The Changing System of European Cities and Regions*

Martin Heidenreich

(published in *European Planning Studies*“, 1998, vol. 6, No. 3, pp. 315-332.)

Abstract: This paper analyses the current structure of the system of European cities and regions, relations within the system and how it is changing. Cluster analysis distinguished eight regional types: metropolitan, semi-peripheral and peripheral service regions; central, semi-peripheral, peripheral and collapsed industrial regions; and agricultural regions. The core of European industrial societies proves to be almost identical with the city belt that dominated economic development in pre-industrial Europe. Two possible paths of change are discussed: delocalization of simpler, labour-cost-intensive activities towards the periphery (*delocalization hypothesis*), or structural changes in industrial core regions and persisting marginal status in the periphery (*restructuring hypothesis*). Neither hypothesis could be confirmed or rejected unequivocally: There were indicators for the continuing importance of urban service centres but no peripheral industrialisation; for the continuing dominance of industrial core regions while undergoing structural changes. It is concluded that there are hardly any signs of convergence between core and peripheral regions.

1. The System of European Cities and Regions

Europe has a highly regionalized economic structure. Those regions with the highest per capita income and the lowest unemployment are concentrated within a dense, urbanised economic area extending from the South of England across the Benelux countries and western Germany into northern Italy. Dating back as far as the thirteenth (see Braudel; 1979) -- or even the ninth[1]--century, this central European region--recently labelled the "blue banana"--has had a determining influence on European development. For centuries, the other southern European as well as eastern and northern European regions have tended to be on the margins of European economic activity and have been assigned to the periphery or the semi-periphery of Europe's world economy (Wallerstein, 1974).

The urbanised European core region--whose economic centre of gravity has shifted from Italy to northern Europe since 1600 (Braudel, 1979)--has long been the area within

---

* This article will be published in “European Planning Studies”, Vol. 6 (1998). In methodological terms, this article draws strongly on the work of Friedrichs (1997). I wish to thank two anonymous referees of “European Planning Studies” for their suggestions and Jonathan Harrow for translating the original German text into English.

1 See Therborn (1995: 194): „Between ‚seeward‘ and ‚landward‘ Europe ran a territory which Rokkan sometimes called the ‚backbone‘ (épine dorsale) of Europe, but more often the ‚city belt‘. This European backbone is characterized by weak centre formation and a strong network of cities. It runs North-South along old trade routes, bridging the cultural divides between Latin and Germanic Europe, between Catholic and Protestant Europe ... By and large, the city belt corresponds to the short lived Kingdom of Lothar of the Treaty of Verdun, 843 ... In terms of the two master variables, which Charles Tilly has used for explaining state formation in Europe, the city belt was characterized by accumulation

which innovations and economic growth in Europe are concentrated. As Zündorf (1997) puts it:

> Wherever and whenever innovations occurred in Europe, imitators soon appeared who provoked a competitive struggle resulting in a rapid diffusion of these changes. Nowhere was this diffusion of changes faster and more lasting than in the blue banana that has always had the best developed lines of communication through a dense girdle of cities, and where the many neighbouring cities, regions and states found the quasi-natural arena for both their competition and their cooperation. (p. 244, translated)

Globalisation means that this competitive struggle will become even more intensive in the future, because the highly diversified governance structures of national states (which provided a degree of protection from unimpeded market forces after World War II) are losing their former effectiveness. Particularly if a joint European currency (the Euro) actually is introduced, costs and prices will become directly comparable, and this will further intensify competition within Europe.

This does not necessarily mean that economies will converge (see Hradil & Immerfall, 1997). Even though the processes leading to the establishment of national states in Europe have frequently extended over centuries, economic differences between regions in one and the same country are, in many ways, still larger than differences between countries. In Germany, for example, per capita income in Hamburg is far higher than in Lüneberg or in Mecklenburg-Western Pommerania (1993: 221% versus 97%, respectively 60% of the EU average). It is particularly economically powerful cities that stand out clearly from their national surroundings (see Overview 1). Big cities like Hamburg, Paris, Stockholm or London, but also Brussels, Frankfurt, Bremen, Munich, Vienna, Lisbon and Athens, prove to be urban growth poles in both the European core regions and the periphery.

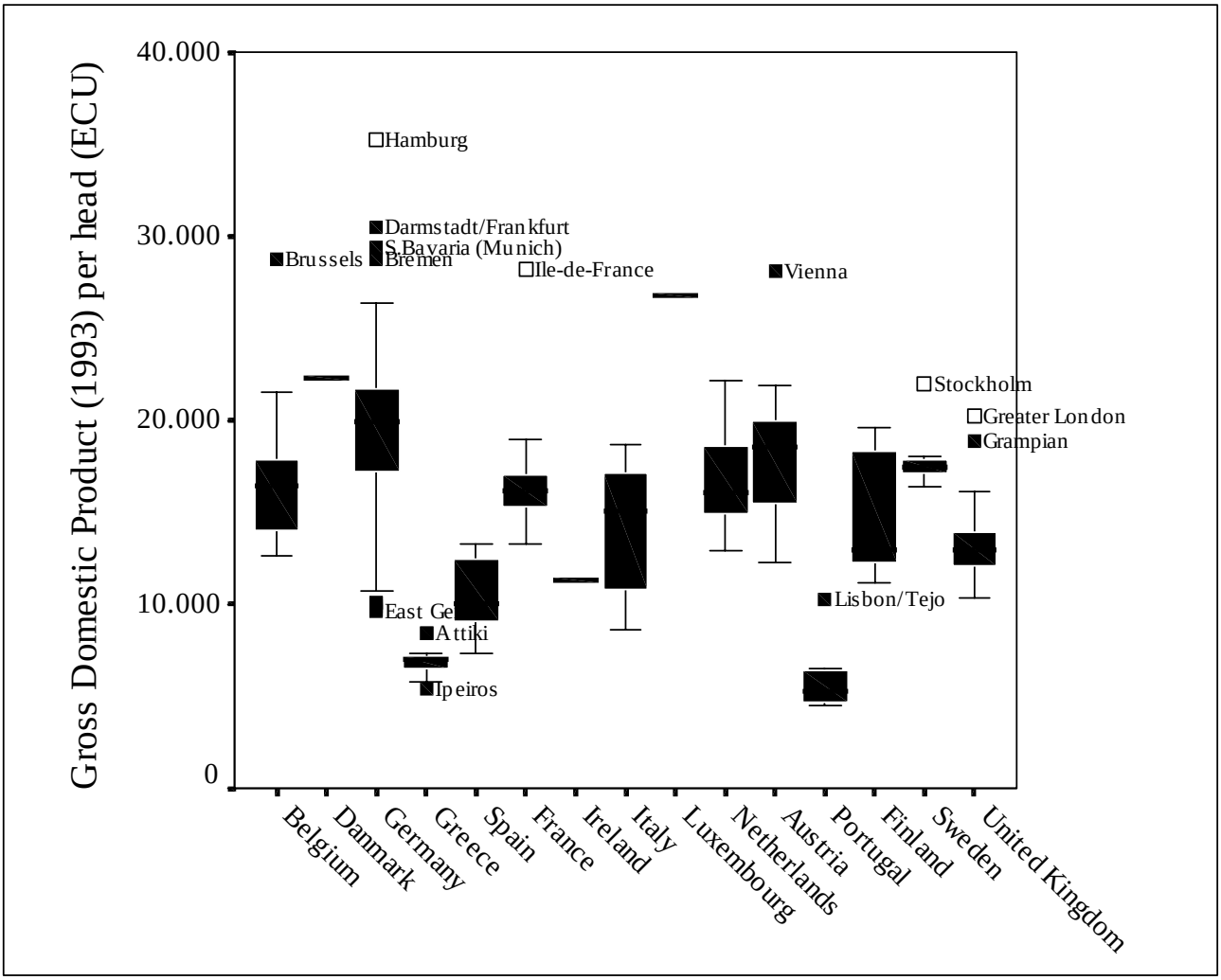
The first question that arises is how do the centre and periphery, the cities and other economic areas, relate in terms of economic exchange? What sort of "division of labour" has grown up within the framework of the European urban and regional system? The following section will discuss this issue on the basis of available regional data. The third section will then examine how this division of labour between the European cities and regions has changed in recent years: Can a shift of more simple, labour-cost-intensive activities towards the European periphery be observed (*delocalization hypothesis*), or is it more correct to

