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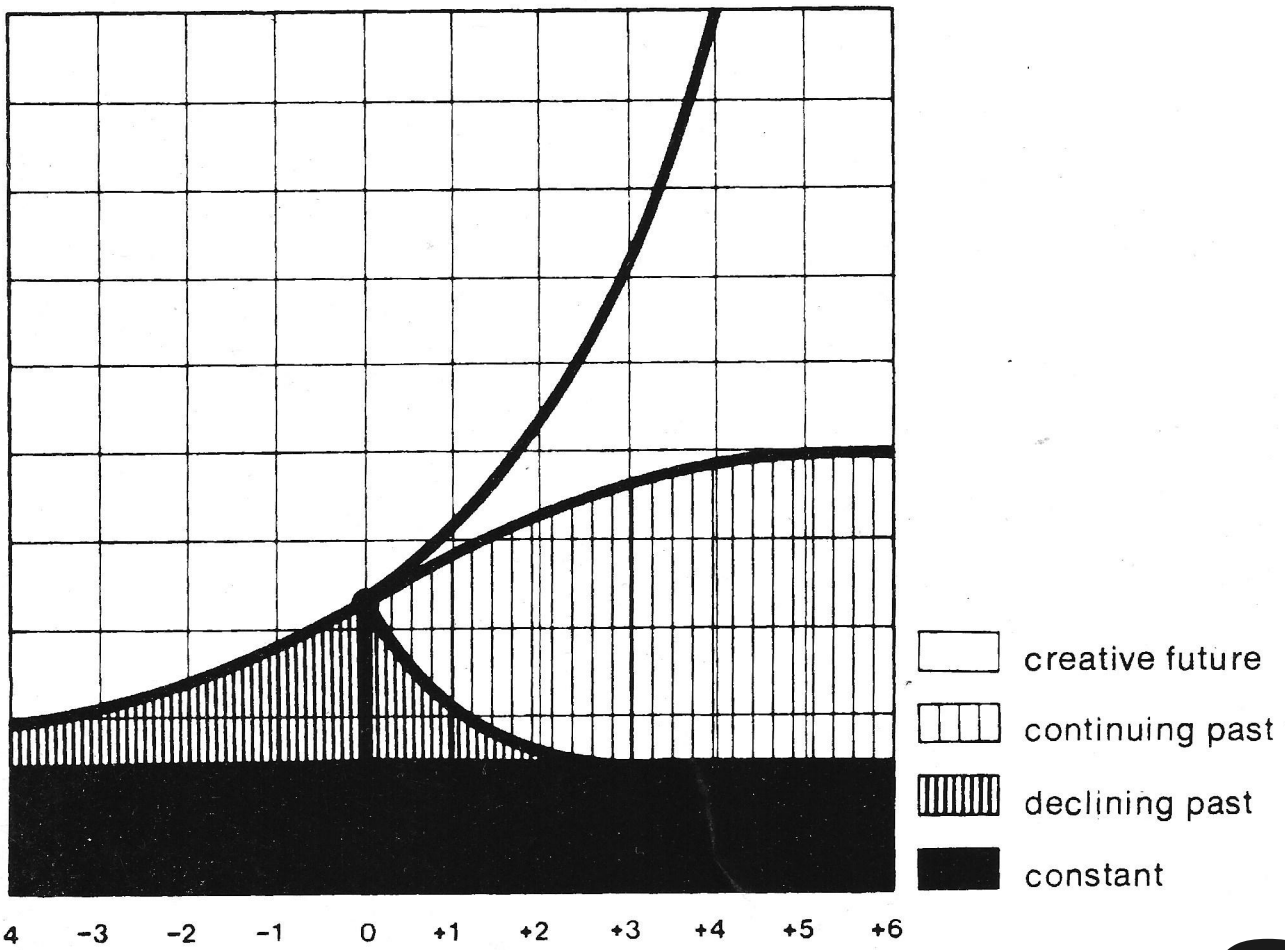
the problems and science of
HUMAN SETTLEMENTS



the four futures of human settlements

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FUTURES

EKISTICS: the problems and science of HUMAN SETTLEMENTS

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Upon its establishment in 1958, ATO started ekistic research and educational programs and later on in 1963 established the Athens Center of Ekistics (ACE) to foster a concerted program of research, education, documentation, and international cooperation related to the art and science concerned with the development of human settlements. In the domain of documentation in addition to its library, ACE publishes the following two journals:

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- The Ekistic Index of Periodicals, as well as
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- "The City of the Future"
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- To promote the development of knowledge and ideas concerning human settlements by research and through publications, conferences, etc.;
- To encourage the development and expansion of education in ekistics;
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- To recognize the benefits and the necessity of an interdisciplinary approach to the needs of human settlements, and to promote and emphasize such an approach.

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Volume 67-68, Number 400-408, January 2000-June 2001

Futures 2

Cover: The four futures of human settlements (*Source:* C.A. Doxiadis and J.G. Papaioannou, *Ecumenopolis, the Inevitable City of the Future* (Athens, Athens Publishing Center, 1974, fig. 2, p. 17).

Most of the papers in this issue are a selection from a large number of documents solicited and compiled by P. Psomopoulos. R.J. Rooke provided editorial assistance, Alex Freme-Sklirou proofread the texts, Katerina Efthymiou and Niki Choleva were responsible for typesetting and graphics, Myrto Moufli for the photography, and Nikos Margaritis for the final dummy from a maquette by the editor.

The editor's page

A first triple issue of *Ekistics* on alternative futures of human settlements entitled "Futures 1" was published in June 1999.

Most of the 16 documents contained therein dealt with global issues with direct or indirect relevance for human settlements concerning the total inhabited part of the earth and the planet as a whole or territorial entities of continental or national magnitude with communities - more poor than rich - corresponding to the large scales between Metropolis and Eperopolis.

At that time on the basis of many more papers on the same subject already available, and in view of our keen desire to bring them to the attention of our world readership, we promised the authors that we would publish most of them in a second issue on "Futures."

For a large number of serious reasons we were unable to abide by that commitment.

However, at present, many years later, new technologies have made it possible to overcome these obstacles. We therefore decided to publish a second volume entitled "Futures 2."

The contents of the 28 papers we are able to publish electronically may not be directly relevant to burning issues today but they are definitely of historic importance concerning the topics and the sites to which they refer, and are undeniably of interest to the authors themselves.

We wish to convey our deepest apologies for the delay to the authors, some of whom are unfortunately no longer with us.

