



The renewal of regional capabilities Experimental regionalism in Germany[☆]

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Abstract

The innovativeness of a region depends on its ability to recombine technological, organisational and scientific capabilities. This recombination can be facilitated by regional policies. In the past, these policies provided a stable set of “local collective competition goods” supporting interorganisational patterns of cooperation, communication and competition. Given the increasing uncertainties of an internationalised knowledge society, these stable regional orders are challenged by new, more open-ended and experimental patterns of regional policies. These policies treat regions as social fields whose political and economic boundaries, identities, dominant coalitions and governance structures are constructed in bargaining and exchange relations. Also the type of collective competition goods required and their target groups are the result of negotiations involving not only political actors and business associations but also enterprises and trade unions. This shift to a discursive renewal of regional capabilities, as well as the difficulties and limitations encountered by such “experimental regionalism”, is illustrated on the basis of an East and a West German region. Leipzig had to create a new economic and business structure and to integrate the existing firms into regional networks in order to enhance its innovative capabilities. In Leipzig, these two challenges were met by separate, newly created institutions thus hampering the regional integration and innovativeness of the recently recreated industrial basis. In Nuremberg, the transformation of a traditional industrial region into a technology and service-based one was facilitated by a common vision, regional networks, new research facilities and favourable conditions for start-up activities. In this case, a new regional “steering committee” facilitated the integration and renewal of formerly isolated regional capabilities thus demonstrating the potential of a discursive renewal of regional innovation systems.

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1. Introduction

Up to now the strength of the German economy has been based on regionally concentrated industrial and urban agglomerations (Krätke, 2004): Automobiles in Southern Germany, financial services in Frankfurt, kitchen production in East Westphalia, advertising in Hamburg, mechanical engineering in Baden-Württemberg, medical technology in Tuttlingen, etc. The economic specialization of these regions was an important basis for nationally and internationally competitive companies who often shaped the regional paths of development (Cantwell and Janne, 1999). These companies were embedded into regional labour markets, regional buyer and supplier networks and a regional education and research infrastructure. The economic and institutional specialization of different regions was facilitated by a federal system, which delegated crucial decision-making competences to the regional level thus facilitating the provision of “local collective competition goods”—even if the specificity of these regional institutions in Germany should not be overestimated, because they have been shaped by nation-wide associations and governance structures (Crouch et al., 2001). This polycentric regional and urban economic structure – a heritage of the European city belt (Rokkan, 1999) – was an important basis of the competitiveness and innovativeness of continental European countries in comparison with the monocentric regional systems of many developing countries and central and eastern European states. On a theoretical level, the strengths of territorially concentrated economies have been analysed as industrial districts (Pyke et al., 1990), new industrial spaces, innovative milieus (Crevoisier, 2004), learning regions, clusters (Porter, 1998; Maskell, 2001), local production systems or regional innovation systems (Cooke et al., 2004).

Economic regions can be an efficient way of organizing distributed innovation processes which require the development, accumulation, and recombination of heterogeneous knowledge under conditions of economic, technical, and scientific uncertainties (Rammert, 2004). These agglomeration advantages have been explained by transaction cost savings, by the private or public provision of products, services and qualifications that fit the specific needs of the regional companies, by the opportunity to establish and stabilise

interaction-based trust relationships or by learning advantages because spatial proximity is supposed to facilitate the exchange of implicit, experience-based, uncoded knowledge and the recombination of previous knowledge (Amin and Thrift, 1992; Scott, 1998; Cooke, 2002). In a recent study on local economies in four large European countries, these advantages have been summarized under the label “local collective competition goods”: “Provision of such goods must be ensured by social or political arrangements, that is by forms of local governance” (Le Galès and Voelzkow, 2001, p. 1; cf. also Crouch et al., 2004).

The shift from relatively closed local economies embedded in their national institutional environments to a more open, knowledge-based and innovation-centred economy challenges the implicit assumption of Le Galès and Voelzkow, that there exists a stable, clearly defined list of collective goods (for example qualified employees, R&D services, technology transfer, reliable legal or technological norms, information on new markets and technologies, consultancy and other “real services”) provided by markets, organisations, associations, communities or the state. The growing uncertainties in a knowledge society are not limited to firms; learning regions are not only characterised by learning firms as the “Nordic School” of the learning economy assumes (European Commission, 2002, p. 16; Asheim and Isaksen, 2002). The challenges, especially for economic regions in the larger European countries, that up to now were strongly embedded in their national context, are even more radical: Similar to the regions in smaller, more open countries, they now have to adapt not only their organisational, but also their regional capabilities to the conditions of more integrated markets and an intensified international competition on costs and innovativeness. Not only learning firms, but also learning institutions are required. The below-average growth rates especially in Germany, France and Italy can therefore also be interpreted as an indicator of the difficult shift from stable regional, to a large extent nationally defined environments to a European-wide and global division of work between specialised regional economies which have to update continuously not only their technological and organizational, but also their institutional capabilities. *Our central thesis is that the renewal of an economic region requires a simultaneous “reinvention” of organisational and regional capabilities: Complementary to*

the restructuring of the regional firms, the region, its boundaries, its identities, its governance structures, its “collective competition goods” and its political and associational actors have to be “re-invented” in order to face the uncertainties of an international competition on costs and innovation. The simultaneous and reciprocal “reinvention” of regional firms and governance structures is only possible in an experimental, discursive way which has been described by Sabel (1996) as “experimental regionalism” (cf. also Gualini, 2004).

In Germany, several regional policies have been developed in order to facilitate the renewal of regional capabilities.¹ These regional policies include network policies (often termed “cluster policies”), the creation and public provision of regional collective goods (especially technology transfer, research, education, business incubators, marketing initiatives, etc.), the financial support of existing or new companies and plants and the creation or redesign of regional institutions supporting these regional policies. In the following, we will develop a sociological framework for the analysis of these regional policies (Section 2). On the basis of two examples – the East German region of Leipzig and the West German region of Nuremberg – we will analyse the possibilities and limits for a renewal of regional capabilities. We start with the analysis of the challenges these two regions are facing in open, more integrated markets (Section 3). There follows an analysis of the contribution of different policies to the renewal of these regions and the corresponding “reinvention” of the region and its governance structures (Section 4). It can be shown that both regions have strengthened the innovation capability of existing businesses, facilitated start-up activities and attracted new firms through the intensification of inter-company networks, through regional developmental visions and through the provision of new collective goods, especially new research facilities, academic institutions,

company incubators and technology transfer institutions. But an insufficient integration of the different regional policies may hamper the successful renewal of regional capabilities especially in Leipzig (Section 5).

2. The renewal of regional innovation systems

While the *cluster concept* focuses mainly on interorganisational networks and value chains (Porter, 1998), the concept of *regional innovation systems* (RIS) emphasises also the role of regional institutions (Cooke et al., 2004). It can be characterised by

“two main types of actors and the interaction between them . . . The first actors are the firms in the main industrial cluster in a region including their support industries. Secondly, an institutional infrastructure must be present, i.e., research and higher education institutes, technology transfer agencies, vocational training organisations, business associations, finance institutions etc., which hold important competence to support regional innovation.” (Asheim and Isaksen, 2002, p. 83)

While clusters are integrated primarily through production and value chains (for example by supplier and buyer networks), RIS are additionally integrated by institutions and regional cultures. This implies that the boundaries of clusters and regional innovation systems are not always congruent.

