and drive, endangering performance and damaging morale.

The external threats are no less edifying. Competition is fierce and increasingly professional. Clients will continue to demand increased professionalism and transparency. So a client-based organization will be a must, and clients are demanding.

Acknowledgments

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7 The industrial structure and location behavior of the US, European, and Asian semiconductor industries

Tomokazu Arita and Philip McCann

Introduction

Much of the current literature on hi-tech developments within the electronics industry tends to focus on the spatial and organizational arrangements evident in innovative clusters such as Silicon Valley. There are, however, many very different forms of spatial organization which engender innovations within the semiconductor industry, and these variations depend on the particular sub-sector of that industry. In this contribution we discuss the case of US, European, and Asian semiconductor producers, analyzing data from over 100 semiconductor plants operated by over 50 firms located within the USA, Europe and Asia. In particular, we will focus on the firms undertaking the wafer manufacturing processes. As we will see, in order to discuss the geographical behavior of many parts of the semiconductor industry, it is necessary to consider not only organizational issues, but also the different sub-sectors within the industry. From these perspectives, many of the generalizations made about the semiconductor industry based on observations of Silicon Valley are seen to be rather inappropriate.

This chapter is organized as follows. In section two we review the types of arguments frequently associated with discussions about the spatial organization of the semiconductor industry and spatial patterns of innovation. In section three, we describe in detail the structure and organization and activities which take place within the semiconductor industry, focusing on the three different components of the industry. As we will see, many of the issues raised in section two only relate to one sub-sector of the electronics industry. The two other parts of the industry have been almost entirely ignored in the literature. In section four we discuss our methodological approach, which involves using cluster analysis to group semiconductor plants according to their technological trajectories and activities. This is done by using detailed indices of product innovations within the wafer-processing sub-sector of the industry. We then use this information to construct diagrammatic representations of the spatial and technological structure of the global industry in each of the three super-regions of the US, EU and Asia, over the period 1995 to 2004. This allows us to observe trends in the spatial and technological structure of the global industry over this period. This exercise is then repeated in the case of four individual global semiconductor producers, in

order to help us identify how these global changes are manifesting themselves at the level of the individual corporate firm. In order to account for these findings, in section five we explore the organizational issues governing the spatial patterns of product innovations within the semiconductor industry.

Geography and the semiconductor industry

Over the last decade there has been a significant growth in interest in the geographical behavior of firms in the electronics and semiconductor industry (Oakey and Cooper 1989; Saxenian 1994; Almeida and Kogut 1997; Kittiprapas and McCann 1999). There are a variety of interrelated reasons for this recent research interest, which can broadly be grouped into three themes. The first theme is a general renewal of academic interest in geography and industrial location issues per se. This has been encouraged in part by the continuing process of economic integration in many parts of the world, such as the EU, NAFTA, ASEAN and MERCOSUR, as well as by the writings of certain influential commentators (Porter 1990; Krugman 1991). The second theme is a growth in interest in the particular characteristics of the electronics and semiconductor industry itself. The reason for this is partly that the electronics industry, and in particular the semiconductor part of the industry, is generally regarded as an industry which is both highly successful, and also at the forefront of human technological development (Piore and Sabel 1984; Best 1990). While individual consumer electronics subsectors within the electronics industry are highly cyclical, the semiconductor and microchip production industry is rather less volatile because this sector provides the basic technological developments and inputs for all of these other imperfectly correlated consumer electronics sectors.

At the same time, innovations in the semiconductor industry are often embodied into the production technology of other non-electronics industries, thereby generating induced productivity effects. Therefore, on account of this process of the onward transmission and embodiment of new technologies from the semiconductor industry into other electronics and non-electronics industries, it is implicitly assumed by many commentators that observation of the behavior of the electronics and semiconductor sector may also provide clues as to the future technological trajectory of other industrial sectors in general. A third reason for the growth in interest in the electronics and semiconductor industry has been the apparent tendency of this industry to cluster in particular locations such as Silicon Valley (Scott 1988, 1991; Saxenian 1994; Angel 1991). The result of this behavior is that certain areas appear to exhibit high growth performance in this sector, while other areas have been unable to develop any equivalent industry base (*The Economist* 1997). This has lead to concern among public policy planners in various countries and regions (Castells and Hall 1994) to understand the economic–environmental conditions under which such industrial clusters are fostered, in the hope of replicating these conditions elsewhere.

In order to generate such an array of new product developments, these combined features are assumed to imply that the semiconductor industry will also

tend to be at the forefront of organizational developments (Eisenhardt and Schoonhaven 1990) and production process innovations (McCann and Fingleton 1996). Therefore, observation of the current organizational behavior of the semiconductor industry may point towards the future behavior of industry in general, as other industrial sectors attempt to imitate the successful organization and production innovations exhibited by this sector. Indeed, much of the current thinking about the optimal relationship between industry organization and geography, has been developed on the basis of observations of the large numbers of small and medium-sized semiconductor firms in locations such as Silicon Valley (Saxenian 1994; Scott 1988, 1991; Larsen and Rogers 1984). In many circles (Keeble and Wilkinson 1999) it has now become almost a matter of faith that many small and medium sized firms clustered at the same location will guarantee the maximum levels of product innovation (Aydalot and Keeble 1988; Saxenian 1994). The logic behind this argument is that such small firms are assumed to find it not only relatively easy to share information and to benefit from local information spillovers, but also to reconfigure their organizational and input-output linkages appropriately as new product developments occur. Empirical support for these arguments, which appears to confirm the local presence of industry-specific informal information spillovers, comes primarily from patent citation counts (Jaffe *et al.* 1993; Almeida and Kogut 1997). Meanwhile, these observations of the high growth performance of small firm clusters such as Silicon Valley (Saxenian 1994), Cambridge UK (Castells and Hall 1994) and Ile de France (Scott 1988), are contrasted with the relatively weaker growth performance of the large-firm parts of the electronics industry (Saxenian 1994). Explanations for the apparent difference in the growth performance of the small- and large-firm sectors are based on the assumptions that the organizational rigidity and well-defined boundaries of large hierarchical firms limit the ability of large firms to respond appropriately to the rapid market changes of these new industries (Saxenian 1994). Small-firm clusters are therefore perceived to represent the future optimal spatial and organizational arrangements in industries with very short product life cycles (Piore and Sabel 1984; Porter 1990; Saxenian 1994).

Such arguments, however, are based on very strong assumptions about the relationship between information generation, knowledge exchanges and geographical scales. Following Marshall (1920) and Vernon (1960), this clustering argument is based on the assumption that knowledge spillovers are generated and realized specifically at the geographical scale of the local urban area. Urban clustering is therefore assumed to be advantageous for industries which exhibit very short product life-cycles (Vernon 1966, 1979). Yet recent research within the electronics and semiconductor industry (Suarez-Villa and Rama 1996; Suarez-Villa and Karlsson 1996; Wever and Stam 1999) suggests that agglomeration linkages, and the formal outcomes of any informal knowledge spillovers (Audretsch and Feldman 1996; Suarez-Villa and Walrod 1997; Arita and McCann 2000) extend over much larger spatial scales than that of the individual urban metropolitan area. In the case of multi-plant multinational firms (Cantwell and Iammarino 2000), any such agglomeration effects may even operate over

spatial scales larger than individual countries. These empirical observations therefore cast doubt on the assumed importance of specifically local inter-firm knowledge spillovers as a source of competitive advantage (Porter 1990, 1998) within the electronics industry, and point rather more to the role of labor market hysteresis as a possible rationale for industrial clustering (Angel 1991; Arita and McCann 2000). More importantly, however, these observations also cast doubt on the whole hypothesis that small-firm clusters represent something of an ideal spatial and organizational arrangement ensuring the maximization of innovation, either for the semiconductor industry or any other innovative industry facing short product life-cycles. Moreover, the fact that among the large-firm sectors there are winners and losers, suggests that similar arguments also hold for large firms. Without detailed industry and firm-level information regarding the relationship between firm innovation, entrepreneurship, and decision-making structures and processes, we must be cautious about over-generalizing about the optimal structure, organizational and geographical behavior of the industry.

Part of the problem here is that so much of the literature which purports to show a high correlation between spatial industrial clustering, small- and medium-sized firms and short product life-cycles, has tended to focus on the spatial and organizational issues of only one particular part of the global electronics and semiconductor industry. The electronics industry as a whole is comprised of many sub-sectors ranging from the semiconductor industry to the consumer electronics sectors, and the semiconductor industry itself is comprised of three quite distinct sub-sectors, defined in terms of the nature of the activities and the transactions they undertake. Observations of Silicon Valley and the 'Cambridge Phenomenon' (Castells and Hall 1994) are actually primarily observations of groups of small firms whose activities correspond solely to only one of the three sub-sectors within the semiconductor industry, namely the 'Design' sector. Yet, there are also many large vertically-integrated firms in this same sub-sector of the industry which are almost entirely ignored by the literature. Similarly, the other two parts of the semiconductor industry, the 'Wafer Process' and the 'Wafer Manufacturing' sectors, are characterized almost entirely by vertically-integrated wafer manufacturing and assembly firms. The spatial and organizational arrangements of the vertically-integrated parts of the semiconductor industry are completely different to the small semiconductor firms (Arita and McCann 2002a,b,c, 2004, 2006; McCann *et al.* 2002). The relationships between geography and technology within the semiconductor industry must therefore be considered individually for each of the three sub-sectors of the industry. Only in this way can we assess whether or not the types of spatial and organizational arrangements of Silicon Valley are more generally applicable to the other parts of the industry.

Firm location behavior within the semiconductor industry is often the result of different, and sometimes rather conflicting objectives. Rarely is the geographical result in reality a Silicon Valley-style spatial clustering of highly innovative small firms generating very short product life-cycle outputs. The fact that this is a rare phenomenon is partly why such high-technology clusters are of interest, but also it is why generalizations based on such observations should be avoided.

In order to appreciate these points we must first discuss the nature and organization of the semiconductor industry itself.

The organization of the semiconductor industry

In order to understand the organization of the semiconductor industry it is first necessary to understand the different activities which take place within the industry (Nishimura 1995, 1999). As we see in Figure 7.1, the different activities in the semiconductor industry can be compared more or less directly with the different activities which take place in the book publishing industry.

The first stage of the production process is the silicon chip design stage, in which the functional logic of the microchip, and three-dimensional circuit layout of transistors and capacitors within the silicon wafer is determined. This activity is carried out primarily using computer aided design (CAD) systems. This stage of the process can be compared with the planning, editing and layout stages of the book publishing process. The result of this stage is the production of masks, which are the three-dimensional templates of the chip. These Integrated Circuit (IC) design activities are undertaken both by the large number of small specialized IC design firms, and by large vertically-integrated semiconductor producing firms. The activities are provided for by specialist CAD vendor firms which provide customized design software for the designers. At the same time, there has also emerged recently a sub-sector of the industry which is concerned only with the construction of intellectual property rights relating to IC designs. These firms design only logic functions without circuit layouts, and act in

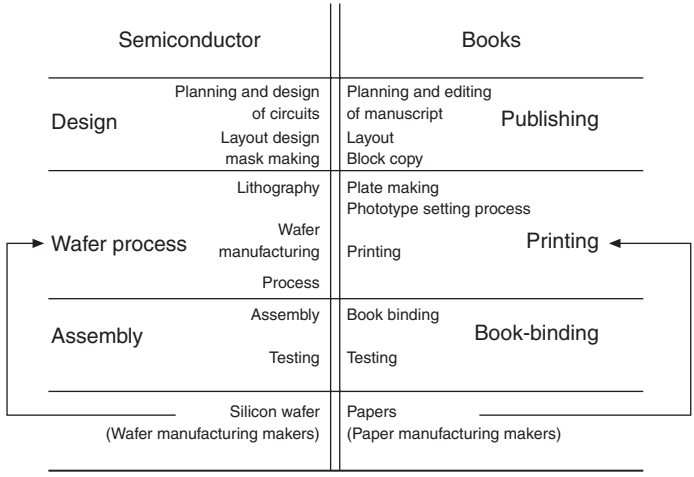

Figure 7.1 Production process of semiconductor: comparison with book publishing and printing.

consultation with both small and large IC design firms in order to ensure that patents are granted for the new chip protocol designs. The number of firms involved in this stage of the production process has grown enormously during the last two decades, with small design-oriented firms tending to be clustered in locations such as Silicon Valley. It is this part of the industry which has received so much academic attention. Yet there are still very many IC design activities which take place within vertically-integrated semiconductor producers, both inside and outside of Silicon Valley, with locations in other parts of the US, as well as in both Europe and Asia. These are the types of firms which we will investigate in this paper, with our examples being Intel, Texas Instruments, Philips, and Toshiba. Other such firms are NEC, Mitsubishi (Arita and McCann 2000), Sanyo, OKI, Motorola (Arita and McCann 2004), Sony, Sharp, Rohm (Arita and McCann 2002c), Fujitsu (Arita and McCann 2002b), Matsushita and Hitachi (Arita and McCann 2006).

The second stage of the process is the wafer process, the technology of which is determined by materials science. At this stage of the production process the circular silicon wafers, produced by specialist chemicals firms, are subjected to lithography. This is a process whereby ultra-violet light is used to illuminate certain parts of the wafer, according to the mask design, in order to bring about chemical changes within certain parts of the wafer. The wafers are then etched and treated, thereby removing the parts of the wafer subjected to the lithography. After as many as fifteen stages of lithography and treating, the result is a three-dimensional silicon structure. This stage of the semiconductor production process can be compared to the plate-making and phototypesetting process which takes place in the book printing industry.

The third stage of the wafer production process is that of the wafer assembly process. Here, the circular wafers which have been subjected to lithography and treating are extracted and dissected into many small square chips, each of which is then framed in plastic or ceramics for insulation and protection. This stage of the chip production process is the equivalent of the book binding process within the book publishing industry. The level of technology of the second and third stages of the wafer and assembly process is defined in terms of the minimum processing rule and the wafer size. The minimum processing rule is the definition of the level of miniaturization of the technology, and the wafer size is the size of the individual silicon wafers which can be produced and then dissected to produce chips. The smaller is the minimum processing rule and the greater is the wafer size, the more advanced is the technological generation. In terms of technology, the second and third stages of the semiconductor production process are just as important to the semiconductor industry as the first stage, and the product life-cycles are just as short. Different minimum processing rules and wafer sizes represent completely different generations of technology.

The majority of these second and third stage activities tend to be carried out by two groups of firms in more geographically dispersed locations outside of the US (Arita and McCann 2002a,b,c, 2006), and this may explain why these sectors have received relatively little academic interest. The first group of firms undertaking

the wafer and assembly processes are the vertically-integrated semiconductor producers such as Intel and NEC, which undertake all of their own chip design and manufacturing activities. Firms such as Nippon Electronics Company (NEC), Philips, Fujitsu, and Motorola, which also manufacture finished goods, produce for internal demand as well as for other consumer firms, whereas firms such as Intel produce entirely for external customers. The common feature of the production of these firms is high volumes. The second group of firms undertaking the wafer and assembly processes are the specialist East Asian sub-contracting IC manufacturing firms. These are primarily Taiwanese (*Business Week* 2005), Korean, and Japanese firms. They are comprised of a small number of specialist large firms, such as the Taiwan Semiconductor Manufacturing Company, which have both the capacity to produce ICs in large numbers, and also the technology to allow both the high degree production specificity and flexibility required to manufacture custom-designed ICs. The second and third stages of the semiconductor manufacturing process are at least as technologically advanced as the first stage, requiring enormous physical, financial and human capital inputs. Therefore, simple observations based primarily on contrasts between Silicon Valley and other parts of the semiconductor industry (Saxenian 1994) are of very limited analytical use for more general industry-organization discussions.

Having discussed the nature of the semiconductor industry, in the next section we will look at the relationship between technological change and spatial industrial organization in the case of the semiconductor manufacturers who are located in the USA and Europe. In particular we will focus on those firms which carry out the second- and third-stage wafer process and assembly activities. The object of this exercise is to assess the extent to which orthodox product life-cycle approaches can broadly account for the technology–space relationship.

Data and analysis

The data we employ comes from the Strategic Marketing Association: ED Research (1995, 2004) compendium of the semiconductor industry, and provides individual production line data for every semiconductor firm located within the USA, Europe and Asia, for 1995 and 2004. The total number of such firms and production lines, in terms of the equivalent number of 6-inch (150 mm) wafers produced in each region are described in Table 7.1.

In terms of general establishment data, the SMA-EDR compendium provides us with the location details of each plant. For technology indices, the SMA-EDR provides us with information on the minimum processing rule and the wafer size of the products produced at each location. In the case of the minimum processing rule, a smaller size represents a newer vintage of technology, whereas in the case of the wafer size, a larger size represents a newer technology. SMA-EDR also provides us with details of the wafer processing capacity of the plant in terms of the total number of silicon wafers produced annually. As far as we are aware, such detailed semiconductor technology data has never before been employed by other applied economists.

Table 7.1 The semiconductor industry in the world in 1995 and 2004

	US	*EU*	*Asia*	*Japan*	*Rest of Asia*
1995					
Total firms	153	56	144	47	100
Total production lines	353	119	439	276	163
Production fab	193	99	344	211	133
R&D pilot	160	20	95	65	30
Total production capacities[a]	2,855,137	1,447,853	5,969,949	3,950,919	2,019,030
2004					
Total firms	110	66	153	67	88
Total production lines	198	123	445	277	168
Production fab	118	98	349	220	129
R&D pilot	80	25	96	57	42
Total production capacities[a]	3,531,655	2,509,293	10,737,574	4,575,497	6,162,078

Note
a Total production capacities (6-inch wafers equivalent).

In order to test for an association between the level of geographical peripherality and the vintage of technology implemented, we employ both an empirical approach and a diagrammatic approach.

The first part of our analysis is to observe broad scale changes in the spatial evolution of the industry. Figures 7.2a and 7.2b describe the 1995 and the 2004 distributions of wafer production lines and R&D plants of semiconductor firms in the USA; Figures 7.3a and 7.3b describe the 1995 and 2004 distributions of wafer production lines and R&D plants of semiconductor firms in the EU; and Figures 7.4a and 7.4b do the same for semiconductor firms in Asia. The second part of our analysis is to observe changes in the spatial evolution of individual firms within the industry. Here we take four individual cases, and once again we observe the changes over time in their spatial patterns of technological development. The cases we take are Intel (US), Texas Instruments (US), Philips (Netherlands), and Toshiba (Japan). Figures 7.5a and 7.5b describe the 1995 and 2004 distributions of wafer production lines and R&D plants of Intel. In Figures 7.6, 7.7 and 7.8 the same patterns are given for Texas Instruments, Philips, and Toshiba.

In situations such as this, where there are multiple pieces of data for each observation, and where observations are produced in very different contexts, a cluster-analysis methodology (Everitt *et al.* 2001) is often used within social science research. This is a technique which uses linear programming algorithms to group the observations into groupings in which certain types of data outcomes are associated. As such, groupings of characteristics which are relatively correlated with each other are used to classify observations. This allows us to identify distinct groupings of observation types, which share common characteristics, from within a larger sample. We first use a cluster-analysis in order to classify all individual production lines into four different classes according to their levels

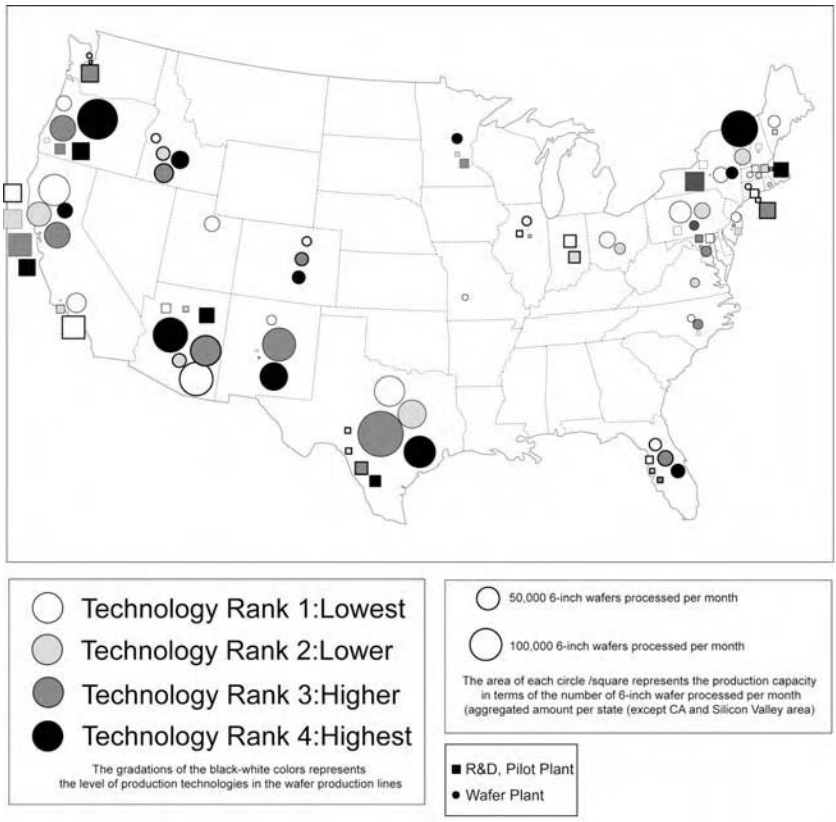

Figure 7.2a US semiconductor plants: distribution of wafer production lines, 1995.

of technology, by combining the two indices, the minimum processing rule and the wafer size. Secondly, once we have identified the individual clusters, we split these different technology groupings according to the levels of production capacity of each production line, in terms of the total number of 200 mm silicon wafers or equivalent which are produced monthly. In each of the following figures, each circle represents an individual production line. The technology class of the production technology is described by the levels of shading. The black represents the more advanced level of technology and white represents the least advanced level. Finally, the level of the production capacity is described by the size of each circle. In addition, each figure also contains information about the pilot and R&D plants, which are depicted here with squares. These pilot and R&D plants are the plants in which the production line is directly allied to a R&D facility, rather than being simply a dedicated stand-alone production facility. Once again, the level of technology is depicted using shading, and the scale of the R&D facility is depicted according to the size of the square.

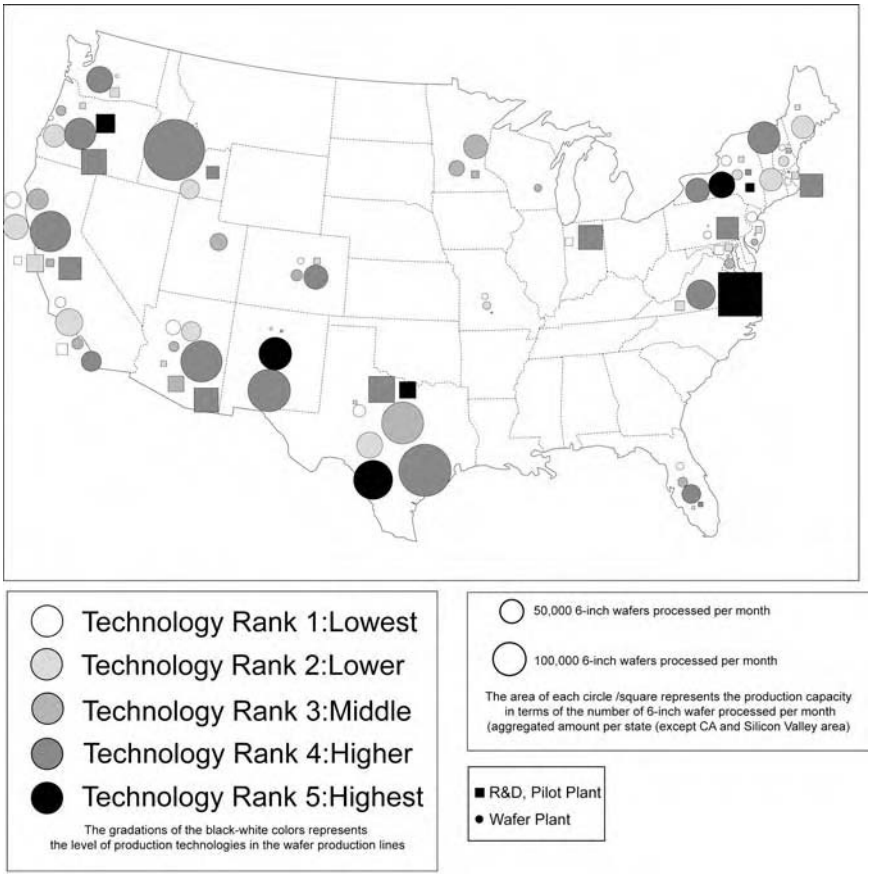

Figure 7.2b US semiconductor plants: distribution of wafer production lines, 2004.

The cluster-analysis for 1995 data produces four distinct groupings of technology, whereas the 2004 data produces five groupings. Group 4 technology, which is the highest level in 1995, corresponds to approximately group 3 technology in 2004, above which there are two new levels. This indicates the level of technological development over this period. These six global-region diagrams and the eight firm diagrams allow us to observe the spatial evolution and the changes in the spatial patterns of technology of both the overall semiconductor manufacturing industry and also individual firms within the industry over the last decade.

Analysis and discussion

With our technology, plant and spatial data we can now begin to investigate the relationship between geography and the implementation of technology within the wafer processing component of the semiconductor industry. Following either

product-cycle (Vernon 1966), stage theory (Johansson and Vahlne 1977), or orthodox international business arguments (Dunning 1977), applied to either regional (Vernon 1960; Markusen 1985) or international locations (Vernon 1966, 1979; Dunning 1977, 1988, 1992), we can hypothesize that different generations of semiconductor technologies will be spatially differentiated within the semiconductor industry. In particular, on the basis of a simple product life cycle model (Vernon 1960; Markusen 1985), we would expect that the most recently developed products requiring the most advanced, miniaturized and newer production technologies, will tend to be implemented in locations which are traditionally regarded as being central to the semiconductor industry, such as Silicon Valley, Tokyo, and The Netherlands. On the other hand, more mature vintages of product and process technologies would be expected to be implemented in more geographically peripheral locations exhibiting lower wage rates, relative to these central locations. Such locations would typically be in less-developed lower-wage regions, with the organizational control still being maintained in the advanced central locations. From the product life-cycle perspective, the reason for this is that less advanced technology products will have become more standardized and therefore easier to mass produce than more recent higher technology products. As such, the human capital inputs required to produce more standardized technologies will be less. Moreover, increasing production quantities also implies the need for larger plants with larger land and labor requirements. In a product-cycle framework, the combination of these two effects will therefore provide an incentive for such plants to be located in lower wage, lower skill, and lower land price regions. Although there are both subtle and complex variations in how the international business literature treats geography (McCann and Mudambi 2004, 2005), depending primarily on the treatment of both organizational and transaction costs issues, the overall relationships concerning the expected pattern of technology and geography can still be summarized by this simple centre–periphery type description. As such, if this argument is correct, then we ought to observe a strong positive correlation between increasingly mature vintages of a technology, the location of the product and process technology implementation, and the level of geographic peripherality of the establishment.

We recall from our above description of technology indices, that the more advanced generations of technology are represented, either by smaller minimum processing rules, or by larger wafer sizes. Therefore, using this information, it should be possible to identify the extent to which these simple product life-cycle arguments hold. If these arguments hold, then we would expect that core advanced technologies will be produced in central core locations, while more basic mature vintage technologies will be produced in more geographically peripheral locations.

If we consider Figures 7.2, 7.3 and 7.4 we see that there is very little evidence of any simple overall global center–periphery geography within the semiconductor industry. In particular, although the US is the origin of many of the early innovations and technological developments within the industry, over the period 1995–2004 the relative contribution of both R&D, and also wafer production of both the EU and Asia, has increased significantly, and the relative dominance of

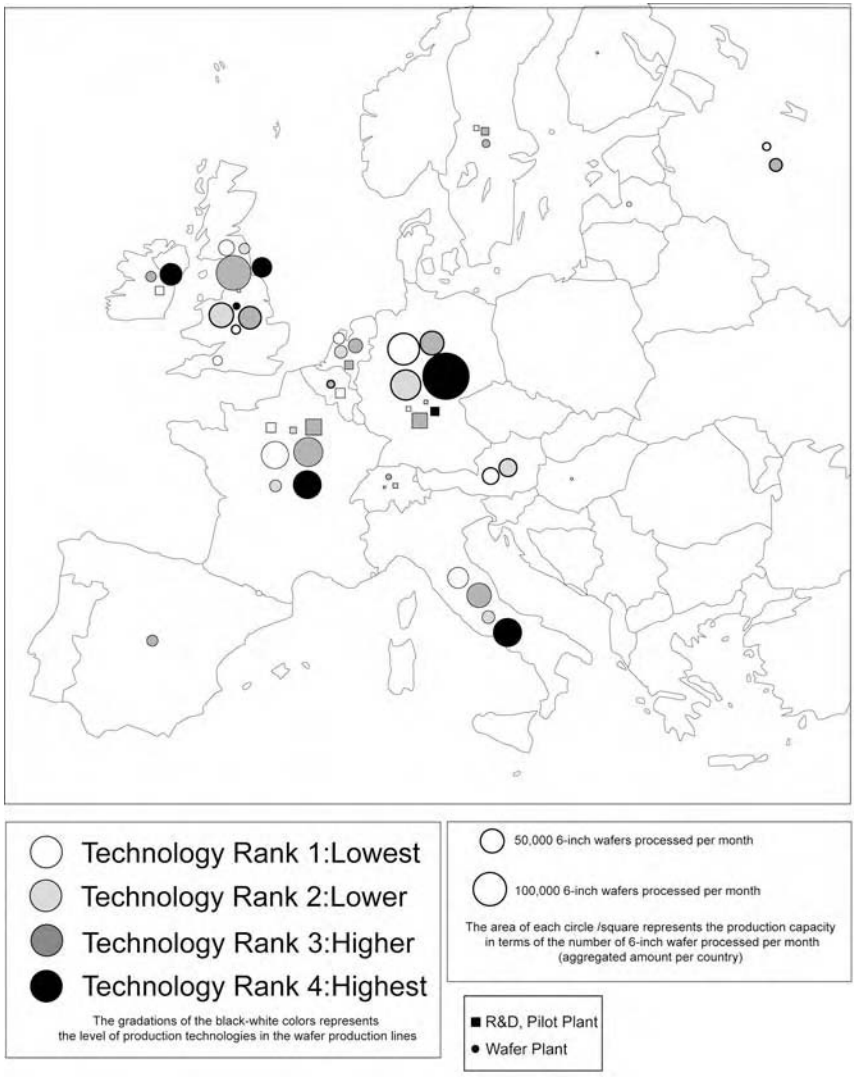

Figure 7.3a EU semiconductor plants: distribution of wafer production lines, 1995.

the US appears to have disappeared. As such, there is no consistent simple center–periphery logic to the industry on a global scale.

At the same time, there have also been some significant changes in the contribution and distribution of activities within each of these three super global regions. In the case of the US, we see from Figures 7.2a and 7.2b that the production capacity, the levels of technology, and the R&D capacity of the US semiconductor industry, have all increased significantly over the period 1995–2004. Since 1995

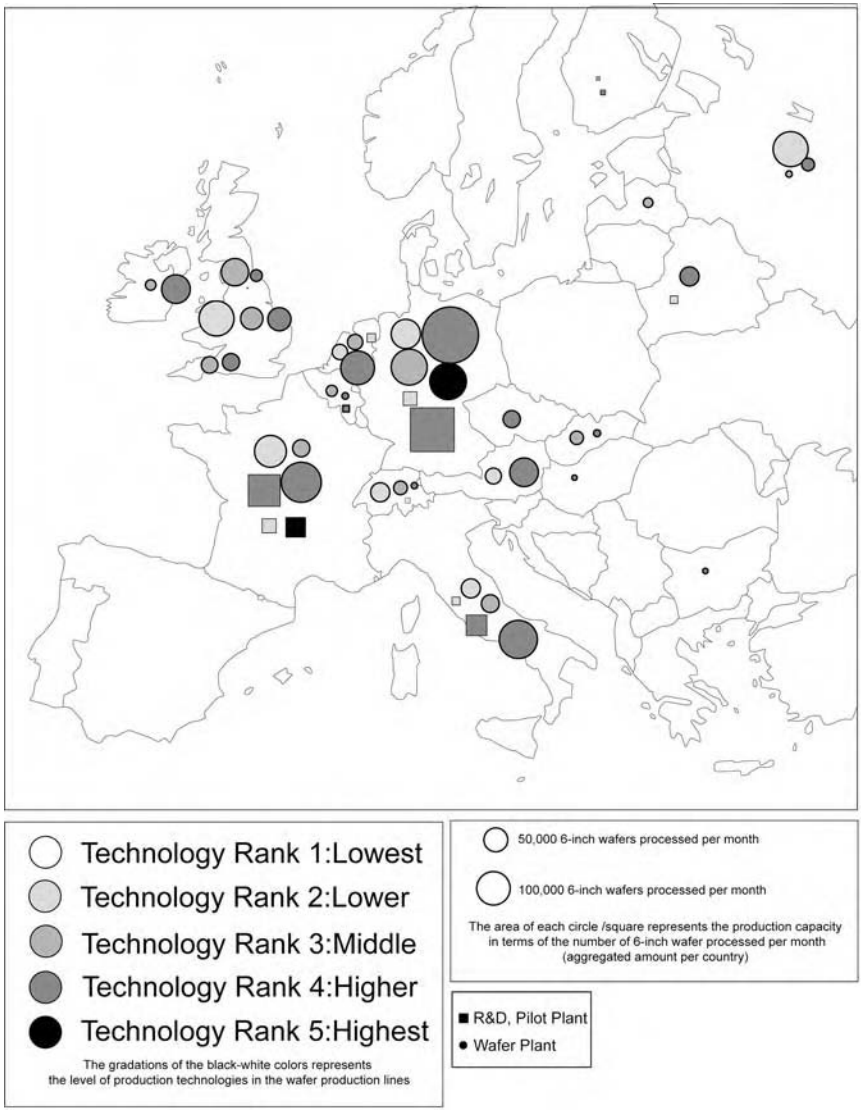

Figure 7.3b EU semiconductor plants: distribution of wafer production lines, 2004.

there has been a relative shift away from the dominance of the West Coast. Although places such as Silicon Valley, California, Oregon, Texas, and New York State, still seem to be core places in terms of the industry's sub-regional clusters, other areas have also developed. In particular, areas in the non-coastal Western states appear to have grown in importance, along with many of the North Eastern states, while the industry has almost no presence in the mid-Western states. In

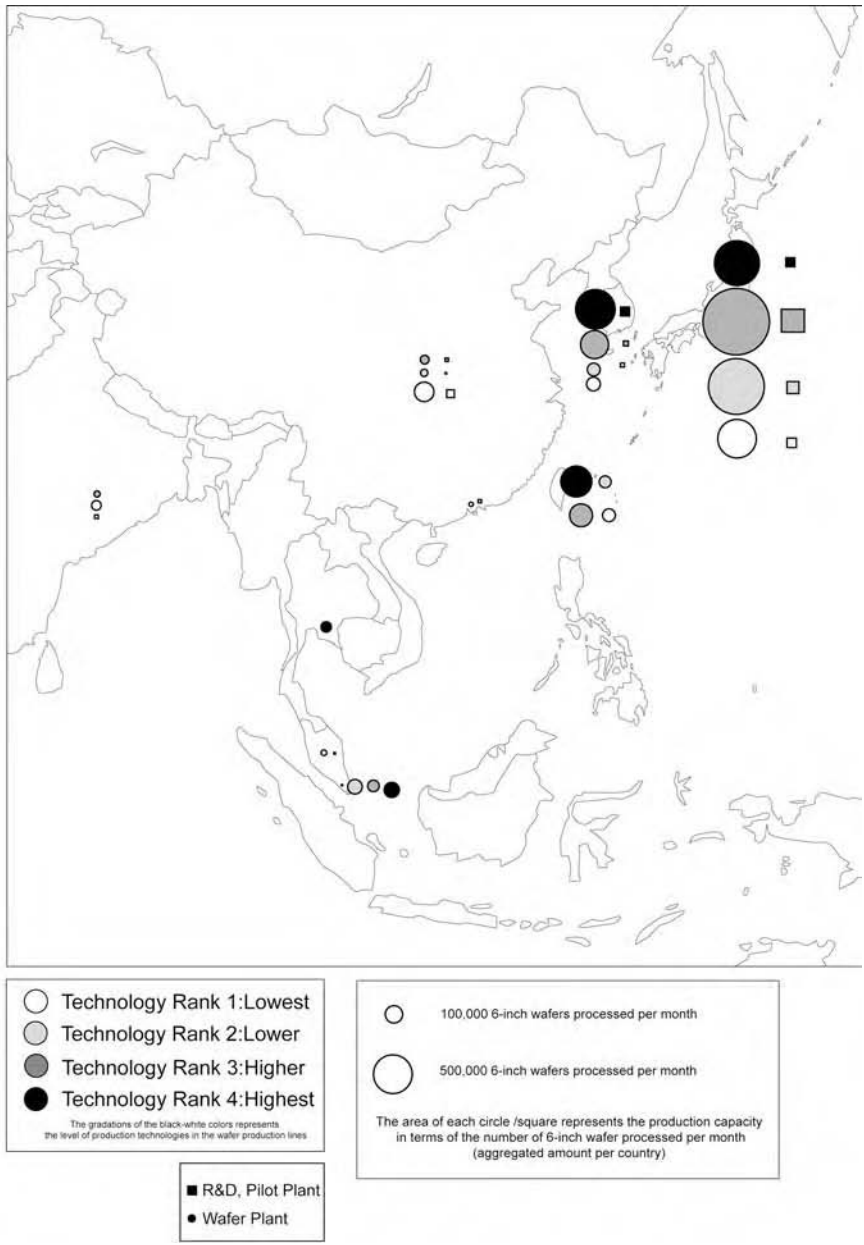

Figure 7.4a Asia semiconductor plants: distribution of wafer production lines, 1995.

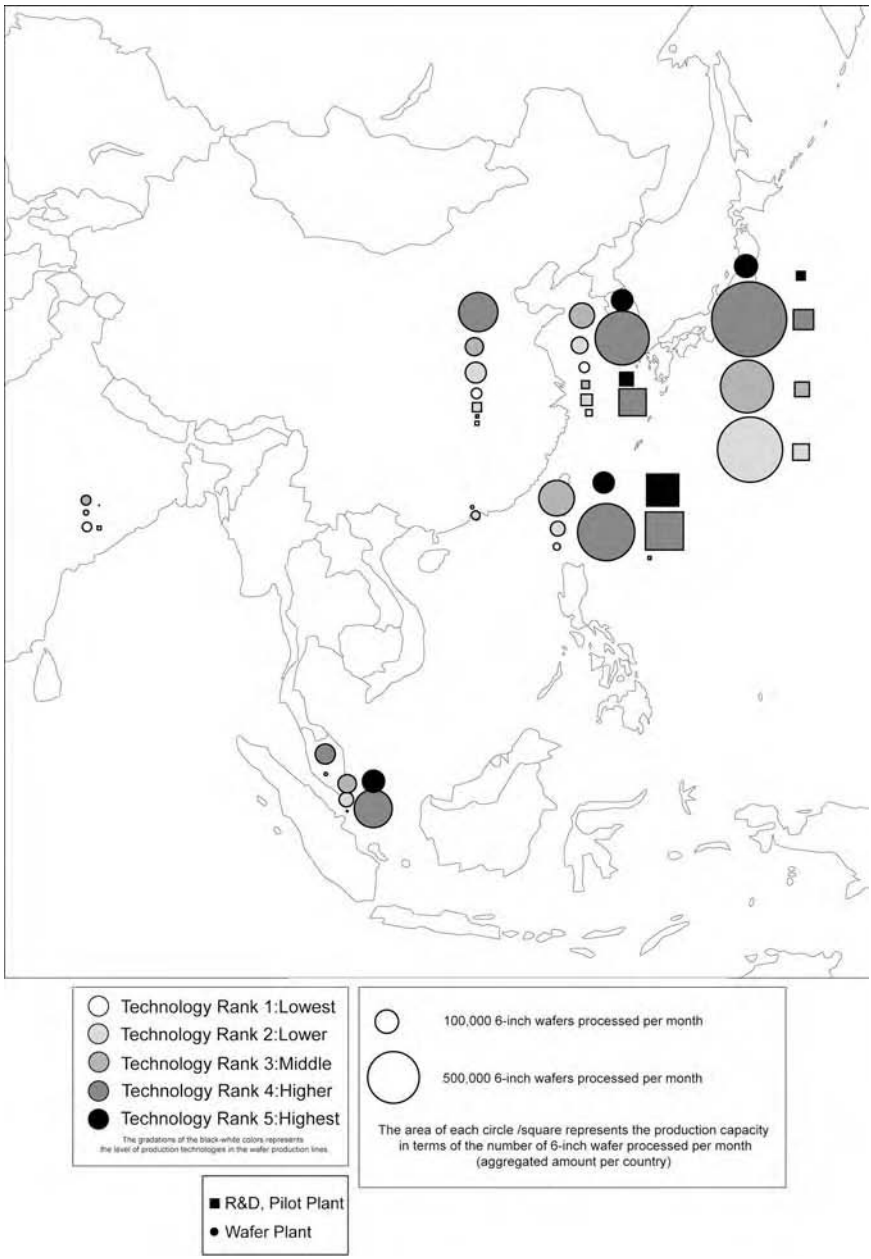

Figure 7.4b Asia semiconductor plants: distribution of wafer production lines, 2004.

addition, there has been something of a qualitative shift in the distribution of technologies, in that these more newly-emerging states are the ones which combine both concentrations of production lines along with lines of the latest technology. California is therefore no longer dominant in these technologies.

If we consider Figures 7.3a and 7.3b we see that the production capacity, the levels of technology, and the R&D capacity of the EU semiconductor industry, have all increased significantly since 1995. As such, these features are similar to the case of the US. In addition, as with the case of the US, there has also been something of a shift in the relative contribution and distribution of activities even within the European super-region. In particular, there has been a general steady drift eastwards of many semiconductor activities, whereby EU semiconductor producers have invested in production facilities and in some limited R&D facilities in former transition and communist countries. Importantly, however, in the case of many of these Eastern European investments, although they are still relatively small in comparison with those located in Western Europe, they are in relatively new technologies, and not in old or mature vintage technologies.

