

MORPHOLOGICAL INTENSIFICATION IN A POSTSOCIALIST CITY – A BANSKÁ BYSTRICA CASE STUDY

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Abstract: Morphological intensification is a distinct feature of the transition from the relaxed and sprawl-based growth of a city towards growth within, with a special emphasis on the use of various spatial reserves. The work described here entailed an analysis of selected aspects of the above phenomenon as exemplified by the city of Banská Bystrica in central Slovakia. In particular, it focuses on the origin, development and present state of 306 areas within the overall built-up zone that had not been put to urban use, on the nature of, and spatial variability to, the morphological intensification process, and on the potential for intensification of three city zones (delimited by different historical and socio-economic development), i.e. the main growth zone, the annexed settlements zone and the extensive growth zone.

Key words: morphological intensification, spatial reserves, extensive growth zone, annexed settlements zone, main growth zone, Banská Bystrica, Slovakia

INTRODUCTION

Now that 20 years have elapsed since the change in political and economic conditions in Central Europe, it is possible to look at the inner spatial structure of cities in this region in the context of those events. For recent years have ushered in certain trends as regards transformation whose effects and impacts have been attested to by many studies from different countries (Vendina 1997, Węclawowicz 1998, Sýkora 1999, Matlovič

2000, Ira 2001, Pirveli 2001, Timár and Váradi 2001, Ruoppila and Kahrik 2003, Rebernik 2005, Lötscher 2005, Parysek 2005, Ilieva and Iliev 2010 and others). The said trends include intensification, commercialisation, gentrification, functional fragmentation and many more, but they have all been understood as reflecting the changed social and economic conditions in the environment of the existing spatial structure of cities. From among the processes mentioned,

it is perhaps the trend towards intensification that occupies a specific position (Ira 2001, Matlovič *et al.* 2001, 2009). What is manifested in this case, in perhaps the most noticeable manner, is the transition from the relaxed, sprawling growth of a city towards internal growth, and with a special emphasis on the use of spatial reserves. This trend focuses primarily on recent parts of cities, while most processes of urban transformation culminate in the central (older) parts. Morphological intensification is also the most visually remarkable sign of urban transformation.

The theoretical background to this study is provided by work summarising the typical features of the “socialist city”, by French and Hamilton (1979) and Węclawowicz (1999). This research provides the basis on which to determine and analyse the structure and behaviour of “post-socialist cities” (Liszewski 2000), or to design general models of urban transformation (Radváni 1982, 1989; Kandráčová 2000; Sýkora 2000a; Liszewski 2001). Relevant case studies here are Korec (1996), Liszewski and Wolaniuk (1998), Sýkora (1999), Matlovič (2000), Ira (2001), Ptáček *et al.* (2007) and Chorvát (2008).

The main purpose of this work is to point to the fundamental features of morphological intensification, as well as the various levels of intensification potential, in the city of Banská Bystrica in central Slovakia. With its 80,000 inhabitants, Banská Bystrica may be thought of as a typical middle-sized “postsocialist city”. The work done on it focuses on the origin, development and specific features of unused urban areas (hereinafter UUAs) within the overall built-up zone, these being the dominant spatial reserves that might allow morphological intensification to take place. These areas have been studied in the whole built-up part of the city, and consequently in 3 types of area arising out of the specifics to the spatial distribution of UUAs.

The purposes of the work described here were:

- to introduce a database developed for the purposes of this study and its capabilities

allowing selected urban processes to be analysed and modelled;

- to designate and identify types of built-up area of differing historical and socio-economic development; and (on the basis of the distribution and properties of the respective UUAs), to infer related intensification trends;

- to draw conclusions as regards the further growth of Banská Bystrica and the impact of observed trends towards intensification.

At the same time, this work has an ambition to add a further thread to work presented in *Geographia Polonica* under the headline: Cities in the Transforming Postcommunist Countries—Ten Years of Economic, Social and Spatial Experience (Spring 2005, Vol. 78, No.1), Slovakia being the only one of Central Europe’s post-communist countries not to be represented.

