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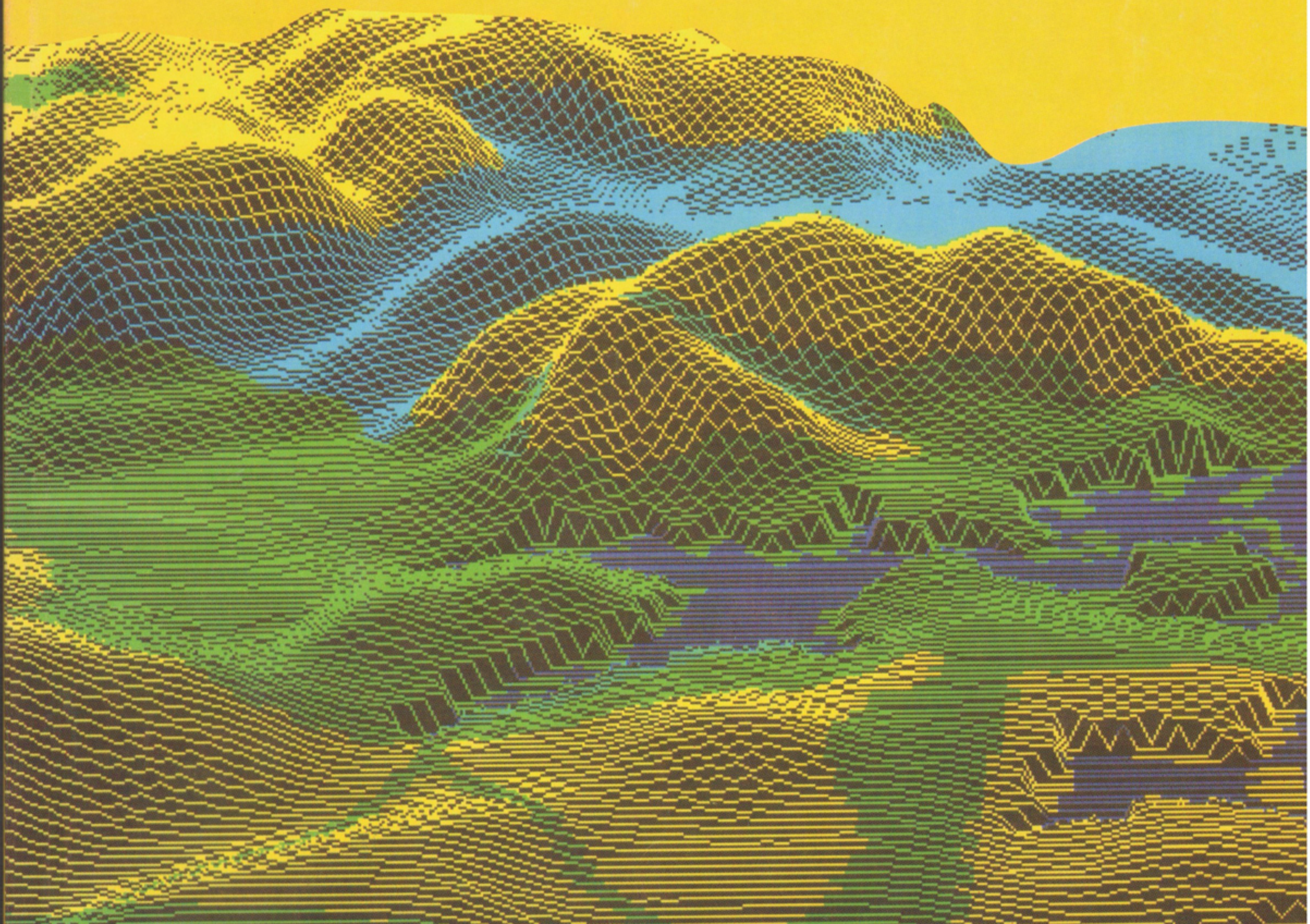

Illustrations to P. Ptáček's, A. Létal's and S. Sweeney's paper.

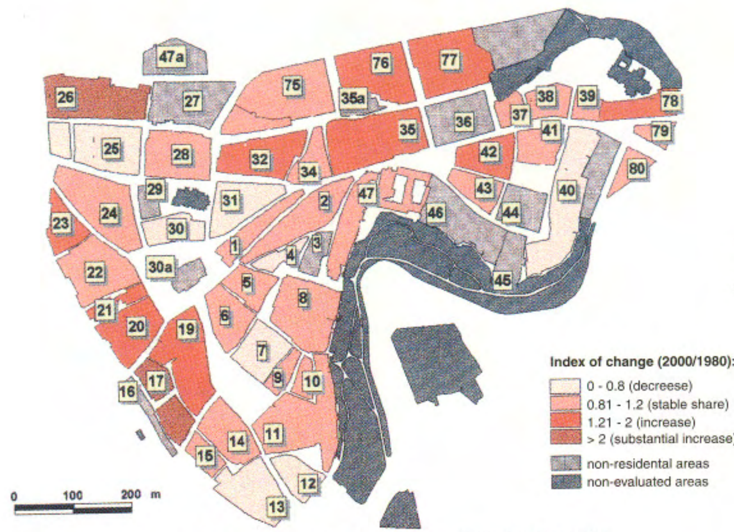

Fig. 2a: Index of changes in housing (2000 / 1980)

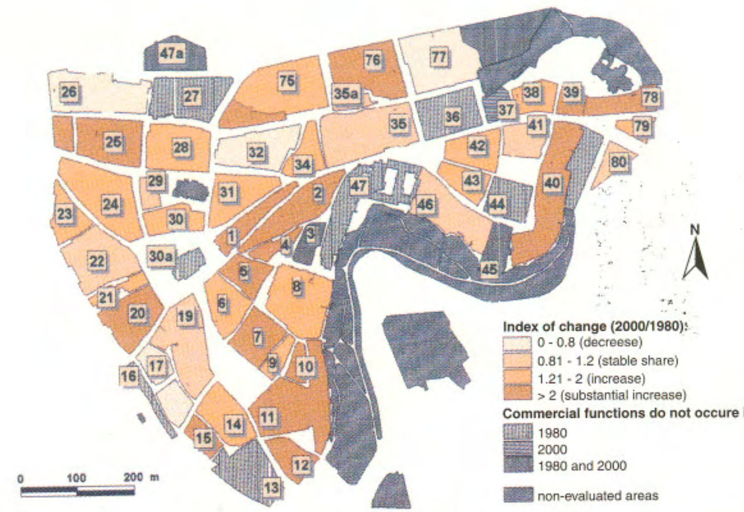

Fig. 2b: Index of changes in commercial functions (2000 / 1980)

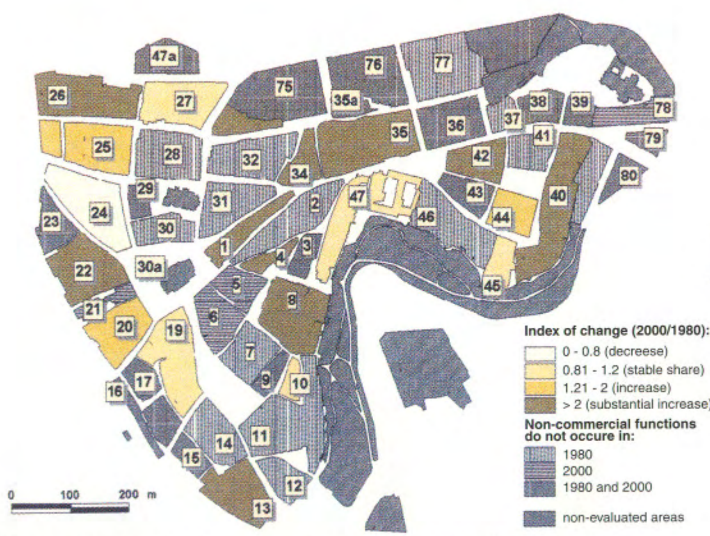

Fig. 2c: Index of changes in non-commercial functions (2000 / 1980)

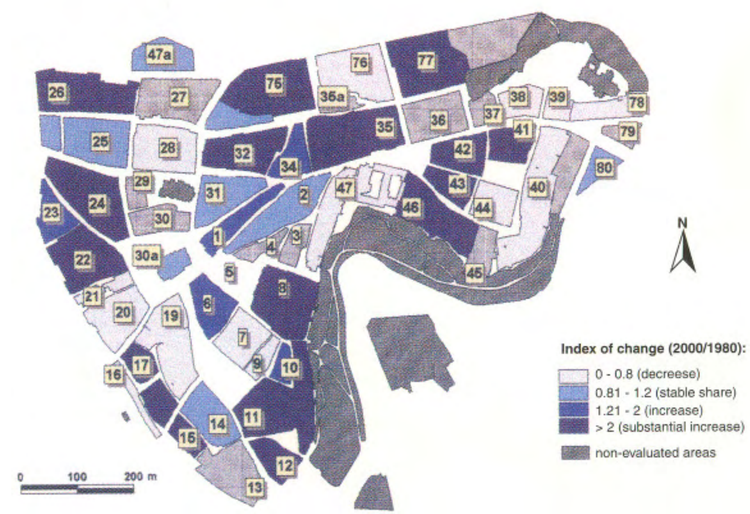

Fig. 2d: Index of changes in other functions, mainly reconstructions (2000 / 1980)

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MAILING ADDRESS

MGR, Institute of Geonics, ASCR
Drobného 28, 602 00 Brno
Czech Republic
(fax) 420 545 422 710
(E-mail) geonika@geonika.cz
(home page) http://www.geonika.cz

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Articles

Reports

AN EVALUATION OF PHYSICAL AND FUNCTIONAL CHANGES TO THE INTERNAL SPATIAL STRUCTURE OF THE HISTORICAL CENTRE OF OLOMOUC, CZECH REPUBLIC, 1980 - 2000

Pavel PTÁČEK, Aleš LÉTAL, Sandra SWEENEY

Abstract

Substantial changes have taken place in the physical and functional structure of cities in Central and Eastern Europe since 1989. The post-communist transformation of the urban environment both shares general trends and expresses specific characteristics based on the historical development of a particular city. In this paper we examine both observed and anticipated changes to the internal spatial structure of the historical centre of Olomouc. Those changes which have taken place during the twenty years bracketed by 1980 and 2000 have been derived by comparing equivalent data from the two periods. While it may not be possible to predict with any real precision the future development of the internal spatial structure of the historical city, based on general trends we have highlighted several possible future scenarios. Classical GIS methods were used to connect the spatial and statistical databases.

Shrnutí

Zhodnocení změn ve fyzické a funkční struktuře historického centra Olomouce (Česká republika) v letech 1980 a 2000

Po roce 1989 došlo k podstatným změnám ve fyzické a funkční struktuře měst ve střední a východní Evropě. Postkomunistická transformace městského prostředí zahrnuje jak obecné trendy společné většině zemí, tak specifické charakteristiky vycházející z historického vývoje jednotlivých měst. V následujícím článku se autoři zaměřují jak na očekávané, tak na pozorované změny v historickém centru Olomouce po roce 1989. Jsou srovnávána ekvivalentní data z dvou období, z let 1980 a 2000. I když se nedá do detailu předpovídat budoucí vývoj vnitřní prostorové struktury města, autoři se pokusili na základě obecných trendů a specifik města nabídnout scénáře možného budoucího vývoje. K analýze prostorových a statistických databází je použito klasických metod GIS.

Key words: *Czech Republic, Olomouc, internal spatial structure, cities after socialism, GIS*

1. Introduction

Like many other cities in post-communist Europe, Olomouc has initiated substantial changes to the physical and functional use of its internal spatial structure (Fig. 1). The main aim of this paper is to examine both the real and anticipated changes in the internal spatial structure of the historical centre of Olomouc and to interpret them in light of the general trends taking place in post-communist towns and cities in Central and Eastern Europe. In this paper we focus on specific changes to the city's historical centre. With respect to the city's functional structure we are concerned mainly with the process of commercialisation and the loss of housing function. In discussing changes to the physical structure we concentrate on anticipated upgrading to the physical condition of buildings. We use classical GIS methods to link spatial and statistical databases.

1.1 Development of post-communist cities – main processes and tendencies

Current discussions about post-communist cities and their transformation are extensive and have brought forward many novel theoretical approaches, along with some practical examples (Sýkora, 2000; Matlovič et al, 2001; Weclawowicz, 2000). While these authors often stress the uniqueness of these processes for particular cities, on the other hand they agree on general trends. The timing of these processes depends on:

1. the vertical position of the city (size of the city);

2. horizontal position (location within the national and international settlement system network, location with respect to main urban centres and axes); and
3. the stage of economic transformation achieved by the particular country.

Fig. 1: Situation map

The following table presents a theoretical framework of the main processes taking place in post-communist towns and cities. It shows that the transformation of the internal spatial structure of the city is a very complicated and complex process.

Szelenyi, 1996). Changes which took decades in Western European towns and cities have been contracted into a decade or so in post-communist Central and Eastern Europe (Pickvance, 1996). Olomouc, where development since 1989 has brought a wide range of changes to the city's internal spatial structure, is no exception. Among those changes which have affected the historical centre we can expect and, therefore, we focus on:

1. the substantial physical renovation of buildings in the historical centre accompanied by changes in both their ownership structure and use;
2. a continuing or accelerating decline of the population in the historical centre, and changes in its structure, namely, the beginning of the process of gentrification in which marginal social groups are pushed out of the centre to be replaced by higher income groups, especially foreign employees who are mainly from Western Europe, and local young urban professionals or „yuppies"; and
3. the continuing commercialisation of the historical centre related to population decline and the replacement of the residential function with business functions.

	Type of structure in the inner city		
	morphological	functional	socio-demographic
Transformation processes	suburbanisation gentrification revitalisation intensification urban decay	suburbanisation commercialisation de-industrialisation demilitarisation sacralisation functional fragmentation	suburbanisation gentrification segregation separation socio-economic decay

Source: Matlovič et al. 2001

Tab. 1: Basic transformation processes of a city's internal spatial structure in post-communism

These processes begin earlier and are more intensive in larger towns or cities. This is especially true of capital cities which very often serve as „gate cities" for an entire country. Thus, the post-communist transformation taking place in the historical centre of Olomouc should be less intensive than that of either Prague or Bratislava (Matlovič et al., 2001). Compared to the two capitals, the most significant changes to have taken place in Olomouc are the restoration and commercialisation of the historical centre. Although the intensity of the processes at work may lag behind that of both Prague and Bratislava (Matlovič et al., 2001), substantial changes can be observed that are in keeping with the general trends elucidated by Häussermann (1996) and Szelenyi (1996).

1.2 Post-communist development in the city of Olomouc: principle anticipated tendencies

A typical feature of the changes taking place in post-communist cities is their rapidity (Pickvance, 1996;

Several papers present a more complex view of the post-communist city (Weclawowicz, 2000; Sýkora, 2000a, 2000b, 2001). These authors deal with theoretical and methodological problems. Others, namely Häussermann (1996), Pickvance (1996) and Szelenyi (1996) derive general trends and present them using case studies of particular cities in Central and Eastern Europe.

1.3 Historical development of the city of Olomouc

Olomouc is an historical city with 103,000 inhabitants located in the centre of Moravia, one of the historical Czech lands. It is the capital of the County of Olomouc (Olomoucký kraj) which has 640,000 inhabitants. Olomouc dominates the regional economy and in it are concentrated many progressive economical activities, namely, Palacký University. Due in large measure to historical circumstances, the internal spatial structure of the historical centre has survived almost intact. To appreciate the current situation in Olomouc, we must make a brief excursion into the city's history.

Olomouc, which was once the capital of Moravia, is now the most important town reserve in the Czech Republic after Prague. It has been continuously settled since the 6th century. During the Thirty Years War, when the city was captured and pillaged by the Swedes (1642-1650), it was almost completely destroyed. In 1650 the population of the town numbered only 2,000 inhabitants and most of the buildings were destroyed. Although the reconstruction of Olomouc into a Theresian fort (1745-1755) suppressed all economic development, it preserved the city's historical centre intact. No longer walled, the city centre and the inner city in general have preserved their spatial and architectonic patterns. These survived basically until 1948 due, in large part, to the combined efforts of its enlightened administration and the presence of the important architect Camillo Sitte who designed the ring area behind the townwall. Developments made between 1968 and 1990, during which time the city was the main residence of the Soviet occupation army in Czechoslovakia, have left the biggest scar on the city. Following the repatriation of the Soviet army in 1990-92 the town once again began to fulfill its original pre-World War II ideas of development. The most significant change was that from a military to a „university town". With the UNESCO designation of its Holy Trinity Column located on the Main Square, Olomouc is now listed as a World Heritage Site.

2. Material and methods

The empirical foundation for this research is based on a comparison of the functional structure and the physical condition of entire buildings in the historical centre for the years 1980 and 2000. A database of 641 buildings was used. These were connected into 64 blocks of houses to provide a better overview of the process of change. Generally speaking, the blocks are already a combination of more than one factor, i.e., combined residential and commercial use. Introducing a finer scale, i.e., maintaining the 641 units, would create too much variance and leave too much „noise" in the data. The likelihood of not observing any pattern within a given data set increases with decreasing sample size (Arrillaga and Arnold, 1990). By using our approach, in other words, pooling the dataset of individual house units into house blocks, we lowered the likelihood of finding any pattern. Despite this, we found a clear pattern of change in the internal spatial structure of the historical centre which simply supports the strength of the data structure.

For 1980, we obtained unique material from Olomouc City Hall which included basic documents for the city's master plan preparation (Magistrát města Olomouce, 1980). These documents include detailed information on the physical condition of entire houses and their functional use which has allowed us to create a detailed database for the year 1980. For the year 2000 we designed a survey to evaluate the present condition of the buildings compared with that of the previous twenty years. In May 2000 the survey was completed.

2.1 The survey

The survey (Tab. 2) used a qualitative scale to rank the condition of the buildings on a scale of 1 (excellent) to 5 (worst category). Using the results of the survey we evaluated the physical condition of buildings for which the chosen representative feature was the physical condition of the facade. The functional use of the buildings was initially divided into nine categories which were then reduced to four basic ones, namely: housing, commercial use (administration, offices, accommodation, shops, production), non-commercial use (education, health, culture, church), and other (mainly buildings under reconstruction or not in use).

2.2 GIS Applications

In this paper we use the GIS program ArcView, which allows for spatial and statistical analyses to be linked and the results presented visually. ArcView 3.1 software and ArcView extension Diagram Wizard 3.0 were used to produce cartographic outputs, simple statistical calculations and spatial analyses. For the spatial database we used a digital plan of the historical centre (1: 1 000). The 64 blocks of houses were chosen as the basic identification feature. Because GIS needs data in digital format two principle sections of analogue data were converted.

The main map (spatial database) was prepared using the cadastral map of Olomouc. The map had to be adapted for working in Arcview and updated for our research needs. The basic map was modified using methods of cartographic generalisation. The spatial database consists of two polygon layers or shapefiles. The shapefile buildings consist of 641 polygon objects while the shapefile blocks consist of 64 polygon objects.

A database of descriptive input was acquired using City Hall's own materials combined with the information obtained from the 2,000 survey. There are two types of maps presented in this article. The first demonstrates the index of change in the functional use of buildings (Fig. 2a-2d - see cover p. 2). The index value (colour) indicates the extent of change in the building's functional use (deepest colour siginifying the greatest level of change). The second presents the structure of a building's functional use in the two periods (Fig. 3a and 3b). The final spatial database provides exceptional material for studying changes in the internal spatial structure of the historical centre of Olomouc.

Zone: 1 2 3 4 5 6 7 8 9 10 11 12 13
Street, house number:______________________
Questioner:
Date:

A. PHYSICAL CONDITION

1. Condition of fasade

1 2 3 4 5 under reconstruction

2. Inner part of the house

1 2 3 4 5 under reconstruction

3. Courtyards, inner open spaces

1 2 3 4 5 under reconstruction

B. FUNCTIONAL USE OF THE HOUSE

4. Number of floors

underground
overground

5. Prevailing functional use (%)

shop		health care	
culture		workshops	
education		church	
offices		other	
accommodation and catering		not evaluated	

6. Names of companies and branches

7. Names of occupants

Tab. 2: Survey of the physical condition

3. Results

3.1 Post-1945 trends affecting the recent spatial structure of the historical centre

To understand the current condition and use of the buildings in the historical centre, we must turn an eye to more recent history. Until World War II the historical centre was predominantly settled by both Germans and Jews, with the Czech population primarily in the suburbs. During the war, all Jewish property was confiscated by the Nazi regime and the overwhelming majority of the Jewish population were transported to concentration camps, from which they did not return. In 1945-6 when the German minority was expelled from the country, their properties were etatised and newly settled by Czech inhabitants from both other parts of the city and from the countryside. By that time, generally speaking, the housing and hygienic conditions had been seriously degraded. The pattern of public ownership, combined with low rents, played a dominant role in the spatial structure of the historical centre for the next fifty-odd years. The pattern which led to low quality undesirable living space in the historical centre has been described in detail by Häussermann (1996).

At the same time, Palacký University, re-established in 1946, was given several large pieces of property by the state. The majority of its faculties are still located in the historical centre.

