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When the wind of change blows, some build walls, others build windmills. (Chinese proverb)

1. Introduction

Most of the currently debated theoretical concepts in economic geography try to explain the positive sides of geographical clustering of industries, by emphasizing the positive effects they have on networking and innovation (Lorenzen, 2005). This is exemplified by the work on the rise of high-tech regions, industrial districts and regional production clusters in North America and Western Europe and, to some extent, contrary to older theories on unbalanced regional development that addressed both positive and negative aspects of regional evolution (Myrdal, 1957). This chapter takes a critical stance on the modern one-sided view of the correlation between geographical clustering of industries, networking and innovation. It makes clear that the geographical clustering of industries in some constellations negatively affects innovativeness and renewal. This is particularly the case in the under-theorized old industrial areas (Cooke, 1995; Hamm and Wienert, 1989). To some extent they can be regarded as the industrial districts of the past, in which initial strengths based on geography and networks, such as industrial atmosphere, highly specialized infrastructure, close inter-firm relations and strong support by regional institutions, turned into barriers to innovation. In the 1990s Grabher (1993) emphasized the role of path dependence and lock-ins as concepts explaining the lack of renewal in old industrial areas in general and the Ruhr area in Germany in particular. His studies can be linked to recent work done in order to introduce evolutionary economics into economic geography (Boschma and Frenken, 2006; Boschma and Lambooy, 1999a; Essletzbichler, 2002; Essletzbichler and Winther, 1999; Martin and Sunley, 2006; Maskell and Malmberg, 1999; Morgan, 1997; Schamp, 2000; Shapira and Fuchs, 2005; Storper, 1997; see also Boschma and Martin, and Martin and Sunley, Chapters 1 and 3, this volume). Unlike neoclassical theory, this school takes history and geography seriously by recognizing the importance of place-specific elements and processes to explain broader spatial patterns of technology evolution. Since the lock-in concept is one of the few promising modern concepts explaining the negative sides of clustering, it forms the theoretical core of this chapter. However, the lock-in concept has some weaknesses I aim to tackle here. First, the inductive, bottom-up concept is too weak to be a sound theoretical concept in economic geography yet, as it is mainly based on observations in a few regions (the Ruhr area mainly) and one kind of traditional industrial complex (steel and coal-mining). Second, little systematic cross-regional and cross-sectoral comparative research has been done on the specific role of lock-ins in hindering restructuring processes in old industrial areas. There are a few recently published exceptions, such as the papers by Chapman (2005), Schamp (2005), Hudson (2005) and Van Grunsven

and Smakman (2005), published in a special issue of *Environment and Planning A*. This chapter is written in line with this new empirical research strand (see also Birch et al., 2010; Hodson, 2008; Tödtling and Trippl, 2004).

The first aim of this chapter is therefore to comparatively analyse the impact of lock-ins on restructuring processes in two differently structured regions (textile and shipbuilding industry), regions that are furthermore located in differently politically structured countries with a dissimilar economic development level, namely Germany and South Korea. The second aim is to work out factors explaining why it is that we find relatively strong lock-ins in some old industrial areas and relatively weak ones in other old industrial areas. The deliberate choice of starkly contrasting characteristics of research objects is related to the expected economic-structural and political-institutional *impact factors* contributing to the strength of regional lock-ins. Concerning the economic-structural impact factors the *expectation* is that the shipbuilding industry clearly has stronger tendencies towards regional lock-ins than the textile industry, given its stronger spatial concentration and mono-structure, high entry and exit barriers because of its capital-intensive characteristics and its oligopolistic market structure. Concerning the political-institutional impact factors, it is expected that the German associative model is expected to lead to a stronger involvement of local and regional actors involved in lock-ins than in the Korean developmental state model. Creating clear value added to existing individual case-studies (Cho and Hassink, 2009; Eich-Born and Hassink, 2005; Hassink, 2007b; Hassink and Shin, 2005b), this chapter goes two steps further by, for the first time, systematically comparing the four case studies and by, also for the first time, working out and testing the explanatory value of impact factors.

In the next theoretical section on regional lock-ins, these impact factors are presented. After that section, the empirical case studies are put in an economic-structural and political-institutional context in section 3. The case studies are described in section 4, whereas section 5 presents a comparative analysis and draws the conclusions of this chapter.

2. Regional lock-ins in old industrial areas: a theoretical framework

Path dependence and lock-in are important notions of evolutionary economics that have been used by economic geographers to explain the negative sides of economic clusters, particularly the decline in old industrial areas (Boschma and Lambooy, 1999b; Hassink and Shin, 2005a; for an excellent overview of path dependence and regional lock-in and the links to evolutionary economics, see Martin and Sunley, 2006). According to Saxenian (1994, p. 161), 'spatial clustering alone does not create mutually beneficial interdependencies. An industrial system may be geographically agglomerated and yet have limited capacity for adaption. This is overwhelmingly a function of organizational structure, not of technology or firm size'. Geographically concentrated clusters can become insular, inward-looking systems, as many old industrial areas, both resource-based mono-structural areas, dominated by for instance steel, coal-mining and shipbuilding industry, and areas specialized in consumer goods (textile for instance) (Schamp, 2000), have shown us (Hamm and Wienert, 1989; Hudson, 1994). 'The initial strengths of the industrial districts of the past – their industrial atmosphere, highly developed and specialized infrastructure, the close interfirm linkages, and strong political support by

regional institutions – turned into stubborn obstacles to innovation' (the 'rigid specialization' trap) (Grabher, 1993, p. 256).

Grabher (1993) has defined these obstacles as three kinds of lock-in. First, a functional lock-in refers to hierarchical, close inter-firm relationships, particularly between large enterprises and small and medium-sized suppliers, which may eliminate the need for suppliers to develop so-called boundary spanning functions, such as research and development and marketing. The lack of these functions hinders suppliers in switching to new markets in times of a structural crisis. Second, a cognitive lock-in is regarded as a common world-view or mindset that might confuse secular trends with cyclical downturns. Third, and closely related to cognitive lock-ins is the notion of political lock-ins that might come up in a production cluster (Grabher, 1993; Hamm and Wienert, 1989; McGillivray, 2004). Political lock-ins are thick institutional tissues aiming at preserving existing traditional industrial structures and therefore unnecessarily slowing down industrial restructuring and indirectly hampering the development of indigenous potential and creativity. Institutional tissues consist both of networks of organizations, such as political administrations at all spatial levels, trade unions, large enterprises and business support agencies, and things that pattern behaviour, such as norms, rules and written and unwritten laws. With regard to the latter part, there seems to be, therefore, a strong relationship between cognitive lock-ins and political lock-ins. Such a particular and thick institutional tissue can, together with the firms and workers, form a so-called self-sustaining coalition (Grabher, 1993; Hudson, 1994). In such a situation, large companies might not want to give up sites for the attraction of inward investment, as they are afraid to lose qualified employees to competitors. Local authorities might not see the point of attracting inward investment or promoting restructuring in another way, as large tax incomes are paid by traditional industries. In some regional production clusters, the spirit of the Schumpeterian entrepreneur might dwindle because of increasing industrial concentration and the domination of large companies. The self-sustaining coalition also lobbies for sectoral interventions often at a national or supra-national level, which hamper the restructuring process more than they support it, as they remove the incentives to take initiatives for entrepreneurs and thus paralyse competition and tranquillize large industries (Hamm and Wienert, 1989). Morgan and Nauwelaers (1999) emphasize that in these kinds of network status is privileged over knowledge, power over learning and the past over the present.