URBAN TRANSFORMATION

Contemporary changes in urban structures are to a large extent the result of globalisation trends (Zborowski 2001, Sýkora 2000b), and therefore apply, not only to the transition economies that are the CEECs, but also to a number of other cities existing under various economic systems and conditions (Wu 2003).

The trends in question are also an organic component to recent development of former “First” and “Third” World cities. While the urban transformation has been proceeding fluently for decades in well-developed economies, the situation in Third World countries was such as to ensure that the onset and rate of change was very much dependent on initial conditions.

In contrast, a characteristic feature of cities in the CEECs is a relatively dynamic and radical change that is occurring on an almost equal footing in all countries, having been initiated by a common factor in the form of the sudden change of political and economic system in the late 1980s and early 1990s. These facts allow for the

analysing of the respective changes in the time since their onset, with details of nature and intensity then being compared from country to country and city to city. A more detailed knowledge of the relevant transformation trends may also provide for prognoses regarding expected future development (Bašovský 1995, Gzell 2001).

A key consequence of the aforementioned transformation processes has been the ongoing modern-to-postmodern transformation of urban spaces (in Central and Eastern Europe, authors prefer the terms post-socialist or post-communist—Hall 1998). However, regardless of the term used, it is historical development plus ongoing transformation processes that together determine contemporary urban structure. The latter include gentrification, suburbanisation, growth of ghettos, population deconcentration or controlled segregation affecting the social-demographic substructure of the city. Tertialisation, sacralisation and other factors affect the functional substructure of the city; and restoration, revitalisation or aesthetisation impact upon its morphological substructure (Ira 2001, Matlovič *et al.* 2001). This list is by no means exhaustive, with many other processes capable of being distinguished. However, in what follows we shall focus solely on morphological intensification.

In fact, morphological intensification differs markedly from most of the other trends mentioned above (Ira 2001, Matlovič *et al.* 2001, 2009). While most them culminate in the older (central) parts of the city, morphological intensification focuses mainly on recent parts of a built-up area. Dominant axes of its spatial development often follow the courses of main road communications. Historical and socio-economic facts related to this behaviour are as follows:

1. In general, the growth of a city was restricted by its administrative borders/limits. Therefore, it was common practice for cities to annex administratively the surrounding municipalities, in order to ensure sufficient spatial reserves for their expected (planned) growth.

2. Extensive city growth was significantly space demanding and the space available was not treated effectively. Today, the results of that are spacious UUAs surrounded by built-up areas, and often in the immediate vicinity of intensively exploited city-centre districts.

3. After the fall of communism, disintegration tendencies took their place among the leading motifs underpinning the intensification of built-up areas. After some peripheral city parts had regained their independence, cities lost the opportunity to grow territorially, and they were consequently forced to reconsider the extent of their own spatial reserves, a process which harmed them.

4. Long-term urban development and recent relatively strict regulations regarding sites of historical interest resulted in a lack of appropriate space for intensification in central city parts. This resulted in a level of attractiveness of UUAs on the periphery of the built-up area that was never noted before.

5. The renewal of spatial rent resulted in a logical decrease in prices from the city centres towards the periphery. This resulted in a dominance of functional intensification in the central parts and morphological intensification at the periphery.

There are two spatial forms of morphological intensification—the so-called vertical and horizontal addition. The less-frequent vertical addition started at the beginning of the transformation period, primarily in the prefab housing estates. This was an easy and feasible way in which to solve the pressing demand for price-affordable housing, and to improve the insufficient technical conditions of flat roofs. Vertical addition in detached houses remains an important alternative of independent multi-generation housing. However, this process is mostly of nothing more than a point character and is a form of intensification that can also be seen in historical centres and adjacent inner cities. The result has been the occurrence of isolated tower blocks (manhattanisation), which often disturb the overall

city horizon. In addition, the lack of space for traffic in city centres has sometimes resulted in vertical addition to depth through the building of underground car parks, stores or depots.