Let me take this opportunity to repeat on the cover of the volume on "Futures 2" the graph that we reproduced on the cover of "Futures 1" which was originally published in *Ecumenopolis, the Inevitable City of the Future* by C.A Doxiadis and J.G. Papaioannou (Athens, Athens Publishing Center, 1974), and remind readers that "in order to move beyond general and intellectually courageous concepts to specific estimates, we have to distinguish what the forces are which are actually shaping the City of the Future. When we do this we can recognize the existence of four different futures for everything about which we are talking within the city:

- The first of these futures is the constant one, represented by things like the mountains, which we cannot change, or the fundamental properties of matter and energy.
- The second future is represented by those elements which are inherited from the past but which are declining and will be gradually eliminated, such as the present generation of people, or houses which are in a dilapidated state, or the cultural traits and technological inventions which have been superseded: that is the declining past.
- The third future is represented by the continuing past, such things as the children of the present generation who are influenced by parents now alive, houses being built according to the patterns of existing ones, or roads which exist today and will go on being used.
- The fourth future is the creative one: this is the future which will come into being because of things that do not exist at all today - new ideas, new technology, new developments. It is this creative future which in fact makes all the real difference between the past and the future, and which marks the difference between Anthropos and animals, since they cannot influence thejr future in this way, whereas Anthropos can."

P. Psomopoulos

Post-socialist industrial transformation in the major Hungarian cities

Eva Kiss

Dr Kiss, a human geographer and graduate of the Lajos Kossuth Science University, Hungary, is a senior research fellow at the Geographical Research Institute of the Hungarian Academy of Sciences. Since 2000 she has also been an associate professor (docent) for the Faculty of Economics of West-Hungarian University in Sopron. In recent years the study of industrial transformation and its spatial consequences has been one of the main aims of her research.

Introduction

During recent decades cities have undergone relevant changes. Their functions, social, economic and spatial structures, their landscapes and images have altered. Considerable changes have also taken place in their industry. In developed cities these changes had already begun in the 1970s (MARCUSE and VAN KEMPEN, 2000) and they can basically be traced back to the shifts in the world economy during the 1970s. In Eastern European cities, however, transformation accelerated only after 1989, when radical economic and social reforms were introduced in the wake of the change in the political system. Thus, in this part of Europe industrial transformation has been accompanied by the disappearance of the socialist system and by efforts to establish a market economy. And this is one of the essential differences between Western and Eastern European cities.

The other relevant difference is: whereas in the West only a small proportion of enterprises or a particular sector need renewing at any given time (HILLMAN, 1992), in the East industry as a whole and each individual firm needs to be restructured simultaneously.

In addition profound changes have also taken place in the world economy during that time. As a consequence, all the Eastern European cities were and some of them still are in a very unfavorable position and they had to or have to cope with much more severe difficulties than their Western counterparts. This is also the reason why the transformation in Eastern Europe has proceeded at a slower rate and has been less smooth, particularly in certain parts of the region.

Until now emphasis has been primarily put on the investigation of the industrial transformation of the Eastern European capital cities (GRITSAI, 1997; KISS, 1999a; KOREC, 1997; POTRYKOWSKA, 1997), probably because these are the most innovative areas in the countries in question and display the most immediate responses to challenges. Kluczka (1996) has also emphasized that the dynamics of development (the whole economy being in transition) have primarily been manifested in the functional and structural transformations of capital cities. As a consequence, the changes (e.g. industrial restructuring) of other urban settlements have not received proper attention. That explains why the five regional centers of Hungary (Debrecen, Győr, Miskolc, Pécs and Szeged) are the focus of this study. However, to draw an overall picture of the post-socialist industrial transformation and its effects on the industrial space in the major Hungarian cities, the capital, Budapest, is also included. These are the most populous cities of the country. Compared to Budapest (1.8 million) the population of the other cities is far less. In 2000, 204,000 people lived in Debrecen, in Győr 127,000, in Miskolc 172,000, in Pécs 157,000 and in Szeged 158,000. Forming a "half ring" around the capital they are situated in a different part of the country relatively close to the national border (fig. 1).

This paper is primarily aimed at demonstrating the most important changes in the industry of the major Hungarian cities and their effects on the urban space and land use. How did the changes taking place in industry affect the structural and functional divisions of cities and the urban landscape? Have they led to a new spatial order? The other objective is to reveal the most important similarities and differences between the industrial transformation of the capital and other cities as industry has always played an important, although variable part in their economy and it has also been significant among their central functions. (Although the latest data come from 1998, they are suitable for indicating the present state because on the one hand, since then the changes have not been as spectacular as before, while, on the other hand, the Central Statistical Office has not published detailed industrial data for major cities in its latest statistical yearbooks) (tables 1 and 2).

This study is based upon the experiences of research carried out in the five cities at the turn of the millennium. The methodology of this research was very similar to that applied for Budapest between 1995 and 1998 in order to explore the most important characteristics of its industrial restructuring (KISS, 1999b), some results of which will be also introduced here. In the course of research carried out in 2000 different methods and sources have been drawn on to obtain a real picture of the processes taking place in the industrial areas of major Hungarian cities. In addition to statistical data more detailed information about industrial firms located in the cities studied has been provided by the *Industrial Almanac*. To complement them a survey was carried out in 2000. Originally it was intended to ask 159 major enterprises situated in the regional centers about their organizational form, ownership, size and use of area, spatial links, plants, plans, reasons for the choice of location, satisfaction with location in cities, etc., but only 21 (13.2 percent) of them responded. Though this rate is quite low, it is suitable to indicate the most important characteristics and trends. (The low response rate is closely related to the fact

that lately it is very difficult to get any information and data from industrial firms. They have become much more reserved than before 1989). Of the 21 responses, 9 (27 percent of all surveyed) were from Debrecen, 2 (8 percent) from Győr, 3 (14 percent) from Miskolc, 4 (13 percent) from Pécs and 3 (8 percent) from Szeged. This was also the reason why some interviews were also made with the managers of 2-3 firms in each city in 2000. To receive more details on changes in local industry and on its future, interviews were made with officials of local authorities, with chief architects, with managers of industrial estates and leaders of chambers of commerce and industry, altogether 20 people. Besides the survey and interviews mentioned above, observations (fieldwork) at some industrial establishments (how they are re-utilized) have also contributed to obtain a real picture. The different methods and sources complemented each other well and allowed a comprehensive approach.