RIS can be analysed as “worlds of production” (Storper and Salais, 1997) or *social fields* which are institutionalised, i.e. regulated, environments of organizations and which comprise individual actors, organisations, interorganisational networks, rules of appropriateness and interpretation (“conventions”) and the corresponding regulatory bodies (for example employer or employee associations, regional economic agencies, technical standardisation authorities or educational departments; cf. Fligstein and Stone Sweet, 2002). The dynamics and regulation of an organisational field can be analysed in its strategic, normative and cognitive dimensions (Scott, 2001): Firstly, an organisational field is an arena for the more or less rational pursuit of interests; it is a structured environment for the games and strategies of individual and collective actors. Secondly, organisational fields are shaped by collectively binding norms and rules thus increasing the

¹ Cf. for example Dohse (2000, 2003) and European Commission (2003, pp. 37–38) for the federal BioRegio, EXIST and InnoRegio contests and the new initiative for “Innovative Regional Growth Cores”. Sometimes, these policies have been analysed as cluster policies (cf. Hilbert et al., 2004 for the North Rhine Westphalian experiences; Sternberg et al., 2004 for two examples of cluster policies in Lower Saxony and BMBF, 2004 for a detailed description of 102 networks of competence and the corresponding policies in 32 German regions). In France, similar political initiatives have been developed (cf. DATAR, 2004).

stability of field-specific regulations. Thirdly, organisational fields are characterised by common knowledge, myths, symbols and patterns of interpretation.

The potential advantages and strengths of regional innovation systems can also be analysed in these dimensions: *In a strategic perspective*, transaction costs can be reduced by spatial proximity and more informal, trust-based exchanges. These advantages are especially important when confronted with complex, irregular, uncertain, unpredictable and hardly codifiable tasks (cf. especially the “Californian school” of regional economics, for example [Storper and Scott, 1995](#)). Often the public provision of regional collective competition goods and “real services” is also the outcome of bargaining and exchange processes at the regional level and between the regional, national and European levels. *From a normative point of view*, the advantages of regional networks and other, not just market-based exchange relationships – the so-called “untraded interdependencies” – are the result of regional governance structures (public institutions, business associations, communities, etc.) which stabilise patterns of regional cooperation. The creation of regional collective goods is also often the result of normatively stabilised regional networks and patterns of cooperation between regional actors – for example the access to specialised technological knowledge, information about new markets, the vocational training of qualified and motivated manpower adapted to the needs of the regional industry ([Crouch et al., 2001](#)). *In the cognitive dimension*, the major agglomeration advantages are learning and innovation by an intensified exchange of informal, uncoded, implicit knowledge ([Asheim and Isaksen, 2002](#)).

On this basis, *regional capabilities* can be defined as the capacity to create and provide collective competition goods and to stimulate and stabilise communication and cooperation between regional companies, schools, universities, technology transfer, research and development facilities and political and administrative actors. These goods and networks support the innovative capability of regional firms, this is “the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (cf. [Teece et al., 1997](#), p. 516). The creation and evolution of these regional capabilities are the result of strategic interaction, regional governance structures and regionally available possi-

bilities for the integration of heterogeneous, explicit and implicit knowledge. An essential dimension of regional capabilities is also that the ways in which regions facilitate interorganisational learning processes cannot be taken for granted, but have to be carefully monitored.

The question of how regional innovation systems can update their regional capabilities thus avoiding regional lock-in-effects has often been answered by reference to cluster policies ([Porter, 1998](#); [OECD, 1999, 2001](#); [Bröcker et al., 2003](#); [Sternberg et al., 2004](#)). We prefer the more general concept of “regional policies” due to the inherent difficulties of the cluster concept ([Markusen, 1999](#); [Martin and Sunley, 2003](#)) and because the focus of many so-called cluster policies is often much broader than the stimulation and support of interorganisational and interinstitutional networks which have been identified as the core of cluster policies ([Boekholt and Thuriaux, 1999](#), p. 381). Network policies are only one way in which the innovative capabilities of a region can be increased. Other dimensions are the creation and provision of collective competition goods (education, research and development, technology transfer facilities), and the creation of regional institutions strengthening the external visibility, the internal “concertation” ([Pichierri, 2002](#); [Negrelli, 2005](#)), the coherence of different public research, technology, education and industrial policies and the collective identity of the region ([Storper and Salais, 1997](#)).

The interest in regional policies reflects first of all the limits of previous industrial policies focused, for example, on the support of specific firms, technologies, industrial sectors and research fields deemed to be essential for the economy ([Boekholt and Thuriaux, 1999](#), p. 384). These policies assumed that the state can forecast future economic, scientific, technological or regional dynamics—an assumption which has been eroded gradually by increased competition on costs and innovativeness, by quicker development cycles and the increasing uncertainties of innovation processes and the most promising national champions and technological trajectories. These uncertainties were the major reason for the shift from linear to systemic innovation patterns characterised by the increasing role of interactive and recursive learning processes stabilised by innovation systems, this is a set of interconnected institutions which contribute to the creation, storage,

transfer and recombination of the heterogeneous knowledge, skills and artefacts which are at the origin of new technologies and other innovations (Metcalf, 1995). But often it had been neglected that regional or innovation systems also do not solve the challenges evoked by the fundamental dilemmas of innovation processes, but only shift them to another level (Heidenreich, 2004): Institutions may facilitate inter-organisational learning but in which ways do institutions learn? This question reflects the uncertainties about the best ways to support the innovativeness of regional companies.

Sabel (1994, 2004) tries to answer this question by distinguishing between classic and new governance systems for cooperative, networked forms of inter-organisational cooperation. A classical role of regional institutions was the public provision of collective competition goods or “real services” for smaller firms that could not afford their own departments (for marketing, quality assurance, consulting, etc.). This, however, requires that the regional associations know what type of public goods are required. Given the openness of networked processes of regional cooperation – which have been described as “pragmatistic collaboration” in which “each collaborator can continuously monitor the performance of the (relevant) others, while learning from them and acquiring skills” (Helper et al., 2000, p. 445) – this assumption is highly unrealistic. Sabel (2004, p. 86) therefore observes the emergence of a new, processual type of regional governance: “Learning” regional institutions which create the conditions for a creative interpretation of new situations and opportunities become crucial for the support of innovative networks of enterprises. This has been termed by Sabel (1996) “experimental regionalism”: “The aim of regional experimentalism is to create an organization capable of re-evaluating and revising its substantive purposes... experimentalist institutions will find out and adjust means and ends accordingly.” The emergence of such new forms of regional governance is the result of power and exchange relationships, in which regional actors try to balance the contradictory demands of regional learning processes.

Taking Leipzig and Nuremberg as examples, in the following we will analyse how these institutional learning processes were organised. We start with a description of the challenges these two regions are facing.

3. Leipzig and Nuremberg—on the way to regional nodes in global networks

The administrative NUTS II regions of Leipzig (Saxony) and Nuremberg (Bavaria) are in many respects typical of the challenges the East and West German regions are confronting during the current economic restructuring processes. Whilst the Nuremberg region, whose official name is Central Franconia, was a traditional industrial region shaped by the electronics and metal industries, the economic basis of the Leipzig region was nearly completely destroyed after the failure of the socialist shortage economy and reunification.