In 1953, Ordinance 323/1953 was passed. This legislation was meant to legally enforce the settlement of nomadic groups in Czechoslovakia, predominantly Gypsies. They were to stay in the city or village where they were staying on a particular date. These groups, having little money, tended to settle in state-owned houses with poorer hygienic conditions and lower rents, which were predominantly located in the historical centres of Czechoslovak cities and towns (Pickvance, 1996; Szelenyi, 1996). This was also true for Olomouc.

In 1959, the Act on Housing Co-operatives (Act 27/1959) initiated large-scale housing estate construction on the

Fig. 3a: Functional use of houses in he historical centre of Olomouc (in 1980)

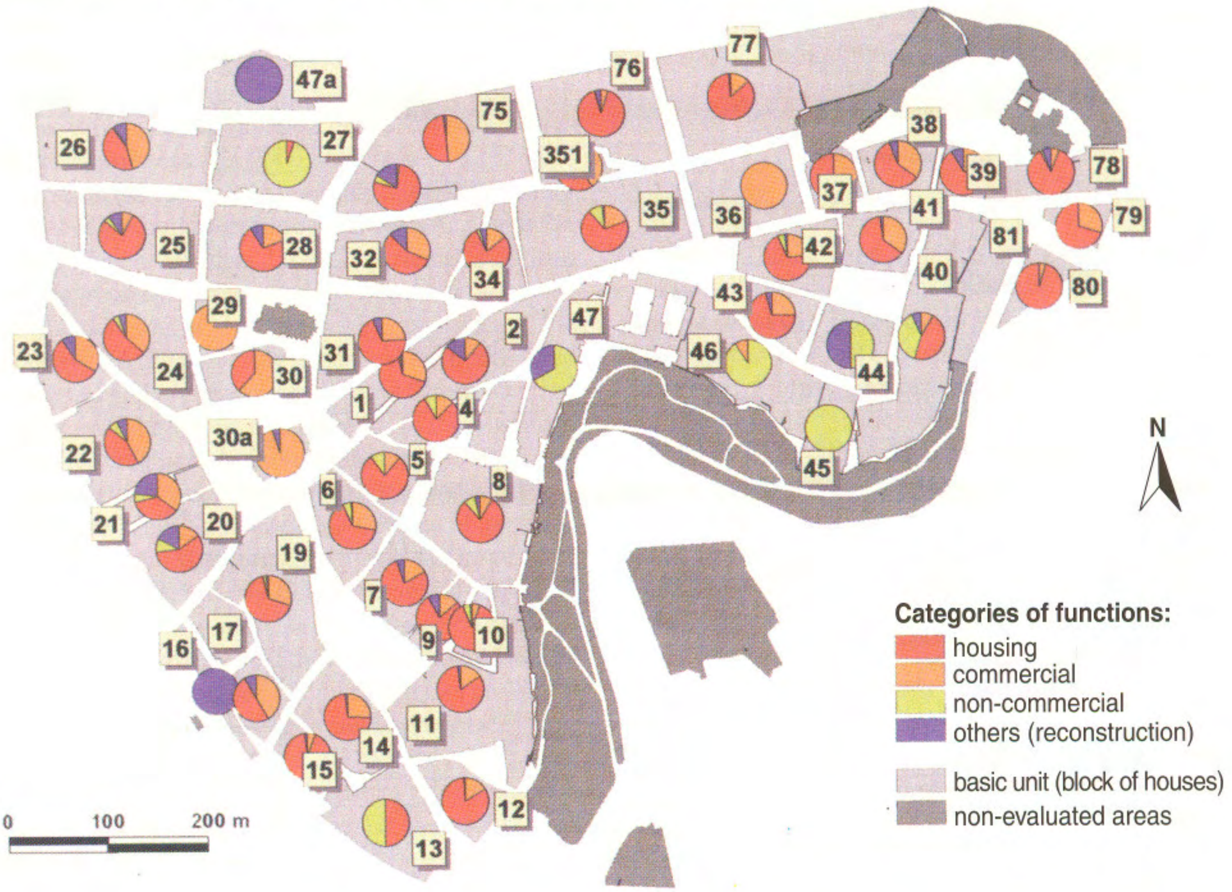
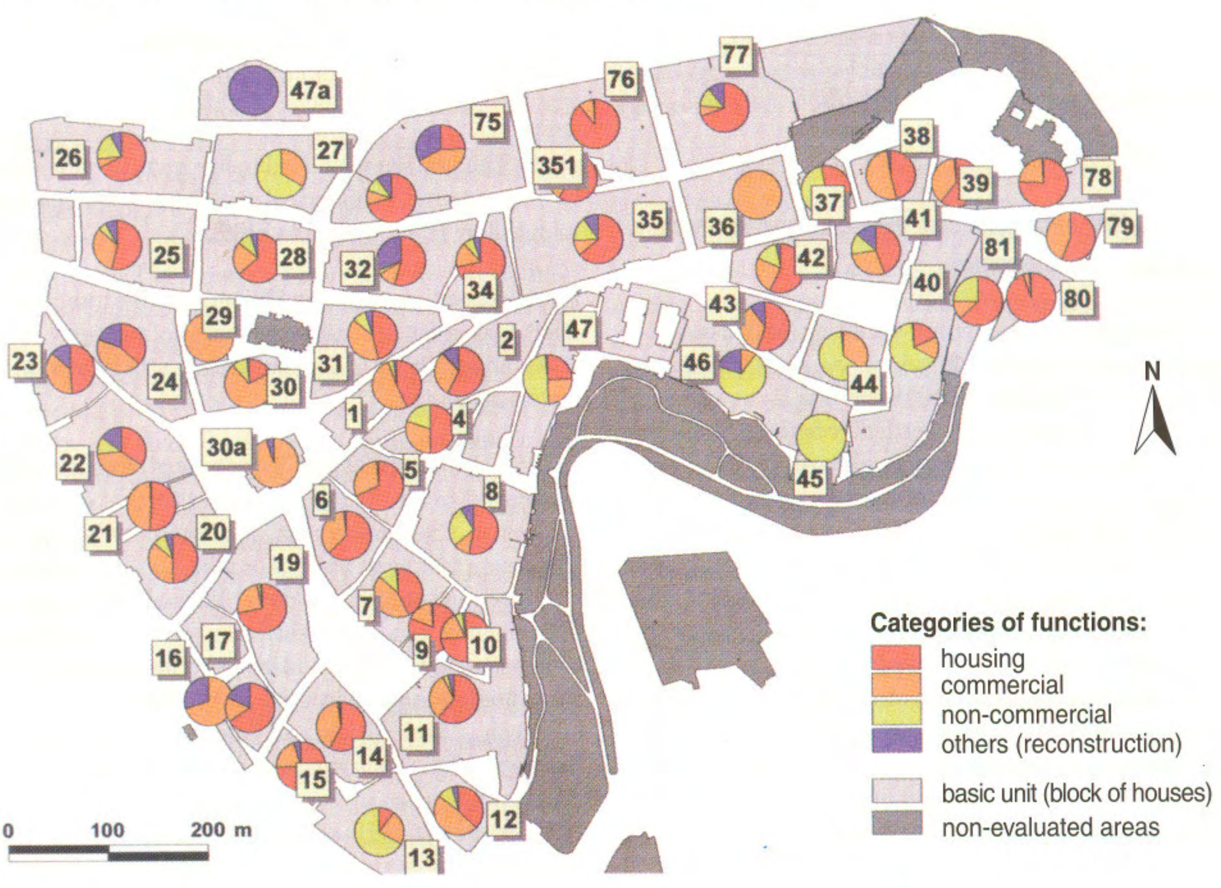


Fig. 3b: Functional use of houses in the historical centre of Olomouc (in 2000)



periphery of cities. These prefabricated skyscrapers offered better living conditions for people living in the historical centre. Residential properties in the historical centres were seldom renovated because rental incomes failed to cover the costs of improvements. The continual degradation of the historical centre's physical conditions also led to social structure degradation with primarily elderly people and lower social strata families remaining (Häussermann, 1996; Szelenyi, 1996).

While the trends described above were more or less universal, one event made Olomouc unique. Olomouc was the main base of the Soviet occupation army and all decisions concerning the city's development were subordinated to the Soviet Army (Act 19/1969). This strongly affected the use of the periphery, as well as both the use and the condition of the historical centre, one part of which was legally occupied by the Soviet and later Czech Army until 1999 (Act 20/1969).

3.2 Principle mechanisms responsible for the changing internal spatial structure of the historical centre of Olomouc

In 1990, more than 50 % of the houses in the historical centre was state owned. These houses were transferred to the municipality (Act 172/1991). Because of the historical circumstances, it was often difficult to determine who the actual owner of a property was, so the share of houses that was restituted was minimal. Until 1996-7, Olomouc City Hall did not have any housing policy specific to the historical centre although maintaining the housing function was universally believed to be of high priority. However, there was no minimal limit of municipal house ownership. Most of the municipal houses were privatised and City Hall has no direct influence on them. However, to improve the physical condition of houses, Olomouc City Hall established a Housing Development Fund in 1996. This allows the city to offer private owners low interest-rate loans for reconstruction and the creation of new housing units in the historical centre.

Since the mid-1990s, there has been an observable trend toward the exterior reconstruction of houses in poor physical condition. These have, as pointed out earlier, been primarily settled by weak social groups. The usual scenario is the strict exercise of the civil code. City Hall did not issue any special legal norm concerning the removal of weak social groups (Kaštil pers. com., 2003). Because of non-payment of rent or because of reconstruction activities, people have been temporarily re-located to appropriate flats. After reconstruction, the newly renovated flats are then offered to them, but for an appropriate rent. Newly reconstructed houses are offered to the public via the „envelope method", i.e. the higgest bidder takes the flat. New flat owners are usually those in the upper income bracket. Some flats are offered to foreign companies which have opened factories in the region. This is done through the Department of Economic Development, part of City Hall, in collaboration with local real estate agencies (Kaštil pers. com., 2003).

The functional use of the 64 blocks for the years 1980 and 2000 are presented in Fig. 3a and 3b. Five basic indices were chosen to better evaluate the changes which have occurred during the past twenty years. These are:

1. index of changes in residential function [share of housing in particular blocks in 2000 (in %) by share of housing in particular blocks in 1980 (in %)];
2. index of changes in commercial function, [share of commercial functions in particular blocks in 2000 (in %) by share of commercial functions in particular blocks in 1980 (in %)];
3. index of changes in non-commercial function, [share of non-commercial functions in particular blocks in 2000 (in %) by share of non-commercial functions in particular blocks in 1980 (in %)];
4. index of changes in other functions, [share of other functions in particular blocks in 2000 (in %) by share of other functions in particular blocks in 1980 (in %)]; and
5. index of changes in the physical condition of houses [average level of physical condition in a particular block in 2000 by average level of physical condition in particular block in 1980].

Changes in residential function are presented in Fig. 2a. There is generally speaking 7 % less residential area in 2000 than was present in 1980. Most of the loss is concentrated in the main business streets in the historical centre of the city, namely, Ostružnická, Ztracená, and Riegrova Streets. Some buildings have entirely lost their residential function, but the majority of them have maintained at least a portion of their original use. A very small fraction of buildings have increased their residential function. What is the most observable process during the last five years is the beginning of the process of gentrification (for a general treatment see Sýkora, 1993). The first areas affected by this process were near Hrnčířská and Kapucínská Streets, and more recently on the Lower Square and on Univerzitní Street. There are basically two sources of gentrifiers: newly successful Czechs and, increasingly, the employees of foreign companies working in the Olomouc region (Kaštil pers. com., 2003). The latter group has been steadily growing since 1999. While some houses were restituted to their original pre-1948 owners and some privatised, the majority of houses remain in municipal ownership. These had been settled in 1950s and 1960s by weaker social groups, primarily Gypsies. This minority is now being „pushed out" and replaced by these „yuppie" groups.

In Fig. 2b (changes in commercial function) there is an observable and obvious increase in the extent of the commercial area. The most dynamic increase is concentrated on the main commercial streets east of the Main Square, all of which, by 2000, were in substantially better physical condition than in 1980. The expansion of commercial space from the Main Square outward is directed mainly toward Ostružnická and Ztracená Streets. A second area of expansion is concentrated in the blocks east of the Lower Square.

In Fig. 2c it is evident that the share of blocks with non-commercial functions is substantially lower in 2000 than in 1980. In roughly one half of the entire number of blocks we can observe non-commercial functions. Apart from art and cultural functions, the most important role in the process of change has been played by Palacký University and the Roman Catholic Church (Olomouc is the seat of the Moravian Archbishopric). Many university and church buildings are concentrated in the historical centre. In general, the increase in non-commercial function is connected with the rising importance of the university and the increasing number of buildings used by it. In the past ten years Palacký University has been a progressive economic actor in the historical centre of Olomouc. It has undertaken the physical reconstruction of Univerzitní ulice, Křížkovského ulice and much of Arcibiscupské náměstí. The reconstruction undertaken by the university has initiated increased gentrification in the immediate neighbourhood with smaller property owners copying its efforts.

In Fig. 2d (index of changes in other functions) we see mainly blocks of houses which are currently under reconstruction. This can also be a good characteristic by which to evaluate changes taking place in the historical centre. In those blocks of houses where we see a substantial increase in this index, it is clear that some functional changes are either underway or are going to occur. Mainly, it signifies the on-going process of restoration in the historical centre.

In Fig. 4 (index of changes in the physical condition of houses), substantial upgrading to the physical structure of houses is observable. The main investor at present is the City of Olomouc. Almost half of the 64 blocks of houses that comprise the main database are still in its ownership. City Hall is extenstively involved in the process of rehabilitating the physical structure of the historical centre. City Hall contributes financially to repairing the facades of privately-ownedbuildings through its Housing Development Fund. Next to City

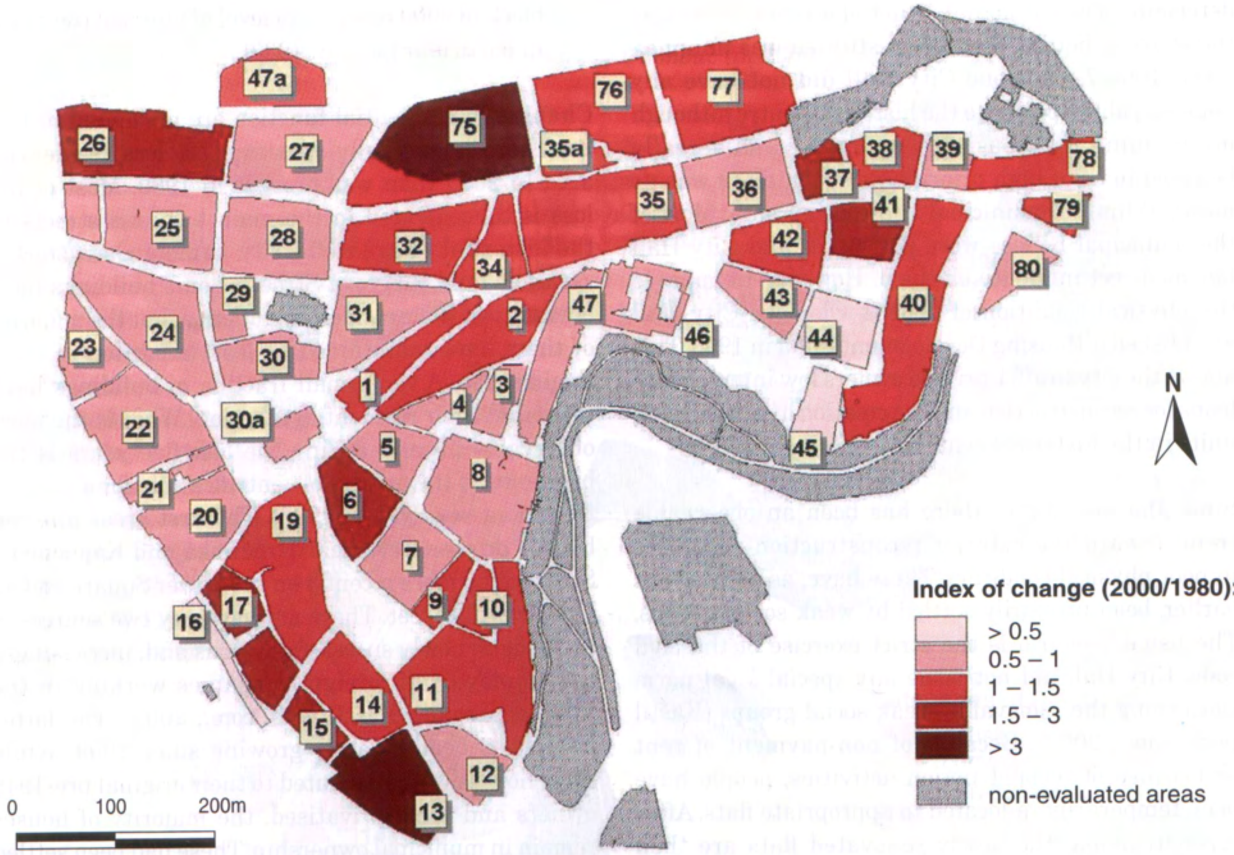


Fig. 4: Index of the physical condition of the buildings 2000/1980

Hall, the second major investor is Palacký University, followed by the Moravian Archbishopric.

4. Conclusion

The main aim of this paper was to describe changes in the physical and functional structure in the historical centre of post-communist Olomouc. Future developments in the historical centre of Olomouc will continue to be determined by the processes of gentrification, commercial and residential suburbanization, and tourism. With respect to gentrification, it is already clearly observable that demand for new commercial and office space has reached the saturation point (Kaštil pers. com., 2003). Residential space is increasingly sought after by high income newcomers, many of whom are foreign and, by implication, temporary residents in the country.

Commercial and residential suburbanisation is an observable trend in Olomouc. Several new hypermarkets and suburbs have proliferated on the periphery of the city. In Chmoutov, Slavonín and Velký Týnec new single-family dwelling suburbs in the North American style have been built, all on the floodplain (Sweeney, Ptáček and Létal, 2002). This uncontrolled urban sprawl and massive suburbanisation has been described as a universal trend in the post-communist transition of cities and towns in Central and Eastern Europe (Szelenyi, 1996). In the historical centre only luxury or tourist-focused shops and some few residential units are likely to remain. Local residents will have difficulty finding housing in the centre because of the exceptionally high rents brought about by the process of gentrification. In addition, there will be ecological problems brought about by building on green-spaces, burying agricultural land, and increased commuter problems (Sweeney, Ptáček and Létal, 2002). An enlightened City Hall policy could regulate this self-re-enforcing process, which is usually responsible for the decay of the internal spatial structure of cities.

Olomouc has a high potential for tourism. However, the prospect of increased day-tourism re-enforces the gentrification of the historical centre. Currently, City Hall, in collaboration with the Regional Development Agency, is working to increase congress tourism and other more profitable forms of tourism (BermanGroup, 2000; Kaštil pers. com., 2003).

Based on the theoretical approaches presented by Matlovič et al. (2001), it is clear that the main processes taking place in the 1990s are the commercialisation of the historical centre with an associated loss in residential function due to subsequent depopulation. This interlocking process is accompanied by substantial physical renovation. By using GIS methods to link the statistical database with a spatial one we were able to visually present a detailed picture of the changes that have taken place over the last twenty years. We were also able to anticipate where future change was most likely to occur. The unique method and rich database, each time slice of which falls more or less a decade on either side of 1989, allow for a systematic appraisal and interpretation of post-communist changes to the historical centre of Olomouc. All told, the interlocking problems of gentrification, commercial and residential sprawl on the city's periphery, as well as tourism, have far-reaching policy implications.

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Authors´ addresses:

Pavel PTÁČEK
Department of Geography
Faculty of Science, Palacký University
třída Svobody 26, Olomouc, Czech Republic
e-mail: ptacekp@prfnw.upol.cz

Aleš LÉTAL,
Department of Geography
Faculty of Science, Palacký University
třída Svobody 26, Olomouc, Czech Republic
e-mail: letal@resc.upol.cz

Sandra SWEENEY
Department of Ecology and Environmental Sciences
Faculty of Science, Palacký University
třída Svobody 26, Olomouc, Czech Republic
e-mail: sweeney@prfnw.upol.cz

Reviewer:

Doc. RNDr. Luděk SÝKORA, PhD.

GEOGRAPHIC SOIL ANALYSIS AS A MEANS TO IDENTIFY BIOTOPES: AN EXAMPLE FROM SLOVENIA

Ana VOVK KORŽE

Abstract

Geographic soil analysis is based on a spatial assessment of soils and their characteristics. Exact soil knowledge enables the definition of biotopes in an area under investigation. Biotopes show soil function and its meaning in a certain landscape. A knowledge of biotopes is important for planning regional development, protecting soils, preserving biotic diversity and developing economic activities based on soils. With soil analysis as the basis for dividing the region into biotopes, four macro-biotopes have been defined in Dravinjske gorice: biotopes in the Dravinja valley, biotopes in the Ložnica valley, biotopes of southern Dravinjske gorice, and biotopes of the middle Dravinjske gorice. To determine the inner balance in a biotope it is necessary to know soil characteristics, relief, lithological parent material, humidity, forest and meadow vegetation, and water balance. The arrangement of biotopes and their characteristics, including land use, indicate certain area potentials.