---

and concentration of capital, rather than by a concentration of coercive means.“

assume an increasing service orientation in the industrial core regions (*restructuring hypothesis*)?

Overview 1: Regional and National Income Differences in Europe (GDP per head; in ECU 1993)



Note: This box-plot reports unweighted national medians, quartiles (i.e., the net productivity exceeded or not met by 25% of the NUTS2 regions) and extreme values. Regions that deviate from their national median by more than 1.5 (■) or more than 3 box lengths ( ) are also entered. No deviations from the national mean can be reported in three countries (Denmark, Ireland, and Luxembourg), because only one region is defined. The European average in 1993 was 15,951 ECU per capita.

Source: European Commission (1997): Regions. Statistical Yearbook; own computations.

2. The "Division of Labour" Within the Framework of the European Urban and Regional System

The economic efficiency of regional agglomerations of companies has been confirmed repeatedly in recent years (see Piore & Sabel, 1984; Porter, 1990; Braczyk et al., 1998). The central Italian, Danish, Californian and southern German industrial regions have been presented as examples of the advantages that can accrue through regional specialisation on specific products and technologies: Neighbouring companies with a similar focus of production can exchange information more quickly, and this facilitates industrial innovation processes. In addition, related research and training facilities grow up that are adapted to the special needs of the regionally concentrated companies. Hence, the regional concentration of related companies enables regional networks of cooperation and innovation to form that strengthen commercial learning processes and innovations (see Cooke, 1992).

Nonetheless, the concept of regional innovation systems has a twin weakness: First, a (more or less innovative) economic region is not isolated from its national and supranational environment. There are no sharp boundaries between an economic region (which is characterised by an institutionally embedded cluster of related companies) and its environment, because a region can survive economically only as a localized node in wider communication and production networks (Amin & Trift, 1992). These networks may be based on technical, organisational, professional or industrial commonalities (large technical systems, multinational groups, professions or branches) but they can also, once again, be created on the basis of spatial proximity and a common institutional framework. Such "extended" spatial ties are important for the socioeconomic position of an economic region, because neighbouring regions often have to assert themselves with similiar resources in a globalized competition. Precisely because of the similarities in their economic and social structures, this forces them to compare themselves with each other, to learn from each other, or even to build up complementary strengths. For example, without the concentration on basic industry (coal, iron, steel, chemicals) in the German state of North-Rhine Westphalia, Baden-Württemberg would never have specialized so clearly on high-quality capital goods (motor cars, machines, electrical engineering) after World War II.

Second, the relation between urban centres and industrial economic regions is disregarded in the regional innovation system approach: Service metropoles like Rotterdam,

Düsseldorf or Milan could not exist without efficient industrial regions like Randstad, the Ruhr or Piedmont/Lombardy. The strength of the financial centres of Frankfurt and Paris is based in their respective national markets; the economic foundation of the City of London is the European market. Particularly in an internationally networked communication and knowledge society, it is increasingly less satisfactory to focus on *either* industrialized regions (Scott, 1995; Storper, 1995; Saxenian, 1994) *or* on "global cities" (Sassen, 1994). The complementarity of innovative services and high-quality industrial products also has a spatial dimension. This makes it necessary to analyse the socio-spatial division of labour, and address not only the interaction between cities and industrial economic regions but also how cities and economic regions are embedded within larger spatial contexts. In the following, I shall try to do this for the example of the European Union.

The European Union contains 15 member states consisting of 76 so-called NUTS1 regions (excluding the French overseas territories). These regions are, for example, the 16 German federal states or the 11 British standard regions. In many countries, these regions are broken down further into so-called NUTS2 regions. This results in a total of 202 regions for which a large amount of data is available in the regional yearbook published by the Statistical Office of the European Communities and the corresponding data-base (REGIO). Selecting these relatively small regions makes it possible to reduce differences within a region (e.g., between cities and their hinterlands). This NUTS2 data can be used to compile a typology of European regions and cities.[2] The present classification is based on five variables that provide a good reflection of the economic, employment and income structure of each region: the unemployment rate (unemployment as a percentage of the labour force in April 1995), the labour force participation rate (labour force as a percentage of the working-age population in 1995), the per capita income (in ECU for 1993) and the proportions of persons employed in industry and in the service sector (in 1995). Because the correlation between these five variables is relatively low (the squared correlation

---

[2] NUTS is the nomenclature of territorial units used in European Union statistics. Working with the European regional database REGIO raises the problem of missing values. This problem was dealt with as follows: For Great Britain, I went back to the NUTS1 level, because data on the labour market and employment are not broken down any further. This reduced the total of units from 202 to 178. For the Austrian regions, regional unemployment rates were taken from national statistics (thus comparatively overestimating these figures). The labour force participation rates (labour force as a percentage of the population from 15 to 64 years) for the Swedish regions were estimated on the basis of the national participation rate. Per capita incomes in Halle, Dessau and Magdeburg were estimated on the basis of the index for the state of Saxony-Anhalt.