From Figures 7.4a and 7.4b we see that the production capacity, the levels of technology, and the R&D capacity of the Asian semiconductor industry have all increased very significantly over this period too. As such, these features are similar to the cases of both the US and the EU. Once again, and similar again to the case of both the US and the EU, there has been something of a shift in the relative contribution and distribution of activities even within the East Asian super-region. In particular, while Japan remains very strong in the semiconductor industry, as was mentioned earlier, firstly Taiwan, and secondly South Korea, have both recently emerged as very significant global industry players, with enormous R&D capabilities, as well as very high levels of production capacity (*Business Week* 2005).

While these figures indicate that there has been a general geographical spreading of the global semiconductor industry, our analysis also demonstrates that there is no simple or consistent centre–periphery logic to the industry on a global scale of a type implied by product-cycle arguments (Markusen 1985). On the contrary, the locations' characteristics of the semiconductor production lines and R&D facilities are heterogeneous and no clear association can be observed between the level of geographical peripherality and the vintage of technology implemented. Therefore, it may be that the spatial patterns of technological implementation within the semiconductor industry are determined primarily by factors which are not included in orthodox product-cycle type specification. Such factors may include organizational and transaction costs issues. Following this argument, a possible alternative explanation for our lack of support for the product-cycle model within the global semiconductor industry is that the wafer-processing activities of the industry are comprised almost entirely of plants which are part of vertically-integrated hierarchical organizations, and the relationship between technology and geography in this industry depends on the spatial organization of these vertically-integrated firm hierarchies. These are points that we will now consider with the help of Figures 7.5a to 7.8b, which provide details as to the location of the semiconductor wafer manufacturing R&D and production facilities of four

major global semiconductor producers, namely Intel, Texas Instruments, Philips, and Toshiba. These diagrams allow us to observe how these firms have developed their spatial patterns of activities over time, and therefore to consider the types or organizational or transaction costs issues which may be pertinent to their spatial organizational behavior.

Figures 7.5a and 7.5b provide us with information about the geographical organization of Intel. Intel is a dedicated semiconductor microchip firm, based in Silicon Valley. Within the USA, Intel has several plants undertaking combined semiconductor R&D and wafer-processing activities in the area surrounding the Silicon Valley location of its headquarters, as well as similar facilities in Oregon. In addition, Intel also has wafer manufacturing facilities in the South Western states of Arizona and New Mexico. Over the last decade, however, Intel has rationalized the number of its combined R&D and production facilities on the West Coast, while at the same time slightly increasing the number of its wafer manufacturing facilities in other US states outside of either the South West or the West Coast. In terms of international investments, Intel has retrenched over the last decade, in the sense that as well closing its Japanese operations, its remaining overseas investments no longer produce the most advanced levels of technologies, as was the case in 1995.

Figures 7.6a and 7.6b provide us with information about Texas Instruments, a multi-product electronics firm, of which one of its major activities is the production of wafers and microchips. From a spatial perspective, Texas Instruments is a much more tightly controlled organization than Intel, in that all of its domestic semiconductor wafer production and R&D facilities are within the state of Texas, and this has continued to be the case over the last decade. In terms of overseas investment, as with Intel, Texas Instruments has slightly retrenched its activities, in that as well closing its Italian operations, none of its remaining overseas investments produces the most advanced levels of technologies, as was the case in 1995.

The spatial-organizational patterns of both Intel and Texas Instruments are similar to that of other US vertically-integrated semiconductor producers such as Motorola, National Semiconductor and Advanced Micro Devices (Arita and Fujita 2001; Arita and McCann 2002a,b,c, 2004, 2006). Within these US firms, there are often a large number of locations undertaking production activities. Almost all of these activities are either in combined R&D and wafer-processing activities, i.e., the first and second stages of the production process, or only in the wafer-processing activities, i.e. in the second stage of the production process. These activities are often clustered together around the headquarters locations of the companies, but such clusters are not necessarily exclusively in these areas. Moreover, within the USA, not all plants are located in spatial clusters, but are often individually sited in a range of locations. Whether or not a firm has an R&D facility in Silicon Valley depends largely on the founding location of the firm. In terms of the overseas operations of the US firms, significant proportions of their wafer-processing activities, as well as all of their wafer-assembly activities, take place outside of the US. However, the evidence here, suggests that the period

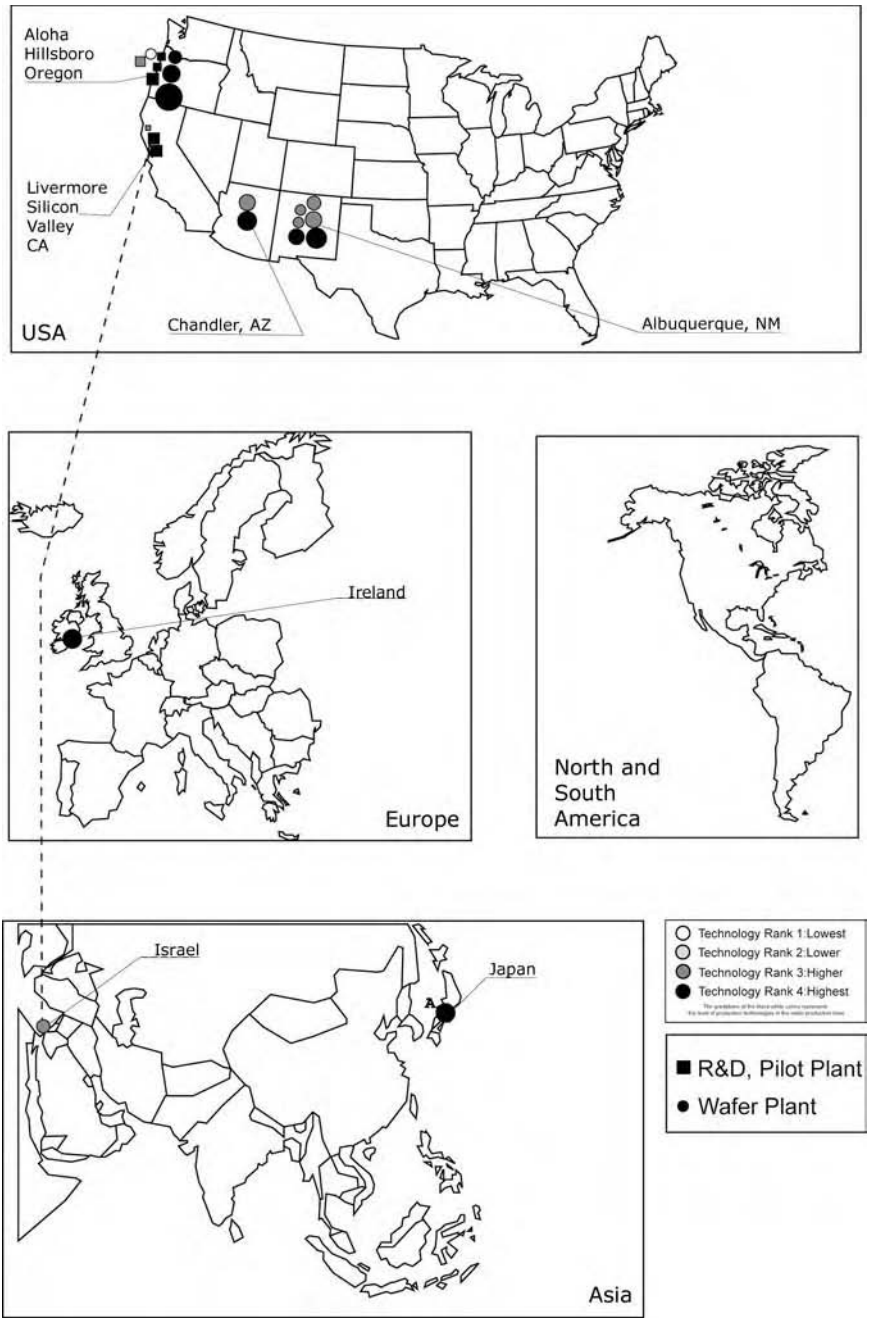

Figure 7.5a Semiconductor wafer production lines: Intel, 1995.

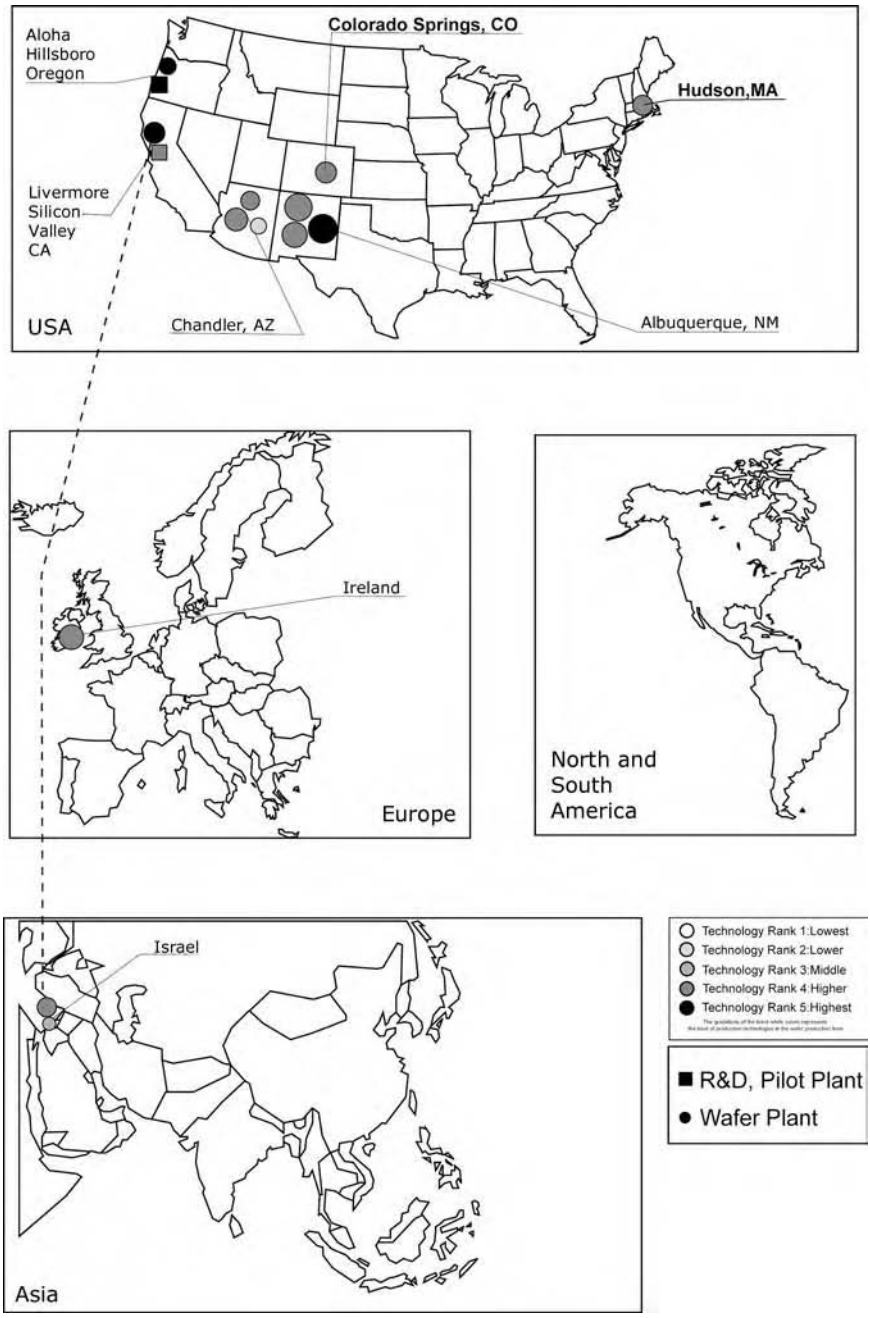

Figure 7.5b Semiconductor wafer production lines: Intel, 2004.

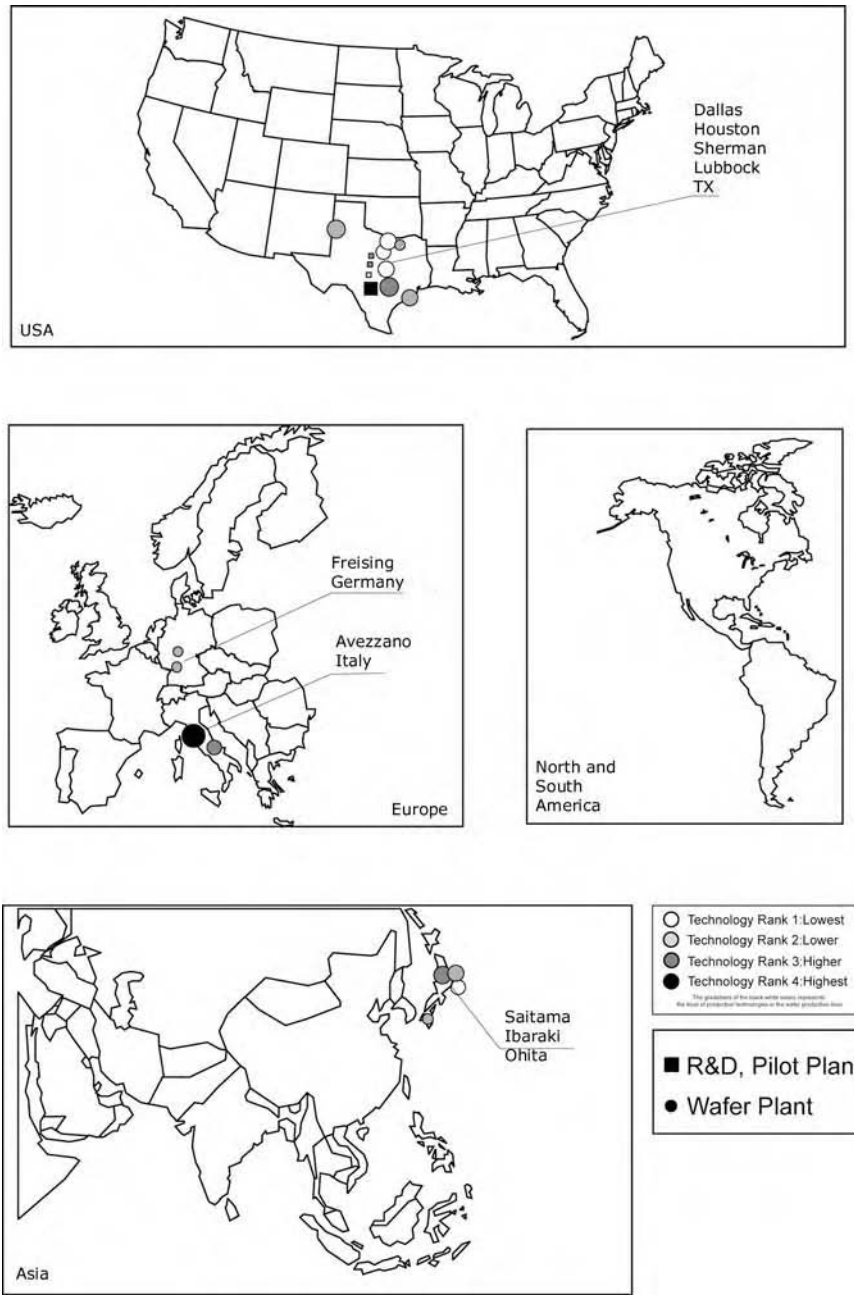

Figure 7.6a Semiconductor wafer production lines: Texas Instruments, 1995.

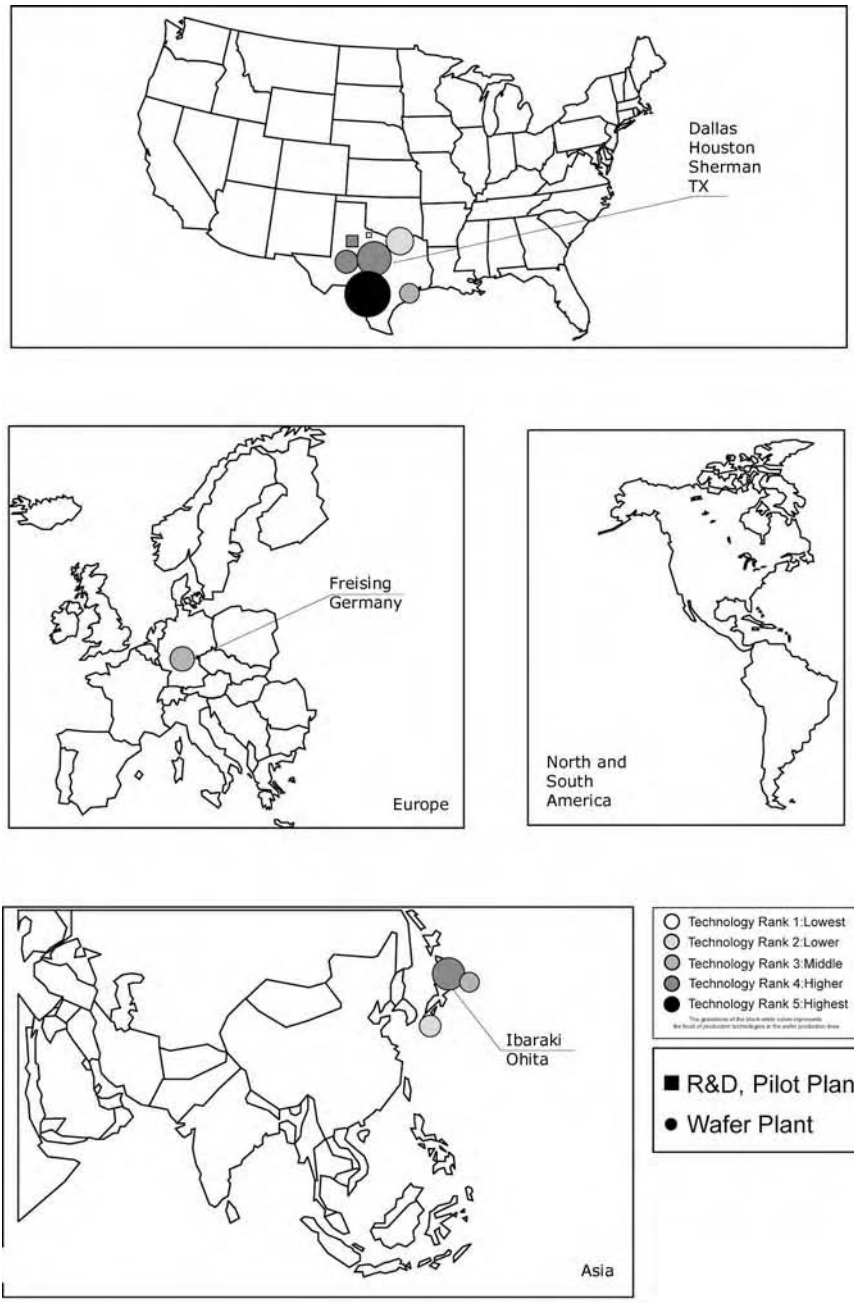

Figure 7.6b Semiconductor wafer production lines: Texas Instruments, 2004.

1995–2004 has been somewhat a period of international retrenchment for the overseas operations of the US semiconductor producers.

Figures 7.7a and 7.7b provide us with information about Philips Semiconductors, one of the product divisions of Royal Philips Electronics based in Amsterdam and Eindhoven in the Netherlands.

As we see, Philips has expanded its semiconductor activities significantly over the decade 1995–2004, although it has tended to keep all these activities within a close geographical range of its headquarters locations. For comparison purposes, its plants are only slightly more geographically spread out than those of Texas Instruments, and much less than those of Intel. As Philips has maintained a comprehensive set of products, including analog and discrete devices used for consumer electronics products, in comparison to the US firms, it has tended to concentrate relatively more on the wafer-processing activities, i.e. the second stage of the manufacturing process, and relatively less on the first stage. In addition, none of its technology, even in Europe, is of the very highest level. This is also true of its overseas operations outside of Europe. Moreover, as with Intel and Texas Instruments, Philips has slightly retrenched its activities in that it has closed many of its US and Asian operations, and concentrated them into an individual US facility and an individual Asian facility. As with its European operations, none of Philips' remaining overseas investments produce the most advanced levels of technologies. As such, within the global semiconductor industry as a whole, Philips has tended to develop a niche primarily as a mid-range technology manufacturer. The general pattern described in this example of Philips is also broadly replicated in the case of other major European vertically-integrated semiconductor firms, such as STMicroelectronics and Infineon Technologies AG.

Figures 7.8a and 7.8b provide us with information about Toshiba, a multi-product Japanese electronics producer. In the case of Toshiba, there are combined R&D and production facilities in the Tokyo region, plus some smaller facilities in both the north and the south of Japan. A casual observation of these figures may lead us to conclude that there is an obvious centre–periphery logic to these arrangements. However, while the details of this argument are beyond the scope of this chapter, a close inspection of the organizational aspects of these Japanese firms (Arita and McCann 2002a,b,c, 2006) suggests that these groupings of plants are organized as stand-alone product-technology divisions within the overall corporate structure, and that this arrangement is designed specifically to avoid the problem of unintended knowledge outflows. As such, this can be shown to be a very different spatial-organizational logic than might be inferred from orthodox models of agglomeration.

The location behavior of these global semiconductor firms can only be understood as being indicative of traditional multi-plant location considerations, as long as we also understand that issues of knowledge capabilities, knowledge control, and the relationship between these knowledge management issues and firm structure are paramount. The traditional multi-plant considerations suggest that the location decisions regarding the siting of facilities is based on orthodox multi-plant/multinational lines, in which access to a suitable local labor market

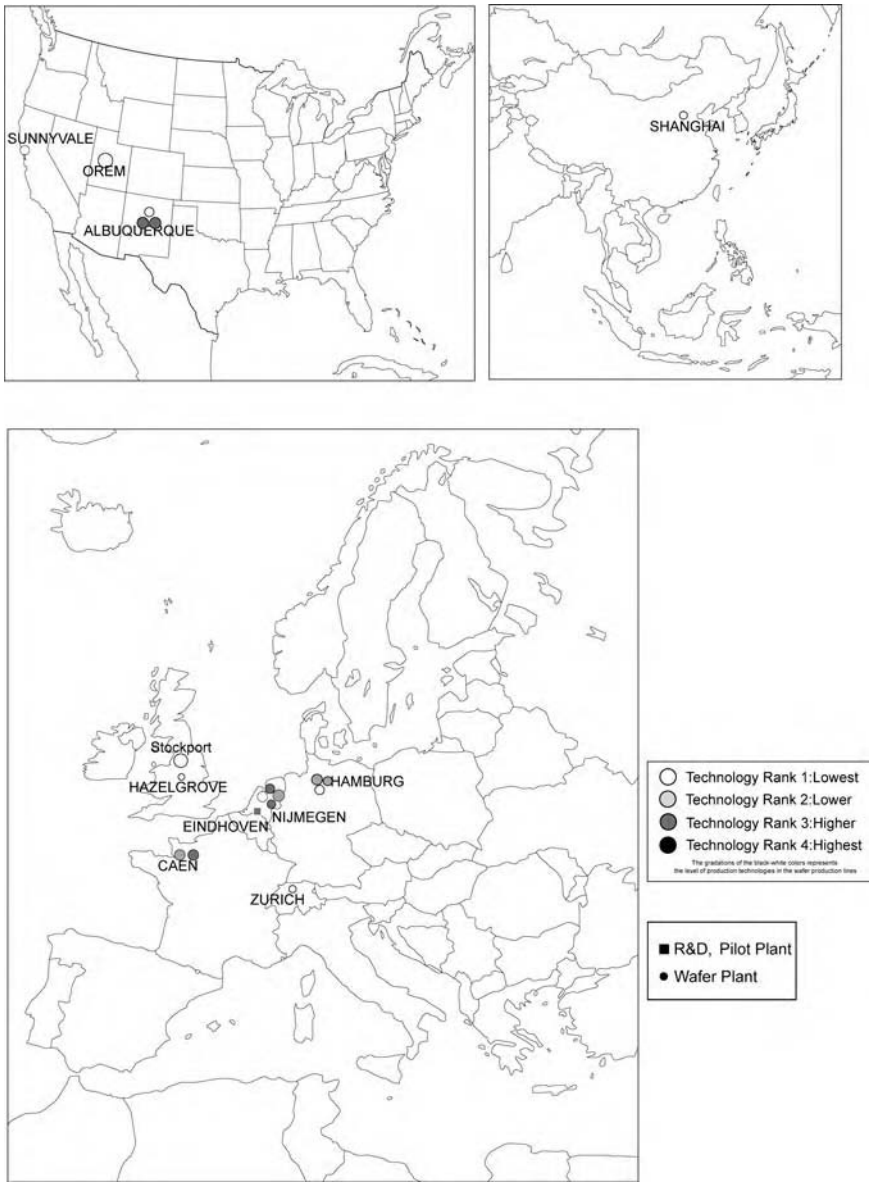

Figure 7.7a Semiconductor wafer production lines: Philips Electronics, 1995.

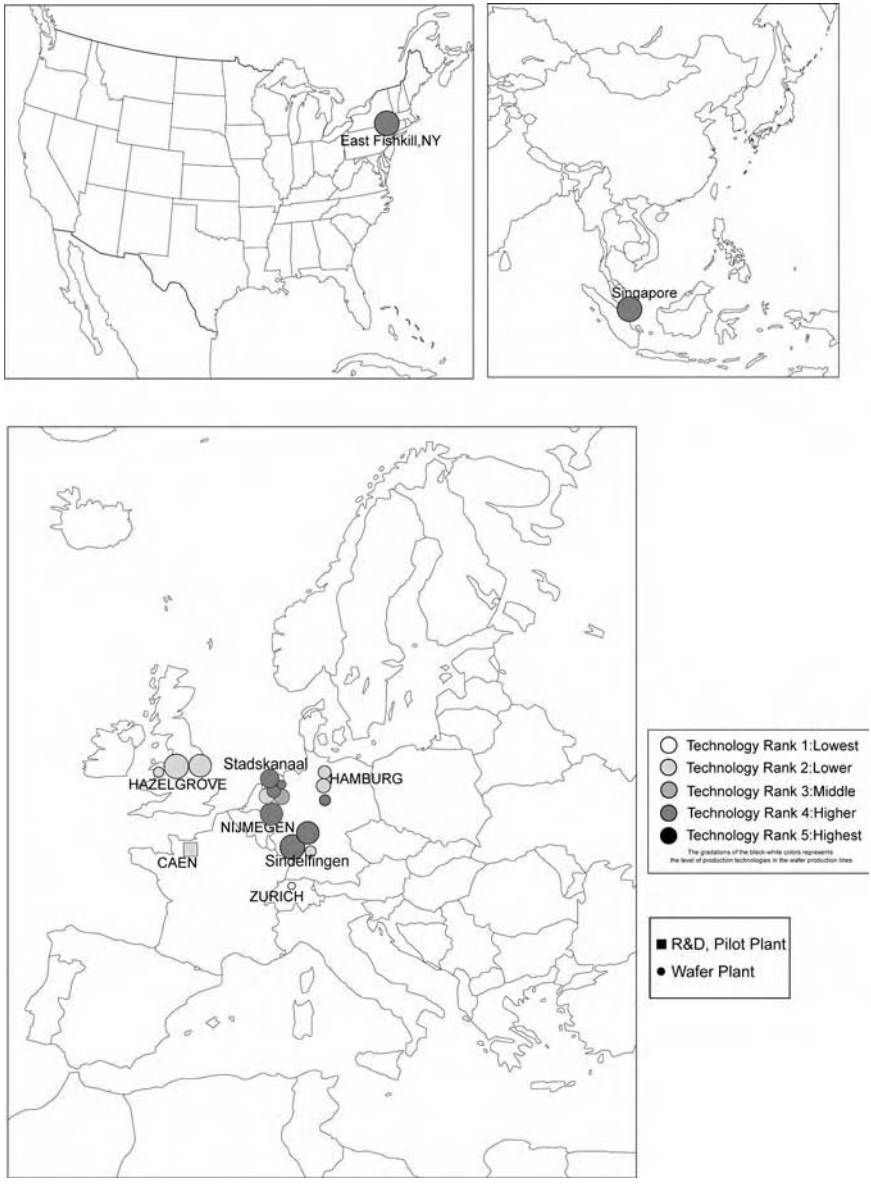

Figure 7.7b Semiconductor wafer production lines: Philips Electronics, 2004.

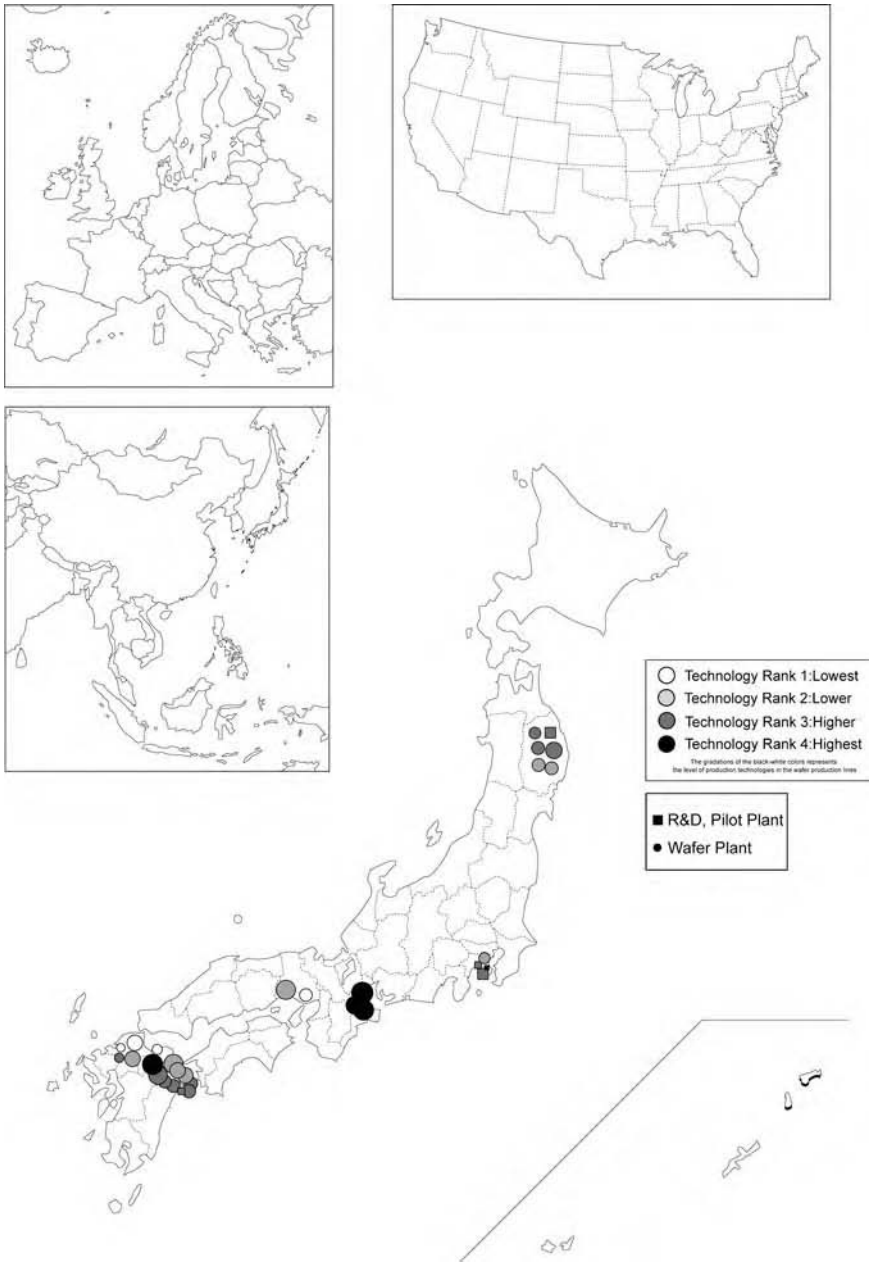

Figure 7.8a Semiconductor wafer production lines: Toshiba, 1995.

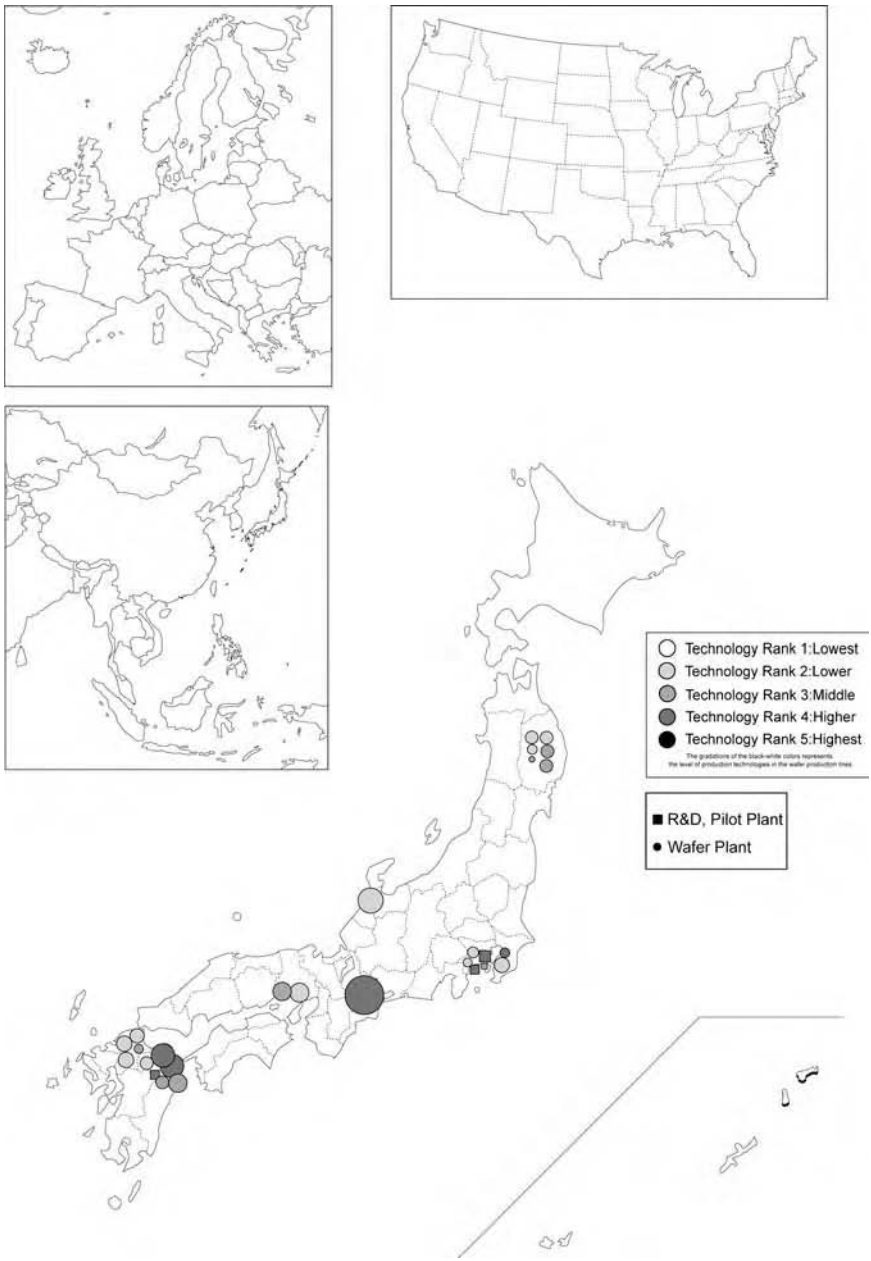

Figure 7.8b Semiconductor wafer production lines: Toshiba, 2004.

and land is a major consideration, subject to the location of suppliers and customers. In the simple product-cycle model (Markusen 1985) there develops a core–periphery logic to the pattern of activities. Moreover, the more recent literature also emphasizes the agglomeration-clustering behavior of such firms, in order to gain access to knowledge inputs. However, the knowledge management aspects of this industry appear to be entirely different to the simple stylized knowledge access and knowledge management assumptions embedded in the product-cycle literature (Markusen 1985) or much of the clustering literature. For example, while the parent and headquarters locations tend to dominate the R&D activities of these firms, these areas are not the only areas in which R&D activities are located. Nor are the areas immediately adjacent to the parent company headquarters necessarily engaged in higher level operations than the more geographically distant facilities. Moreover, while each of these firms described has a tendency to group plants geographically, there is also a tendency not to locate its plants immediately adjacent to those of its competitors. There are good reasons for this behavior. The semiconductor manufacturing industry is a very knowledge-intensive industry, and both access to knowledge and retention of knowledge are crucial issues. The location behavior of firms in general can be shown to depend on the balance between the effective management and control of knowledge inflows and outflows, and in particular, of unintended knowledge inflows and outflows (McCann and Mudambi 2004, 2005). Moreover, this balance itself can be shown to depend on the industrial structure. In oligopolistic knowledge intensive industries, such as the global semiconductor industry, simple agglomeration-clustering will generally not take place. This is why semiconductor firms are often organized geographically into groups of plants within the same firm, but in locations which are quite different to those of their major competitors, as is the case here. The only real exception to these circumstances is where the organizational boundaries are so extremely tight and clearly defined (McCann and Mudambi 2004, 2005) that no unintended outward knowledge spillovers are possible, in which case such firms become ‘islands of innovation’ (Simmie 1998).

Conclusions

This chapter has discussed the various sub-sectors of the semiconductor industry, and applied a simple product-cycle model to the case of the wafer-processing part of the industry. The data we employ is some of the most detailed and disaggregated available for such an industry. A notable development within the industry over the last decade has been primarily the rise of Asia as a leading centre for the semiconductor industry, followed secondly by Europe, rather than continuing the relative dominance of the US. Meanwhile, at the individual firm level, there is some evidence for industrial clustering among local establishments, but this generally takes place within a tight organizational logic (Arita and McCann 2002a,b,c, 2006) designed specifically to rule out unintended knowledge outflows (McCann and Mudambi 2004, 2005).

Overall, our analysis finds little or no support for a simple product-cycle type

of description of the relationship between the implementation of technological innovations and the location of the activity, either at the international level, or at the level of the individual firm. This is because the technology and knowledge management assumptions embedded in the product-cycle model are not appropriate for this industry. The reason is that the spatial patterns of production within the semiconductor industry are dominated by issues of decision-making and control within complex vertically-integrated hierarchical organizations, and these cannot be analyzed by adopting a product cycle approach. Rather, we would argue that a much more sophisticated analysis involving industry structure and transaction costs is required in order to understand the geographical organization of this industry. By adopting such an approach, it can be shown that our observations are consistent with an analytical framework in which activities are spatially differentiated across local labor markets according to the skill requirements of the firms' various activities and operations, the available land and human capital inputs available at particular locations, and the locations of the markets and inputs supplied for the plants, as long as we also acknowledge the extent to which such firms will wish to avoid unintended outward knowledge spillovers.

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8 Globalization of a potato starch co-operative

The case of AVEBE

Dirk Strijker

Introduction[1,2]

AVEBE is a co-operative based in the north of the Netherlands, in the region called the Veenkoloniën, producing and marketing potato starch and starch derivatives. In recent years AVEBE has followed a strategy of international expansion through Foreign Direct Investments (FDI), not only in nearby countries but also in Asia and South America. The strategy is not unchallenged and does not have a long history. This paper investigates the background to the international expansion of AVEBE. The nature of the internationalization of AVEBE differs sharply from that of the private firm of W.A. Scholten, also a potato starch producer, founded in the nineteenth century, and at that time truly internationally oriented. We will focus especially on the differences between the co-operative and this private firm.

The Veenkoloniën

The Veenkoloniën is a region in the northeast of the Netherlands (Figure 8.1) between the sandy part of the province of Drenthe and the German border. It is the Dutch part of the 50,000 hectares of Bourtanger Moor that used to cover the whole northern border area of Germany and the Netherlands (Figure 8.2).[3] An important peat bog developed there from 5500 BC. After 1600 the peat was systematically removed, primarily to serve as fuel. The region became an important rural-industrial area during the peat-digging period that lasted until the 1930s. Part of the industry was related to the peat digging (peat-litter, but also shipbuilding, for instance), another part to agriculture (the production of potato starch and strawboard). The availability of cheap fuel furthered energy-intensive industries, not only agro-industries, but also, among others, the glass industry. The industrial development had a deconcentrated spatial structure. Industrial development occurred in different villages and towns (Hoogezand, Sappemeer, Pekela, Winschoten, Veendam, Wildervank, Stadskanaal).

According to Voerman (2001), this scattered industrial, and hence scattered residential structure prevented the rise of an urban centre with potential for developing into an agglomeration in the future. The economic situation of the Veenkoloniën deteriorated after 1850, when the peat digging gradually declined.

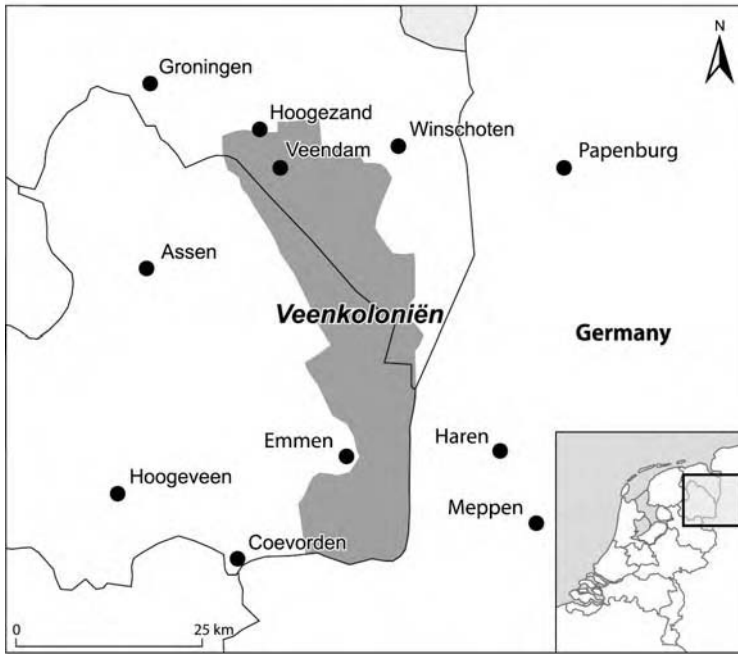

Figure 8.1 Veenkoloniën (source: derived from www.veenkolonien.nl).