In the 1990s, both regions suffered a decline in industrial jobs (Table 1). The reasons for this were different in both regions: With reunification the companies in Leipzig were integrated practically from one day to the next into a high-wage economy. This led to the almost total break-down of the regional economy. Nearly all the larger companies had to be closed down; an almost completely new population of firms had to be created. The economic difficulties of the Nuremberg region, however, were the result of the economic liberalisation in Europe after the creation of the Common Market and the economic integration of eastern and western Europe. Many of the traditional electro-technical and mechanical engineering companies of the region either closed down or outsourced a considerable part of their production tasks abroad.

3.1. *Between Boomtown and Mezzogiorno: the reconstruction of a destroyed economic region*

The NUTS II region of Leipzig has 1.1 million inhabitants, 495,000 of whom live in the city of Leipzig. Due to the decline in the birth-rate and the migration of the younger, most-qualified manpower, the population in the district of Leipzig has declined by 6.5% since 1990. Leipzig is not an integrated region with a strong socio-cultural and economic identity, since the city is closely connected with the neighbouring Saxony-Anhalt city of Halle (common airport, central German traffic company, environmental research institute Halle-Leipzig, central German radio) and other regions in Saxony, Saxony-Anhalt and Thuringia. A crucial problem for a regional policy is therefore the question of which territory it should refer to.

Table 1
Employees by economic activity in Leipzig and Nuremberg (NUTS level II; 1996–2002)

	1996	1997	1998	1999	2000	2001	2002
<i>Leipzig</i>							
Agriculture (A, B) (%)	2.6	2.7	2.2	2.3	2.4	2.4	2.3
Industry; construction (C–F) (%)	32.3	31.4	29.5	28.2	26.3	24.6	23.7
Manufacturing industry (D) (%)	13.0	12.5	12.2	11.9	12.0	12.2	12.6
Services (G–P) (%)	65.1	65.9	68.3	69.5	71.3	73.0	73.9
Trade, hotels and restaurants; transport, communication (G–I) (%)	21.1	21.8	22.9	22.6	23.1	23.7	24.0
Financial intermediation; business activities (J, K) (%)	13.8	14.4	14.9	15.5	16.5	17.1	17.3
Community, social and personal services (L–P) (%)	30.2	29.8	30.5	31.4	31.7	32.2	32.6
Employees (in 1000)	470.8	463.8	455.8	454.9	450.5	445.2	437.5
<i>Central Franconia</i>							
Agriculture (A, B) (%)	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Industry; construction (C–F) (%)	35.6	35.0	34.1	33.4	33.2	33.0	32.3
Manufacturing industry (D) (%)	29.2	28.6	28.1	27.4	27.4	27.6	27.2
Services (G–P) (%)	63.6	64.2	65.1	65.8	66.1	66.2	66.9
Trade, hotels and restaurants; transport, communication (G–I) (%)	25.3	25.0	24.8	24.9	24.4	24.3	24.2
Financial intermediation; business activities (J, K) (%)	13.9	14.5	15.1	15.7	16.3	16.5	16.7
Community, social and personal services (L–P) (%)	24.4	24.7	25.2	25.2	25.3	25.4	26.0
Employees (in 1000)	742.4	736.4	756.4	761.5	776.6	779.9	778

Source: <http://www.regionalstatistik.de/genesis/online/Online> (accessed on 3/9/2005).

After reunification in 1990 an incremental transformation of the Leipzig economy was not possible. Combines based in Leipzig such as Gisag, Robotron, Takraf or IFA had closed down their businesses by 1991/1992. The reconstruction of a new economic structure has still not been completed: The unemployment rate of 21.5% (February 2005) is more than twice the West German average (10.4%). The gross domestic product per inhabitant is approximately 70% (2002) of the European (EU15) and German level. The employment rate in Leipzig (2003: 60%) is largely below the German level (65%).

The share of the manufacturing industry is much lower than the national average (2002: 12.6% in comparison to 22.1%), even if this share has been increasing slightly since the end of the 1990s (Table 1). The employment share of the crisis-ridden construction industry, of public education, social and health services, public administration and energy and water supply are considerably higher than in West Germany. All these industries are largely dependent on public funds. The biggest companies in Leipzig confirm the impression of an economy, which, to a large extent, is dependent on public expenditures and services. With

the exception of the Verbundgas AG and the PC-Ware IT AG, they are all public companies: The central German Television and Broadcasting Service (MDR), the city works, the regional house-building association and the waterworks.

Three different phases of the economic reconstruction of Leipzig can be distinguished: In the first half of the 1990s, the renewal of the infrastructure was the centre of attention. Since then public companies and publicly financed building investments have played a crucial role. The city then tried to establish itself as a Central German media and financial centre. This attempt was not successful. Only in the third phase were the industry and production related services rediscovered. With considerable public support a productive industrial sector is now developing in Leipzig. New plants and settlements of Quelle, Siemens, Porsche, BMW and in future DHL are examples for the so-called Saxonian “lighthouse investments”. The crucial question for Leipzig is whether these new industrial kernels can be used as crystallization points for smaller and medium-sized regional firms and for advanced, production-related services.

Table 2
Indicators of regional dynamics in Leipzig and Nuremberg (NUTS II regions)

Indicator	Region	1995	1996	1997	1998	1999	2000	2001	2002	2003
Employment rate (in % of 15–64-year-old population)	Leipzig						61.5	61.7	60.1	59.9
	Nuremberg		67.9	67.4	67.9	68.4	69.3	69.3	68.6	68.3
Unemployment rates (in %)	Leipzig					15.4	16.6	17.4	18.8	19.4
	Nuremberg	5.7	6.1	7.1	6.8	6.3	5.4	4.9	6.0	7.4
GDP (PPP; in % EU-25)	Leipzig	88.2	89.6	86.9	82.2	81.7	78.7	76.9	76.0	
	Nuremberg	136.9	135.7	132.5	132.1	132.4	131.9	125.1	122.9	
High and medium high technology	Leipzig	5.97					5.67	5.76	5.78	5.74
	Nuremberg	15.08	15.10	14.92	15.49	14.39	15.20	14.64	14.11	13.92
Knowledge-intensive services	Leipzig	25.75					31.39	32.41	34.63	35.99
	Nuremberg	26.19	27.98	28.84	29.31	30.44	27.49	29.48	31.06	30.07
HRSTO (in % of active population)	Leipzig	27.50					27.92	27.21	28.41	28.92
	Nuremberg	31.89	33.23	32.03	33.90	32.19	31.14	34.41	33.49	30.74
HRSTC (in % of active population)	Leipzig	18.78					18.63	17.98	18.12	20.16
	Nuremberg	16.57	15.65	15.09		15.37	15.62	16.96	15.82	14.13
EPO Patent applications	Leipzig						97.69	107.75	100.28	
	Nuremberg	587.27	592.73	695.53	816.79	863.62	1033.80	1066.45	1002.62	
Low educational attainment	Leipzig						4.2	3.3	3.0	2.4
	Nuremberg					20.0	18.2	16.3	16.6	15.5
Medium education	Leipzig						57.0	60.9	61.7	59.2
	Nuremberg					51.0	51.6	53.8	56.1	56.1
High educational attainment	Leipzig						36.4	35.0	34.9	37.2
	Nuremberg					23.9	24.7	26.4	24.5	24.4

Source: Eurostat online database (<http://europa.eu.int/comm/eurostat>; accessed on 9/3/2005).