Overview 2: Eight Types of European Economic Region. Results of Cluster Analysis

Metropolitan service regions (C1)	**Semi-peripheral service regions (C2)**	**Poor service regions (C3)**	**Industrial core regions (C4)**		**Industrial Semi-periphery (C5)**			**Industrial periphery (C6)**	**Collapsed industrial regions (C7)**
Region of Brussels	Flemish Brabant	Extremadura	Antwerp	Baden-Württemberg (4 regions)	East Flanders	Denmark	Mecklenburg Western Pommerania	Asturia	East Germany (excl. Meck.-Pom.)
Southern Bavaria (Munich etc.)	Wallonia (5 regions)	Andalusia	Limburg (B)	Bavaria (6 regions; excl. Munich)	Lüneburg	Schleswig-Holstein	Burgenland	Cantabria	Etelae-Suomi (Fi)
Bremen	South Aegean Islands	Ceuta and Mellila	West Flanders	Upper Austria	Bassin parisien (6 regions)	Aosta Valley	Lower Austria	Northeastern Spain (4 regions)	Itae-Suomi (Fi)
Hamburg	Algarve	Canary Islands (E)	Giessen	Vorarlberg	Lorraine	Trentino-Alto Adige	Steiermark	Castilla-Léon	Vaeli-Suomi (Fi)
Darmstadt (Frankfurt etc.)	Attiki (Gr)	Campania (I)	Kassel		Pays de la Loire	Friesland	Lisbon and Tejo valley	Castilla-La Mancha	Pohjois-Suomi (Fi)
Ile-de-France (Paris etc.)	Madrid	Calabria	Braunschweig		Bretagne	Drenthe	Småland met öarna	Catalonia	
Luxembourg	Balearic Islands	Sicily	Hannover		Poitou-Charentes	Overijssel	Norra Mellansverige	Valencia	
Groningen	Nord-Pas-de-Calais		North-Rhine Westfalia (5 regions)		South West France (3 regions)	Gelderland	North (UK)	Murcia	
Vienna	Languedoc-Roussillon		Rhineland-Palatinate (3 regions)		Central East France (Rhône-Alpes etc.)	Zeeland	Yorkshire + Humber	Molise (I)	**Mediterrean agricultural regions (C8)**
Berlin	Provence-Alpes-Côte d'Azur		Saarland		Ireland	North Brabant	East Midlands	Puglia (I)	Northern Greece (4 regions)
Flevoland	Corsica		Alsace		Kärnten	Limburg	West Midlands	Basilicata (I)	Central Greece (5 regions)
Utrecht	Liguria		Franche-Comté			Salzburg	North-West (UK)	Sardinia	North Aegean Islands
Holland (Amsterdam, Rotterdam etc.)	Lazio (Rome etc.)		Piedmont			Tirol	Wales		Crete
Uusimaa (Helsinki etc.)			Lombardy			Östra Mellansverige	Northern Ireland		Alentejo
Ahvenanmaa Islands			Venetia			Sydsverige			Azores (P)
Stockholm			Friauli-Venetia			Västsverige			Galicia
Mellersta Norrland			Emilia-Romagna			East Anglia			Northern Portugal
Övre Norrland			Central Italy (3 regions)			South-West (UK)			Central Portugal
South East (London ...)			Abruzzi			Scotland			Madeira

coefficient has a maximum of 23%), they could be entered into a cluster analysis without a disproportionately strong weighting of any single indicator.

Ward's hierarchical cluster analysis based on the standardized scores (see Backhaus et al., 1994, chap. 6) discriminated between the following eight types of region (see Overview 2):[3]

1. Metropolitan service regions (global cities)
2. Semi-peripheral administrative and service regions
3. Poor service regions
4. Industrial core regions
5. The industrial semi-periphery
6. Industrial periphery regions
7. Collapsed industrial regions
8. The Mediterranean agricultural regions

Four clusters--the central and semi-peripheral industry and service regions (C1, C2, C4, C5) consist of either two or three sub-clusters. This is indicated by the shading in Overview 2 (this structure results from the dendogram that is not illustrated here for reasons of space). However, this differentiated group structure only manifests with 15 clusters. At first glance, this is an unsatisfactory outcome, because such broadly differing regions as Baden-Württemberg, Saarland or Piedmont are aggregated into one cluster. However, it is scarcely possible to solve this problem with the available quantitative data; there continues to be an urgent need for qualitative comparisons of regional innovation systems (see, e.g., Braczyk et al., 1998). Nonetheless, the cluster structure chosen here also points to one very important finding, namely, the extraordinary variety in the southern European regions. This would make it statistically meaningful to drop several Greek and Portuguese regions from the analysis because the "single-linkage" procedure identified them as outliers.[4] This procedure, recommended by Backhaus et al. (1994, p. 300), would permit a more detailed breakdown of

---

[3] One statistical criterion for ascertaining an appropriate number of clusters is the so-called "elbow" criterion. When there are only a few clusters, the sum of least squares increases enormously. This bend at the transition to a smaller number of clusters is the "elbow". Inspecting the contents also supported an eight-cluster solution: Seven clusters, for example, would have combined the eastern German and Finnish problem regions with such successful industrial regions as Rhône-Alpes or Denmark. A (desirable) further breakdown of the European core regions would require at least 15 clusters.

[4] These are Thessaly, West Greece, Pelopoponnese, Thrace, Epiros, the Ionian and Aegean Islands, Crete and Macedonia in Greece; in Portugal: the Azores, Alentejo, Madeira and Central and North Portugal; as well as the Spanish North-African enclaves of Ceuta and Mellila.

the industrial and tertiary core and semi-peripheral regions while retaining a sufficiently small number of types for a clear overview. However, I do not see any reason to cut out the extraordinary heterogeneity, particularly in the south European regions, in this way, because Ward's cluster analysis is quite capable of identifying the "true" group structure despite such outliers.

Overview 3: Population, Employment and Income Structures in the Eight Types of Regional Economic System (Unweighted Means)