Horizontal addition is the most distinct expression of the urban-transformation processes. It is relatively rare in historical centres, especially due to the lack of spatial reserves. The main processes implemented are exploitation of the gaps between buildings, and the substitution of seedy old buildings by new hierarchically better-equipped ones (banks, polyfunctional buildings, luxury housing, etc.). This is often accompanied by a restoration of historical sites. In the inner parts of cities, this process has resulted in a mostly linear character of new building, often following the directions taken by main lines of communication (services related to traffic and trade), as well as in the substitution of more spacious unused gaps by complexes of above-standard housing, administrative and retail buildings. The most significant spatial expression of horizontal addition can be observed on the peripheries of cities and beyond the limits of the built-up area. In these parts of a city, easily accessible locations provide conditions for the growth of individual housing, services and manufacturing. In the case of prefab housing estates on the periphery, spatial reserves mainly offer the potential for sub-standard outfitting of areas to be improved upon significantly.

From the inhabitants' point of view, morphological intensification has brought many advantages, such as a shortening of transport distances (to services), or an improvement in the environment through a reduction in the number of unused and devastated areas. The disadvantages arising centre mainly on the way investors' interests are forced upon the city planner's concepts and principles, the danger of unrestrained building densification, conflicts over the allocation of functional zones (traffic/housing, industry/recreation, etc.), deteriorating hygiene conditions, etc. These tendencies are grounded in legislative imperfections

and in the vision of the quick profit—both phenomena typical for an early period in the joint transformation of the economy and society.

THE HISTORY AND DEVELOPMENT OF BANSKÁ BYSTRICA'S BUILT-UP AREA

The spatial structure of Banská Bystrica reflects several phases of spatial development and stagnation that relate to the fortunes of the mining industry, metallurgy and commerce. While the last of the said phases of development was of relatively short duration (1950–1990), it nevertheless changed the cityscape markedly. The main reasons for this lay in the dynamic development of industry, public-service utilities, and mainly administrative functions after World War II. This was accompanied by a massive population increase from 15,000 to 85,000 inhabitants.

The city was founded in the first half of 13th century in the northern part of the Zvolen Basin, on the right side of the Hron River and in the area where it changes course from west to south (Fig. 5). The position on river terraces protected the city from floods and also served a defensive function. Since the 18th century, when the city began growing beyond its walls, building has spread on to the alluvial plains. The beginnings of this process were related solely to river-exploitation activities including small water-powered ironworks, stores of floating wood, other ironworks, charcoal production, etc. By the end of the 19th century, the city had become one with built-up areas of the closest rural municipalities to the south, i.e. Radvaň and Kráľová. These represent the most important milestones of the city's development, and they entail the recent formation of the city's main growth core (Annex 1).

Dynamic extensive development of the city after 1945 (especially of factories, store-houses, and prefab housing estates) required considerable space for new building. To

provide for outward growth of the city, surrounding rural municipalities were annexed to the city administratively. It was in this way (in the course of two—1966 and 1970—phases that 18 municipalities lost their independence. In fact, the settlements closest to the city (Radvaň and Kráľová) had become part of its built-up area as early as at the end of the 19th century. The remaining annexed rural municipalities (built-up areas) were steadily merged with the city's built-up area. Over time, their peripheries gained new housing—often whole new streets of family houses or new housing estates. In the area towards the city centre, service facilities and industry appeared. The areas of annexed municipalities built up in this way became secondary growth cores of the city (Annex 1). Only seven, more-distant municipalities regained their independence after 1990, partly because their built-up areas had not already merge with the main city built-up area.

Initially, the built-up areas of annexed rural municipalities were separated from the main growth core by what were in the main agricultural areas several kilometres broad. After World War II, new buildings began to appear in this zone—though not all on the edge of the city's built-up area, but as solitary areas of housing, service facilities or industry. These became tertiary growth cores of cities (Annex 1). The beginning of this process should be sought in the first years after World War II (1945–1950). It can be seen in Fig. 5 that, at the eastern and south-eastern edge of the main growth core (1950), we may note the appearance of areas of new building thoroughly isolated from the city built-up area, or possibly linked by narrow corridors, have appeared.

As a result of these historical facts the city (its built-up area) becomes a mosaic of areas given over to urban exploitation, or non-urbanly (e.g. fields, meadows...) exploited areas. Building density was growing, number of unused areas was reducing and larger ones were lessening—however a lot of them left closed in the city built-up area until now.