The situation worsened in the twentieth century as the favorable water connections (internal, but also to other parts of the country) became less important, and even became a hindrance to the development of an efficient road system.

After the removal of the peat layer, the sandy underground and the top layer of the bog were mixed and became fertile agricultural land. Gradually the region became famous for its arable production, with cereals, sugar beet, and especially starch potatoes as the main crops.

A major restructuring plan was started in the 1970s to modernize the infrastructure and the agricultural potential of the region. This restructuring plan was given the form of an official law[4] because of its size and the complicated nature (infrastructure, ownership, land use, and water management). However, this region is still one of the least developed in the Netherlands, with above-average unemployment, an under-developed service sector, and is relatively unattractive for residential use.

The history of potato starch in the Veenkoloniën

At the beginning of the nineteenth-century potato starch, which is also called potato flour, was used to starch linen and other textiles. It replaced the more expensive wheat starch which had been used until then. The first factories for potato flour production in the Netherlands were actually located in the textile-producing

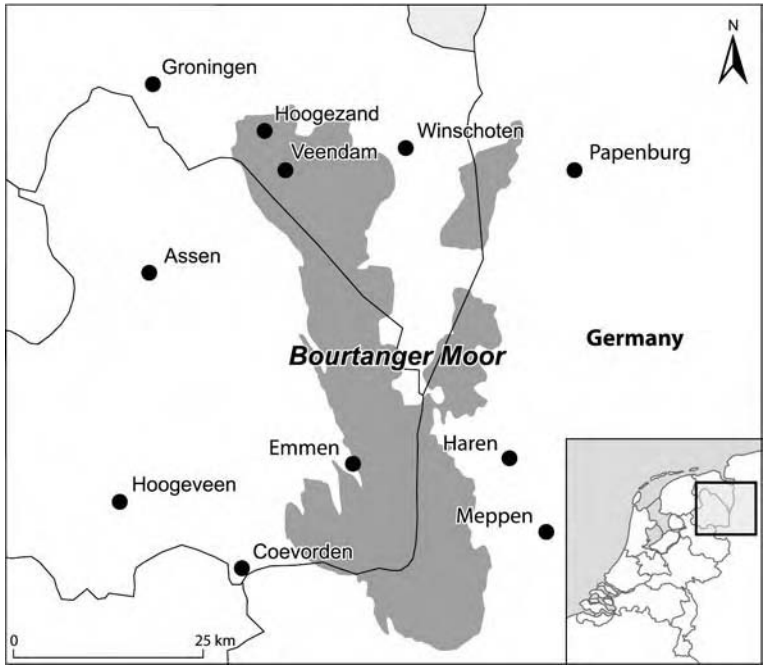

Figure 8.2 Bourtanger Moor (source: derived from Seedorf, H.H. 1977, Topographischer Atlas Niedersachsen und Bremen. Wochholz, Neumünster).

regions (the eastern part of the country in Gelderland and Overijssel) in the 1830s.[5] Comparable developments occurred in textile-producing regions in Belgium and France. Unlike in England, textile production on the continent was still a home industry at that time (Dendermonde 1979, p. 55).

Although potatoes contain less starch than wheat, it was easier to extract and therefore cheaper. The founder of potato starch production in the Veenkoloniën, W.A. Scholten, moved his operation from Gelderland to the Veenkoloniën in 1841 (some parts of this firm were acquired by AVEBE in 1978). In 1840 Boon, a producer from Amsterdam, had already made the same move, and a few years later Dutalis, a producer from Mechelen in Belgium, also moved his operation to the Veenkoloniën, but in the end the only really successful firm was that of Scholten. They all acknowledged the advantages of the area in terms of cheap fuel (peat) and cheap potatoes.[6] They moved away from the consumption regions, primarily because starch, or flour, was much cheaper to transport than the raw materials. This agrees fully with the location theory proposed by Weber.

The starch, sometimes still wet, was transported to the consumption regions of Gelderland, Flanders and Leiden. After some years, Scholten produced too much starch for his home market and tried to market this abroad to the textile region of Lancashire (Dendermonde 1979, p. 56). From that time on, potato starch became subject to developments in the international markets.

Competition on the market for starch

In the first instance, potato starch was a cheap alternative for other starches. More than twenty potato starch factories were established in the Veenkoloniën between 1840 and 1880, all were private firms. In the second half of the century the profitability of the factories decreased due to increased competition, both in the region from new factories, and abroad with new production areas being developed in the Alsace and in the east of Germany. Moreover, in the last quarter of the nineteenth century, new and cheaper starches, produced from overseas corn, came onto the market.

During that period, there was increased tension between the firms and the farmers in the Veenkoloniën. The farmers increasingly felt that the owners of the firms got the best deal in transactions. This tension was fed further after 1880 during the international agricultural crisis, with low prices for arable crops and increasing protectionism in the neighboring countries. Several co-operative production units were founded in the 1890s, with Borgercompagnie (1898) as the first, as an answer to the problem of low prices for potatoes. These co-operatives can be seen as the predecessors of AVEBE. By 1912, there were already 13 co-operative potato starch factories in the region (see Table 8.1).

Specialization

The co-operative factories were small, partly because the founding farmers had difficulties in financing their operations, but also for logistical reasons. In principle, there were advantages of scale in this type of industry, but the transport of potatoes and peat, used to provide energy, was expensive and stimulated small-scale production. The formation of the co-operatives caused serious problems for the private firms and many had to close or went bankrupt. The number of private firms decreased from 23 to 11 between 1898 and 1926. The share of the private firms in milling potatoes decreased from 94 percent to 13 percent. The total quantity of milled potatoes quadrupled in that period, but the net result was that the milling capacity of the private firms was halved (Table 8.1).

Table 8.1 Number of plants, quantity of milled potatoes, and shares of co-operatives and private plants, 1898–1926

Year	*Number of co-operative plants*	*Share in the quantity of milled potatoes (%)*	*Number of private plants*	*Share in the quantity of milled potatoes (%)*	*Total quantity of milled potatoes (1000 hectolitre)*
1898	2	6	23	94	2,641
1905	9	40	24	60	8,449
1912	13	49	20	51	13,630
1919	22	87	15	13	10,096
1926	20	87	11	13	12,012

Source: copied from Knaap (2004, p. 329).

The figures also disclose another fundamental development, that is that the private firms moved forward in the production chain, into the processing of flour, and selling products for final consumption. This development is not unique in the sense that agro food co-operatives normally do concentrate on the first stage of the production process. The main reason is the need for farmers to counterbalance power (van Dijk 1997, p. 95).

The severe competition then resulted in a form of specialization, with the co-operatives buying the potatoes and producing flour from them, while the private firms bought the flour and produced all kinds of derivatives from it. It was the private firms that became most active in the market for finished and semi-finished products. At that time there were already quite a number of derivatives produced from native starch, for example, starches for all kinds of industries (paper, textiles, paints, and foodstuffs such as chocolate and confectionery), syrups for food products and for the production of liqueurs and confectionery, sago and starch for the consumer market, and all kinds of dextrins or gums for the production of glues, pharmaceuticals, etc. (Knaap 2004, p. 63).

A common sales office

The severe competition led to initiatives being taken by the private firms to co-ordinate their sales activities for potato flour, but the differing interests and mistrust were too great to make this a success. This was in contrast to the development made by the co-operative firms. They succeeded in organizing a common sales office, named Coöperatief *A*ardappelzetmeel *V*erkoop*B*ureau (AVB, later AVEBE), that was formally founded on 11 November, 1919. This was the real start of the present-day co-operative AVEBE. In the first instance, 12 co-operatives joined AVB, followed by four more in 1921. The three largest co-operatives did not join at that time and remained independent for many years. An important reason for establishing a common sales office was significant market power on the demand side. This was especially the case during World War I, when the German government developed a centralized import bureau. The small suppliers – the separate co-operatives – were confronted with one major buyer.

Lack of co-ordination

For many years the founders of AVB, the co-operatives remained independent firms. This situation continued until 1971, when AVEBE was re-formed into a primary co-operative, with farmers, instead of co-operatives, as direct members. It was the end of the role of the underlying co-operatives. The formation of the primary co-operative was the end of a long process. As early as the 1930s Keuning (1933) had put forward a strong case for a full merger, including production planning and facilities. During the first years of AVB, starch packed for small-scale consumers and derivatives were excluded from the common operation, and purchases of potatoes, planning, relations with the farmers, and the production technology, all remained in the hands of the individual co-operatives.

The task of the sales office was just to sell. The customers were the users of native starch; the textile industry and producers of derivatives. It took until the 1950s before AVB was able to increase its scope. In that year it opened its own research laboratory and a factory for derivatives. The articles of association were changed in 1952, from sales office AVB to sales and production association AVEBE. Two decades later, the production of derivatives still covered only one-third of their own starch production. Two-thirds still had to be sold as native starch, implying that developments in the starch market were at that time still of crucial importance for the firm. In recent years this picture has changed, and nowadays starch makes up less than one-third of the turnover of AVEBE (29 percent in 2003/2004).

Internationalization/FDI

AVEBE opened its first sales office abroad in the 1960s. The first international partnerships also date from that time – with a Danish potato starch industry, two co-operatives in southern Germany, and a corn starch firm in Belgium. The spectrum of AVEBE became more international in 1978, when AVEBE took over the starch parts of the old Scholten firm, then named KSH. Scholten had gone bankrupt as a result of mismanagement and misguided mergers. AVEBE gained the ownership of Scholten-Chemical, which was internationally oriented, and also of a number of foreign plants and sales offices: Stadex AB in Sweden; Haussimont in France; and Sepa in Italy (closed in 1985). AVEBE opened new sales offices abroad, in Belgium and in the USA, at that time, because of the increased scale of operations.

It was not until 1985 that AVEBE started FDI on its own. In that year it started a joint venture project in Thailand (Siam Modified Starch Company: SMS) for the production of derivatives based on cassava, together with Poon Phol from Thailand and Matsutani from Japan. Starch from cassava or manioc in many respects has comparable properties to starch from potatoes (low fat and low protein), and is much cheaper. It can, therefore, be used as an additional source of starch for the firm for the production of derivatives, or for direct sales to customers. Cassava is grown in tropical climates, so using cassava automatically implied a step towards internationalization. AVEBE now has a 34 percent share in SMS (1/8/2004). SMS opened its first processing plant in Pathumthani, Thailand in 1987. AVEBE became partner in a second project in Thailand (Siam Quality Starch) for the production of cassava starch in 1994 with a 23 percent share (1/8/2004).

AVEBE started a joint venture for the production of derivatives based on cassava in Argentina in 1996, in Indonesia in 1997, and in Brazil in 2003. All these investments were intended to extend the resource base. A joint venture in China, with a majority share of 63 percent, for the production of potato starch was started in 2002. The background to this joint venture was to gain a foothold in an important potato-producing region of the world, in completely different institutional circumstances. The development in China was not the first time that AVEBE has produced potato starch abroad; it had taken over a German co-operative, Wendland

Table 8.2 Key figures of production locations in 2004

Location	*Country*	*Number of employees*	*Product*	*Market*
Charleston (SC)	USA	40	Starch specialities; derivatives	Food industry
Cikampek (Java)	Indonesia	110	Tapioca starch	Paper industry
Dallmin	Germany	70	Potato starch	Food and feed industry
Foxhol	Netherlands	500	Starch specialities; protein	Food and feed industry
Gasselter-nijveen	Netherlands	100	Potato starch and related products	Food and feed industry
Guaira	Brazil	70	Tapioca derivatives	Paper industry
Haussimont	France	65	Potato starch and proteins	Food and feed industry in Southern Europe
Lüchow	Germany	70	Potato starch and proteins	Food industry
Malmö	Sweden	80	Starch specialities	Food industry
Nijmegen	Netherlands	80	Wheat starch and proteins	Food industry
Xuan Wei	China	180	Potato starch	Food industry
Ter Apel-Stadskanaal	Netherlands	500	Potato starch, proteins, derivatives	Food and feed industry
Veendam	Netherlands	85	Dextrin and starch specialities	Food industry

Source: data taken from AVEBE, Annual Report 2004, and from newspapers.

Stärke, in 1989 and the members of Wendland gradually became full members of AVEBE. The production unit, in Lüchow, is still in use. A production unit for potato starch was bought in Dallmin, in the former GDR, in 1995. See Table 8.2 for an overview of the present AVEBE locations.

Agricultural policy

The enlargement of the resource base with the step into cassava was not only driven by the motive of cost prices, but also partially has an institutional background. Potato starch production in the European Union is heavily subsidized, but the continuation of that support has been quite uncertain for many years now. The EU policy for starch since the 1960s has been based on the following principles:

- Starch from potatoes is more expensive than starch from other sources, such as cereals, and the difference has to be compensated for in order to keep producers of starch potatoes in business. The compensation takes the form of a premium for potato starch producers. This is paid to the milling industry, and transferred to the farmers in the form of a higher price for the potatoes.

- Because of the relatively high price for cereals in the EU compared to non-EU countries, EU producers of starch should be compensated for their competitive disadvantage with production restitutions. The restitution enables the starch-producing firms to pay a guaranteed minimum price to their suppliers (the farmers). The amount of potato starch has been limited by a quota system because of budgetary problems since 1995.
- The production of starch potatoes and the related industries is an important economic activity in some specific regions of the EU.

There is uncertainty about the system as such, about the premium, about the level of compensation (the restitution), and about the allocated quota. The system was modernized in the mid-term review of the Common Agricultural Policy in 2003 but fundamental decisions still have to be taken. One of the possible measures to be taken is particularly threatening. The current policy provides for a direct payment for producers of starch potatoes. Its amount was fixed at €110.54 per tonne of starch in the framework of Agenda 2000. Up to now, these payments have been paid to the starch industry and not to the farmers, allowing the industry to pay the farmers a relatively high price for potatoes. The mid-term review of the CAP proposed to transfer the payment directly to the farmers, to be included in the single farm payment. As a consequence of this, the price for potatoes would drop considerably, possibly so low that farmers would switch to other crops rather than starch potatoes and the industry would lose its input. A compromise agreement was reached in the end, after heavy pressure from the starch industry: 40 percent of this payment will be included in the single farm payment and 60 percent will still be paid to the industry. However, the logic of the agricultural policy is such that in the long term, possibly after 2013, the 40 percent could be increased, leaving the industries with none or not enough potatoes.

Although the potato starch-producing firms in the EU – AVEBE and the German co-operative Emsland Stärke are the leading firms – are partners in the struggle for continuation of the existing system, at the same time they are attempting to make their firms less vulnerable to changes in the system. Apart from that, further growth in potato starch and derivatives in the home region is quite impossible, because of the quota system mentioned above. Global production and enlargement of the resource base are important instruments for reducing vulnerability, together with the reduction of the costs of production.

Profitability

AVEBE has gone through some difficult times in the past. The co-operative was close to bankruptcy in the 1980s after the exploding energy prices, and in the 1970s after the takeover of parts of Scholten. Solvency was no more than 2.7 percent for instance in 1980. The firm recovered, after a major restructuring of debts by banks and governments, with solvency increasing to 6 percent in 1986, 14 percent in 1987, 26 percent in 1989, and 34 percent in 1991. Financially, AVEBE has been quite a healthy company since that time. The solvency has

increased further in the last ten years, from 36 percent to 45 percent in 2004.[7] However, profitability is still low. The results are now mostly positive after the dramatic 1980s, with annual losses reaching 5 percent of the annual turnover in 1983. However, the return on group equity has been less than 4 percent in many recent years, while the aim of the executive board is for a minimum of 10 percent.

Business units

For a number of years the management of AVEBE has been trying to make the firm more customer-oriented, in order to increase profitability. An important step in that process was the decision taken in 2001 to split the firm into four independent operational companies (opcos), with integral responsibility for marketing, R&D, and also for profitability. Three opcos are market-oriented (food, paper, specialties), the fourth (starch) is responsible for starch production and sales. The three market-oriented opcos have no obligations to buy starch from number four. The general policy (until 2005, see hereafter) was local-for-local, meaning that products should be produced close to the market. According to that philosophy, products for Asia should be produced in that region, and not in the Netherlands. This has markedly improved the market opportunities of the three opcos, but at the same time the end of the truck system is a threat for the starch opco, which will probably lose some important internal customers. The pressure on starch will be translated into pressure on the farmers/owners (lower prices, less demand).

Present situation

The present position of AVEBE in the Netherlands is that it has two milling plants and another two plants for the production of derivatives. The last two will be closed in the near future and the production capacity will then be concentrated in two locations in the Veenkoloniën, apart from a small unit in Nijmegen. The total number of employees in the Netherlands is 1,400, including those in the company head offices in Veendam, and is decreasing. There are another 600 employees located abroad, including 180 in China. The importance of AVEBE for the region lies not only in the direct employment, but also in the indirect relations (transport, construction, engineering works, etc.) and for agriculture. Approximately 20–30 percent of the regional agricultural income stems from the production of starch potatoes.

Scholten

It is interesting to compare the internationalization of AVEBE with its important predecessor, the potato starch-producing firm of W.A. Scholten. The Scholten firm can be seen as the first industrial multinational in the Netherlands (Knaap 2004, p. 326).

Knaap (2004, p. 68) has reconstructed the exports of potato starch in the nineteenth century. Although there was some export in earlier years, exports become important from 1860 onwards and rapidly increased from approximately

2,000 tons in the 1860s to 15,000 tons in the 1880s. The exports of derivatives at that time seem to be negligible. Knaap (2004, p. 70) also concludes that in the nineteenth century the potato starch-producing firms had no serious (push) reasons for becoming engaged in foreign direct investment. The national (Dutch) market offered enough opportunities for further expansion. Nevertheless, from 1866 onwards, Scholten began to invest abroad, first in Brandenburg, Germany (p. 82). Knaap has analyzed the possible motives for this investment. Two elements seem to play a role:

1 Scholten was trying to avoid German import duties on his products (he was already exporting to the German market).
2 He was convinced that Germany was a promising market, and the Havel region was an attractive area for production.

Scholten was confronted with all of the problems associated with foreign direct investment, such as difficulties with concessions, difficulties in getting enough raw material (potatoes), problems with contracts, and unknown requirements from the market (Knaap 2004, pp. 152–164). Put in present-day terms, the transaction costs were high. But he succeeded, and founded new factories in Prussia (Neu Ruppin 1869; Tangermünde 1870; Landsberg 1876). Scholten was not the only firm to become engaged in foreign direct investments. His old rival, Dutalis, who came from Mechelen and had relocated to the Veenkoloniën, followed him to Prussia and opened up factories there too (Knaap 2004, pp. 159–161). A new factory was built by Scholten in Podejuch in 1889, with the aim of producing starch for export from Germany to other European countries. Germany had created high tariff walls for starch and the German starch industry flourished. Other countries with a more liberal trade philosophy (Great Britain, Belgium, the Netherlands) had not followed the German example and were easy targets for German export. Once more, Scholten tried to take advantage of institutional differences.

But he did not just stay in Prussia. He founded factories elsewhere in the Habsburg empire, starting in Galicia, east of Krakow, near what is now the Polish-Ukrainian border, in 1870. Some years later, in 1876, he founded a factory in Olmütz on the Austrian-Hungarian border. Again the motive seems to be that he expected a market for the final product (Vienna, Budapest) and he looked for cheap resources, summarized by Knaap (2004, p. 315) as "searching for *locational advantages*". Unlike the situation in Germany, protection and tariffs seem not to have played an important role in his decision to found factories in the Habsburg empire. Figure 8.3 shows the location of the different investments made by Scholten (1869–1892).

The Galician activities never became profitable and were terminated in 1875, and the factory in Olmütz was sold in 1888. Scholten also expanded to the Russian empire in the 1870s, first in what is now Poland (Petrokow, 1872, sold in 1888), and then in Nowy Dwor in 1881, sold in 1892. He later tried unsuccessfully to develop a factory near Moscow. In this case it is clear that the main motive was market opportunities.

Figure 8.3 Locations of investment by Scholten (1869–1892) (source: derived from Knaap 2004).

There is a clear difference between the success of Scholten in Germany and the relative failure in the places that were further away (although the Russian branch was not so unsuccessful). Knaap (2004, p. 298) states that this difference can be partly explained by the differences in 'market familiarity'. Scholten traditionally already traveled a lot in Germany, and the geographical and cultural distance was relatively small for him. Austria and Russia/Poland were further away, also in a cultural sense.

The chemical division

As stated before, Scholten, and other private starch producers, gradually moved away from starch production and specialized in the production and marketing of starch derivatives with higher added value. For the Scholten firm this tendency towards specialization in the added value part of the production is visible in the establishment of a biochemical division in 1920 that soon outstripped the starch division (Knaap 2004, pp. 333–335). The chemical division had a strong international profile; in the 1930s it was able to serve important export markets (Middle East, Asia, USA). Its first step in FDI (in France) was

again motivated by institutional factors (production behind a prohibitive tariff wall). The development of its own, diversified production of derivatives, including all kinds of biochemicals, made the firm less vulnerable to the volatile starch market, and it increased internal flexibility.

Starch from corn

Another reason for Scholten to move away from starch production was the emergence of new competition from starch from corn in the last quarter of the nineteenth century. The development of this corn starch is fully in line with the ideas of Håkanson (1992). The production was developed in the USA, with a stable basis in the Midwest. In the first instance, the corn-based starch and derivatives competed with imported potato starch, also that from Scholten, on the home market in the USA, but later on, at the turn of the century, corn starch was exported to Europe. One of the key players in the USA corn starch industry, CPRC, opened its own sales office in Hamburg in 1905, and in the 1920s it planned to start FDI in Europe, in Germany (Knaap 2004, p. 206). The German factories belonging to Scholten were at that time already organized in an AG (Private Limited Company). Some of the shares were no longer in the hands of the Scholten family, and in 1927, CPRC acquired the majority holding. It was the end of the foreign possessions of Scholten, and it gave the American competitor a strong foothold in Europe.

Discussion

Belated FDI

In the past, AVEBE could be described as a co-operative with members/owners who did not think in terms of markets but in costs. The differences with the former private company of Scholten is striking. Scholten started with FDI as early as in 1866. In fact, he followed the local-for-local policy, which was not adopted by AVEBE until 2001. According to Knaap (2004), Scholten tried to find locational advantages, from Germany to Moscow. It is only in recent years that AVEBE has been doing the same, but this development has even been blocked by the members recently (see below).

The relatively slow and weak movement towards the internationalization of AVEBE was also remarked upon in an article on "globalization of smaller firms" (Prasad 1999). In an international comparison of the timing of internationalization, Prasad found that AVEBE was the only firm in his set that started internationalization in the third or mature phase of its organizational life cycle. All other firms had already made this step in the second or growth phase.

Further in the value chain

The difference in market orientation between Scholten and AVEBE is also illustrated by the relative importance of starch production for the firms. At the end of

the nineteenth century Scholten and other private firms were already trying to specialize in the production and marketing of derivatives. Scholten opened his chemical division in 1920, and the production of starch became relatively unimportant for him very soon. The same development only started for AVEBE in the 1950s, with the opening of a research laboratory and a pilot plant for derivatives. There have been continuous efforts since then to increase the production and marketing of derivatives, until the level of today, with 60 percent of the turnover now coming from derivatives. AVEBE stressed in many press releases that the future lies with the derivatives. This focus has changed in recent years. The research capacity of the group has been considerably decreased, and what is left is directed at customer-oriented applied research. This implies that the further development of derivatives will be increasingly less easy with, as a consequence that a larger share of the production will have to be sold in strongly competitive markets requiring cost reductions which will be difficult to achieve.

Becoming a market leader

The turnover of AVEBE was primarily realized in the Netherlands and nearby countries until the mid-1980s. For instance, 83 percent was realized in Europe in 1984. The European share decreased to 68 percent in 1990 and since then has continued to decrease steadily (58 percent in 2003). FDI outside Europe hardly contributed to the turnover of the group in 1984. The FDI of AVEBE at that time was primarily in Europe, and mostly inherited from the Scholten firm, Stadex in Sweden and Haussimont in France, for instance. Since then the picture has changed considerably. The share of non-European FDI (Southeast Asia and South America) in the turnover of the group was 20 percent in 2003.

The co-operative character

The specific feature of co-operative firms is that the owners are also, and even primarily, the suppliers. The main objective of an owner is the creation of value (profit, capital, continuity), while the main objective of the supplier is unlimited demand for the output of his farm, which at the same time is the input of the co-operative, at the highest possible price, and continuity. This implies an immanent struggle between the two. The higher the price for the potatoes, the lower the profit and the less the continuity. Hendrikse and Veerman (2001) have shown that, even for a marketing co-operative, the owners tend to have a preference for investment in their own farms, leading to underinvestment in the co-operative. The more specific the investments in the co-operative are, the less the farmers will be willing to invest.

As long as the internationalization of a co-operative is limited to simple international sales activities without serious investment requirements, the decision rules of a co-operative will probably be equal to those of a private firm. It is the owner part of the farmer that evaluates chances and risks. In that sense it is not so surprising that AVEBE, in its old days as a sales office, did have international

sales offices. The situation becomes different when international sourcing or production becomes a profitable alternative for local sourcing and production, or when international sales require high, specific investments. The owner side and the supplier side of the farmer then have fundamentally different interests. International sources may be profitable for the firm but will replace local sources. A full switch from potatoes to foreign cassava or wheat, or even potatoes produced abroad, is quite impossible, because of the co-operative character of the firm: the firm is owned by Dutch potato growers.

The move of AVEBE towards globalization and market orientation started only after near bankruptcy in the 1980s. The obvious reason for going international was the conviction that the co-operative serves its members best when it remains an independent producer. The idea was that AVEBE could only survive when it is, and remains, the market leader in its relevant market, that is in the world market for potato and related starches and derivatives. AVEBE's world market share of potato starch is about one-third.

The policy of AVEBE is in line with the more general attitude of the large Dutch co-operatives (the auctions, the dairies, the meat producers) that market, and hence price leadership is a necessity for survival (van Dijk and Mackel 1991). This strategy has one specific difficult aspect for AVEBE: the market for potato starch is only a small segment of the total starch market. According to figures prepared by Ostertag and updated by Fuglie and Oates (2004), nearly two-thirds of the world starch production is from maize, a quarter from sweet potatoes and cassava, 5 percent from wheat, and another 5 percent from potatoes. This means that being market leader for potato-based starch still means only being a small player in the total starch market. At the moment, AVEBE's market share in the world market for starches is less than 2 percent.

As stated previously, the members of the co-operative have a strong influence on AVEBE's internationalization policy. Reference can be made to the end of the 1970s, when expansion by AVEBE into wheat activities in France was fiercely attacked by the farmers/owners as an example of the immanent internal struggle between the firm and the co-operative. Nevertheless, AVEBE did participate for some time in a wheat starch project in France: Chamtor s.a. More recently, the same type of troubles have again emerged, now concerning further investment in starch production in Asia, and in further expansion in cassava starch (the so-called two-resource strategy: potatoes and cassava). Two members of the board of the co-operative left in 2004 because of doubts about these investments. Three months later the chairman of the co-operative, Haselhoff, withdrew because of the same dispute. The debate culminated in October 2005 when the director (Krijne) was dismissed, again because he was in favor of further internationalization and of the two-resource strategy. The new director was given the task of concentrating upon lean and mean production of potato starch in the traditional home region. The representatives of the members apparently did not want to spend more money in the development of production facilities in Asia. They seem to be risk-averse, and they wish to give priority to the starch production facilities in the Netherlands where their own potatoes are milled. As a consequence, it was also decided that

the independence of the four business units in the organizational structure will be terminated. The turn in the strategy became fully visible in 2006. In a few months all foreign production activities outside Europe were sold, including the newly established factory in China, and including the traditional footholds in Thailand. In order to save money, even the headquarters of the co-operative in Veendam was sold. The board and the management departments left their characteristic office in Veendam and moved to an old and much smaller office building at a production unit near Groningen (Foxhol).

One could argue that the behavior of the members is not so much risk-aversion, but that they have a keen eye for long-term continuity, but in my opinion this is not the case. If their main objective was long-term continuity of the firm, extension of the resource base to, for instance, cassava, in the light of the political threats faced by potatoes, would be a desirable strategy. So, the behavior reflects their primarily short- and medium-term interests.

The continuous struggle about the future direction illustrates perfectly the difference between the interests of a firm and of a co-operative. The departure of chairman Haselhoff is especially interesting in this respect. As a farmer his main concern must have been the selling of his potatoes. As chairman, and responsible for the firm, his main concern was the future growth of the firm, if not in potato starch, then in cassava, and if not in the Veenkoloniën, then in Asia or South America.

AVEBE: advantage or disadvantage for the region?

What would have happened to the Veenkoloniën region if there had not been co-operative starch producers? The development of the Scholten firm, and the imitation by Dutalis, allows the conclusion to be drawn that some of the private starch-producing firms had no close ties with the region, and not even with the potato. They were entrepreneurs, looking for profit. On the other hand, there were also private firms that were founded by old industrial families from the region (Wilkens, Meihuizen, Duintjer, Van Linge; Knaap 2004, p. 45) that were probably more attached to the region, and less willing to leave. It is clear that the private firms withdrew from starch production and concentrated upon the production of derivatives as soon as there was a reason to do so.

There is a good chance that the private firms would either have left the region or would have stopped the production of potato starch in difficult times. A second argument is that the public sector probably would have been less willing to subsidize the production of starch potatoes if the sector had been characterized by private instead of co-operative ownership. As a matter of fact, the active behavior of the public sector, both in regard to spatial policy and the national and EU agricultural policies, was certainly also triggered by the high unemployment rate in the region.

The consequence of less public involvement would have reduced the orientation of the region towards arable farming. This would have had implications at three levels. In this scenario the arable farmers would have earned less in the

short term, and they would probably not have found alternatives in the arable sphere. This would have opened up a development towards dairy farming or intensive livestock farming, sectors that did relatively well in Dutch agriculture in that period. The consequence for the region would have been less employment opportunities, at least in the short term. In the longer term it could have led to a different long-term industrial development, but the specific picture is unclear. The third implication would have been that the public sector would probably have devoted much less effort to measures to maintain the potato production. For a long period the regional spatial policy has been directed at maintaining the best possible production circumstances for AVEBE and its farmers. This has led to an open, arable landscape that is not very attractive for non-agricultural developments (nature, residential, etc.).

All in all, it is questionable whether a private firm would have attracted enough public involvement to keep the potato and starch production in the region.

Conclusion

The production of potato starch has been an important economic activity in the north of the Netherlands for more than one-and-a-half centuries. The production shifted from the place of consumption to the area where the raw materials, potatoes and fuel, were available cheaply in the 1830s. Potato starch soon became an internationally traded commodity. The leading processing firm, Scholten, soon started foreign direct investments in different European regions. Scholten is seen as the first Dutch industrial multinational and its main motivation was profit-seeking. The same firm was also the first to make the step from basic production to biochemical engineering in the 1920s. Scholten went bankrupt in 1978 and important parts of the firm were then integrated into the co-operative AVEBE.

Although Scholten and AVEBE were the two leading firms in potato starch for decades, AVEBE followed a completely different line of development. Due to its co-operative structure – its *raison d'etre* – the production of derivatives did not start until the 1950s. AVEBE was not involved in FDI until the integration of the remnants of Scholten. It has only been since the end of the 1980s, after near bankruptcy, that AVEBE has been active in the global markets. This happened under the threat of increased international competition on the starch market, and under the threat of decreasing protection from the Common Agricultural Policy of the EU. The central strategy became local-for-local; the aim was to be the leader in the market for potato starch, and an important player in the starch market in general. It is a brave policy, but because the firm will not be able to become leader in the market for starch, it is questionable whether this strategy can be successful. The position of potato starch, with its high costs and limited market chances, is such that international expansion will probably not help to maintain the actual production in the Veenkoloniën. The focus has recently changed again, in the direction of the home region, and with priority for potatoes and not for cassava. The co-operative character of AVEBE and its co-operative predecessors has an important spatial implication: potato growing and starch

production would probably have ended in the region a long time ago if AVEBE had been a private firm.

Notes

1 Information on the foreign operations was kindly supplied by AVEBE where this was not available from the Annual Reports.
2 Unless stated otherwise, figures on the financial situation of AVEBE are taken from the Annual Reports of the years 1980 to 2003.
3 There are several comparable but much smaller areas outside the Veenkoloniën but still in the north of the Netherlands. Those areas went through the same process of digging peat, the rise and decline of agricultural industries (also potato starch), and restructuring.
4 Wet op de Herinrichting Oost-Groningen en de Gronings-Drentse veenkoloniën, Stb. 1977, 694.
5 A potato starch factory opened in Gouda in 1819, but its main purpose was the production of sweet syrup (Gouda is still known for its syrup waffles). At that time starch factories with the same sweet purpose were developed in other places as well (Rotterdam, Oosterbeek). The location of these syrup factories was close to the consumption regions (Knaap, 2004, pp. 37–38).
6 After the removal of the bog for peat production, the remaining soil, a mix of peat and sand, was well suited for the production of potatoes. Before the peat could be removed, the bog had to be drained by canals. These canals were also the waterways for the transportation of the peat, and later on they were used for the transportation of potatoes; an additional advantage for the region.
7 In 2006 it appeared to have dropped considerably, to 31 percent, among others due to restructuring costs.

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9 Philips

A global electronics firm restructuring its home base

Oedzge Atzema, Egbert Wever and Marloes Krol

Introduction

According to Peter Dicken (2003) and Alan Rugman (2005) Royal Philips Electronics is one of the few truly global companies in the world. Nevertheless, the company still maintains a highly palpable presence in the Netherlands, including the location of its international headquarters, as well as those of its divisions, several technology centers and a number of manufacturing activities. Yet, whenever Philips relocates one of its activities from the Netherlands, Dutch newspapers express doubts about Philips' future in its home country. A regular refrain is an often-voiced concern that Philips is gradually fading away, relocating more and more jobs to low-cost countries in Eastern Europe and Asia Pacific. The Dutch labor unions are worried as well, and try to secure guarantees for Philips' employees in the Netherlands.

No doubt the number of Philips employees in the Netherlands is shrinking. It is tempting to link these shrinking employment numbers to the relocation of 'Dutch' jobs to low-cost countries, a reasoning that is based on a simplified idea of the international division of labor according to the life-cycle approach developed by Vernon (1966). This approach deals with one single product or activity. When that product matures its production will be standardized and will be relocated to countries with lower production costs in order to cope with international competition. Only very complex, knowledge-intensive versions of that product may remain at the original location with higher production costs. In the life-cycle approach it is assumed that only standardized production activities are relocated and not, or at least to a lesser degree, the non-production activities. The last mentioned activities, including R&D, are supposed to constantly generate new products in order to compensate for the loss of jobs in the standardized manufacturing sector. The fact that nowadays Philips is relocating non-standardized non-production activities too, raises doubts in the media, and explains the worries of the Dutch labor unions: globalization is threatening Dutch jobs.

However, this line of reasoning might be too simplistic for a company such as Philips, that is active all over the world, that produces a multitude of products and that is changing its product portfolio and product-market combinations constantly. It is perhaps also too straightforward to link the shrinking

number of Philips jobs in the Netherlands exclusively to the relocation of activities to low-cost countries. As Peter Dicken pointed out in 1998: "TNCs can indeed be blamed for some of the loss of manufacturing jobs in their home countries. But … the question is very complex" (Dicken 1998, p. 438).

In this contribution we will look at the position of Philips in the Netherlands. We will consider the changes that took place in the Netherlands in the number of Philips jobs, in the kind of activities the company is performing, and the regional distribution of these jobs and activities within the Netherlands. Our starting point is that all these changes are in one way or another the consequence of changes in the strategy of the company. We aim to 'translate' the internal strategy within Philips into its impact on the national and regional economy of the Netherlands.

However, we start our contribution with a brief historical overview. The next section describes how Philips gradually changed into a global company. Then follows an account of the radical reorganizations initiated by the last three CEOs: Jan Timmer (1990–1996), Cor Boonstra (1996–2001) and Gerard Kleisterlee (2001 to date). Preceded by a short overview of the international position of Philips, we focus in the final section on the changes that took place in the Netherlands over the last ten years.

The Philips story until 1990: evolution of products and organization

The initial phase (1890–1914)

Philips was founded in 1891, when Gerard and Anton Philips started the production of electric light bulbs in Eindhoven, at that time a relatively small Dutch town. Although the company was not the first bulb producer in the Netherlands, it turned out to be by far the most successful one. Gradually it strengthened its position in the world market, partly by initiating a cartel with the German company AEG and, in the beginning of the twentieth century, by building plants in other countries (Great Britain, Belgium, Spain), in order to cope with import restrictions.

The take-off phase (1914–1940)

After World War I Philips reduced its dependency on electric bulbs by diversifying its product portfolio. Gradually it became a producer of consumer electronics. The famous Natlab, started in 1914, was the driving force behind this change, generating an almost continuous flow of new products.

Figure 9.1 shows that Philips still maintains its focus on its lighting division by developing a steady stream of new products. Besides this central focus, Philips developed new products in the consumer electronics market, starting with the production of radio tubes in the 1920s and radio sets and the philiograph in the 1930s. In the professional electronics market Philips had already started with the production of medical X-ray tubes in 1918.

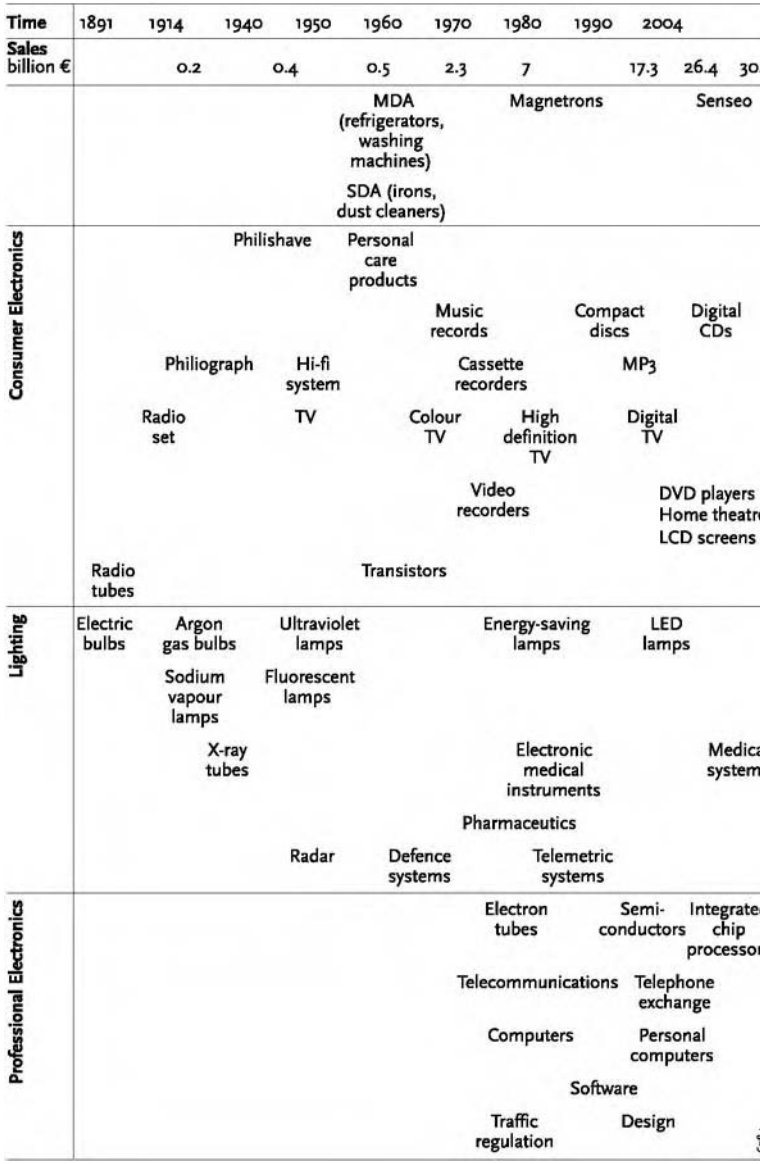

Figure 9.1 The evolution of Philips' product portfolio.

In this take-off period Philips re-styled its organization. It became a vertically-integrated company. It started the production of argon and hydrogen gas, and glass bulbs as well as activities such as cardboard packaging and even transport (Sluytermans 2003). Some horizontal integration took place as well. Philips got a share in Volt and Pope, its two most important Dutch competitors in the electric

bulb market (Heerding 1986, cited by Sluytermans 2003, p. 95). The company continued to expand internationally by setting up an international network of sales offices and by building new production plants abroad, mirroring more or less the well-known model of Håkanson (1979). Nevertheless, Philips was still a Dutch company. In 1929 it was the second biggest employer in the Netherlands: 70 percent of all Philips employees lived in the Netherlands. This changed in the 1930s during the depression, when many countries imposed import barriers. Philips responded by building plants abroad, and as a consequence, the number of Philips jobs outside the Netherlands increased, while in the Netherlands it decreased. In 1939 Philips employed 19,000 workers in the Netherlands and 26,000 abroad (Blanken 1997, cited by Sluytermans 2003). The Dutch share in the total number of jobs dropped from 70 percent in 1929 to 41 percent in 1939. Philips was on its way to becoming a transnational company.

The expansion phase (1945–1970)

After World War II, the international expansion of Philips accelerated. Until World War II, the world electronics market was dominated by American (General Electric, Westinghouse), German (Siemens, AEG) and British (GEC) companies, but thereafter Philips and some Japanese companies entered the world arena. During this period Philips co-operated more or less intensively with several Japanese companies, a practice which had already started in 1952 when Philips concluded a technical and capital co-operation agreement with a Japanese firm, Matsushita Electric, to set up a joint venture called Matsushita Electronic Corporation (MEC), which later gained prominence from its brand name Panasonic.

Between 1940 and 1970 the net sales of Philips grew from €0.4 billion to €7 billion. Substantial total sales growth led Philips to diversify its product portfolio (Figure 9.1). In the field of consumer electronics Philips became a world known producer of televisions, hi-fi systems and music records. It carved its reputation for innovative, good quality products; for instance, in 1963 it introduced the compact audio cassette, which became a huge success. At that time, it was the world's second biggest company in consumer electronics, but consumer electronics was not the only order of the day. Starting already in 1939 with its Philishave, Philips became a producer of major and small domestic appliances (MDA and SDA). The production of the X-ray tubes evolved towards a parcel of electronic medical instruments. During the war the Philips division in the United States was engaged in the production of radar, the beginning of its involvement in the production of defense systems. Furthermore, during the 1960s Philips became an important European producer of telecommunication systems as well as computers. Nevertheless, for professional electronics such as telecommunication and computers its position on the world market was somewhat less prominent vis-à-vis consumer electronics (Sluytermans 2003).