	Metropolitan service regions (C1)	**Semi-peripheral service regions (C2)**	**Poor service regions (C3)**	**Industrial core regions (C4)**	**Industrial semi-periphery (C5)**	**Industrial periphery (C6)**	**Collapsed industrial regions (C7)**	**Mediterranean agricultural regions (C8)**	**All regions**
Number of regions	20	17	7	40	52	15	10	17	178
Proportion of the population of the 15 EU-countries (100 %=369.7 Mio.)	15.3%	8.6%	6.1%	23.5%	30.4%	7.5%	4.4%	4.2%	100 %
Population density 1993, population per km^2	1151(1)	267	734	252	153	102	101	81	307
Annual growth of population 1983-93 (in %)	1.0(1)	0.5	0.3(1)	0.5	0.3	0.1	-0.2	0.3	0.4
Labour force participation rate (1995)	60.0	49.3	46.0	54.6	57.9	46.2	60.1	51.2	54.6
Male labour force participation rate (1995)	69.1	60.8	62.2	66.5	67.0	60.6	65.8	65.2	65.5
Female labour force participation rate (1995)	50.2	38.7	31.1	43.6	48.2	32.5	54.9	38.4	43.7
Employment in agriculture (1995; as a percentage of civilian employment)	2.5	4.7(1)	11.3	4.2	5.9	11.6	7.2	28.7(1)	8.0
Employment in industry (1995; as a percentage of civilian employment)	23.0	22.2	19.6	37.9	29.1	32.6	34.1	23.5(1)	29.4
Employment in services (1995; as a percentage of civilian employment)	74.4	73.1	69.2(1)	57.9	65.1	55.8(1)	58.8	47.8	62.7
Unemployment rate 04/1995 (%)	8.5	11.8	27.7	6.9	9.0	19.2	16.9	8.0	10.7
Male unemployment rate 04/1995 (%)	8.5	9.7	22.5	5.6	7.9	14.3	14.9(1)	5.6	8.9
Female unemployment rate 04/1995 (%)	8.3	14.9	37.3	8.7	9.6	27.8	19.2	11.8	13.1
Youth unemployment rate (< 25 years) 04/1995 (%)	15.4	28.9	57.0	11.3	17.6	40.8	22.9	24.1(1)	21.4
GDP per head (Ecu 1993; EU15=100 %)	143.5(1)	83.6	56.3	119.9	97.6	67.4	68.8	39.6	95.1
R&D expenditure as a percentage of GDP (1992/3)	2.4	1.2	0.3	2.0	1.6	0.6	2.0(1)	0.3	1.5
Part-time employment (1995; as a percentage of civilian employment)	21.7(1)	11.1	6.7	14.7	21.0	7.0	10.8	7.1	15.1

Note: Labour force participation rates were computed as the ratio of the labour force to working-age population (14- to 64-year-olds). Unemployment rates and employment rates of the three economic sectors were drawn on the total labour force. Research and development (R&D) expenditures were either taken from the statistical abstracts mentioned below, computed from national research statistics (for Italy and Germany) or estimated on the basis of national research expenditure on the individual regions.

(1) Because the standard deviation within this group is larger than the standard deviation for all regions, the group mean cannot be interpreted meaningfully.
Source: European Commission (1997): Regions. Statistical Yearbook; the REGIO data-base; own computations.

When interpreting the groups reported in Overview 2, the first thing to note is that their weights vary greatly: More than three quarter of the west European population lives in the four core and "semi-peripheral" groups, whereas only 22.2 % live in the four peripheral regions (C3, C6, C7 and C8).

The contents of the eight types of region can be interpreted on the basis of Overview 3, which reports the (unweighted) means for some population, labour market and employment indicators. In all cases, differences between these means are significant. The proportion of variance explained by each group membership (*eta*^{2}) is very high: It extends from 22% (population density) to 60 to 80% (income, labour force participation and unemployment rates). Against this background, the eight regional types can be interpreted as follows:

Metropolitan service regions (C1). The first regional type covers large urban conglomerations such as London, Paris, Berlin, Frankfurt, Munich, Hamburg, Vienna, Stockholm or Helsinki (but not Athens, Rome, or Madrid that are assigned to Cluster 2). Population density and population growth are well above the European average (although the standard deviation is very high because a few sparsely populated Finnish, Swedish and Dutch service regions such as the Ahvenanmaa Islands or Flevoland are classified to this type). These regions are characterised by high per capita income, a high rate of part-time employment, high research expenditure and exceptionally high labour force participation rates and proportions employed in the service sector combined with low unemployment. Whereas the unemployment rate for women is hardly any higher than that for men, the difference between the participation rates for men and women is surprisingly high at approximately 20% (except in the Scandinavian regions). Hence, the trend towards a metropolitan service society may well be accompanied by a stable distribution of labour between the genders. The centres of these service regions are occupied by the metropolitan conglomerations that serve as the main nodes for the world-wide flow of information, communication, trade and finance (see, for a discussion of these "global cities", Sassen, 1994). With the exception of Paris and a few Scandinavian regions, all these metropolitan conglomerations lie within the "blue banana". They are also embedded either in industrial core regions or at least in semi-peripheral industrial regions (see Overview 4).

Semi-peripheral administrative and service regions (C2). This regional type shares a very high proportion employed in the service sector with the metropolitan service regions as

well as a low proportion of persons employed in industry. However, it differs in having a much lower labour force participation rate, a higher unemployment rate, much lower research expenditure and a markedly lower per capita income (84% compared with 144% of the EU average). Unemployment is distributed very unevenly: It is above-average for women and, above all, young persons. This type of region is extremely heterogeneous: It includes, first of all, Mediterrean metropoles and trading centres (Rome, Athens, Madrid, Genoa/Liguria); second, the relatively prosperous southern European holiday regions (Algarve, Balearic Islands, Mediterranean France, the Aegean Islands); and, third, a few former "rust-belt" regions that have been able to build up new service branches since the collapse of their traditional industrial base (northern France, Brabant).

Poor service regions (C3). These regions--similar to the industrial periphery regions (C6)--still have a strong agricultural base. Likewise, they also have very high unemployment and very low labour force participation rates and income levels. However, compared with the industrial periphery regions, they have taken another, more service-intensive path of development: They have staked their future either particularly on tourism (Canary Islands, Andalusia, Sicily) or--in the case of the ports of Ceuta and Mellila on the Mediterranean coast of Morocco--on transport.

Industrial core regions (C4). This group contains the core industrial regions of Europe: the Ruhr, Baden-Württemberg, Bavaria, northern and central Italy as well as the Belgian and Austrian industrial regions. With the exception of three central Italian regions (Umbria, the Marches, Abruzzi), these regions also lie within the blue banana. Per capita income is well above the European average--even though well below levels in the metropolitan service centres. Unemployment rates are well below the European average. European research and development capacities are concentrated in these regions as well as in the metropolitan service centres.[5] The leaders of this industrial core group are the industrial regions of Baden-Württenberg, Bavaria and western Austria. However, the German coal and

---

[5] Based on the technological specialisation and the patenting activities of some European regions, Verspagen (1997) constructs a more restricted European „high-tech" cluster. This cluster consists of all the German regions, two French regions (Ile-de-France, Rhône-Alpes) and two British regions (East Anglia, South East). He concludes „that being a core technology region strongly increases the probability of being a core economic region" (Verspagen 1997: 14). The only exceptions are the English regions. The inverse relation is not true; not all the core industrial regions are core technology regions. This points to the fact that specialisation on less advanced technologies can also be a successful road to high income and employment rates (especially for the North Italian and some Eastern French regions).

steel regions also belong to this category because their unemployment rates are below average and per capita incomes are still above-average (but not the Belgian, northern French and British "rust-belt" regions in which industrial decline has had a much stronger impact on income and employment). The increasing flexibility of these regions and the impact of production-related services is indicated by the high rates of part-time employment and the rapid increase in persons employed in the service sector (see Overview 5).