Shrnutí

Geografické půdní analýzy jako prostředek identifikace biotopů

Geografické půdní analýzy jsou založené na prostorovém hodnocení půd a jejich charakteristik. Přesná znalost půd dovoluje definovat biotopy ve zkoumaném území. Biotopy ukazují na funkci půd a jejich význam v dané krajině. Znalost biotopů je důležitá pro plánování regionálního rozvoje, ochranu půd, uchování biodiverzity a rozvoje ekonomických aktivit založených na kvalitě půd. V regionu Dravinjske gorice byly pomocí půdních analýz vymezeny čtyři makrobiotopy: Biotopy v údolí Dravinje, biotopy v údoli Ložnice, biotopy jižní Dravinjske gorice a biotopy střední Dravinjske gorice. K určení vnitřní rovnováhy v biotopu je nutné znát půdní charakteristiky, reliéf, horninové podloží, humiditu, lesní a luční vegetaci a vodní bilanci. Uspořádání biotopů a jejich charakteristika včetně využití území určuje potenciál území.

Key words: *biotope, soil characteristics, soil geography, regional geography, land use.*

1. Introduction

Soil is a constituent part of the landscape. It covers parent rock and enables vegetation growth. Leser (1978) wrote, that within the landscape ecology framework, a major significance comes down to soils, because, as an highly integrative factor, they indicate past and present processes in the geo-ecology complex. Since soils are a complex landscape factor, they reflect as well characteristics of other natural and social components. These pedogenetic factors work in an interacting manner. Climate has a strong influence on rock and organic matter decomposition processes, on rock disintegration intensity and mineral origin. The parent rock represents the source substrate for a soil's beginning. By structure, grain and chemical and mineral composition, the parent rock influences soil characteristics directly. Relief has a many-sided meaning. Relief configuration, altitude and exposure influence solar insolation and the amount of precipitation, and consequently soil erosion. Relief affects both surface and underground water circulation. Surface and underground water outflow directs soil genesis (Juma, 2001). According to the presence of water in soil, automorph and hydromorph soils develop. Vegetation is the result of all the above-mentioned factors, and it has an interacting effect on humus type and form. Edaphon constantly changes the upper part of the pedosphere.

The aim of this article is to present the results of a geographic soil analysis of a defined area (using the example of the region of Dravinjske gorice, Slovenia – Fig. 1), and to use them in biotope determination. Exact soil knowledge enables differentiation of the area under investigation into biotopes. The latter show soil function and its meaning in a certain landscape. A knowledge of biotopes is important for planning regional development, protecting soils, preserving biotic diversity and developing economic activities based on soils.

Fig. 1: Situation map (Dravinjske gorice is located in the eastern part of Slovenia).

2. Methodology

Methods used in the investigation of geographic soil characteristics are discussed first. The analytical results provide an insight into growing conditions of a certain area. Based on differences between them, biotope borders can be determined. The arrangement of biotopes and their characteristics, including ground use, indicate certain area potentials (Encyclopaedia of Slovenia, 1993). The space in which organisms and plants live is defined as a biotope. As there are, within any given biotope, certain valid ecological relationships, it is rather homogeneous. The biotope is an inorganic part of an ecosystem, which in connection to a living world, combines as an ecosystem. From nature's point of view, a biotope is an indication of a precisely-determined living space, comprising living communities in a balanced relationship (Tarman, 1990).

The methodology of soil investigation is based on a spatial assessment of soils and their characteristics. Of foremost interest is the soil, as a constituent part of the landscape, and its influence on biotopes together with human activities. Field investigation of soil is the most basic and fundamental method for investigating the „earth's skin" (Heeb, 1991). Such research involves an inventory of regional landscape characteristics, the excavation of soil profiles and their field inventory, and the derivation of soil samples for laboratory analysis.

From a laboratory analysis, a more precise comprehension of the soils origin and the processes affecting them can be obtained. Laboratory methods for soil analysis can be divided into physical and chemical approaches. As often happens, only soil samples are taken in the field, and all the analysis is made in the laboratory. From the additional information as a result of these analyses, interpretation of the soils in a particular landscape is facilitated. The methods by which field and laboratory analysis are carried out, follow the international ISO standards. The soil characteristics area includes 42 standards, which are considered with the methods defined for investigating soil characteristics (Vovk Korže and Lovrenčak, 2001).

On the basis of geographic soil analysis, the Dravinjske gorice area was divided into homogeneous units. Their size and number are the result of soil heterogeneity. The area under investigation comprised 8,500 ha, and the investigation scale was set at 1: 25 000. When dividing the landscape into biotopes, we took into consideration the dominant regional characteristics, both those of a stable (relief characteristics, basic rock), and variable character (climate, water conditions and vegetation), as well as human activity.

3. Soil characteristics in Dravinjske gorice

Dravinjske gorice are young, slightly rolling hills, with origins in the glacial period, but primarily after that time. They lie at the contact point of southern Pohorje, Vitanjske Karavanke (Bočko hribovje), western Dravsko polje and western Haloze (Bračič, 1985). As a result of the young, non-stuck lithological parent rock, a slightly agitated surface, and 1,050 mm of annual precipitation, both above and underground water circulation has developed. The calculation of this water circulation shows how much water outflows into the underground (according to the amount of precipitation and potential evapotranspiration), and how much water outflows on the surface. The latter surface water flow is primarily important for

Parent rock	$F*10^4 m^2$	N m	$N * F m^3$	L	$Q *10^3 m^3$ - %
Plio-pleistocene sediments	302.5	1.05	317.6	0.32	101.6 – 35.3
Marl aggregates	140.0	1.05	147.0	0.25	36.8 – 12.8
Holocene alluvia	398.0	1.05	417.9	0.35	146.3 – 50.9
Diluvia	10.0	1.05	10.5	0.28	2.9 – 1.0
SUM	850		893		287.6 – 100%

*Legend: F = lithological parent rock area, N = precipitation amount in metres, N*F = precipitation, volume, L = infiltration coefficient (Verginis, 1992), Q *103 in m3 or % - quantity of underground water outflow*

Tab. 1: Surface runoff and underground water outflow in Dravinjske gorice test area erosive (denudation) landscape transformation, and consequently soils.

The calculation of above and underground water circulation for the Dravinjske gorice test area was made on the basis of data provided by different meteorological stations in Rogaška Slatina, Slovenske Konjice and Pragersko. It was considered as an average precipitation amount for the thirty year period between 1961 and 1991.

From the yearly precipitation quantity of 1,050 mm, the proportion between underground water outflow (Q %), evaporated water (E %) and surface water outflow (R %) is as follows:
Q = 338.1 mm or 32.2 %
E = 288.7 mm or 27.5 %
R = 423.2 mm or 40.3 %

This calculation shows that almost half of the precipitation (40.3 %) outflows on the surface, which causes denudation and erosion. Numerous streams gather the surface running water, contributing to a high river system density. Due to this large surface water outflow, the Dravinjske gorice landscape is lowered into distinctive round-shaped relief formations, originated from small bits transfer. On plio-pleistocene sediments (sand with loam and clay), 35.3 % of precipitation water outflows into the underground. On marl sediments, only 12.8 % of water outflows into the underground, because the clay parts break up the sediment porousness for water.

3.1. Water balance in soil and its influence on biotope delimitation

From the data on temperature and precipitation, the water balance for Dravinjske gorice was calculated. For this operation, it is necessary to know the field water capacity, which indicates the amount of water that the soil is capable of holding without vegetation, for a few days after heavier rains (Heinz, 1993). The field water capacity (FWC) depends on soil texture and profile depth. Because various soils are apparent, we have calculated in advance data for riverbank soils, gleyic soils, pseudogley, and eutric brown and distric brown soils. For each mentioned soil type, one typical profile was chosen and characteristics of that profile considered.

SOIL TYPE	FWC at 30 cm depth in mm
Riverside, non gleyic soils A-C	124
Riverside, gleyic A-G	162
Pseudogleys A-Eg-Bg-C, A- (B)g-C	148
Eutric brown soils A- (B)v-C	121
Distric brown soils A- (B)-C	100

Tab. 2: Field water capacity for prevailing soil types

From the calculated water balance, a positive difference between precipitation amount and potential evapotranspiration, between 1961 and 1991, can be seen, indicating that on average there was enough precipitation to cover evaporation needs. What is apparent, then, is a water surplus, which contributes to supplementary water store in soil (Schultz, 1995). In the water balance diagram (Fig. 2) monthly precipitation values (Pmm), potential evapotranspiration (PE) and actual evapotranspiration (AE) are presented.

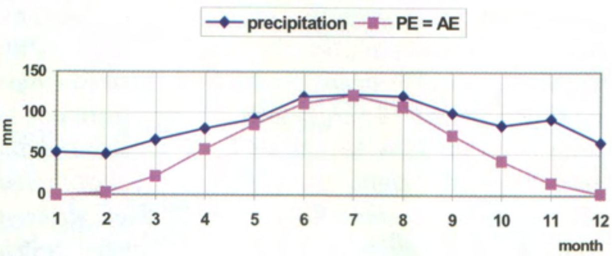

Fig. 2: Water balance of the test area in Dravinjske gorice

The water balance diagram shows a yearly precipitation surplus, which in July is srongly reduced to 0.4 mm. The water balance data are as follows:
Soil humidity index = 63.3
Humidity index = 63.3
Aridity index = 0
Warmth index = 642.1 mm
Warmth index for three summer months = 53.3 %
CLIMATE TYPE = B3rB1b3
Where:
B3 = humid climate type
r = possible minimal water deficit in summer
B1 = for evaporation it consumes 642.1 mm of thermal energy, which is valid for subtropical climate type
b3 = 53.3 % of thermal energy is spending in three summer months for evaporation, which is a subtropical climate type characteristic.

The humidity index (Ih) is 63.3 due to the positive difference between precipitation surplus and evapotranspiration, because there is no lack of water in any month; the aridity index (Ia) equals 0, which enables the calculation of the soil humidity index (Im), that equals Ih, (i.e., 63.3), and is basic for determining climate type on the basis of soil humidity. It follows that Dravinjske gorice have a humid climate, with minimal water deficit in July and no water lack in the soils. The FWC of individual soils is nowhere lower than 100 mm, which means that plants have enough water throughout the year.

4. Derivation of biotopes with respect to soil characteristics

Using the survey results, we used three levels for identifying and naming biotopes:

(i) macrobiotopes (large, homogeneous areas), (ii) mesobiotopes (medium sized, homogeneous areas), and (iii) microbiotopes (the smallest homogeneous areas) (Bastian, 1994). In Dravinjske gorice, there are four macrobiotopes, which are distinguished according to lithological parent rock, relief position and underground water influence. Macrobiotopes are marked with capital letters (A, B, C and D); mesobiotopes have the annotation of a number (A1, A2), and microbiotopes a second number.

A32: built-up areas; and
A33: infertile areas.

Of significance for macrobiotope A is sandy loam and sandy clay lithological parent material, which is very permeable for water. The altitude is between 250 and 270 m, and the relief slight in inclination from 0 to 2°. The average annual temperature is 9.5 °C, in the vegetation period 15.5 °C, the average summer temperature is 18.1 °C, and average winter 0.4 °C. The annual precipitation amount is 1,076 mm and exceeds annual potential evapotranspiration by 40.4 %. Because in any month a negative difference between the quantity of precipitation and height of potential evapotranspiration does not appear, an annual water surplus of 406.4 mm of water occurs. There is no water deficiency, accounting for a high soil moisture index (63.3), which denotes a humid climate. Shallow riverbank soils, deeply gleyic hypogley and flatland pseudogley, differ according to the underground and precipitation water influence. The predominant use of the soil is meadows and cultivated fields - which are located in flood-safe zones, along with built-up areas (Vovk Korže and Korže, 2001).

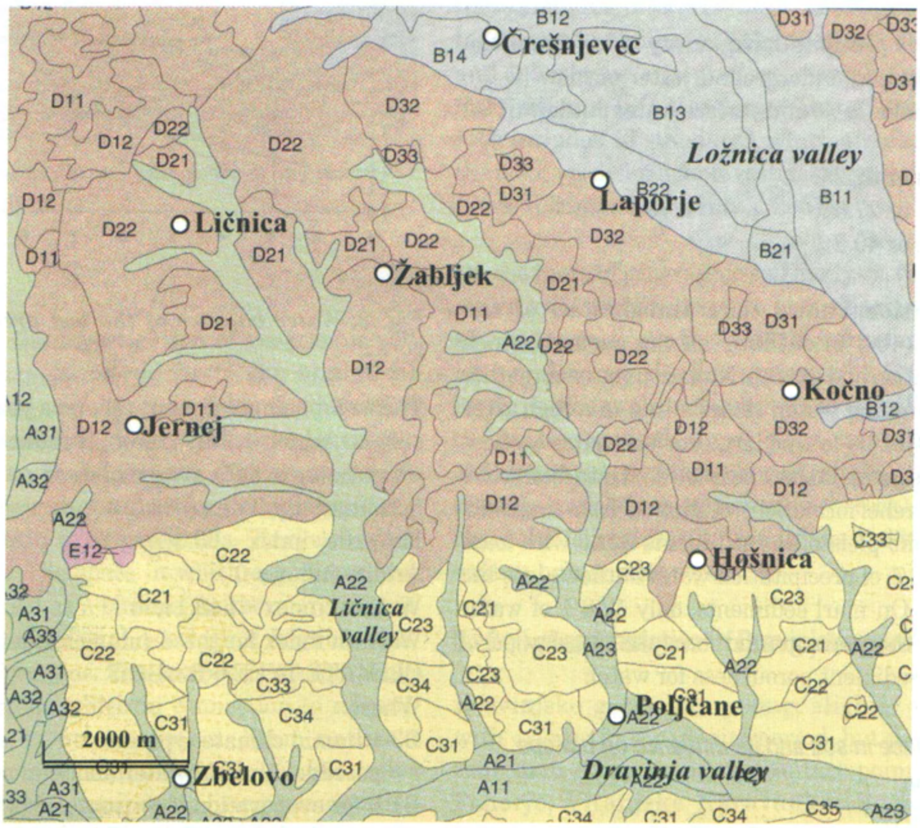

Fig. 3: Borders between biotopes using soil analysis (segment of map, Vovk, 1995)

Macrobiotope A: adjacent to the rivers and their tributaries, at altitudes from 250 to 270 m, on Holocene sandy loam and sandy clay alluvia with recent accumulation, periodic underground water influence and riverbank soils. The dominant field use is meadows.
Macrobiotope A consists of three mesobiotopes according to soil type:
A1: shallow riverbank soils beside running waters, non-gleyic on sandy loam alluvia;
A2: hypogleys, deep gleyic at valley edges on sandy clay alluvia.
Microbiotopes are:
A11: meadows, periodically flooded, on shallow riverbank soils;
A12: fields on shallow riverbank soils;
A21: fields and meadows on hypogley;
A22: meadows on hypogley;
A23: built-up areas;
A3: flatland pseudogley on sandy clay alluvia;
A31: fields and meadows on flatland pseudogley;

Macrobiotope B: flatland at an altitude of 250 m, on Pleistocene and Holocene silty loam and silty clay loam alluvia, with regular standing water in hydromorphic soils and gleying processes.
Macrobiotope B consists of two groups of mesobiotopes according to soil type:

B2: flatland pseudogley on silty clay loam alluvia.
Mesobiotopes are comprised of six microbiotopes, which differ according to forest associations and field use:
B1: hydro ameliorated cultivated fields on amfigley;
B11: meadows on amfigley;
B12: *Alnus glutinosa* (L.) and *Carex elongata* (L.) forest on amfigley;
B13: common oak forest on amfigley;
B21: meadows on flatland pseudogley; and
B22: *Carpinus betulus* (Lam.) forest with *Prunus padus* (L.) on flatland pseudogley.

Macrobiotope B has silty loam and clay lithological parent rock. Silt has poor physical characteristics: in drought it cracks, while in moist periods it is bloated, and is scarcely permeable for water. The average annual temperature is 9.4 °C, the temperature in the vegetation period 15.5 °C, average summer temperature 18.4 °C, and average winter temperature - 0.2 °C. Due to an openness towards east, towards Dravsko polje, there are some subpannonic climate characteristics, seen in the higher average summer temperatures, vegetation period, and lower precipitation amount. The annual rainfall is 1,012 mm, which is enough for covering evapotranspiration needs throughout the whole year. Annually, then, there is a water surplus of 339.2 mm, and soil moisture index 62.6, which according to the Thornthwaite climate classification indicates a humid climate. Amfigley and flatland pseudogley are under the influence of high level underground water and water retention in profile.

Macrobiotope C: in terms of relief, dissected hills on marl, at altitudes from 300 to 450 m. As a result of the poor porousness of marl for underground water percolation, strong denudation is present. Dystric and eutric soils are devoted to mixed field-meadow and forest use.
Macrobiotope C consists of three mesobiotopes, according to relief position, soil type and field use:
C1: plough-soils on steep slopes on marl;
C2: dystric brown soils on sandy marl, on ridges and tops of ridges;
C3: eutric brown soils on clay marl at foot of slopes, colluvial.
Mesobiotopes can be distinguished according to differences in forest association and field use, resulting in nine more microbiotopes:
C11: vineyard on plough-soils;
C21: field -meadow use and scattered setting on dystric brown soils;
C22: *Carpinus betulus* (Lam.) forest with *Luzula luzuloides* (Lam.) on dystric brown soils;
C23: beech forest with chestnut on dystric brown soils;
C31: field-meadow use on eutric brown soils;
C32: beech forest with *Hacquettia epipactis* (Scop.) on eutric brown soils;
C33: *Carpinus betulus* (Lam.) and *Luzula luzuloides* (Lam.) forest on eutric brown soils;
C34: beech forest with chestnut on eutric brown soils; and
C35: common oak (*Quercus robur*) and *Carpinus betulus* (Lam.) forest on eutric brown soils.

Characteristics of microbiotope C are conditioned by marl, its lithological parent rock, which comprises the outermost southern part of Dravinjske gorice. In comparison to the rest of the hills, the relief shapes are more distinctive, with altitudes from 300 to 450 m, slope inclinations from 10 to 20°, and with extreme southern and northern exposures. Microclimatic conditions differ slightly from the general climate conditions. The southern positions of macrobiotope C have more hours of sun insolation, which accounts for the vineyards on larger areas. This is also connected with the lithological parent rock. Northern positions of macrobiotope C pass towards Bočko hribovje, and reach altitudes of up to 400 m, but in spite of the northwest exposures, vines and grapes are still grown. From the water balance for the wider Dravinjske gorice area, it is clear that there is water height in the soils, increasing with altitude.

Macrobiotope D: gently dissected hills of Pleistocene loam with gravel and sand, with strong denudation processes on the tops of ridges and colluvium at their feet, due to a lack of lithological basis resistance; humid climate, and with pseudogleying processes due to periodic retention of precipitation water in the soil profile.
Macrobiotope D consists of three mesobiotopes, which differ according to relief position and soil type:
D1: eutric brown soil and ranker on clay with sand and gravel;
D2: eutric brown pseudogleyic soil on gentle slopes and catchment areas;
D3: slope pseudogley in the transition from hills to flatland, on northern exposures and silty sediments.
There are seven microbiotopes:
D11: eutric brown soils with field-meadow use on slopes;
D12: acidophilic beech forest with chestnut on tops of ridges on ranker;
D21: field-meadow use and scattered settlement on eutric brown pseudogleyic soil;
D22: acidophilic beech and chestnut forest on eutric pseudogleyic soil;
D31: field meadow use on slope pseudogley;
D32: acidophilic beech and chestnut forest on slope pseudogley; and
D33: built-up areas.

The central part of Dravinjske gorice represents macrobiotope D, which in terms of area is the most extensive. The prevailing altitude is from 280 to 350 m, the relief configuration is round-like, inclinations range from 5 to 20°, and due to slope dissection, all exposure categories are represented. Humid climate, water surplus in the soil and gentle relief configuration enable periodic pseudogleying, shown in the (B) v/g horizon by a greater clay share, and poorer water permeability. The predominant field use is acid- like and degraded beech forest with chestnut. Cultivated fields and meadows are located near the villages, which are on the upper slope areas.

4.1. Comparison of biotopes with respect to geographic characteristics

is also demonstrated in the soil water balance, which is positive all year. According to their texture, loam soils are prevalent, which due to a higher share of clay, contain underground precipitation water outflow. In such growing conditions, forests, namely common oak, beech and *Carpinus betulus* forests, thrive best.