Taken together these three forms of lock-in, functional, cognitive and political, can be considered as *regional lock-ins* (see also Martin and Sunley, 2006 and Boschma, 2005), which forms the core concept in this chapter. A regional lock-in refers to a set of interrelated lock-ins that manifest themselves at the regional level, but are influenced and affected by both intra-regional and extra-regional factors. In a way regional lock-ins explain why we can find in some mature industry clusters *adjustment*, 'which refers to an extension of established trends, resulting in stagnation or gradual decline' or a lack of *renewal*, which would involve 'a significant change of the existing trajectory of development, enabling the cluster to sustain its prosperity' (Chapman et al., 2004, p. 383). In the case of adjustment, firms tend to focus on cost reduction and copying, whereas in the case of renewal, the focus will be on innovation and diversification. If institutional resistance to restructuring is strong in old industrial areas suffering from de-industrialization (strong cognitive and political lock-ins), there is a strong tendency

for conserving existing structures or for modernizing existing production facilities (adjustment). If institutional resistance to restructuring is weak, there might be more room for setting up new industries, partly emerging out of the existing industries (renewal), although this is no deterministic relationship, as also in a situation of weak resistance there might be no evolution of new industries. Related to the issue of new industries are the recent discussions on the role of related/unrelated variety and path creation in restructuring regional economies (Boschma and Wenting, 2007; Frenken et al., 2007; Martin and Sunley, 2006). On the one hand, variety is seen as a source of regional knowledge spillovers, measured by *related* variety within sectors. On the other hand, in the case of *unrelated* variety, variety is seen as a portfolio protecting a region from external shocks. According to Martin and Sunley (2006, p. 421) 'there is a trade-off between specialization and a short-lived burst of fast regional growth on the one hand, and diversity and continual regional adaptability on the other'. In most regional economies, however, the situation is rather complex, as:

> various networks and structures of interrelatedness can emerge between different sectors and activities within a region, thus suggesting the possibility of what we might call 'path-interdependence', that is situations where the path-dependent trajectories of particular local industries are to some degree mutually reinforcing. The extent and significance of this interlinking path effect is a key issue for further research. (Martin and Sunley, 2006, p. 421)

Although it is acknowledged that related and unrelated variety plays a role in the overall restructuring of a regional economy, the main focus in this chapter is on the role of lock-ins in the hindering of restructuring processes.

Several authors suggest that mono-structural regional economies with a high degree of specialization, in particular, are most prone to regional lock-ins (Grabher, 1993; Hamm and Wienert, 1989; Martin and Sunley, 2006; Schamp, 2000, p. 136). Going one step further, it is also suggested that regional lock-ins are relatively strong in spatial concentrations of capital-intensive industries, such as the steel, coal-mining and shipbuilding industries, which are spatially more concentrated than labour-intensive traditional industries, such as textiles, and which are often characterized by high degrees of state involvement at national and supra-national level leading to stronger protests and resistance in case of politically influenced plant closures (Hamm and Wienert, 1989; Hudson and Sadler, 2004, p. 291; Schamp, 2000). It is also emphasized that regional lock-ins are embedded in varying national and supra-national institutional contexts (Hudson and Sadler, 2004; Martin and Sunley, 2006; Schamp, 2000, p. 145).

The line, however, between adjustment and renewal cases can be very thin (Boschma and Lambooy, 1999b; Grabher, 1993; Hamm and Wienert, 1989; Martin and Sunley, 2006; Maskell and Malmberg, 1999; Tödtling and Trippl, 2004). This is illustrated by Essletzbichler and Winther (1999) when they speak about positive and negative lock-ins, by Fürst and Schubert (1998) when they distinguish between productive and non-productive political networks and by Callon (1998) when he refers to enabling and constraining networks. As milieus tend to change more slowly than industries, a sclerotic milieu can remain in a region even after the industrial structure to which it belonged already has disappeared. The transition from positive to negative lock-ins and the thin line between 'good' and 'bad' industrial agglomerations (Hassink, 1997; Saxenian, 1994) show the importance of studying and understanding this under-researched phenomenon

in economic geography. In this chapter, the constraining and negative character of lock-ins is emphasized, as it analyses the explanatory role lock-ins can play in delaying necessary renewal processes in old industrial areas. A sound understanding of negative lock-ins is for several reasons important for geographers. They might explain the structural economic problems some old industrial areas face, as well as the related persistence of regional economic inequalities in some industrialized countries. Moreover, a sound understanding of the emergence of negative lock-ins might enable geographers to draw policy lessons on how to avoid their emergence.

Thus, the evolutionary economics school and the related lock-in concept seem to be useful concepts to understand the negative consequences of path-dependent development and the importance of regions' capabilities to adjust their institutional endowments ('un-learning') (Maskell and Malmberg, 1999; Schamp, 2000). Grabher's lock-in concept has been often cited (see for instance in Cooke and Morgan, 1998, p. 111; Schamp, 2000, p. 139), showing its importance as an explanatory concept for the decline of industrial areas, but empirical research testing the concept has been rare.

Moreover too little is known to answer the key question, namely 'why it is that some regional economies become locked into development paths that lose dynamism, whilst other regional economies seem able to avoid this danger?' (Martin and Sunley, 2006, 395). This chapter, therefore, not only aims at analysing whether we find regional lock-ins in old industrial areas, but also tackles this key question by looking at factors having an impact on regional lock-ins. Derived from the above discussions on path dependence, lock-ins, institutions and industrial characteristics, the following impact factors are expected to have the strongest effect on regional lock-ins. One could of course debate adding more factors, such as the age of an industry, but these are regarded as the most important ones. Impact factors are not the same as environment or context; they also include the characteristics of the population, as can be seen under the economic-structural impact factors. The strength of regional lock-ins, in turn, affects adjustment or renewal in old industrial areas (Figure 21.1).