After the introduction, a brief historical overview follows in order to demonstrate the major events in the industrial development of the cities studied. Then, the most important changes in industry of the major cities are summarized, which have probably had the largest effect on the industrial space and land use. Finally, before conclusions are drawn, changes in the industrial areas are evaluated.

Industrial development before 1989

Due to natural endowments and geographical location along important commercial routes (Győr, Pécs, Szeged) and/or on the boundaries of different economic regions (Debrecen, Miskolc), agriculture and trade had dominated the economy of the cities studied until the middle of the 19th century. Industrial activity, the processing of agricultural crops, had mainly been restricted to craftmanships and handicrafts. Industrialization accelerated in the second half of the 19th century and proceeded at a much faster rate in the capital city than in the others. Many industrial firms were established and part of them still operate today. Most of them were founded with Hungarian capital, but the amount of foreign investments was also considerable. Generally the factories were up-to-date and well-equipped at the time of their foundation. The number of industrial employees also increased very quickly. The sectoral structure of industry also began to take shape at that time. In Debrecen the food industry, in Győr machinery and food industries, in Miskolc mining and metallurgy, in Pécs mining and the food industry and in Szeged light and food industries developed most rapidly. In spite of this, the significance of their industry lagged behind the capital which had become a large and modern city by the beginning of the 20th century.

After World War I a new national border was drawn for Hungary and it considerably changed the position of the above five cities within the country and their geographical setting. They found themselves on the periphery of a much smaller country, while before World War I they were located between the capital and peripheral centers such as Kassa, Zagreb, Nagyvárad. Parallel with this process their significance was recognized and they were converted into major poles of growth to counterbalance Budapest which had become too large a city for such a small country. It was very unfavorable for the cities studied, however, that the traditional, multifold economic, social, commercial, cultural, etc. spatial relations with their hinterland were suddenly broken (fig. 1).

Between the two world wars industrial development was curbed. As a consequence of reduced territory, there was a heavy loss of markets and of a considerable portion of resources. In addition, the world economic crisis also heavily affected Hungary. At that time Győr was second to Budapest among the largest industrial centers of the country with 35 large factories registered with ca. 12,000 people (46 percent of all earners) working in them in 1930. In other cities the respective figures were the following: Debrecen 10,911 (20 percent), Miskolc 10,216 (35 percent), Szeged 16,868 (25 percent) and Pécs 10,166 (34 percent). In contrast with them, in Budapest 268,801 (39 percent) people were employed in industry at that time.

World War II caused severe damage. After the reconstruction, industrial production resumed, but already within the socialist system. This meant – among other things – the nationalization of industrial companies, an elimination of joint ventures and increased centralization. The second main period of industrialization in Hungary was implemented in a socialist way. Because of rash industrialization, at the beginning the development of heavy industry was the focus, and particularly in the areas of Miskolc and Pécs of the cities studied. Then, from the 1960s industries (machinery, chemical and textile) of other towns also began to develop, although this relatively delayed industrialization seemed to be at a great disadvantage, especially in the case of Szeged. Between 1950 and 1970 several enterprises were established and the number of employees also increased. In 1970 in Debrecen 30,439 people worked in industry, in Győr 28,118, in Miskolc 41,764, in Pécs 33,201 and in Szeged 33,962. Socialist industrialization made these cities major industrial centers with a few hundred hectares of industrial areas. But the most important industrial center of the country continued to be Budapest where more than 504,000 people worked in industry and the size of industrial areas exceeded 4,000 ha.

From the 1970s the emphasis was put on intensive and selective development. Improvement of the quality of products, increase of competitiveness and higher technological standards were the primary targets. Less firms were established, the number of industrial employees decreased, and industrial areas ceased to expand any more. In spite of the favorable changes, the problems of Hungarian industry were manifested in an explicit way, which resulted in a deepening crisis during the 1980s. Overall reforms, however, could have been implemented only after the change in the political system in 1989.

Major trends in industry after 1989

After 1989 significant and diverse transformation processes started in the industry of Hungarian cities and most of them have already been finished by now. They varied in their intensity in time and space and in their effects on the industrial areas. Of them organizational reform can be regarded as the first and most spectacular process. Due to it the old forms (like a state-owned company) were replaced by new ones (like a limited liability company) and the organizational structure became more diverse. Particularly at the beginning, this renewal process well indicated the innovative capacity of each sector, company and region. It had proceeded more quickly in the machinery industry, printing and publishing and in the central and northwestern parts of the country (KISS, 1999c). Nowadays the limited liability company is the most popular form for various reasons (limited responsibility, one person can establish it, a small amount of capital is needed). The majority of them were completely newly established (e.g. Audi Hungarian Motors Ltd located in Győr), while many of the companies limited by shares have been reorganized from state companies (e.g. Pick Salami Factory located in Szeged). Owing to the organizational reform the number of industrial firms has also increased. However, there is a big difference in their number between Budapest and the other cities. In the capital there are