- “Nuremberg” and “Leipzig” refer to the NUTS level II regions (“Regierungsbezirke”) Central Franconia and Leipzig.
- High tech and medium-high tech manufacturing (in % of employment): office machinery; communications equipment; medical precision and optical instruments; chemicals; machinery and equipment; motor vehicles, other transport equipment.
- Knowledge-intensive services (in % of employment): Water and air transport; post and telecommunications; financial intermediation, insurance and pension funding, real estate activities; computer and related activities; research and development; other business activities; education; health and social work; recreational, cultural and sporting activities.
- HRSTO: Human Resources in Science and Technology—Occupation Individuals who are employed in a S&T occupation (ISCO '88 COM codes 2 or 3). HRSTC: Human Resources in Science and Technology—Core Individuals who have successfully completed education at the third level in a S&T field of study (ISCED '97 version levels 5a, 5b or 6) and are employed in a S&T occupation (ISCO '88 COM codes 2 or 3).
- EPO Patent applications: Patent applications to the European Patent Office by year of filing; per million labour force
- Lower education: Pre-primary, primary and lower secondary education (in % of total employment between 25 and 64 years).
- Medium education: Upper secondary and post-secondary non-tertiary education—levels 3–4 (ISCED 1997) (in % of total employment between 25 and 64 years).
- High education: Tertiary education—levels 5–6 (ISCED 1997) (in % of total employment between 25 and 64 years).

The absence of larger private companies with their own research and development departments explains why Leipzig cannot yet be designated as a knowledge and technology-based region even if the share of

knowledge-intensive services and human resources in science and technology is partially even higher than in Germany or Nuremberg (cf. Table 2). Altogether, only 158 patents were applied for with the German

Patents and Trademarks Office (Greif, 2000) in West Saxony in the year 1998. In addition there are no application-orientated Fraunhofer Institutes in Leipzig, although there are three Max Planck Institutes. Almost 37,000 students were registered at the seven Leipzig colleges and universities. The academic infrastructure of the region therefore is very good, but there is no technical university in the Leipzig district. Some of our interviewees² from regional business associations mentioned this as a serious obstacle, even if there are technical colleges in neighbouring towns (Dresden, Chemnitz and Freiberg). The education level of the population of Leipzig is very high (Table 2)—and clearly above the national level. The high level of unemployment therefore cannot be explained by inadequate qualifications.

In conclusion, the institutional conditions in Leipzig are quite favourable: The educational level of the employees and inhabitants is comparatively high; the city has numerous research institutes and universities (above all in non-technical fields); numerous branches of multinational companies are now located in the region. The crucial question for the region and the regional cluster policies is if these potentials can be used as the cornerstones of a knowledge-based economy.

3.2. *Nuremberg: from an industrial region to a technology-based service region*

Central Franconia has 1.7 million inhabitants and is dominated by the four closely grouped cities of Nuremberg (492,000 inhabitants), Fürth, Erlangen and Schwabach. In contrast to Leipzig, Central Franconia has developed a relatively clear and uncontested regional identity defined by a central city, a long commercial and industrial tradition and different common regional institutions—especially a large university, a

regional administration, chambers of crafts, industry and trade, a natural gas and power supply company, a regional traffic system and a regional marketing association. Already in the 19th century the region had been dominated by the mechanical and electrical engineering industry. The proportion of those in industrial employment in Central Franconia is still considerably higher than in Germany. Advanced and high technologies are strongly represented in the region (Table 2).

A peculiarity of the Central-Franconian industry is the strong role played by large enterprises. 37% of the 186,000 industrial employees work in firms with more than 1000 employees. Siemens has a prominent position as the largest regional employer with almost 33,000 employees. It is estimated that approximately 100,000 jobs in the region are directly or indirectly dependent on this group. Five of the current 12 divisions of this company are coordinated from Erlangen (Industrial Solution and Services, Medical Solutions, Power Generation, Power Transmission and Distribution and Transportation Systems) and two from Nuremberg (Automation and Drives, Logistics and Assembly Systems). Alongside Siemens and other large industrial companies (INA, Bosch, AEG, Diehl, Adidas, Lucent), financial services, mail-order and logistics businesses are strongly represented in the region. Eleven of the 38 largest companies in Central Franconia (with more than 1000 regional employees) employ more persons abroad than in the region itself. The regional economy therefore is strongly integrated in national and international networks.

Since the 1970s the region of Central Franconia has gone through a rapid deindustrialisation and tertiarisation process. Since 1974, over 170,000 service jobs have been created in while over 100,000 industrial jobs were lost, for example in prestigious firms such as Grundig, Triumph Adler, AEG, ADtranz Ceba and ABB/ALSTOM. The proportion of industrial employees fell from 61% to 39%, whilst the proportion of service employees rose from 38% to 61%. From 1992 to 1997, after the reunification boom, more jobs were lost than were created. At that time, Nuremberg was sometimes even considered to be a crisis region (Dörre, 1999). Since then, the number of employees has increased again. This successful shift from an industrial to a technology and service region was made possible on the one hand by the development of production-related services (consulting, advertising,

² We interviewed 34 representatives of regional firms, development agencies, unions and employers and business associations in Central Franconia and Leipzig during the first half-year in 2004. These interviews, which were mostly conducted by Vedrana Miljak, have been recorded and transcribed. An exhaustive analysis of Leipzig and Nuremberg based on these interviews can be obtained at the website of the project (<http://www.uni-bamberg.de/sowi/europastudien/eurocap>). We thank our interviewees very much for their openness and support. As we have assured our interviewees of confidentiality, neither their names nor in many cases their positions are revealed in the extracts cited in this paper.

market research, financial services, IT and telecommunications, engineering offices and call centres), and on the other hand by the strengthening of the innovativeness of the remaining industrial companies which are still the backbone of the regional economy.

Nuremberg is – together with Stuttgart and Oberbayern – one of the three most patent-intensive German regions. The patent intensity is nearly double that of Germany – primarily on the basis of patent applications by Siemens. In other European countries, the share of patent applications to the EPO is only higher in Uusimaa, Noord-Brabant and Stockholm. However, none of the 12 Bavarian Max-Planck-Institutes (basic research) is located in Northern Bavaria, even if a Max-Planck working group was set up recently in Erlangen. The regional institutes concentrate on application-orientated research. The most important ones are the two regional Fraunhofer Institutes located in the region, which have specialised in the field of micro-electronics. Furthermore, there are seven universities in Central Franconia with a total of 29,000 students, for example, in life sciences, modelling and simulation, new materials, mechatronics and optics. As a consequence of its long industrial history, the proportion of semi-skilled or unskilled employees in Central Franconia is higher than in Bavaria or Germany (Table 2).

In conclusion, Central Franconia is an export-orientated industrial region specialising in mechanical and electrical engineering, medical technology and automotive supply and production-related services. Both the patent applications as well as the proportion of those employed in advanced and high-technology industries demonstrate its outstanding technological competences. The concentration of these capabilities within the biggest industrial employer of the region indicates a certain vulnerability, as this company already employs 62% of its staff outside Germany. The successful merger, restructuring and internationalisation activities of this company were the single most important aspect for the transformation of the former “crisis region” into a region, which plays a crucial role in the field of knowledge-intensive products and services. But it becomes increasingly clear that the region can no longer simply rely on the performance of this company.

Leipzig was a commercial city, which had to rebuild its economic structure almost completely following reunification. After the first wave of publicly financed

expenditures and public companies, the city tried to become an East German centre for services, fairs and banking. Latterly, the city successfully attracted branch plants of large West German service and industrial companies (Quelle, Siemens, Porsche, BMW, DHL) which now have to be used as regional growth units and kernels of regional competence networks.