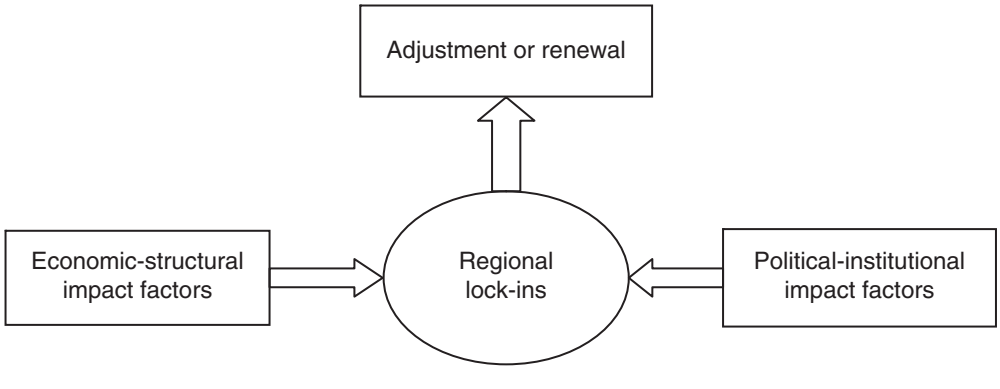

Figure 21.1 Relations between impact factors, regional lock-ins and the restructuring in old industrial areas

Economic-structural impact factors

1. A marked industrial mono-structure: the leading industry having an employment share of at least 30 per cent of the total manufacturing employment in the region as a rough indicator for a mono-structure.
2. A specific leading industry: capital-intensive, high entry and exit barriers, above average company size, oligopolistic market structure, and influential trade unions.

Political-institutional impact factors

3. An institutional tissue at the regional level, consisting of local, regional policy-makers, captains of industry, regional trade unionists, representatives of industry associations, that is strongly focused on the leading industry and hence weakly on external relations.
4. A national-political system, which enables regional actors to influence political questions concerning industrial policy.
5. Supra-national institutions that strongly affect the conditions of industrial policy relevant to the leading industry.

The following empirical section analyses whether regional lock-ins hinder the renewal of the textile and shipbuilding industry regions in Germany and South Korea. It also helps to fulfil the second main aim of this chapter, namely to detect the factors affecting the strength or weakness of regional lock-ins.

3. Putting the case studies in context

In order to be able to give a fair judgement on the impact of the above described factors on regional lock-ins, the case studies that are presented in the next section need to be contextualized both concerning the economic structure (shipbuilding and textile industries) and the political-institutional context (Germany and South Korea).

Concerning the *economic-structural context*, the shipbuilding industry is both spatially extremely concentrated, and at the same time a global industry and an industry with much state intervention (Cho and Porter, 1986; Stopford, 1997). During the history of the industry, there have been dramatic changes in global leadership (Cho and Porter, 1986; Stopford, 1997; Todd, 1991). Shortly after the Second World War, Germany and some other European countries took over leadership from Great Britain. In the 1960s Japan became the world's leading shipbuilding nation. Since 1973 South Korea has been building up and expanding its shipbuilding industry and since the end of the 1990s Japan and South Korea have shared world leadership in shipbuilding (Stopford, 1997). The industry is characterized by very high exit barriers and high sunk costs. Furthermore, in some countries the industry is strongly supported by the state because many shipyards are located in coastal areas with few alternative employment opportunities (Stopford, 1997, p. 468). 'These [exit] barriers lead unsuccessful shipbuilders to continue operating, often with government subsidies, and to persistently wage price wars at the expense of industry profitability' (Cho and Porter, 1986, pp. 543–4). Despite high entry barriers, strong government support has facilitated several countries, such as Japan and South Korea, to enter the market, whereas governments in Western Europe heavily intervened

in order to protect the industry against competition from low-wage countries (Stråth, 1986). Related to these government policies, the European and South Korean shipbuilding industries have recently been involved in a political battle (Eich-Born and Hassink, 2005).

The textile industry, in contrast, is much less spatially concentrated, less capital-intensive, has lower entry and exit barriers, is more characterized by small and medium-sized enterprises, has less influential labour unions and has in many countries, notably in Germany and South Korea, a much weaker lobby for state support (Dicken, 2003; Toyne et al., 1984).

Despite the competitive pressure and economic globalization, the national *political-institutional context*s of development remain remarkably distinct (Whitley, 2000) and therefore still provide different institutional contexts for lock-ins. Three different socio-economic models of development can be identified (see also Cooke and Morgan, 1998; Whitley, 2000): entrepreneurial, associative and developmental. Germany can be considered as an associative and South Korea as a developmental model.

The *associative model* of development is often regarded as a model of 'public–private partnership', where states are negotiating with, and often also delegating power to, industrial associations. Industrial associations have emerged as important vehicles for branch organization, concerned with standardization or other topics of common interest, also influencing market regulations and the forms of competition. The state enables forms of self-organization that foster both economic development and political stability (Cooke and Morgan, 1998). This form of governance involves the devolution and delegation of power from the state to intermediate organizations, thus creating institutions that may enhance and enable learning and innovation. Thus, the state is collaborating with and working through institutions that constitute systems of innovation (Cooke and Morgan, 1998, p. 24). The associative model is typically found in Germany, Austria and Switzerland, partly in the Netherlands and in a different, participatory form in Scandinavian countries.

The associative model has a broad-based educational and training system that recognizes the value of both academic education and vocational training (Lam, 2002). This educational system is conducive to a decentralized mode of work organization and provides a good basis for interactive learning. Practical experience has a high social status. Although this educational system allows for the accumulation of tacit knowledge, at the same time it inhibits the creation of active labour markets. Labour markets are much less polarized than in the entrepreneurial model. They are partly local, with relatively little geographical mobility and scope for renewal. The associative model is characterized by strong unions and participation of the work-force in management, which leads to long-term relations to employers.

With regard to the constitutional set-up, the state encourages the establishment of strong intermediary associations and delegates a considerable range of economic and social functions to them (Whitley, 2000). There is strong involvement of social partners in policy-making. Associative modes of governance also play an increasingly important role in regions, transforming the regional level from being passive spaces subjected to corporate allocative decision-making into laboratories where regional institutions enhance trust and cooperation and have contributed to innovation processes (Cooke and Morgan, 1998). That means, on the other hand, that local and regional actors also have

more leeway to resist necessary restructuring processes and hence regional lock-ins are potentially stronger.

The *developmental state model* is the East Asian variant type of the broader state-centred socio-economic model of development, which can be found in France (see Cooke and Morgan, 1998). In order to close the industrial and technological gap with the West, Japan and South Korea followed the route of the developmental or plan-rational state, characterized by a strong, authoritarian, central government that deliberately and strategically supported large enterprises and competitiveness in certain selected targeted industries. Economic policy successfully followed the sequence of import, import-substitution and export orientation.