MATERIALS AND METHODS

To uphold the consistency of records and features in the database, built-up areas and UUAs had to be defined unambiguously. We followed an assumption of the Athens Charter (1933), to the effect that typical urban functions involve working (though not in agriculture and forestry), housing, some types of recreation and traffic. Thus, we considered as a built-up area that part of the city which comprises a mosaic of plots with typically urban functions. At the same time, this is a compact settlement unit that is capable of being separated from its functionally different rural surroundings (such as fields, meadows, woods, villages...) by virtue of an unambiguous border. Utilization of the built-up area is not always ideal, however, functional disturbances often existing within it in the form of unused urban areas (UUA), which is to say areas not put to urban use. UUAs are mainly wasteland (fallow urban) areas inside the built-up zone or on its periphery. UUAs may also still be wooded, or used in agriculture (as fields, meadows, pastures, etc.), or else areas not serving any function, provided they are thoroughly enclosed within a built-up area.

The fundamental data used in this study were gathered during the 2004–2006 period. All the UUAs were surveyed in the field, their being indicated on the cadastre map by means of hand drawing. A description of the current status of each area was also made. Subsequently, all the field records were processed in a GIS environment. Additional data characterizing all the investigated areas were extracted from municipal databases, reports and maps, or else calculated using GIS capabilities (e.g. size and perimeter, compactness, origin, slope and aspect, position in ecological segments, price of plots, distance from the boundaries of the built-up area and from the city centre). A total of 306 UUAs were recorded and characterized, their spatial distribution being as depicted in Annex 3. A detailed description of the database is to be found in Pouš and Hlásny (2006). The database was developed in GeoMedia

Professional v. 6. This also provided a proper environment for all spatial analyses. Statistical analyses were carried out in STATISTICA v. 7.

RESULTS

ZONATION OF THE BUILT-UP AREA

The nature and intensity of the morphological intensification taking place is crucially dependent on such factors as the origin of the respective UUA (detailed further below), ownership, extent, price, available technical facilities or traffic accessibility. These factors are the results of the application of principles of spatial management after 1990, and of a long-term development of the city's spatial structure in different historical periods and in various districts. We therefore delimited three city zones of differing spatial and historical genesis and potential for intensification (see Annex 2):

The main growth zone is spatially equivalent to the primary growth core prior to the onset of the socialist (extensive) period of city development. It is shown by the original spatial extent to Banská Bystrica's built-up area, as delimited using remote-sensed imagery from 1949.

The annexed settlement zone comprises built-up areas of rural municipalities annexed administratively to the city in 1966 and 1970. These are the former secondary growth cores that became part of the recent

built-up urban area. Aerial photographs from 1949 were also used to delimit these borders.

The extensive growth zone is the largest part of the present-day built-up area, which only became urbanized under communism. Its present extent reflects spatial development of the primary, secondary and tertiary growth cores, the border having been extracted from recent cadastre maps and specified in detail by means of field survey work.

SPATIAL RESERVES

IN THE CITY'S OVERALL BUILT-UP AREA

The UUAs extend over 9.66% of the city's built-up area, which comprises 306 UUAs over more than 1,800,000m². The average size is thus 4,596m² (Table 1), though figures range from 150 to 140,000m². This wide range arises out of both the historical development of the city and very detailed field mapping. The sizes of unused areas follow on closely from the exponential distribution, this expressing the fact that most areas are small, while progressively larger areas are fewer and fewer in number (Fig. 1). This is also in fact a feature common to all three zones (Figs. 4, 5 and 6).