4. Regional policies as procedural learning

Economic policies in Leipzig and Nuremberg were confronted with partially different challenges: In Nuremberg the shift to a knowledge- and technology-based region required a stronger regional research, education and innovation infrastructure, the development of production-related services, a closer integration of service and industrial companies and the support of technology-based start-up companies. Leipzig was faced with the challenge of rebuilding the economic structure almost from scratch and to create inter-organisational networks. Both challenges required the development of a new type of regional policy: Neither the dominant MNC nor the newly created industrial plants could be the only focal point of regional policy. Both regions were faced with the challenge of creating distributed economic capabilities beyond the focal companies and paths. These challenges required a new, procedural or discursive type of regional policy, which did not limit itself to the production of credible rules (normative dimension) or the provision of collective competition goods (strategic dimension). A style of policy and institution making was required which, according to Sabel (1994), combines economic learning (“acquiring the knowledge to make and do the things valued in markets”) with monitoring (“the capacity of each party to assess whether it is getting enough of a fair deal”). This “learning by monitoring” is a discursive and recursive process which creates not only new, procedural rules but also redefines the interests and identities of the actors involved and their understanding of the world. Public policy thus becomes an open-ended, experimental process in which public agencies also learn how to set goals in collaboration with regional firms.

Regional networks are important arenas for such a “re-invention” of a region and its capabilities and governance structures. In these networks and the cor-

responding power and exchange relationships different actors in politics, science, education, technology and economy can discover and redefine their own strengths and the strengths of other regional partners. In the following, we will describe how the collective learning processes in Leipzig and Nuremberg succeeded in such a re-creation of the region and its identities and economic governance structures. These regional policies can be considered as quite a new development in Germany because until now economic and so-called cluster policies in Germany were in general conceptualised at the national level (European Commission, 2003; OECD, 1999, 2001).

4.1. *Between lighthouses and networking: regional policies in Leipzig*

Leipzig successfully attracted branch plants of large German companies. Only gradually is the task of integrating the new industrial competences into regional networks being discovered. Four different regional initiatives can be distinguished, which place a different emphasis on the challenge of attracting new companies, creating new technologies and updating existing competences. The city of Leipzig and the federal state of Saxony favour above all the settlement of new businesses, whilst the Foundation “Innovation and Work Saxony” (IAS) and the Central German cluster initiative concentrate on the networking of existing businesses and institutions. These four initiatives are only loosely connected, since they are organised at four different territorial and political levels. This heterogeneity reflects the uncertainties with regard to the question of what is the best territorial level for a regional policy: The city of Leipzig, the administrative district of Leipzig, the federal state of Saxony, or the fictitious region “Central Germany”, which covers especially the federal states of Saxony, Thuringia and Saxony-Anhalt. In the following, the different and partially contradictory concepts of these initiatives will be analysed taking the regional policies at the municipal and district level as examples.

The city of Leipzig concentrates its activities on five industrial fields which are designated as clusters: automobile and supply industry; media/communications technology/IT; health/biotechnology/medical technology/life sciences; energy and environmental technology; cross-sectional technology and services (crafts,

other processing trades, logistics, services and trade, fairs, congresses, tourism and culture in conjunction with the hotel and restaurant trade). According to one interviewee these fields reflect mainly “future perspectives”, i.e. they still have to develop into real clusters. At present, they are to be understood above all as fields of local activities.

The first sector, the *automotive and automotive supply industry*, employs approximately 100,000 persons in eastern Germany. In Leipzig, however, there were only 869 employees in this sector in 2002—despite the Porsche assembly plant. This number has significantly increased since the start of the new BMW plant in 2004 (currently 2000; in 2007, 5000 employees).

In the traditional fair and book city of Leipzig *media, IT and communications economy* is an important sector. Particularly important are the headquarters of the Central German Television and Broadcasting service (MDR), the Leipziger Volkszeitung, the Telekom, approximately 40 call centres with 1300 employees and the distribution centre for books. Since Summer 2000 approximately 80 firms in the field of film and television production have used the studios and offices in the “media city Leipzig” near the MDR. In comparison with the traditional media locations in Germany, Leipzig will, however, find it difficult to establish itself as a media centre on a national or international level; it “does not yet have the potential to grow into major agglomeration of the German media industry” (Bathelt, 2002, p. 606).

All the health activities of the city are grouped as a cluster—*health/biotechnology/medical technology/life science*. Biotechnology, which is promoted massively within the framework of the Saxonian biotechnology initiative, may already be considered to be a cluster, since the regional firms are gaining a certain reputation in the area of the regenerative medicine. Here, a small niche could be emerging.

Energy and environmental technology is strongly promoted by the state. Most of the jobs are to be found, however, in lignite mining and in the power-station associated with it. The field of environmental research and regenerative energy may be promising. However, it is still open to question as to whether Leipzig can achieve an autonomous position in this sector.

The fifth “cluster”, “*Cross-sectional Technologies and Services*”, embraces industries, which belong to

no other branch, for example the despatch centre of Quelle AG, the Leipzig airport and the Leipzig Fair. This is clearly not a cluster.

Over the next 10 years the city is planning to create 30,000 jobs by this “cluster policy”. In order to achieve it, the following methods will be implemented: A foundation for innovation, a start-up programme and personnel development services. Furthermore, the city is establishing cluster management (for example for the automobile industry and the health cluster). According to the statement of the director of the regional policy development, the local cluster policy is however still in its early stages; the transformation from bureaucratic to business-oriented structures has not yet been achieved. An important indicator for this is the central role of the city in cluster management. Contrary to Nuremberg, the city, not the chamber of industry and commerce, coordinates the communal cluster initiative. The philosophy associated with this is demonstrated by numerous municipal technology-transfer and marketing companies (for example the innovation centres Biocity and Mediacity, a personnel development company and a business innovation centre):

“If you look at all the publicly-owned businesses such as the city works, local waterworks, the public transport company LVB, the Leipzig house-building association and all of their branches and sub-branches, then Leipzig is the front-runner with 150 municipal firms (. . .). This is a philosophy, that prevails in this city, according to the motto: ‘If the entrepreneurs are not in a position to create jobs, then we will do it by ourselves.’ (Interview on 2/11/2004)

Accordingly, the city has developed its cluster policy largely without the participation of other regional actors. In addition, the cluster policy does not seem to be a focusing device aiming at the concentration of political initiatives on specific regional strengths. This may be useful because Leipzig may currently not in a position to develop such a selective industrial policy. Given the high unemployment rates, every potential investor must be supported. The attempts to embed existing companies into regional innovation networks and to support their capabilities by network policies are, therefore, still in their infancy. A top manager of a large regional firm describes this learning process as follows:

“Currently the city is learning how to define its fundamental objectives rather than doing a bit here and a bit there. The strategy of the city is still very erratic concerning the future lines of development and its potentials and priorities. A city grows with its companies and the departure of people or the arrival of new decision-makers (. . .) The coordination of economic demands with other local institutions is not yet running smoothly. Business interests and those of the community must be made more compatible, for example through a competence centre for sustainable business. Actions, projects etc. should be tried in order to promote cooperation. As the BMW plant was built, for example, I felt that a traffic concept for the city was missing, since the traffic flows will change with an extra 5,000 employees. The coordination within a city frequently does not work (. . .). I would prefer a working coordination, a better interaction between business and business, business and politics, business and local politics.” (Interview on 23/6/2004)

At present, the integration of local companies into regional networks has no priority. The city of Leipzig hardly incorporates other regional actors into its economic policy. Some interviewees also suspected that the city is not interested in a common regional economic development agency exploiting its strengths in comparison with neighbouring cities and districts.