Both countries lack natural resources and are consequently strongly committed to education and the development of human resources. The educational system is a combination of broad-based training system and elite academic system. There is recognition of the value of both academic education and vocational training. A high value is put on practical skills of engineers, partly for historical reasons: industrial development was based on imported technology and hence engineers played a crucial role in international technology transfer. The labour market is characterized by long-term stable employment in large enterprises.

The corporate governance of the developmental model is characterized by a high level of state-controlled ownership coordination (Whitley, 2000). The state strongly controlled the capital market; banks were mostly state-owned and provided biased financial support for targeted large enterprises. South Korea's large conglomerates (chaebol) were strongly controlled by the state and tended to be characterized by strong vertical integration processes and a centralized, hierarchical and kinship-based organization.

The constitutional set-up is characterized by a strong central government and its ministries and agencies. The combination of a strong central state and chaebol with their headquarters in Seoul gives local and regional actors little leeway to affect restructuring processes and hence regional lock-ins might be rather weak.

Recently, however, a clear development can be observed from the developmental state model in crisis towards the entrepreneurial socio-economic model of development, a development that particularly started after the economic crisis of 1998 (Moon and Rhyu, 2000). This shows that the presented models are dynamic and change through time and that their influence on regional lock-ins can be ambiguous and should hence be carefully monitored.

The above-described economic-structural context and political-institutional context lead to the following expectations: compared to the textile industry, the shipbuilding industry clearly is expected to have stronger tendencies towards regional lock-ins, given its stronger spatial concentration and mono-structure, high entry and exit barriers because of its capital-intensive characteristics and its oligopolistic market structure. The German associative model is expected to lead to a stronger involvement of local and regional actors involved in lock-ins than in the Korean developmental state model.

4. Locked in decline? Empirical case-studies

In the following, the four case-studies are presented, including the textile industry region Westmünsterland and the shipbuilding region Mecklenburg-Vorpommern, both in Germany, and the textile industry region Daegu and the shipbuilding region Gyeongnam,

Figure 21.2 Location of Mecklenburg-Vorpommern and Westmünsterland (Steinfurt and Borken) in Germany

both in South Korea (see Figures 21.2 and 21.3 for locations). Data were collected by studying literature and policy documents and by conducting in total 83 interviews over a study period of three years with textile and shipbuilding company managers and their suppliers, local, regional, national and supra-national policy-makers, academic experts, consultants, trade unionists and officials of industry associations.

The shipbuilding region of Mecklenburg-Vorpommern, Germany

Shipbuilding dominates the regional production structure of Mecklenburg-Vorpommern, Germany (Eich-Born, 2005; Eich-Born and Hassink, 2005), one of the new Länder in reunited Germany situated in the North East (Figure 21.2). Because of the transformation from central planning to market economy, de-industrialization (employment in shipbuilding dropped from 55,000 in 1989 to around 5000 in 2003) led to dramatically high unemployment rates of around 20 per cent. In order to save the industry from total collapse, a political consensus was built between various interest groups on different geographical levels: yard managers, workers' councils, regional trade unions, mayors of yard cities, regional policy-makers as well as the representatives of the German

Shipbuilding and Ocean Industries Association and the Coordinator for the Maritime Economy in the Federal Ministry of Economics and Technology. Dissolution of the state-owned enterprise and privatization were the strategies applied by the German national and regional government. Nowadays the yards are in the hands of mainly Scandinavian shipbuilding concerns. The modernization of the production capacities was mainly financed by subsidies provided by the German government, the state of Mecklenburg-Vorpommern and the European Union. Over a period of five years, the German government invested more than DM 6 billion (€3 billion) in the construction of new docks, which means state support of about DM 1 million (€500,000) per job (Röller and von Hirschhausen, 1996, p. 17). For each DM of state aid only about 0.09 DM of private investment was attracted. In order to avoid a strong increase in over-capacity, the federal government and the European Commission agreed that the shipyards in Mecklenburg-Vorpommern were not allowed to build more ships than a certain annual capacity limit until 2005.

Thus, regional industrial policy in Mecklenburg-Vorpommern is very much focused on preserving the existing shipbuilding complex, rather than focused on developing new products and industries. That is not only shown by the large amount of subsidies made available for the shipbuilding industry, it is also shown by the successful lobby of the consensus group of actors to release the EU capacity limitation and to sue the South Korean government at the WTO for supposedly illegally supporting Korean yards. It would be unfair, however, to make the impression that the regional industrial policy is only active in lobbying activities in order to preserve existing structures. It also does a lot to support innovative small companies and innovation projects. However, these projects, such as the Maritime Alliance in the framework of the federal support programme InnoRegio, also mainly support the innovativeness of the existing cluster. All in all, both the industrial policy and the regional innovation policy strongly focus on adjustment rather than renewal. We can therefore clearly observe a 'noisy' restructuring process because of relatively strong regional lock-in, which can partly be explained by the clear mono-structure and the lack of alternative industrial activities and by the specific characteristics of the leading industry (capital-intensive large enterprises, so only a few main actors in the region). But at the same time also political-institutional factors also play their role, such as a thick and powerful institutional tissue at the region level in combination with a federal government determined to support the industry.

The shipbuilding region of Gyeongnam, South Korea

Korea has become a world market leader in shipbuilding within just a time period of about 30 years (Hassink and Shin, 2005b; Woo, 2003). The industry has been virtually built up from scratch, as Korea's world market share in the early 1970s was about 2 per cent, compared to the current 38 per cent. Shipbuilding started in the early 1970s because of the interventionist developmental state led by Park Chung-hee (Amsden, 1989). The government's extensive control over the financial sector enabled channelling of investment funds to the industry, which has been heavily concentrated organizationally in a few extremely large shipyards (the world's three largest shipyards are located in Korea) and geographically in the province of Gyeongnam (Figure 21.3). Apart from Halla, which is located in Mokpo (Jeonnam), Korea's seven main shipbuilding companies have their manufacturing facilities in the region (including Ulsan and Busan), the largest being

Figure 21.3 Location of Gyeongnam and Daegu in South Korea

in Ulsan (Hyundai Heavy Industries) and Geoje (Daewoo and Samsung); other large yards can be found in Ulsan (Hyundai Mipo), Busan (Hanjin) and Jinhae (STX).

Both academics and the popular press in Europe are very much focused on the role of the central government in subsidizing Korea's shipbuilding industry, as an explanation for its success. The industry, however, has developed from a couple of cathedrals in the desert, highly dependent on import for its main supply, towards an innovative cluster with much interaction between the large yards and their suppliers, as well as with universities and research institutes (Hassink and Shin, 2005b). The production complex developed from simple co-location enforced by central government and favoured by the natural physical conditions in the area, as well as favouritism by political leaders of central government, to a full fledged cluster, with strong competition, collaboration and policy support at central level. Until recently, local and regional governments played a minimal role in supporting the cluster.