A more precise analysis of the service activities located, on the one hand, in the industrial core regions and, on the other hand, in the tertiary core regions would be highly desirable: Whereas service activities in the "global cities" in Cluster 1 probably involve political administration, the coordination of worldwide streams of trade, finance and communication and product-related functions that are nonetheless spatially separable from industry (advertising, auditing, etc.), the emphasis in the industrial core regions is probably more on services that are close to production and depend on direct and intensive contacts with their industrial clients such as logistics, advisory services, data processing services, engineering offices and development centres. However, the European regional statistics available to date do not permit tests of such hypotheses.

The industrial semi-periphery (C5). This group is also characterised by industry. However, the proportion of industrial employees is much lower and the proportion of employees in the service sector is much higher than in the industrial core regions. Per capita income is lower--despite higher labour force participation rates. This is due to the higher unemployment rate and lower per capita productivity. Research and development expenditures are also well below the average in industrial and metropolitan core regions. As a result, this type of industrial region can be assigned to the west European semi-periphery. Most members of this group are located on the edge of or outside the blue banana (in sparsely populated French, northern German, Danish, British, Swedish and Dutch regions). The high and above-average employment rate is due to the high proportion of part-time employees (particularly in the Netherlands, Sweden and Great Britain).

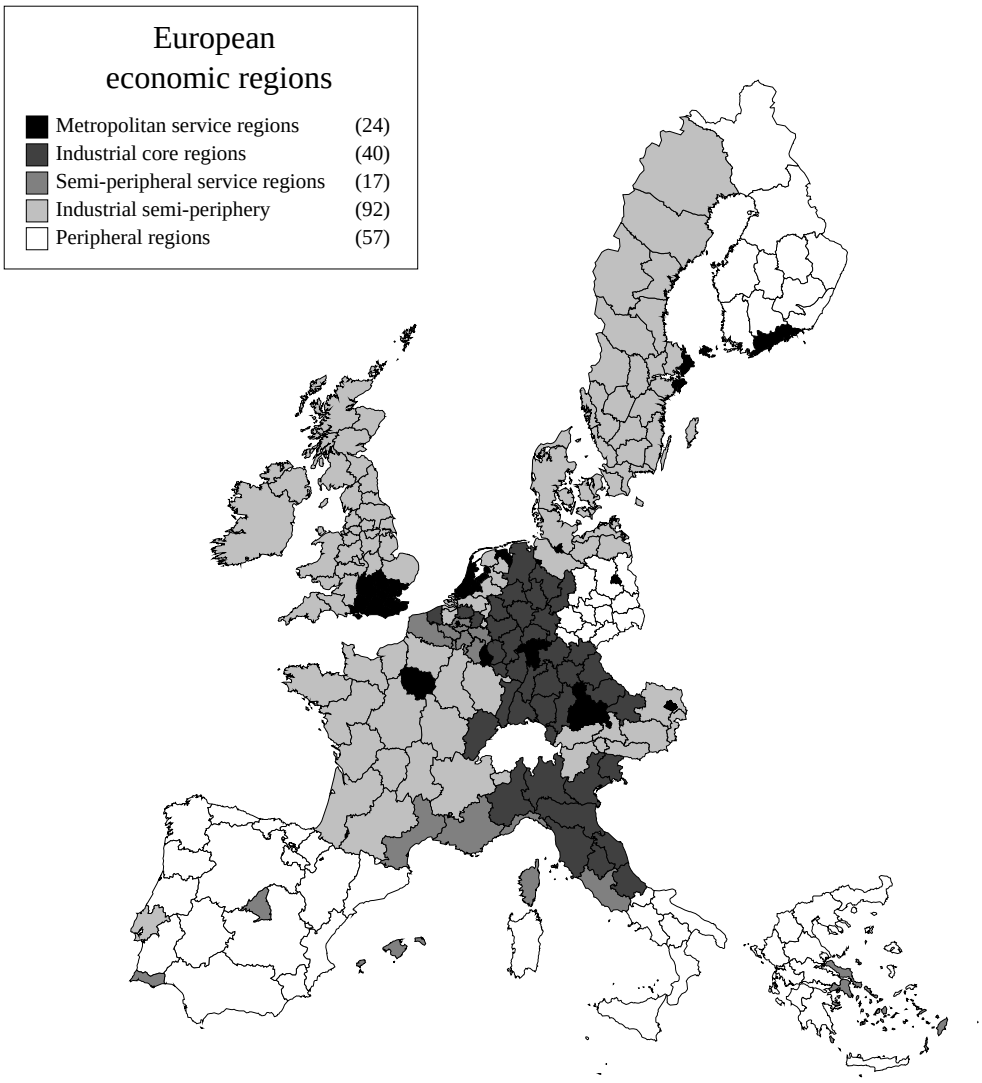
Industrial periphery regions (C6). The income and employment situation is much worse in the Spanish and southern Italian regions of this type. Compared with the southern European farming regions (C8), productivity is nonetheless higher, even when the rate of gainful employment is lower. This indicates that work is being organised increasingly by disembedded labour markets and that the foundations for a modern business economy have

been laid. As a result, the labour force, who were previously tied to the traditional sector, are appearing on the labour market. This can be seen in the dramatic unemployment rates among women and young persons (28% and 41% respectively). The low proportion of persons employed in farming also indicates that the economic dualism of the traditional and the modern sector is gradually disappearing (see, for a discussion of this dualism, Lutz, 1984). This leads to an increase in the proportion employed in industry--a sector that has, nonetheless, not grown large enough to provide jobs for those released from traditional fields: The labour force participation rate is sinking compared with the C8 regions, and a large proportion of the employed are still bound to (non-productive) services. This reveals that these regions are still just starting their economic modernisation. In Spain, this did not begin until after the end of the Franco regime and entry into the European Union.

Collapsed industrial regions (C7). This group contains the sparsely populated, de-industrialised regions of eastern Germany and Finland. These regions are still suffering the consequences of the postsocialist transformations in eastern Europe. Although the labour force participation rate is still very high, one sixth of the labour force--particularly women and young persons--are unemployed. Income is well below the European average (but not the quotas for research and development expenditure--a sign of active state intervention).