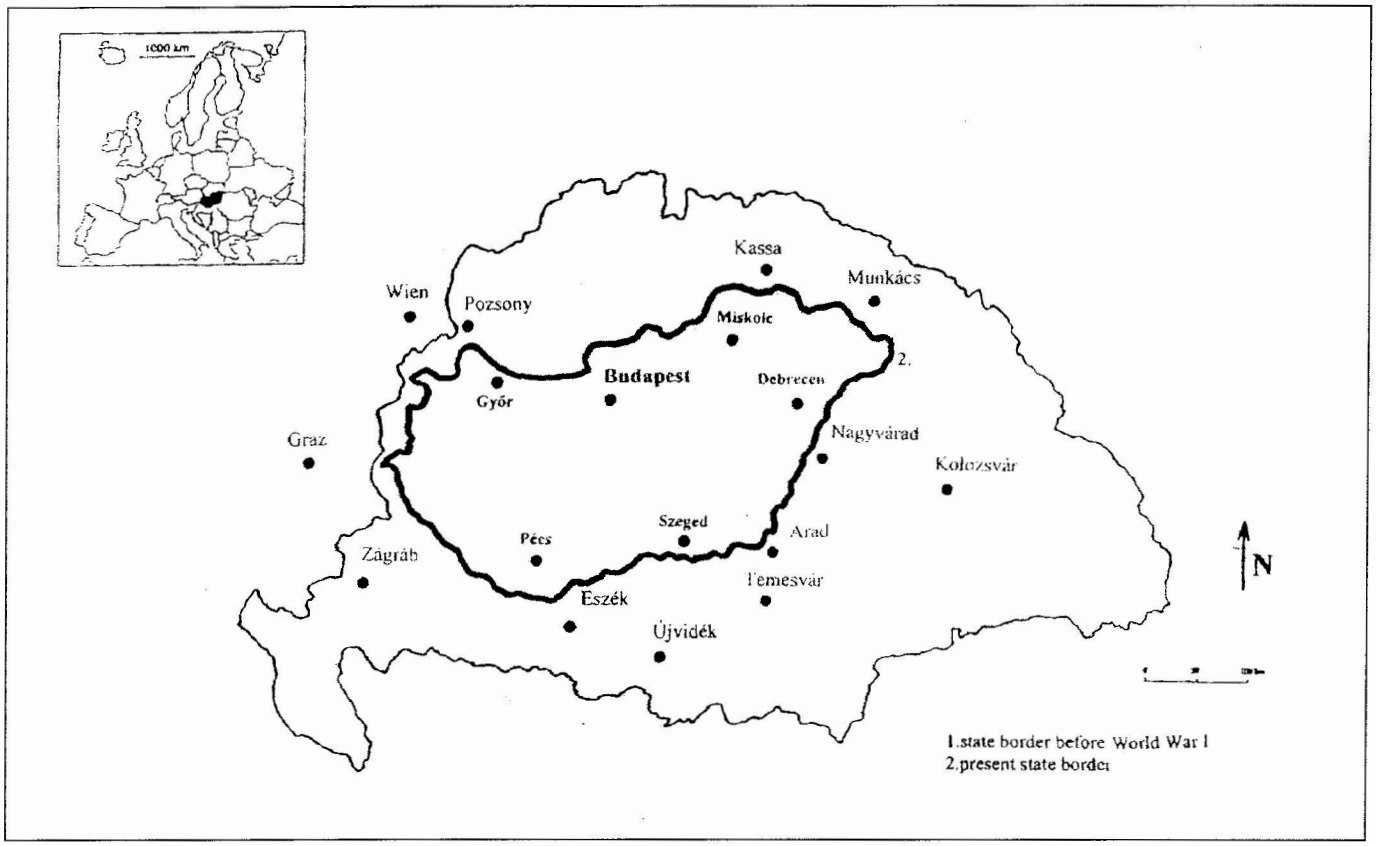

Fig. 1: Location of Hungary and the major Hungarian cities.

Table 1
Significance of major cities in Hungarian industry

Denomination	Share of industrial employees of population (%)		Share of industrial plants of all industrial plants (%)		Share of industrial investments of all investments (%)		Share of industrial investments with foreign interest of all industrial investments (%)	Share of gross value of industrial fixed assets (%)	
	1990	1998	1990	1998	1990	1995	1998	1990	1998
Budapest	21.7	14.1	30.5	12.0	19.0	13.4	10.3	21.0	18.8
Regional centers	14.6	14.5	11.0	7.5	10.2	7.2	21.8	12.3	12.1

*Data of counties to which each regional center belongs. They are the primary destinations of the industrial investments with foreign interest. (*Sources: Regional Statistical Yearbook,* 1990, 1995 and 1998; *Statistical Yearbook of Budapest,* 1990, 1995 and 1998; *Industrial Almanac,* 1998).

Table 2
Some characteristics of industry in the major Hungarian cities

Denomination	Share of industrial firms of all firms (%)	Share of industrial employees of population (%)		Share of industrial investments of all investments (%)		Share of industrial firms with foreign interest of all industrial firms (%)	Gross value of industrial fixed assets per 1,000 inhabitants (USD)
	1998	1990	1998	1990	1995	1998	1998
Budapest	9.8	13.8	9.4	24.3	22.2	9.9	1,098
Debrecen	3.6	15.1	8.3	44.0	31.6	10.0	1,135
Győr	6.6	23.6	17.6	59.7	48.5	11.8	4,095
Miskolc	4.8	20.4	9.5	41.1	38.4	5.7	1,301
Pecs	3.9	14.8	8.0	44.1	32.5	10.8	1,521
Szeged	3.8	15.2	9.2	41.5	32.5	9.2	1,883

(*Sources: Regional Statistical Yearbook,* 1990, 1995 and 1998; *Statistical Yearbook of Budapest,* 1990, 1995 and 1998; *Industrial Almanac,* 1998).

more than 14,000 of them, while in the five cities only a few hundred.

The future of former state-owned companies was developed in a different way after 1989. Basically, it depended on how they reacted to the new circumstances. The majority were re-organized into a new form keeping their original size. Only a few of them have disappeared for ever in each city (e.g. a milk factory in Pécs, a tinned food factory in Szeged, a textile company in Győr), except for Miskolc where several were closed down, primarily because of the loss of markets. Considering the number of firms closed down, de-industrialization is not advanced in the cities studied except for the capital. The third group of former state companies consisted of such state companies which have been partially or completely split up into units (e.g. the large metallurgic factory located in Miskolc has split up into 40 units), as in many cases they had several subsidiary plants to be diversified after 1989. A small number of plants continued to belong to reorganized large companies while the rest, the inefficient plants equipped with old, outdated machines, were closed down. The third group were detached from state companies and they have become independent units taking up a new form of organization. (For instance, a tinned food factory with about 4,500 employees located in Debrecen has been fragmented into three parts and nowadays each operates as an independent company). As a consequence of these processes, on the one hand, the number of plants spectacularly decreased by 38-53 percent in the five cities between 1990 and 1998. The drop in their number was especially great in Budapest, where ca. 4,500 plants operated in 1990 but in 1998 already only ca. 1,000. On the other hand, the increasing number of independent plants has also contributed to the rapid growth in the number of all industrial firms (fig. 2).

Parallel with the decreasing organizational dependence, spatial dependence has also been diminishing. This means that the number of firms where the plant and its headquarters are located in the same settlement (or site) has increased. Compared to the socialist era this is a great change because at that time many plants had distant headquarters (mostly in the capital). Since 1989, however, many headquarters of companies have tried to survive the crisis by closing down their plants located at a distance (e.g. in the cities studied). This has been a general strategy for many former state companies during the last decade. Just one example: the plant of the machinery factory called BHG located in Debrecen was closed down at the beginning of the 1990s, right after losing their markets, while its headquarters located in Budapest managed to operate until the end of the decade.