5. Conclusions

In using geographic soil analysis, one obtains an insight into soil characteristics, which determine regional growing conditions. Knowledge about growing conditions is important for planning space interventions. The aim of geographic soil research is the complete analysis of a region, with respect to landscape. A knowledge of soils

Biotopes **Dravinjske gorice**	Dravinja valley and its tributaries – biotopes A	Ložnica valley – biotopes B	Southern part in transition to the Dravinja valley – biotopes C	The middle section – biotopes D
LITHOLOGICAL PARENT ROCK	Sandy loam and clay alluvia	Silty clay alluvia	Marl	Loam and sand
RELIEF Altitude in m Inclination ° Exposition	 250 – 270 0 – 2 –	 250 0 – 2 –	 300 – 450 10 – 20 j, s	 280 – 350 5 – 20 (all)
CLIMATE DATA T° C – year T° C – veg. Period T° C – summer T° C – winter P mm – year	 9.5 15.5 18.1 0.4 1076	 9.4 15.6 18.4 -0.2 1012	 9.5 15.5 18.1 0.4 1076	 9.5 15.5 18.1 0.4 1074
WATER BALANCE PE mm – year VS mm – year VD mm – year Im	 642.1 406.4 0 63.3	 622.4 339.2 0 62.6	 642.1 406.4 0 63.3	 642.1 406.4 0 63.3
SOILS Prevailing soil Texture % of water FWC mm Kf cm/sec*10^{-3}	 riverbank A-C PI, I 20 – 25 162 3.1	 hydro ameliorated MI 22 124 2.3	 Eutric and dystric IG 18 1424 	 Eutric pseudogley IG 22 140 1.3
FOREST ASSOCIATIONS	–	Common oak	Carpinus betulus and Prunus padus forest	Beech forest with chestnut
LAND USE	meadows	hydro ameliorated fields and forest	Fields, meadows, Vineyards, forest	Forest, fields and meadows
ANTROPOGENIC INTERVENIONS	–	Agro- hydro amelio-rations	Ploughing	–

Tab. 3. Geographic characteristics of biotopes

From Tab. 3, it is clear that the lithological parent rock which comprises the Dravinjske gorice is not agglutinated yet. Because the amount of annual precipitation is above 1,000 mm and because inclinations are weak, water is retained in soils at the feet of the slopes. This is also necessary for permanent relationships between people and nature.

With soil analysis as the basis for disaggregating a region into biotopes, we have in Dravinjske gorice defined four macrobiotopes, which differ essentially with respect to the following characteristics: lithological basis, relief and soil characteristics. The biotopes are similar in climatic characteristics and water balance, which change only over a greater area. Biotope classification frequently rests on the existing field use. In order to comprehend the inner balance of a biotope, it is necessary to analyse not only the soil characteristics, but also other factors such as relief, which influences erosion and denudation processes, the lithological parent material, together with porousness, humidity and soil depth, forest and meadow vegetation, and water balance. The dominant field uses demonstrate accordance or non-accordance of land utilization with respect to natural conditions. By strengthening environmental consciousness, and by feeling a conscious attitude towards individual land farming components, the precise knowledge of soils as a complex factor of the environment is inevitable.

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Author´s address:

Dr. Ana VOVK KORŽE
Department of Geography
Faculty of Education, University of Maribor
Koroska c. 160
2000 Maribor, Slovenia
e-mail: ana.vovk@uni-mb.si

Reviewer:

Doc. RNDr. Jaroslav VAŠÁTKO, CSc.

AN EVALUATION OF CHANGES IN LIFE STYLE FOR RESIDENTS OF THE OSTRAVA REGION

Oldřich MIKULÍK, Barbora KOLIBOVÁ

Abstract

The findings of surveys carried out on two groups of respondents in the Ostrava region, the employed and the unemployed, are reported in this article. Respondents were selected from the major professional groups – miners, foundry workers and chemists. Additional data were collected in the Paskov-Staříč a.s. and ČSM a.s. mines, as well as in the model area (urban district of Ostrava-Michálkovice). In this research project, we are hoping to offer a deeper understanding of life-style shifts as experienced by the respondents themselves. We also emphasize gaining information about standard of living, perceptions of the quality of the environment, value orientations, etc. This study is a part of a long-term research project focussing on the evaluation of changes in the environment of the Ostrava region.[1]

Shrnutí

Hodnocení změn životního stylu obyvatel Ostravska

V příspěvku jde o souhrn poznatků z výzkumů prováděných na výběrových souborech zaměstnaní - nezaměstnaní, srovnání stěžejních profesních skupin - horník - hutník, chemik. Tento cílený výzkum byl doplněn o výzkum na dolech Paskov-Staříč a.s., ČSM a.s. a v modelovém území městského obvodu Ostrava-Michálkovice. Tímto výzkumem prohlubujeme poznání v oblasti posunu vnímání životního stylu samotnými respondenty. Rovněž se orientujeme na získání informací o životní úrovni, vnímání kvality životního prostředí, hodnotových orientací apod. Tyto studie jsou součástí dlouhodobého výzkumu zaměřeného na hodnocení regionálních změn životního prostředí ostravského regionu.

Keywords: *decrease in mining activities, restructuring of coal industry, vertical and horizontal mobility of labour force, unemployment, life style, standard of living, quality of life of inhabitants in the Ostrava region, Czech Republic.*

1. Introduction

This particular region, which used to be called „The Steel Heart of the Republic", has suddenly, in a certain sense, become a periphery (Fig. 1). All new developers (both Czech and foreign) are very concerned about problems related to the rehabilitation of the devastated landscape and to the lack of connections to the highway network. Given the great socio-economic potential of the region, a supra-regional strategy will be required to solve problems connected to the reconstruction of the economy, as well as to the revitalization of the landscape and environment.

2. Terms of reference

What did the Ostrava region look like before 1990? It was one of the industrial areas in which post-war development of the national economy reached perhaps the highest levels ever recorded in the country's history, particularly with the construction of socialism in the 1950s. Here, it was possible to observe changes that started with the industrialization process of capitalist enterprise. Gradually, the natural landscape was replaced by settlements and industrial structures, connected by an increasingly complex network of roads. More recreational facilities were available and,

[1] *The investigations were carried out within the framework of the „Programme for the development of scholarly research in key areas of science", No. KSK 3046108 – ‚Impact of climatic and anthropogenic factors on living and non-living environment',and of the „Programme of supporting targeted research and development", No. IBS 3086005-, Effect of underground mining suppression on the processes in lithosphere and on environment'.*

as these were used more frequently, the life style and social structure of the region started to change.

Ostrava was called the „steel heart of the republic" and the high levels of self-confidence of the employees of the basic industries (mining, metal, steel industries) were further amplified by slogans such as: „He who is a miner, Who can be more?", and the like. Due to this ideology, the Ostrava industrial agglomeration became a privileged region in terms of housing, supplies, social benefits for the privileged professions, above average incomes, etc.

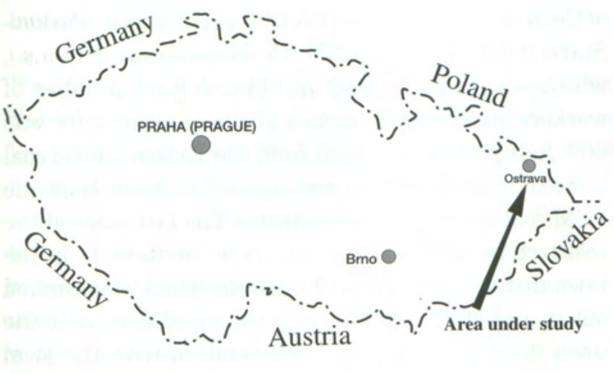

Fig. l: Situation map

The down-scaling of coal mining in the Ostrava region has raised a lot of questions in the field of social concerns as well - how to deal with the human potential concentrated in this residential agglomeration for so many years. Since the beginning of the transformation of our national economy in 1990, we are faced with a socio-economic phenomenon - increasing unemployment, which was basically unknown in the previous era. At present, the unemployment levels are reaching almost 20 %.

This situation has been caused by the decline of coal mining and the reduction of production in many „giant" industrial entities. The result of restructuring is a reduction of both traditional and new employment possibilities. In the period between 1990 and 1995, the economy of the Ostrava region experienced a rapid privatisation. This is evident from the declining number of state enterprises as well as from the increasing number of private corporations, entities. At the present time, however, private enterprise is experiencing a certain level of stagnation. In the agglomeration there are still some industrial giants, which have not yet been subject to privatisation and for which reconstruction and modernization of manufacturing technologies are required. In this respect, they have to deal with insufficient funds and subsidies, as well as the unwillingness of foreign capital to invest in the region. The development or downscaling of the coal industry, however, is mainly an issue for the government's raw materials policy.

Along with high levels of unemployment, which is symptomatic of a destabilized society, other negative social phenomena begin to occur, such as increased criminality, use of drugs and extreme alcoholism. When studying social stratification and social mobility, one obvious question arises: do these categories depend on regional and residential conditions? It is a well-known fact that the Czech Republic has regions with greater or lesser economic, social and demographic differences, and with specific features of their own.

The model region of Ostrava, which has been the subject of our long-term studies, can be classified as a large city type. The Ostrava agglomeration was the result of industrial processes occurring from about 1870 and exhibited a typically rapid development in the period of socialism, when the concentration of heavy industries and coal mining resulted in dramatic population growth. Up to the present, the growth of the agglomeration has been stimulated both by industry and by other sectors of the national economy. The change in this region happened after 1989, when the decline of coal mining and downscaling of production in the large factories of heavy industries started to occur.

The interpretation of changes in life style is based on our survey of: (I) a selected group of unemployed persons registered at labour exchange offices in Ostrava and Karviná; (II) the employees of three Ostrava corporations which represent the continuing principal traditional industrial branches in the region - coal mining, metallurgy and chemical industry; (III) employees at two selected coal mines (Paskov-Staříč and ČSM); and (IV) the inhabitants of the Ostrava-Michálkovice urban district.

Life style, as a concept, is a structured composite of habits, customs, and/or accepted norms. It is hypothesized that life style expresses, in some way, the values and interests of an individual, a group, or society in general.

Elements of life style, which crystallize around life roles themselves and the meanings of these roles, are important indicators of how life style is realized. There is no commonly accepted method to distinguish between life style and other related concepts, especially to distinguish it from livelihood as a concept. One major way in which a distinction is possible is to understand that life style is influenced by culture and its interpretation by an individual or society at large, whilst livelihood is defined by economic and social factors. At times, the concept of „livelihood" is perceived as a synonym for the concept of „life style". At other times, the concept of „livelihood" is seen in a broader sense, emphasizing the economic and social conditions of life. In our view, a combination of „life style" and income level can be regarded as an indicator of social status.

Over the past several decades, many research efforts were dedicated to sociological studies, both theoretical and empirical in nature, of livelihood (as well as the sociology of life style). Theoretical foundations are evident in the work of M. Weber (for example, in his perspectives on status groups as circumscribed by their life styles), G. Simmel, A. Adler and T. Parsons. Empirical sociological studies of livelihood frequently merge with studies of the quality of life, leisure, social stratification, etc. The analysis of „livelihood – life style" in Czech sociology has focused on responding to the following four questions:

1. What are the bases on which individuals, social groups, social classes or society in general, support themselves?;
2. In a given social system, what type of person is successful? (how are the effects of differential capabilities, resources, and expectations evaluated?);
3. In these evaluation processes, what are the relations between individuals, social groups, or social classes?;
4. In what ways are these processes reflected in the consciousness of people, in their choices of strategies for survival, their achievements, etc.?

One empirical finding of note from the Czech studies is that livelihood processes demonstrate a certain momentum. A concrete representation is revealed during a period of rapid social change - the result is a combination of the old and the new.

3. Research structure and results

In the period 1998-1999, the research design was developed and the first step of research began by surveying the group of unemployed persons registered at the labour exchange offices in Ostrava and Karviná. In 1999-2000, the employees in three corporations in Ostrava, which represent the major and still traditional branches of industries in the region - OKD, a.s., Nová huť, a.s. and MCHZ, a.s., were surveyed. A total of 1,500 workers were addressed in these three enterprises.

In 2001 a research study was prepared at the Institute of Geonics into the employees of two coal mines - Paskov-Staříč (OKD, a.s.) and ČSM (Českomoravské doly, a.s.), which was implemented in 2002. A total number of workers addressed by means of our questionnaire was 600. Return was very high from the Paskov-Staříč coal mine (503 respondents) and somewhat lower from the ČSM coal mine (330 respondents). The last stage of the research is up to now an inquiry of inhabitants in the town district Ostrava-Michálkovice, which was carried out in mid-2002. A survey into the social climate of the town district was made in cooperation with the local municipal authority by addressing 600 persons; return was 50 %.

3.1 Linkage of respondents to the region, perception of changes in the region after the year 1990

As many as 75% of unemployed respondents do not intend to move out of the region due to their family background and linkage to their existing abode. The social bond to the region is further augmented by the fact

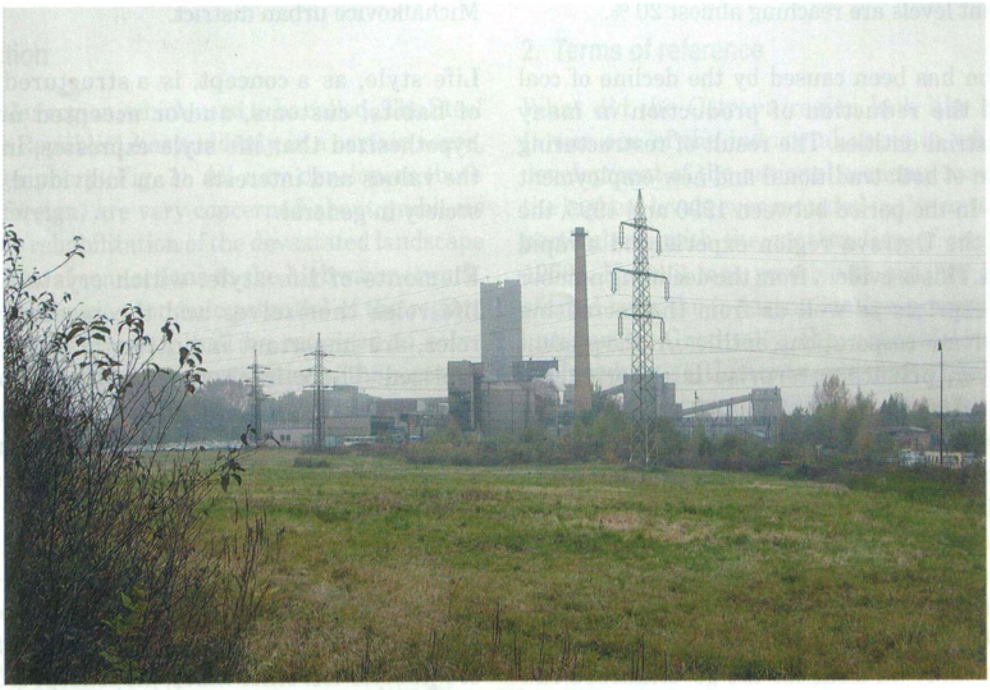

Fig. 2: The „Staříč" Mine. Photo O. Mikulík

that nearly a half of the inquired persons answered that both partners had lived in the region without any break since their child years. Main reason for the respondents who consider moving out of the region is a low chance for them to find corresponding jobs together with the increasing instability and problems in the region. Stabilization of the employed and their staying in the region are rather high and influenced by multiple factors - 86 % of them will definitely not move or rather intend not to move out of the region this being given by the fact that the Ostrava region is a place of birth for two thirds of the respondents and the bond to the region is further augmented by the family background and housing reasons.

If we proceed to the assessment and a comparison between the two above mentioned coal mines, we shall find the opinion level of employees nearly identical in all groups inquired by the questionnaire. A single exception is the question of moving out of the region where the workers from the Paskov-Staříč mine are decided to stay living and working in the region at 85 %, reasons being the satisfactory environment which seemingly does not resemble the traditional, by coal mining devastated landscape.

The general situation and future prospects of the region were classified by 85 % of respondents in the category of unemployed as bad and very bad. Possibilities of the future development are not seen in the traditional industries in the region but in other industrial branches, trades and services. Standard of living was observed to worsen for 92 % of the inquired, this concerning increased housing costs (84 %); as many as 12 % in this group were even incapable of paying for their flats. About a half of the respondents live in municipal flats, a third in cooperative flats, 18.5 % have a family house of their own, and only 4.7 % dwell in corporate apartments. Only a quarter of the inquired have a car of their own, 60 % of respondents make use of public system of transport.

In the period after the year 1990 we can see some essential changes in the attitude to social securities, namely in the relation to work also in the category of employees. More than a half of the respondents fear not to loose their jobs and for 12 % of the inquired the loss appears quite realistic. These considerations reflect the economic situation and the psycho-social mood in the region. A half of the employees are prepared to move out to get a new job, but the answers are conditioned by many factors such as stability in the region, housing issues, family background and social contacts.

Slight variances can be observed from diagram curves of new employments in the two studied coal mines with existing different personal policies. A question of whether the employees are decided to stay in the industry over a long time was rather suprisingly answered in a positive way by 71 % of respondents in the both mines. It is to be assumed therefore that mining still represents the stability and security on the region's labour market at a time of the existing high rate of unemployment. A question of how much they value their jobs was answered by 40 % respondents who are aware of labour market instability and fear to loose their jobs. As far as the prestige of mining is concerned, it is still as many as 60 - 70 % of the inquired from our selected group of respondents who perceive their profession as satisfactory on the imaginary ladder of public opinion.

3.2 Value orientations, leisure activities, judgement of the contemporary society's moral codex

Hierarchy of values in the unemployed respondents starts with health condition in the first place, than comes the satisfactory living together with their partners, families and friends, satisfaction at work, property, money, with the career being in the last place.

The change of general situation in the Ostrava region is perceived by the respondents within the offered scale to be rather worse up to conclusively worse - 85 % of the inquired. General prosperity of the region in the future is considered to be rather bad up to very bad - 82 %. In the concrete survey of the possible future prosperity - whether in coal mining, metallurgy, chemical industry or services, the answers were as follows: The least number of respondents can see the developmental possibilities of the region in chemistry and metallurgy appears at about the same level. The OKD employees themselves can see the greatest challenges of their region's development exactly in coal mining; yet, there were 28 % respondents. The fact can be commented as a hidden wish of their own company's stability and loyalty to employer. At the same time, however, they assume that the region's economic development is also possible in different -concretely unspecified- branches of economy; this opinion was presented by 76 % of the inquired miners.

Interesting was the evaluation of human relations in the coal mines Paskov-Staříč and ČSM in the model areas, and generally in the society. Nearly a half of the respondents feel that the industrial relations at work worsened at the present time. An even worse situation is perceived to exist in the society (70 % respondents). Most frequently reported nuisances are envy, dishonesty and disinterest in another individual. As for the negative social phenomena, they feel most jeopardized by increased criminality. From the offered scale of life values the respondents set up a following hierarchy: 1 – health, 2 – satisfactory married life (partnership), 3 – satisfaction at work, 4 – family and friends, 5 – property, 6 – money, 7 – career.

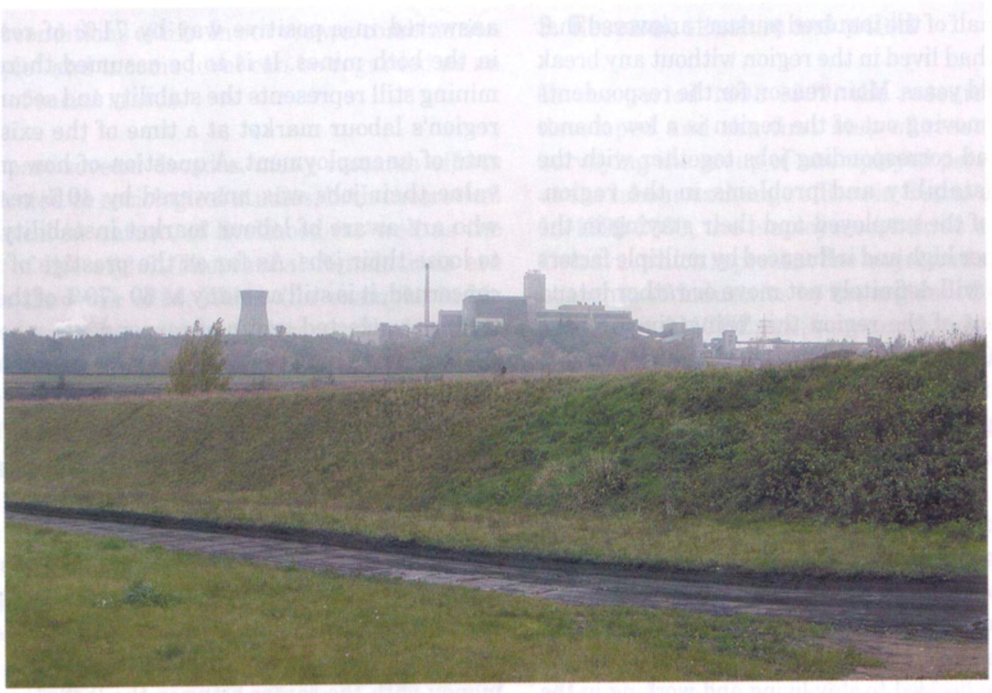

Fig. 3: The „ČSM" Mine. Photo O. Mikulík

Assuming from results of the former research studies into this group of employees in mining industry, we could corroborate the facts concerning when and how the miners from the two mines spend their leisure time: regular winter holidays are used by only a very low percentage of the inquired (ca. 15 %); regular summer holidays are taken by a greater part of the respondents – approx. 45 %. More than 50 % of respondents informed when inquired about the place of their recreation in 2001 not to had had the holidays at all reasons being financial or other; 25 % of the inquired went abroad and 25 % spent their holidays in the Czech Republic.