In organizational terms the company became what Dicken (2003, p. 214) calls a 'multinational' organization, a transnational organization whose operations are

decentralized (Figure 9.2). This type of organization was the outcome of the 'local-for-local' strategy of the company. In many countries, especially in Latin America and Europe, production activities were oriented to the national market. The operations in the various countries were primarily seen as largely independent national businesses. This was also true for the United States, where Philips started its first production operations in 1933, although it indicated to its arch-rival General Electric, that it would stay out of the US lighting market. However, as a consequence of World War II, Philips decoupled its US activities in an independent trust organization (the North American Philips Corporation or NAPC) to remain an allied producer after the German occupation of the Netherlands. At the end of the war this situation continued, in view of contracts in the defense sector (radar equipment). Moreover, Philips wanted to protect the company against American companies such as General Electric which might be interested in its American activities. Although the NAPC was organized as an independent trust, the brand name of Philips remained relatively unknown in the United States for a long time. Philips operated under various other brand names on the US market, for example, under the name Norelco, specializing in domestic appliances and personal care products.

In the beginning of this period of expansion Philips plants producing for export were mainly located in Europe, primarily in the Netherlands, Belgium and Austria. At that time, labor market conditions in Europe were relatively profitable for Philips. Nevertheless it also started production activities in Asia (Taiwan, Hong Kong, Singapore, and later on in South Korea). These plants also produced for export, since Philips was not allowed to sell its products in these regions. By the end of the sixties, Philips became a multinational.

The selection phase (1970–1988)

In the 1970s and 1980s it became clear that radical changes were imperative. Market conditions changed dramatically as competition increased. At the same time, 'traditional' products such as the radio, TV-sets, record players and hi-fi equipment became mature; while others, such as the semiconductors and computers, were still growing fast (Dicken 1998, p. 353). In order to cope with the changed external business environment, Philips had to:

- change its organization;
- define its core activities;
- lower its production costs.

Three interconnected aspects of the existing Philips organization had to be redefined: its 'business culture', its 'local-for-local' strategy and its 'dual management structure'.

Until the 1970s, and in contrast to its efforts to become a truly international organization (Figure 9.2), Philips' business culture was dominated by national orientation and paternalism. Almost exclusively Dutch managers, the top of

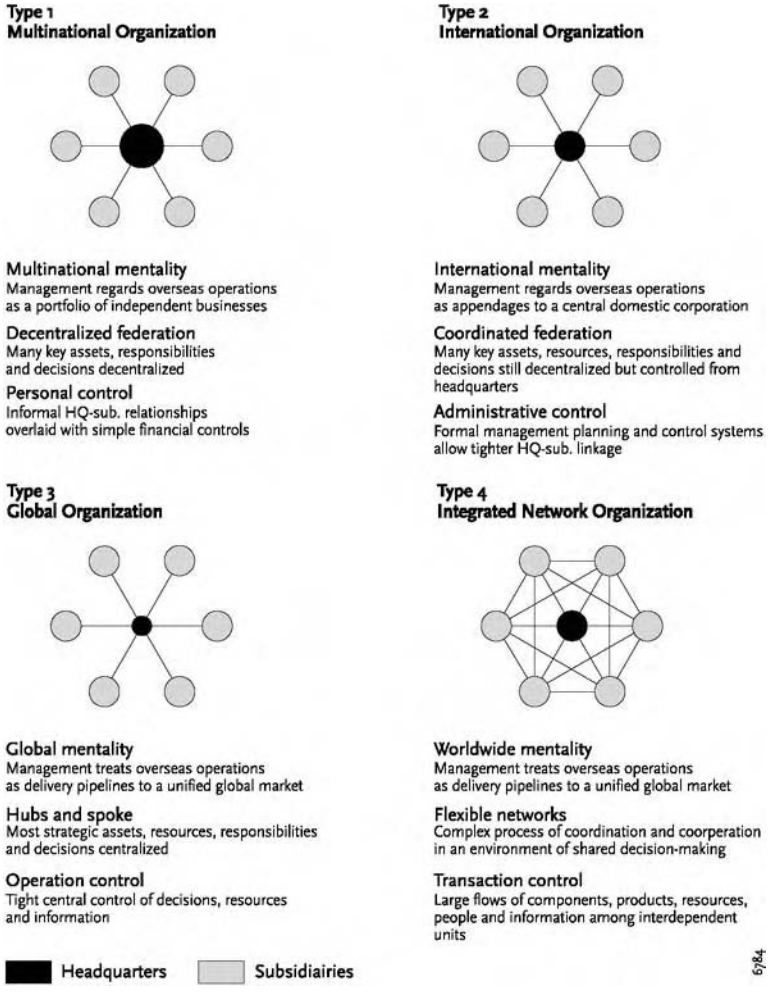

Figure 9.2 Ideal types of TNC organization (source: Dicken 2003).

which often had family ties with the original founders, controlled the company. Decision-making processes were typically Dutch; there was a strong emphasis on consensus. Moreover, the whole company was seen as one big family, taking care of every individual employee. A Philips job was considered a job for life. To become an international organization this culture had to change and from the late 1970s onwards, CEOs from outside the Philips dynasty entered the scene, although the company has always had a Dutch president. Nevertheless, on the second management level more and more non-Dutch managers have been recruited. Gradually the new management no longer strove for consensus – the Philips product portfolio was open to change and innovation. Furthermore, a Philips job was no longer a job for life.

In the same period it became clear that the decentralized 'local-for-local' policy should be replaced by a more centralized division policy in order to be able to respond timely to external changes. But that was not an easy task, since the 'national organizations' (NOs) had become extremely powerful within the organization. Particularly, the earlier-mentioned North American Philips Corporation (NAPC), operated as if it was completely independent. However, it was not only NAPC, but other NOs as well, which behaved sometimes contrary to the company's interest. They were primarily looking after their own possibilities and performance, which turned out to be a severe handicap when changes in the external environment required speedy and timely response. This can be demonstrated by two examples.

The first example is about the expansion of the production of Philips in Europe. Philips strongly supported the formation, and later on the enlargement, of the European Union, which would create bigger markets and bigger markets would open up opportunities to realize scale economies, by replacing small but relatively expensive 'local' plants with bigger and relatively cheap 'European' ones. However, within the existing Philips organization it was difficult to close plants down, as that might raise protests from the mighty NOs; and although, in the beginning of the 1980s several plants were closed, others were not or closure was postponed for several years. For sure, Philips was tardy in restructuring its production activities because of the powerful position of the NOs, resulting later on in severe problems. However, we have to recognize too that the European institutional environment in those days made it very difficult, sometimes almost impossible, to close plants without creating new jobs for those who would lose their jobs.

The second example is about innovation. The powerful position of the NOs turned out to be a barrier to the introduction of new products. The need to implement new innovations quickly increased when product life-cycles became shorter. But in the traditional set-up 'Eindhoven' could not unilaterally force the NOs to sell a new innovation of the Natlab. They had to convince them, sometimes without success. The North American Philips Company refused to sell the Philips V2000 video system (Metze 1991). Both examples cited, illustrate that Philips, in a sense, was 'locked in' in its own structures. Changing this structure needed a lot of time, so the pace of change could only proceed gradually.

The change from a decentralized 'local-to-local' to a more centralized organization had its impact on the international expansion of Philips, which continued to produce for itself, or to buy components abroad, not as in the past exclusively for market reasons, but to 'reduce production costs' of their core products. Many production activities, especially standardized ones, in which economies of scale could be realized and for which low skilled labor could be used, were started in, or reallocated to, low-cost 'runaway-countries', especially in Asia (Metze 1991; Ernst 1997). That had its consequences for many of Philips' relatively small-scale plants, serving relatively small markets, in Europe. At the start of the 1980s the company still had 275 plants in Europe, while by the end of the decade it had only around 100 (Muntendam 1989; Metze 1991).

The third change Philips had to make, was to change its 'dual management structure'. When Philips was founded, it was headed by a technical man (Gerard Philips) and a marketing man (Anton Philips); a dual structure that did not change for a very long time. All NOs, and later on all divisions as well, had the same management structure at the top. Sometimes the technical CEO was in fact the most important, in other situations the marketing CEO. But just as in the relation between the NOs and 'Eindhoven', the two CEOs sometimes had different ideas about the strategy to follow. In those cases it often resulted in long discussions. The same long discussions took place between, on the one hand the NOs and divisions, and on the other hand 'Eindhoven'. There, conflicts between the technical and marketing lines resulted in delay or in postponing vital decisions. Although already in the 1980s attempts were made to replace the dual management with one CEO, it was not until the 1990s that CEO Jan Timmer succeeded in changing this outdated management system.

During the 1980s it became clear that Philips had to make another strategic change, i.e. to redefine its 'core activities'. Inspired by the ideas of Prahalad and Hamel (1990), Philips made a distinction between interlinked and stand-alone activities. Of the four core sectors three were classified as interlinked: consumer electronics, components, and telecommunication and data systems. Lighting was defined as a stand-alone core activity. All the other activities, of which there were many at that time, were regarded as non-core, for example medical systems, domestic appliances, defense systems and industrial electronic systems. However, many of these products sold well.

The redefinition of core activities had far-reaching consequences for the presence of Philips in the Netherlands. For instance, the Philips pharmaceutical and chemical division (Duphar) located in Amsterdam, Weesp, and Olst, was sold to the Belgian company Solvay in 1980. In 1989 Philips sold its defense activities to the French company Thomson (known today as Thales), including Holland Signaal located in Hengelo. Moreover, in 1989 Philips sold its computer division, located in Apeldoorn, to the American company Digital Equipment Corporation and its telecommunication activities, located in Hilversum, were bought by the American company AT&T (including Lucent). With this sale the Philips adventure in the computer market, which began in the 1950s, came to an end. Despite the high quality of the early computers developed by Philips and its fortified position in this market after taking over the American company Signetics in 1975, IBM's leading market position proved too dominant. To redress the balance, and stimulated by the European Commission, Philips started to cooperate with the German company Siemens and the French company CII in the Unidata project. This project failed and so did Philips in its bid to become a major player in the computer industry. After selling its computer division Philips sold its major domestic appliance activities at the beginning of the 1990s to, once again, an American company, Whirlpool. Philips and Whirlpool had founded a joint venture in 1989 to market their own brands in Europe and to sell brands such as Bauknecht and Ignis. Whirlpool bought out Philips in this joint venture in 1991.

Further scrutiny reveals two categories of non-core activities. Some activities were acquired unintentionally when Philips took over a company: they were part of the whole deal. In the past these non-core activities were continued for quite a long time, partly because it was difficult to close them. For instance, Philips for many years produced barbed wire in Ireland. However, in the 1980s Philips gradually started to get rid of such kinds of non-core activities. The other category concerns the non-core activities that primarily serviced the (former) core activities of the company, for example producing plastics, cardboard, or machinery. By selling these former systems of internal deliveries within a vertically organized company, a system of external subcontracting and co-makership was established, resulting in vertical 'des-integration'.

To strengthen its core activities Philips focused more on R&D co-operation with other companies (de Smidt 1990). This policy reflected the company's need to reduce the risks connected to the enormous R&D expenses to develop new products. Following are some examples. In 1979 Philips participated in the German firm Grundig and developed together with that company the V2000 video system. In 1980 Philips bought the American brand Marantz and co-operated with that company in the development of digital audio products. Working closely together with Sony led to the introduction in 1983 of the Compact Disc, which became one of Philips most successful products, followed later on by many innovative products such as the Super Audio Compact Disc and Digital InterFace. Another example is the co-operation with the German company Siemens in 1984 to develop the so-called mega chip.

Although a start was made, the short-term results of what was realized in the 1970s and 1980s were not impressive. Undoubtedly, there were some big successes, namely the introduction of the CD, but Philips was not successful in many other markets. Many external critics, as well as insiders, think that most decisions were taken too late in these cases. As a consequence, the company found itself in a rather problematic situation at the end of the 1980s. Profits and solvability were too low, the price of a Philips share dropped to an all-time low.

Philips in the 1990s

During the 1990s, our focus in this chapter, initiatives that were started hesitatingly in the 1970s and 1980s, but were accelerated by CEO Cor van der Klugt, were implemented in a rather drastic way. For insiders, it was clear that the company had taken too much time to adapt to the changing business environment.

Thus Philips underwent, yet again, another transformation and became a different company compared to the one it was several decades before. The new Philips was, in the words of Peter Dicken (2003, p. 216), an 'international' organization, no longer a 'multinational' organization (Figure 9.2). It considered its overseas operations no longer as quasi-independent businesses, but as subordinated branches controlled from the company's head offices. Philips

also focused more intensively on what it considered were its core activities and outsourced all activities that were considered non-core. These changes can be attributed to individual CEOs.

The first person who initiated the difficult process of reorganization was Jan Timmer. He had made a career within the Philips company and had a reputation as an effective reorganizer. He had made Polygram a real cash cow and had reorganized the consumer electronics sector. Influenced by (again) Prahalad, Timmer introduced a radical restructuring process called 'Operation Centurion'. In mass meetings he showed Philips' employees all over the world, how dramatic the company's situation was: 40 percent of all activities had not made any profit in the last five years, sales per employee were only half of those of competitors such as IBM, Siemens or Sony. This part of 'Centurion' should pave the way for radical changes Philips had never seen before, implying the closure of hundreds of firms and the dismissal of many thousands of employees in order to create a new future for Philips. For Timmer, it was clear there would only be a new future with the demise of the 'old' Philips.

Even before 'Centurion' officially started, Timmer ordered two dismally performing divisions – Consumer Electronics and Information Systems – to draw up a reorganization plan. He, moreover, decided to stop all activities surrounding the Megabite chip (in co-operation with Siemens), to withdraw from the market of certain LCD screens, and to stop the production of sensors for video cameras and cheap lasers, resulting in a loss of 4,000 jobs. Where the division 'Information Systems' was concerned, Timmer decided to stop the production of minicomputers, implying the loss of another 5,000 jobs. On top of this unofficial start, sometimes called 'Centurion 1', came the official 'Centurion 2' policy, resulting in a loss of 35,000 to 45,000 jobs worldwide. Every division had to reduce its labor force by 15 percent, focusing on employees in the central offices. Labor productivity had to be improved, and supplies had to be reduced. Unlike in the previous period, goals were formulated that the top managers had to realize. The last part of the reorganization ('Centurion 3') focused on revitalization, implying clear strategic decisions for the future.

Although Timmer is less associated with the last stage of 'Centurion' he made revitalization decisions too. The former Polygram man saw opportunities in the growing multimedia sector and, as a result, Philips became involved in all kinds of services in this field, including the participation in cable nets, in companies producing films and in stores selling or renting videos. The results of 'Centurion' were impressive. Between 1990 and 1995 sales increased worldwide by 16 percent and the number of employees decreased from 304,600 to 265,000. The financial world was highly satisfied. The price of a Philips share increased by 186 percent (Freedman 1996).

Timmer concretized some trends that were going on within Philips. The 'dual management system' was abolished. Moreover, the role of the financial department was strengthened and a CFO was introduced. The first one, Dudley Eustace, sold Philips' very profitable share in MEC, the earlier mentioned joint venture with Matushita. Furthermore, he drew up some attractive financial

arrangements with the Dutch Rabobank to lease the internal knowledge of Philips.

In 1997 Jan Timmer was succeeded by Cor Boonstra, a former CEO of Sara Lee. Although Boonstra had been a member of the Philips management board for a couple of years, he was seen as an outsider. Boonstra focused strongly on shareholder value, even more than Jan Timmer did, therefore he deconsolidated some loss-making activities, so-called 'bleeders'. Moreover, he ended the company's unprofitable participation in Grundig (consumer electronics), sold the business unit Car Systems to Mannesmann, and withdraw from the multimedia activities started by Jan Timmer some years before. In 1998 he sold Polygram to Seagram. Boonstra also cut back on overhead costs by halving the staff in the headquarters. Furthermore, he reorganized the business structure of the company by merging the divisions Sound and Visions, Consumer Electronics, and Industrial Electronics, into two new divisions: Consumer Branded Products, and Business Electronics. In his opinion, both divisions should focus on 'high volume electronics'. These two divisions became core divisions, together with the Components division. Around these three core divisions a circle of more or less stand-alone divisions existed: Lighting, Domestic Appliances and Personal Care and Medical Systems. Boonstra also introduced a new model of internal governance by which the 120 business units of Philips were given direct responsibility for doing business. Each of the business units had to report its results directly to him. According to Boonstra, Philips was a manufacturing company, producing exclusively physical goods of excellent quality. "Let's make things better" was the slogan used in the marketing campaign to shape the image of Philips.

In 2001 Gerard Kleisterlee, an engineer, took over Cor Boonstra's position. Contrary to Boonstra he had a long history within Philips. Kleisterlee concluded that the reorganization enforced by Boonstra had not been efficient. The business units stood too much on their own, bearing total responsibility for their own administration and financial planning, resulting in an enormous increase in total overhead costs. Kleisterlee wanted to get rid of such a federation of administratively more or less independent business units, where synergy effects were missing. His slogan was 'one Philips'. In the first months of his regime he reduced the number of jobs in such administrative activities by 50,000. In an offensive approach he upgraded the division, Medical Systems, into a core division. In order to strengthen this core activity, Philips started an ambitious program, including the acquisition of four medical systems firms in the United States. That was made possible by the excellent financial position of the company, a stark contrast with the situation when Jan Timmer started his 'Operation Centurion'.

In sum, taking 1990 as a reference point, Philips had undergone a drastic transformation. The period in which the company was seen as one big Dutch family definitely came to an end, although the CEOs were still Dutch. At the helm were strong leaders who decided about strategic market positioning as well as operational reorganizations; they made their individual mark. Due to different

ideas about core- and non-core activities the portfolio of core activities changed regularly. Successive CEOs said goodbye to activities (and as a consequence to workers) that they saw no longer as core activities, sometimes selling firms that their predecessor had bought only some years before. Wisse Dekker (1982–1986) focused on computers and telecommunication, but in 1991 Jan Timmer (1990–1996) sold this division to Digital Equipment Corporation. Timmer, in his turn, focused on software and media such as music (Phonogram) and video (Videoland), but his successor Cor Boonstra (1996–2001) hived off both in 1997, concentrating on physical high-tech products. For Boonstra 'medical systems' was still a relatively marginal stand-alone activity, while Gerard Kleisterlee made it a core activity.

The global status of Philips in 2004

Thanks to the shock therapy, Philips recovered in the 1990s. According to Dicken (2003) and Rugman (2005) it is now one of the few real global companies. In order to define 'global', Dicken uses a more or less traditional index of transnationality (TNI) consisting of the share of assets and employment outside the home country. Based on this analysis, only a minority of the 100 largest TNCs can be classified as global. Many of these global TNCs originate from small countries, such as the Netherlands. Recently, Rugman (2005) used another indicator: in order to be 'global' a firm should sell more than 20 percent of its products in each of the triad regions in the world (Europe, North America and Asia), but less than 50 percent in each of these regions. Based on this criteria, Rugman could classify only nine out of the top 500 TNCs in the world as 'global', with Philips sharing the illustrious company of other giants such as IBM, Sony and Nokia. Rugman classified another nine companies as 'near miss' global companies, because of insufficient information available. Eleven of them belong to the computer, office and electronic producers industries, including Compaq, Aventis, and Eastman Kodak.

As a global company, Philips is involved in many markets as well as in many business activities. Yet, it is remarkable that, despite all changes that occurred, there is a lot of continuity too (Figure 9.3). As said before, the company started more than one hundred years ago with the production of electric light bulbs. Today, it is still the world leader in lighting, 15 percent of its total net sales are realized in this sector. Also, in consumer electronics, originating in the 'take-off phase', Philips is still very active: 33 percent of its worldwide sales are realized in this sector. Nevertheless the profit margins in this market are still very small as a result of the low cost competition of Asian competitors. Less important, at least based on sales, were the divisions: Professional Products and Systems, and Components. In 2004 both divisions no longer existed, but a new division, Semiconductors, was created, realizing 18 percent of total sales. In the market for professional electronics, Philips has strengthened the position of Medical Systems, which currently realizes 19 percent of total sales. Domestic Appliances and Personal Care is still the smallest division, realizing 7 percent of total sales,

but it is nowadays a profitable core activity of Philips. The current strategy of Philips is to focus on Lighting, Medical Systems and Domestic Appliances and Personal Care.

Between 1988 and 2004, nominal value of total net sales of Philips increased by nearly 20 percent (from €25,448 million to €30,319 million). Although the figures given in Figure 9.3 are not perfectly comparable over time (the company reorganized its structure and its product portfolio), one could conclude that the share of Lighting, Consumer Electronics, and Domestic Appliances and Personal Care, in the total sales of Philips is rather stable.

The geographical pattern of Philips sales changed too (Figure 9.4). Europe is still its most important market (43 percent of total sales), but the Asian market has become increasingly important for Philips. In 2004 more than a quarter of all Philips' sales were realized in Asia. According to some press releases, this shift will continue in the years to come. Recently, Philips announced that it expects to reach 33 percent of its total net sales in the Asian region in 2008. The (internal) deliveries from Asia are already growing impressively. In the Netherlands, partly the same development can be observed: the value of interregional deliveries has doubled, but sales have stabilized. This development illustrates the position of 'Standort the Netherlands' within the Philips company, a preferred location for business activities such as Planning and Control, and Research and Development.

Although there has also been a process of reallocation of Philips (production) activities from Western Europe towards new EU members in Eastern Europe (Poland, Hungary), all the corporate and division headquarters are still located in

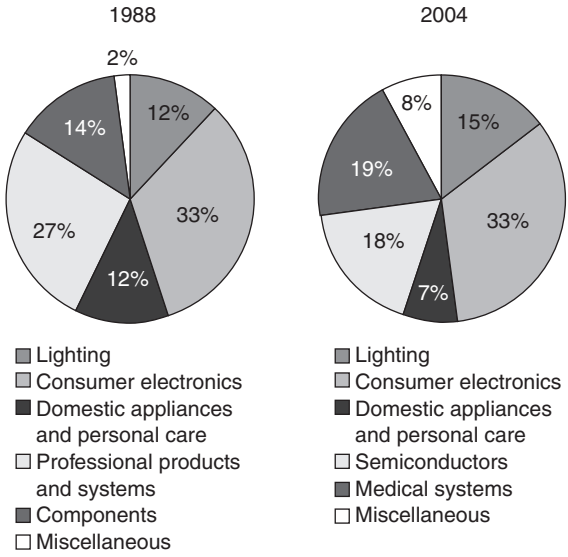

Figure 9.3 Net sales of Philips by product division, 1988 and 2004 (%).

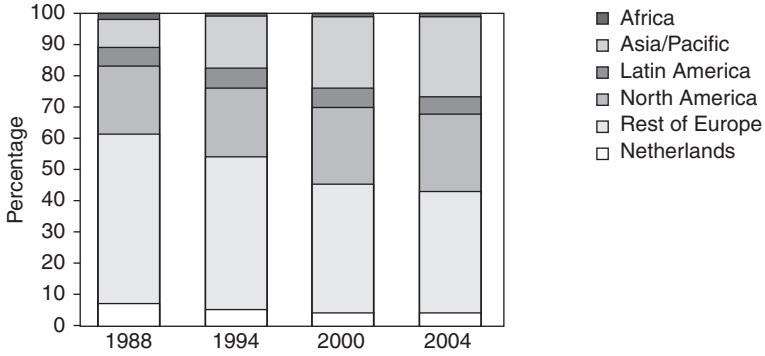

Figure 9.4 Sales of Philips by geographical region, 1988–2000 (%).

the Netherlands, with the exception of Andover (USA), the location of the headquarters of the division of medical systems (Table 9.1). For the R&D centers the situation is not very different, although Table 9.1 gives another impression, showing that seven of the eight international specialized R&D laboratories are located outside the Netherlands. Moreover, like other global companies in the electronic industry almost every Philips plant has its own support laboratory and each of the main economic regions has its own development centre. Nevertheless, two-thirds of all Philips' 2,100 purely research employees still work in Eindhoven. The Techno Campus in Eindhoven is a kind of hub in the Philips internal R&D network.

So, Philips sold quite a number of manufacturing activities or relocated them to other countries, while its remaining Dutch portfolio of activities shifted towards high value-added activities. This supports Ernst's statement that:

> In essence, electronic firms breaking down the value chain into discrete functions and locating these functions where they can be carried out most effectively, where they are needed to facilitate the penetration of important growth markets, and where this enables the firm to generate closer, faster and more cost-effective interaction between different value stages across different locations (Ernst 1997, pp. 101–102).

The reasons for Philips' continued orientation toward the Netherlands might be simple. Stopford and Strange already remarked in 1991 (cited by Dicken 2003, p. 234) that even in global companies the directors and managers are psychologically and sociologically highly embedded in their home country. Apart from that, there are intensive network relations between the Philips top management and the Dutch government. Although its management board has become more and more international, institutional relations within the Netherlands are still quite strong. The same is true for the financial support Philips gets from the Dutch government to stimulate innovation in its R&D lab in Eindhoven.

Table 9.1 Location of Philips headquarters and research centres, 2004

Function	*Location*
International Headquarters	Amsterdam (NL)
Division Headquarters:	
Lighting	Eindhoven (NL)
Consumer Electronics	Amsterdam (NL)
Domestic Appliances and Personal Care	Amersfoort (NL)
Semiconductors	Eindhoven (NL)
Medical Systems	Best (NL) and Andover (USA)
Regional Headquarters:	
Europe, Middle East, and Africa	Amsterdam (NL)
Asia	Hong Kong (China)
North America	New York (USA)
Latin America	Sao Paulo (Brazil)
Research Centres:	
Main general centre: Natlab	Eindhoven (NL)
Process Technology	Leuven (B)
Lighting	Aachen (D)
Medical and Electronic Modules	Hamburg (D)
Electronics	Redhill (GB)
Medical Systems and Wireless Communication	Briarcliff (USA)
Consumer electronics	Shanghai (China)
Informations and Software Technology	Bangalore (India)

The second reason has to do with the particular location conditions an international headquarters needs. Within a TNC organization the headquarters has to deal with complex processes of co-ordination and co-operation. For this function a location of the headquarters in one of the most important global transportation and communications networks can be attractive, in order to be able to stay in close contact with all the other parts of the organization. That makes it understandable why Philips relocated its international headquarters from Eindhoven to Amsterdam, close to Schiphol international airport, and with a broad range availability of high-quality (financial) services and rich cultural amenities in the Dutch capital city. Incidentally, there is a less rational explanation for this relocation as well: Boonstra's wish to escape from the lock-in resulting from the 'old boys network' existing in and around Eindhoven, engendering, in his eyes, a lack of dynamism. Nevertheless, these institutionally inspired arguments for embeddedness of control and research activities of Philips in the Netherlands do not give any guarantees for the future. If Philips is indeed becoming an 'integrated network organization' (Figure 9.2), there is no reason why it should concentrate these kinds of activities in the Netherlands. In the case of control, there is a tendency to decentralize responsibilities to the regional headquarters for marketing reasons and to cluster production units for efficiency reasons. Also in the case of Research and Development, the scope Philips employs is international.

For instance, it invests heavily in R&D of consumer electronics in China (Shanghai), and in R&D in medical systems in the US Boston region. Within the European context, Philips uses the concept of an R&D triangle, comprising Eindhoven–Leuven–Aachen.

Philips in the Netherlands: fading away?

A parabole can be used to describe the shape of total employment in Philips over the last five decades (Figure 9.5). During the expansion phase the number of Philips employees increased rapidly worldwide, from 90,000 in 1950 to 359,000 in 1970. In that period the Dutch share already started to decrease, from 45 percent to 28 percent. Nevertheless, the absolute number of Philips employees in the Netherlands more than doubled, from 44,000 in 1951 to around 99,000 in 1970. But since 1971 that absolute number has constantly been shrinking. Nowadays it is nearly half that of 1950 and a quarter of the figure in 1970.

We will focus in this chapter on the factors behind the decrease in employment over the last decade, between 1994 and 2004. In order to get a good impression of what happened in that decade we include data from the whole period since 1980 (Figure 9.6).

Between 1981 and 2004 the number of Philips jobs decreased worldwide from 348,000 to 162,000 (–53 percent). In the Netherlands it went from 76,000 to 27,000 (–64 percent), indicating that the rate of decline in the Netherlands exceeded that in the rest of the world. The Dutch share in total Philips employment declined from 22 percent to 17 percent. Given what was said before, it is no surprise that the decrease in jobs in the Netherlands, as well as worldwide, accelerated during 'Operation Centurion' at the end of the 1980s and the

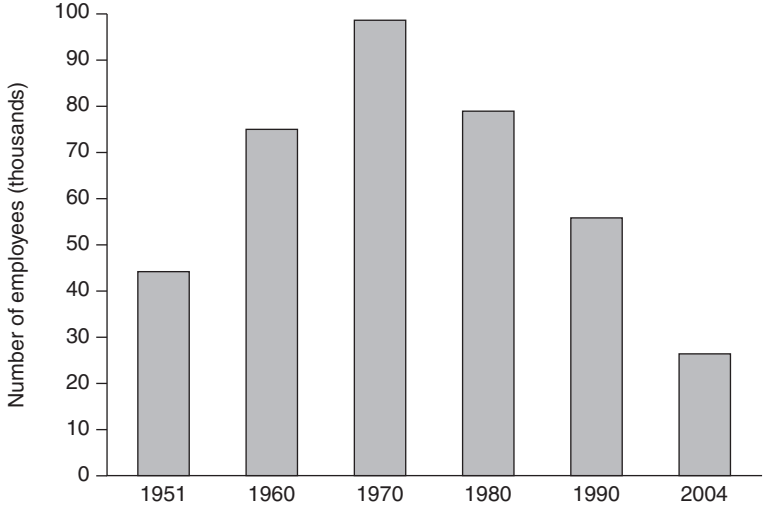

Figure 9.5 Philips employment in the Netherlands, 1951–2004.

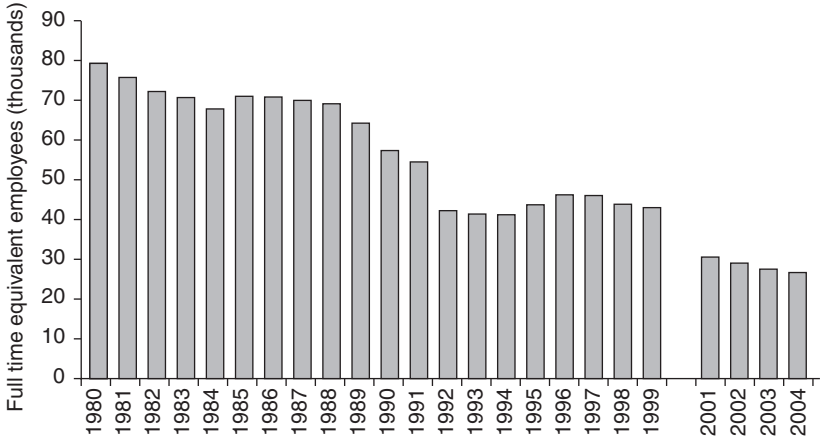

Figure 9.6 The absolute numbers of jobs at Philips in the Netherlands (1,000 full-time equivalent employees), 1980–2004 (figure for 2000 not available).

beginning of the 1990s. Nearly 50 percent of the loss of Philips jobs in the Netherlands in this period can be explained by the net effect of deconsolidations and consolidations (Luiken 1994). Moreover, nearly 40 percent of the decrease in Philips employment in the Netherlands in this period can be explained by increases in labor productivity and 15 percent by direct or indirect reallocation of activities to other mostly, but not exclusively, low-cost countries.

So half of the decline in employment can be attributed to strategic reasons. The negative net effects of (de)consolidations on employment in the Netherlands reflect the company's ongoing vertical disintegration policy (the deconsolidation of services such as catering, cleaning, energy supply and logistics), its back-to-basics strategy (the sale of non-core activities), as well as its participation in many high-tech joint ventures. The second conclusion taken from research conducted by Luiken (1994) might be that the shrinking number of Philips jobs in the Netherlands had only marginally to do with the relocation of standardized activities to overseas low-cost countries. The majority of the international relocations, consisting of manufacturing plants, especially from the lighting, components and domestic appliances divisions, stayed within Europe. Production activities were moved from the Netherlands to the United Kingdom, France, Germany, Portugal, and Poland. Only a minority found its way to Taiwan, Mexico, and Singapore.

After 1994, the number of Philips jobs in the Netherlands first increased (by nearly 5,000), but after 1997 there was a constant decrease (Figure 9.6). Over the whole period, between 1994 and 2004, and according to the official figures of Philips, there was a total decrease from 41,652 to 26,772 employees; a reduction of nearly 36 percent. Like Luiken (1994) we attempted to get more insight into the background of this decrease by investigating what happened in the business activities of Philips within the Netherlands. Without input from Philips, we

had to make our own dataset, based on articles in newspapers and magazines, as well as on public information given on the internet.

The base unit of our investigation is the 'business site': an office or plant in which commercial activities take place and of which more than 50 percent is owned by Philips. These business sites should have their own address in the Netherlands. Some places, as well as some addresses, can have more than one business site. In 1994, we counted 97 Philips business sites in the Netherlands, located in 33 municipalities. Not surprisingly, the municipality of Eindhoven hosted nearly half of them (43). To control our data, we compared the employment figures we found of each of the business sites of Philips still active in 2004, with the employment information from the National Information System on Employment (LISA). The same is done with the deconsolidated business sites.

According to our information the number of Philips business sites in the Netherlands was reduced between 1994 and 2004, from 97 to 38 (Table 9.2). The majority of this reduction can be linked to deconsolidations: Philips sold 54 business sites to other companies or made them independent via a management buy-out. Including the findings of Luiken (1994), one can conclude that, over the last twenty years, Philips sold about 75 percent of all the business sites it had in 1980 in the Netherlands.

During the period 1994–2004 Philips closed only five business sites in the Netherlands and established three new ones, all of them in research and development and all located in Eindhoven or in the immediate surroundings of that city (Best). Two sites were relocated within the Netherlands: the international headquarters (including the headquarters of the Consumer Electronics division) from Eindhoven to Amsterdam, and the headquarters of the Domestic Appliance and Personal Care division from Groningen to Amersfoort.

The main reason for deconsolidation is that those business sites were no longer considered as core activities, for instance in transportation and expedition, recycling, cable and wire, plastic and metal ware. Surprisingly, Philips also sold business sites in medical systems and advanced lighting in car systems. The most sensational sale was that of Polygram to Seagram. Sensational, because it was performing very well and employed a growing number of staff. The main reason for this kind of sale is financial, while a secondary reason is strategic.

Table 9.2 Number of Philips business sites in the Netherlands, 1994 and 2004

Business sites in 1994	97
Existing sites	33
New sites	3
Relocated sites	2
Deconsolidated sites	54
Closed sites	5
Business sites in 2004	38

The same is true for the sales of so-called 'bleeders', business sites with a poor business performance (Table 9.3). Most of these bleeders belonged to the divisions of professional electronics (Industrial and Business Electronics), components and lighting. Generally, and not surprisingly, in almost all cases the number of jobs decreased substantially in these 'bleeders'.

After 2000 Philips sold fewer business sites and only relatively small ones. Besides, Philips sold its last (minority) shares in ASML and Atos Origin, and gradually some of its international participation in LG Philips LCD (South Korea), TSMC (Taiwan), and Navteq (USA). The generated revenue was invested in the company's current main strategic domains: Medical Systems, Domestic Appliances, and Lighting.

The sale of non-core activities and 'bleeders' as well as well performing activities has consequences for the discussion about the shrinking number of Philips jobs in the Netherlands, because many of these Philips deconsolidations have not disappeared. They are still active in 2004, implying concomitant jobs. However, they now no longer belong to Philips. According to our calculations in the deconsolidated businesses 5,679 employees were working in 2004, implying that the number of jobs between 1994 and 2004 did not decrease by 36 percent, but 'only' by 22 percent. This implies that the reduction in the number of Philips jobs in the Netherlands is at least partly compensated by the jobs in the still existing deconsolidations (Figure 9.7).

We have to give nuance with respect to the decrease in Philips jobs in the Netherlands, because the given figures do not include jobs of suppliers and spin-offs of Philips in the Netherlands. As such, the related employment of Philips in the Netherlands is much larger than our own figures on the shrinking numbers of business units show. Unfortunately, there is no information available about the

Table 9.3 Typical 'bleeders' in the Netherlands sold by Philips, 1994–2004

1994	Production of aluminium oxide (lighting) in Uden: sold to DMC2 (Germany)
1995	Production of oscillators (components) in Doetinchem: sold to Saronix (USA); closed
1995	Production of industrial automation systems (professional electronics) in Nuenen; sold to Neways (NL)
1997	Production of axes for video recorders (components) in Dordrecht: sold to Nimbus (NL); closed
1998	Production of semiconductor lasers (professional electronics) in Eindhoven; sold to Uniphase (Canada)
1998	Production of digital tapes (components) in Eindhoven; became an independent firm (Onstream)
1999	Production of hearing-aid instruments (domestic appliance) in Eindhoven; sold to GN ReSound (Denmark); closed
1999	Production of plastic and metal accessories (components) in Eindhoven, Tilburg, and Sittard; became an independent firm (Key Tec) that concentrated production in Sittard; Tilburg and Eindhoven closed
2000	Production of ferrite chains (professional electronics) in Eindhoven; sold to Yageao (Taiwan)

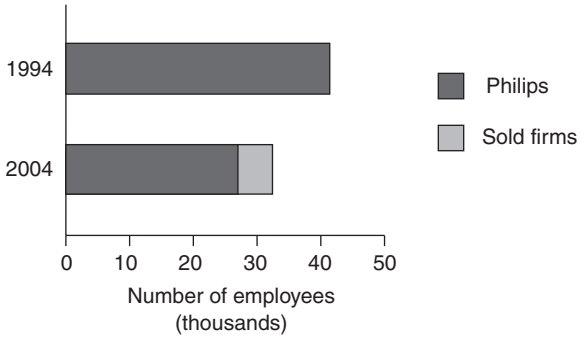

Figure 9.7 Employment in business sites in the Netherlands, owned by Philips in 1994 and 2004, and sold by Philips in the period 1994–2004.

share of Dutch firms within the worldwide population of 50,000 suppliers of Philips. The same is true for the number of spin-offs. Nevertheless, some of them are quite successful, such as the semiconductor producer ASML in Veldhoven (started in the beginning of the 1980s as a joint venture between Philips and ASMI, having about 3,000 employees in 2004), or the ICT firm Atos Origin (started in 2000 as a merger between the French company Atos and the Dutch company Origin, which included Philips Communication and Processing which merged in 1996 with BSO, employing a staff of about 9,000 in 2004). In 2005 Philips no longer participated in either firm. It sold its remaining shares in the last two years for about €200 million each.

Looking at the 33 business sites of Philips in the Netherlands that survived the period 1994–2004, it becomes clear that in 17 of them, employment decreased substantially (Table 9.4), mainly because of the general increase in labor productivity and the trend to outsource parts of the production process and all logistic activities.

Many of the Dutch Philips business sites of the lighting division survived by upgrading their activities and by increasing their labor productivity. However, in the mid-1990s Philips built a new production plant in Pila in Poland, employing

Table 9.4 Employment in surviving Philips business sites in the Netherlands, 1994–2004 (number of business sites)

	Increased	*Stable*	*Decreased*
Lighting	–	6	4
Domestic Appliance and Personal Care	–	1	2
Semiconductors and Components	2	3	4
Professional Electronics	–	3	3
Medical Systems	1	–	–
Miscellaneous	–	–	4
Total	3	13	17

about 3,300 workers in 2004. A part of the production in the Netherlands was reallocated to low-cost Pila. The future of some of the Dutch business units in this division seems to be problematic. According to newspaper reports, the Dutch labor unions expect Philips to close its lighting business units in Middelburg, Deurne/Maarheeze, Oss and Weert, although Philips denies it at this moment. Nevertheless, Philips announced that it will concentrate its activities on high-value end-products, particularly in LED lighting, and presented recently (in 2005) a worldwide investment plan of €200 million, of which €40 million will be used to expand the main Dutch lighting business site (with 1,200 employees) in Roosendaal. In the near future, Philips could quite well concentrate all or most of its Dutch high-value lighting activities in Roosendaal, deconsolidating activities elsewhere in the Netherlands.

Besides the headquarters in Amersfoort, there are only three production sites of the Domestic Appliance and Personal Care division left in the Netherlands. The production sites in Hoogeveen (coffee-makers and vacuum cleaners) have been in big trouble already for quite some years. Consequently, the number of jobs has decreased and Philips has announced that it will close both sites in the short-run and will relocate the production activities to Poland and China. The development activities will be reallocated to the nearby production site in Drachten. This business site shows quite stable employment figures (about 700 employees), but it had to upgrade its employment, as it became Philips' development centre for electric shavers.

The Dutch production sites in the former Components division are confronted with bad market conditions, because of slumping prices and stagnating sales for conventional TV screens. As a consequence, the number of jobs in these kind of activities in the Netherlands was trimmed. The last production site in Stadskanaal is scheduled to close in 2005. Philips protected its interests in LG Philips Displays, a joint venture with the Korean company LG Electronics. Because of the rising demand for new flat screens, Philips started some years ago with the same Korean company the joint venture LG Philips LCD and concentrated the production in South Korea.