Besides organizational reform, reorganization of ownership has been another relevant consequence of the change in the political system. Due to privatization, state property has decreased while the share of private property has increased. The circle of owners has widened and diversified. Among them can be found Hungarian and foreign private persons, companies and various institutions. However, it is very common that an enterprise has a single owner. This applies to almost 60 percent of the firms surveyed and interviewed. The composition of proprietors is not a negligible factor, either for the given settlement or for the industrial establishment because it can affect their future since the firms or settlements where a few entrepreneurs are the owners with a high concentration of capital may become more vulnerable. In contrast, if there are several owners with different amounts of capital, there is a high probability of a change in ownership which can hinder effective operation.

In addition to Hungarians with limited capital, foreigners have also taken part in the privatization of industry. Attracting

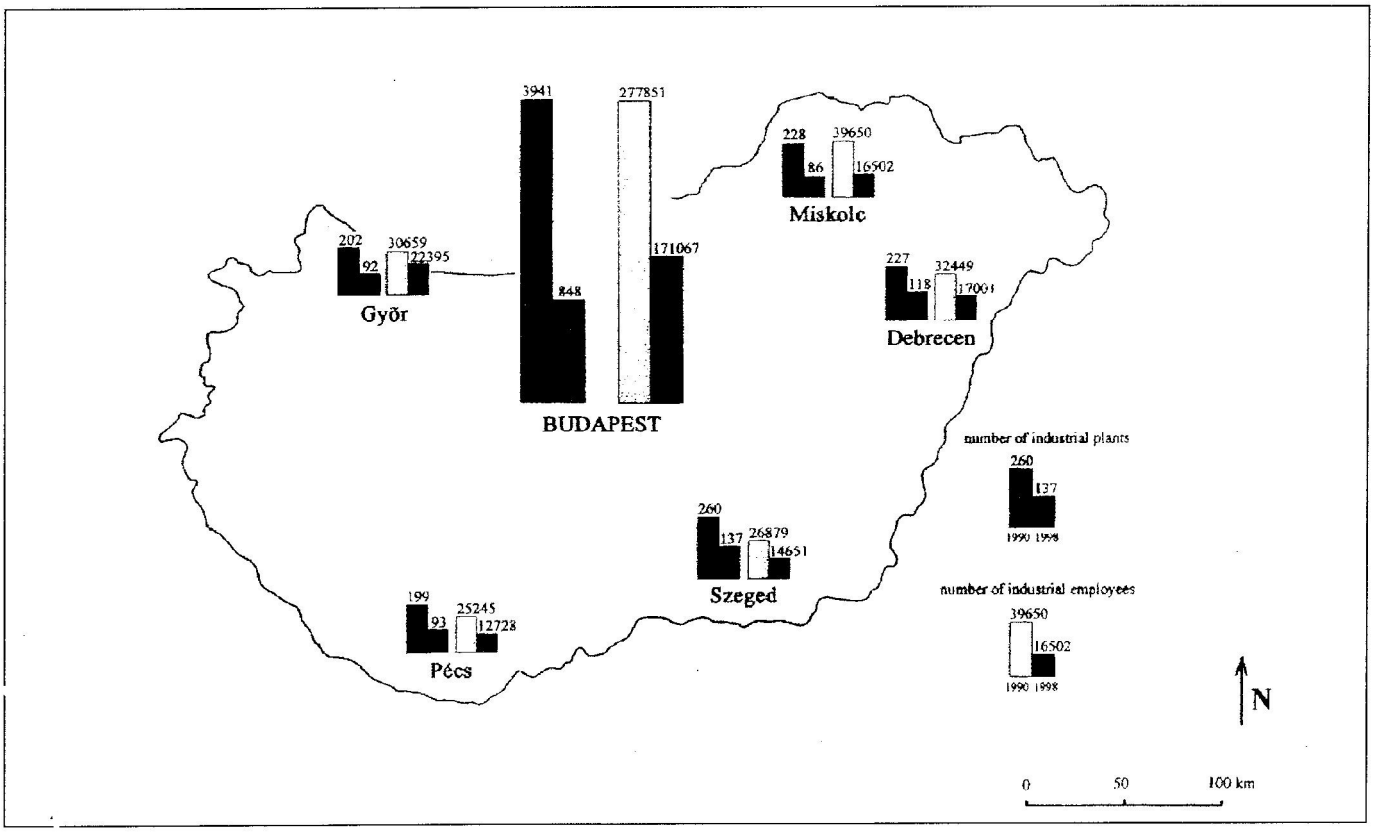

Fig. 1: Number of industrial plants and employees in the major Hungarian cities (1990-1998). (*Sources:* Regional Statistical Yearbook, 1990 and 1998 Statistical Yearbook of Budapest, 1990 and 1998).

the greatest interest of foreigners – explained by several factors – privatization has proceeded most rapidly in Győr. In the other cities it has taken place much more slowly. The main reason for this was a massive lack of capital while in Budapest a huge property supply existed. Foreigners preferred privatization of large-sized firms whereas smaller-sized ones as a rule were privatized by Hungarians. As a consequence, dual ownership was formed in the cities studied by the end of the 1990s, and this is in line with national trends (CSÉFALVAY, 1996). Foreigners strove to capture the companies with the best prospects and they neglected those producing deficits and with obsolete equipment. It was also their strong intention after a while to become the only owner of the former partially owned firm. Nowadays more than 4,100 firms with foreign interests operate in Hungarian industry, of which approximately 1,300 are to be found in the capital. According to the data of the *Industrial Almanac*, their number is far less in the regional centers (below 30 respectively). There is no doubt that foreign investment has played an extremely important role in the modernization and structural transformation of Hungarian industry.

Of the five cities, Győr has attracted the largest number of foreign investors. This is due to its favorable geographical location being close to the western border of the country. In addition, it is fairly well provided with infrastructure and a skilled labor force. The latter is partly related to the fact that during the socialist period local workers were permitted to be employed in Austria, to get acquainted with Austrian working culture and to adopt some of its elements. Furthermore, the well-known company there "Rába" has been an excellent "school" for the preparation of management, making staff eligible to lead the plants of multinational companies subsequently settling in the town. Miskolc is the other extreme with the lowest number of firms of foreign interest, because of its unfavorable geographical location, obsolete built environment and its less skilled labor force. According to one of the leading officials of the local authority, the lack of an extensive area for greenfield investment has also contributed to delayed foreign investments. The latter can be traced back to the following circumstances: the city is situated in a valley and thus there is no place for further expansion, suitable areas for new industrial establishments are private property and agricultural land. Foreign investors have appeared only since the end of the 1990s; until that time they stood idly by to see how local circumstances would turn out after the crisis. Citing the leader of the chamber of commerce and industry, lately the interests of foreigners have intensified towards the city and they are trying to provide them with different advantages as in the other cities. Owing to its peripheral location and lack of a motorway, there are only a few foreign enterprises in Pécs. Even Nokia has already left the city, partly because the promised developments have not been implemented. The cases of Szeged and Debrecen are very similar. However, in Szeged the lack of industrial professionals, economic problems and political instability beyond the frontier (crisis and war in Yugoslavia) were additional disadvantages, while in Debrecen probably the weak lobbying power of local leaders has also been responsible for the delayed influx of foreign capital. All these show that the spatial pattern of foreign capital clearly reflects the earlier developed advantages and disadvantages in each city.