Presently, the shipbuilding cluster, which mastered the financial crisis in 1998 remarkably well, is enabling regional growth. However, the growth-enabling lock-in in Gyeongnam might turn into a constraining one in the future, if external conditions negatively affect the cluster and at the same time lock-ins hinder the ability of the cluster to react to the changing conditions. Among these changing conditions are the conflicts with the European Union on unfair competition, the expected cyclical downturn in the industry because of over-capacity combined with the increasing competitiveness of low-cost shipbuilder China, which might increasingly make shipbuilding in South Korea a vulnerable industry and which might turn the cluster from a mature into a declining one. Potential lock-ins might occur because of the common worldview shared by the main actors in the industry that China is not yet a threat (cognitive lock-in), and because of the

high dependencies between suppliers and large yards in the close-knit cluster that is still completely in Korean hands (functional lock-in). If, therefore, competition from China strongly increases in a future scenario, a constraining lock-in may occur. This constraining lock-in might, however, be much more the product of national interests than interests of a regional coalition of enterprises and local and regional policy-makers.

The textile region of Westmünsterland, Germany

Thinly populated Westmünsterland, consisting of the counties Steinfurt and Borken, is located in North Rhine-Westphalia in the western part of Germany at the Dutch–German border (see Figure 21.2). Within Germany it is one of the main textile clusters. The region's textile industry started with linen-weaving in cottages and farmhouses and was initially based on flax and hemp (Ditt, 2000; Hassink, 2007b; Hauff, 1995). Factory production started from the 1840s onwards, when spinning machinery was adopted. Most firms that were established were small and family-owned. At the beginning of the 1960s, in its heyday, the textile industry employed about 75 per cent of all employees in the region's manufacturing industry. In the early development phase, local textile entrepreneurs had a strong impact on local politics. The exact location of railroad tracks, self-financed railroad construction and the establishment of weaving schools are examples of the entrepreneurs' impact on shaping the local production environment (Hauff, 1995, p. 135). During its heyday the textile cluster in Westmünsterland had the characteristics of an industrial district, that is intensive inter-firm networks within the region, but because of the internationalization of sales, procurement and recently also production, the intensity of inter-firm networks within the region has been rapidly decreasing.

Because of a strong increase in competition from emerging economies in East Asia combined with automation and rationalization of the production process, textile employment decreased by 25 per cent during the 1960s. In the subsequent 1970s and early 1980s Westmünsterland's economy hence suffered from a crisis. However, it now has scores that are average or even above-average on socio-economic indicators such as employment growth, unemployment and gross domestic product per capita. The restructuring process has led to a relatively heterogeneous regional production structure. Instead of dominating the regional production structure, the textile industry is now only one of a few large industries. The remaining textile companies have been successful in reorientating themselves towards technical textiles, the high value-added segment of the textile market. Inter-firm cooperation within the region has been decreasing to low levels, as a result of the restructuring process and the focus of the remaining textile companies on new, diverse product markets, which are located outside the region. Overall, the regional economy has been relatively successfully restructured (Reckfort and Ridder, 1996), since new manufacturing and service employment could be created to compensate for the job losses in the textile industry. Moreover, most of the remaining textile companies managed to achieve renewal by diversifying into the field of technical textiles, with applications in, for instance, medical technology, the car supplier industry, construction and so on, instead of adjustment through copying and cost reduction.

It is partly because of relatively weak functional, cognitive and political lock-ins that this renewal could be achieved. They contrast with the relatively strong lock-ins observed in the neighbouring heavy industrial complex of the Ruhr area. Weak functional lock-ins can be seen through the early diversification of the few textile industry suppliers in the

region into new markets. Weak cognitive and political lock-ins are testified by the early mental and policy reorientation of the main regional actors towards supporting new economic activities. This region has been going through 'quiet' restructuring processes, which, in turn, led to renewal and a diversification of the production structure. Political lock-ins and resistance to restructuring were weak in this region and closely related to that, there tended to be little media and academic attention for its economic problems (Hauff, 1991, 1995). Hauff (1991, p. 207), for instance, observed at the beginning of the 1980s, after the collapse of Van Delden, the largest textile firm in the region:

> In the wake of the Van Delden collapse, Gronau's unemployment rate was, in fact, higher than that of any other urban community in North Rhine-Westphalia. It is, indeed, surprising that, despite the tenseness of the job situation in and around Gronau, there were neither protest movements, nor occupations of factories like those which had accompanied pit and steel closures in the more militant Ruhr.

This 'quiet' restructuring process and related weak regional lock-ins can be explained by factors that are partly industrial and partly contextual in nature. With regard to the first factor, relatively weak lock-ins can be explained by the specific characteristics of the textile industry, an industry with, in contrast to heavy industrial complexes, low entry and exit barriers, relatively many small and medium-sized enterprises, strong competition and little influence of trade unions (Dicken, 2003). Furthermore, a number of specific contextual factors can be observed in Westmünsterland that contributed to weak lock-ins. First, the location of the region adjacent to the heavy industry complex of the Ruhr area, within the political-administrative boundaries of one state (North Rhine-Westphalia), led to little media attention and weakened the hopes of the main regional actors to be able to successfully lobby the state government. Second, local cultural and organizational factors, such as the reserved, down-to-earth and settled mentality of its people and the patriarchal organization of family firms (Hassink, 2007b), contributed to weak lock-ins. Because of the weak lock-ins, the regional economy reoriented itself at an early stage, which in turn led to a successful renewal.

The textile region of Daegu, South Korea

The textile industry cluster of Daegu, the third largest city in South Korea (see Figure 21.3), and the surrounding cities of Gumi and Gyeongnam, started to grow in the 1960s (Cho and Hassink, 2009; Lee et al. 2000; Park, 1997). It is characterized by specialization in the production and weaving of chemical fibres and has been strongly focusing on export. Textile business constitutes the largest segment of manufacturing in Daegu: 31.3 per cent of total establishment, 34.7 per cent of total employment; which means a location quotient of 4.1, 34.6 per cent of total production, 54.2 per cent of total export and 30.9 per cent of total value added in 2002 (Cho and Hassink, 2009). The high rate of automation in the 1980s brought about problems of overcapacity and overproduction, which in turn led to financial difficulties in the textile business. Moreover, textile companies were faced with increasing competition from low-cost neighbouring countries, China, in particular, and a shift of Korean producers to China in the 1990s. Forty years of path-dependent evolution led to specialization in the narrow low value added and low-tech middle stream of the textile value chain, whereas high value added and high-tech downstream activities were nearly totally absent. The upshot of all this is that the

employment in Daegu's textile industry decreased from 91,000 in 1981 to 82,000 in 1986 and 47,000 in 2000 (Cho and Hassink, 2009).