The two business sites in the Semiconductor division show an increase in the number of jobs: the big production facilities in Nijmegen, with 4,500 employees (2005 year-end figure) and an R&D centre for imaging in Eindhoven. The situation in Nijmegen is quite interesting. During 'Operation Centurion' Jan Timmer stopped the mega-chip project, resulting in a loss of 700 jobs. Fortunately for the city of Nijmegen there was a new boom on the world chip market after 1993. Philips decided to invest in existing factories, resulting in an increase in jobs in Nijmegen (4,500 employees in 2005); the site produces advanced chips. In 2004 Philips announced that it would rent out the biggest part of the so-called Philips City Centre (officially Fiftytwodegrees) in Nijmegen, a centre for new product and business development. However, recently rumors could be heard that Philips is not considering semiconductors as a core-activity any more. If these rumors are right they could have consequences for the Nijmegen site.[1]

As mentioned earlier, Medical Systems became a division of its own. To become the world's number one in some of the markets for medical products, Philips acquired several American companies: Marconi Medical Systems, ATL Ultrasound, Medquist, ADAC Laboratories, and Agilent Healthcare Solutions Group. In the Netherlands, Philips sold two sites in this division, but employment in its most important Dutch production site and adjoining headquarters in Best increased to 3,000 jobs in 2001. Since then, employment decreased slightly. The existing headquarters in Best will be merged with the division headquarters in Andover near Boston in the USA, one of the biggest markets for this division. The site in Best will then be transformed into the division's European headquarters.

The overall picture is quite complex, yet rather clear. Almost all Philips production sites in the Netherlands show a decline in employment over the last decade. Increasing labor productivity, outsourcing and relocation of activities towards Central Europe and Asia, are the main characteristics of this development. Yet several Dutch production sites show stable or even increasing employment. Mostly these are sites with high competence or R&D activities. Such activities seem to have the best chances of survival within the Dutch context.

The changing geography of Philips in the Netherlands

To explore the spatial effects of the developments that have taken place, we shift our attention from business sites to business locations, the municipalities in which Philips' business sites are located. In some municipalities, such as Eindhoven, there is more than one business site, hence the number of municipalities is less than that of business sites.

In 1970 Philips business sites could be found in municipalities spread all over the Netherlands. This was the result of the company's 'regional policy' during the 1950s and 1960s, when the Dutch government announced a policy with the goal to accelerate the modernization of the manufacturing sector and to give financial and economic assistance to economically weak regions in the northern, eastern and southern parts of the Netherlands (Atzema and Wever 1999). In line with this policy, Philips started to locate many production sites in those economically weak regions. The main reason for Philips doing so was the simple fact that it had to abandon its former policy of recruiting workers from all over the country for its booming Eindhoven activities, while that city was increasingly plagued by a severe shortage of houses. For the same reason, Philips started new activities in Belgium (Leuven, Turnhout, Hasselt) and Austria (Vienna, Klagenfurt). In fact, Philips changed its traditional 'workers to the work' strategy into a 'work to the workers' strategy. As a result, Philips had production sites all over the country, even in the Dutch 'peripheral' regions in the northern and eastern parts of the country. Most of them were still there in 1994, although the number of jobs at most of these places had decreased (Figure 9.8).

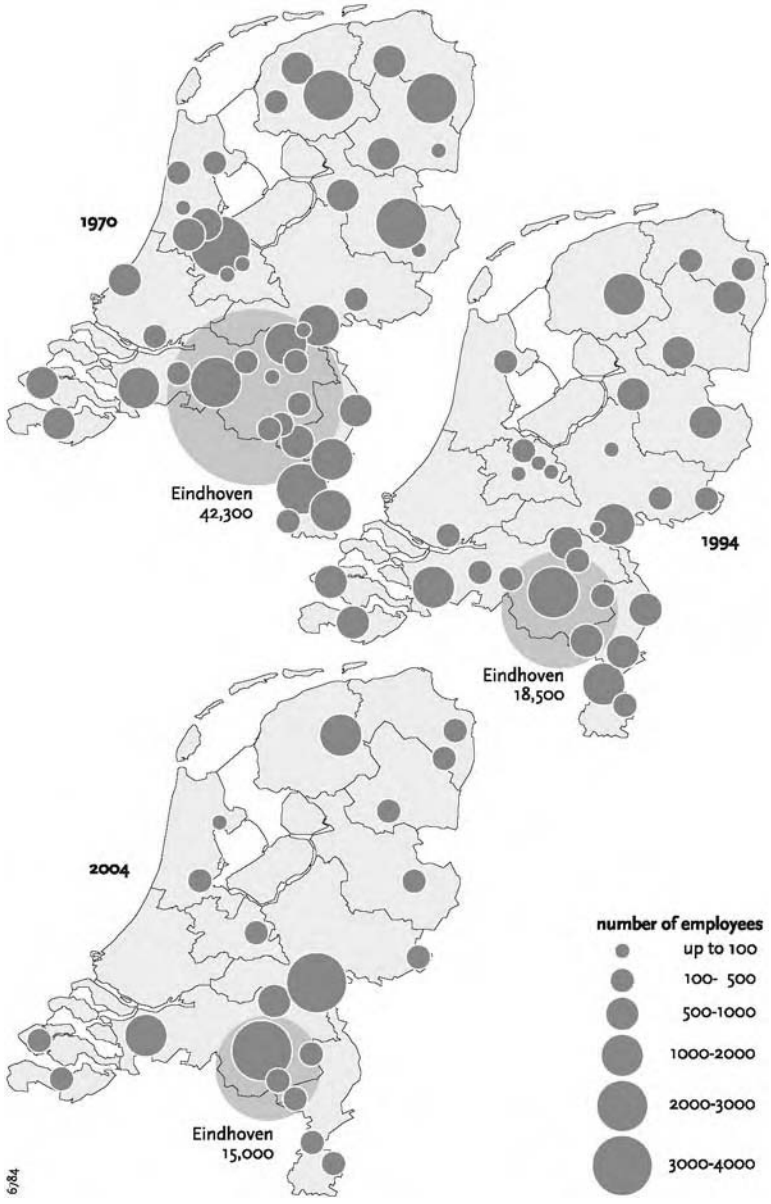

Figure 9.8 Location of Philips business sites in 1970, 1994, and 2004.

The development in the most urbanized western part of the Netherlands, the Randstad Holland, was quite different. Almost all business sites in the Randstad had disappeared by 1994. In 1970, Philips owned four different clusters of activities in the Randstad: telecommunications, pharmaceuticals, music records and computers. But, as mentioned earlier, Philips abandoned telecommunication activities after an unsuccessful joint venture with AT&T (later Lucent), sold the pharmaceutical and chemical division to Solvay, sold Polygram to Seagram and sold Philips Data Systems to Digital.

In the beginning of the 1990s, during 'Operation Centurion', Philips drastically reduced overheads in Planning and Control, and Research and Development, activities that were until then exclusively concentrated in the Eindhoven region. That is why between 1970 and 1994 a robust reduction in Philips employment in the Eindhoven area took place as well, from more than 42,300 employees to 18,500.

The changes in the location pattern between 1994 and 2004 can properly be explained by the strategic developments described previously. Those strategic decisions greatly affect the geography of Philips in the Netherlands. In the first place, in 2004 a revaluation of the Randstad can be observed when the international headquarters and the headquarters of the Consumer Electronics division were relocated from Eindhoven to Amsterdam and the headquarters of Domestic Appliance and Personal Care from Groningen to Amersfoort. A second break with the developments during 'Operation Centurion' is the less impressive decline in employment in the region of Eindhoven. Due to its Technology Campus, Philips' Eindhoven location is more oriented to R&D activities than ever before. A third change occurred in the other regions of the Netherlands where a kind of functional concentration process is going on. In the northern regions of the Netherlands there are only five production sites left, but when we include the announced closing of the sites in Stadskanaal and Hoogeveen, Philips will shortly only be present in the development centre and production site in Drachten. The company is still present in the south-western regions with its lighting production sites in Middelburg, Terneuzen and Roosendaal, but as we said before, Philips might concentrate all production in Roosendaal in the near future. In the south-eastern regions of the Netherlands, outside the Eindhoven region, the chip factory in Nijmegen has become by far the largest business site.

The Philips case: questioning conventional wisdom

In our study, we investigated the implications for the Dutch economy of the continuing reorganizations of Philips as a result of changes in its international business strategy. We have especially looked at the kind of activities Philips performed, and continues to perform, in the Netherlands, the number of jobs connected with these activities and the spatial pattern of these activities.

The Philips story illustrates quite clearly, that the company has made use of several of the concepts we can find in most of today's economic geography handbooks. At least three concepts are clearly discernible:

a the change from a vertically integrated firm to a disintegrated firm;
b the concept of outsourcing, which became increasingly more important since the 1980s; and
c the concept of 'core activities', used explicitly for the first time in the Philips context by CEO Cor van der Klugt in his Harvard lecture in 1987 (de Smidt 1990).

In addition to the illustration of these well-known concepts, we will focus in this closing section on lessons that should be gleaned from employing a too simple or too general argumentation when dealing with TNCs. As we are aware, it is difficult, maybe even dangerous, to generalize on the basis of one case, our lessons should be considered as question marks posed to challenge conventional wisdom. We found five of such lessons.

Specific evolution of TNCs

The first lesson has to do with the concept of TNC itself. Often there is at least the suggestion that this is a clear, uniform concept. Generally speaking, all TNCs try to strengthen their competitive advantages by establishing a series of (linked) activities in several countries, but the way in which TNCs realize this aim differs considerably. Moreover, there is little evidence that TNCs are converging towards one general organization model. Although some parts of Philips fit the general model developed by Dicken (Figure 9.2) they deviate in place and time.

According to Dicken "All TNCs have an identifiable home base and the characteristics of that base continue to exert an influence on how firms behave as they develop international networks of operation" (Dicken 2003, p. 235). As we stated, Philips had for a long time, a specific business culture, which reflected in several ways its original Dutch institutional context. Furthermore, this dominant business culture constrained for nearly two decades the necessary response of Philips to fundamental changes in the international market conditions. As such, Philips did not achieve resounding success during the 1970s and 1980s. It took the company two tumultuous decades, plus a CEO acting like a bulldozer to prepare the ground for the dramatic reorganization in the 1990s: 'Operation Centurion'. Although there might be remarkable differences among TNCs in this respect, we think that every TNC is at some time and in one way or another, 'locked in' in its business culture and corporate structure. It takes time, sometimes even too much time, to unlock such a TNC. Philips, certainly, was lucky that it had several real profit-makers during the two problematic decades before Timmer started 'Operation Centurion'.

During the presidency of Timmer, Philips was organized into a global organization. To make a success of 'Operation Centurion' it had to centralize the decision-making power in the corporate centre in Eindhoven. But did the Philips organization evolve into an integrated network organization since? Certainly, because of the increase in international outsourcing and the number of international alliances, Philips became more and more an international network

organization. Nevertheless, it remains questionable whether Philips has transformed nowadays into a fully integrated international network organization.

In the first place international alliances do have a long history in the Philips organization. Already, in the initial phase of its history, Philips formed a cartel with its German competitor AEG. Later on, it also made sales arrangements with its American competitor General Electric. After World War II, Philips was one of the first electronic companies to form an alliance with a Japanese company (Matsushita). In the 1980s an increasing number of international R&D alliances were started. A second point to be made is that there seems to be a quite substantial difference between the kind of international networks implemented by each of the individual divisions. So the various divisions within the Philips organization do not function in the same respect. For instance, the lighting division is distinctly more vertically integrated than the other divisions. Nevertheless, when the lighting division focuses more and more on high-value products, the process of (international) outsourcing will increase. In the case of consumer electronics, Philips focuses on a so-called asset light strategy, that is to say it sells the production to other firms but still uses its own brand name. In the case of components, we mentioned already the joint ventures with the Korean company LG Electronics (LG Philips Displays, LG Philips LCD). Recently Philips transferred the production of pc monitors to a Chinese company TPV. Furthermore, in 2002 Philips sold nine production units to the American company Jabil Circuit to provide contract manufacturing services. As a consequence, Jabil functions as a strategic long-term partner for Philips' consumer electronic business. Worldwide, Philips now owns only three production sites in consumer electronics itself. Such clearly defined outsourcing is, until now, less common in the case of the Semiconductors division. Nevertheless, very recently Philips announced that it would separate the division from the general organization. This might be a sign that the company might sell the division to a partner, although the management has promised its stakeholders that it would not sell before the end of 2006. The situation is different once again in the case of the Domestic Appliance and Personal Care division, which has become one of the 'stars' in the Philips portfolio. Over the last few years, Philips started several (inter)national alliances to introduce new products, for instance with Beiersdorf (Cool Skin), Unilever (steam iron), Sara Lee (Senseo), Proctor & Gamble (intelliClean system), and Interbrew (PerfectDraft). Those alliances can be characterized as inter-sectoral alliances and differ in this way from the longstanding R&D alliances within the electronics sector. In the case of the medical systems division, knowledge exchange seems to be very important. That might provide an argument for Philips to cluster its business units in the United States in general, and the Boston region particularly. We have not investigated the organizational differences between divisions, or between business units within divisions for that matter, but we assume that differences exist there too. Further research in this field is needed.

A third argument against the general transformation of Philips into an integrated network organization concerns the strategic program launched in 2003 'Transforming into One Philips' (TOP). This program aims to integrate the

separate parts of the company in terms of organization, branding and corporate culture to create a single, focused company with a top-down type of governance regime. Every business unit has to follow the same strategy (consumer-directed value-added), advertising campaign ('sense and simplicity') and positioning (care, lifestyle and technology). In some ways, this overall strategy restructures the company into a more traditional global or even international organization.

Bounded rationality, personal preferences

A second lesson can be learnt from the use of general business concepts. Normative thinking in business theory is not necessarily reflected in business practice. Let's take the example of the idea of 'flexibility', one of the most used words in corporate management books. The general idea behind it is that only firms or managements that are able to adapt to, or make use of, the changing international business environments, will be successful in the long run. Undoubtedly, all Philips' top managers have read these books. There is no reason to assume that they are not convinced of the relevance of this idea of flexibility, but our case illustrates quite clearly that it is often not easy to implement 'flexibility' in the short term.

Furthermore, our case should remind us that big corporations such as Philips are, after all, organizations of people, not of dehumanized rational economic actors. We saw that in the 1990s, when Philips changed its product portfolio almost constantly. Maybe the international business environment became more turbulent, but it seems that ideas about the most optimal product portfolio of the various CEOs were more relevant. Jan Timmer saw promise in multi-media, Cor Boonstra in high-volume electronics, and Gerard Kleisterlee in medical systems, and all these preferences affected the portfolio strategy of Philips.

Innovation by acquisition

According to conventional wisdom, TNCs are constantly trying to innovate new products and commercializing these innovations. Indeed, that is what Philips did, but only until the 1980s, when the company focused its innovation policy more intensively, although not exclusively, on strategic alliances with other corporations, sometimes even its competitors (de Smidt 1990). But when a company wishes to change its product portfolio, and at the same time, wants to be one of the big players in the world where core activities are concerned, changes in this portfolio are too slow if a company is exclusively dependent on its 'own' innovations. It would take too long to carve a market position fitting a big player. Especially in the 1990s, we see that Philips used more and more international acquisitions to play a key role in changing its portfolio, made possible by a favorable financial position. CEO Kleisterlee is currently using this strategy to strengthen the position of the Philips' Medical Systems division, but the same is true in other divisions.

This might be important for Philips' future presence in the Netherlands. As pointed out earlier, two-thirds of the present-day employment in Philips'

specialized research centers is still located in the Netherlands, particularly in the Eindhoven region. Philips promotes the High Tech Campus Eindhoven as a Dutch version of Silicon Valley, or in a broader sense, as one of the cornerstones of the innovation triangle comprising Eindhoven (the Netherlands)–Leuven (Belgium)–Aachen (Germany). According to the plans, in a couple of years the number of employees on this High Tech Campus will be doubled to 8,000, 60 percent of whom will be employees of Philips and 40 percent from other firms. Nevertheless, the future of this High Tech Campus lies in the international innovation networks in which Philips engages.

Geography follows strategy

The Philips case clearly does not confirm the popular idea of the relocation of all kinds of (manufacturing) activities to low-cost countries. The number of complete relocations made by Philips over the last two decades was surprisingly low. Moreover, most of the Philips business sites in the Netherlands were not replaced by sites in overseas low-cost countries. At least as much ended up in economically well-developed countries, even in the West.

Besides, some of the relocations to presumably 'runaway-countries' are certainly not exclusively based on cost arguments, but also, and in some cases even more so, on arguments concerning market perspectives. This holds for example, for most of Philips' reallocations to China. Low-cost countries play a more relevant role in the increasing process of (international) subcontracting, but that is another story; in fact a story of trade between its principle independent business partners.

Furthermore, it is common sense that the number of employees in most TNCs is shrinking. Increases in labor productivity in (especially) manufacturing activities, is often given as one of the explanatory factors. Another factor is the process of outsourcing, resulting in a statistical shift of jobs formerly belonging to Philips and now to other, independent companies. We have seen that these factors also played a role in our Philips case. However, for the Netherlands we found a much stronger factor: the net effect of the process of buying and selling firms. In the Philips case the net effect on the number of jobs was rather impressive, not only in the period 1994–2004, but also in the decade before, a factor that has consequences for the interpretation of the shrinking number of Philips jobs in the Netherlands. This net effect of selling and buying partly compensates for the loss of jobs within Philips, for it turned out that many jobs in those firms sold by Philips were not lost at all. The reason is that Philips did not sell all of them because they were 'bleeders'. On the contrary, many of them were performing quite well (Polygram, Origin) when they were sold and they continued to do so afterwards. Moreover, job losses are also partly compensated by spin-offs, some of which became real large players. The number of jobs Philips lost in the period since 1984 was certainly not equal to the equivalent loss of jobs in the Dutch economy, a conclusion that can seldom be found in popular reports.

Within the Netherlands, geography follows strategy too. As a result of strategic decisions, the geographical location of Philips' business sites at this

moment concerns high-tech manufacturing, including connected competence centers, in the north (Drachten), south west (Roosendaal) and east (Nijmgen) of the country, control functions and especially R&D in the area around Eindhoven, still by far the most important Philips location in the Netherlands, and specific control functions in the west (Amsterdam and Amersfoort).

Relative relevance of local conditions

Global acquisitions are playing an important role in changing the Philips product portfolio. The loss of Philips jobs in the Netherlands was at least for a significant part the result of buying and selling firms within the framework of changing ideas about the ideal portfolio. And the pattern of Philips activities and jobs in the Netherlands changed remarkably by the same process of selling and buying firms. For geographers, it is important to realize that in all these situations, local spatial aspects did not or hardly played a role. For instance, the selling of Phonogram had nothing to do with unsatisfactory conditions in Baarn. However, this is nothing new. In the old days too, Philips bought firms that created, according to its main strategy prevailing at the time, value-added for the company or for the divisions. Of course, the firms that are bought are located somewhere, but for Philips that location was not relevant for the decision to buy them. Concerning the changes in the spatial pattern of Philips' activities in the Netherlands, it would be completely wrong to conclude from the aggregated pattern that location conditions in some parts of the country, let us say in the western part in the 1980s, were deteriorating at that time.

Nevertheless, in recent history there might be two exceptions to the general rule just formulated. The first one is about the relocation of the international headquarters and the headquarters of Consumer Electronics, and Domestic Appliances and Personal Care, to the Randstad area. Local factors, such as the presence of Schiphol airport, high standard of financial services, and cultural amenities, might strongly favor the location decisions, although we also mentioned an alternative, less geographic explanation for the shift of the head-office from Eindhoven to Amsterdam. The other exception is about the relocation of the headquarters of Medical Systems from Best in the Netherlands to Andover in the United States. Andover is located in the Boston region, which is claimed to be the most outstanding knowledge-rich region for medical research in the biggest market (the USA) for the division. So probably with respect to control and knowledge, local conditions remain important to explain the geography of TNCs.

Here we are at a central aspect of the 'Geography of Enterprise', a geography in which clearly two lines of research can be distinguished. In the first, 'space' is a relevant element in the strategy of companies. The Håkanson model and Vernon's life-cycle models, are clear examples. In the other, space in the form of spatial patterns is the result of non-spatial decisions made by companies. Our Philips case at least suggests that in the huge majority of the changes in business activities and employment the second line of reasoning is more important than geographers often assume.

Acknowledgment

We want to thank our colleague Prof. Dr. ir. Jan Muntendam for his critical remarks on an earlier draft.

Note

1 In August 2006, Philips sold 80.1 percent of the shares of its semiconductor division to a consortium of investing companies, consisting of Kohlberg Kravis Roberts (KKR), Silver Lake Partners, and Alp Invest Partners.

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10 Product upgrading and survival

The case of VW Navarra

Martina Fuchs

Upgrading in transnational companies

Upgrading usually occurs when peripheral plants link up with global production networks and try to improve their position within such networks. When foreign plants of transnational companies upgrade their product line, they can have positive effects on the regions where they are located. The reason is that upgrading often requires workers with higher skills and thereby improves local labor markets. Furthermore, upgrading can give the firm more autonomy and as a consequence, more competence and power. Broadly speaking, greater freedom for the plant can strengthen the economic sovereignty of the region too.

In manufacturing industries, we can distinguish four kinds of upgrading. Process upgrading refers to innovations in technology or organization of the production process in a factory. Product upgrading is based on innovations that help the company move into more sophisticated product lines, which in turn increase the unit values and improve the market share. Functional upgrading occurs when the company gains more competences – i.e. new departments of research and development – to increase the overall skill content of its activities. And inter-sectoral upgrading means using the knowledge of specific chain functions to move into different sectors; for example, a firm that formerly produced electronic components for telecommunications is now also able to produce components for the automobile industries (Humphrey and Schmitz 2000; Schmitz 2004, p. 7f.).

However, we have to keep in mind that these four forms are interconnected. Product upgrading is often the condition for, or a consequence of, other kinds of upgrading. For example, product upgrading helps a firm move into completely new markets (inter-sectoral upgrading). And functional upgrading, in the sense of adding departments for research and development, is the result of the need to develop new products. Although these forms are interwoven, their differentiation can be used heuristically as a tool for understanding innovation in global production networks. Furthermore, the discussion about upgrading is linked to the debate on global governance. In that connection, understanding upgrading helps us comprehend the positions of key actors by revealing how central and peripheral roles

are distributed in transnational companies. For example, it may shed light on how works councils and trade unions influence management strategies (Schmitz 2004).

In this chapter we concentrate on upgrading because it is directly related to the market in which our case-study company has developed its core competences. Although inter-sectoral upgrading is also directly related to markets, product upgrading means going into completely new markets. As the following case study will show, product upgrading has to be analyzed in a differentiated manner. It can manifest itself as a new product or as an improvement of an existing one. Furthermore, there are different kinds of improvement. It can mean making an existing product better and renewing it (e.g. by introducing new models of the same type of vehicle). Alternatively, upgrading can entail a slight shift in the direction of inter-sectoral upgrading. In that case, it would mean diversifying the product – not moving it into other sectors but preparing it for entry into neighboring market niches (e.g. by varying the design for the same type of vehicle).

When we discuss upgrading in transnational companies, we are engaging in the Geography of Enterprise discourse (De Smidt and Wever 1990), which focuses on the internal workings of (transnational) companies. Today, a great deal of the discussion about upgrading is not about transnational companies but about global value chains. However, our study makes clear that the analysis of transnational companies warrants a place alongside the value chain debate. As we shall demonstrate, upgrading plays a role in different kinds of international production networks, be they global value chains or transnational companies. However, with regard to product upgrading, we should keep in mind that differences exist due to the relations specific to transnational companies. Typically, headquarters will tend to take greater responsibility for a foreign plant than for a supplier. As our case study will show, Volkswagen's headquarters has to take care of the plant in Spain. Indeed, the corporation stands for a particular image of the brand, including the responsibility for creating and keeping jobs in Spain. This image itself is an important factor in Volkswagen's market share in Spain. Just for the sake of argument, suppose that Volkswagen only had a supplier in Spain instead of a plant of its own. In that event, the ties would be much looser and the company could easily cut the relations if headquarters deemed it necessary.

The stronger linkages within transnational companies are considered 'hierarchical' in the tradition of transaction cost theory. This characterization is a little misleading, however. Relationships inside transnational companies are not only subject to hierarchical control, but have other dimensions too. These include responsibility for the plant as a whole, as well as bargaining and mediation between different departments, plants or persons, in the transnational company. As our case study will show, unions and works councils have a key role in this interplay.

This contribution places product upgrading against the background of automobile markets in Europe instead of world markets. This narrower context is justified by the fact that the product in our case study, the Volkswagen Polo, is produced mainly for the European market, especially – besides for Spain – for

Italy and Great Britain. But the Navarra plant also exports to countries outside of Europe, namely to China and Brazil. The predominance of Europe in its market is not accidental. European markets for passenger cars differ from those of other world regions. These particular characteristics of the European market fall under four headings:

1 market share;
2 regulation;
3 brand loyalty; and
4 technological standards.

Regarding market share, low-volume cars and cars of the lower mid-class make up about 60 percent of the whole market. In contrast, light trucks have a significantly high market share in North America. As for the regulatory framework, institutions for the EU market are co-ordinated centrally by the European Commission, for instance, standards for technology and the ecological environment, rules for sales, and rules on competition. The third feature, brand loyalty, embeds this product in European markets. People are loyal to the brand because it has the aura of a "national champion" (Hudson 2002, p. 268) or because it has always been the brand chosen by the person or the family. And regarding technological standards, the features in this product are more sophisticated than those found in US-made cars. This is partly due to the importance of diesel technology (Jürgens 2004, pp. 4ff.).

Thus, the product of our case study, the Polo, can be seen as a typical product for European markets:

- It belongs to the class of small-volume cars.
- The market share of the Polo is shaped not only by market competition among private actors, but also by the rules for competition set by the EU. These rules were especially influenced by the integration of the countries in Central and Eastern Europe into the EU.
- Volkswagen has to keep the loyalty of its Spanish customers by carrying on with production at the plant in Spain, even in difficult times.
- The Polo is a very sophisticated car in the low-volume segment. The intensity of high technology in it has made the car a high-priced product compared to other cars in this market segment.

The markets in Europe have changed since the transformation of the formerly socialist states in Central and Eastern Europe and the enlargement of the EU in 2004. The automotive industry found a friendly investment climate in the new member states, which offered new opportunities for flexible production. Many component supply companies followed the car producers to these new locations. Volkswagen is the biggest investor in the ten countries that entered the European Union in May 2004. In those ten new European countries, the Volkswagen group has a market share of nearly 30 percent, followed by Peugeot (nearly 12 percent)

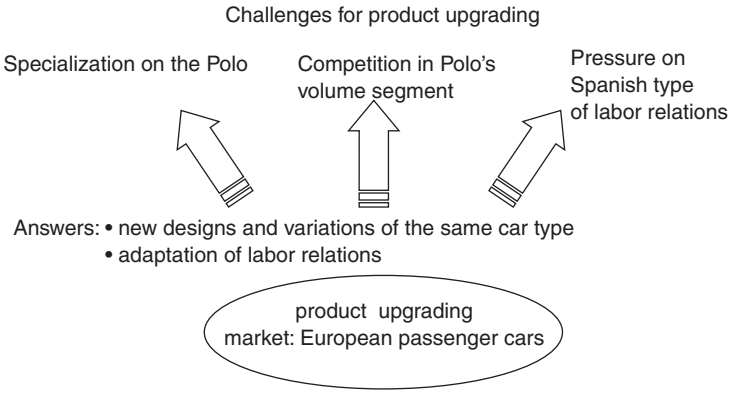

Figure 10.1 Challenges for local upgrading of Volkswagen Navarra (source: own figure).

and Renault (10 percent). The Volkswagen group has 12 production plants in the new member-states, with nearly 50,000 employees. In total, Volkswagen has more than 320,000 employees worldwide, about half of that number working in Germany (Autogramm 05/2004; Volkswagen AG 2005). But the Volkswagen group is not alone in this expansion. Other car producers and automobile component suppliers are active in Central Europe as well. Forty percent of the German automobile supply companies already have plants in Central Europe, where they employ about 100,000 persons (Automobilindustrie 2004). 'Follow sourcing' is the primary reason why these suppliers have invested there; they follow the assembly plants.

The central aim of this chapter is to show how the Volkswagen plant in Pamplona slipped into a peripheral position. This can be explained in terms of specialization of the plant and in terms of market competition within the Volkswagen group. From the headquarters' point of view, the fact that labor relations are more conflict-prone compared to Volkswagen in Germany also plays a role. First, we discuss the importance of Volkswagen to the region of Navarra. The peripheral position of the plant in Navarra is elucidated by Spain's changing position in European automobile markets and by Volkswagen's global strategy of integrating Central and Eastern Europe in its operations. Besides emphasizing the specialization of Volkswagen Navarra on the Polo, we highlight the growing competition in this volume segment, also within the Volkswagen group. Last but not least, we point out that labor relations at Volkswagen Navarra have come under stronger pressure. These three issues constitute the main challenges to the plant in Navarra (Figure 10.1).

Volkswagen and the region of Navarra

In 1982/1983, Volkswagen started to take over SEAT in Comunidad Foral near the city of Pamplona in the province of Navarra. The takeover was complete in 1994. The SEAT plant had already been opened as a state-owned

company in 1965. Until the takeover by Volkswagen, quite a wide range of cars had been fabricated. Since 1984, Volkswagen produced the Polo in Navarra, a brand that was produced for the first time in Wolfsburg in 1975 on the basis of the former 'Audi 50' (Figure 10.2). Furthermore, Volkswagen assembles engines in Pamplona.

Thus, in Pamplona we find a change from a former diversity of products (before the takeover by Volkswagen) to a specialization on one single product, the Polo, which was improved incrementally through product innovation. It started with the A 02. Since 2005, Volkswagen produced the newest generation of the Polo in Navarra (A 05). Thus, up to this point, we are looking at a success story of product upgrading in the plant (Aller *et al*. 2004a,b).

Today, Volkswagen Navarra employs about 4,200 persons (2004). There are also regional employment effects caused by automobile component supply industries such as TRW, Bosch and other suppliers, both international and

1965	Start of production in the plant of Landaben: Authi (Automóviles de Turismo Hispano Ingleses)
1967	Start of production of MG 1100
1968	Start of production of Morris 1100 Traveller, Morris 1300 Traveller, 'Mini' 1275 (Mini-C)
1969	Start of production of Mini 1000, Mini 850. British Leyland acquires 50% of Authi
1970	Labor conflicts
1971	Start of production of Austin 1300 and Mini GT
1973	British Leyland acquires more shares of Authi so that it holds 98% of the shares
1975	Sociedad Española de Automóviles de Turismo (SEAT) acquires the ownership (SEAT is owned by the I.N.I. (Instituto Nacional de Industria) 51%, private owners 42%, FIAT 7%)
1976	First car of the SEAT factory. SEAT 124
1979	Start of production of Lancia: SEAT acquires the competence to produce an Italian automobile brand outside of Italy
1981	Start of production of the Panda
1982	Contract for co-operation between Volkswagen and SEAT. VW buys shares in 1986, 1990 and 1994 (full ownership)
1983	In the plan for industrial promotion, the government of Foral in Navarra concedes 746 million pesetas to Volkswagen. The investment of Volkswagen for the new Polo are 6,500 million pesetas
1984	Start of production of Polo Coupé (Polo A 02)
1986	Introduction of the second turn. Quality standard Q-86
1993	New brand 'Navarra de Automóviles S.A.'
1994	Start of production of Polo A 03. Quality standard ISO 9002. New brand 'Volkswagen Navarra S.A.'
1997	Environmental standard ISO 14001
1999	Start of production of Polo A 03/GP
2001	Start of production of Polo A 04
2005	Start of production of Polo A 05

Figure 10.2 History of Volkswagen Navarra. (source: Aller and Garcès 2004b, p. 8, adapted with minor changes).

Spanish. There are about 150 component suppliers of Volkswagen in Navarra, where the automotive industry accounts for about 50 percent of the regional exports (Aller *et al*. 2004a,b). However, the system of supply relations has changed since the early 1990s. With the former organizational change of A 02 to A 03 in 1994, the number of suppliers in the region increased significantly. Since the conversion to A 04, the amount of outsourcing has remained stable (with regard to the number of persons employed in the supplier industries). Meanwhile, the number of second-tier companies has decreased. That is because Volkswagen's strategy was to reorganize the hierarchy of suppliers and introduce (or purchase) more complex modules instead of a wide range of separate parts. The inputs for the first-tier companies mainly stem from imports. First-tier companies are the direct suppliers of parts, components and systems to the car producers. The second-tier companies are the suppliers of the first-tier supply companies. Since the modularization, the component suppliers deliver their products on a just-in-time basis (Aller *et al.* 2004a,b).

Volkswagen Navarra, together with PSA Vigo, led an expansion of Spanish automobile production in the 1990s and was a reliable driving force for regional growth and job creation in Navarra (Camacho 2004, p. 10). But in the current decade, both the number of cars produced and the employment base have declined (Figure 10.3), putting the former success story under pressure. Now, the entry into global production networks shows its disadvantage. The Volkswagen plant in Navarra, and with it the regional economy, has become highly dependent on external decision-making.

Yet the dependence on Volkswagen is limited, insofar as Navarra has a supply sector orientated not only on Volkswagen, but also on other European clients in the automobile industry. Aller *et al*. (2004b, p. 25) estimate that 'in

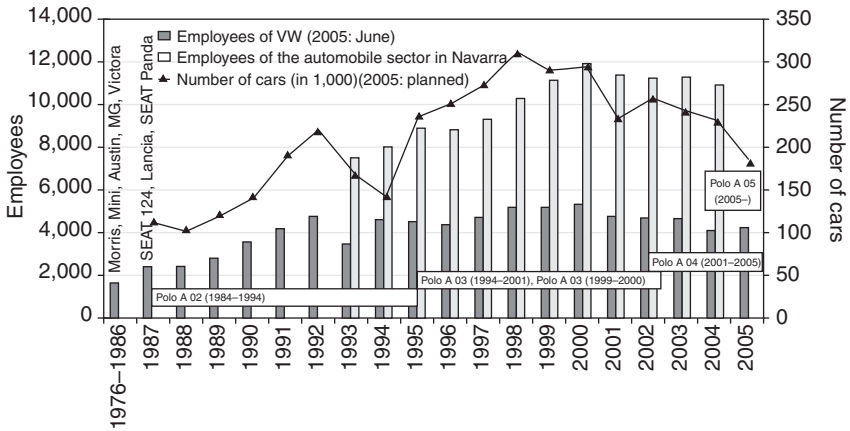

Figure 10.3 Number of employees and cars produced at Volkswagen Navarra; number of employees of the automotive sector in Navarra. (source: Aller and Garcès 2004b, p. 9, own figure).

case' Volkswagen decided to relocate the production from Navarra to another region, two-thirds of the employees would lose their jobs. About one-third of the employees are working in component supply industries. These companies are not directly dependent on Volkswagen and could re-orientate their production lines. However, on the whole, the region is dependent on decisions made at external headquarters (Schmitz 1999).

Volkswagen's worldwide strategy and the challenges to Volkswagen Navarra

Product specialization at Volkswagen Navarra

An important reason for the high competition for the plant in Navarra is Volkswagen's strategy of concentrating in Navarra on one single product, the Polo. Specialization on a single product is not typical of the Volkswagen group. In fact, the group has many – mainly foreign – plants with quite a range of products. So the plant in Navarra is an exception. Although headquarters brought new models of the Polo (A 02 to A 05) to the plant in Pamplona, this history of product innovation now seems to be insufficient. The markets of the EU have changed. Furthermore, the plant in Pamplona has to face increasing competition from the automobile production taking place in Central and Eastern Europe. Spain's position in European automobile markets has changed too, which raises questions about a reorientation for the plant in Navarra.

The concentration on upgrading a single model and the policy of not introducing other types of cars are creating a problem for the plant in Navarra. Specialization on a low-volume car sounds like a strategy for keeping the plant in Navarra in the role which automotive plants in Spain had played two decades ago. Then, Spain was specialized in producing low-volume cars for the European market. But today, many other producers build larger cars too.

The location pattern of Volkswagen shows plants spread all over Europe. Figure 10.4c shows the ring of new plants in Eastern Germany and Central Europe. There is also a global production network of Volkswagen with locations (mainly) in Latin America (Mexico and Brazil), South Africa and China. This production network integrates assembly as well as an internal supplier network of engines, systems and components. In contrast to DaimlerChrysler and BMW, Volkswagen has no production plants in South East Asia.

Formerly, the strategy of Volkswagen and other producers of mid-class vehicles, like Opel and Ford, was to produce larger cars, which offer higher returns in the core regions, while the smaller models were produced in the periphery. Automotive headquarters assigned a specific role to the European peripheries – the production of smaller cars. The locations provided an entry to new markets where the demand for cheaper cars was high because the average incomes were lower than in the core markets. In this period, the automobile companies learned how to produce in the periphery and how to frame the institutional setting there, i.e. the vocational training. This strategy of producing low-volume cars in Spain

resembles Vernon's life-cycle approach. Although the cars produced in the periphery are not old products, they are cars with lower values. But the theoretical life-cycle model has never had a very good fit for Volkswagen. The group has built up a global production network in which a lot of its worldwide plants have to perform specific tasks within the worldwide internal supplier network of Volkswagen. Furthermore, also in research and development, we find common projects: e.g. the co-operation between headquarters and the plant in Mexico which jointly created the New Beetle. This does not fit in with the life-cycle model either.

The typical producers of expensive high-volume cars (DaimlerChrysler, BMW and Porsche) did not invest in Spain in the sector of passenger cars. Even though DaimlerChrysler became a transnational company and BMW spread its locations out internationally, the high-volume producers are cautious about investing in Central Europe as well as in Spain. They prefer to invest in new market regions overseas, particularly in the Americas and in East and South East Asia. They tend to locate their European plants mainly in Germany, as Figures 10.4a and 10.4b show.

The traditional producers of mid-class vehicles follow different strategies. They formerly learned how to produce (smaller) cars in the periphery, and this learning process helps them integrate the periphery in a new way, namely by building higher-volume cars there. Volkswagen, Opel and Ford began to produce higher-volume cars in Spain and in Central Europe, because the higher-volume cars began to cover the markets in the South and in the East. An example of this is Autoeuropa, a former joint venture between Ford and Volkswagen. Established in Setubal, Portugal, in 1992, it has been under sole ownership of Volkswagen since 1999 (Vale 2004). Besides the SEAT Alhambra, Autoeuropa produces the Sharan and still makes the Ford Galaxy. In Portugal and in Spain, Opel/GM produces the Meriva (besides smaller cars). In the Spanish town of Valencia, Ford produces (in addition to smaller cars) the Ford Focus.

Such diversification into more expensive cars is found, not only in Europe, but overseas as well. Until the 1990s, Volkswagen de México in Puebla was producing the 'old' Beetle, mainly for the Mexican market. Now they produce the New Beetle and other larger types for the core market in North America. Furthermore, the transnational companies have started to reorganize research and development, and production, on the global level. Volkswagen's New Beetle was developed in Puebla (Mexico) and Wolfsburg (Germany). BMW integrated the development of the Z3 Roadster in Spartanburg (USA) with its design centres in the USA and Japan, and with the departments of research and development in Munich (Pries and Schweer 2004). Furthermore, Brazil is going to be the research and development centre for economical cars within the Volkswagen Company.

This new role of the peripheries seems to be necessary for the car producers, because the traditional core markets are stagnating. Competition with regard to lower costs is an insufficient solution for this. Recently, however, we see a new market strategy emerging among some European car companies, which are trying to bring low-priced cars onto the European market. One example is

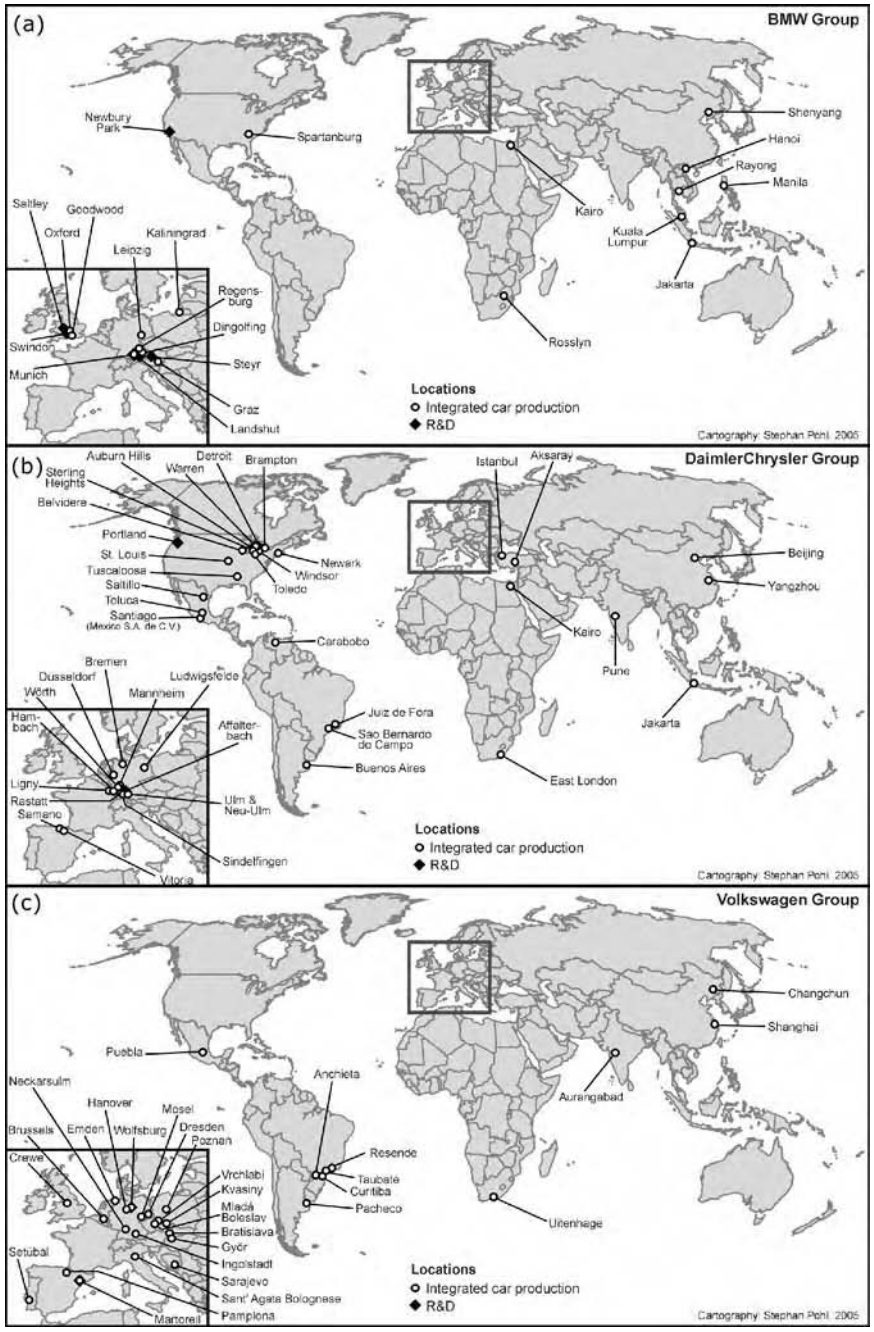

Figure 10.4 The spatial pattern of car plants and R&D activities for BMW, Daimler-Chrysler, and Volkswagen.