The cluster policy of the Foundation “Innovation and Work Saxony” (IAS) at the district (NUTS II) level is based on an alternative concept. This regional cluster policy has been developed under the auspices of the regional district president. It tries to use the regional companies, mostly newly founded or taken over by western owners, as kernels for the development of regional networks. An impressive example of this is the regional network of 10 foundries (and additionally some suppliers), which have cooperated since 1997 mostly in the fields of training and process development. In total these firms employ approximately 1700 persons and have created approximately 300 jobs in the last few years:

“In 1996/97, we met for the first time within the context of the regional forum West Saxony. The first time was very difficult. What could we do together? Could we develop common projects? There were also some concerns since everyone believed that he had to protect

his own share of the market. If the projects had not been coordinated by the district president and in particular by the IAS Foundation, we would not have continued (...) Then in 1999 we started our first common project – cooperative training for administrative employees. The next step was to retrain those unemployed, who had already acquired metal-working skills, and to transform them into motivated and skilled foundry workers. Furthermore, we have retrained employees into foundry workers in six-month programmes. In September last year, we succeeded in starting training for foundry technicians to prepare them for the tasks of middle and lower management (...) In 2002, we created the Leipzig Association of Foundries which took over the organizational, training and coordinating tasks for our activities (...) In addition, we now concentrate on common R&D problems, which our members are unable to solve for themselves.” (Spokesman of the foundry network Leipzig–West Saxony; 4/3/2004)

This network is 1 of the 18 different network projects with, in total, 200–300 small and medium-sized companies. The regional IAS organization (the regional forum West Saxony) is coordinated by representatives of the state, of the unions and of the employers associations. It has the task to initiate and coordinate “the regional dialogue between the economic and social partners and actors from the political, economic and administration scenes”. One focus is the further education and training of employees, another the creation of networks between local companies and between them and research, technology transfer and education. These networks have been very successful in broadening the technological knowledge of regional firms:

“The most promising fields for our activities are the areas, which are to a large extent dependent on regional technological know-how and innovations. The sectors, where the corresponding networks can be created at an early stage, can be competitive here in Leipzig. In many sectors, we have highly qualified, highly-motivated employees – as well as the R&D potential we need in order to follow international development. This is certainly true for mechanical engineering (with exception of the more simple parts). Also small series, where a high degree of flexibility and innovation is necessary, can survive here. This is also true for foundries and automotive suppliers, as well as for medical technol-

ogy. There are highly-innovative, small businesses here in the region”. (Interview with the regional director of the IAS foundation; 3/3/2004)

The cluster policy pursued by the IAS clearly differs from the municipal cluster policy: The regional employer and employee associations and other regional actors are closely integrated in the definition of projects; the foundation is more orientated towards the strengthening of the capabilities of regional mid-cap companies rather than attracting production plants and founding new, technology-orientated businesses; the foundation emphasises Leipzig’s industrial basis rather than its role as a service and trading centre; it is less concerned with high-tech businesses than with smaller businesses with established technological competences. The foundation thus pursues a strategy that makes an important and complementary contribution to the economic renewal and consolidation of the Leipzig region.

The newly created production plants of external companies are also ready to cooperate with other regional companies and to participate in regional networks. But the city, the district or even the federal state is too small for them. The adequate political level would be the five East German states or at least Saxony, Saxony-Anhalt and Thuringia because these states are closely integrated. The largest regional companies, especially in the automobile and chemical industries, created the Central German Regional Marketing Initiative in April 2000, because this political level does not exist³:

³ This initiative has also adopted a cluster policy and concentrates on the following seven clusters: the automotive industry, chemical and plastics industries, biotechnology and life sciences, the energy and environmental sector, the food industry and the media and IT sectors. In part, these are still prospective clusters, whose formation may be significantly hindered by regional selfishness. As the director of the Leipzig BMW plant, in his role as speaker for the automotive cluster, writes: ‘The participation in a cluster belongs to the laws of a regional industry. But the automotive industry is globally orientated’. Therefore, ‘for us East Germany is the smallest possible unit’, says Claussen. For the big players in the industry it is important to integrate the different regional supplier initiatives and the different research facilities. Whilst Saxony-Anhalt and Thuringia have shown themselves to be ready to cooperate, the Saxon economic policy has some reservations about a trans-regional concept, criticised Claussen (<http://www.mitteldeutschland.com/deutsch/Wirtschaft/Cluster>; accessed on 7/9/2004).

“We adhere to the cluster concept. There are 3 to 5 manufacturers in this region engaged in production, but without research and development facilities. Further suppliers will move here, because if they have to decide on their next investments, they will say: ‘If I go there, I can also supply Opel or other manufacturers in the region.’ We want to enhance the regional strengths by working together with the plants of our competitors in trying to develop networks in the sense of a cluster initiative (. . .) the plant managers of our competitors have decided to participate in this initiative (. . .). However, we do not want to participate in a cluster just limited to Saxony but rather in one that includes at least three federal states in eastern Germany.” (Interview with a representative of a large Leipzig automotive plant; 13/2/2004)

A common aspect of the two types of regional strategies for renewal is the minimal inclusion of regional research and development capacities. Our interviewees explain this by the absence of a Technical University. Even if there are several universities in the region, they do not have, according to our interviewees, very much to offer to regional industry. Industrial firms therefore prefer to cooperate with neighbouring technical colleges. But in some sectors, some forms of cooperation are emerging: In environmental technology, there is intensive cooperation with a huge environmental research centre, in the area of life sciences, academic research groups cooperate with regional businesses within the framework of Biocity; at the Leipzig University of Applied Sciences (HTWK), a new Centre for Media Sciences was established in 2002 in cooperation with the MediaCity and the MDR; 9 of the 28 Leipzig medical technology businesses cooperate with the university.

In conclusion, the cooperation between the four territorial levels (city, district, federal state and Central Germany) and their respective cluster and economic development policies is not easy. Some of our interviewees point to specific political interests and vanities. This is associated with different politico-economic conceptions which have been demonstrated taking the examples of the communal and the regional policies. While the city successfully concentrates on the attraction of large “Lighthouse businesses”, the Foundation Innovation and Work Saxony concentrates rather on the creation of networks between small and medium-sized

businesses. It initiates and coordinates regional innovation networks in order to develop the staff’s qualifications and the innovative capabilities of the companies by improving the relationships between businesses, public institutions and regional associations. The difficulties in cooperation between the various initiatives also points to the different range of economic and political actions: The networks in the automotive industry, biotechnology (Leipzig, Halle, Jena), the media industry (Halle, Leipzig), the chemical and plastic industry and in the energy sector transcend the boundaries of a single state. Despite the impressive renewal of the Leipzig economy, there are still possibilities to improve the coordination of the regional policies, the creation of regional networks and the participation of regional actors.