In the context of this situation, Cho and Hassink (2009) observed both functional and cognitive lock-ins. As for the functional lock-in, there are a large number of small-scale vertically as well as horizontally interrelated producers around a handful of large supplier firms of 'raw fibres' and a number of large textile companies with market outlets. Functionally, the networks are geared to producing, weaving and dyeing chemical fibres, typically constituting a middle-stream segment in the textile industry. This means that Daegu's textile production system is based on hierarchical cost-cutting and subcontracting networks, of which the driving force is the sustained demand on foreign markets. Much of the high valued added part of the textile value chain, such as apparel, design, fashion and trade, however, has been displaced or integrated into extra-local networks in Seoul, with Daegu's textile industry falling into a trap of low value added production. Concerning the cognitive lock-in, local clientelism gives rise to passive and captive behaviour of local entrepreneurs to exogenously imposed conditions for textile production. Enjoying export demand and policy protection, small local textile producers stick to their vested interests to avoid risk-taking ventures. This commonly shared vision has led to local mercantilistic entrepreneurship among second-generation local entrepreneurs. They tend to seek rents from subcontracting, land speculation and factory leasing rather than to generate profits from high value added production. They are not interested in improving their learning capability and act merely as a self-sustaining coalition that resists a progressive reshuffling of the existing industrial structure. Because of this mercantilistic entrepreneurship, the existing industrial networks of middle-stream textiles are clearly cognitively locked in.

In response to this situation, the central government launched an ambitious project called the Milano Project (1998–2003) aiming at restructuring the present middle-stream textile of Daegu into a high value added down-stream textile that comprises apparel, design and fashion as a competitive edge. Milano is a symbolic target for the high-end restructuring of textile in Daegu. In April 1998, President Kim Dae-Jung, who came to power with regionalist full support from his home province in the south west, visited Daegu to lessen the south east's regionalist antagonism against him and officially promised (*kongyak*) full policy support for revitalization of Daegu's decaying textile industry, which materialized into the Milano Project. It consists of 19 projects in four sectors, which require a total of €650 million in a period of five years. As of 30 April 2003, the overall rate of project implementation was 75 per cent. The main promoters of the project, the central government and the City of Daegu, aim at promoting both new activities (fashion and design) and projects with new actors (research institutes, universities, design schools, banks etc.), whereas the actors with a vested interest, local textile producers and their lobby organizations, oppose these plans. The latter argued that Daegu's textile cluster should maintain its competitive edge in the branch of weaving and dyeing, whose technology, know-how and market accessibility were believed to be at the top of the world. Therefore resistance to and conflict around the restructuring are widely witnessed in the process of project implementation and the project is, therefore, not regarded to be a success (Cho and Hassink, 2009; Sohn, 1999). In a way, therefore, centrally devised renewal efforts were blocked by locally emerged lock-ins.

5. Comparative analysis and conclusion

Are old industrial areas locked in decline? Not necessarily so is the first conclusion that can be drawn after analysing restructuring processes in four regional economies. The chapter has shown that some regional economies, such as Westmünsterland, successfully renewed and diversified their economies, partly because of the lack of regional lock-ins and hence the 'quiet restructuring' process. Mecklenburg-Vorpommern and Daegu, on the other hand, are locked in adjustment, partly because of strong lock-ins blocking necessary renewal (Table 21.1). Analysing the impact of lock-ins on restructuring processes was the first aim of this chapter.

The second aim formulated in the introduction of this chapter was to work out *impact factors* to explain the differences found: why is it that we find relatively strong regional lock-ins in some old industrial areas and relatively weak ones in other old industrial areas? Derived from the literature, two types of impact factors were listed, that is economic-structural impact factors and political-institutional impact factors. It was expected that in comparison to the textile industry, the shipbuilding industry clearly has stronger tendencies towards regional lock-ins, given its stronger spatial concentration and mono-structure, high entry and exit barriers because of its capital-intensive characteristics and its oligopolistic market structure. At the same time, it was expected that the German associative model leads to a stronger involvement of local and regional actors involved in lock-ins than in the Korean developmental state model.

The empirical results show that each individual case study can only be explained by a unique set of impact factors (Table 21.1). Mono-structure does not necessarily lead to regional lock-ins, as the case of Westmünsterland shows us. Also the industrial structure does not in all cases explain the differences in lock-ins, as can be seen in South Korea, where a lock-in prone industry such as shipbuilding does not show regionally induced lock-in tendencies, whereas the regionally induced lock-in unexpectedly emerged in the textile region in Daegu. Regionalism and national political factors that led to clientelism play a role here. To understand, therefore, why the intensity of lock-ins differs between

Table 21.1 Comparative analysis of case studies

	Adjustment/ renewal	Regional lock-ins	Dominant impact factors
Mecklenburg-Vorpommern	Adjustment	Strong at several spatial levels	Both economic-structural and political-institutional factors
Gyeongnam	Slow renewal	Fair and enabling, mainly at national level	Economic-structural factors dominate
Westmünsterland	Renewal	Weak	Both economic-structural and specific regional political-institutional factors
Daegu	Adjustment	Strong at local level	Political-institutional impact factors dominate

regional settings, contingent path dependence and context specific factors need to be taken into account for each individual case. These results fit well in the current institutional, relational and evolutionary paradigms of economic geography, which all emphasize the role of path dependence and contingency (Martin and Sunley, 2006). They also confirm the main argument expressed by Martin and Sunley (2006, p. 414), namely that 'we need to understand regional "lock-in" as a multiscaled process, and one which also has a high degree of place-dependence, rather than as a universal principle that applies everywhere and anywhere and that is inexorable in its emergence and consequences'. In order to forecast where lock-ins could block regional renewal in the future, it is thus of utmost importance to go beyond the narrow spatial focus on the local and regional, from which many studies of old industrial areas have been suffering. The empirical part of this chapter has shown that it is of key importance when analysing regional lock-ins in old industrial areas to take the institutional context at all spatial levels, that is local, regional, national, and supra-national into account.

This chapter has attempted to contribute to the key question of why it is that 'some regional economies become locked into development paths that lose dynamism, whilst other regional economies seem able to avoid this danger' (Martin and Sunley, 2006, p. 395). More research is necessary to answer this question and a future research agenda should, in my view, focus on several issues that could not be enough dealt with here. First, not enough research has been done yet on the role of social capital and trust in relation to regional lock-ins. They might potentially, for instance, be strong in regions with high stocks of social capital and trust. Second, the issue of sunk costs (costs that are irrevocably committed to a particular use, and therefore are not recoverable in case of exit) should be more explored in relation to regional lock-ins (Melachroinos and Spence, 2001). Third, too little is known about the issues around related and unrelated variety and path creation in relation to the above-mentioned key question (see also Martin and Sunley, 2006). Fourth, further research is necessary regarding what triggers the transition from positive to negative lock-ins in regions. Last but not least, more work should be done on regional policy concepts to avoid the emergence of lock-ins, such as the learning region and learning cluster (Hassink, 2007a; OECD, 2001). Particularly the paradigm of evolutionary economic geography offers a wide variety of theoretical notes, such as variety, selection environment, path dependence and lock-ins that are useful in dealing with these issues and hence in coming closer to a satisfying answer to the above-mentioned key question in economic geography.