Volkswagen's Fox, developed and produced in Brazil, which is on the 'platform' of the Lupo, underneath the Polo. Renault's Dacia Logan is another example. This strategy is limited, especially because the customers' expectations with regard to safety make the cars more expensive. Furthermore, the financial markets exert more pressure than before, inducing car producers to produce high-volume cars, which bring better returns (Jürgens 2003, p. 1).

The diversification dissolved the former specialization of Spain in low-volume cars. In the 1980s, Spain was the most important market for cars with engines of 1.5 liters and less. Moreover, Spain was the major exporter of these cars. In 1989, 88 percent of the exported cars were small, but in 1999, only 48 percent were small. The Central European production in particular replaced the Spanish predominance in small-car production (Humphrey and Memedovic 2003, p. 11).

Nowadays, not only in Southern Europe but in Central Europe too, the automotive industry also builds cars which are even more expensive. For example, besides the Polo, Volkswagen produces the Bora, Golf and Touareg in Bratislava (Slovakia). Also the other 'family members' of the Volkswagen group are engaged in higher-volume segments. In the Czech Republic, Skoda builds (besides the Fabia) the Octavia, the Sedan and the Skoda Superb. In Hungary, Audi produces the Audi TT, including the Roadster.

Furthermore, the automobile component suppliers – as well as the car producers – benefit from the lower wages and incomes for the workers and employees. Probably more important is that they benefit from the higher labor flexibility, which is greater in the periphery than in Western Europe. These advantages of cheap and flexible labor are combined with a highly qualified labor force. Some of the new automobile locations already have a long tradition in the automobile industry. Skoda, for example, is the third-oldest automobile brand in the world. Additionally, the investors encounter a body of governmental regulation which supports their investments. They enjoy low taxes and a tolerance for new forms of organization which offer considerable leeway for organizational experiments (Faust *et al.* 2004, p. 52; Hudson 2002, p. 270). The trend of 'Going East' was already supported by the reduction of tariffs between the new EU countries in Central Europe and Western Europe in 2001/2002. Since then, car producers have had to comply with a requirement for 60 percent European content. This was a disadvantage to investors from Japan and South Korea, as they had intended to use Central Europe as a base to open up the European market with less local content (Humphrey and Memedovic 2003, p. 11).

When we compare Southern Europe with Central Europe, we see that the automotive supply industry has shifted from the South to the East. But we should keep in mind that this is true only in a relative sense. As Nunnenkamp (2004, p. 33) stresses,

> The value chains of automobile production are not redirected from the South to the East, but there are additional capacities of production, mainly created by further outsourcing. The absolute capacity of supply imports from Southern to Western Europe did not decline, but doubled since 1990.

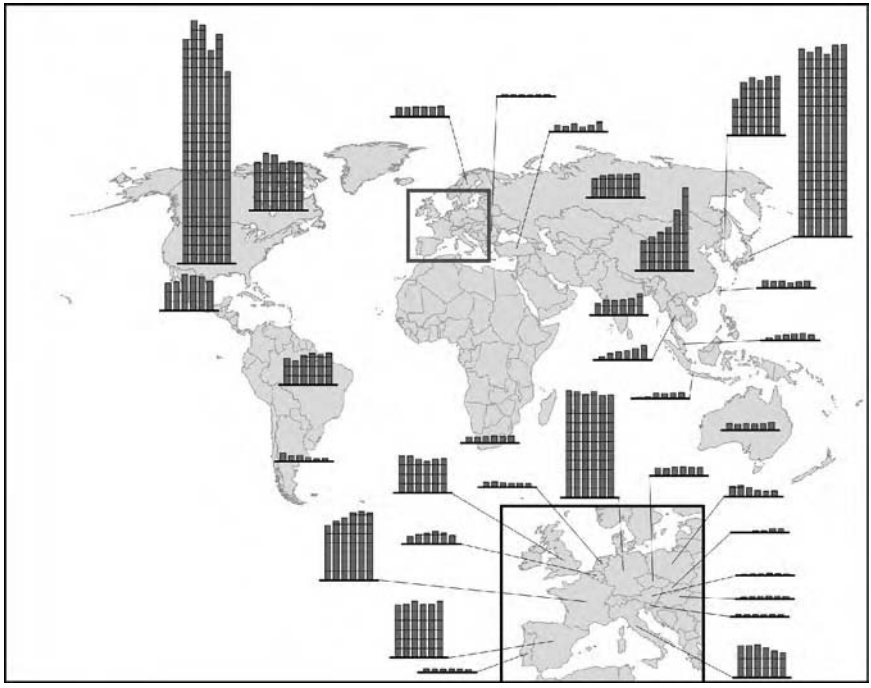

Figure 10.5 Production of motor vehicles 1998–2003 (source: VDA 2003, cartography: Florian Biener).

Yet the volume of automobile production in Spain is still much bigger than in the countries of Central and Eastern Europe (Figure 10.5). That said, there is a new cluster of automobile production in Central Europe that could cause disadvantages for Spain in the future.

On the whole, the factory in Pamplona has to face high pressure on a single product, the Polo. At the same time, the plant is involved in strong competition. This applies to competition from other brands, especially from French and Japanese automotive companies, but also to competition within the Volkswagen group. This internal competition is discussed in the following section.

Competition in the Polo segment

The plant in Pamplona is in competition with other plants of Volkswagen that also produce the Polo. On top of the lack of diversification into higher-volume segments, this is another challenge to the plant in Navarra. Besides Pamplona, the Polo is built in Brazil, China, and South Africa, as well as in Slovakia. Each day, 2,000 cars are built on average; of these, 1,250 are built in Navarra (2005). The plant in Bratislava (Slovakia) serves the same European markets as the plant in Pamplona and is thus the strongest competitor. In Bratislava, Volkswagen has

7,700 employees who produce the Polo, as well as other types (Volkswagen AG 2005). This creates a strong competition with the Polo which is built in Navarra.

Besides the locations which produce the same model of the brand, there are other brands within the Volkswagen group that make cars similar to the Polo. This makes the concentration on the Polo even more precarious. The competition within the transnational company is the result of a strategy that Volkswagen has followed for over a decade. This strategy differs from that of other car makers because Volkswagen is concentrating on the 'growth of volumes' into the high-volume segments and luxury cars (e.g., the Phaeton) and by the 'expansion of multiplicity'. The latter direction was a result of Volkswagen's acquisition of new brands. The strategy led to a diversity which made reorganization of the company necessary. The recent results are shown in Figure 10.6. Furthermore, the Volkswagen management created common platforms of design and development as well as production for Volkswagen, Audi, SEAT and Skoda. The platforms of common parts and components reduce the cost of research and development. They also lower the production costs for the Volkswagen company on the whole (Freyssenet *et al.* 2003, pp. 245–249).

We have to consider that the competition between the different brands on a common platform is not as strong as the competition within a brand, because the brands cover different design profiles. SEAT stands for a sporty image and 'Southern' feelings. Skoda represents the compact mid-class car with an image of high quality and 'sincerity' (In Germany, advertising for the competitor of the Polo, Škoda Fabia, characterized the Fabia as "Still that small but already that serious!"). The Volkswagen Polo symbolizes a modern and reliable car with high standards of technology and security for the passengers. It stands for a car with high re-sale value on the used car market.

However, this strategy entails a risk of 'cannibalism' between the brands (Freyssenet and Lung 2004, p. 90). With regard to the Polo, this refers to the SEAT Ibiza. Produced on the same platform, it is built in Matorell (Spain), and in Bratislava (Slovakia). Besides the competitor SEAT, there is Skoda, which produces the Fabia in Central Europe. The recent model Fabia is built with an advanced engine technology. This technology was introduced when the new Skoda Fabia came to market, earlier than its implementation in the Polo. While Volkswagen sold about 100,000 Polo's in 2004, the company sold about 184,000 SEAT Ibizas and 240,000 Skoda Fabias in the same year. Furthermore, the Brazilian Fox, introduced in 2005, is a competitor 'from below' to the Polo.

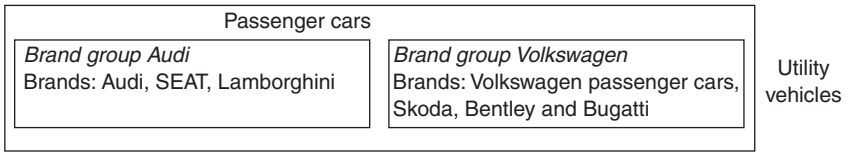

Figure 10.6 Organization of the Volkswagen Group. (source: Volkswagen AG 2005, own figure).

We have to consider that Volkswagen cannot keep its position on the Spanish market only by imports to Spain. Managers of Volkswagen estimate that if Volkswagen closed down the plant in Pamplona, this would severely damage the image of the Volkswagen group, and Volkswagen would lose a large market share in Spain. This would not only affect the market segment of the Polo, but also that of Volkswagen's other models. Thus, the size of the Spanish automobile market is still like an 'insurance policy' for the continuity of the plant in Navarra. The Volkswagen group holds a market share of 21 percent of all passenger cars in Spain. In fact, every tenth car delivered by the Volkswagen group is sent to Spain (Volkswagen AG 2005). Here, we find further proof of the general axiom that foreign direct investments of automobile companies are motivated and maintained, not only by a focus on labor costs and flexibility, but to a high degree by expectations of high market shares.

Nevertheless we have to consider Volkswagen's strategy on *how* to keep the production capacities in the plant of Navarra. The top management in Wolfsburg does not plan a diversification into higher-volume cars. Thus, the strategy has to concentrate on the Polo. The Polo is a relatively expensive, technology-intensive car. Furthermore, its relatively high cost often means that it cannot be positioned as an inexpensive car for young people. Hence, the new strategy is to keep the technology at the current standard for the time being and not to raise the level of expensive technological innovations in the car. Rather, the strategy is to bring new designs as well as new variations of the Polo onto the market. This implies a gradual diversification. Thus, we have to consider gradual diversification as a form of product innovation if we are to gain adequate understanding of product innovation in this complex area.

Labor relations

Hudson (2002, pp. 267–273) stresses the importance of labor relations (besides the management's market strategies and the role of the state) in the interplay of bargaining whereby peripheral plants jockey for a stronger position in the changing geographies of production. Indeed, besides the strategy to work out new designs and variations, Volkswagen's headquarters and the company's European works council envision some changes for the plant in Navarra with regard to labor relations. To understand this point of view, we should briefly review the situation in Germany (Widuckel 2004). There, Volkswagen stands for a co-operative way of resolving conflicts between management and the works council. The solutions may involve reducing working hours as a means to lower the wages in times of recession, for instance, or establishing new organizational structures against the backdrop of the international competition between the plants, as illustrated by 'Auto 5,000 GmbH'.

> Auto 5,000 GmbH' is an agreement between Volkswagen and the IG Metall metalworkers' trade union about a set of company agreements for a new Volkswagen subsidiary, 'Auto 5,000 GmbH', produced by 5,000

employees inside of the traditional Volkswagen plants in Wolfsburg and Hanover. The agreement is a result of a bargaining process that started with the announcement by Volkswagen's management that the German locations have to demonstrate that they are as productive as foreign plants; if not, management threatened to build the new car, the Touran, in the European periphery. 'Auto 5,000 GmbH' was a challenge to the IG Metall and the works councils that had to agree to the new competition between the traditional Volkswagen workforce and the new Touran workers, who did their jobs for lower pay than the traditional staff, though working together under the same roof of a common factory building.

This kind of agreement, based on particular labor relations and a specific self-definition of the workers' representatives, has been typical for Volkswagen in Germany in the last decades. In Germany, the Volkswagen works council as well as the trade unions try to find co-operative solutions even in times of recession. This means that the works council and the trade unions cannot only tell success stories to the employees about the goals they have achieved, and, in case of failure, blame the management in public. They also have to inform them about unpleasant, unpopular tendencies and common decisions which were worked out together with the management. To induce the workers to accept such policies, the German Volkswagen works council has developed specific communication platforms, such as meetings and newspapers. Furthermore, in the Supervisory Board of Volkswagen, the influence of the workers' representatives together with public actors of Lower Saxony is high. Additionally, in the German Volkswagen plants nearly all of the blue-collar and white-collar workers are members of one single trade union (IG Metall). The representatives of the IG Metall follow the same strategy as the works council, and there is no serious competition from another trade union organized in Volkswagen in Germany. Such homogeneous discourse among the important actors also leads to a particular kind of discourse between the members of the staff, who, in general, support such a co-operative strategy. This has ensured that the members of the works council and the representatives of the trade union keep getting re-elected.

In Navarra, the situation is different to that in the German plants. There is not just one trade union, as in Germany, but several, and these are dissimilar as well. The trade unions are the only representatives of the workers; there is no extra works council. The unions are in competition with each other, also for re-election. Therefore, it is hard for a trade union representative (who has to get re-elected) to bear bad news to the staff, for instance, to tell the workers that they should work longer hours and earn less money in times of recession. This is especially difficult when other trade unions seem to offer more popular ideas, as is the case in the plant at Navarra. However, in Navarra, the management and trade unions agreed on the reduction of working hours and wages for the years 2004 and 2005. So, there seems to be some convergence between the German

locations and Navarra. Nonetheless, the differences between the more conflictive labor relations in Spain and the more co-operative labor relations in Germany still persist. As the German headquarters is more accustomed to the German type of labor relations and the flexibility associated with it, this model sets an example for the plant in Spain. The pressure to adapt to this co-operative model may still increase against the background of the flexibility of labor relations in Central and Eastern Europe. However, the interesting point is that the triangle, comprised of top management and the European works council in Wolfsburg, and the local union in the plant in Navarra, started to create a modified setting of labor relations. The new setting is intended to make the plant more flexible and competitive in the overall Volkswagen location strategy. From a technocratic point of view, we should call this 'process' upgrading. But a more adequate assessment of the change in labor relations is that it is a *condition* for product upgrading, and one which is expected by headquarters in Germany.

Concluding remarks

This chapter shows that there are three main issues which pose challenges to the Volkswagen plant in Navarra. The first issue is the specialization of Volkswagen Navarra on a single model, the Polo. The second is the competition within this market segment, including the new competitors in Central and Eastern Europe. And the third is the pressure on the labor relations, which still are more conflictive than in Germany. This study does not imply that Volkswagen's reactions to the challenges are the only 'right' ways to approach product upgrading in Navarra. We cannot judge what is right or wrong for the future of that plant. Nor does this portrayal of the company suggest that the German type of labor relations is 'better' than the type we find in Navarra. Indeed, the co-operative course in German labor relations causes problems for the unions, especially with regard to the 'true' representation of the workers' objectives. Last but not least, we cannot say which strategy is right or wrong for the Volkswagen group on the whole. Our analysis does not offer an economic model but tries to explain the consequences of management strategies in a transnational company for a foreign plant. What this case study does demonstrate, is the importance of product innovation for the survival of a foreign plant. Furthermore, it shows that top management perceives labor relations as an important instrument for enhancing productivity. The head office pushes for more flexibility; for the workers and their representatives, agreement is often the only means to save the plant and safeguard local employment.

In Volkswagen Navarra, the change is gradual and takes time. Our case study shows that 'old' factories can prolong their life through product upgrading. Yet the point is that automobile plants are not flighty, bolting to find the cheapest locations for production each time they get spooked. On the contrary, especially because of the image the Volkswagen plant has for the Spanish car market, the head office will not change its location pattern overnight. We find that the market plays a more important role than the costs sunk in a mature factory, a

factor frequently mentioned in the neoclassical literature. Indeed, we also find a 'mature' production of the Polo in plants outside of Spain. Thus, there is a path-dependency which mainly has to do with the market and the positive image of Volkswagen among Spanish customers. The introduction of the new Polo in 2005 has to be interpreted as the willingness of Volkswagen's headquarters to give new perspectives again to the plant in Navarra.

However, the strategy of Volkswagen is not representative of the automotive industry. Again and again we find examples of spectacular plant closures, or at least announcements and threats of plant closures, even in countries with high market shares. Some recent examples are a Jaguar plant owned by Ford in Great Britain and an Opel plant (General Motors) in Germany. This insight into different management strategies makes the argument of divergent path dependencies among transnational companies even stronger.

We also have to consider the possibility that the strategy of the Volkswagen group may change in future. There are already some indications of potential change. In the summer of 2005, there were rumors of a closure of a German plant and of the sale of SEAT. Again, this points to increasing competition within the Volkswagen group. Furthermore, path-dependency is influenced not only by management strategies, it is also affected by external changes in the regimes of accumulation and the regulatory settings. Twenty years ago, Spain was the emerging market in Europe; in the current decade, we find rising markets in Central and Eastern Europe. Such developments could not have been foreseen by Volkswagen's headquarters in the 1980s. This makes it even more difficult to predict future path-dependencies.

This chapter has demonstrated that product upgrading should be examined in a differentiated manner. Product upgrading does not only mean making an older product better and renewing it (e.g., introducing new models of the Polo). Product upgrading can also mean diversifying the product to prepare it for other market niches (e.g., developing new designs and variations of the same car type). This leads us to a central issue in the discussion of product upgrading. When we speak of product upgrading, we often only implicitly refer to the market conditions. But making the reference explicit can deepen our understanding of upgrading, of the future chances of plants, and frequently connected to this, the future perspectives of the regions too.

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11 The demise of a local champion

MacMillan Bloedel's acquisition by Weyerhaeuser

Roger Hayter

Introduction

In 1999, MacMillan Bloedel (MB), a forest product giant based in British Columbia (BC), was acquired by Weyerhaeuser (Weyco), an even bigger forest product giant, headquartered in Tacoma, Washington State. Apparently, MB had simply been another corporate name lost to 'globalization'. Tom Stephens, MB's last chief executive officer (CEO), who recommended the Weyco acquisition, certainly reinforced this view by emphasizing a 'global' trend toward bigger forest companies that could achieve efficiencies simply not available to the 'smaller' MB. Coincidentally, the acquisition apparently revealed another well-established trend: the Americanization of the Canadian economy. Yet this simple globalization account has already been publicly abused. Thus Weyco apparently did not find sufficient efficiencies in the former MB operations and in 2005 it sold its interests to Brascan, a giant fund and asset manager (but not forest product manufacturer) headquartered in Toronto, Ontario. The growth of big land asset companies with extensive forestland in their portfolios is, by the way, a global trend.

This chapter interprets MB's acquisition by Weyco from a local or regional development perspective, especially with reference to coastal BC where MB had historically concentrated its activities within the province. This interpretation emphasizes that MB's demise was not simply another (peripheral) example of globalization. Rather, MB's acquisition was the culmination of ultimately unsuccessful long-term corporate restructuring efforts that sought to navigate extraordinarily complex global-local dynamics (and subsequently Weyco did not fare any better). Thus MB's restructuring in BC was profoundly complicated by the onset of relentless, new kinds of volatile conflicts that resulted from the softwood lumber trade dispute with the US, environmental opposition to industrial forestry, and aboriginal land claims. These increasingly entangled conflicts, metaphorically summarized as the 'war in the woods,' deeply impacted MB's operations in BC, adding to the more conventional corporate planning challenges created by market dynamics, adversarial labor relations and technological change (Hayter 2003). Moreover, the local impacts arising out of Weyco's acquisition of MB continue to reverberate and remain uncertain. Brascan is a

different kind of corporate player in BC's forest economy and, while it has already implemented a new organization structure for MB's former operations, it remains a largely secretive, non-publicly traded company whose intentions in BC are unclear.

In recent decades, the restructuring of capitalist economies has been broadly conceptualized within the overarching theme of globalization and the growth and domination of giant companies. Economic geography has recognized that the imprints of globalization processes vary locally. However, for the most part, local roles are portrayed as reactive or defensive, involving adaptations of, or resistance to globalization processes. This chapter argues that the 'local' part of global-local dynamics of restructuring needs to be given greater priority. Specifically, the central thesis of this paper is that MB's acquisition by Weyco, rather than reflecting inevitable forces of globalization (towards ever bigger, foreign-controlled firms), resulted from MB's failure to cope with a complex range of challenges within BC. Indeed, at least with respect to MB's CEO and principal owners, Weyco provided them with an (global?) escape from these local problems.

This chapter's interpretation of Weyco's acquisition of MB focuses on MB's corporate restructuring from around 1980 to 1999 within the context of the volatile global-local politics shaping BC's forest economy (Barnes *et al.* 1990; Hayter 1976; Hayter and Edgington 1997; Hayter 2000; Cashore *et al.* 2001). As a case study, MB is important because of its long-standing leading, and often contested role in BC's forest economy. MB was the champion of BC's forest economy not simply by virtue of its size. Unusually for a BC firm, it was a multinational corporation (MNC) that was locally controlled and innovative, generating significant product and process innovations from its in-house research and development (R&D) laboratory, the largest of its kind in Canada. Whether MB's demise implies declining potentials for BC's forest economy to shape its global role is an important question.

Global-local politics and British Columbia's forest economy

Recent explanations of industrial evolution in terms of (50-year) 'long waves' or Kondratieff cycles, emphasize that industrial transformation or restructuring primarily occurs in order to rejuvenate productivity potentials that have declined in the previous regime or paradigm (Freeman 1987). Even the flexible specialization model identifies a "second industrial divide" (Piore and Sabel 1984) that coincides with a regime change from Fordism to post-Fordism, or from Fordism to the information and communication techno-economic paradigm (ICT). Indeed, there is a shared characterization of Fordism as a mass production system driven by economies of scale and size, operated by union labor and controlled by large integrated MNCs within an international framework regulated by fixed exchange rates and free trade commitments. There is also a shared recognition that over the last three decades, stimulated by the pervasive effects of new micro-electronic and communication technologies, Fordism has been

transformed. Production systems have increasingly featured more flexible firms, factories, and labor. In this transformation, globalization has emerged as a parallel, intimately connected idea that, broadly speaking, proposes that 'local' regions and nations have become more open to exogenous or 'global' influences, especially as a result of increased mobility of capital and information, and levels of global competition.

Within economic geography the theories of industrial transformation and globalization have been extensively debated, but with little appreciation that these concepts are rooted in the experience of core industrial regions in dominant countries (Barnes *et al.* 2001; Hayter *et al.* 2003). The globalization debate has been similarly pre-occupied with agglomerations. Indeed, the view that geography matters, that places are 'sticky' (Markusen 1996), has almost been conflated with agglomeration tendencies. Resource peripheries, including forest peripheries, are peripheral in this thinking. Yet they are vitally important to processes of industrialization. Their transformation and globalization is shaped by complex (global-local) interactions of forces that are not found in core regions.

The uniqueness of forest peripheries stems from their distinctive roles as industrial and resource regions (Hayter 2003). As industrial regions, forest peripheries are heavily dependent on exports, external control and on trade regulations that are primarily shaped by dominant industrial powers. Since their raison d'être is to export 'cheap' commodities to major global markets, forest peripheries have fully supported the neo-liberal trade agenda. Yet, forest peripheries have remained vulnerable to the politicization of trade relations, largely controlled by dominant economic powers. This trade agenda has featured a battery of new regulations around multi-lateral, bi-lateral and trading bloc relations. In some case, as exemplified by the Canada–US lumber trade dispute, neo-liberalism has perversely implied restrictions on exports (Hayter 1992).

Forest peripheries are also resource regions whose restructuring has been profoundly affected by resource cycle dynamics. According to the resource cycle hypothesis, as resources deplete they become more costly to industry as the most accessible, highest quality resources are exploited first (Mather 1990; Freudenburg 1992; Clapp 1998a). Further, resources are not only factors of production for industry, but comprise as well, a range of non-industrial values, ecological, aesthetic, and cultural. Industrial exploitation undermines, or at least modifies these non-industrial values. In recent times, significant conflicts have arisen over exploitation of resources as public attitudes have changed in favor of these non-industrial values. Indeed, modern environmentalism, broadly conceived as attempts to reduce human impacts on the natural environment, was sparked by decades of massive escalating resource exploitation and warnings of a global environmental crisis in late Fordism (Carson 1962; Meadows *et al.* 1972; O'Riordan 1976). The rapid emergence of environmental non-government organizations (ENGOs) marks this shift in attitude and the role of environmentalism as an increasingly powerful factor shaping public policy, corporate strategies, and regional restructuring. Moreover, ENGOs have been especially critical of industry

in resource peripheries, none more so than in forest peripheries (Hecht and Cockburn 1989; Hayter and Soyez 1996). Aboriginal opposition to resource industrialization has also escalated over the past 30 years (Stephens 1997; Clapp 1998b).

In forest peripheries around the world, globalization has led to complex interactions of industrial and resource dynamics driven by the imperatives of flexibility, neo-liberalism, environmentalism and aboriginalism. This clash of imperatives collectively distinguishes the restructuring of forest peripheries from industrial core regions. Within Canada, BC has emerged as an unusually troubled and contested forestry periphery, where the clash among industrial, environmental and aboriginal values has posed extraordinary difficult problems for regional and corporate restructuring. The depth of these troubles reflect the size and richness of BC's forest resource, recent development, and the legacy of export-oriented, or what Jensen (1989) calls "permeable" Fordism.

BC's troubled forest economy

The provincial government's Forest Act of 1947 laid the basis for a Fordist strategy and the commodification of BC's 'old growth' forests, which were leased to large corporations in return for large-scale investments in export-oriented industrialization (Hayter 2000). For three decades the forest industry diffused economic growth throughout the province, creating numerous, high income, 'union towns', so-called because significant shares of working people in these communities belonged to a major trade union. The 1947 Forest Act argued for sustained yield forestry but these principles were crudely practiced, largely reliant on 'natural regeneration'. Forests were seen primarily as industrial inputs. Economically, the specialized commodity culture of BC's forest economy became increasingly volatile in the 1970s, as the classic resource cycle squeeze between rising costs and declining prices became apparent. Simultaneously, technical changes, most auspiciously driven by applications of micro-electronics, were beginning to sweep through the forest sector, constantly reducing employment levels in support of mass production. These same technical changes also encouraged firms to seek greater flexibility among surviving employees. In practice, the severe recession of the early 1980s marked a fundamental turning point in the trajectory of BC's forest economy. Since then, the imperatives of flexibility have combined with trade, environmental, and aboriginal conflict to define and shape its restructuring.

Since the recession of the early 1980s, four broad characteristics and themes that define the global-local politics of BC's forest economy may be summarily identified (Hayter 2003). First, the recession in the early 1980s recession sharply stimulated industry to rationalize and question reliance on the culture of specialized, cheap commodities based on the Fordist labor bargain and work organization that emphasized seniority and job demarcation. Increasingly, management and unions have fought over the implementation of "flexible work cultures" (Barnes *et al.* 1990; Barnes and Hayter 1992; Hayter *et al.* 1994; Hayter 1997). Flexible mass production and even flexible specialization have become

discernible trends, facilitated in part by the penetration of high-value Japanese markets (Rees and Hayter 1996; Edgington and Hayter 1997; Reiffenstein *et al.* 2002).

Second, since 1981 the US-based Coalition of Fair Canadian Lumber Imports (CFCLI), has lobbied the US Federal Government to restrict Canadian lumber imports, principally by arguing that BC's lumber industry is unfairly subsidized. The early 1980s recession badly hurt American sawmills, and the CFCLI's solution was to 'blame' Canadian imports. The CFCLI claims that in BC, where 90 percent of the forest harvest is from Crown land, 'stumpage' payments, a tax charged by the provincial government for cutting Crown timber, does not reflect fair market values (Hayter 1992). This dispute, which became embroiled in the signing of the Free Trade Agreement between the US and Canada in 1989, and subsequently in NAFTA in 1991, has been a massive threat to BC's forest economy. In the 1980s, a tax was imposed on Canadian lumber exports to the US, in the 1990s they were restricted by quota arrangements and in 2002, the US imposed a punitive duty of 27 percent on Canada's lumber exports. This trade dispute exemplifies the meaning of perverse neo-liberalism as interpreted and controlled by dominant powers. The CFCLI justifies protectionist actions by linking free trade with 'fair' trade, and even when various dispute panels, including those negotiated within NAFTA and by the WTO, have decided in Canada's favor, the results are simply ignored or the idea of fair trade modified. The dispute is also consistent with the political economy definition of North American 'continentalism' as a set of principles related to free trade, a spatial division of labor (between the US and Canada) and, first and foremost, American hegemony (Hayter and Holmes 1999).

Third, environmental opposition to industrial forestry in BC began in the early 1970s with the founding of Greenpeace in Vancouver. In the early 1980s, this opposition was stimulated by the first official recognition of the 'fall-down' effect, that is a reduction in timber harvest as old growth depletion could not be synchronized with new growth. In the context of severe recession, ENGOs also argued that the forest economy had become a 'sunset sector'. Indeed, since then ENGO battles with the forest industry have escalated, especially in the coastal zone. Simultaneously, locally based environmental opposition to local forestry operations has expanded to consumer boycotts in world markets that are co-ordinated by 'multinational' ENGOs like Greenpeace (Hayter and Soyez 1996; Stansbury 2000). Since the early 1990s, ENGOs have argued that large tracts of BC should be converted to conservation areas.

Fourth, long simmering aboriginal discontent over the (almost complete) failure in BC, in contrast to other provinces, to negotiate treaties following BC's entry into the Canadian confederation in 1871 boiled over in the mid-1980s when aboriginal blockades were mounted throughout the province. Many of these blockades targeted logging activities and all supported land claims (Tennant 1990). Encouraged by ENGOs, treaty demands were given impetus, first, in 1982 by the federal government's repatriation of the constitution and the creation of a Charter of Rights that enshrined aboriginal rights and, second, by a commitment in 1993 to

a new Treaty Process. This Process, involving the federal and BC provincial governments as well as aboriginal peoples, quickly established over-lapping land claims covering all BC. Although the Treaty Process has not been effective so far, high-profile court cases have reinforced the principle of aboriginal rights, and one major treaty plus several interim agreements have been signed that allocate timber rights to aboriginal peoples. Aboriginal peoples were traditionally ignored in forest policy. However, aboriginal imperatives have become a reality and aboriginal control over BC's forests is increasing.

Successive 'right wing' governments in the 1980s, controlled by the Social Credit Party (Socreds), and especially by 'left wing' governments in the 1990s, controlled by the New Democratic Party (NDP), desperately sought to address these issues. Indeed, the NDP introduced an extraordinary battery of regulations that centered around significant:

a increases in stumpage;
b changes to forestry practices to meet new environmental regulations;
c expansions to the provincial park base;
d commitments to 'inherent' aboriginal rights; and
e special measures to protect the Clayoquot Sound Region of Vancouver Island (Gunton 1997).

Yet these measures have failed to appease the CFCLI, the ENGOs or aboriginal peoples; rather the demands of these groups escalated (Hayter 2003). For BC's forest industry, the main respite from its various woes has been the low value of the Canadian dollar as revenues are primarily export-based, and in US dollars while, costs are paid for in Canadian dollars.

The crisis and catalyst for change for BC's forest economy as a whole, and for MB, was provided by the severe recession of the early 1980s.

The 1980s recession: crisis and catalyst for change

In the 1970s, growth rates in major commodities leveled off and earnings, production, and employment in the provincial forest economy fluctuated sharply. As part of these trends, MB recorded its first corporate loss in 1975, a year of recession, but achieved its highest profit level in the boom year of 1979. The remarkably severe recession of the early 1980s both underlined this volatility and confirmed the need for long-term restructuring for MB and the provincial forest economy as a whole. In 1982, the provincial industry incurred a net loss of $500 million and all major corporations lost money, faced high capital-debt ratios, and cut costs by laying-off over 20,000 union workers. While the provincial forest economy did not properly recover until 1986, MB reduced its income losses after 1982 by divestments and closures (Table 11.1). Thus, in 1983 MB sold its head-office building in Vancouver for $63 million. Several subsidiaries were sold outright, including a newsprint mill in New Brunswick for $145 million in 1981, and three subsidiaries, involved in paper and allied activities

Table 11.1 MacMillan Bloedel: Selected Aggregate Trends, 1979–1997

Year	*Sales $m*	*Employment*	*Earnings before taxes $m*	*Net earnings $m*	*Capital investment $m*	*Debt equity ratio (%)*
1997			–138	–368		
1996	5,043	13,497	43	51	497	
1995	5,254	12,886	359	279	758	50
1994	4,417	12,549	235	180	288	49
1993	3,739	12,258	134	54	244	50
1992	2,918	13,203	–64	–49	214	52
1991	2,477	13,905	–226	–93	275	46
1990	2,818	15,036	–69	50	363	35
1989	2,923	15,094	211	245	553	27
1988	3,037	15,384	336	327	350	18
1987	2,863	15,226	508	271	249	19
1986	2,512	15,102		178	100	28
1985	2,336	15,139		43	97	42
1984	2,128	14,994		19	138	46
1983	2,044	15,472		24	104	42
1982	1,843	18,581		–58	207	46
1981	2,210	22,049		3	308	39
1980	2,436	24,505		113	328	35
1979	2,180	24,730		155	280	27

Source: MacMillan Bloedel Selected Annual Reports. Note that in 1995 MB (slightly) revised some of its accounting formulas and the data from 1991 reflects these changes. All dollar figures are nominal.

across Canada and Europe, were partly sold in 1983 to create joint ventures with new corporate partners. MB also reduced its workforce between 1979 and 1986 by 38.9 percent, principally by a combination of divestments and downsizing. Subsequently, technical change, modernization and job flexibility put further pressure on MB's workforce.

The devastating recession of the early 1980s exposed MB as a corporate 'dinosaur', a metaphor that captured the state of industrial organization across BC and the Pacific Northwest (Schwindt 1979; Brunelle 1990). As the province's largest corporation, MB epitomized Fordist organization and led the boom in BC's forest economy from 1950 to the 1970s. MB mass-produced cheap commodities in big factories that employed unionized labor in employment relations structured according to seniority and job demarcation. MB was a fully integrated forest manufacturer, harvesting logs from private and public lands to feed lumber, plywood, shingle and shake, pulp, paper and paperboard mills. By the late 1960s, MB's corporate system became multinational, with most investments in the USA and Europe (Hayter 1976). However, MB remained rooted in coastal BC and especially around three integrated forest product complexes in Powell River, Nanaimo and Port Alberni, the latter the largest and most diversified (Figure 11.1).

In addition, MB operated a large sawmill in Chemainus, and several wood

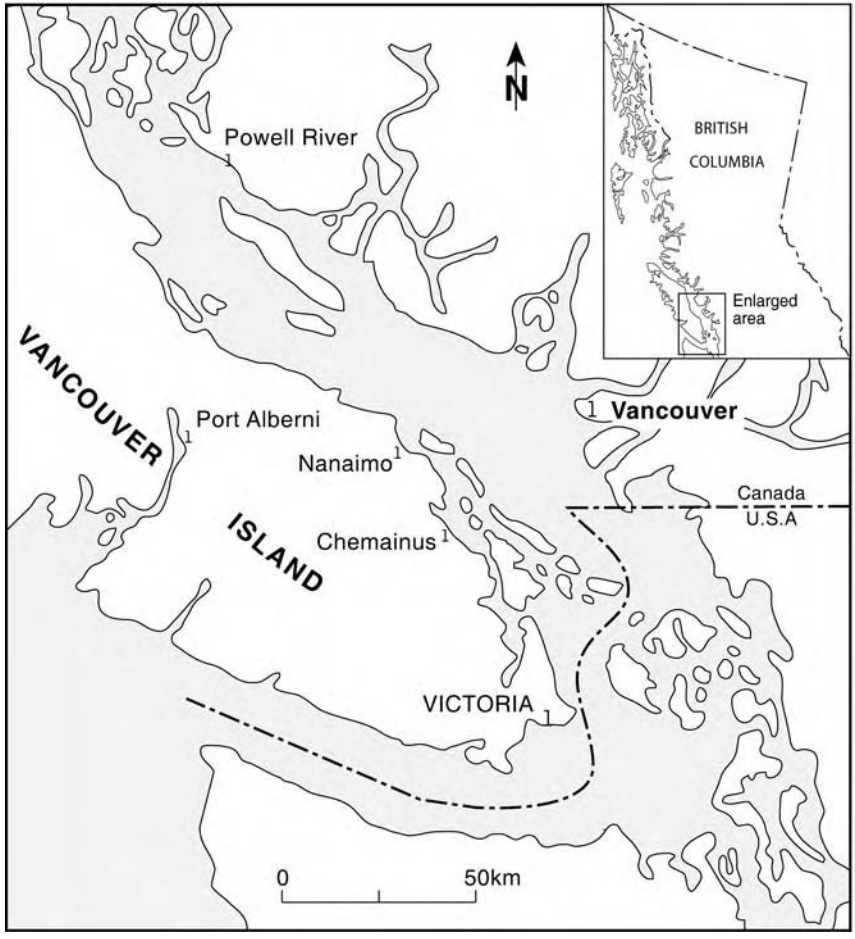

Figure 11.1 MacMillan Bloedel's principal operating nodes in British Columbia.

processing and converted paper mills in the Vancouver area. These operations were supplied from tree farm licenses and from MB's privately-owned forests that were located in the coastal littoral, including the Queen Charlotte Islands. Indeed, MB owned the largest private forests in BC.

The 1980s recession in BC exposed MB's facilities to be old, high cost, rigid in operation and attitude, and no longer viable. MB's immediate response was to reduce costs by closing facilities and laying-off employees. Subsequently, MB raised revenues by selling some facilities and began to re-think its Fordist attitudes by renovating and computerizing facilities, and bargaining for more flexible workforces in efforts to emphasize higher value products. The restructuring of the Chemainus sawmill, part of some broader attempts to diversify towards

the high-priced Japanese market, heralded MB's new strategic thinking towards "flexible mass production" (Barnes *et al.* 1990; Hayter and Edgington 1997).

Flexible mass production strategy was a legitimate long-term approach for MB in the high cost environment of BC as it emphasized quality and value and not simply naive cost efficiency. Admittedly, in practice MB's strategy of flexible mass production was thought out and implemented in ad hoc, even inconsistent ways. Thus, even as MB shifted to higher quality papers it retained a commitment to standardized pulp and newsprint production until the 1990s, when it then acquired mills in the USA that were mass producers of fiber board. Significantly, MB's new strategic thinking remained conceptualized in relation to trends in a 'conventional' business environment comprising rivals, consumers, government policies, labor, suppliers of technology, etc. The recession of the early 1980s, however, was the catalyst for US trade protectionism, ENGO anti-logging campaigns, and the rise of aboriginal protests regarding land claims; and MB had no experience in dealing with these new forces within its business environment. Corporate planners in the early 1980s were consumed with the need to survive in the context of the worst recession since the 1930s and it is unlikely that the durable, escalating nature of US protectionism, ENGO and aboriginal protests was anticipated in the mid-1980s. Rather, the explosion of these conflicts were seen as temporary, as part of the recession, and at least in the case of the trade conflict, effectively resolved by NAFTA and its dispute mechanisms. But NAFTA has not resolved the trade dispute, and ENGOs and aboriginal peoples have 'piggy-backed' their opposition to industrial forestry in BC on the efforts of the CFCLI.

Overall, the evolution of MB's restructuring has been a roller-coaster ride (Table 11.1). Earnings (before taxes and net) were low or negative for several years in the early 1980s, when wood processing operations were badly hit; in 1991 and 1992, when pulp and paper operations were especially poor performers, while massive losses were incurred in 1997. Sharp up-swings in financial performance in the late 1980s and mid-1990s separated these nadirs, and in 1997 MB generated sales of over Can$4.5 billion when employment of 10,592 was 42.8 percent of 1979 levels. Significantly, the downturn in BC's forest economy in 1997/1998, in which MB fully shared, was not felt in the rest of Canada. The downturn in Japanese demands was a factor in BC's poor experience, but BC firms also lost market share in Japan at this time, suggesting problems peculiar to BC. For its part, MB was once again a champion firm in disarray and Tom Stephens was hired as the new CEO in 1997, to increase 'shareholder value'. This goal he achieved, with startling success, with MB's acquisition by Weyco.

MB's search for flexible mass production

Broadly speaking, flexible mass production occurs when economies of scale are combined with economies of scope, as high production volumes are associated with a more differentiated, higher-value (innovative) product-mix. For MB, flexible mass production has been a central theme of its corporate restructuring since 1980. In BC, in 1980, MB was diversified across the basic forest industries

Table 11.2 MacMillan Bloedel: Production at Major BC Facilities

Location	*1980*	*1996*	*Status in 2005*
Lumber (MFBM)			
Port Alberni (APD)	372	161	Operating (Cascade Forest Products)
Port Alberni (Somass)		75	Operating (Cascade Forest Products)
Nanaimo	256	146	Operating (Cascade Forest Products)
Chemainus	167	97	Operating (Cascade Forest Products)
Powell River	75	28	Closed
New Westminster	68	87	Operating (Cascade Forest Products)
Vancouver (White Pine)	176	118	Closed
Vancouver (custom cut)		72	Operating (Cascade Forest Products)
Panelboards (Msq.')			
Vancouver	100	closed	
Port Alberni	150	closed	
Vancouver	106	101	Closed
Pulp and Paper			
Port Alberni (paper)	371	318	Operating (Catalyst)
Port Alberni (pulp)	56	closed	
Port Alberni (linerboard)	96	closed	
Powell River (pulp)	47	34	Closed
Powell River	471	400	Operating (Catalyst)
Nanaimo	334	sold	Operating (Harmac Pulp and Paper)
Vancouver (fine paper)	37	sold	Operating (Domtar)

Notes
Catalyst replaced the name NorskeCanada in October 2005.
Cascade Forest Products is owned by Brascan and was established in 2005.

(lumber, plywood, shingles and shakes, pulp, newsprint, paperboard, containers, and other papers). Within each industry, production specialized in mature commodities and was designed to maximize through-put (volume) at the lowest possible cost. By 1991, MB had moved out of some commodities completely and downsized others. With fewer employees, MB increasingly emphasized value maximization in manufacturing a wider range of specialty papers and building products, including engineered woods. Such a strategy of flexible mass production made considerable corporate and regional sense, given that by the 1980s BC was a high-cost wood-supply region and the opportunities created by the application of micro-electronic technologies for flexibilizing mass production.