The most frequent origin of UUAs reflects the termination of former non-urban functions (often in combination with other origins), and the fact that the respective area has not been exploited in an urban manner up to the given time. As far as spatial distribution is concerned, these areas are

Table 1. Distribution of urbanly unused areas by city zones

	A		B		C		D		E
	m ²	%	Σ	%	m ²	%	%	%	m ²
MGZ	3,398,838	18.15	44	14.00	253,571	14.38	7.46	1.35	5,763
ASZ	1,097,421	5.85	29	2.46	44,584	9.48	7.06	0.24	1,537
EGZ	14,229,352	76.00	233	83.54	1,512,117	76.14	10.62	8.08	6,490
BUA	18,725,611	100.00	306	100.00	1,810,272	100.00	9.66	9.66	4,596

A—Extent of respective zones, B—Number of urbanly unused areas, C—Extent of urbanly unused areas, D—Percentage of urbanly unused areas of the size of respective zones/of the whole built-up area, E—Average size of urbanly unused areas, MGZ—main growth zone, ASZ—annexed settlements zone, EGZ—extensive growth zone, BUA—built-up area.

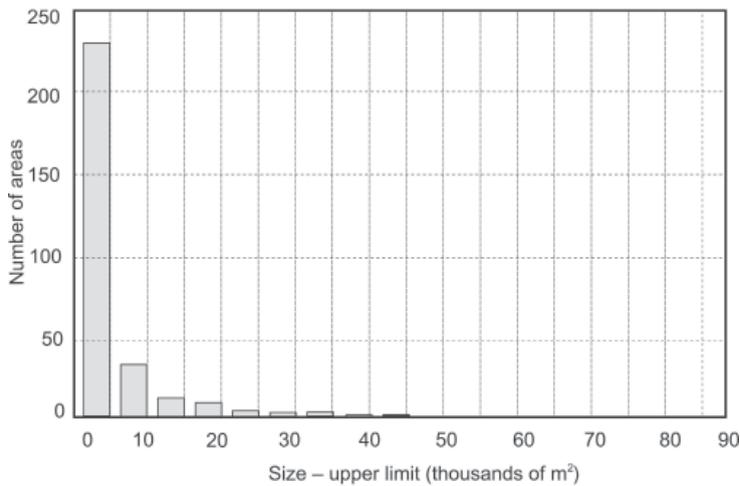


Figure 1. Entire built-up area—distribution of urbanly unused areas by their size

completely absent from the city centre, and also distributed very sparsely on the edge of the annexed settlement zone. Most of them extend through the extensive growth zone.

A second frequent origin lies in the termination of urban functions. The areas involved here are mostly in the last phase of the morphological cycle characterised by Conzen (1962), in that the ruins of buildings and abandoned industrial facilities, etc., are present. A high level of devastation and limited attractiveness to potential investors are typical for them.

The smallest group of UUAs is that originating in remaining non-urban functions, such as fields, meadows or orchards. These are mostly of larger extent, and the high rate at which they are now disappearing reveals their importance in the morphological intensification process. Most of the areas in question lie on the edge of the historical centre, or follow the directions of main communications within the zone of extensive growth.

SPATIAL RESERVES IN THE MAIN GROWTH ZONE

The main growth zone is the part of the city with the longest urban tradition. Until 1950 the predominant urban process was hori-

zontal addition, primarily on the city's edge. Present prevailing functions are services and transportation, while industry and housing take a smaller portion. This territory accounts for approximately 18% of the city's overall built-up area, though it comprises just 14.4% of the unused areas. This is a pattern widely observed at the centres of Central Europe's cities, these being their most intensively exploited parts.

Banská Bystrica city is found to differ somewhat from the assumption, in that the main growth zone consists of two different parts (Fig. 3). The northern part is sparsely covered by relatively small unused areas, distributed mainly on the periphery. These are mostly the plots in the last phase of the morphological cycle, and their potential for having urban functions allocated to them is extremely high, thanks to the attractiveness of their position in the city centre. In contrast, the southern part forms a north-south corridor partly accommodating the city's most spacious unused areas. These extend across the aforementioned settlements of Radvaň and Kráľová, which had merged with the city before World War II. New urban-sprawl-type building has not exploited these reserves effectively so far, with the result that higher size categories are also