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References

Amsden, A.H. (1989), *Asia's Next Giant: South Korea and Late Industrialisation*, New York & Oxford: Oxford University Press.

Birch, K., D. MacKinnon and A. Cumbers (2010), 'Old industrial regions in Europe: a comparative assessment of economic performance', *Regional Studies*, **44** (1), 35–53.

Boschma, R.A. (2005), 'Proximity and innovation: a critical assessment', *Regional Studies*, **39**, 61–74.

Boschma, R.A. and K. Frenken (2006), 'Why is economic geography not an evolutionary science? Towards an evolutionary economic geography', *Journal of Economic Geography*, **6**, 273–302.

Boschma, R. and J. Lambooy (1999a), 'Evolutionary economics and economic geography', *Journal of Evolutionary Economics*, **9**, 411–29.

Boschma, R. and J. Lambooy (1999b), 'The prospects of an adjustment policy based on collective learning in old industrial regions', *GeoJournal*, **49**, 391–99.

Boschma, R.A. and R. Wenting (2007), 'The spatial evolution of the British automobile industry: does location matter?', *Industrial and Corporate Change*, **16**, 213–38.

Callon, M. (1998), 'Introduction: the embeddedness of economic markets in economics', in M. Callon (ed.), *The Laws of the Markets*, Oxford: Blackwell, pp. 1–57.

Chapman, K. (2005), 'From "growth centre" to "cluster": restructuring, regional development, and the Teesside chemical industry', *Environment and Planning A*, **37**, 597–615.

Chapman, K., D. MacKinnon and A. Cumbers (2004), 'Adjustment or renewal in regional clusters? A study of diversification amongst SMEs in the Aberdeen oil complex', *Transactions of the Institute of British Geographers*, **29**, 382–96.

Cho, D.S. and Porter, M.E. (1986), Changing global industry leadership: the case of shipbuilding', in M.E. Porter (ed.), *Competition in Global Industries*, Boston, MA: Harvard Business School Press, pp. 539–67.

Cho, M.-R. and R. Hassink (2009), 'The limits to locking-out through restructuring: the textile industry in Daegu, South Korea', *Regional Studies*, **43**, 1183–98.

Cooke, P. (ed.) (1995), *The Rise of the Rustbelt*, London: UCL Press.

Cooke, P. and K. Morgan (1998), *The Associational Economy; Firms, Regions and Innovation*, Oxford: Oxford University Press.

Dicken, P. (2003), *Global Shift: Transforming the World Economy*, London: Paul Chapman.

Ditt, K. (2000), 'Wirtschaftlicher Wandel in Textilregionen während des 19. und 20. Jahrhunderts: Die Industrialisierung Minden-Ravenbergs und des Westmünsterlandes im Vergleich', [Economic change in textile regions during the 19th and 20th century: the industrialisation of Minden-Ravenberg and Westmünsterland], *Westfälische Forschungen*, **50**, 293–331.

Eich-Born, M. (2005), *Transformation der ostdeutschen Schiffbauindustrie. Anpassungsprozesse in einem global-lokalen Institutionengefüge*, [The Transformation of the Eastern German Shipbuilding Industry. Adjustment Processes in a Global–Local Institutional Tissue], Münster: Lit Verlag.

Eich-Born, M. and R. Hassink (2005), 'On the battle between shipbuilding regions in Germany and South Korea', *Environment and Planning A*, **37**, 635–56.

Essletzbichler, J. (2002), 'Evolutionäre Wirtschaftsgeographie: Neues Forschungsparadigma oder Sackgasse?', [Evolutionary economic geography: new paradigm in research or dead end?], *Geographischer Jahresbericht aus Österreich*, **59**, 11–30.

Essletzbichler, J. and L. Winther (1999), Regional technological change and path dependency in the Danish food processing industry', *Geografiska Annaler B*, **81**, 179–95.

Frenken, K., F. Oort van and T. Verburg (2007), 'Related variety, unrelated variety and regional economic growth', *Regional Studies*, **41**, 685–97.

Fürst, D. and H. Schubert (1998), 'Regionale Akteursnetzwerke; Zur Rolle von Netzwerken in regionalen Umstrukturierungsprozessen', [Regional actor networks: on the role of networks in regional processes of restructuring], *Raumforschung und Raumordnung*, **56**, 352–61.

Grabher, G. (1993), 'The weakness of strong ties; the lock-in of regional development in the Ruhr area', in G. Grabher (ed.), *The Embedded Firm: On the Socioeconomics of Industrial Networks*, London & New York: Routledge, pp. 255–77.

Grabher, G. and R. Hassink (2004), 'Strukturwandel in altindustriellen Regionen in Deutschland und Südkorea', [The restructuring of old industrial regions in Germany and South Korea], University of Bonn, Final Report to the German Research Council (Deutsche Forschungsgemeinschaft), available at: http://www.giub.uni-bonn.de/grabher/downloads/finalreport_SARIDS.pdf.

Hamm, R. and H. Wienert (1989), *Strukturelle Anpassung altindustrieller Regionen im internationalen Vergleich*