Since 1980, overall changes to MB's operating structure within BC have been dramatic, and often controversial (Table 11.2). In the 1980s, MB stopped producing softwood plywood, shingles and shakes, fine papers and paperboard; in the l990s it moved out of market kraft pulp and, just prior to its acquisition by Weyerhaeuser, it sold its pulp and paper operations and closed its R&D laboratory. Surviving manufacturing operations were downsized and fundamentally different in terms of markets, product-mix and work organization, while significant changes in wood harvesting were also implemented. In the case of Port Alberni, a MB dominated 'company town' on Vancouver Island, MB's (union) employment

dropped from around 5,400 in 1980, to around 2,000 in 1999. Port Alberni, which during the 1960s and 1970s was frequently in the top ten Canadian communities in terms of per capita income, now has a structural unemployment problem, and is desperately seeking to diversify (Hayter 2000, pp. 309–319).

The crisis of the early 1980s provoked MB to immediately rationalize and cut costs. Simultaneously, the recession helped crystallize corporate thinking towards flexible mass production. MB took the lead in demanding changes in Fordist labor principles towards more flexible labor practices. Its new mill at Chemainus was the first (union) mill in BC to formally incorporate flexibility principles in the employment contract (Barnes *et al.* 1990). MB pioneered the development of Japanese lumber markets. It was the only BC-based firm to establish a Japanese subsidiary (Hayter and Edgington 1997). It drastically modified its harvesting practices and, in a totally unexpected move, announced it would stop clear-cutting in favor of variable retention harvesting (Hayter 2000). As the largest forest tenure holder in BC, MB's forestry operations have also sought to connect with aboriginal peoples. In a well-known case located near Port Alberni, MB formed Iisaak Forest Resources, a joint venture 51 percent owned by the Nuu-cha-nulth. It illustrates the growing trend linking forest corporations and aboriginal peoples. Moreover, MB emphasized innovations that were generated by its R&D group as part of deliberative attempts to 'move back' along the product cycle towards higher value products. In support of this thinking, it extensively modernized its existing facilities in BC, most comprehensively in relation to sawmills.

Yet between 1980 and 1990, MB's performance remained on a roller coaster and its strategies were constantly opposed, often bitterly. Labor, its old adversary, opposed the shift towards work-based flexibility beyond Chemainus. At Powell River deteriorating labor relations featured court action (Hayter 1997). As BC's biggest lumber exporter, MB's sawmills were distressed by the trade conflict with the US. Provincial forest policy initiatives were principally aimed at corporate forestry practices, especially on the coast, and MB was subject to increasingly intense ENGO and aboriginal scrutiny. Indeed, MB was on the front line of ENGO opposition in the 1990s as Greenpeace and others established BC forests as a priority for environmental action and MB as the central corporate target for logging blockades, market boycotts and disruptions to annual general meetings. In the 1980s, MB was also the focus of hostile takeovers involving large central Canadian-based conglomerates. The first was rejected by the provincial government in 1981 on the basis of the slogan that "BC resources are not for sale" (Hayter 2000, p. 118). Subsequently, Noranda Mines of Toronto, itself controlled by Brascan, acquired MB and, after an unhappy liaison, during which time MB retained its identity and much of its Vancouver-based technostructure, Noranda sold its shares in MB in 1993 for Can$931 million, the principal buyer being the BC Government.

Nevertheless, throughout the stormy 1980s and 1990s, MB's commitment to flexible mass production can be discerned. This commitment is summarized in terms of innovative behavior and in-situ modernization in MB's mills and a retreat from the practice of large-scale clear-cutting the forest was also part of a shift from Fordist practices.

Moving back along the product cycle

MB sketched its own adaptation of its product innovation strategy within the familiar context of the product-cycle model, specifically with reference to building products (Figure 11.2). This model represents MB's perceptions of (building) product-growth potentials. The rationale for these perceptions is that innovative products command a price premium over standardized commodities whose competitiveness derives solely from cost efficiency. Generally, more technologically complex products are harder to copy by lower-cost, less sophisticated rivals, and they potentially provide longer-lasting competitive advantage. While Scandinavian forestry firms had long emphasized innovatory behavior, MB's recognition of such innovation (value-maximizing) priorities, as distinct from cost-minimizing priorities, defined leading-edge corporate attitudes in BC. Thus, as of 1996, for MB the products with the greatest growth potential are recently innovated ('back along the product cycle curve'), including engineered wood, medium density fiber board, and oriented strand board. Particleboard is closer to maturity, whereas construction plywood is already in rapid decline. On the other hand, 'baby squares', that is lumber cut specifically to Japanese specifications, and the application of kiln drying, has created new markets for 'differentiated' lumber. In the mid-1990s, MB's R&D group anticipated the development of plastic wood and fiber gypsum products. A similar categorization of products is possible for pulp and paper.

In shifting towards more innovative products, MB's R&D group has played a vital role. The new products of Parallam and Pacifica illustrate this role. In 1980, MB's building products were dominated by mature products, with the exception of particleboard, a form of which MB had innovated in the mid-1960s at a then

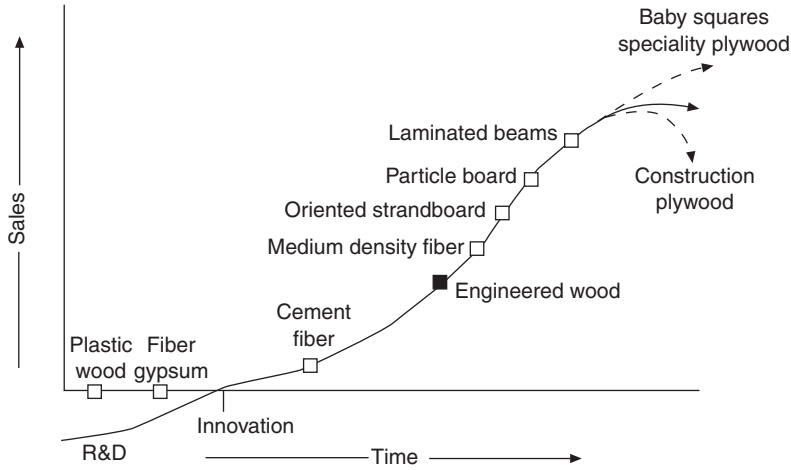

Figure 11.2 MacMillan Bloedel's building products: generalized corporate perception of product life-cycles.

new Vancouver plant. By 1996, MB had innovated various building products, the best known being Parallam, a brand-name engineered wood. Scientists began working on Parallam in the late 1960s and in 1982 a prototype plant was built (at the Canadian White Pine sawmill). Parallam became a commercial reality in 1986 at a new plant located within the Vancouver metropolitan area in Delta (on Annacis Island). From R&D to innovation, the Parallam project took over 15 years and cost over Can$50 million.

As a high-quality, engineered product customized over a wide range of sizes at consistent high-quality specification and produced in volume, Parallam is an excellent example of flexible mass production. It is a structural beam made from long (2.5 meter) veneer strands, mainly from hemlock and Douglas-fir but also larch and poplar, that are bonded in a patented microwave pressing process. Beams of various widths and lengths can be manufactured with consistent structural properties and compared favorably with metal beams. Parallam is two-and-a-half times the strength of sawn lumber, and the Annacis Island mill produces beams up to 66 feet long and two feet wide, length being restricted by factory size rather than by the process. Quality control is rigorous. Markets have grown rapidly in North America, and by 1996, Annacis Island was manufacturing 200 million cubic meters and was shipping four containers of Douglas-fir based Parallam to Japan a week. In 1996, the Annacis Island mill employed 160 workers, organized on teamwork principles and, in contrast to MB's other plants, the workforce is non-union. In 1997–1998, plant capacity was doubled. In 1991, MB formed a joint venture with Trus Joist International, the largest engineered wood producer in the USA, and within this partnership, Parallam was a consistent source of profit to MB.

Pacifica illustrates flexible mass production in the paper industry. MB had long sought to innovate groundwood and lightweight coated (LWC) papers in order to reduce emphasis on newsprint. Indeed, in the 1970s, first Powell River and then Port Alberni, started to produce such papers. Telephone directory papers have been highly successful and are a major product line at Port Alberni. Port Alberni was also the chosen site for the start-up of NexGen in 1996, a new 'ultra' LWC paper, now known as Pacifica, and used in glossy magazines, catalogues, and advertising flyers. The technology used in this project was engineered by MB to allow coating to be applied on both sides of the paper. Pacifica is difficult to make, the technology is sophisticated, the paper makers are well trained, and less wood fiber is required in comparison to newsprint. These features make it appropriate for Port Alberni, and local fiber supplies are ideal for a LWC paper. Pacifica employs a nine-man team, rather than six employees, the traditional manning level on paper machines. At Port Alberni, Pacifica significantly contributes to flexible mass production. Once dominated by newsprint, the mill now produces over 40 different grades of paper, including telephone directory paper and Pacifica, all in high demand and commanding premium prices.

In addition to the examples of Parallam and Pacifica, until its closure in 1997, MB's R&D group made other important contributions to corporate restructuring. These notably comprised the development of site-specific high yield pulps,

a robust and flexible packaging system ('Spacekraft') and the creation of expensive and effective environmental management systems. In-house R&D was certainly not the sole supplier of technology to MB. Equipment manufacturers, including Valmet in the construction of a paper machine for Pacifica, provided technology. MB also obtained innovations from small firms and universities while many technical changes were initiated at mill sites. Moreover, in addition to incorporating the results of in-house R&D, MB extensively modernized and rationalized its facilities within BC in support of flexible mass production.

In-situ modernization

In 1980, MB's facilities were generally at least 40 years' old, in Powell River's case 70 years, and were based on out-moded (Fordist) ideas of maximizing the throughput of logs in support of commodity diversification. The shift towards a more differentiated product mix within more limited commodity segments required massive in-situ changes. While all sites were downsized in terms of jobs, some sites were abandoned, such as the Vancouver plywood and Nanaimo pulp mill sites, and some operations were sold (Table 11.2). At most sites, there were also significant changes in product mix, markets, and work organization, that reflected commitments to flexibility and value maximization.

MB's most extensive, coherent restructuring of its operations in BC, focused on its 'whitewood' sawmills that utilized Douglas-fir, hemlock, and balsam. Indeed Chemainus, Nanaimo, and Port Alberni sawmills, were completely replaced (on-site) by entirely new mills in 1981, 1983, and 1989 respectively. Among its whitewood mills, only Canadian White Pine in Vancouver was not modernized. At Chemainus, the changes were dramatic, based on the desire to increase the productivity of the workforce through technical change and new working arrangements. MB closed the mill in 1981 and its decision to build a new mill was predicated on union agreement to flexibility principles, centred around a team-work system, on the shop floor, the first forest union agreement of its kind in BC. MB's 'hammer' in this bargaining was that the old collective bargaining agreement, based on seniority and job demarcation, was voided after a two-year closure period, which is exactly what happened (Barnes *et al.* 1990). Thus, MB hired selectively from its prior workforce and from among new applicants (rather than re-hire according to seniority), demanded new entrance requirements, and formal recognition of flexible working conditions. The new mill was quickly fully computerized and, while employment levels dropped from 650 jobs in 1980 to 150 jobs in 1996, production was reduced by only 40 percent (Table 11.3).

The new technology at Chemainus cuts logs to ensure full market values are retrieved (rather than fastest throughout) and, by the touch of a button, logs and lumber are cut to various sizes. The mill simultaneously shifted from low-value dimension lumber markets, especially in the USA, to higher-value products, especially to meet Japanese specifications (Table 11.3). Since 1985, Chemainus has been MB's most profitable sawmill. At Port Alberni and Nanaimo, the

Table 11.3 MacMillan Bloedel's Chemainus sawmill, selected characteristics for selected years, 1980–1996

	Employment	*Production (MFBM)*	*Sales (%) to:*		
			North America	*Japan*	*Other*
1980	650	167	45	40	15
1981	550	135			
1983	0	0			
1985	125	69	30	35	35
1989	140	101	15	49	36
1996	150	97	12	55	33

Source: Hayter (2000, p. 131).

changes in markets, work organization, and product mix, have been in the same direction as the standards established at Chemainus. In the late 1980s these three mills co-ordinated their operations by focusing on different fiber supplies in terms of species mix, length, and diameter, to serve complementary market niches, especially in relation to Japan (Hayter and Edgington 1997). Meanwhile, the Somass cedar mill at Port Alberni was comprehensively modernized to combine scale and scope economies in search of flexible mass production (Hayter 2000, pp. 133–134).

At the Powell River and Port Alberni pulp and paper complexes, MB's modernization efforts were considerable but more piecemeal, at least partly because of the expense involved. In both places, expensive environmental programs were introduced in the 1990s, and in both places there was a shift away from standard newsprint grades towards specialty paper production on many fewer, larger computerized paper machines. By 1996, the two mills produced 718,000 tonnes of paper of which 42 percent was standard newsprint, 8 percent comprised LWC papers, and 50 percent comprised telephone directory papers. This shift went furthest at Port Alberni where, by 1996, two-thirds of the production was dominated by LWC papers and telephone directory papers. At Powell River, standard newsprint LWC papers accounted for one-third of the mill's output in 1993 and there had been a shift away from North American markets that, from the 1950s to the 1980s, had completely dominated Powell River's markets. While both LWCs and telephone directory paper were first introduced at Powell River, MB shifted its priority for these products to Port Alberni because it felt that the local fiber mix was more suitable. Port Alberni was also the bigger complex and, adjacent to Clayoquot Sound, MB's operations there faced strong opposition from ENGOs.

The retreat from clear-cutting

Sustained ENGO opposition to MB's forestry in BC began on Meares Island, Clayoquot Sound in 1979 (Stansbury 2000, p. 37). The early 1980s recession

witnessed an escalation of this opposition, and from 1990 to 1993, ENGO attacks on logging had become internationally co-ordinated and formally targeted MB's logging on Clayoquot Sound. The largest demonstration involved 1,000 protestors and, while a counter-demonstration by labor was even bigger, it heralded significant environmentally motivated changes in forest policy and practice and the new powerful influence of ENGOs. Moreover, the ENGO critique of corporate forestry was crystallized over the conventional practice of 'clear-cutting', and the established tendency of 'continuous' clear-cutting whereby adjacent areas (cut blocs) of timber were cut in sequence, often creating 'monster' clear-cuts within a few years (Hayter and Soyez 1996). Indeed, ENGOs began to oppose any clear-cutting of old growth timber, and after 1993, this opposition was extended to the entire central coast of BC which ENGOs are trying to rename as the Great Bear Rainforest (McAllister and McAllister 1997). MB had major logging rights in this region, including the Queen Charlotte Islands that they had logged in the 1960s. Overlapping aboriginal land claims are also present on the central coast, led by the Haida's claim for the Queen Charlottes ('Haida Gwai').

Unfortunately for MB, the provincial government changes in forest policy in the 1990s did not resolve environmental (or aboriginal) problems to their or industry's satisfaction. Thus provincial policy changes had massive implications for corporate forestry. Between 1988 and 1994, provincial stumpage charges on timber harvested in the coastal region were increased almost threefold. Simultaneously, the (1993) Forest Practices Code fundamentally changed the regulations governing harvesting practices, not only with respect to clear-cuts, but with respect to environmentally sensitive areas, such as near streams, and in requiring designated habitat to be left unlogged. The Code eliminated continuous clear-cutting and drastically reduced the maximum size of clear-cuts on the coast to 40 hectares, less than those permissible elsewhere in Canada or in Sweden. The Code introduced aesthetic and cultural criteria to ensure 'viewscapes' were not impaired and aboriginal heritage, such as culturally modified trees, was not changed in any way. Further, the Code added considerably to the planning procedures that were required before logging could proceed. In addition, MB's tenure rights were reduced by expansion of the provincial park system and related measures.

As a result, the new provincial legislation massively increased the costs and uncertainty of logging. MB and Government estimates placed the cost of the Code to the industry as a whole at over Can$750 million and MB estimated that by the mid-1990s over 700 regulations governed forestry in coastal BC (Cafferata 1997; Gunton 1997). Indeed, MB argued that most if not all of its Crown logging operations were unprofitable. Yet ENGO interests were not appeased and were especially incensed that clear-cutting, albeit on a smaller scale, was still permitted. For the provincial government and MB, clear-cutting was justified not simply on economic grounds but also for worker safety and ecological reasons, rationales that were supported by foresters (Kimmins 1992). ENGOs rejected or ignored these arguments and continued their opposition to clear-cutting. They also rejected the

Clayoquot Compromise of 1993, until the region became a UNESCO Biosphere Reserve in 1998.

During the 1990s, MB's logging operations on Crown land were therefore facing escalating costs, the uncertainty, time, and costs of vastly increased bureaucratic procedures and ENGO opposition remained strident. Alberni West ('Sproat Lake') Division illustrates the impacts of these problems for MB. Thus, Sproat Lake's harvest progressively declined from 600,000 cubic meters in 1980, to 440,000 in 1993, and to 350,000 cubic meters in 1997, by which time 45 percent of its land base has been allocated to the 'special status' category in which logging is considerably restricted. Simultaneously, forestry planning became more complex to conduct a landscape evaluation assessment, incorporate forest ecosystem networks (FENs), and anticipate visually affected green-up (VEG), which means that before an adjacent clear-cut can be logged new growth must reach at least three meters in height, or five meters in special scenic areas. Sproat Lake was also required to submit harvesting plans to officially designated biologists and fishery experts, and to local communities and native bands, and must demonstrate how logging plans had been revised in light of concerns raised. Meanwhile the Sproat Lake Division continued to regenerate its forests by planting. In 1997, the Division planted 4.1 million seedlings, and has now planted over 95 million in total, principally fir, hemlock, cedar, and yellow cedar. But the bottom line was that, in 1997, the Division lost $6 million. Indeed, MB as a whole was about to enter another 'bust', as it turned out, its last one.

Tom Stephens and the restructuring of MB for shareholder value

In 1997 and 1998, MB incurred huge losses (Table 11.1). MB's principal shareholders, the Texas-based Bass family and the Ontario Pension Plan Fund, were perturbed and were influential in the hiring of Tom Stephens as CEO, whose mandate was to enhance 'shareholder value'. Stephens, an outsider to MB, was known for rescuing a large US-based asbestos corporation from massive debt and facing complex compensation claims. Tom Stephens instantly became a public figure in BC, willingly granting interviews to newspapers and media alike, consistently stressing the importance of shareholder value and the need for restructuring. His impact on MB was stunning. He downsized the head-office by 100 jobs, a reduction of 2,700 jobs was announced, major investments in medium density fiber board in the USA were sold, as were the pulp and paper complexes at Powell River and Port Alberni. He visited all MB's operations in BC and demanded immediate accountability; they were to become profitable or closed. In the case of the Sproat Lake Division, the local union agreed to a restructuring plan, rather than have the Division closed. This plan reduced jobs from 190 to 53 employees, including a decline in staff from 32 to 12, with only two supervisors left in the bush, and work patterns involved much greater flexibility.

In major public announcements, reported extensively in the media and making headline news in *The Vancouver Sun*, Stephens declared that MB would commit

itself to 'selective logging' and would stop clear-cutting. This announcement both completely surprised the government, whose Forest Practices Code still recognized the viability of clear-cutting, and the ENGOs. Indeed, Greenpeace publicly supported Stephens' initiative by offering to help market wood from MB's selectively logged forests (Hamilton 1998, 1999). In practice, the selective logging of one or a very few individual trees from a forested area that otherwise remains intact and visually unchanged, was not introduced. Instead, MB implemented variable retention harvesting, where small groups of trees are left in the logged area, based on various ecological considerations. While most of the trees are still logged, variable retention is substantively different from clear-cutting. Moreover, Stephens had won a major public relations coup as regards logging, as he had undermined the central plank of ENGO criticism. The ENGOs were further 'brought on side' by his decision to stop logging completely in 1999 in Clayoquot Sound. Within MB itself, despite the job losses, there was widespread admiration for Stephens' initiatives that were deemed essential for corporate survival.

Critically, Stephens' publicized plans had the desired positive effects on stockholder values, a development further reinforced by the unexpected announcement by Weyerhaeuser of its intention to acquire MB. For the giant Weyco, which had operated in the interior of BC since the early 1960s, MB was a corporate prize that made it the biggest forest firm in the province. MB's coastal operations dovetailed with Weyco's home operations south of the border, opening up possibilities for integrating wood fiber flows, while Weyco's existing market shares in the USA and Japan were increased. Weyco also acquired MB's non-BC-based operations including a major forest product complex and timberlands in Alabama, and several operations across Canada. The acquisition was finally consummated at a price of $2.45 billion.

Tom Stephens argued that the takeover was inevitable, indeed welcome, driven by imperatives of corporate concentration and the low value of the Canadian dollar that particularly increased the ease by which Canadian firms could be acquired by US-based firms. The genius of Tom Stephens is hard to deny. He arrived in BC as an outsider at a time when the provincial forest economy was high cost and deeply troubled by trade, environmental and aboriginal disputes, forest policy was in a state of flux and MB was in distress. MB had returned a negative cash flow for 13 years and "in 1996, investors revolted, demanding changes in the management and board" (Hamilton 1999, p.F1). Tom Stephens was chosen to reverse this situation, a challenge he met to much public acclaim in local media. Indeed, within two years of his arrival the principal shareholders of MB, including himself, witnessed unexpected increases in their share values, culminating in the takeover by Weyco. Thus, in 1997 MB lost $368 million or (minus) $2.99 per share, but in 1998 MB earned $42 million or 29 cents per share. In early 1997 MB's shares had dropped to a low of $12.0; at the announcement of Weyco's take-over they increased to $26.15. The shareholders made lots of money. Somewhat paradoxically, Stephens claimed he had not sought to orchestrate such a take-over while rationalizing Weyco's offer precisely as a

global imperative. Even then, this rationale seemed dubious. It was never clear why the former MB operations would be more efficient as part of Weyco. After all, the downsizing of MB operations had been central to its restructuring and available evidence suggests MB was plenty big enough to realize available economies of scale in all main functional respects.

Immediately after the acquisition, Weyco rapidly integrated MB's operations within its own systems of accounting and identity. Whether Weyco increased efficiencies and developed a more stable operating environment is doubtful. If ENGO opposition to industrial logging that targeted MB seemed to disappear, Weyco has not been able (or willing?) to resolve the lumber trade dispute and encourage the US to drop its restrictions on BC's lumber exports. Meanwhile, aboriginal opposition to logging on the forest tenures previously leased to MB increased significantly, especially on the Queen Charlottes (Haida Gwai). Any potential for Weyco to integrate its extensive coastal operations on either side of the US–Canadian border has simply not been realized, at least in terms of material flows. Indeed, this potential within the same corporation no longer exists, as in 2005 Weyco sold the former MB holdings in BC to Brascan for about Can$1.2 billion. Already, Brascan has created two distinct companies from these holdings, a decision that, in turn, implies distinct strategies. Thus, Island Timber controls the private forest lands previously owned by MB while Cascadia Forest Products controls the manufacturing facilities and tenured forest areas previously owned by MB. It is the private timber rights, however, that are the key to Brascan's interests and to a wider global strategy.

Weyco's interests, shareholder demand for value, and Tom Stephens, were the immediate causes of MB's demise. But why was Tom Stephens hired? Why was, after almost two decades of restructuring, further radical restructuring deemed necessary? The claim of this chapter is that Tom Stephens was hired because MB's strategy of flexible mass production failed. This strategy failed, not because it was inappropriate, but because it was not effectively implemented, and the reasons lie primarily in the complex nature of global-local dynamics within BC and within MB. What went wrong on MB's strategy of flexible mass production? Two perspectives, that are not mutually exclusive, are offered to shed light on MB's structural dilemmas. The first perspective emphasizes strategic 'internal' mistakes by MB, the second portrays MB as a victim of 'external' circumstances within BC.

MB's strategic failures

According to Porter (1985), corporations achieve sustainable success in an industry by following one of four generic strategies: cost leadership across a range of goods, differentiation across a range of goods, focused cost leadership on a limited set of goods, and focused differentiation on a limited set of goods. Problems arise when firms do not clarify their fundamental competitive base, whether rooted primarily in cost minimization or value maximization, and whether their activities should range across many or a few product markets.

Different strategies require different managerial competencies, forms of investment, corporate structures, work skills, and imply different production and marketing economies of scope. In a given region, it is likely that for large firms only one strategy will be appropriate to local conditions.

In Porter's terminology, during Fordism MB aspired, with considerable success, to be a leader based on low costs derived from economies of scale and size across the full spectrum of forest product industries. In its restructuring of the 1980s and 1990s, MB has sought to shift the basis of its leadership to value maximization and a more focused range of 'higher value' industries. It may be argued, however, that MB failed to shift sufficiently towards this goal, especially in pulp and paper. Thus, at both Powell River and Port Alberni in 1998, MB still manufactured large quantities of newsprint that is price sensitive and whose competitive base primarily rests on low costs. In addition, while MB's extensive US-based operations remain oriented to (domestic) paper packaging markets, that are amenable to product differentiation, in BC (and across Canada) MB sold 50 percent of its interests in these markets. Moreover, MB waited until the late 1990s to divest its BC pulp and paper mills. This decision could have been reached a decade earlier. Alternatively, MB could have sold one of its paper complexes in BC, moved completely out of newsprint, and concentrated all its specialty production at its remaining mill.

If MB chose the correct strategy of flexible mass production it did not fully pursue the implications of such a strategy in both paper and building products. Given the increased complexities of sectoral dynamics and regional uncertainties associated with globalization, the failure to focus corporate energies on one segment or the other was probably a contributing factor to MB's demise. Several reasons for this failure to focus its strategy more sharply can be offered. First, MB may have over-estimated its abilities to become a flexible mass producer across the forest product spectrum. Second, its temporary acquisition by Noranda, with its CEO located in Toronto, came at a crucial time and may have contributed to a reticence to streamline. MB was regarded as a great coup for Noranda and its thinking was probably still based in celebrating control and corporate size. Third, the continued volatility of BC's forest economy not only rendered forecasting difficult but justified the diversification in both wood and paper products, an attitude long established in the industry. Indeed, the early 1980s recession undermined the wood processing industry mainly while pulp and paper remained more or less viable, while the reverse was true in the early 1990s recession. Finally, MB's corporate home in BC was centered around the long established integrated forest product complexes at Powell River, Port Alberni and Nanaimo. Their break-up in the 1990s was a hard choice, and would have been harder still when several founding entrepreneurs were still alive.

MB as victim

In the early 1980s, MB's restructuring plans sought to re-define corporate strategy in response to changing fiber supply conditions, technological changes to a

considerable degree driven by micro-electronics, and forces of market differentiation. As volatile as they were, these trends represent 'conventional' market forces. In BC, however, MB faced remarkable shifts in political economy that could scarcely have been foreseen in the nadir of the early 1980s recession. Environmental protest, aboriginal land claims, US protectionism, and government, especially provincial legislation, rapidly and unpredictably altered the environment of industrial forestry in BC. These changing circumstances, which have clearly not yet worked themselves out, had pervasive effects on MB.

MBs may be considered as a special 'victim', and its failed strategy of flexible mass production, a result of unusual events in its own backyard of BC. MB was the largest, most diverse forest product corporation in BC. MB's BC-based operations were concentrated in the coastal region where conflicts are most intense and where costs in the province are highest, and ENGOs explicitly targeted MB in their increasingly well-orchestrated campaigns of blockades, boycotts, and media attacks. Recent government policies also had specific implications for MB because of its size and location. Indeed, the provincial government unilaterally reduced MB's timber rights to provide land for parks and had to be taken to court to award compensation. The provincial government has reduced AACs on public lands to provide timber for small firms and land for parks, the corporate impact of which has been greatest on MB. In addition, MB participated in a broadly based committee, chaired by the government, to deal with logging in the Clayoquot Sound, and agreed to substantial compromises over established logging rights. Yet, the provincial government further modified the Clayoquot Compromise to cater to demands by ENGOs who had pulled out of the decision-making process. The provincial government has also increased taxes on MB's private lands. Even the federal government imposed the country's most stringent environmental regulations on MB's Port Alberni operations.

Possibly, MB should have been better able to assess the implications of the trade, environmental, and aboriginal disputes in BC, at least once they had begun in the early 1980s. Yet, the disputes themselves evolved and their durability has been remarkable. Indeed, each dispute has escalated. The American lumber lobby (CFCLI), which originally demanded a 10 percent tariff on BC's exports, is now demanding changes in timber pricing and the privatization of BC's forests. ENGO protests that originated as localized protests against logging have become globally orchestrated, they have targeted consumers as well as logging operations, and now feature demands that extensive areas of BC's forests remain unlogged. Similarly, aboriginal protests evolved from local cries of despair to sustained legal and political battles based on hitherto unrecognized 'inherent rights'. Importantly, the CFCLI and ENGOs in particular had no incentive to end disruptive behavior that was undermining the BC's forest economy. Indeed, their interests have been served by prolonging the problems of BC's forest economy and MB, the 'champion' firm. Over time, the CFCLI, ENGOs, and aboriginal peoples, co-ordinated their opposition to industrial forestry in BC (Hayter 2003).

The local debate over MB's acquisition

As BC's largest firm, and by virtue of its Canadian ownership, MB's acquisition by Weyco generated debate. The provincial government appointed a Commissioner to assess this debate to see whether the acquisition was in the best interests of BC. The acquisition was opposed by ENGOs, who feared the deal would undermine MB's recent commitments to environmentally sensitive forest practices. However, ENGOs 'sudden' concern for MB's autonomy scarcely seemed credible following a decade in which ENGOs had specifically targeted MB as the principal abuser of BC's forests. In the event, MB's takeover occurred with little fuss. There was also concern expressed over the acquisition of a Canadian champion firm by an American giant, and the associated loss of control and the benefits of that control. Labor, however, did not feature much in the debate probably because of the declining membership and power of forest unions in BC and the downsizing of MB's operations in particular, often in association with contentious shifts towards flexibility.

Yet the benefits of Weyco's acquisition of MB to BC were never made clear. Weyco did not offer new production know-how, global marketing connections, technological capability, or forest management expertise. MB was already well proven in these respects. Rather, MB's accumulated human and capital resources, centered in BC, contributed to the competitive strengths of Weyco, and several managers, including the manager at the Chemainus sawmill, for example, were moved to Washington State to help introduce practices developed by MB. Moreover, the Weyco deal did mean more foreign ownership, less competition, restrictions on innovation potentials, and leakage of revenues from BC's already troubled forest economy. This transfer of funds, in the form of profit repatriation and payments for head-office and R&D services, became internal transactions at the discretion of Weyco. Meanwhile, the former foreign operations of MB are now controlled by Weyco and payments formerly made to MB (and BC) re-routed accordingly.

Significantly, the acquisition impaired BC's ability to generate innovative value-added activities. MB was BC's leading corporate innovator, especially with respect to product innovations, and it pioneered (in a BC context) the vitally important high-value Japanese market. MB's surviving facilities became branch plants, ultimately directed from Weyco's head-office in Tacoma. MB's Japanese subsidiary, the only one of its kind set up by a BC-based corporation and a vital source of learning about Japanese markets, was absorbed within Weyco's Japanese office. MB had been competing with Weyco for Japanese (and other) high-value markets. The most likely scenario is that Weyco's Washington State mills will take responsibility for new markets, while its newly acquired mills in BC, like its existing mills in BC, will focus on standard, large volume commodities.

Admittedly, MB did close its R&D program in 1997. Whether this closure was simply a cost minimizing move and/or motivated by the desire to make MB an attractive acquisition target is not known. Weyco's acquisition, however,

meant that there was no chance for a re-commitment to in-house R&D within BC. Interestingly, the then President of Weyerhaeuser Canada, was recently quoted as saying that one of the reasons that Canadian firms do not invest in R&D is that they are not big enough. They are often not big enough because firms such as Weyco acquire them and refuse to do R&D in Canada. Weyerhaeuser's acquisition of MB will also reinforce recent pleas for 'privatization' of BC's forests, led by MB, that likely imply the sale of logs to the 'highest bidder', even if this means log exports. Needless to say, log exports can scarcely help the development of technological expertise in BC, nor employment in wood processing.

But the debate over the pros and cons of foreign ownership for BC as a result of Weyco's acquisition of MB have become academic as the former BC-based facilities of MB are now part of Brascan.

Conclusion

This analysis rejected a simple globalization hypothesis that Weyco's acquisition of MB was an inevitable outcome of relentless corporate consolidation. The real reasons are more complicated, were a long time in developing, and are much closer to home, that is they are rooted within BC. Tom Stephens, the author of MB's last restructuring effort, was charged with increasing shareholder value. Whether or not he regarded Weyco's intervention as fortuitous, Weyco's offer seemed to confirm the initiatives that he had made at MB, and increased MB's share value. For Stephens, Weyco was a global 'white knight' and he immediately recommended acceptance of Weyco's offer. Stephens had been hired just two years previously to rescue MB because of his reputation for rescuing corporations in financial distress. In part, MB's problems reflected a corporate failure to fully think through its (appropriate) flexible mass production and to comprehend how to deal with all the challenges in an increasingly volatile business environment within BC. In part, MB's problems resulted from provincial government policies that were introduced to resolve ENGO and aboriginal protests and the claims of the American lumber lobby. For MB, provincial policy initiatives greatly increased its costs of operations and reduced its wood fiber supplies, but did not resolve environmental, aboriginal, and trade conflicts. But provincial forest policies were locally debated, were a matter of choice, and have been criticized and changed since. Finally, the provincial government had the right to veto Weyco's acquisition. The acquisition was by no means automatic. A previous provincial government had stopped MB's acquisition by a central Canadian giant in the early 1980s and there are suggestions that other such offers were stopped. Meanwhile, ENGO opposition to Weyco's acquisition proposal was rendered meaningless by their relentless prior hostility to MB, itself a matter of choice.

In one way or another, local institutions were significant authors of MB's demise. The economies of scale rationale for Weyco's acquisition of MB, that appeared flimsy at the time, also turned out to be unsupported in practice. Brascan's

acquisition of the former MB's BC-based facilities, immediately split into two companies, confirmed the fragmentation of MB as the once champion forestry firm of BC. As is usual in situations of this nature, the main social costs have been shouldered by laid-off workers and communities that must now diversify.

For economic geography, analyses of long-run corporate strategies continue to provide important insights into local development. These analyses, however, need to more fully appreciate how fundamentally the business environment of firms has changed in recent decades. Although there are important exceptions, there is still a sense that economic geography has been especially slow to incorporate environmental and cultural matters into interpretations of business environments. At least around the resource peripheries this neglect is especially unfortunate. A failure to properly understand the business environments of firms means a failure to understand the geography of firm behavior. Moreover, environmental and cultural (and trade) politics, of the kind examined here, invariably have deep local roots and expression. An analysis of these politics inevitably means that local matters are accorded priority rather than treated as minor local variants to overwhelmingly powerful global or outside imperatives. For example, business-environment relations in resource peripheries are very different from those found in industrial cores. Case studies remain an important method to untangle these multi-dimensional global-local, business-environment interactions.

Acknowledgments

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12 GlaxoSmithKline

Regional and local networking in a post-communist economy

Tadeusz Stryjakiewicz

Introduction

Since the beginning of the process of post-communist transformation in East-Central Europe, foreign enterprises have been increasingly important actors in the economies of the host countries, including Poland. Their role in economic and social development has been the subject matter of much discussion and research (cf. e.g. Bąk and Kulawczuk 1996; Błuszkowski and Garlicki 1997; Olesiński 1998; Domański 2001; Durka 2002). However, the research usually concerns the national economy as a whole and rests on basic economic indices. It is only to a lesser extent that it focuses on the effect that foreign firms have had on the development of the towns and regions where they are located, on the regional and local networks which they have been building or joining, as well as on their embeddedness in regional and local economies (cf. Dicken *et al*. 1994; Dziemianowicz 1997; Pavlinek and Smith 1998; Phelps 2000; Stryjakiewicz 2000).

There are conflicting opinions in the world literature about the importance of foreign corporations in the economies of their host regions. On the one hand, they are perceived as 'cathedrals in the desert', or manufacturing enclaves with no significant links with the local economic system (Grabher 1994; Hardy 1998). On the other, many studies (Stryjakiewicz 1999, 2000; Domański 2001) have shown them to be highly integrated with other regional and local firms and institutions. Hence, there is a need for wide-ranging research on the role of foreign firms in regional and local economies, not only from the perspective of the firm, but also its host town or region. That is why a team of researchers from Adam Mickiewicz University (AMU) and the University of Economics in Poznań[1] launched a project focusing on the regional and local networking of different kinds of foreign firms, and in a wider context, on the global-local interplay using the Poznań (or Wielkopolska) region[2] as an example. The implementation of the project is closely connected with the Regional Innovation Strategy (RIS), recently adopted by the Wielkopolska regional government, which rests on the assumption that foreign firms play a significant role in innovation transfer. The project is in an initial stage; the first pilot case study, the results of which are reported in this article, was carried out in 2004 (for details see Stryjakiewicz 2004).

The study has a purely empirical character. It rests on a broad definition of an industrial network as a 'set of interconnected exchange relations among actors performing industrial activities' (after Håkansson and Johanson 1993, p.40). A wider discussion of specific features and forms of networking in post-communist economies is the subject of another article published recently by Stryjakiewicz (2005), in which the following forms of networks are distinguished.

'Old' networks (surviving from before 1990):

- modified command-economy networks;
- traditional local networks.

Networks emerging as an effect of the transformation process:

- externally driven networks through multinational corporations (MNCs) and EU institutions;
- informal 'transition' networks;
- grass-roots networks of the 'new economy' (in an initial stage).

MNCs are considered among the major driving forces of networking, fostering the change of the economic system. They can help the Polish economy join the globalization process on a wider basis, narrow Poland's technological gap, introduce new systems of management and organization of production, and increase the productivity of labor and exports. Similar conclusions have been drawn by Domański (2001, 2005) as a result of extensive studies.

Creating (or joining) regional and local networks by multinational corporations may also facilitate sustainable regional development. In the literature (Schamp 1988; Stryjakiewicz 1999), a distinction is made among three types of spatial expansion of multinational corporations from the point of view of their effect on regional and local economies:

a the type oriented towards the use of local resources (e.g. cheap labor, raw materials and energy) with only slight multiplier effects;
b the 'export platform' type: the location of an establishment abroad is primarily intended to take over the local market; and
c the type combining global strategies of a corporation with embeddedness in regional and local economies; it manifests itself in the corporation establishing co-operation with regional and local subcontractors, self-governments (e.g. under a public-private partnership), R&D units, and other institutions of the local business environment; in other words, in growing regional and local networking.

The present article offers an in-depth analysis and assessment of the process of regional and local networking of a multinational corporation, using GlaxoSmithKline Pharmaceuticals (GSK) in Poznań as the case. In particular, it discusses two main issues:

- location factors and growth of GSK in Poznań and
- GSK's regional and local business networking.

In the concluding remarks the paper tries to establish which type of the three above-mentioned categories the firm under analysis resembles most closely.

The scope and methodology of the study

GlaxoSmithKline is one of the world's leading pharmaceutical and health-care companies with a more than 200-years-old tradition and about a 7 percent share of the world pharmaceutical market. GlaxoSmithKline's present name and organizational structure found its origin in 2000 when Glaxo Wellcome merged with SmithKline Beecham. GSK has 80 manufacturing sites located in 37 countries and 24 R&D centers in 11 countries (including one in Poznań). It employs over 100,000 people throughout the world and is present in 125 national markets. The company allocates more than $4 billion per year to R&D activities and participates in many international research projects (in some of them in co-operation with the WHO). In Poland the firm is registered under the name of GlaxoSmithKline Pharmaceuticals S.A. as a company in which GlaxoSmith-Kline holds more than 97 percent of shares and the State Treasury 2.7 percent. It employs close to 1,600 people. Half of the value of GSK sales in Poland originates from the Poznań factory.[3]

There are two basic reasons for the choice of GSK as the subject of this case study:

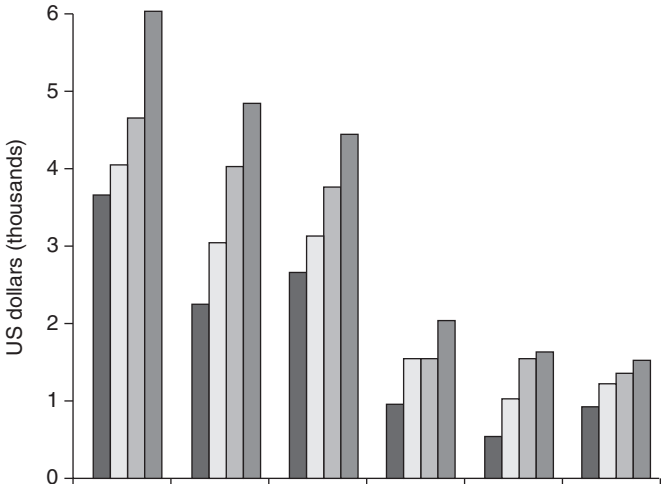
1. GSK is one of the biggest foreign firms in Poznań created as a result of the sale on 28 January 1998 of Poznań's Polfa Pharmaceutical Works to the British concern Glaxo Wellcome. It is considered a classical example of the privatization of a state-owned enterprise through its sale to a foreign strategic investor. The seven years of the concern's operation in the region is a time-span long enough to attempt an assessment of the degree of its embeddedness in the local economy and its role in the spatial-economic structure of Wielkopolska voivodeship.
2. The project met with much friendly interest on the part of the GSK management, which is not a frequent occurrence among foreign firms. From the point of view of the project's targets, the most important was GSK's making available a full address list of its regional subcontractors and agreeing to the researchers sending them questionnaires (under the University label and for the exclusive use of the research team). GSK financed the costs of the project implementation, the publication of the results, and the organization of a scientific conference, without interfering in the research in any way.