In a more general perspective, this points to the challenges a region is facing when it tries to reinvent its capabilities: At first, the region has to define its boundaries and thereby its identity: What is the social and organisational field which fits best the strategies of firms, associations, communities, politicians and institutions? The city of Leipzig could assert itself as a relevant space for economic policies only in some fields (settlement of new plants, networks in the media and biotechnology sector), for other branches and policies larger socio-political and economic spaces were required. Until now the economic and political actors were unable to define a common regional field and identity. For example, it was not possible to create an integrated, collective “steering committee” for the renewal of the region. Secondly, heterogeneous cooperation requires the involvement of different political, economic, scientific and administrative actors within common projects. While the involvement of economic actors was not an essential goal at the municipal level, a political actor for Central Germany does not exist. Only at the district level could both political and economic actors be involved. This was the prerequisite for the procedural development of a regional policy which supported the development of collaborative enterprise strategies and mutual learning processes. But the potential of this *discursive renewal of regional capabilities* could not be fully exploited because the described network policies were not integrated with other policies (R&D, creation of new plants, and support of start-up companies) and with other political and economic actors engaged at the other territorial levels.

4.2. Regional policies in Nuremberg

The economic renewal of the Nuremberg region was supported by a bottom-up initiative, through which, on the one hand, the cooperation between economy, science and politics was intensified and on the other the Bavarian innovation policy was focused on the regional strengths. In 1998, this initiative was able to produce consensually a “development vision of the Nuremberg economic region”.

In this vision, five core competences were identified: (1) Medical Technology and Pharma, (2) Communication and Multimedia, (3) Energy and Environment, (4) Transport and Logistics, and (5) New Materials and Process Technology. The competences in the *medical technology cluster* are concentrated in Erlangen. The central actors are the medical faculty, the 21 university clinics, the medical solutions division of Siemens (approximately 4500 employees at Erlangen), and approximately 750 small and medium-sized businesses in the medical and pharmaceuticals area. The *communications and multimedia cluster* includes the IT sector (hardware, terminals and distribution) as well as the printing sector (printing works and publishing houses) each with approximately 20,000 employees, advertising/journalism/market research (16,000), IT-services (15,000), multimedia (11,000) as well as software (5000). In the *energy cluster* (power generation and distribution technologies) there are 500 businesses with 50,000 staff. Environmental technology encompasses some 700 middle-sized businesses with approximately 18,000 staff. Approximately 74,000 people work in the *transportation and logistics* field. These competences are concentrated in the “CNA—Center for Transportation and Logistics Neuer Adler”. In 2001 a “*new materials*” competence centre was opened in Fürth, but it is too soon to call this a cluster.

The regional initiative has a long history: When the structural difficulties of the Nuremberg economy became apparent in the 1980s, the metal workers union first of all called for a regional and structural policy and asked for the requalification of the staff and the development of new products. In the 1990s there was a further decline in traditional manufacturing industries (Dörre, 1999, p. 99). From 1995 to 1997 Siemens medical technology also suffered a dramatic crisis; the employment in Nuremberg and Fürth (formerly

10,000) was halved as a result. In 1995, on the initiative of the former chairman of Siemens, the IHK coordinated the elaboration of a regional development vision. This vision was signed in March 1998 by the regional business associations, unions, the IHK, the Chamber of Crafts and the district president and other regional political bodies. Even if companies were not directly involved in the decision-making process, they supported the concept. Siemens in particular actively and effectively supported all phases in the development of the model and the foundation of five competence initiatives in five competence fields. Examples of this support are the Innovation and Foundation Centre for Medicine and Pharmaceuticals or the Research and Technology Campus, which was housed in an area provided by Siemens.

Another crucial actor for the renewal of the Nuremberg region was the federal state of Bavaria. Within the context of a high-tech-offensive launched in 2000, 70 projects with a volume of DM 750 million were promoted. The money was invested in the five competence fields formerly described (especially in regional research, technology and education institutions). This financial support was also important in overcoming the reservations of the cities and the districts in the region Central Franconia towards the dominant role played by Nuremberg.

The selection of the five competence fields was a compromise between actors interested in the path-dependent development of existing industries (especially the unions) and public actors interested in investments in new technologies. The interest of the unions was crucial for the selection of the clusters Energy and Environment and Transportation and Logistics because they wanted to stabilise these sectors and their huge share of production employment. The two technologically most advanced clusters in the region are Medical Technology and Communications and Multimedia. Numerous regional businesses are active within these fields; also, regional businesses and colleges have considerable research and development competences at their disposal in these areas. Even without political support, these fields can be regarded as clusters. However, medical technology depends strongly on one single company, whose sales abroad account for 90% of its turnover while three quarters of its staff work abroad. The success of the regional development vision can also be explained by the fact that it did not avoid the conflicts

between actors committed to the further development of previous strengths and other actors who wanted to promote new technologies. As a consequence of the regional negotiation processes, “high-tech myopia” and regional lock-in effects could be avoided.

As a result of these negotiation processes, five competence initiatives were created, each supported by a group of regional companies and political actors. Altogether, approximately 1000 businesses were engaged in these initiatives which were financed by the contributions of their members:

“On the basis of the regional development vision, we were able to set up a competence initiative in each of these five core competence areas. These initiatives had a full-time manager, a secretary, an office with the task of creating regional networks, generating pilot projects and advancing the competence field in the region. Meanwhile we also have established innovation and technology centres (for example the IZMP in Erlangen) for virtually all competence fields. This contributes to the steady development and support of the respective competence fields.” (Interview with the manager of a competence initiative; 2/19/2004)

The manager of one of these initiatives describes his work as “technology marketing, inter-company information, cooperation and contact management between businesses, technology projects, tough political lobbying and public relations”. At first, the competence initiative concentrated on the external representation of the region and subsequently initiated different projects, they are now developing in the direction of a regional business associations coordinating very specific interest groups of regional actors (for example grid operability, digital signatures, IT managers, E-government, mobile telephones). This is a basis for intensified cooperation with regional research facilities:

“One of our topics is power electronics. Inspired by a American initiative, we created the European Centre of Power Electronics. Many renowned German businesses participate in it. This was the basis for the creation of a working group of the Fraunhofer society: ‘In this way we know very quickly, what the requirements of the industry are and what we as a research institute can do to cover them.’ This was supported by

the federal state of Bavaria.” (Manager of a competence initiative; 28/1/2004)

A further success of the competence initiatives was the support of start-up companies. Numerous business incubators and technology transfer centres were created in the region. Some of them were assigned to the five competence fields. These centres evolved into focal points for innovation networks:

“One of our specialties is software development. We organize meetings and expositions with external experts for example on software requirements for medical technology. We are trying to build a new network between the two fields of IT and medical technology, between doctors, clinicians and information technicians. The image-processing and image-recognition systems are all software products.” (Interview with the manager of a business incubator; 20/1/2004)

The regional competence initiatives therefore could create many different, sometimes highly specialised networks between different companies and between research institutions, political actors and schools. New regional value chains have been created and common research and development projects have been initiated. Furthermore, the cooperation between the regional cities and districts has been improved. Cooperation with the regional colleges and research institutes is however still considered altogether rather unsatisfactory.⁴

Confronted with the structural crisis of the 1980s and 1990s, the Chamber of Industry and Commerce (IHK) has succeeded in including the relevant actors (representatives of the city and the administrative districts, the unions and employer associations and the

⁴ The regional networks between science and economy have been described to us as follows: “Best in this field are the Fraunhofer Institutes which are responsible for applied research. On the one hand, the Fraunhofer Institute must master the state of the research, on the other hand they have to refinance themselves through orders from companies. This forces them to engage in technology transfer. Secondly, the Universities of Applied Sciences can be ranked, because they are closely connected to the economy and develop many projects with regional companies. Unfortunately, our universities are in last position as far as technology transfer is concerned, because they adapt their structures only very slowly” (Interview with a official responsible for the local economic policy; 28/1/2004).

companies) in a common regional development concept. The public support infrastructures created by this initiative are well-coordinated because every competence initiative is (financially and organisationally) linked with the corresponding firms and institutions. The actors are well connected to each other and have developed a common understanding of the region and its perspectives.