[An International Comparison of Structural Adjustment of Old Industrial Regions], Essen: Rheinisch-Westfälisches Institut für Wirtschaftsforschung.
Hassink, R. (1997), 'What distinguishes "good" from "bad" industrial agglomerations?', *Erdkunde*, **51**, 2–11.
Hassink, R. (2007a), 'The learning region: a constructive critique', in R. Rutten and F.W.M. Boekema (eds), *The Learning Region: Foundations, State of the Art, Future*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar, pp. 252–71.
Hassink, R. (2007b), 'The strength of weak lock-ins: the renewal of the Westmünsterland textile industry', *Environment and Planning A*, **39**,1147–65.
Hassink, R. and D.-H. Shin (2005a), 'Guest editorial: The restructuring of old industrial areas in Europe an Asia', *Environment and Planning A*, **37**, 571–80.
Hassink, R. and D.-H. Shin (2005b), 'South Korea's shipbuilding industry: from a couple of cathedrals in the desert to an innovative cluster', *Asian Journal of Technology Innovation*, **13**, 133–55.
Hauff, T. (1991), 'De-industrialisation, socioeconomic change and revitalisation in the west Münsterland textile area: the case of Gronau,' in T. Wild and P. Jones (eds), *De-industrialisation and new industrialisation in Britain and Germany*, London: Anglo-German Foundation, pp. 199–213.
Hauff, T. (1995), *Die Textilindustrie zwischen Schrumpfung und Standortsicherung: weltwirtschaftliche Anpassungszwänge, unternehmerische Handlungsstrategien und regionalökonomische Restrukturierungsprozesse in der Textilindustrie des Westmünsterlandes* [The Textile Industry between Contraction and Location Protection: Under Adjustment Duress due to Worldwide Economic Change, Company Management Strategies and Regional Economic Restructuring Processes in the Textile Industry of Westmünsterland], Dortmund: Dortmunder Vertrieb für Bau- und Planungsliteratur.
Hodson, M. (2008), 'Old industrial regions, technology, and innovation: tensions of obduracy and transformation', *Environment and Planning A*, **40**, 1057–75.
Hudson, R. (1994), 'Institutional change; cultural transformation, and economic regeneration: myths and realities from Europe's old industrial areas', in A. Amin and N. Thrift (eds), *Globalization, Institutions, and Regional Development in Europe*, Oxford: Oxford University Press, pp. 196–216.
Hudson, R. (2005), 'Rethinking change in old industrial regions: reflecting on the experiences of North East England', *Environment and Planning A*, **37**, 581–96.
Hudson, R. and D. Sadler (2004), 'Contesting works closures in Western Europe's old industrial regions: defending place or betraying class?', in T.J. Barnes, J. Peck, E. Sheppard and A. Tickell, (eds), *Reading Economic Geography*, Malden, Oxford & Carlton: Blackwell Publishing, pp. 290–303.
Lam, A. (2002), 'Alternative societal models of learning and innovation in the knowledge economy', *International Social Science Journal*. **171**, 67–82.
Lee, C.-W., Y.-C. Park and E.J. Kim (2000), 'The restructuring of textile and apparel industry and the spatial division of labour on production system in Daegu', *Journal of the Korean Geographical Society*, **35**, 207–25 (in Korean).
Lorenzen, M. (2005), 'Editorial: Why do clusters change?', *European Urban and Regional Studies*, **12**, 203–08.
McGillivray, F. (2004), *Privileging Industry: The Comparative Politics of Trade and Industrial Policy*, Princeton, NJ: Princeton University Press.
Martin, R. and P. Sunley (2006), 'Path dependence and regional economic evolution', *Journal of Economic Geography*, **6**, 395–437.
Maskell, P. and A. Malmberg (1999), 'Localised learning and industrial competitiveness', *Cambridge Journal of Economics*, **23**, 167–85.
Melachroinos, K.A. and N. Spence (2001), 'Conceptualising sunk costs in economic geography: cost recovery and the fluctuating value of fixed capital', *Progress in Human Geography*, **25**, 347–64.
Moon, C.I. and S.-Y. Rhyu (2000), 'The state, structural rigidity, and the end of Asian capitalism: a comparative study of Japan and South Korea', in R. Robison, M. Beeson, K. Jayasuriya and H.-R. Kim (eds), *Politics and Markets in the Wake of the Asian Crisis*, London & New York: Routledge, pp. 77–98.
Morgan, K. (1997), 'The learning region: institutions, innovation and regional renewal', *Regional Studies*, **31**, 491–503.
Morgan, K. and C. Nauwelaers (1999), 'A regional perspective on innovation: from theory to strategy', in K. Morgan and C. Nauwelaers (eds), *Regional Innovation Strategies: The Challenge for Less-Favoured Regions*, London: The Stationery Office and Regional Studies Association, pp. 1–18.
Myrdal, G. (1957), *Economic Theory and Under-Developed Regions*, London: Gerald Duckworth & Co. Ltd.
OECD (2001), *Cities and Regions in the New Learning Economy*, Paris: OECD.
Park, K.-T. (1997), 'South Korean economic development and the concentration of the textile industry in Taegu since the 1960s', *Journal of the Korean Geographical Society*, **32**, 359–70.
Reckfort, J. and M. Ridder (1996), *Die münsterländische Textilwirtschaft: Bedeutung, Struktur, Entwicklung und Potentiale zur Stärkung der Wettbewerbsfähigkeit* [The Münsterland Textile Economy: Importance, Structure, Development and Potential to Strengthen Competitiveness], Münster: Schriften zur Textilwirtschaft, Bd. 48.

Röller, L.-H. and C. von Hirschhausen (1996), 'State aid, industrial restructuring and privatization in the new German Länder: competition policy with case studies of the shipbuilding and synthetic fibres industries', WZB Social Science Research Center Berlin, Discussion Paper FS IV 96–13.
Saxenian, A. (1994), *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*, Cambridge, MA & London: Harvard University Press.
Schamp, E.W. (2000), *Vernetzte Produktion: Industriegeographie aus institutioneller Perspektive* [Networked Production: Industrial Geography from an Institutional Perspective], Darmstadt: Wissenschaftliche Buchgesellschaft.
Schamp. E. W. (2005), 'Decline of the district, renewal of firms: an evolutionary approach to footwear production in the Pirmasens area, Germany', *Environment and Planning A*, **37**, 617–34.
Shapira, P. and G. Fuchs (eds) (2005), *Rethinking Regional Innovation and Change: Path Dependency or Regional Breakthrough*, New York: Springer.
Sohn, T.-S. (1999), '"Milan of Asia" project for Taegu hits early snag', *Korea Herald*, 1 March.
Stopford, M. (1997), *Maritime Economics*, London & New York: Routledge.
Storper, M. (1997), *The Regional World: Territorial Development in a Global Economy*, New York & London: The Guilford Press.
Stråth, B. (1986), 'Redundancy and solidarity: tripartite politics and the contraction of the West European shipbuilding industry', *Cambridge Journal of Economics*, **10**, 147–63.
Todd, D. (1991), *Industrial Dislocation: The Case of Global Shipbuilding*, London & New York: Routledge.
Tödtling, F. and M. Trippl (2004), 'Like phoenix from the ashes? The renewal of clusters in old industrial areas', *Urban Studies*, **41**, 1175–95.
Toyne, B., J.S. Arpan, A.H. Barnett, D.A. Ricks and T.A. Shimp (1984), *The Global Textile Industry*, London: George Allen & Unwin.
Van Grunsven, L. and F. Smakman (2005), 'Industrial restructuring and early industry pathways in the Asian first-generation NICs: the Singapore garment industry', *Environment and Planning A*, **37**, 657–80.
Whitley, R.D. (2000), 'The institutional structuring of innovation strategies: business systems, firm types and patterns of technical change in different market economies', *Organization Studies*, **21**, 855–86.
Woo, Y.-S. (2003), 'Spatial characteristics of production networks in the shipbuilding industry', *The Journal of Korean Economic Geography*, **6**, 99–117 (in Korean).