The choice of Poznań and its region as a study area also seems to be justified for at least two reasons:

1 According to the data of the State Agency for Information and Foreign Investment, over the years 1990–2003 foreign firms invested $3.5 billion in Poznań, which amounted to 4.8 percent of the national total. Disregarding the capital city of Warsaw,[4] Poznań ranks first among Poland's largest cities, both in terms of the total stock of foreign direct investment (FDI) and per capita figures (Figure 12.1). The investors represent different lines of business and home countries. This makes it possible to carry out a comparative study of the various behavior patterns of foreign investors towards the host local economy.
2 Like most regions of Poland and other post-communist states, the Poznań region (Wielkopolska voivodeship) has experienced a polarization between the metropolitan area and the peripheries during the transformation period. From a geographical perspective, it might be interesting to investigate whether the location of foreign firms encourages or checks this tendency.

It should be emphasized that GSK's purchase of a pharmaceutical plant in Poznań rather than in any other of the many alternative places was not a matter of coincidence, but resulted from the specific locational attractiveness of this site. This issue will be pursued in the next section.

The data on which the present analysis is based were collected from the following sources:



	Poznań	Wroclaw	Kraków	Łódź	Szczecin	Gdańsk
2000	3,6	2,2	2,6	0,9	0,5	0,9
2001	4	3	3,1	1,5	1	1,2
2002	4,6	4	3,7	1,5	1,5	1,3
2003	6	4,8	4,4	2	1,5	1,5

Figure 12.1 Foreign direct investments per capita in major Polish cities, 2000–2003 (source: Poznań City Office, Department for City Development).

a appropriate GSK departments;
b firms and institutions co-operating with GSK to which questionnaires were sent concerning the role of GSK in their business contacts and an assessment and prospects of mutual relations (following a list of those firms and institutions supplied by GSK);
c regional and local business environment institutions, such as the Wielkopolska Chamber of Industry and Trade, and the Poznań Scientific-Technological Park; and
d the literature on the subject (including comparative studies) and published statistical materials.

Location factors and growth of GSK in Poznań

The sale of the Poznań Polfa Pharmaceutical Works to the British concern Glaxo Wellcome was the biggest capital transaction of the State Treasury during the transformation period from 1989 to 1998. The details of the transaction, which are presented below,[5] seem a good illustration of the strategy of big global corporations towards the so-called emerging markets of East-Central Europe. This strategy follows the models of spatial expansion of multinational corporations known from the literature (Håkansson 1979; Shanks 1985; Dicken 1998).

Glaxo Wellcome (GlaxoSmithKline since 2001) has been present in the Polish pharmaceutical market since 1978. In 1984, the firm established its business representation in Poland. After the start of the transformation process, its interest in this market greatly increased in the 1990s. In 1992 Glaxo Wellcome Poland Ltd. was established, with its seat in Warsaw, to create a distribution network and promote the company's products in our country. In 1997 the firm opened a drug packaging plant and a storehouse at Duchnice near Warsaw. Thus, it took a typical development path of a multinational corporation in its host country: an earlier market penetration through export contacts, followed by establishing a sales representation, and ending in the launching of its own manufacturing plant (cf. Håkansson 1979, p.13; Dicken 1998, pp. 201–211). The firm considered taking part in the privatization of one of the Polish pharmaceutical plants, but not just any one of them. As Davidson stated candidly, "We had selected three plants in Poland that we were interested in, but in fact we were waiting for the sale of the Poznań factory." Thus, an element of space played a crucial role in the decision, but not in the traditional sense of location factors (like the cost of transport or labor) or other territorially localized investment incentives (e.g. tax relief). The following factors were decisive for the company:

1 Line (specialization) of production. The Poznań plant was the only producer of anti-asthmatic aerosols in the country. It manufactured them relatively cheaply, but on the basis of an obsolescent technology (using Freons). Glaxo Wellcome produced more modern, Freon-free aerosols. Thus, it achieved a special sort of complementarity: combining lower manufacturing costs with

modernized technology, which was expected to let the firm expand into other Central and Eastern European markets (and so it has).

2 Good production record: high profitability, the majority of products having international quality certificates (GMP – Good Manufacturing Practice), and a relatively high productivity of labor. Understandably enough, the company was not going to buy a factory that would only cause trouble (even in return for a larger share of the market).

3 Market-oriented attitude of the local milieu. The management of the Polfa plant in Poznań expressed a wish to have a strategic investor from the same line of business (and not, as with many other enterprises, one that would merely supply capital, e.g. banks).

4 Complementarity of the distribution network. While Polfa had a well-developed network supplying pharmacies, in the 1990s Glaxo Wellcome also developed a direct-supply network for hospitals.[6] Besides, Polfa had an extensive distribution network in Central and Eastern European countries from COMECON times, while Glaxo Wellcome set up a new network in this area.

The sale of Poznań's Polfa Pharmaceutical Works to Glaxo Wellcome stood out among privatization transactions completed at that time, for ensuring the employees the best social conditions. The concern contracted to keep up employment for four years and to maintain all the components of wages and benefits, to increase wages at least by the inflation rate, and to maintain social benefits (including the financing of the modernization of the plant's holiday compounds). Also, each employee received, not only his part of the statutory pool of 15 percent of the 'free' shares, but also a sort of 'privatization bonus' equivalent to 10.5 monthly wages. A fitness club for the employees was also set up on the premises. All this sprang from two causes:

a a wish to arouse a friendly feeling towards the privatization and the new owner among the staff; and

b a low proportion of labor costs in the total costs of pharmaceutical production (in comparison with, e.g. expenditure on R&D and the purchase of raw materials and packaging), as a result of which the company could afford the above benefits package and employment guarantee, especially in view of the anticipated increase in output.

The purchase of Poznań's Polfa plant gave the British firm a 7–11 percent share of the Polish drug market (depending on the indices employed) and it has kept this market share ever since. The investor met his privatization obligations fully, having invested more than $106 million over the years 1998–2002. In that period, a total of 99 new products started to be manufactured in the Poznań factory, of which 49 were medicines devised by the local Research and Development Department and 50 were transfers from GSK (Cylwik 2003). Thanks to the investment and the transfer of technology, the GSK establishment in Poznań has become the only producer of Freon-free aerosols in this part of

Europe and one of only four in the world, and the leading manufacturer of gelatin capsules in the entire GSK group. The foreign investor has also played a big part in product certification by the GMP (Good Manufacturing Practice) standards.

On 28 June 2004 a Regional Centre for Drug Individualization and Distribution was opened in Poznań, which has enhanced the status of Wielkopolska's capital as one of the major European GSK centers responsible for the manufacturing, preparation, and distribution of drugs in East-Central European markets. The products of the Poznań factory are exported to 30 countries, with Russia, Ukraine, and Lithuania as the main destinations.

Regional and local business networking of GSK

Spatial structure of networks

The regional network of GSK embraces 682 agents (firms, hospitals, financial, legal and educational institutions, and businesses of natural persons), which is 16.3 percent of the total number of the company's Polish partners.[7] They include 258 so-called 'key partners' (having stable, permanent relationships with GSK) that are the object of this study. This network covers the entire Wielkopolska voivodeship with a predominant share of Poznań. There are, however, some spatial differences between the particular types of networks, i.e. that of suppliers, customers, and clinical research institutions.

The supplier network is presented in Figure 12.2. It consists of the suppliers of raw materials, production components, and services. The network of the suppliers of raw materials and production components (called 'material suppliers') includes 79 subcontractors in the region (48 percent of the total number of the material suppliers). It is based primarily on year-long contracts (58.2 percent; see Figure 12.3a). The regional multiplier effect of GSK location in Poznań in terms of manufacturing procurement can largely be observed in the city itself and the southern part of the voivodeship.

The most regionally-oriented network is that of service suppliers (this corroborates a well-known tendency described in the literature, cf. Hayter 1997; Schamp 2000). The Poznań GSK factory co-operates with 48 service firms from the voivodeship (which is 62 percent of the total number of service providers). This is a field where the change in the spatial links after the takeover of Polfa has been especially pronounced, as a result of the outsourcing strategy pursued by the new management. As Figure 12.3b shows, most co-operation agreements are quite new.

The customer network (Figure 12.4) is supra-regional and does not show any spatial preferences. The distribution of customers over the entire voivodeship area is even; there is at least one in each poviat (an intermediate administrative unit). Predominant among the Wielkopolska-based customers of the Poznań GSK plant are hospitals – 71.8 percent of the total. The remaining recipients are wholesale pharmaceutical warehouses (though sometimes very small).

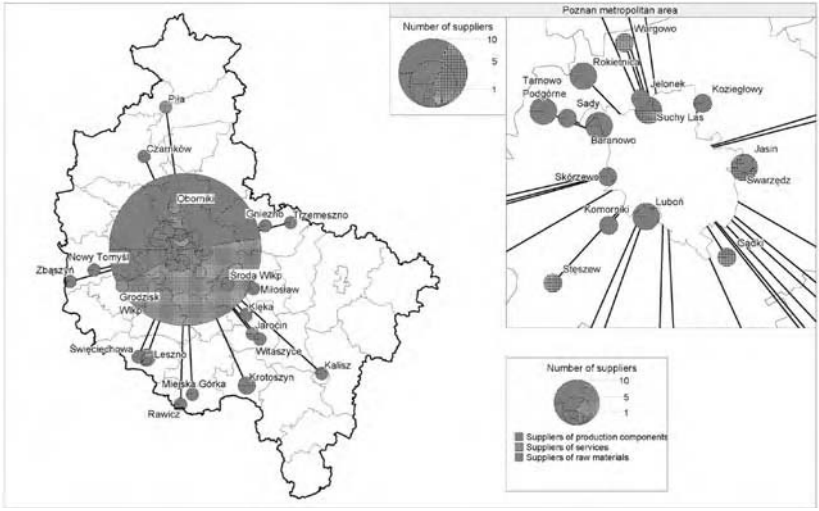


Figure 12.2 GlaxoSmithKline suppliers in Wielkopolska voivodeship in 2003, by type of supplies (source: own compilation on the basis of GSK materials).

The network of clinical research (Figure 12.5) embraces 11 institutions in the Poznań metropolitan area. The hospitals located outside this 'core area' do not participate in this kind of link.

Assessment of networking effects

In order to make a more objective and deeper assessment of the regional effect of the location of the GSK plant in Poznań, an attempt was made to approach the issue not only from the perspective of the enterprise being the source of this effect, but also from that of the agents co-operating with GSK. For this purpose, questionnaires were sent to all the GSK partners supplying the firm with materials and services and receiving its final products (on the basis of a list drawn up

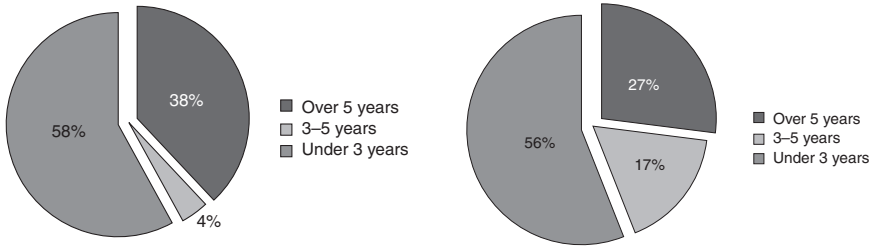


Figure 12.3 Period of co-operation with GSK (source: GSK Data).

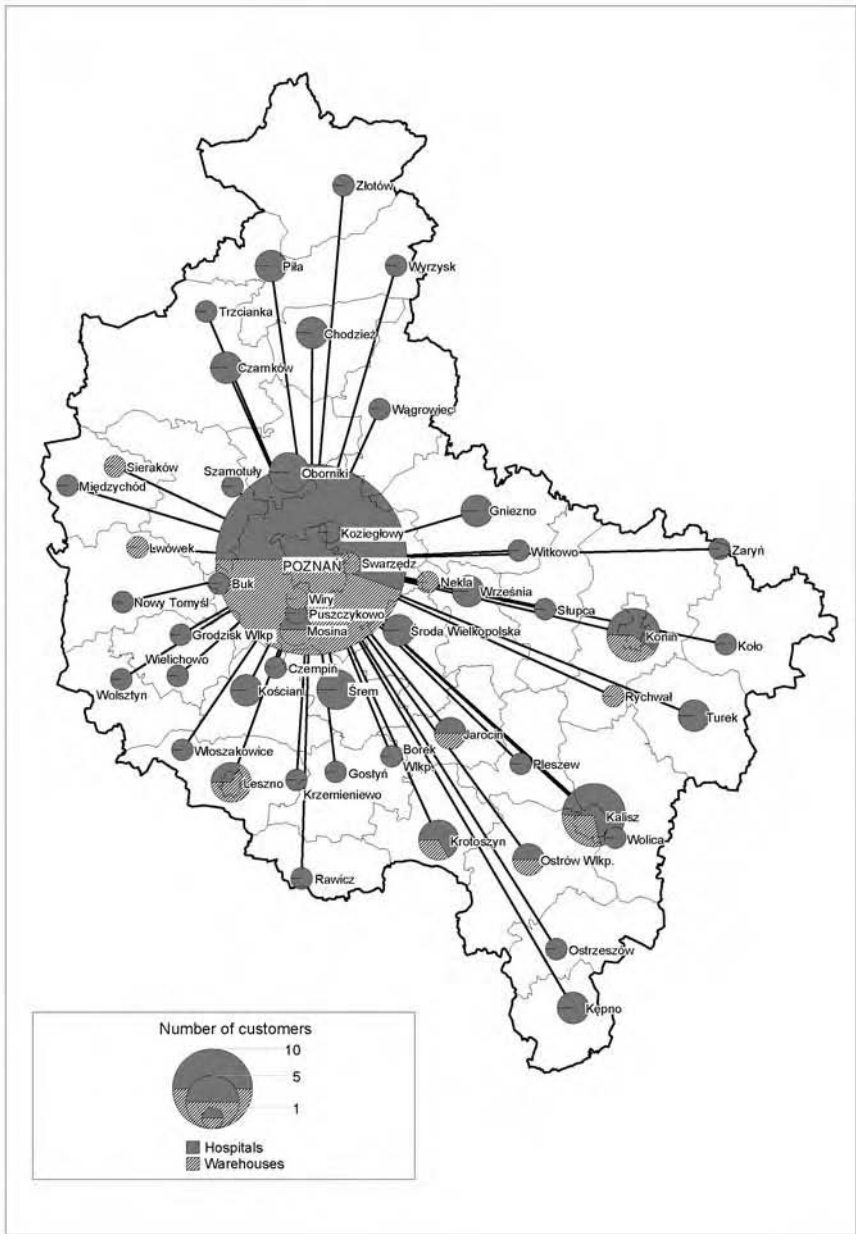


Figure 12.4 GlaxoSmithKline customers in Wielkopolska voivodeship in 2003 (source: own compilation on the basis of GSK materials).

by GSK). The survey questionnaire included detailed questions concerning the nature of the respondents' co-operation with GSK, the importance of the co-operation for them, its assessment, and prospects for future development. The questions fell into three groups. The first concerned a general description of the respondents; the second, their links with GSK; and the third, their perception of the place and role of GSK in the regional economy.

The questionnaires were sent to all of the 258 key partners co-operating with GSK in the region; 62 (or 24 percent) responded, including 32 suppliers and 30 consumers. This completion rate may seem unsatisfactory, but in other similar surveys (e.g. those conducted for the purposes of the Regional Innovation Strategy) it was equally low (from 19 percent to 27 percent).[8] Generally, Polish firms are distrustful of participating in these kinds of studies and reluctant to impart any information whatsoever. This is partly due to the heritage of the past, still alive among some of the state apparatus (e.g. the use of such information to destroy entrepreneurs by tax organs), and partly to the absence of a tradition of scientific research conducted in firms, and a poor awareness of its significance among businessmen. Naturally, this undermines the reliability of such studies. The results of the survey analysis are shown in Figures 12.6–12.9.

Figure 12.6 presents the proportion of employees involved in co-operation with GSK in different types of firms: suppliers of materials, service providers, and GSK product consumers. Co-operation with GSK is the most important for service providers. As much as 45 percent of total employment in the firms surveyed is associated with GSK activity.

Strong points and advantages of co-operation with GlaxoSmithKline Pharmaceuticals are shown in Figure 12.7, weak points in Figure 12.8. Among the strong points the local businesses usually mention the reliability and innovation-oriented attitude of the partner as well as good prices; among the weak points there are logistic difficulties (such as the incompatibility of transport and storage systems employed by both sides) and bureaucratization of procedures. They see the biggest chance for the development of their co-operation with Glaxo in an increase in GSK's investment, and the biggest threats, in a rise in competition among local businesses and the government's unfavorable policy towards pharmaceutical firms.[9]

As many as 62 percent of the economic entities polled see advantages in GSK's location in Poznań, as against 7.3 percent who see disadvantages (Figure 12.9). Bearing in mind the steady decline in GSK employment, worth noting is the fact that the advantage mentioned most often is the rise in employment in the region (36 percent of respondents). This might indicate that job reduction in GSK has been offset to some extent by job creation in the co-operating firms (as a result of outsourcing). This particular finding has been stressed most emphatically in the local media because this beneficial effect of networking often tends to be disregarded in evaluations of the local embeddedness of firms.

From the perspective of the effect of the location of GlaxoSmithKline Pharmaceuticals S.A. in Wielkopolska, especially desirable seem to be such measures as handing over a production to be terminated in its Poznań plant to other entities in

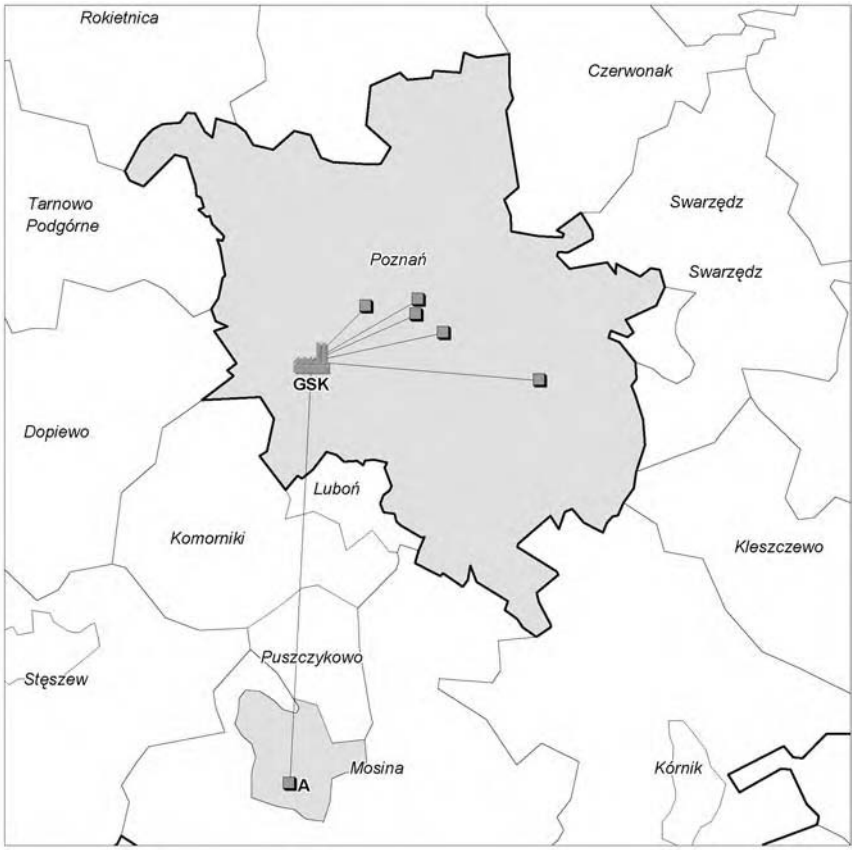


Figure 12.5 Network of links between GSK and clinical research institutions (as of July 2004) (source: own compilation on the basis of GSK materials).

the voivodeship. A good example is a private business in Krotoszyn which has taken over the production of some sore throat lozenges.[10] As a result, 115 people have found jobs in a less developed part of the region, and a transfer of knowledge and information has taken place. Another example worth imitating has been the transfer of know-how and equipment for the manufacture of surgical threads to one of the region's workshops for disabled people (to this day GSK has been responsible for technological supervision and product sterility tests).

Concluding remarks

The results of the study presented in this contribution indicate that GlaxoSmithKline Pharmaceuticals seems to be the closest to that type of multinational corporation which combines its global expansion with embeddedness in regional and local economies.

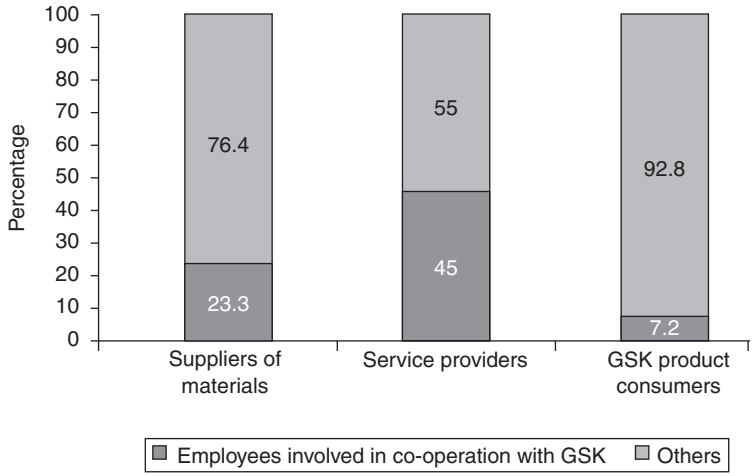


Figure 12.6 Proportion of employees involved in co-operation with GSK by type of firm (%) (source: survey studies).

It is understandable that regional and local dimensions are only of secondary importance in a global corporation's strategies (for example, for GSK in comparison with government policies towards health care and the pharmaceutical sector), and that those strategies pay scant attention to the expectations and preferences of towns and regions. Experience to date (as described, e.g., in Dziemianowicz 1997; Stryjakiewicz 1999, 2005; Gaebe 2002), has shown, however, that stronger embeddedness of a foreign enterprise in its local milieu may be a source of advantages for the firm and the region. In the case of GSK in Poznań, these advantages are perceived by both the firm management and the local government. Both sides emphasize that they manifest themselves in at least three aspects: economic (the agglomeration advantage, multiplier effects of continu-

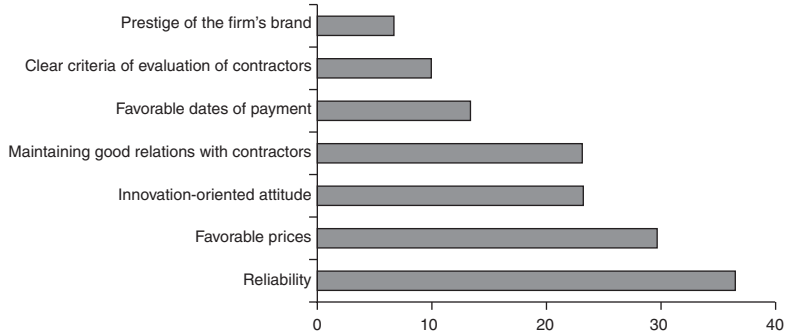


Figure 12.7 Strong points and advantages of co-operation with GSK (% of responses) (source: survey studies).

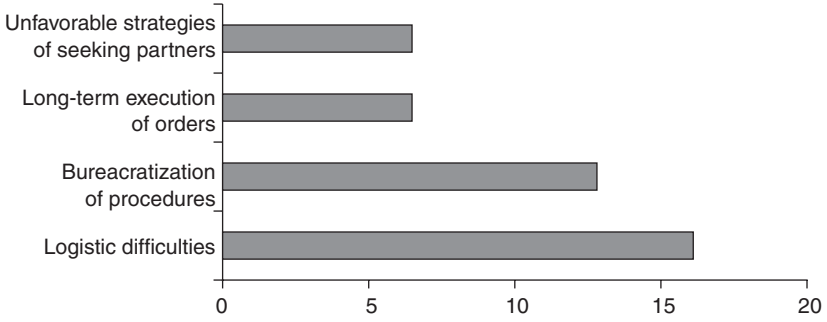


Figure 12.8 Weak points of co-operation with GSK (% of responses) (source: survey studies).

ous new GSK investments), social (good labor relations and no local conflicts, which have happened to some other firms and locations in Poland), and marketing (creating a favorable image of the firm and the region). Naturally, there are still many possibilities of even deeper regional embeddedness of the company under analysis, and further steps in this direction keep being taken.

In 2005, a new cooling warehouse for refrigerating medicines at low temperatures, was built in Poznań. It was intended to become a node in a network that would allow direct deliveries to 3,000 vaccination points throughout Poland within 48 hours. Moreover, in 2005, a GSK Regional IT Support Center was opened. This new unit was to provide IT services to 44 European branches of GSK. In 2006, a further 69 new jobs were to be created in Poznań with the launching of the production of four new innovative medicines. The Poznań

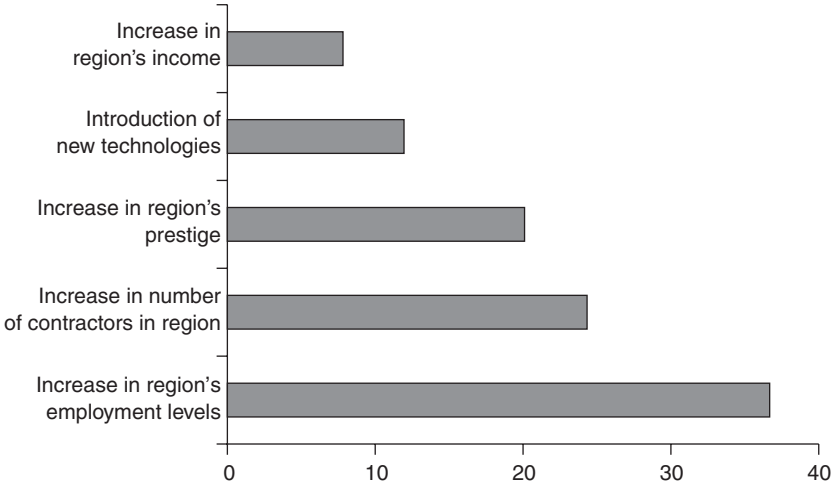


Figure 12.9 Advantages of GSK location in Poznań, as perceived by local businesses. (% of responses) (source: survey studies).

factory was planned to take over the supplying of world markets with GSK antiretroviral drugs used in HIV/AIDS therapy, which would extend the range of its export contacts to embrace 43 new countries, including Mexico, South Africa, and Australia (see: www.paiz.gov.pl).

Hence, in the case of GlaxoSmithKline Pharmaceuticals, the coincidence between the firm's global strategies and local advantages is clearly visible. It should be emphasized, however, that in post-communist economies one can also find examples of multinational corporations, the effect of whose operation in regional and local markets is questionable.

Acknowledgments

The author would like to thank Maria Kawinska (Adam Mickiewicz University, Poznań) and Andrew Ryder (University of Portsmouth) for their translation assistance. Thanks are due to Krzysztof Stachowiak, Bartosz Stepinski, and Anna Tobolska (Adam Mickiewicz University), for the preparation of diagrams and maps that accompany this chapter. Support for this research from GlaxoSmithKline Pharmaceuticals S.A. is gratefully acknowledged.

Notes

1 The team included researchers and doctoral students from the Institute of Socio-Economic Geography and Spatial Management, Adam Mickiewicz University in Poznań: Michal Meczyński, Krzysztof Stachowiak, Bartosz Stepiński, Anna Tobolska, Jacek Wajda, and Justyna Weltrowska, as well as Lucyna Wojtasiewicz the Centre for Regional Economic Research of the University of Economics in Poznań, under the supervision of the author.
2 The notion of the Poznań region is treated in the present work as identical with Wielkopolska voivodeship, one of the highest-level administrative units in Poland created on 1 January 1999.
3 Data after GSK Key Facts (see: www.gsk.com.pl) and Cylwik (2003).
4 In each post-communist country, the capital-city area has a disproportionately high share of foreign firms.
5 This information comes from the interview given to the author by Simon C. Davidson, Glaxo Wellcome's Director for Central and Eastern Europe, called the father of this privatization, on 20 April 1998, in the company's headquarters in Greenford, Middlesex.
6 Under the pre-1990 communist economy, the hospital-supply system was fully centralized: the only intermediary firm authorized to make such transactions was Cefarm, while Polfa's activity in this field had been limited.
7 The share of the Wielkopolska region in the country's population amounts to 8.8 percent.
8 By comparison, in the widest-ranging research on firms with foreign capital in Polish industry carried out by Domański (2001), the return rate was 24.7 percent. The author considered it "higher than in most studies of this sort", which he attributed to the fact that he had previously vouched he would not publish individual data without the firms' consent (Domański 2001, p.15).
9 Apart from excessive, poorly defined, and unpredictable fiscal burdens, the respondents mention instability of rules applying to the health-care sector, e.g. refunds for drugs by the National Health Care Fund.

10 As a result of the strategy of growing specialization pursued by the Poznań factory, this kind of small-scale production has been dropped from its manufacturing line.

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13 Epilogue

A relational perspective[1]

Peter Dicken

At almost exactly the same moment as the first edition of this book was published, Richard Walker composed a "requiem for corporate geography" (Walker 1989). In the event, it was very much a single performance composition. Although some notes certainly rang true, others made much less sense: the 'requiem' was a flawed work (Dicken and Thrift 1992). Indeed, far from witnessing the demise of 'corporate geography', significant research has continued to explore the complex actions of corporate enterprises and their intricate, ever-changing organizational and geographical architectures, as the contributions to this volume, and others, testify. At the same time, as Taylor and Asheim (2001) and the editors of this volume point out in Chapter 1, there continues to be significant diversity in how this research is conceptualized and empirically conducted. In this brief concluding chapter, I want to reflect on the specific approach that has formed the basis of my own research with colleagues, in the past couple of decades.

A generic network perspective

In terms of Taylor and Asheim's (2001) typology of theoretical perspectives on the firm, I guess I would be placed either in the 'network' or the 'relational' category (surprisingly, they make no connection between the two, whereas I find it impossible to separate them). Unfortunately, the 'N' word has become riddled with misconceptions. It continues to be used in a whole variety of ways. To some, it is everything and nothing and, therefore, meaningless. To others, notably some economic geographers, it implies strongly localized interactions. To many in the business literature (and elsewhere), networks are seen as completely new forms of organization. Indeed, ever since Powell's (1990) paper, suggesting the 'network' as an alternative to 'markets' and 'hierarchies' – a distinction recently maintained by Thompson (2003) – confusion has reigned over what is, and what is not, a network.

My position is quite simple: a network is not something novel and different. It is not some new form 'between hierarchies and markets' – a notion that implies that these are not networks. In fact, a 'hierarchical' organization is unequivocally a network: one with a specific form of governance and set of

power relationships. Most markets are also networks, but with different forms of governance and power relationships. Only the 'purest' markets, in which only one-off, spot transactions occur, may fall outside this classification. But pure markets are, in reality, almost as rare as hen's teeth. The correct question, therefore, is not whether something is a network or not, but rather 'what kind of network' it is. Networks are 'generic' forms of social organization. Adopting such an approach implies both a 'topological-relational' perspective and also one which focuses on the 'asymmetries of power relationships'.

Firms, therefore, are 'particular kinds of network', entangled in 'webs of networks' – of other firms (suppliers, customers, competitors, collaborators) and other social organizations, including states (at different geographical scales), labor organizations, consumer groups, and a whole panoply of civil society organizations. They are 'networks within networks'. Firm networks are both structural and relational … [they are] … structural in that the composition and inter-relation of various networks constitute structural power relations, and they are relational because they are constituted by the interactions of variously powerful social actors.… Thus, while power is exercised within networks, networks themselves constitute structural power relations in which exclusions and inequalities exist (Dicken et al. 2001, pp. 94–95).

Firm networks are of course, fundamentally dynamic: they are always, by definition, in a state of flux – in the process of 'becoming' – both organizationally and geographically. The 'spatio-temporality' of firm networks, therefore, is highly variable and contingent. Some networks are long-lived, others are more ephemeral; some are geographically extensive, others are more geographically localized. None remain completely unchanged for very long. Adjustments, some large, some small, are continuously being made in response to both internal and external circumstances.

I conceive of the firm, therefore, as a 'relational network' embedded in wider networks of social actors and institutions, involving asymmetrical power relations across a spectrum of geographical scales and territories. Such an approach begs the question of a firm's boundaries. Many would argue, of course, that, at the very least, firms have 'legal' boundaries. That is, of course, true – in a legalistic sense. But even these may be less definitive than they seem. Firms, especially very large ones, frequently create particular kinds of legal existence to get around regulatory obstacles, especially relating to taxation. Such legal entities may be far from reflecting the reality of firms as producers and distributors of goods and services, especially in terms of their geographical structures. Hence, I find Badaracco's views especially persuasive. Rather than conceptualizing the firm as having clearly defined boundaries, Badaracco (1991, p. 314) portrays it as:

> a dense network at the center of a web of relationships … [defined by] … ownership, hierarchical control, centralized power, managerial discretion, social bonds of membership, loyalty, and shared purpose, and formal, legal contractual relationships.

The central domain of the firm blends slowly into its surrounding environment as ownership, hierarchy, control, power, social bonds, classic contracting, and other boundary-defining devices diminish in significance or are shared with other organizations. Eventually, "the gradual attenuation of these relationships reaches a point at which the firm exercises neither power nor influence. Here, the genuinely external environment of the firm begins".

In what follows, I will comment briefly on what I regard as three important dimensions of firm networks: their governance, their spatiality, and their territorial embeddedness. In doing so, I want to focus specifically on one type of firm: the 'transnational corporation' (TNC).

Modes of governance of TNC networks

Conventional definitions of TNCs (or MNCs) in the economic literature, use level of ownership as the key defining characteristic (see Navaretti *et al.* 2006, p. 2). But this is far too restrictive a definition, which fails to capture the diverse and complex ways, involving both equity and non-equity relationships, in which TNCs engage in intricate and multiple spiders' webs of collaboration. For this reason, I prefer to define a TNC as "a firm that has the power to co-ordinate and control operations in more than one country, even if it does not own them". This creates immensely complex and diverse governance structures within an individual TNCs transnational production networks, both internally and externally.

The nature of the co-ordination process within a TNCs production network depends, in part, on where the firm draws the boundary between those functions it 'internalizes' (i.e. performs 'in-house') and those it 'externalizes' (i.e. outsources to other firms, either as simple suppliers or as part of more systematic strategic alliances). Theoretically, at one extreme, the whole TNC production network may be internalized within the firm as a 'vertically-integrated' system crossing national boundaries. In this case, the links consist of a series of 'internalized transactions', organized 'hierarchically' through the firm's internal organizational structure. At the other extreme, each function may be performed by separate firms. In this case, the links consist of a series of 'externalized transactions', organized either through 'the market' or in collaboration with other firms in a kind of 'virtual' network.

Of course, this dichotomy – between externalized, market-governed transactions and internalized, hierarchically-governed transactions – grossly simplifies the richness and diversity of the governance mechanisms in the contemporary economy. In fact, there is a 'spectrum' of different forms of co-ordination, consisting of networks of interrelationships within and between firms. Such networks increasingly consist of a mix of intra-firm and inter-firm structures. These networks are dynamic and in a continuous state of flux; the boundary between internalization and externalization is continually shifting. Precisely how they are co-ordinated depends, to a considerable degree, on the precise nature of the production, distribution and consumption processes involved.

Thus, although it may be possible to identify certain ideal-types of TNC organization (see Bartlett and Ghoshal 1998; Dicken 2007, Ch. 4) the governance structures of TNCs remain highly diverse. Similarly, the ways in which transnational production networks (TPNs) are controlled and co-ordinated vary greatly (Dicken 2007, Ch. 5; Gereffi *et al*. 2005). Gereffi *et al*. have broadened Gereffi's earlier distinction between 'producer-driven' and 'buyer-driven' production networks (Gereffi 1994) to a more nuanced typology incorporating captive, relational, modular, hierarchical, and market structures. A major differentiating issue here is the nature and distribution of power within the networks. Indeed, one of the most important benefits of adopting a relational network perspective is that it forces us to adopt a more nuanced view of power relationships.

Spatiality of TNC networks

A firm's 'spatiality' has two major dimensions: its geographical extent and its geographical configuration. By definition, the development of 'transnational' corporations implies that the former has become greater and that the latter has become more complex and varied. Transnational production networks, therefore, have become increasingly long and increasingly connected. Innovations in three 'enabling technologies' have made these developments possible: time-space shrinking technologies in transport and communications, which enhance speed and efficiency of movement; production process technologies, which enhance production flexibility; and organizational technologies, which make possible more effective co-ordination within and between firms across vast distances.

Taken together, these three sets of innovations help to explain the greater 'geographical extensiveness' of transnational production networks but they do not, in themselves, explain the specific 'geographical configuration' of firms' activities. Here, it is necessary to take into account the precise functions of different firm activities, given that different functions have different locational needs, that such needs may be satisfied in a range of different locations and that, as a result, different parts of firms tend to develop rather distinctive spatial patterns. Some functions tend to be geographically dispersed, others tend to be geographically concentrated, either close to important functions of other firms (geographical clustering), or close to other functions within the same firm (organizational-geographical clustering). Of course, the notion of geographical clustering has become (again) a major – and controversial – issue in both geographical and business research (see Bathelt *et al.* 2004; Martin and Sunley 2003). In this context, Bathelt *et al*.'s concept of 'local buzz' and 'external pipelines' is especially helpful in reminding us that firms in 'local' clusters are often more tightly linked into networks outside the local cluster than inside.

Territorial embeddedness of TNC networks

Every element in a transnational production network – every firm, every function – is, quite literally, 'grounded' in specific locations. Such grounding is

both material (the fixed assets of production), and also less tangible (localized social relationships, and distinctive institutions and cultural practices). Hence, the precise nature and articulation of transnational production networks (TPN) are deeply influenced by the concrete socio-political, institutional and cultural 'places' within which they are embedded, produced and reproduced. The relationships between firms and territories are exceedingly complex (Dicken and Malmberg 2001). There are strong processes of path-dependency – though not determinacy – involved in these mutually constitutive processes of embeddedness, what I have described elsewhere in this context as processes of 'placing' firms and 'firming' places (Dicken 2000, 2003). As the geographical extensiveness and complexity of TPNs increases, the nature of this embeddedness also becomes far more complex.[2] On the one hand, the nature of the places within which the parts of TPNs are situated, influences how these component firms or establishments behave and perform within the overall network subject, of course, to the prevailing power relationships in the network. As Schoenberger (1999, p. 211) observes, different 'places' within the firm, organizationally and geographically, develop their own identities, ways of doing things and ways of thinking over time, the reason being that they live in different places and must confront and respond to the particularities of these places across a whole range of practices and issues.

One of the major problems in co-ordinating TPNs, therefore, is that, by definition, they are made up of actors from a wide variety of national (and local) environments. In the case of a dominant firm within a TPN, the country of origin remains an important influence on how it operates, both across the network as a whole, and in those specific locations where its operations are situated.

On the other hand, the nature of the production networks themselves, in which the individual firms or establishments are connected, has a profound influence on their prospects and that of the communities in which they are located. Humphrey and Schmitz (2002), for example, make this point in discussing the prospects of industrial upgrading of enterprises in localized industrial clusters (see also Schmitz 2004). More broadly, in a regional development context, Coe *et al.* (2004) explore the complex ways in which global production networks and regional development interact through what is termed a 'strategic coupling process'.

All transnational production networks are embedded in 'multi-scalar regulatory systems'. International regulatory bodies, such as the WTO – part of the 'confusion' of institutions that makes up the incoherent architecture of global governance – are immensely significant in influencing the geography of transnational production networks. One needs only a look at the influence of the Multi-Fibre Arrangement in the clothing and textiles industries to be aware of this (the abolition of the MFA at the beginning of 2005 seems likely to have a massive influence on transnational production networks in these industries). International institutions establishing technical standards (like the ISO 9000, the international quality management standard, or the ISO 14000 international environmental standard), likewise, play a highly significant role. In some cases

they make the operation of transnational networks more feasible through their introduction of codifiable standards. In other cases, they create problems of conformity to an international standard in specific places.

Among the multiplicity of regulatory institutions, and allowing for the proliferation of international and sub-national bodies, the 'national state' remains especially important. All the elements in transnational production networks are regulated within some kind of political structure whose basic unit is the national state. International institutions exist only because they are sanctioned by national states; sub-national institutions are commonly subservient to the national level, although, of course, the situation is more complex in federal political systems.

As a result, TNCs and states are continuously engaged in intricately choreographed negotiating and bargaining processes. On the one hand, TNCs attempt to take advantage of national differences in regulatory regimes (such as taxation or performance requirements, like local content). On the other hand, states strive to minimize such 'regulatory arbitrage' and to entice mobile investment through competitive bidding against other states. The situation is especially complex because, while states are essentially territorially fixed and clearly bounded geographically, a TNCs 'territory' is more fluid and flexible. Transnational production networks slice through national boundaries (although not necessarily as smoothly as some would claim). In the process, parts of different national spaces become incorporated into TPNs (and vice versa).

There is, in other words, a territorial asymmetry between the continuous territories of states and the discontinuous territories of TNCs and TPNs, and this translates into complex bargaining processes in which, contrary to much conventional wisdom, there is no unambiguous and totally predictable outcome. TNCs do not always possess the power to get their own way, as some writers continue to assert. In the complex relationships between TNCs and states – as well as with other institutions – the outcome of a specific bargaining process is highly contingent.

Conclusion

These three dimensions of transnational production networks – their governance, their spatiality, and their territorial embeddedness – are, of course, not independent of one another. Although each is worthy of research in its own right, the real need is to increase the rigor of our conceptualizations of how firms as relational networks operate, in particular seeing such networks as intrinsically 'geographical'-organizational phenomena. Current work on global production networks (GPNs) attempts to do just this. But adopting a relational network approach poses huge empirical problems. The kinds of information needed to reconstruct transnational production networks, even in part, are not easily available. Increasing amounts of information are becoming available on the Internet but this can only go so far. There is no real alternative to meticulous, first-hand research, involving in-depth interviews with relevant actors. But this is a huge challenge, not only in terms of gaining the co-operation of the actors themselves but of

acquiring funding for what is expensive research. Without such research, however, we will fail to understand the huge and complex changes that are occurring in the global economy and their implications for people and places across the world.

Notes

1 In this chapter, I draw specifically on materials in Dicken (2000, 2003, 2005, 2007), Dicken *et al.* (2001), Dicken and Malmberg (2001).
2 The concept of embeddedness is much used and often abused. It involves more than simple 'territorial' embeddedness, although this is undoubtedly important. See Hess (2004) for a valuable critique.

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