During the socialist period the advantages of a site were not important at all. Settlements did not have to compete for investors. The location of a large new investment was primarily the outcome of a political decision (ENYEDI, 1996). Since 1989 this has changed. In the new social system competition has appeared and the strengths and weaknesses of a settlement have become more and more obvious. In other words: competition has brought them to the surface and this socialist inheritance has had a great influence on its further development. In contrast, in the developed Western countries, cities or sites have been involved in a new kind of competition, the rules of which have changed too quickly and consequently their former strengths and weaknesses have been put in a different light. They have been revised and this is also a relevant difference between Eastern and Western cities (ASHWORTH and VOOGD, 1997).

Recently traditional elements of attraction (like access to raw materials) of location selection have been pushed into the background and factors such as the availability of transport facilities, of immediate participation in the information flow and of logistics have come to the fore in Hungarian cities too. The general quality of life and built environment in the given settlement has been increasingly taken into account by investors. Probably, this explains why the headquarters and managers of a plant established in a less attractive settlement prefer to settle mostly in the capital. For example, a tobacco factory located in Pécs has been privatized by the British American Tobacco Company and their office was set up in Budapest and their managers commute to the factory, about 500-600 km a day.

Parallel with the organizational and proprietal transformation there was a marked shift in the size distribution in favor of small and medium-sized firms in the 1990s since the majority of the newly founded firms belonged to these categories. Recently a considerable part of the industrial companies employ less than 50 persons. Compared to Budapest (94 percent), however, the share of the firms with less than 50 employees is much lower in the five cities. There can be two reasons for this:

- a far lower number of small-sized firms have been established in these cities, because of the lack of capital and enterprising spirit; and,
- the pace of restructuring of the former large state companies has been much more modest.

This new structure of size categories shows strong similarities with that in developed cities, but the Hungarian small enterprises are still lagging behind in terms of skills, technical equipment and competitiveness (table 3).

Table 3
Number of industrial firms by organizational forms and their share by size categories in the major Hungarian cities, 1998

Denomination	Number of industrial firms	Of which		Share of industrial firms by size categories (%)				
		limited liability company	shareholder company	-10	11-20	21-50	51-300	300-
Budapest	14,981	7,457	309	79	9	6	4	2
Debrecen	120	74	28	43	13	21	21	2
Győr	169	129	24	33	19	7	25	16
Miskolc	141	100	21	40	23	20	12	5
Pécs	129	93	17	27	17	22	27	7
Szeged	109	73	20	23	22	21	19	15

(*Sources: Industrial Almanac*, 1998; *Statistical Yearbook of Industry*, 1998).

During the last decade the number of industrial employees has radically decreased. From this aspect de-industrialization is most advanced in Budapest and in the center of the Hungarian "Ruhr region," Miskolc. In both cities employment fell by 58 percent between 1990 and 1998. In the case of Budapest the main reason was the fast development of the service sector while in the case of Miskolc it was the crisis of traditional heavy industries. According to the leader of the chamber of industry, its first signs could have already appeared in the 1980s, but no one dared to rationalize it because of the large number of workers. Probably this was also the reason why the crisis lasted even into the mid-1990s. Pécs was severely hit by the decline of mining. All of its mines were closed down. Due to this and the restructuring of other firms, the number of industrial employees has decreased by 50 percent in Pécs. The analogous parameter values were 48 percent for Debrecen, 45 percent for Szeged and 27 percent for Győr. Debrecen and Szeged have not been hit by the crisis so severely as Miskolc, for example, since their industry had been much more multifaceted. In spite of this, reorganization and rationalization have led to a considerable decrease in employment, particularly in textiles, but the basic structure of industry has not changed. In the case of Szeged industrial renewal began rather late and lasted a long time. Perhaps its peripheral location, the Balkan war and the historical background explain this. Owing to its diverse industry, advantageous location, huge foreign investments and to its innovative urban management, it was Győr that experienced the decline to a lesser extent. The leading sector is the machinery industry there, particularly manufacturing of vehicles and their components and electronics as new sectors. The latter is also a new sector in Pécs, but in the other cities no such new branches are observed. In Győr the position of industry has been strengthened and it is developing very dynamically. Compared to the other cities the de-industrialization of Budapest has proceeded more rapidly owing to various factors (e.g. lack of space, acceleration of globalization, considerable foreign investments).

Changes in industrial areas

Changes that have taken place in the industry of the major Hungarian cities after 1989 have directly or indirectly affected the location of the industry and the size of the industrial areas. Thus, during the last decade industrial areas have also changed to a greater or lesser extent. Chapman and Walker (1988) have considered these changes partly as natural consequences of the evolution of industrial areas. In Hungarian as well as other Eastern European cities this process had proceeded very slowly before 1989, but then accelerated, owing to the change in the social system and to economic reforms. As a consequence, industrial space is in a different phase of transition in each city. The pace and measure of changes depend on several factors (e.g. the size, location and sectoral pattern of industrial areas, and the size of firms found in the same industrial district). All these also affect the prospects of each industrial area. There will be areas which remain almost unchanged while others will be partly or completely transformed and new industrial areas may also emerge.

In the major Hungarian cities most of the industrial areas were developed along the major transport routes and/or close to localities of raw materials during the period of two waves of industrialization. As a rule large contiguous industrial areas are mostly situated on the periphery, far from the city center while small ones are scattered in various parts of the cities for the choice of which there is no good explanation in many cases. Most of the industrial areas belong to one firm and date back to the end of the 19th century. Industrial areas formed a half crescent, a special industrial belt around the city center only in Budapest of the major cities. Nowadays industrial areas consist of two or three larger and several smaller units in each city (fig. 3).