The Mediterranean agricultural regions (C8). Average incomes in the sparsely populated Greek and Portuguese farming regions (and in the depopulated rural hinterland provinces of Galicia) are well below the European average--and the proportion of persons employed in industry and services as well. The desolate employment situation in these regions has led many potential employees to withdraw from the labour market. This is indicated by low labour force participation rates and the below-average unemployment rates. A major proportion of the employable population is engaged in traditional, non-commercially organized fields with exceptionally low productivity (farming, fishing, crafts, cottage industry, tourism). Women and young persons in particular have hardly any chances on the labour market. These regions belong to the poorest of the poor--despite massive assistance from the European Union extending over many years.

Overview 4: Geographical Sites of European Core and Peripheral Regions



In summary, we can discriminate between industrial and service regions in Europe. However, no general trajectory of regional development can be found (i.e., from farming across industrial to service region). Instead, two different, yet nonetheless complementary, trajectories can be distinguished: on the one side, industrial regions (industrial periphery regions, semi-peripheral regions, industrial core regions, and de-industrialised regions); on the other side, service-centred regions (poor, semi-peripheral and metropolitan service regions). The area covered by the so-called blue banana reveals a concentration of not only the more efficient industrial regions but also the metropolitan service regions. The European city belt has been transformed into a highly industrialized space whose strengths are based on advanced services and industrial products; these regions (but also some Scandinavian ones)

are the place where diversified quality production--which seems to have been the dominant postwar production model of Europe--is located (see Streeck, 1991). In contrast, the peripheral European regions are characterised by less advanced industrial and service regions (see Overview 4). This points to the *complementarity* and the reciprocal reinforcement effects to be found between industrial and service regions: Metropolitan service and administrative regions do not operate in a vacuum; a major part of their strength comes from being embedded in or close to efficient industrial regions--and vice versa. The pre-industrial European city belt has been transformed into an industrialized space with many focal cities (some serving as capitals). The same complementarity applies for the semi-peripheral service regions: The economic strength of cities like Athens, Madrid or Rome is due to their role as national administrative and service centres.

3. The Development of the European Urban and Regional System

I shall now discuss how the European urban and regional system is changing on its path towards a service- and innovation-centred knowledge society. I shall examine which of the following two assumptions formulated by Appold and Kasarda (1988) provides a better description of development in the European regions: the *delocalization hypothesis*, focusing on the role of transport and communication costs (Appold & Kasarda call this the deconcentration thesis), or the *restructuring hypothesis*, focusing on the role of the resources available in the region. These two hypotheses can be used to predict different trends: Against the background of declining costs for transport, information and communication, the *delocalization hypothesis* predicts an internationalisation and globalisation of economic activities. This is accompanied, on the one hand, by a shift in standardised and labour-cost-intensive activities. In particular, industrial activities will be delocalized from high-wage to low-wage regions. On the other hand, however, big-city conurbations will be upgraded, because they develop into central nodes in the worldwide networks of trade, information, finance and companies. Therefore, an upward evaluation of urban areas can be anticipated, because these are characterised by the concentration of coordination and communication tasks in a broader sense: banks and stock exchanges; insurance; brokers; legal counselling; auditing; tax, law and company consultancy; public relations and advertising; research and development; data-processing services and, last, but not least, the headquarters of

multinational companies (Sassen, 1994). Hence, the following predictions can be derived form the delocalization hypothesis: (1) Industrial activities will become increasingly less important in the European high-income regions. (2) Industry will take on an increasingly important role in the (European) peripheral regions. (3) Development will be particularly dynamic in a few "global cities" that will be able to gain a reputation for their commercial and financial services in the world-wide division of labour and also possess an efficient infrastructure (airports, office facilities, safe and pleasant residential districts, trade fairs, railway and road links).

In contrast, the *restructuring hypothesis* focuses on the regional availability of those resources that are required for pre-industrial, industrial or post-industrial economies. From this perspective, it is particularly the local availability of different resources that is decisive for regional advantages. This is not just restricted to natural resources (such as timber, fertile soil and pasture, coal or ore). Socially "produced" resources such as trained specialists, low labour costs, cooperative trade unions or attractive leisure-time, recreation, and research facilities can also be very important.

The operationalisation of such a hypothesis depends decisively on knowing which "resources" provide a basis for locational advantages in a knowledge and communication society. One potential resource is the “production” of knowledge, in other words, indicators of high research expenditure and the availability of reputed research institutes and universities. However, this overestimates the significance of scientific knowledge for innovations (Gibbons et al., 1994). Current innovation theories place far more emphasis on the existence of innovation networks as a decisive precondition for reciprocal, trans-disciplinary processes of technological learning (Camagni, 1991; Kowol & Krohn, 1995). One particular form of innovation network characterised by spatial proximity is that of economic regions exhibiting a regional agglomeration of related companies and flanking institutions (Heidenreich, 1997). Such (highly differing) innovation networks are found particularly in the industrial core regions of Europe (Braczyk et al., 1998).

If an upgrading of regional or national innovation systems (as incorporated forms of technological knowledge) is anticipated in line with the restructuring hypothesis, the following trends can be predicted: (1) Mature industries in which only incremental innovations are still possible, will decline in importance in the European core regions. However, peripheral regions will only benefit from this very slightly, because the demand for

knowledge-intensive products and services does not simply supplement the demand for standardized goods but tends to replace it: High-powered computers, "intelligent" motor cars or fashionable clothing are not purchased in addition to a standard personal computer or a Volkswagen beetle, but instead of them. Therefore, (2) industrial production will not be shifted to a considerable extent to the (semi-) periphery. (3) The classic industrial conglomerations do not forfeit their importance in favour of "global cities"; it is far more the case that--as the traditional sites of high-quality industrial products--they will continue to be the central locations for assembling knowledge-intensive goods. As a result, urbanised service metropoles in which numerous close-to-production services are concentrated, do not grow up *instead* of industrial core regions but *complementary* to them. Essentially, it is anticipated that the previous industrial core regions will retain their central position (one indicator of this is an increase in the gross domestic product), but will undergo clear changes in their economic structure (one indicator for this would be an increasing proportion of employment in the service sector).

Thus, different socio-spatial trends can be anticipated depending on whether more emphasis is placed on the communication and transport costs (delocalization hypothesis) or the requested resources for a knowledge and communication society (restructuring hypothesis): an upgrading of the big cities and a decline in the earlier industrial core regions versus a structural transformation of the industrial core regions (indicated, for example, by an increased proportion of employment in services) and a stable role for urbanised service metropoles; and an industrialisation of the periphery versus a continuation of the minor role of industrial production in the periphery.