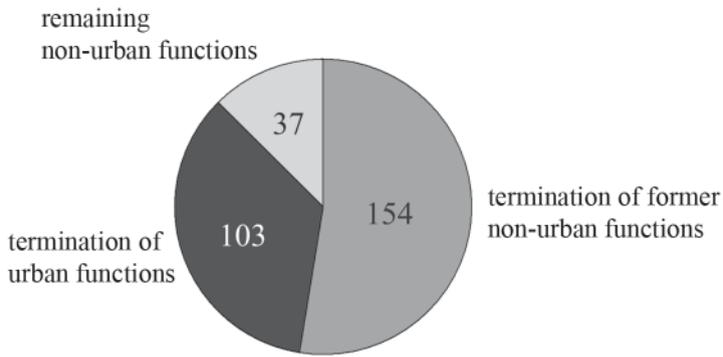


Figure 2. Urbanly unused areas in the whole built-up area by their origin

represented by a greater number of UUAs (Fig. 4). The spatial distribution in this case follows the directions of two main communication routes bordering on to this area from east and west, while the main origin lies in the abandonment of a previous agrarian function. Notwithstanding the fact that this part of the city had already been urbanized pre-1950, the character of the spatial structure here more closely resembles that of the extensive growth zone. The greatest range and variability to sizes of unused areas can be seen in this very area, in spite

of the theoretical assumption that low values should rather be approached in the annexed settlements zone. The mean size here is markedly above average, with the intensification potential approaching that of the extensive growth zone. These facts allow for an allocation of urban functions that differ significantly in the demands they make of space. That also matches the intended profile of the city centre, as the part of the city’s built-up area most diversified functionally and morphologically.

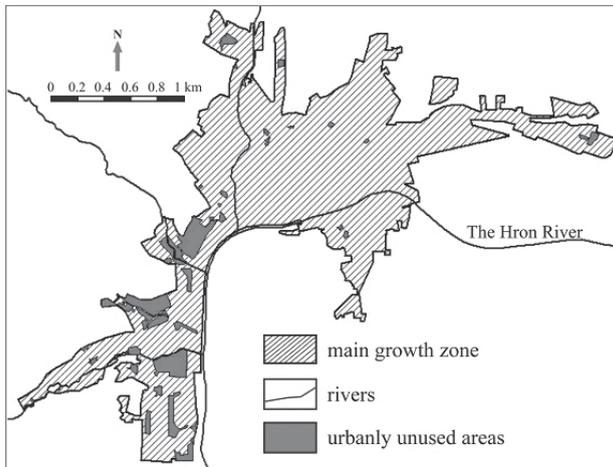


Figure 3. The main growth zone—distribution of urbanly unused areas

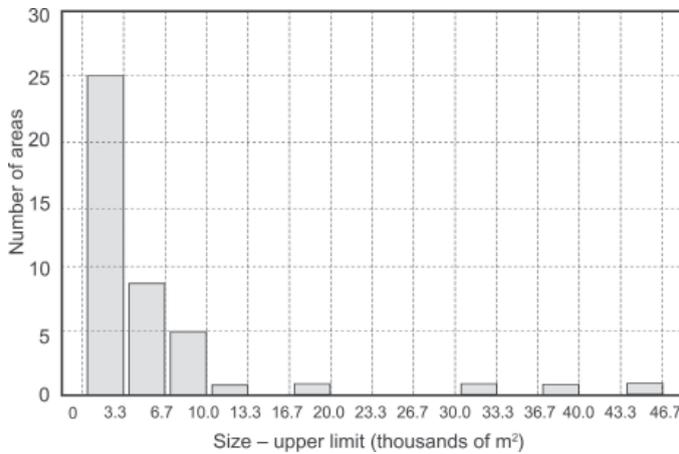


Figure 4. The main growth zone—distribution of urbanly unused areas by their size

SPATIAL RESERVES IN THE ANNEXED SETTLEMENT ZONE

The annexed settlement zone is not contiguous in nature. It comprises nine compactly built-up areas, connected to the city's built-up area mostly on its periphery. The prevailing function is individual housing, and there is mostly a single central street as the main axis. The zone comprises 5.85% of the city's built-up area. The origin of the 29 areas not

at present put to urban use lies primarily in the termination of the housing function. The overall area these cover is of 44,584m², or some 2.46% of the unused areas in the city as a whole. This implies an average size significantly below the city average (Fig. 5). The mentioned areas of the annexed settlement zone have the fullest contiguous construction of any of the three defined city components, this implying the most limited