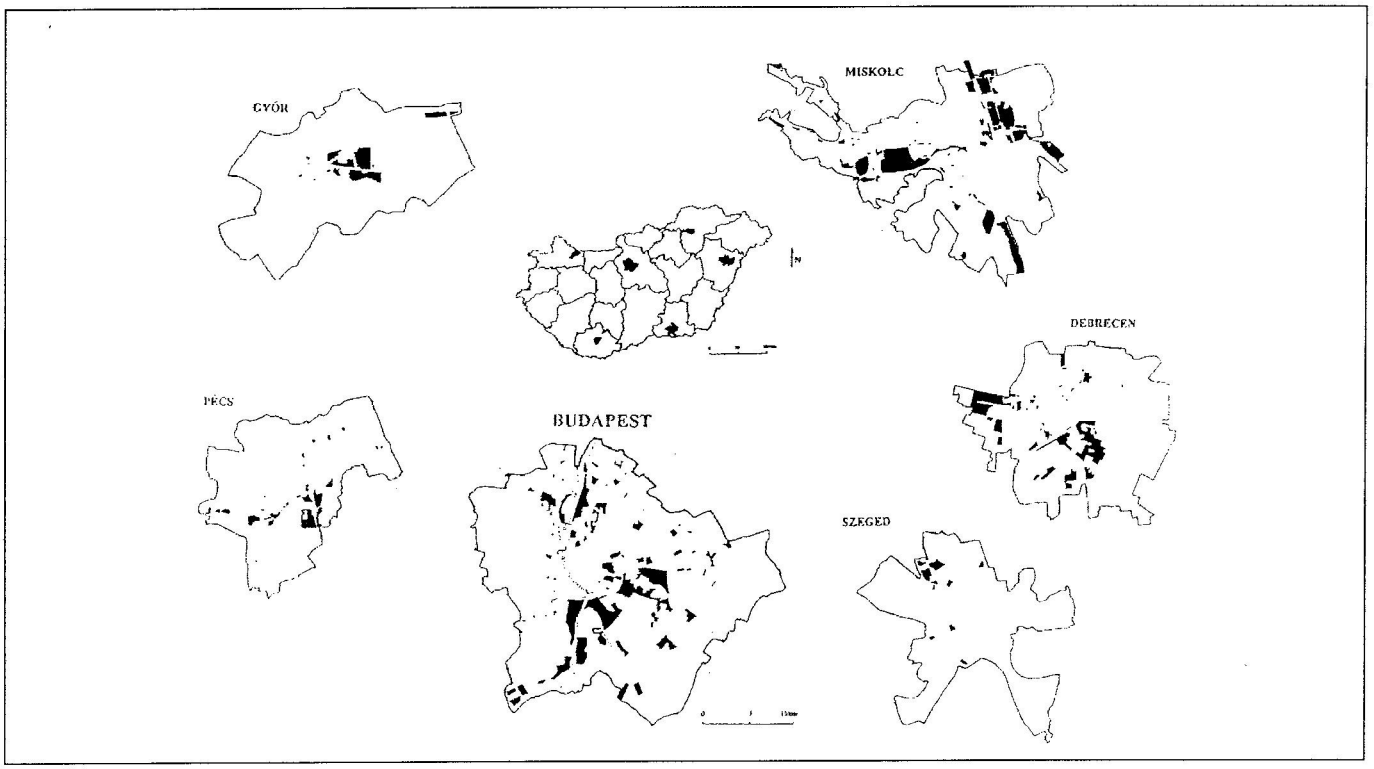

Fig. 3: Industrial areas in the major Hungarian cities in the 1990s. (*Source:* Master plan of cities. Survey carried out in Budapest in 1998).

During the last decade radical changes have not affected the spatial order of industry considerably. On the one hand, because in each city only a few factories were closed down and later some of their sites have been re-utilized for industrial purposes. For example, the area of a former factory manufacturing prefabricated blocks for houses located in Győr is now shared by several industrial firms forming a kind of small industrial estate. On the other hand, because only a few new industrial firms have been established as greenfield investments (for example, an American company called Ross Mould established a plant in the northeastern part of Miskolc). Probably, the fact that the old industrial areas were underutilized was also motivation for the spatial structure of industry not changing significantly. This was emphasized by the chief architect of Miskolc, where old industrial areas could receive new enterprises. After rehabilitation, mining areas could also be a potential site for new firms in Pécs. In addition each chief architect noted that in the long run only small sites might disappear which are close to the city center or to residential areas and where polluting factories are located. This involves not more than a couple of firms in each city (e.g. a mill in Debrecen, a textile plant in Pécs, a plastics factory in Miskolc). Although the new scenes of industrial production which are industrial estates have also appeared in each city, the spatial pattern of industrial areas has not changed considerably, as they usually border on existing industrial zones and/or they are mostly brownfield investments.

Moreover, neither the relocation of industrial plants within a city nor their suburbanization are characteristic. This can be explained by numerous factors, to mention only a few: relatively large industrial areas are available (part of them have to be rehabilitated) and their current pattern is suitable, lack of capital, while neighboring settlements (e.g. their infrastructure) are not prepared to receive industrial establishments. Only the manager of a machinery firm located in Miskolc has indicated that they had to relocate part of their firm into a neighboring settlement, because at the original site there was not enough space for further development. Almost every firm asked reported that their location within the given settlement has remained the same since they were established and generally the location of their firms was judged to match the urban pattern. Thus, the actual sites do not cause any problem from the aspects of land use and spatial structure. In the case of lack of space, the firms asked do not intend either to relocate their sites or to purchase a new site further away from the present one. Only three of the managers interviewed said that they intended to solve this problem by extending their present site. All these also anticipate that the spatial pattern of industry will not change spectacularly in the major cities, except for Budapest, in the near future either.

Due to the reasons mentioned above the extent of industrial areas has not changed considerably either over the last decade except for the capital. According to the survey carried out in the second half of the 1990s in Budapest their extent has decreased by 40 percent on average, and this process is still under way. The drop was especially significant in the northern and northeastern parts of the capital's industrial zone. The expansion of the city center in these directions has also contributed to their fast de-industrialization. And it has resulted in the splitting of the large continuous industrial zone into smaller units. Such trends cannot be observed in the regional centers, partly because these city centers have sufficient room for the further expansion of city functions. At the same time the change of function and the expansion of the city center have taken place much more slowly in the southern-southeastern than in the northern-northeastern part of the capital. Basically here, the main tendency is the rehabilitation of old industrial areas.