These predictions will be discussed on the basis of the limited amount of longitudinal data available on the regions of the European Union. To a large extent, the eastern German, Finnish and Swedish regions will have to be excluded from this analysis because they only became part of the European Union in the 1990s. This removes a complete regional type, the collapsed industrial region. The Greek and Portuguese regions as well as a few other regions will also have to be excluded (see Overview 5). This means that it is no longer possible to perform a meaningful analysis of the southern European farming regions and their developments. The Austrian data, in contrast, can be supplemented almost completely with

data from national sources. Given these limitations, developments in various types of region can be analysed for the last 7 to 14 years (see Overview 5).[6]

Overview 5: Trends in Employment Structures and Income Levels in Seven Types of European Economic Region

Type of economic region (without collapsed industrial regions)	Growth of GDP per head[(2)] (in %)	Differences between labour force participation rates (%)	Differences between unemployment rates (in %)		Differences between rates in agricultural employment (in %)		Differences between rates in industrial employment (in %)		Differences between rates of service employment (in %)	
Period	1988-93	1988-95	1983-95	1988-95	1981-95	1988-95	1981-95	1988-95	1981-95	1988-95
Metropolitan service regions (n=14-17)	+27.0[(1)]	+1.8[(1)]	-0.3	+0.0[(1)]	-0.9	-0.7	-6.8	-1.8	+7.6	+2.6
Semi-peripheral service regions (n=14-17)	+33.9	+2.0	+2.2	+1.0	-4.1[(1)]	-2.1[(1)]	-6.1	-1.6	+10.3[(1)]	+3.7[(1)]
Poor service regions (n=6-7)	+30.7	-0.8	+10.6	+2.2[(1)]	-9.3	-4.9	-3.6[(1)]	+0.5	+12.9	+4.4[(1)]
Industrial core regions (n=40)	+31.5	+0.5	-0.3	+0.4	-3.5	-1.7	-5.2	-1.5	+8.7	+3.2
Industrial semi-periphery (n=45-46)	+28.2	+0.4[(1)]	-0.5	-0.2	-3.7	-1.8	-6.1	-2.4	+9.8	+4.2
Industrial periphery (n=15)	+32.5	-1.2	+4.7	+1.6[(1)]	-9.1	-3.0	-1.1[(1)]	-0.1	+10.2	+3.1
Mediterranean agricultural regions	+41.1[(1)] (n=15)	-2.1 (n=17)	-- (n=2)	+1.6[(1)] (n=17)	-19.3[(1)] (n=4)	-12.0[(1)] (n=6)	0.7 (n=4)	1.1 (n=6)	+18.6[(1)] (n=4)	+10.9[(1)] (n=6)
Total (n=136-155)	+31.3	+0.3	+1.0	+0.6	-4.7	-2.4	-5.0	-1.5	9.8	+3.9
Missing values for East Germany, Sweden and the following regions:	Azores; Madeira	Brabant Finland	Greece; Finland; Portugal; Flevol.	Finland	1981 and 1988: Liège; Greece, Finland. 1981: Flevoland; Azores; Madeira					

(1) Because the standard deviation within this group is larger than the standard deviation for all regions, the group mean cannot be interpreted meaningfully.
(2) Increase in gross domestic product (GDP) per resident (in ECU) as a percentage of 1988 levels.
Source: European Commission (1997): Regions. Statistical Yearbook; the REGIO data-base; own computations.

The first thing to be noticed is that the changes in the industrial core regions and the metropolitan service regions do not differ so clearly as predicted by either the delocalization hypothesis or (in the opposite direction) the restructuring hypothesis. The increase in the gross domestic product per resident is--particularly when Berlin, the city with by far the lowest growth rate is excluded--roughly comparable, just like the development in unemployment rates over the last 7 or 14 years. Both types of region show a clear drop in the

6 Values for the indicators reported in Overview 5 differ significantly between the different groups. The proportion of variance (*eta*^{2}) explained by the type of region was--with the exception of the shift of industrial employment from 1988 to 1995--between 18% and 47%.

proportion of industrial employment. Indeed, the proportion of service sector employees has grown even more strongly in the industrial core regions than in the metropolitan regions (which already have a stronger service sector). Adding the industrial semi-periphery also does not change this pattern: Here, it can be seen that growth in the service sector is even faster than in the industrial or metropolitan core regions. But in creating new jobs the metropolitan (and especially the semi-peripheral) service regions are far more successful than the industrial regions: Within only 7 years, the labour force participation rate in the service regions increased by 1.8 and 2.0% respectively. This indicates that the delocalization hypothesis and the restructuring hypothesis each appropriately characterise one of the two growth poles in the knowledge society: Whereas the former provides an accurate prediction of the dynamic development of the metropolitan service regions, the latter points to the continued importance of industrial regions that are characterized increasingly by an expanding service sector. On a general level, this indicates that the knowledge society is not post-industrial, but a society based on the complementarity of industrial and service sector activities (see BMBF, 1997). This is documented in a bipolar territorial structure: Not only are nationally, Europe--or globally oriented administrative and service cities like London, Frankfurt, Paris or Hamburg expanding, but also the industrial regions that have been successful in the past. This reproduces the previous complementarity between industrial and service regions on a higher level: In the industrial regions, companies have sourced out many production-related services. However, many of these functions remain in the region because of the importance of spatial proximity for efficient research and development, advisory, logistical and data-processing services. Other functions depend less on this spatial proximity to industrial companies. Examples are auditing, advertising and financial services. These can be concentrated in the urban service centres that can offer a good transport and communication infrastructure as well as pleasant living conditions for the upper service class.

Trends in the peripheral regions of Europe contradict the assumption that any major part of industrial production is being relocated away from the European centre to the European periphery. Certainly, it can be seen that the proportion of industrial employees is increasing in some regions (from 1988 to 1995, particularly in northern and central Italy, north-eastern and central Spain, central Portugal and Ireland), while, during the same period, the proportion of industrial employment has dropped by about 4%. However, this may be only a temporary increase. In the peripheral regions, the proportion employed in industry is in

a general state of decline--even though this is occurring more slowly than in the central and semi-peripheral regions. If there is a shift (and not only a transformation) of industrial production, then this is taking the form of increased imports of finished products from non-European newly industrialised and developing countries and of increased direct investments in these countries. But there is no general trend towards an industrialisation of the European periphery. Even the expansion of the service sector in the peripheral regions continues to be accompanied by a marginal status. This is indicated by the decline in labour force participation rates and the major increase in unemployment rates. This persistent peripheral position is predicted more accurately by the restructuring hypothesis than the delocalization hypothesis. As far as it can perceived at present, the gravitation center of the emerging European knowledge society will not differ too much from the core regions of the European industrial society. This is hard to believe when we analyse the institutional and industrial legacies of the advanced European industrial regions and the various lock-in effects preventing new forms of organisational and interorganizational learning, new patterns of cooperation and conflict resolution, as well as new forms of training and employment mobility (Heidenreich, 1997).