The regional initiative described above successfully transformed the regional governance structures and its identities. This is demonstrated by the creation of a developmental vision, the five competence initiatives formerly described, the different technology and start-up centres, a common marketing association (since 1996) and the current attempt to be officially recognised as a “Metropolitan Region” within the European Spatial Development Perspective (ESDP). An important prerequisite for this regional renewal was the creation of a collective “steering committee” for the region: The regional development vision was the result of long-term cooperation and negotiation processes between the unions, the regional Chamber of Industry and Commerce, the regional cities and rural districts, and the federal state of Bavaria. The initiative was able to develop a common vision of the region which bridged the differences between the four dominant regional cities, the two planning regions in Central Franconia and between the urban and the rural districts. Also the controversial, but ultimately unanimous choice of the name “Nuremberg region” instead of the official, largely unknown name “Central Franconia” demonstrates the ability to reinvent the regional identity. This newly constructed region with its strong and visible centre was so attractive that even parts of other administrative districts (Neustadt, Forchheim, recently also Bamberg and Bayreuth. . .) are participating.

A few lessons concerning the *discursive renewal of regional capabilities* can be learned from this case study. Firstly, the regional Chamber of Commerce and Industry played a central role in setting up a regional coordination group, since the chamber was accepted more easily than the unions, the universities, political actors or large companies. Secondly, the financial support of the Bavarian, German and European level could be used effectively in the region, because the regional development vision and the competence initiatives facilitated the concentration of the funds. The discursive reconstruction of the region therefore facili-

tated a mutual learning between economic and political actors. Thirdly, the region has succeeded in concentrating on its real strengths and potentials by developing a regionally specific list of capabilities and avoiding the “high-tech list” currently in vogue (biotechnology, IT, new materials, etc.). Fourthly, the competence initiatives and the incubators were able to support regional networks and start-up companies. In this way, the regional cluster policy could contribute to the transformation of a traditional industrial region into one of the most innovative German technology regions.

5. Conclusion

Given the economic and technological uncertainties in an increasingly globalised competition on costs and innovativeness, a region cannot rely only on proved receipts—for example on the provision of a well-defined list of “local collective competition goods” or on the public support of new technologies and firms. Faced with new challenges a region often has to reinvent itself and its identity, its boundaries and its governance structure. This reconstruction of a region and its capabilities is done in an explorative, stepwise way based on the incremental exploration of alternatives by a multiplicity of regional actors. Such an approach has been analysed by Sabel (1994, 1996, 2004) and Helper et al. (2000) as experimental regionalism based on learning by monitoring. The basic idea is a decentralised coordination between organisations and institutions capable of re-evaluating and revising their goals thus enabling the recursive and mutually adjusting development of regional strategies.

The regional policies in Leipzig and Nuremberg are a good example of the shift from a regional policy based on a stable institutional framework to a more experimental, open-ended and discursive policy aimed at the renewal of regional capabilities (Table 3). However, the difficulties and limits of such a renewal are also demonstrated. At first we discussed what the relevant region was and who the relevant actors were. An important result of this was that in both cases the region and its boundaries had to be redefined. A decision had to be made on which of the numerous political levels in Germany (cities, districts, federal states, etc.) a regional policy had to be implemented. In addition, the boundaries of different economic clusters hardly coincided

Table 3
Regional policies between stabile regional orders and the discursive renewal of regional capabilities

	Support of regional firms and networks by a set of stable regional institutions	Discursive, experimental construction of regional capabilities
Strategic dimension	Provision of a stable set of local, mostly public competition goods	Procedural, experimental definition of required collective goods
Normative dimension	Stable, public, associational or trust-based norms facilitating credible interorganisational commitments	Discursive, negotiated development of rules; important role of experimental learning
Cognitive dimension	Institutional support for interorganisational, networked forms of learning based on tacit, non-codified knowledge (focus: learning organisations)	Continuous evaluation of the performance of regional arrangements supporting interorganisational learning (focus: learning organisations <i>and</i> institutions)
Regional identities	Regions defined by clear political and administrative boundaries	Regions sometimes have to redefine their boundaries also taking into account interorganisational networks and regional value chains
Crucial actors	Existing public agencies and intermediary associations (to a large extent shaped or created by national institutions and decisions)	Construction of a collective regional “steering committee” involving political, administrative, economic and (sometimes) scientific actors
Regional strategies	Often reflect national institutions and strategies	Consensual decision on the selective support of regional strengths by network policies and the provision of collective goods

with each other and with the political boundaries. This proved to be a major handicap with Leipzig; a congruent boundary for the different economical and political fields of action could not be defined. This has been illustrated by the latent conflicts between the different cluster policies at the municipal and district level and by the fact that some of the emerging clusters (automobile, chemicals, biotechnology, and media) could not rely on a coherent institutional representation at the “Central German” level. In Franconia, the creation of the “Economic Region Nuremberg” which partly transcended the boundary even of the administrative district “Central Franconia” was the result of bargaining and exchange relations between the involved political levels and actors. In this way, a crucial problem of German regionalism, the “detachment between institutional regions and socio-economically coherent territorial units” (Gualini, 2004, p. 334) could partly be overcome.

The creation of a new socio-political space reciprocally contributed to the creation of a new regional “steering group” (or coordination platform) which embraced also unions, employers and business associations. In both cases, the regional actors were able to create a new social field. This field was integrated by a common and consensually developed vision

integrating the various interests, experiences, visions, time-horizons, and success criteria of economic, scientific, and political actors into a common regional project. This vision has been developed during the course of the process of regional renewal in which the actors involved had to decide what the most important regional strengths justifying a selective use of public means would be.

The collective learning processes in which the region, a collective steering group and the requisite institutional infrastructure (competence centres, business incubators and technology transfer centres, network brokers, etc.) and the regional patterns of collaboration had been developed, proved to be an effective way of dealing with the dilemmas of regional innovation systems—dilemmas which arise from the contradictory demands of openness and closure, of path dependence and renewal (Heidenreich, 2004). In the case of Nuremberg such a procedural and discursive reinvention of regional capabilities supported the transformation of a traditional industrial region into a technology-based service region. In the case of Leipzig some of the remaining and the newly established companies could be integrated into regional networks. A new, discursive form of regional policies could thus integrate the different, formerly isolated

capabilities of political, economic, administrative and partly also scientific actors thereby facing the challenges of distributed innovation processes and contributing to the renewal of regional capabilities. But a serious limitation of the “experimental regionalism” in Germany could not be overcome at the regional level: The absence of a central authority able to monitor the institutional changes at the regional level and to assist the regions to continually revise their strategies. The absence of an authority able to ensure “that the results of diverse experiments are publicized, rewarded, and penalized in a way that ignorance, habit, respect for local decorum, and fear of local oligarchs might obstruct” (Sabel, 1996) is another example for the “blocked federalism” in Germany.

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