At the end of the 20th century in Debrecen 11 percent (672 ha) of the administrative area of the city is occupied by industry, in Győr 12 percent (600 ha), in Miskolc 19 percent (1,100 ha), in Pécs 4 percent (250 ha) and in Szeged 10 percent (529 ha). This also means that its share either in Budapest (about 5 percent, 2,500 ha) or in the area of each city is still considerable. Compared to some other capitals these findings are also valid. For example in Tokyo its share is around 7 percent (4,000 ha) (TAKEUCHI, 1985), in Warsaw 5 percent (2,300 ha) (MISZTAL, 1997), and in Helsinki 14 percent (2,500 ha) (KISS, 1996), even if we add that these areas may also have shrunk in recent years. This big difference in the share of industrial areas between Budapest and other major Hungarian cities can be primarily traced back to the differences in their function and the importance attached to industry in the local economy. Namely, Budapest as a capital has to fill different capital city functions besides other, so called "normal" city functions, and partly because of this, its tertiary sector develops more rapidly and its manufacturing industry has less importance in the local economy than in the other major cities in Hungary. These facts indicate, on the one hand, that the processes taking place in the industrial areas of Budapest differ from the other major Hungarian cities. In a certain sense it follows a special development process that, on the other hand, is very similar to that of the other capital cities. In other words, Budapest pursues much more the trends observed in developed capital cities, therefore their impacts show plenty of similarities to them.

With the shrinkage of urban manufacturing, derelict and redundant industrial areas also emerged as new phenomena in Eastern European cities, but the processes that brought them about are not new (BEAUREGARD and HAILA, 2000). They are very similar to those of developed cities, and the change of the political system in Eastern Europe in 1989 only accelerated them, and opened a green light for them. The share of these areas is not considerable in the cities studied except for Budapest where its size can be estimated at a few hectares. These areas can be re-utilized in different ways depending on the intricate relationship of different factors (size and location of the industrial areas, circle of owners, etc.). In the regional centers of Hungary their re-utilization for industrial purposes is much more common than in Budapest. This also proves that greater importance is attached to industry in the local economy in these cities than in the capital. On the other hand, this also means that the functional transformation of former industrial areas proceeds more slowly in the five cities than in the capital. That is why only a few examples can be listed for this process in each city, where the old derelict industrial areas and buildings have been re-utilized for non-industrial purposes, mainly for service functions. In the place of former industrial establishments many new buildings with different functions have been established which have adjusted to the challenges of the new age. For instance, the former halls of a food-processing factory in Szeged were sold and various shops and other commercial establishments have been established in them. In Győr a former textile hall has been converted into a big shopping center called Interspar. In Pécs ca. 20 companies with different (industrial and non-industrial) activities operate on the site of a former leather factory, the remaining part of which also operates there. In Debrecen new housing occupies the place of a former bakery. Recently there have been more and more attempts for other utilization of traditional industrial areas (e.g. as a residential area, as a parking place or as a park), mainly in the capital where numerous examples can be mentioned for the re-utilization of derelict industrial establishments. They are found mostly in the northern-northeastern part of the city where transformation is the most advanced. For example, the buildings of a former screw fac-

tory located in the 13th district have been renewed and nowadays numerous shops, services and supermarkets can be found in them. Its renewal was among the first to take place in the middle of the 1990s. Due to this functional transformation called "adaptive re-use" by Cohen (1998), traditional homogeneous industrial areas have become more heterogeneous, especially in the capital.

It is quite difficult for local authorities to influence the re-utilization of former industrial areas, because they are usually in private ownership. This is also the reason why they have only limited and mostly indirect means (building regulations, environmental rules) to influence the processes taking place in these areas. As a consequence, most often the re-utilization of these areas seems to be a spontaneous process. However, it is important to emphasize that lately local authorities have been trying to take firm steps in order to be able to carry out their ideas and concepts. Moreover, the local population also express its opinions more and more definitely. But essential changes in the regulation of land use of old industrial areas can be expected only in the long run.

Parallel with the functional transformation of derelict industrial areas, the partial or entire renewal of those industrial establishments can also be observed in each city which keep their original industrial function, but their modernization and adjustment to new challenges are unavoidable. The majority of them are under rehabilitation or renewal. This means that old buildings are being restored, reconstructed and/or new halls built if necessary. This also indicates that industry will be reckoned with in the long run. This is the main characteristic for the southern and southeastern parts of Budapest's industrial zones and for an overwhelming part of the industrial areas of the five cities. According to the survey, the renewal of the outlook of the old industrial establishments has proceeded much more quickly in the firms with foreign interests. As these modernization processes usually take place "within the factory gates," they are not so spectacular for the public. They do not have any remarkable effect on the urban pattern either.

Conclusion

At the end of the 20th century, significant reforms had taken place in Hungarian industry and most of them have already been completed by now. They have renewed industry, and industrial space has also undergone relevant changes. Regarding their extent, however, there are significant variations, especially between Budapest and the other major cities. Due to several factors (acceleration of globalization and tertiarization, lack of space, developed infrastructure, skilled labor force, etc.) and particularly due to the capital city functions, reforms have proceeded much more quickly in the capital than elsewhere. De-industrialization and functional transformation are far more advanced in Budapest, where a considerable section of the traditionally contiguous industrial belt has been replaced by new, mainly service functions. Thus, a new urban structure and functional divisions have begun to take shape which have a major effect on the urban landscape and social structure of the city too.

In contrast with the capital, in regional centers the changes in industry started later and progressed at a slower rate, because of the slow spread of innovation, unfavorable geographical location, small amount of foreign investments, etc. But among these cities there are also considerable variations concerning the extent of changes. One of them, Győr, has responded the fastest to the new challenges and it is now one of the most dynamically developing industrial centers of the country. Many multinational companies have settled here because of its favorable geographical location, closeness to the western border, skilled labor force, good transport location and infrastructure. In spite of this, its urban structure and land use have not changed during the last decade. The same can be said about the other regional centers. Their industrial transformation has taken place more slowly and it has not led to a new spatial order.

Probably, the basic differences in the industrial transformation, which in Hungary are between the capital city and the other major cities, can also be observed in the other Eastern European countries. According to the Hungarian experience, it seems that in the post-socialist era the capital city and the other major cities show divergent trends of development. The capital city pursues the path of developed cities but with a phase delay; however, within a few years the gap may be closed and it will be able to integrate into the changing urban network of European cities. At the same time, the other major cities follow a special course in which industry will gain greater significance than in the capital. At present they are in search of their new position and function in the changing Hungarian urban network. Probably, in the new era – as the transition period coming to its end – the gap in the rate of development between the capital and the other major cities will further broaden. In the long run they have to cope with new challenges which can much more radically affect their industry and industrial areas.

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