In the block of questions concerning the leisure time activities and the use of various facilities for the purpose, answers of our respondents were as follows: Some 15 – 20 % of employees are satisfied with cultural and sports events organized or offered by their employer, nearly 50 % are satisfied only partly. Full or partial satisfaction with medical and rehabilitation care services on the workplace premises was reported by two thirds. Answers to a question whether the inquired have more leisure time now than before the Revolution indicated that 65 % do not – after a comparison. Rather interesting were findings concerning the way of spending leisure time. Although 93 % of our studied group were males, most of the inquired use their leisure time to ensure their households' operation, following in the hierarchy were personal interests and hobbies.

What is the interest of miners working in the studied coal mines in events occurring at the place of their abode and region, what are their own activities in political events, community life, what are their opinions about the changes in the region? A third of the respondents are fully concerned with social, cultural and political events in their town or village and in the region, a half of them are interested only partly. Own activitie in these events reported only a much smaller group of respondents (8 %).

Nearly 90 % of the inquired report to feel that the situation in the region changed after the year 1990. The respondents contemplated over the pros and cons of the contemporary society. About a half of those who were inquired about the pros replied not to perceive any in the contemporary society. Another large group of respondents considered a merit to be the restored free expression of opinion and travelling possibilities. Telling us about their feelings of negative things, the respondents got much more inflamed, seeing the most negative features of the contemporary society's moral in poor human relations, envy, egoism, double dealing and indolence.

The socio-demographic characteristics of individual groups of respondents under study can be summarized as follows:

- The group of unemployed exhibited most respondents at an age of 18 – 30 years (63 %); 46 % were single, 40.3 % were skilled workers, 41.2 % were graduates from secondary schools with A+ examinations, 9.4 % had basic education and 5.2 % were university graduates.
- The group of employed were at an average age of 41 and 58 years, 79 % and 21 % were males and females, respectively; education: secondary school (44.6 %), skilled workers (27.8 %), university graduates (24.5 %), basic education (2.5 %); merital

status: single (7.5 %), married (80.6 %), widowed (3.5 %), divorced (8.1 %); number of children: one (22.1 %), two (63.4 %), three (12.1 %), four and more (2.4 %).

4. Conclusions

The above studies are to further extend the knowledge of life style shift perception by the respondents and to gain new information about the standard of living, perception of environment quality, value orientations, etc. The studies have been made within a long-term research project focused on the evaluation of regional changes of environment in the Ostrava region.

The standard of living of the population in the region under study depends on the concept of regional government policy towards affected regions, on the implementation of proclaimed sustainable development and on the implementation of the conceptions of industrial structures, which are still missing.

The standard of living of the unemployed is logically lower than in the other gainfully employed population. And this is from where the shift of life style derives - if the life style should be understood as a „structured set of life customs or accepted norms which find their expression in the interaction, in the material environment. It is assumed that life style in a certain way expresses also the values and concerns of individuals, groups, or society in general."

Unemployment brings forth other symptoms of instability of the society such as the increase of adverse social phenomena -increased divorce rate, alcoholism, drug dependence, criminality, etc. All these phenomena manifest and deepen in the Ostrava agglomeration with the high accumulation of socio-economic problems.

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Authors´ addresses:

RNDr. Oldřich MIKULÍK, CSc.
Academy of Sciences of the Czech Republic
Institute of Geonics, Branch Brno,
Drobného 28, 602 00 Brno, Czech Republic
e-mail: mikulik@geonika.cz

PhDr. Barbora KOLIBOVÁ
Academy of Sciences of the Czech Republic
Institute of Geonics, Branch Brno,
Drobného 28, 602 00 Brno, Czech Republic
e-mail: kolibova@geonika.cz

Reviewer:

Prof. RNDr. Miroslav HAVRLANT, CSc.

PROBLEMS OF EUROPEAN INNER CITIES AND THEIR RESIDENTIAL ENVIRONMENTS

Antonín VAISHAR, Jana ZAPLETALOVÁ

Abstract

European inner cities are struggling with the consequences of present demographic changes and the current processes of urbanization. Ageing of the population, the shrinking of household size, and the migration of young, educated and more prosperous inhabitants to the city fringe or surroundings, cause decreases in population density, deficiency of financial sources and the dilapidation of inner city areas. These processes endanger large cities, because their inner parts play an exclusive role in city structure. Hence, the re-urbanization of European inner cities is a very topical problem. In addition to the economic, legal, architectural and other factors, the residential environment and its perception play an important role in the process. An example of the inner city in Brno is presented. The problem is to be investigated within the 5th EU Framework project: Mobilizing Re-urbanization on Condition of Demographic Change.

Shrnutí

Problémy subcentrálních částí evropských velkoměst a jejich obytné prostředí

Subcentrální části evropských velkoměst bojují s následky současných demografických změn a probíhajícím procesem suburbanizace. Stárnutí obyvatelstva, zmenšování velikosti domácností a migrace mladých vzdělaných a bohatších obyvatel za hranici města způsobuje snižování hustoty obyvatelstva a chátrání subcentrálních městských zón. Tento proces ohrožuje velká města, protože subcentrální části mají v jejich struktuře výjimečnou pozici. Z toho vyplývá, že reurbanizace evropských subcentrálních částí měst je typickým problémem. K ekonomickým, právním, architektonickým a dalším faktorům se přiřazuje ještě vnímání kvality životního prostředí. Tento příspěvek se zabývá problematikou subcentrální části města Brna. Výzkum je prováděn v rámci 5. rámcového programu EU: Reurbanizace v podmínkách demografických změn.

Key words: *inner city, residential environment, sustainability, re-urbanization, Brno, Czech Republic*

1. Introduction

The project Mobilizing Re-urbanization on Condition of Demographic Change[1], within the key action *City of Tomorrow and Cultural Heritage* of the 5th Framework Programme of the EU, is under elaboration. The project is divided into various „working packages“. This article presents the contribution of the Brno Branch of the Institute of Geonics, Czech Academy of Sciences, for Working Package 1: Understanding, Hypotheses and Key Indicators of Re-urbanization with Reference to Demographic Change.

The Branch is responsible for an evaluation of environmental aspects of the re-urbanization effort. Clearly, there are close connections to the concept of the residential environment. The methodological approach is tested using the example of the inner city of Brno (Fig.1)

[1] *Reference Nr. EVK4-CT-2002-00086*

2. Value of inner cities

With few exceptions, medieval European towns were demarcated by fortifications, outside of which there were suburbs as part of more or less rural space. After the fortifications were taken down, the area outside the town core was built up very rapidly during the onset of the industrial revolution, with a colourful mixture of housing estates of various categories, transportation and industrial structures, and networks of technical and social infrastructures. This is how inner cities came into existence, filling the space between the town core and the more distant inner and outer suburbs, which often developed on the basis of original rural settlements or the surrounding small towns. Sometimes this zone grew in a sectoral manner along the main radial communication axes, and the space between the axes was filled only later.

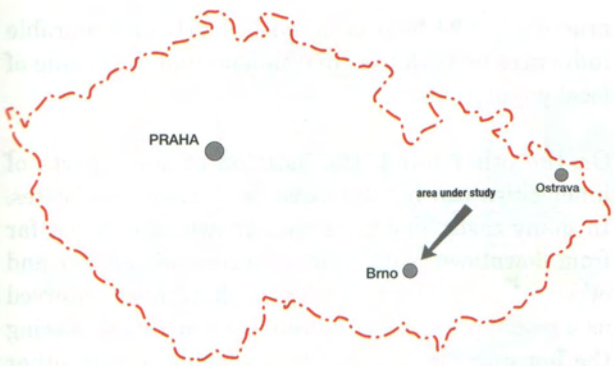

Fig. 1: Situation map

The Inner City is the area immediately surrounding the city core. The demarcation of inner cities in the territories of contemporary large cities, with populations ranging from 250,000 to half a million, is sometimes relatively clear, sometimes vague but always multicriterial (see e.g. Hofmeister, 1994). For such questions, the inner boundary is usually the boundary of the historical core. In the clearest cases, this boundary is more or less identified with an inner traffic circle, which was often constructed in the place of the original fortifications. The outer boundary is, as a rule, less apparent and can be characterized as a line along which compact residential housing – typically with its alternation of open areas and buildings serving various purposes – passes into mainly single-purpose housing estates with only the basic necessities of infrastructure. Sometimes, the line is identical with an outer city traffic circle, that was built at places with lower land use intensity, where some of the plots were efficiently used for a high-capacity motorway.

Czech urban geography normally does not pay very much attention to the issues of inner cities. This can be documented by problems with its definition and demarcation. It is asserted, however, that this important constituent of urban mechanisms is neglected unjustly. The inner city is not only necessary for the efficient functioning of an urban area as a whole, but also it contains a range of very important functional and environmental values. A revolutionary publication on inner cities is the famous book written by Jane Jacobs (1961): Death and Life of American Cities.

The most distinctive feature of such an inner city is its mixed character. One can find open areas here, objects and lines of various purposes. Virtually all kinds of land utilization of an urban nature are present. Apartment houses of higher or lower standard are combined with neighbourhoods of family houses, a typical element being the street and inner blocks. As long as the majority of flats are inhabited, population densities reach their highest values here. These locations contain a social infrastructure of supra-local character, for which it would be ineffective to search for land properties in the central city: hospitals, health centres, universities and secondary schools and colleges, and offices. Some outstanding industrial and other manufacturing areas constitute the industrial infrastructure. The zone is massively „attacked“ by road traffic, concentrated in city circles and radial veins shooting out from the centre to the suburbs. These are places where public transport is at its most dense and where the highest concentrations of parking lots can be found. Traffic and transport, as a rule, comprise the major environmental problems of the inner cities.

On the other hand, such inner cities usually contain major city parks, which could hardly find accommodation sufficiently in the historical core. Inner city blocks, which usually and unfortunately have been deprived long ago of most of their greenery, facilitate the creation of semi-public spaces, needed for a quality community environment. The complex reach of jobs, services and recreation is beneficial. One consequence of the typical mixture of housing and jobs is that these inner city areas exhibit a „day-life“ and a „night-life“, which is rather different from the historical cores, which live mainly during the daytime, as well as from the purely housing zones, which exist mainly at night as popular residential areas.

In a similar manner, inner cities are typified by mixed functions, such that the functions localized there are typically of diverse forms, and this applies also to housing. In the inner cities, one can find both the former worker-dwelling quarters and the clerk apartments for middle segments of the population. Although the inner parts of cities are characterized largely by areas of apartment housing, there are also neighbourhoods of one-family houses or villas, with gardens, situated here in more advantageous positions such as in more broken terrain, inhabited by residents of higher social strata.

The inner cities comprise many functions whose location elsewhere in the urban area would be difficult. By means of functional and traffic connections, these factors aid in ensuring the integrity of the city as a whole, representing at the same time a residential environment for a significant part of the total urban population. This environment has some positive characteristics, especially in the social field, but at the same time, some negative features which follow from the concentration of activities and their mixed character. In this way, the inner city can provide some alternatives to other forms of settlement, especially with respect to environment.

The specific character of the inner city is obvious both with respect to the historical core and to suburban city neighbourhoods. It follows that it is meaningful to study inner cities as a separate issue.

3. Present problems and the effects of contemporary processes of urbanization

Large parts of the inner cities of European cities originated in the era of industrialization, i.e., from the 19th century, with some overlaps from the preceding and following centuries. This indicates that typical houses, streets and squares were sized to accommodate to the usage and activities corresponding to that historical time. If not being refurbished or reconstructed, large parts of the inner cities are obsolete today, and this applies both to the physical condition of buildings, facilities and equipment and to their moral status. Reconstructions made in the past were focused as a rule only on a chosen district or a group of objects. One of the main problems at present may be the insufficient funds of owners, prospective tenants or buyers. The existing problems of the inner parts of American and European cities have been subjected to complex analyses, for example by Rubenstein (1999). It should be noted, however, that European inner cities contain considerably more historical heritage than their American counterparts.

The whole issue is closely related to social and demographic processes, particularly to the changing structure and size of households. While a typical household included more generations, more children and was complete about one hundred years ago, the present situation exhibits a trend towards the single-generation household with one child, and incomplete. This process, which is typical of most of Europe today, is sometimes called the second demographic transition (Daniels – Bradshaw et al., 2001). An apparent exception is sometimes represented by socially disadvantaged groups of immigrants, with demographic features different from the majority population. Thus, one of the problems is the mutual interaction between the original housing resources and the new structure of households. In the absence of an essential exchange of population – e.g., for the groups of immigrants – population densities indicate a logically decreasing trend, and the inner cities become inhabited by ageing populations and/or unoccupied altogether.

Another burning problem is traffic. Although the streets and squares of inner cities were oftentimes sized very generously, the future mass growth of individual automobile use could not be anticipated at the time of road carriages or even at the very beginning of motorcars. While the historic cores of towns used to be protected from traffic, and automobile traffic in the suburbs was already scattered, the inner cities are places with a high concentration of both traffic passage and parking vehicles. Considering the mixed character of these zones, traffic concentration is practically a 24-hour issue, with clearly unfavourable influences on both the environment and well-being of local populations.

On the other hand, the location of some parts of inner cities can be attractive for various businesses. In many cases, one finds well-known streets not far from downtown, with a concentration of services and other activities. Some tendencies have been observed as a result: prices of real estate have increased, forcing the housing function out by replacing it with other functions.

Another important process is suburbanization (Sýkora ed., 2002), building new housing quarters beyond the inner city boundary, expanding urban life styles into rural space. There are several motives behind this trend, of which perhaps the most important are the efforts of young people to become independent of their original families or fellow residents living in the same apartment house, and to have individual housing in a one-family house. As a function of the society's wealth, this is affordable in some European countries only by higher socio-economic strata, but in other countries it also comprises the middle layers of the population. These population sub-groups, then, are absent in the inner cities, both in terms of their numbers and in terms of their age and social structure. The contemporary de-urbanization processes sometimes even evolve into counter-urbanization processes, whose basic features consist of the decentralization of jobs and people, and their scattering into small towns and rural regions (Knox – Marston, 2001).

As a result, the inner cities generally remain inhabited by older populations with no motivations to move, and by socio-economically weak populations with no financial possibilities to buy or build a house beyond the town boundary (Zehner, 2001). Thus, entire city quarters can fall into dilapidation, and the safety of people living in them may become impaired. Also, these places may become the grounds for developing alternative strategies of survival – from squatting to homeless ways of living (Pain et al., 2001).

On the other hand, however, current socio-demographic processes will likely result in increasing numbers of single-living young people, childless couples and divorced individuals. While such households do not rank with the socially weakest ones, they have little motivation to construct a family house outside the city limits. Rather, their preferences lead to rented flats in apartment houses, which can be exchanged as their circumstances change, for flats of other sizes or in another locality. It is assumed that the apartment houses will continue to be localized mainly in the inner cities.

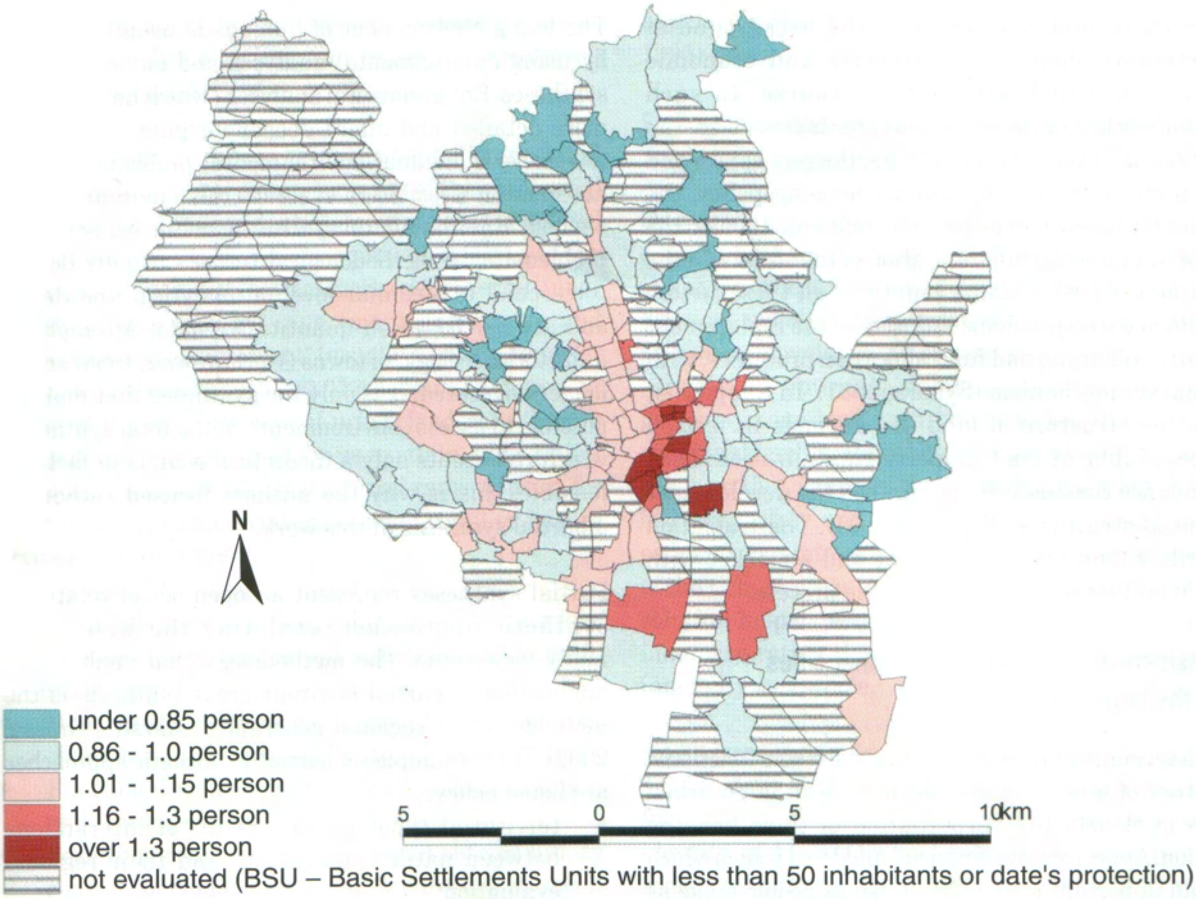

Fig. 2: The average number of person per room with living area 8 m² or more

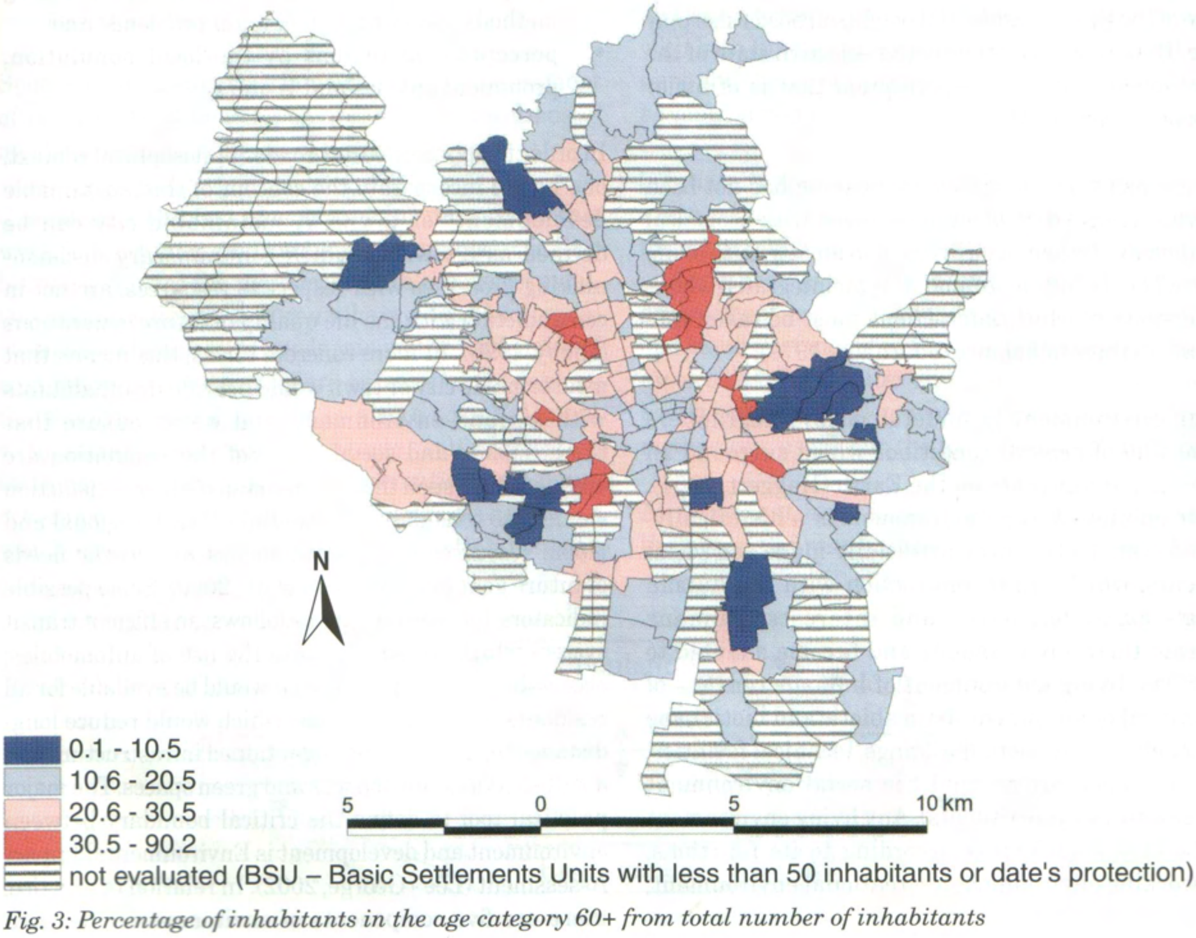

Fig. 3: Percentage of inhabitants in the age category 60+ from total number of inhabitants

All of these processes occur in the background of a particular legal, administrative and economic framework, which affects their course. In such a framework, the most important factors are the functioning of the market for flats, the real estate and land property markets, national housing policy, the policies for loans/mortgages and, undoubtedly, also the economic and social differentiation of the society. In the conditions of post-socialist countries, all these factors are added to the problems induced by the replacement of central planning and fund allocation processes, with the market mechanism (Sýkora, 2001). In a capitalist town, the structure of land use depends in fact on the possibility of land property capitalization: such dependence conclusively determines the development of spatial structures (Rudolph, 2001). The transition towards a land property market and a market with flats is neither a simple nor a single process.