4. Summary and Outlook

This paper starts by analysing the current structure of the European urban and regional system on the basis of available regional data. A cluster analysis distinguishes eight different regional types: metropolitan, semi-peripheral and peripheral service regions; central, semi-peripheral, peripheral and collapsed industrial regions; and agricultural regions. The geographical location of industrial and service regions is a strong indicator of their complementarity. The differences in the level of development in central, semi-peripheral and peripheral economic regions are documented by different income levels and different rates of labour force participation, unemployment and research expenditure. The core of the European industrial societies is nearly identical with the city belt that dominated economic development in pre-industrial Europe.

Then the changing system of the European urban and regional system is analysed--as far as the available time-series data permit. It is discussed whether a delocalization of the more simple, labour-cost-intensive activities towards the European periphery and an

upgrading of urban service centres has occurred (*delocalization hypothesis*), or structural changes of the industrial core regions – in the sense of a stronger orientation towards innovation and an increasing importance of production-related services. This would imply the persistence of the marginal status of the European peripheral regions (*restructuring hypothesis*). Neither of these two hypotheses can be confirmed or rejected unequivocally, because each provides an accurate description of a specific aspect of European development: On the one hand, both the urban service regions and the industrial core regions have managed to make further improvements in their already positive income and employment situation. This points to the increasing importance of innovative industrial regions and urban service centres. These two types of region are the central European nodes in the world-wide flow of goods, information and capital. On the other hand, no industrialisation of the European periphery can be observed. These regions do not profit from the claimed delocalization of industrial production to low-wage countries. Hence, developments in the European core and peripheral regions in no way lead automatically towards economic and social convergence (see European Commission, 1996).

References:

AMIN, A. and THRIFT, N. (1992) Neo-Marshallian nodes in global networks, International Journal of Urban and Regional Research, 16, pp. 571-587.

APPOLD, ST. and KASARDA, J. D. (1988) Agglomerationen unter den Bedingungen fortgeschrittener Technologien, in JÜRGEN FRIEDRICHS (ed.): Soziologische Stadtforschung, pp. 132-149. Opladen: Westdeutscher Verlag.

BACKHAUS, K., ERICHSON, B., PLINKE, W. and WEIBER, R. (1994) Multivariate Analyseverfahren. Eine anwendungsorientierte Einführung (seventh edition). Berlin: Springer.

BMBF (Ministry for Education, Science, Research and Technology); 1997: Zur technologischen Leistungsfähigkeit Deutschlands. Bonn: BMBF.

BRACZYK, H.-J., COOKE, PH. and HEIDENREICH, M. (Eds.) (1998) Regional Innovation Systems. London: UCL-Press (in print).

BRAUDEL, F. (1979) Civilisation matérielle, économie et capitalisme, Xve-XVIIIe siècle. Le temps du monde. Paris: Armand Colin.

CAMAGNI, R. (Ed.) (1991) Innovation networks: spatial perspectives. London: Belhaven.

CASTELLS, M. and HALL, P. (1994) Technopoles of the World. The making of twenty-first-century industrial complexes, London/New York: Routledge.

COOKE, PH. (1992) Regional Innovation Systems: Competitive Regulation in the New Europe. Geoforum, 23, pp. 365-382.

EUROPEAN COMMISSION (1996) First Report on Economic and Social Cohesion 1996. Preliminary Edition. Luxembourg: Office for Official Publications of the European Communities.

EUROPEAN COMMISSION (1997) Regions. Statistical Yearbook 1996. Luxemburg: Office for Official Publications of the European Communities.

FRIEDRICHS, J. (1997) Eine Typologie westdeutscher Großstädte und Muster ihrer Entwicklung 1970 bis 1990 in: J. FRIEDRICHS (Ed.): Die Städte in den 90er Jahren. Opladen: Westdeutscher Verlag (in print).

GIBBONS, M., LIMOGES, C., NOWOTNY, H., SCHWARTZMAN, S., SCOTT, P. and TROW, M. (1994) The new production of knowledge. The dynamics of science and research in contemporary societies. London/Thousand Oaks/New Dehli: Sage.

HEIDENREICH, M. (1997) Wirtschaftsregionen im weltweiten Innovationswettbewerb. Kölner Zeitschrift für Soziologie und Sozialpsychologie, 49, pp. 500-527.

HRADIL,; ST. and IMMERFALL, ST. (Eds.) (1997) Die westeuropäischen Gesellschaften im Vergleich. Opladen: Leske + Budrich.

JONES, B. and KEATING, M. (Eds.) (1995) The European Union and the Regions. Oxford: Clarendon Press.

KOWOL, U. and KROHN, W. (1995) Innovationsnetzwerke. Ein Modell der Technikgenese, in J. HALFMANN, G. BECHMANN and W. RAMMERT (Eds.) Technik und Gesellschaft, Yearbook 8, pp. 77-104. Frankfurt a.M.; New York: Campus.

LUTZ, B. (1984) Der kurze Traum immerwährender Prosperität. Eine Neuinterpretation der industriell-kapitalistischen Entwicklung im Europa des 20. Jahrhunderts. Frankfurt a.M./New York: Campus.

PIORE, M. J., and SABEL, CH. F. (1984) The Second Industrial Divide. Possibilities for Prosperity. New York: Basic.

PORTER, M. E. (1990) The Competitive Advantage of Nations. New York, Free Press.

SASSEN, S. (1994) Cities in a World Economy. Thousand Oaks; London; New Dehli: Pine Forge.

SAXENIAN, A. (1994) Regional Advantage. Culture and Competition in Silicon Valley and Route 128. Cambridge/Mass./London: Harvard University Press.

SCOTT, A. J. (1995) The Geographic Foundations of Industrial Performance, Competition & Change, 1, pp. 51-66.

STORPER, M. (1995) Regional technology coalitions. An essential dimension of national technology policy, Research Policy, 24, pp. 895-911.

STREECK, W. (1991) On the Social and Political Conditions of Diversified Quality Production, in E. MATZNER and W. STREECK (Eds.): Beyond Keynesianism: The Socio-Economics of Production and Full Employment, Aldershot, Brookfield, Edward Elgar, pp. 21-61.

THERBORN, G. (1995) European Modernity and Beyond. The Trajectory of European Societies 1945-2000. London: Sage.

VERSPAGEN, B. (1997) European ‘regional clubs’: Do they exist, and where are they heading? On economic and technological differences between European regions. Paper for the conference on Economic growth and change. Cagliari (http://meritbbs.unimaas.nl/verspagen.html).

WALLERSTEIN, I. (1974) The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the sixteenth Century. New York/San Francisco/London: Academic Press.

ZÜNDORF, L. (1997) Wirtschaftliche Schwerpunktbildungen in Europa. Eine langzeitliche und sozialräumliche Erklärungsskizzein E. LANGE and H. VOELZKOW (Eds.) Räumliche Arbeitsteilung im Wandel, pp. 215-248. Marburg: Metropolis.