4. Residential environment and inner cities in the large cities

One determining factor in retaining the whole functional structure of inner city neighbourhoods in large urban areas is clearly the perpetuation of their housing function. Apart from the financial and legal issues which play an important role in the decisions people make as to whether to stay or move into these town quarters, the condition of the environment and the environmental image of the chosen residential neighbourhoods also play a role. Note that it is not only the objective state of the environment, but also its perception that is of major importance (Ira, 2003).

„Environment" is a term whose meaning has not been precisely specified. It is often confused with ecological terminology. Rather, in our view, it is an attribute of life quality. The „living environment" is an integrated whole, in the study of which interactions must be taken into account in their imbalance (Journaux, 1979).

Living environment is understood by geographers as the sum of general conditions which surround an individual at any place on the Earth (Haggett, 2001). In our opinion, living environment is a historically-formed system of natural, artificially-made and social elements, which are in interaction with the human being's existence, needs and interests. Humans generate their environments and become adapted to them. The living environment of humans consists of the natural environment (both abiotic and biotic), the man-made environment (buildings, technical facilities, lines and open areas), and the social environment (people as social constituents). Any living environment can be classified further according to its functions: e.g., working environment, recreational environment, etc.

The living environment of humans is usually studied by using environmental analyses and environmental syntheses. Environmental analyses - which have become more detailed and afford deeper insights - allow one to resolve individual environmental problems, but do not make it possible to evaluate this environment as a whole. Environmental syntheses - while being rather problematic in methodological terms - usually do not correspond to a similar level of analytical knowledge and are not based on quantitative data. Attempts at a „factorial ecology" of towns (Węclawowicz, 1988) are no longer advocated. It is only the syntheses that make it possible to assess „environment". Yet, a total synthesis, which represents only a theoretical goal, is in fact not feasible; this is why the authors focused rather on a partial synthesis in this work.

Partial syntheses represent an open set of relatively synthetic approaches, exploring the issue from many viewpoints. The methodology that enables the application of partial environmental synthesis is the methodology of regional geography (Marsh - Grossa, 2002). Three examples of partially synthetic approaches are listed below:

- territorial typology as a result of interactions between nature and society and their regional evaluation;
- evaluation of interactions among three basic subsystems of living environment by brainstorming methods and definition of main problems; and
- perception of regions by the local population, prominent entities and visitors.

In order to appreciate the broader philosophical context, one has to incorporate the concept of the „sustainable development" of towns. A sustainable city can be defined as a town in which contemporary decision-making processes with respect to resources, are not in contradiction with the life quality of future generations (Digby, 1996). In more concrete terms, this means that a sustainable city or town would provide its inhabitants with a sound environment, and would ensure that the economic and social needs of the population are accounted for, such that the demand of their satisfaction would also consider the potential of local, regional and global resources and ecosystems, as well as the needs of future generations (Huba et al., 2000). Some possible indicators, for example, are as follows: an efficient transit system which would minimize the use of automobiles; acceptable costs of housing that would be available for all residents; combined land use which would reduce long-distance commuting; well-maintained infrastructure and a sufficient amount of parks and green spaces. The major practical tool to define the critical boundary between environment and development is Environmental Impact Assessment (Lee - George, 2002). In relation to practice, there are five components of environmental research applications: scientific assessment, risk analysis, public education, political action and follow-up monitoring (Raven – Berg, 2001).

With respect to housing, a suitable theoretical approach would incorporate concepts of the residential environment. The „residential environment" is defined as that part of the living environment relating to the function of housing. It may categorized further as „inner dwelling environment" (apartment and house) and „outer dwelling environment" (usually a housing quarter or residential neighbourhood). The housing environment is one of the main aspects of urban landscape. Urban landscape is not developed for us to study it but rather for being used by us. It serves a broad range of users for their housing, commercial, industrial, retail or leisure activities (Hall, 1998).

This research work was focused on the following four basic categories of residential environment (Mikulík – Vaishar, 1996):

- Housing standard (technical quality and floor area characteristics; Očovský, 1989);
- Functional conflicts (including all types of pollution and traffic problems);
- Social environment (including issues of community control, personal safety and occurrence of social pathologies); and
- Greenery (including other characteristics of outdoor areas).

Spatial relations are very important for the assessment of the quality of housing environments – locations of available activities, effects of neighbours, etc.

Considering the fact that a focus of interest in this work is the living environment of humans, it is also humans who are the main criteria in the assessment. On the one hand, a human being is a biological element with biological needs (air, water, food, natural reproduction), which are more or less exactly defined. On the other hand, he/she is also a social element with social needs (social contacts, self-realization in the society, entertainment, recreation and many other needs), which develop and change over time but which should not be forgotten. The relation between population and the environment is complex (Poulain, 1995).

5. Possible solutions for the issues of sub-central zones in large cities

One of the processes that can return life to the inner cities is gentrification (de Blij, 1996; Pacione, 2001). It is a more or less total reconstruction of a certain town district – usually in an attractive location – which aims at new re-development of residential quarters with services for upwardly-mobile population sub-groups, generally combined with business facilities. Socially disadvantaged strata of the local population are forced out from the vicinity of the gentrified quarters because of costs, safety and other mechanisms, and housing estates come into existence which function as ghettos of the rich. Another problem for this process is that this solution helps always only some isolated parts of the inner city, rather than treating the general issue of the inner city as a whole.

An alternative is seen in the process of re-urbanization. The objective of re-urbanization is to preserve the functioning of the town mechanisms, as well as the identity of towns, by restoring their inner parts in order to maintain the qualities of their functionally and socially mixed character. Unlike gentrification, this process does not demand the demolition of the territory and construction of an entirely new residential complex, with both functionally and socially different levels, but aims for the revitalization of the original structures, accommodated to contemporary conditions.

Solutions to the problems of inner cities in large urban areas require the creation of conditions such as the necessary legislative environment, economic tools and methods of area planning. A minimum level of achievement is realized by doing away with obstacles and barriers standing in the way to the revitalization of inner cities. For a better situation, there would have to be a purposeful development of corresponding tools and motivations, usually on the part of the town authorities.

An important issue is the participation of citizens in the process of re-urbanization. There are hundreds of

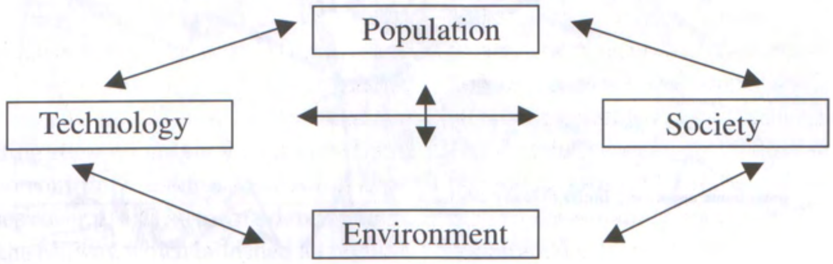

Fig. 5: Třída Kapitána Jaroše street (residential area Lužánky). Photo A. Vaishar

the cooperation of the local government or town. The result is the development of diverse functional areas in place of the old industrial enterprises, be they business quarters, cultural and leisure centres, shopping centres, hotels or housing districts.

6. The inner city of Brno

Brno is a city that has been developing over a long period. Since the beginning of industrialization, there has been an absence of any extreme external impacts, which could have affected the inner town's development. Thus, the inner city of Brno can be considered as more or less typical when compared to European cities of approximately the same size: the historical development of Brno is described by Kuča (2000).

The most proximate suburbs of Brno (originally „seats" outside the town fortifications) ceased to exist, with only a few exceptions, due to war events in the first half of the 17th century. The inner part of Brno was practically limited to the settlement inside the fortifications. Most of this territory forms the existing town core.

Even at the end of the 18th and beginning of the 19th centuries, Brno was already an important industrial junction town in the Austrian-Hungarian Monarchy. Most industries were concentrated on the town outskirts, which became the oldest part of the present inner city. Single-floor houses were replaced by large gallery apartment houses in the first two thirds of the 19th century. Building regulations were issued in 1828. The inner city also contained a number of social type facilities (Fig. 9 – see cover p. 4). The town's development was influenced by the railway, which launched its regular operations in 1839. Brno railway station (which is the oldest station in Czechia, together with the railway station in Břeclav) was designed in close vicinity to the town centre, which gave rise to one of the great problems of this city's development in later times (Fig. 10 – see cover p. 4).

One of the most conspicuous features of urban structure in Brno and, at the same time, one of the most important town-planning implementations from the second half of the 19th century in Czechia, became the Brno circular avenue. The main impulse for its generously-sized construction was the abolition of the status of Brno as a military enclosed town in the year 1852, which made it possible to take down the bastion forts. The circular avenue not only contained residential palaces and tenement buildings but also schools, cultural, administration, churches and other facilities in the styles of neo-Rococo and neo-Renaissance, and a green belt. The circular avenue was originally understood to demarcate the town centre with a different social, urban and ethnic character, and nearly all representative buildings were located inside the circular avenue until the 1880s (Fig. 4).

The extension of the suburbs into the outskirts of large cities dates back only to the end of the 19th century. Unlike the previous area developments, these were brand new urban units built in a regular, usually orthogonal block pattern, on sites never built upon before, with tenement houses for middle and upper social classes in the style of neo-Renaissance, later Eclecticism and Jugendstil. The first of several unfinished attempts occurred in the vicinity of the Šujanovo náměstí Square, where further development was however limited by spreading industrial building. After 1883, the construction efforts were focused into the new housing neighbourhood of

Fig. 6: Representative block of buildings - Konečného sq. (residential area Veveří). Photo A. Vaishar

Veveří, characterized by tenement apartment houses of metropolitan character. This is the time when the most luxurious at all town quarters of the blocks of flats called Lužánky was built, in the vicinity of the oldest public park in Central Europe. In addition, new streets were coming into existence through the reconstruction or annexation of the older suburbs. The first representative residential neighbourhood of Černá Pole, which came into existence in the 1870s, was later followed by the new housing quarters of Pisárky and Jundrov.

The turn of the 19th and 20th centuries witnessed the extensive building of Veveří and Lužánky, (Fig. 5) with these two localities containing some very special buildings, in terms of their architecture. Another neighbourhood of blocks-of-flats was erected during this period of time - Ponava, which also contained a number of military buildings. Attempts at building a representative embankment of the Svratka River in Poříčí Street, and a group of buildings in Křenová Street, remained fragments of the original plans. Pisárky became the most luxurious residential neighbourhood of large villas, while the quarter of Černá Pole was extended with more modest detached or semi-detached houses. The slopes of the Žlutý Kopec Hill and a part of the Žabovřesky cadastral area began to be filled with the

Fig. 7: Building of the Grammar school in the street Křenová (residential unit Trnitá). Photo A. Vaishar

Fig. 8: Vlhká street (residential unit Trnitá). Photo A. Vaishar

family houses of German and Czech white collar workers. The social polarization of that time is still traceable, with houses for middle and higher socio-economic classes of the population growing in the northern part of the town, and a spontaneous building of industrial workers quarters spreading in the south, in the vicinity of industrial areas.

The representative blocks of buildings in the town quarter of Veveří came into existence during the First Czechoslovak Republic (Fig. 6). This is also the period of time in which groups of functionalist buildings (international style of the 1920s) of an extant open settlement character, emerged in Husovice, Tábor, Královo Pole and Štýřice. One phenomenon specific to Brno is seen in the functionalist architecture of villas in the Masaryk Quarter. The most prominent and well-known representative of the style, however, is the Tugendhat Villa situated in Černá Pole. The rise of an independent state was also characterized by intensive building of schools of various levels, and other facilities of social infrastructure, many of which were also located in the inner city (Fig. 7). The German occupation interrupted the town's development and, after the war, the greatest attention was paid to the construction of housing estates, generally spatially separated from the compact town. It is possible to conclude that by the late 1930s/early 1940s building the inner city of Brno was relatively complete. Later, the inner city became only the subject of annexations and reconstructions of individual objects or small housing districts.

The problems of inner cities, as discussed previously, come into the limelight in Brno at the present as well. The decreasing size of households and the practically blocked market for flats, have resulted in both the ageing and loss of population in these zones. Numbers would be decreasing, however, even with a part of the housing resources not being converted into offices. All inner-town basic seat units exhibit a dominance of population in post-productive age groups compared to the population at a pre-productive age. As a paradox, the slowest degree of ageing can be observed in the most degraded districts of the inner town, inhabited by the socially weakest population classes with an atypical demographic behaviour pattern. Gentrification is only fragmentary.

The general objectives of the project were explained elsewhere (Vaishar, 2003). In Brno, a team of researchers plans to carry out an environmental analysis of the city as a whole, as well as two selected housing districts, to serve as a comparative basis for similar studies in Bologna, Léon, Leipzig and Ljubljana. Housing districts chosen for the case studies include the basic residential unit of *Konečného náměstí*, and the district of *Trnitá* (Fig. 8) which consists of three basic residential units.

7. Conclusions

The „institutionalization of Europe" is seen by some researchers as responsible for the designation, „European town", also acquiring a political meaning (Le Galès, 2002). The goal of sustainability for European towns is therefore one of the important objectives of the European Union strategy. One expression of this strategy is the fact that the European Union, within the framework of its 5th Programme, has supported the project: „Mobilizing Re-urbanization on Condition of Demographic Change".

From our point of view, the objectives of the project are to analyze the situation and propose measures for improvement of the housing environment and, hence, for the increased motivation of inhabitants in inner cities to decide whether to stay in them or to move from them. In this project, the process of re-urbanization is defined as follows: Under re-urbanization we understand the process of optimizing economic, legal, social and environmental conditions to provide vibrant living space within the urban core (encompassing identity and cultural heritage) where individuals choose to live and which attracts investments.

Nevertheless, there are some concerns that determining factors for these decisions will be legislative measures in the sphere of housing policy, and the financial power of inhabitants. It is therefore very important that the condition of the housing or dwelling environment does not become a limiting factor, when incorporating environmental measures into the economic and legislative conditions of re-urbanization.

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Authors´ addresses:

RNDr. Antonín VAISHAR, CSc.
Academy of Sciences of the Czech Republic
Institute of Geonics, Branch Brno
Drobného 28, 602 00 Brno, Czech Republic
e-mail: vaishar@geonika.cz

RNDr. Jana ZAPLETALOVÁ, CSc.
Academy of Sciences of the Czech Republic
Institute of Geonics, Branch Brno
Drobného 28, 602 00 Brno, Czech Republic
e-mail: zapletalova@geonika.cz

Reviewer:

RNDr. Peter MARIOT, CSc.

BIOCLIMATOLOGICAL RESEARCH IN MORAVIA AND SILESIA FROM ITS BEGINNINGS UNTIL 1945

Karel KRŠKA

Abstract

In Moravia and Silesia, as elsewhere in Europe, the beginnings of bioclimatology are uncertain. We can see its first signs in more regular phenological observations, which in the first half of the 19th century contributed to the specification of the oldest Moravian climate descriptions. The greatest credit for the progress of meteorology and phenology in Moravia and Silesia goes to the Natural Science Society in Brno (Naturforschender Verein in Brünn), which implemented in the second half of the 19th century, an extensive network of monitoring stations and processed and published the results of their measurements. An outstanding member of the Society was the founder of genetics and meteorologist J. G. Mendel. Rapid increase in agrometeorological and forest-meteorological research started after the founding of Czechoslovakia in 1918. It was organised by agricultural and forest research institutes, with the backing from the Ministry of Agriculture and in cooperation with universities. Its leading protagonists in Moravia were Václav Novák and Bohuslav Polanský, both professors at the University of Agriculture in Brno.

Shrnutí

Bioklimatologický výzkum Moravy a Slezska od jeho počátků do roku 1945

Podobně jako jinde v Evropě i na Moravě a ve Slezsku jsou počátky bioklimatologie nezřetelné. O sporé fenologické údaje z první poloviny 19. století se opíraly nejstarší popisy moravského klimatu, když se ještě neprováděla soustavná meteorologická pozorování. O pokrok v meteorologii a fenologii na Moravě a ve Slezsku se nejvíce zasloužil Přírodozpytný spolek v Brně, založený v roce 1861. Vybudoval hustou síť meteorologických a fenologických stanic, výsledky pozorování zpracovával a publikoval. Jeho významným členem byl J. G. Mendel, zakladatel genetiky a meteorolog. Soustavný agrometeorologický a silvimeteorologický výzkum Moravy a Slezska se však rozvinul až po vzniku Československa v roce 1918 ve výzkumných ústavech zemědělských, a to především zásluhou profesorů V. Nováka a B. Polanského. Naopak problematiky humánní bioklimatologie Moravy a Slezska se týkaly jen ojedinělé drobnější studie J. Mrkose, A. Gregora a B. Hrudičky, protože jejími centry v meziválečném Československu byly Praha a Vysoké Tatry.

Key words: *history of phenology, agricultural and forest bioclimatology, agricultural research, Johann Gregor Mendel, prof. Václav Novák, Brno, Moravia, Czech Republic.*

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1. Introduction

Bioclimatology belongs to those science branches whose beginnings it is hard to find, because they are hard to distinguish and unprovable. For example the influence of weather on the development of agricultural crops had to be the interest of people since time immemorial, because the size of the crop was the cause of abundance or lack of food, or even famine. Farmers even in the old days could, on the basis of their own experience, evaluate local soil and climatic conditions for the growing of certain kinds of crops.

Our ancestors took note of various natural phenomena which occurred during the year, and they related them to the development of grown plants, and to field work and crop yields. The course of the weather was recorded mainly by chroniclers, priests, village writers and farmers themselves. Their records on the development of nature had practical sense, because they bore witness of the weather peculiarities of the particular year. That made it easier to the village folk to gain orientation in the work, and it helped them to estimate further development of weather and the yield of agricultural crops. Some observations of the farmers are reflected in weather rhymes and agricultural work rhymes. People also of course knew in the old days, that weather and especially its changes don't just act on the surrounding nature, but also on them personally, therefore that it has meteorotropic influences. The beginnings of bioclimatology as an exact science can however be put only to the time of the first purposeful and systematic observations which last not even 200 years, or to the time of the first bioclimatological experiments which were started to be performed much later still.

2. The beginnings of phenology in Moravia

Phenology is based on the observation of periodical phenomena in the nature that repeat themselves every year. The founder of phenology is considered to be the Swedish scientist Carl von Linné (1707 - 1778). In Bohemia (Munzar-Drápela, 1999), the first phenological observations were made in 1786 by the botanist and explorer Thomas Xaver Haenke (1761 - 1817), but the person who contributed most to the development of phenology was Karl Fritsch (1812 - 1879), who was originally a lawyer, later meteorologist in the Prague Observatory in the Klementinum and eventually worker of the Central Institute for Meteorology and Earth Magnetism in Vienna. He wrote tens of phenological papers, out of which some were acclaimed internationally.

According to the most recent information, we can prove more systematical phenological observations in Moravia only from the first half of the 19th century. Phenological data contributed to the description of the climate before the beginning of regular meteorological observations and before weather observations reached such extension so as to record regional and local peculiarities of climate. Phenology therefore at the beginning was replacing climatology, and later it became its auxiliary discipline. Let us quote several examples.

The oldest preserved description of climatic relations in Moravia, called „Mährens Klima" (Climate of Moravia, Jurende, 1815), which was brought to attention by J. Munzar (1973), was published in the magazine „Moravia" in 1815. Its author, a Brno scientific worker and publisher Karl Joseph Jurende (born 1780), could however use in it only the meteorological data observed in Brno, and therefore he described the variability of the Moravian climate with the help of growing conditions and phenological data. He writes: *„The climate on the south of the country is mild and sweet: Around Kroměříž, Bzenec, Lednice etc.; ragged and cold in the north: around Branná, Rýmařov, Žďár nad Sázavou and so forth. In the south and south-west grapes prosper, whereas on the far north rye and oats often don't ripen, flax and potatoes etc. are often snowed under. Harvest time variance for South and North Moravia (distance of little over 150 km) is 5 - 6 weeks. In Brno the first cherries ripen at the beginning of June, in Branná the time for cherries is August...In South Moravia, trees blossom usually at the end of April, in North Moravia they most often ripen at the end of May"*. To describe the Moravian climate he even used several zoophenophases.

The description of climate was lagging behind that of other natural phenomena and industrial realities, which of course cannot be explained by people's disinterest in weather and climate. Climate, as opposed to a river, city or a sheep-fold, cannot be directly seen, and without meteorological measurements it cannot be numerically characterised. That's why old topographies and geographies of Moravia contain the description of mountains and waters, occurrence of rocks, minerals and caves, overview of settlements, religious, administrative, defence circumstances and industrial activity including a detailed description of agriculture and stock breeding, as e.g. „Topographie des Markgrafthum Mähren" (Topography of the Moravian Margraviate) by Franz Josef Schwoy (1742-1806) from 1793, but they leave out climate (Vitásek, 1973).

It wasn't until the greatest Moravian geographical work of the first half of the 19th century, the six-part topography of Rajhrad benedictine Thomas Gregor Wolny (1793 - 1871) „Die Markgrafschaft Mähren, topographisch, statistisch und historisch geschildert" (Moravian Margraviate, topographical, statistical and historical description) from the years 1837-1842, that the climate characteristics was included. The author of chapters on the climate in Přerov, Brno, Znojmo, Uherské Hradiště, Olomouc and Jihlava regions is a Brno high school professor Albin Heinrich (1785-1864). He first described the so called mathematical climate which was stemming out of the geographical latitude of a concrete region, and then the so called physical or actual climate, resulting above all from different elevation. Even he, because of the lack of meteorological data, could characterise the climate only in general terms, using mainly his knowledge of phenology.

For example in a work which concerns the Brno region, he writes: *„The difference of the harvest time between the south and the north is 4 - 5 weeks. In the vicinity of Lednice, Břeclav and Hodonín the trees usually blossom at the end of April, while near Ubušín and Ubušínek in the Kunštát region they start to blossom most often at the end of May. In Brno, the average time of blossoming of trees is between 6th and 7th May. The earliest was 7th April 1815, the latest 14th May 1812. Singing lark can be heard already around 15th February and swallows appear usually on the 12th to 15th April. Bunting sings around 16th April and cuckoo around 18th April. Nightingale beats in a thousand of chords around 20th April and the monotonnous calling of quail is heard at dawn and dusk on the 4th May"* (Wolny, 1836).

In a work about the Přerov region (Wolny, 1835) A. Heinrich touches upon the well known fact that in the regional climatic differences, with respect to the small size of Moravia, the differences in elevation reflect more than those in latitude. For expressing the temperature range of the regions (difference between the coldest and warmest areas) he used average data of earliest and latest occurrence of phenological phases. These data he collated into a table (Fig. 1) which is probably the first overview of the phenological phases of plants and animals from the territory of Moravia.

From the table we cannot see for how long and in what places the phenological observations were made; it is certain that there were not many localities. Despite this, the phenological data in the work of Wolny are at least orientation quantitative indicator of the climatic conditions of the Moravian regions. Besides, even much later phenology was viewed mainly as a supporting field of climatology, before it was used for agricultural localisation of crops and for agrometeorological forecasts.

3. Natural Science Society in Brno and its credits for the development of meteorology and phenology

The natural science research in Moravia was not performed by the old Olomouc university, but rather by private and public natural science societies which at the beginning stated that their priority was the support of agriculture. As a section of the „K. k. Mährisch-Schlesische Gesellschaft zur Beförderung des Ackerbaues, der Natur- und Landeskunde in Brünn“ (Moravian-Silesian Society for the Upgrading of Agriculture, Natural Science and Land Science) was in 1816 founded the „Meteorologischer Verein“ (Meteorological Society) which started to organise meteorological measurements. These continued on a lesser scale even after the society was dissolved in 1828.

For further advancement of natural science research of Moravia, especially important was the founding of the „Naturforschender Verein in Brünn“ (Natural Science Society in Brno) in 1861. The Society had as its prime task the renewing and widening of meteorological and phenological observations, which in Moravia already had certain tradition. Many members of the Society, among them the founder of genetics and meteorologist Johann Gregor Mendel (1822-1884), were before that the members of the Agricultural Society. Apart from making

Einzelne Erscheinungen.	Früheste.	Späteste.	Unterschied.
Seidenbast (Daphne Mezer) blüht	1. März am Helfenstein.	30. März bei Bautsch.	29 Tage.
Huflattich (Fussilago farf)	2. dto. b. Prerau.	20. April bei Frankstadt.	48 dto.
Veilchen (viola odorata.)	10. dto. um Kremsier.	1. Mai bei Friedland.	49 dto.
Die Stachelbeere belauben sich	8. dto. dto.	10. dto. bei Czeladna.	61 dto.
Die Buchen schlagen aus	10. April im Kremsierer Thiergarten.	24. Mai auf dem Berge Radoscht.	43 Tage.
Die Kirschen blühen	10. dto. b. Krems.	22. dto. um Hochwald.	41 dto.
Die Pflaumen (prumis domest.) blühen	15. dto. dto.	28. dto. bei Frankstadt.	42 dto.
Die Maiblumen (con vallaria majalis) blühen	20. dto. dto.	28. dto. bei Hochwald.	37 dto.
Der Roggen blüht	25. Mai dto.	30. Juli auf den Bergen bei Frankstadt.	66 dto.
Die Heuerndte	1. Juni an der March.	15. Juli b. Bautsch und Friedland.	44 dto.
Zeitlose (cholchicum autumnale) blüht	8. August dto.	27. Sept. dto.	50 dto.
Die Bachstelze (motacilla alba) kömmt an	20. Febr. b. Prerau.	30. April b. Altwasser.	69 dto.
Die Feldlerche (alauda arvensis) singt	11. dto. dto.	30. März bei Bautsch.	46 dto.
Die Schnepfen (scolopax rusticula Linn.) ziehen	1. März dto.	12. April bei Stramberg.	40 dto.
Die Frösche werden gehört	26. dto. b. Krems.	1. Mai b. Roznau.	33 dto.
Der Wiesenschnarrer (rallans Crex. Linn.)	4. Mai dto.	2. Juni b. Braunsberg.	32 dto.
Die Bienen schwärmen	5. dto. dto.	22. Juli bei Bautsch.	77 dto.

Fig. 1: Overview of phenological characteristics of the Přerov region (G. Wolny, 1835)

observations of the weather, groundwater table, ozone and sunspots, G. Mendel was also making phenological observations, similarly as his predecessor, physician Pavel Olexík (1801-1878).

From 1862 the Society published every year at its own cost a periodical title „Verhandlungen des naturforschenden Vereines in Brünn“ (The Papers of the Natural Science Society in Brno). It contained reports from regular sessions of the Society and articles and extensive individual works from various natural science fields, among other from meteorology and phenology. Already from the 2nd edition it contained overviews of meteorological observations from Moravian and Silesian stations. The first five overviews were compiled by G. Mendel. The first was for the year 1863 (Mendel, 1864). The papers were published without interruption until 1943.

The soul of the meteorological commission of the Natural Science Society was a professor of the Brno technical university Gustav von Niessl from Meyerdorf (1839 - 1919), who in 1867 suggested the making of phenological observations. One year later, the periodical „Verhandlungen...“ published the first overview of phenological observations in Moravia and Austrian Silesia (Uebersicht, 1868). Yearly phenological overviews were published in „Verhandlungen...“ for the years 1867 – 1876, 1878 and 1879, and were concerning a great number of plant and animal species; for trees, shrubs and herbs, mainly blossoming was being observed, out of the animals were apart from the birds observed mammals, reptiles and insect. However, the stations were changing and their number was gradually decreasing.

The greatest credit for the Moravian and Silesian phenology of the second half of the 19th century is due to the botanist Anton Tomaschek (1826 – 1891), who was originally a professor on the German High School, later an associate professor and professor on the German Technical University in Brno. He was preparing for the print the mentioned phenological observation overviews from Moravia and Silesia, and was also active lecture-wise and publication-wise. He wrote e.g. a treatise on average air temperatures as thermal vegetation constants (Tomaschek, 1876), and in another paper he evaluated his own phenological observations in the Brno vicinity during 1880-1889 as well as older observations of other authors, and elaborated a calendar of the first blossoms of the most common trees and shrubs (Tomaschek, 1890).

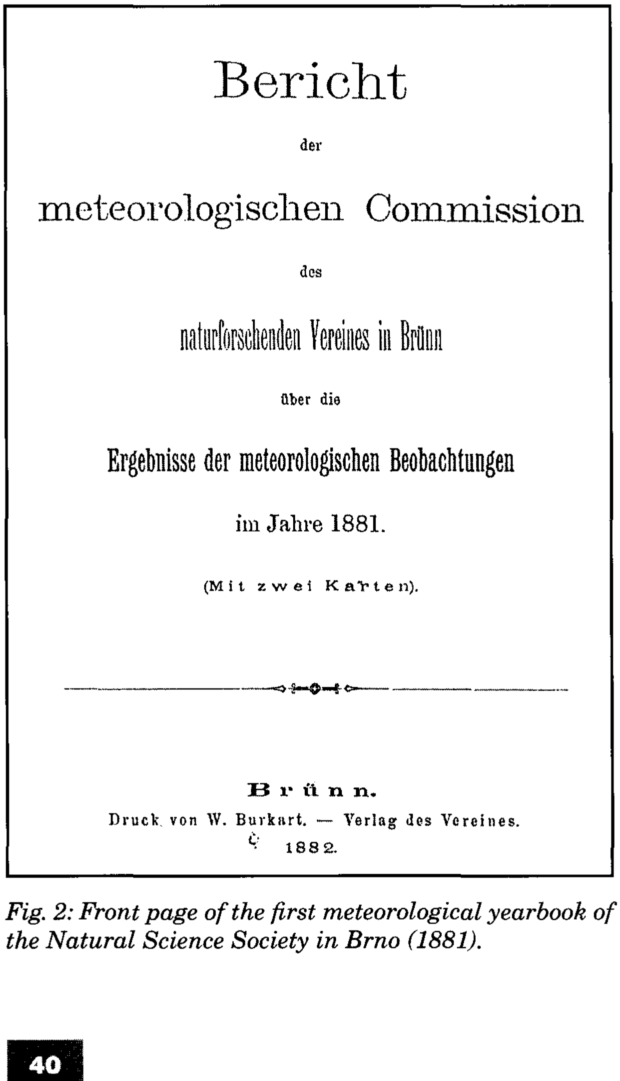
A significant progress in the building of meteorological station network occurred from the year 1880. Then at a gathering of Moravian-Silesian forestry guilds, which took place in Frýdlant nad Ostravicí, it was suggested by Johann Jackl, member of a natural science guild and chief forester, that the large rain gauge network which at that time existed in Bohemia (almost 900 stations) be extended to Moravia and Silesia (the purpose of the network in Bohemia, conducted by professor Emanuel Purkyně (1831 – 1882), was to explain the influence of forests on water regime and soil, and to contribute to the protection of forests). Jackl realised, that the suggested scheme will only have a hope of success in case that it will not stay limited to forest circles, and if it gains the understanding and support of the greater farmers and state administration.

For the setting up of a meteorological observation network for forestry, agricultural and technical purposes was in 1881 founded inside the Nature Science Society a special Meteorological Commission, in which members of both the forestry and agricultural sections of the Moravian-Silesian Agricultural Society were represented, supported by the Moravian Building Bureau, which was getting ready to make various water resources adjustments. R. Zlik was appointed a Chairman of the Commission, after him was appointed from 1895 land forestry inspector J. Homma, its secretary was G. von Niessl (Krečmer, 1965). In 1881, 113 stations were established, a number which gradually grew to 250 stations. The function of the network was ensured better than in Bohemia, because it was multi-purpose and its running cost was paid for collectively by the great church and worldly forest owners, by the greater holders of agricultural land and by the state administration. Moreover, as opposed to Bohemia, complex observation was being made in Moravia, not just measurement of precipitation. Several stations were conducting observations even for the Central Institute for Meteorology and Earth Magnetism in Vienna.

Immediately from 1881 the Meteorological Commission started publishing as an independent publication series yearbooks named „Bericht der meteorologischen Commission des naturforschenden Vereines in Brünn. Ergebnisse der meteorologischen Beobachtungen im Jahre...“ (Report of Meteorological Commission of the Nature Science Society in Brno (Fig. 2). Results of Meteorological Observation in the Year...). At the beginning they were in German, later also in Czech, the last one is for the year 1911. They contain an extremely valuable climatological material, which was used by H. Schindler for the processing of climatography of Moravia and Silesia (Schindler, 1918), and they were further used for the calculation of hydrological design values and for other climatological and hydrological studies.

Already in the program proclamation for the establishment of the new observation network it is said that *„there will also be desirable data about the beginning of blossom and ripeness of fruits of the most important plants, about the time of the harvest etc.“* That‘s why the yearly reports from the years 1882 – 1904 contained abundant phenological data: for plants the development of leaves was monitored, ripeness of fruit of trees, the beginning of bloom of herbs, ripeness of fruit and development stages of cultural plants, for birds the arrival or first departure, for those staying over winter the first observation, then the departure, second departure, last observation, mating, young ones, and even mammals, reptiles, amphibians and insect were being observed.

Comparatively early, in the first half of the seventies of the 19th century, there began the measurement of soil temperature in various depths; the first results from Hrušovany nad Jevišovkou from 1873 were published by Karl Kammel von Hardegger, jun. (1875). From the beginning, soil temperatures were being put into connection with other meteorological elements, in Hrušovany with air precipitation and air temperature, in Přerov, where the measurements were made by a sugar refinery chemist Ludwig Jehle (1887), with insolation and nocturnal radiation. The results were published by 1890.


Bericht

der

meteorologischen Commission

des

naturforschenden Vereines in Brünn

über die

Ergebnisse der meteorologischen Beobachtungen

im Jahre 1881.

(Mit zwei Karten).

Brünn.

Druck von W. Burkart. — Verlag des Vereines.

1882.

Fig. 2: Front page of the first meteorological yearbook of the Natural Science Society in Brno (1881).

Despite the fact that during the Austro-Hungarian Empire the guilds gathered abundant meteorological and phenological material, favourable conditions for analytical studies and experimental research were created only in the period between the wars in the Czechoslovak Republic, when all monitoring was taken over by new state constitutions.

4. Moravian and Silesian bioclimatology in the period between the world wars (1918-1938)

Soon after the creation of Czechoslovakia (1918), agricultural research developed unexpectedly quickly, and its aim was to look for new ways of agricultural production and to carry over its results into practice. The research was supported by the Ministry of Agriculture, directed centrally and carried out mostly by agricultural research institutes, whose leading personalities were lecturers from agricultural universities. In Moravia and Silesia, the Agricultural University in Brno had a great significance for the development of agricultural research and education. It was founded in 1919, and at present is called Mendel University of Agriculture and Forestry.

„Union for Agricultural and Agricultural-Industrial Research“ was founded in Czechoslovakia as early as in 1919, which was in 1925 reorganised into the „Union of Agricultural Research Institutes“. Two years later, forestry research institutes were joined to it. Even though the agricultural research institutes and university institutes were small workplaces and had only limited funds, they became significant parts of Czechoslovak research. The research institutes were putting out two publication series: „Sborníky výzkumných ústavů zemědělských“ (Collections of Works of Agricultural Research Institutes) and „Zprávy výzkumných ústavů zemědělských ČSR“ (Reports of Czechoslovak Agricultural Research Institutes), in which papers were published from all branches of agriculture, including agricultural and forestry bioclimatology. Specific to Czechoslovakia was the connection of pedological and agrometeorological research both in agricultural institutes and at universities. This happened at the urging of the Prague professor Josef Kopecký (1865-1935) who was a founder of these disciplines in Czechoslovakia and also an author of the first Czech textbook of agricultural meteorology and bioclimatology (Kopecký, 1923).

The agricultural research was organised separately according to the lands. In Moravia there was the „Agrometeorological and Pedological Section of the Moravian Land Agricultural Research Institute in Brno“ and in Silesia the „State Agricultural Research Institute in Opava“, which tackled pedological and agrometeorological problems in the territory of Silesia and after the unification of Moravia and Silesia (1927)

Fig. 3: Professor Ing. Václav Novák (1888 - 1967), outstanding Czech pedologist and bioclimatologist.

it was affiliated to the Brno institute. In 1937 the Brno institute changed its name to „State Research Institute for Pedology and Agricultural Meteorology". Director of the Moravian section, or the Institute, was Václav Novák (1888-1967), pupil of J. Kopecký, professor at the University of Agriculture in Brno and founder of its Institute for Pedology, Meteorology and Climatology (Fig. 3).

The Moravian institute conducted for research and practical purposes a network of agrometeorological stations with a both climatological and special program, and organised phenological observations. Out of 309 agrometeorological stations, which were active in Czechoslovakia in 1936, Brno administered 59 stations and Opava 18 stations (in 1931 Brno 62 and Opava 16). Skeleton of the monitoring network was created by agricultural universities. Model station was a well equipped station in Žabčice, situated south of Brno, and operated by the Brno University of Agriculture. Its climate was described on the basis of monitoring from years 1928 – 1938 in a publication by V. Novák (1942) of high methodological value.

Professor Novák excelled organisation-wise and science-wise in both pedology and agricultural climatology. He studied relationships between climate, soil and water, studied issues of microclimate and soil climate (Novák, 1935), favoured field investigations, e.g. as the first Czech scientist he measured dew (Novák, 1938). It is to his credit that the agricultural research institutes built the Czechoslovak Phenological Service (1923), which was one of the first of its kind in Europe (an older service was probably only in Italy from 1922). It had a large, almost unsustainable extent; in the thirties there were about 1,200 observatories in it, out of which Moravia and Silesia had about 650. Important was the direction of the phenological observation, which, despite the fact that it was founded on the principles of H. Hoffmann and E. Ihne, was not botanical, but agricultural, and served practical needs.

Pedological and agrometeorological section published every year the „Zemědělsko-povětrnostní zprávy pro Moravu" (Agricultural-Weather Reports for Moravia), which contained overviews of meteorological observations from chosen agrometeorological stations, and detailed weather characteristics of individual months with respect to the condition of stands, animals and pests, conditions for agricultural work etc. Similar information was being put out in the monthly „Moravský Hospodář" (Moravian Farmer), which was an organ of the Agricultural Council.

The organisation of extensive phenological material was the task, besides V. Novák, of especially Ing. Josef Šimek. First yearbooks from Moravia and Silesia for 1923 and 1924 were published (Novák-Šimek, 1926) with map appendices which mark the beginning of the Czechoslovak phenocartography (Fig. 4 see cover p. 3). Later, state-wide phenological yearbooks under the editorship of V. Novák were published for the years 1927 – 1937, and these were written with the collaboration of experts from other land institutes. The 1927 Yearbook contains among other the first phenological map of Czechoslovakia, namely a map of the beginning of rye harvest, collated by J. Šimek. To Novák's colleagues in the research institute and at the university belonged the associate professor Ladislav Smolík, some of whose works were on the boundary between pedology and climatology while the other were of experimental microclimatological character.

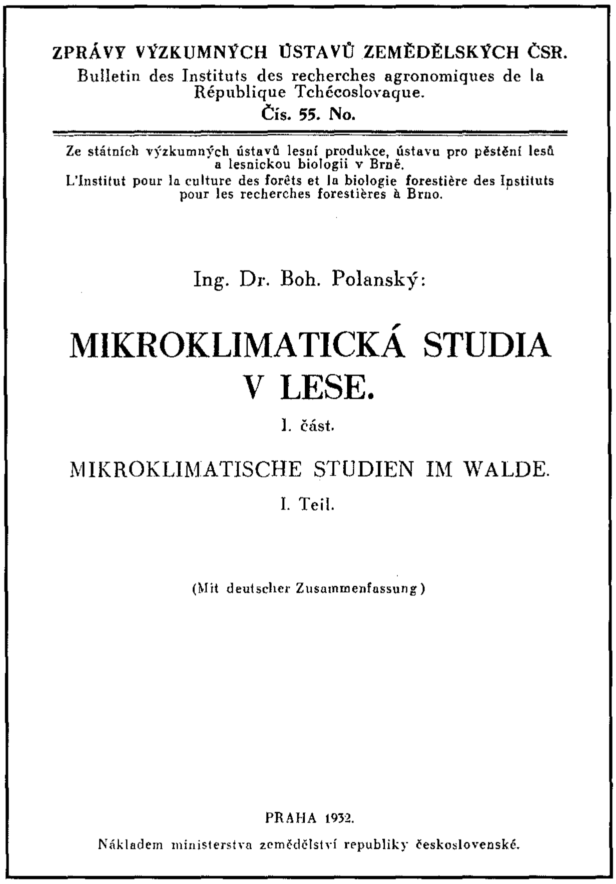
Between the two world wars, the first studies were originating on the influence of weather conditions on the development of crops. J. Šimek (1937) from Brno for instance tried to find a causative connection between monthly and yearly precipitation and the yield of some crops in the Moravian-Silesian land, and Ing. Alois Špička (1930) from Opava tried to find the influence of precipitation and air temperature on the crop yields in Silesia. It is a pity, that these comprehensive analytical studies were forgotten. It's not even known if anyone continued in the research of two German scientists, Franz Frimmel and Karl Lauche (1937), conducted in the Mendel's Institute in Lednice, who were looking for relationships between phytophenological data from the Lednice park, soil temperatures and grain yields.

A little more modest than the agrometeorological research was in the period between the wars the forestry-meteorological research, despite the fact that many workers and university lecturers paid attention to station conditions in various forest stands and cuttings. In Moravia, an important worker in forestry research was Bohuslav Polanský (1901-1983), who was the head of the Institute of Forestry Biology in Banská Štiavnica (Slovakia), founded in 1923, which up until 1936 was under the expert leadership of the Brno Institute of Silviculture.

B. Polanský, later a professor in silviculture at the Faculty of Forestry at the Brno University of Agriculture, conducted microclimatic and phenological research in the mountainous regions of central Slovakia, Moravia in the vicinity of Hodonín and Brno, and used experimental tools and equipment of his own construction. He wrote a comprehensive paper about microclimatic studies in the forest (Polanský, 1932), in which he gathered results of many foreign experts and compared them to his own findings (Fig. 5). His next work, based on the measurements at stations in various forests of Moravia and Silesia, named „Příspěvek k základům lesnické bioklimatologie a fenologie" (A Contribution to the Fundamentals of Forestry Bioclimatology and Phenology, Polanský, 1937), is the first Czech handbook and textbook of forestry meteorology and phenology.

An unusual natural phenomenon, which severely struck Czechoslovakia and other countries of central Europe, was the extremely severe winter of 1928/29. Today it is possible to say that in central Europe it was the most severe winter of the 20th century and after the winter of 1829/30 and 1798/99 third since the beginning of temperature measurements in Prague in 1775 (Kakos-Munzar, 2002; Křivancová, 1999). Its effects were studied by all agricultural and forest research institutes with respect to the freezing of soil, calamity in the fruit industry, damages to forests etc. For the sake of silviculture it was important to find the marginal boundary of tolerance of forest tree species with respect to low temperatures in various field and other conditions. Therefore, on the basis of an extensive questionnaire, B. Polanský (1930, 1931) collated an overview of the damages and evaluated the primary and secondary effects of a severe winter on forest tree species.

The peaceful development of Moravian and Silesian bioclimatology was harshly hit by the reduction of Czechoslovakia as a result of the Munich Agreement of 29. 9. 1938. Czechoslovakia had to surrender to the fascist Germany almost all of Silesia and a large part of Moravia. To further organisational changes and limitation of agricultural research led the nazi occupation of the Czech Lands of 15. 3. 1939 and the subsequent closure of the Czech universities 17. 11. 1939, which meant also the liquidation of the Czech tertiary agricultural education. After the end of World War II, however, the Moravian and Silesian bioclimatology was successful in starting to continue in the pre-war activities and to substantially extend on them.


ZPRÁVY VÝZKUMNÝCH ÚSTAVŮ ZEMĚDĚLSKÝCH ČSR.
Bulletin des Instituts des recherches agronomiques de la République Tchécoslovaque.
Čís. 55. No.

Ze státních výzkumných ústavů lesní produkce, ústavu pro pěstění lesů a lesnickou biologii v Brně.
L'Institut pour la culture des forêts et la biologie forestière des Instituts pour les recherches forestières à Brno.

Ing. Dr. Boh. Polanský:

MIKROKLIMATICKÁ STUDIA V LESE.

I. část.

MIKROKLIMATISCHE STUDIEN IM WALDE.

I. Teil.

(Mit deutscher Zusammenfassung)

PRAHA 1932.

Nákladem ministerstva zemědělství republiky československé.

Fig. 5: Front page of prof. B. Polansky's paper on microclimatic measurements in a forest.

5. Conclusion

Agricultural and forest climatology and phenology were the main bioclimatological disciplines which were conducted in Moravia and Silesia. On the other hand the centre of human bioclimatology in between-the-war Czechoslovakia was Bohemia (Prague) and above all the High Tatras in Slovakia, where the radiation and spa problems were being studied. Only minor works concerned Moravia. Josef Mrkos (1882-1974) and Alois Gregor (1892-1972) for instance devoted themselves to the climate of the largest Moravian spa Luhačovice. The intensity of refrigeration according to the formulae of L. Hill at many places of Moravia and Silesia was calculated by a Brno university associate professor Bohuslav Hrudička (1904-1942) whose flowering career was ended by death in a nazi concentration camp (Krška-Barcal, 1990).

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Author´s address:

RNDr. Karel KRŠKA, CSc.
Czech Hydrometeorological Institute, Branch Brno
Kroftova 43, 616 67 Brno, Czech Republic
e-mail: krska@chmi.cz

Reviewer:

RNDr. Jan MUNZAR, CSc.

CONFERENCE ON REGIONAL GEOGRAPHY AND ITS APPLICATIONS

Antonín VAISHAR, Oldřich MIKULÍK

The 5th Moravian geographical conference CONGEO' 03 on Regional Geography and Its Applications was held in Hotel Vlčina, Frenštát pod Radhoštěm, Czech Republic from 15-19 September 2003 being attended by thirty geographers of whom 14 arrived from foreign countries (Canada, Hungary, Ireland, Poland, Slovenia, Spain and Sweden).

The Conference was focused on the issue of regional geography which is capable of integrating the knowledge of physical and human geography. There were 22 papers presented during the Conference, grouped in 4 main themes as follows: 1-Regional Environmental Issues; 2-Regional Processes in National Settlement System; 3-Regional Identity, Ethnicity, Religiosity and Human Problems; and 4-Euroregions and Their role in European Integration.

Opening paper „Frenštát pod Radhoštěm: The town of mining or the town of tourism?“ informed the Conference participants about the town of the Conference venue, present position and function of the town within the hinterland of the Ostrava industrial agglomeration and about two possible visions of town's future. The area is situated in the hinterland of the Ostrava industrial agglomeration and has to face problems relating to industry transformation in the region of Ostrava including considerations on a possible mining of bituminous coal and gas exploitation in immediate surroundings of the town and decline of agriculture due to worse natural conditions. On the other hand, the region has a considerable potential for a wide range of recreational activities, which could -under certain circumstances- contribute to its prosperity.

Regarding the fact that Conference proceedings were prepared for the Conference participants already before the Conference, speakers were encouraged to focus during their live presentations on the most important parts of their contributions. Time space available for discussion was generous, which was properly used by the attendants. Apart from theoretical works concerning regional geography, some papers brought results of concrete research studies made in the respective European regions. As indicated by the presented papers, the region of Central Europe feels the issue of the 2002 flood, its reasons and impact on the landscape still as highly topical similarly as the issue of landscaping and protection of particular elements of environment. Participants from post-socialist countries focused some of their papers on issues related to the transformation of economy and its impacts onto spatial structures and social sphere.

A whole-day excursion that was organized on the last Conference day made the participants acquainted with the current situation of economic and social transformation in the Ostrava agglomeration, which is one of regions in the Czech Republic, most affected by the transformation. A limited number of Conference proceedings is still available.

Concluding the Conference, experts from the Brno branch of the Institute of Geonics ASCR presented a vision of the 6th Moravian Geographical Conference CONGEO' 05 to be held in summer 2005. Its preliminary topic will be Geography within Europe of Regions. This main theme is added the following sub-topics: Regional Geography: theory and Practice, Settlement Systems of Various Scales, Regions of Large-Scale Landscape Protection, Regional Perception and Identity, Regional Prosperity and Regional Politics, Euroregions and their Role in New Europe. Those who are interested in attending the Conference CONGEO' 05 are encouraged to contact the Brno branch of the Institute of Geonics to be listed for the first circulars in spring 2004.

CZECH-POLISH AND CZECH-SLOVAK CROSS-BORDER COOPERATION OF UNIVERSITIES

Arnošt WAHLA

Cooperation between Czech, Polish and Slovak universities, operating in the borderland regions of the three countries, was markedly intensified in the period 2000-2003. The institution initiating this cooperation was the Department of Social Geography and Regional Development, Ostrava University, with a partner institution the Department of Management at the Faculty of Economics, Technical University in Ostrava - High School of Mining. The organizational process consisted of some preparatory discussions with partner universities in Poland and Slovakia, and in the follow-up international conferences. The projects for these conferences were approved and included with activities of the fund PHARE-CBC (Cross Border Cooperation) which supported particularly „people-to-people" projects promoting the development of collaborating institutions on the two sides of the border, development of interconnecting structures between them, and the development of economic potential in borderland regions.

The above-mentioned Department of Geography was involved previously in this field of research before 2000, organizing a number of national and international events, such as the national conference on European Dimension in the professional training of teachers in geography (1997), and the international conference of European Dimension in Geographical Education (1998). This conference initiated other three conferences - Silesian University in Sosnowiec (1998), University of Matej Bel in Banská Bystrica (2000) and University of Maribor in Slovenia (2001).

Attendance at the prepared conferences was predicated on the official demarcation of Czech-Polish and Czech-Slovak borderland regions. Participants in the conferences included the following public and private universities:

Wroclaw University	Ostrava University	Žilina University
Opole University	Technical University of Ostrava – VŠB	Trenčín University of Alexander Dubček
University of Silesia Katowice	Silesian University Opava	Trnava University
	Bussiness school Ostrava[1]	St. Cyril and Method University in Trnava
	Thomas Bata University in Zlín	City University, College of management in Trenčín[1,2]
	European Polytechnical Institute in Kunovice[1]	

[1] *Private school*
[2] *The University did not accept the invitation to attend the conference.*

The first international conference was held from 25-26 October 2001, with the official title: The Euro-regional Cooperation on the Czech-Polish Border. The conference was attended by academic officials of participating universities, colleges and faculties (1 rector, 4 deans, 4 heads of department, representatives from the Ministry for Regional Development, official representatives of Euro-regions and government authorities). It was stated that, after the year 1992, the universities launched, within the framework of professional preparation, the implementation of Article 126 of the Maastricht Treaty: i.e., education for Europeanship, the European Dimension. An especially active role was played by geographical departments of the universities. The participating universities described the introduction of new study programmes, new study disciplines linked to EU programmes (European integration, European

Union, European Union Geography). Significant activities were focused on cross-border projects, participation in PHARE-CBC, events organized by European university information centres and generation of new study texts.

The second international conference was devoted to the collaboration of universities and colleges in the Czech-Slovak borderland, held in Ostrava from 4-6 February 2003. The attendance of academic officials (4 rectors, 8 prorectors, 8 deans, 24 prodeans, representatives of academic senates) manifested the topical character and significance of transboundary Czech-Slovak cooperation. It was pointed out at the conference that activities of Ostrava University in the field of cross-border collaboration had achieved a certain tradition. The participating universities have a total of 33 faculties, with over 25.000 students and about 3.000 teachers, which illustrates the important pedagogic, scientific and research potential, with very good pre-requisites to take part in the solution of processes concerning European integration and cross-border cooperation. Participants at the conference were informed about activities of the faculties in the Czech-Slovak borderland and cross-border collaboration, appreciating the contribution of the intergovernment agreement on scientific and technical cooperation between Slovakia and the Czech Republic, valuing very highly the concern and support provided by PHARE-CBC.

The third international conference is scheduled for 2004. It will be organized by Trenčín University of Alexander Dubček.

ATLAS OF SLOVAK TOWNS

(Bratislava, MAPA Slovakia Bratislava, 2001, 352 pp.
ISBN 80-88716-87-8)

Arnošt WAHLA

This atlas of all 138 towns existing in the Slovak Republic adds to the publication record and successes of Slovak cartography. Introductory pages address future users with an advertisement page from the publisher MAPA Slovakia Bratislava, an alphabetical list of towns and map information about the growing number of Slovak towns, a well-arranged map of Slovakia with the location of all 138 towns, and statistical data on regions (2001 census), with legends to the maps. Input data worth mentioning here are those on the growing number of towns: Slovakia had 9 royal towns in the year 1250, 23 royal free towns and 197 towns of another status in the year 1720.

The extent of the information presented on the towns differs, in depending on their size, the administrative functions of the town, and a surface area required to picture the whole cadaster. Town plans are elaborated on scales ranging from 1 : 8.000 up to 1 : 12.500, with the most frequently-used scale being that of 1 : 10.000. Very small towns are given the space of one page (text + plan), large towns are presented on more than ten pages.

The structure of information for each town is uniform, with the geographical location of the town illustrated on a small map of Slovakia. The town is characterized by its sign, geographical data (area, population, altitude), data on town authorities, some services, and traditional events held in the town. The text part describes of localization and history, historical and cultural monuments, and tourism. All streets are listed in alphabetical order with allocated localization characteristics. Each town has at least one characteristic photograph (general view, town core, object of significance etc.).

The town plans are processed by uniform digital technology, being well-arranged, readable, representing a sufficient source of information for users, and sufficing for the presentation of all towns. In addition to cartographic marks in the plans, there are some objects which are identified by their functions (town hall, house of culture, gymnasium, companies/firms, prison etc.). Cut-outs are used in cases where the cadastral area of associated municipalities exceeds the possibilities of a continuous picture. For large towns with large cadastral areas, small plans to picture the whole town are added.

The atlas ends with an index of firms and their activities in the included towns, which does not have a uniform presentation, however.

The cartographic work underreview here received a very positive response from a range of users - town authorities, institutions, schools. Universities gained excellent materials to teach social/residential geography. Schools were provided with a useful and easily applicable cartographic and text source of information, to implement regional principles in geographical education.

The Slovak web-sites „superzoznam.sk“ and „atlas.sk“ offer the plans of the towns, along with an apparatus required to search streets.

The Czech cartographic and geographical community can only congratulate their Slovak colleagues for the publication of this valuable work. With regret, however, one must state that no similar publication is being prepared in the Czech Republic.

RNDr. OLDŘICH MIKULÍK, CSc. (60)

Member of the Moravian Geographical Reports Editorial Board, leading scientific worker, member of the Scientific Council of the Institute of Geonics and member of the Senate of the Czech Academy of Sciences - Oldřich Mikulík will celebrate his life anniversary on 21 November 2003.

Dr. Mikulík graduated from Palacký University in Olomouc in 1966, gained the RNDr. (doctor of natural sciences) degree at Masaryk University in Brno in 1974 and the CSc. (candidate of sciences awarded by dissertation) degree at the Czechoslovak Academy of Sciences in 1983.

In the period 1968 – 1993, he worked at the Institute of Geography, Czechoslovak Academy of Sciences in Brno dealing with problems of industrial regionalization in Czechoslovakia. Since the beginning of geographical research of environment in the 1970s, he was engaged in the investigation and later in co-ordination in this field. He was responsible for the related project of international co-operation within the COMECON countries. The best known result of this co-operation is a pair of environmental maps issued by the Austrian Institute of South and South-East Europe.

Since 1993, dr. Mikulík has been working at the Brno Branch of the Institute of Geonics, Czech Academy of Sciences. His professional experience and scientific contacts are important factors of the Branch activities.

Members of the Moravian Geographical Reports Editorial Board wish Dr. Oldřich Mikulík good health and a lot of success in his scientific work.

PROF. Dr. ANDRZEJ T. JANKOWSKI (65)

Professor Andrzej T. Jankowski experienced his 65 jubilee this year. He lectures geography at the Silesian University in Sosnowiec, where he had established the department of geography in the 1980s. He was a Vice-Rector of the University. Now, he is Dean of the Earth Science Faculty and President of the Polish Geographical Society. He has been cooperating with the Institute of Geonics for a long time. He is a member of the Editorial Board of Moravian Geographical Reports. The Editorial Board and all his friends wish him many happy returns of the day and much enthusiasm and success in his next activities.

RNDr. EVŽEN QUITT, CSc. (70)

Scientific worker at the Brno Branch of the Institute of Geonics – Dr. Evžen Quitt, CSc. celebrated his seventieth birthday on 22 July 2003.

Dr. Quitt graduated from Masaryk University in Brno, specialization of physical geography and climatology, in 1957. In 1963, he gained the CSc. degree (candidate of sciences awarded by dissertation) for his work Mesoclimatic conditions of seats with population over 2000 in CSSR, defended at the Faculty of Natural Sciences, University of Jan Evangelista Purkyně in Brno. After the university he worked in the Cabinet of Geomorphology of the Czechoslovak Academy of Sciences, at the Institute of Geography CSAS and at the Institute of Geonics AS CR. At the Institute of Geography CSAS he gradually led the Department of Climatology and Hydrology, Department of Environment, co-ordinating a number of research projects. His scientific profile was focused into the field of topoclimatology, practical climatology and bioclimatology. His works are of pioneer nature and are highly valuated both in the Czech Republic and abroad. A list of Dr. Quitt's publication activities is long. He is author to a number of map works published in atlases, of which the maps of CSR Climatic Regions and Mesoclimatic Regions on a scale of 1 : 500.000 are still much quoted publications.

Dr. Quitt retired in 1993 but he still remains at the Institute of Geonics as a part-time worker. His colleagues from the Institute wish him much health and enthusiasm for future work. The congratulation is joined by all members of the MGR Editorial Board.

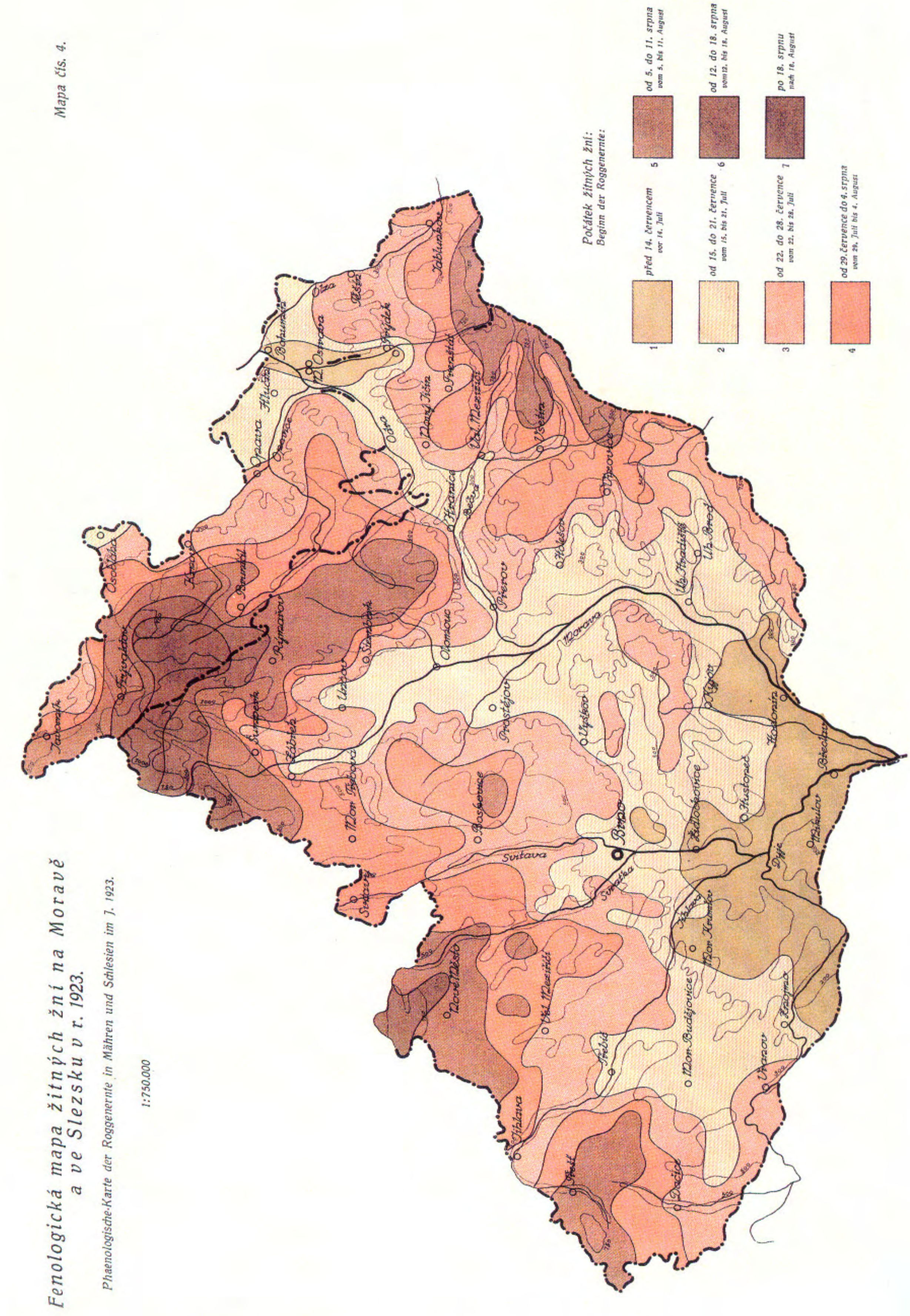

Fig. 4: Phenological map of rye's harvest time in Moravia and Silesia in 1923.

Illustration to K. Krška's paper.

Fig. 9: View of the Brno inner city from the Špilberk castle south-west.

Photo A. Vaishar

Fig. 10: Brno Main railway station inhibits the city development southward.

Photo A. Vaishar

Illustrations to A. Vaishar's and J. Zapletalová's paper.