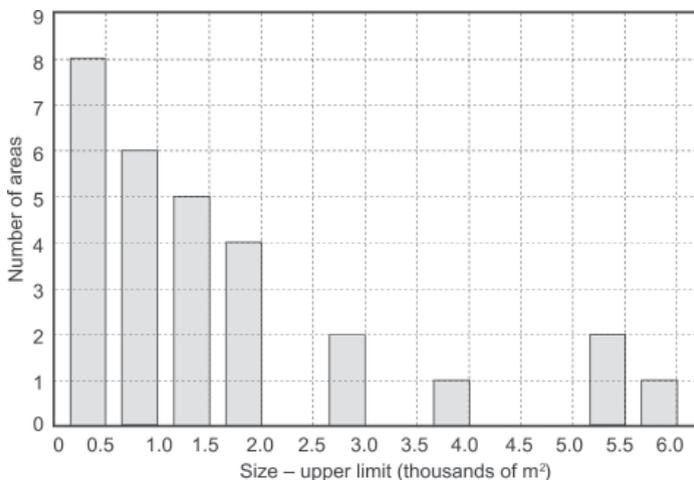


Figure 5. The annexed settlements zone—distribution of urbanly unused areas by their size

potential for morphological intensification, particularly by way of horizontal addition. In contrast to the rest of the city, this area has a limited variability to functional exploitation that also restricts possibilities for intensification.

**SPATIAL RESERVES
IN THE EXTENSIVE GROWTH ZONE**

The zone of extensive growth is the largest of the three zones delimited. Almost all geometric features of UUAs reach their highest values here. The only exception is the range of sizes in respect of which the main growth zone is characterised by the highest value (Figs. 3 and 4). The present state is a result of extensive urban processes in the second half of the 20th century. The spatial distribution of unused areas is almost even, although relatively empty parts of greater extent are present. These are mainly the architecturally older, well-developed zones of common housing to the west and southwest, the compact industrial zone in the east and public service facilities in the northeast of the city. The importance of intensification processes is here crucial, corroborated by an intensive reduction in UUAs involving more than 10% of the total over the last 5 years. This is almost twice as high a rate as in other parts

of the city. Most of the UUAs were reduced only partly during their existence, with the result that the extensive growth zone is today dominated by a large number of UUAs in the smaller size categories (Fig. 6). Despite this, the average extent of UUAs in this zone is very great (Table 1).

CONCLUSIONS AND DISCUSSION

By reference to differential historical and economic development, the city’s built-up area has been divided into three parts, within the framework of which the respective intensification potentials have been analysed. The aim here was to point out the spatial variability to intensification potential in relation to respective historical and socio-economic city development. The extensive growth zone is shown to exhibit the greatest intensification potential, mainly because of the great number of spatial reserves of above-average spatial extent. Due to markedly compact building within the annexed settlement zone, it is here that the most limited intensification potential is present. In contrast, the extensive demolition of historical buildings during the communist period gave rise to an atypical spatial and functional structure

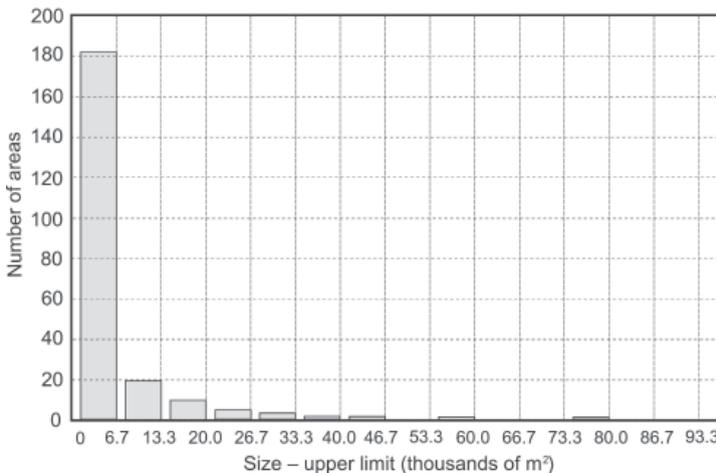


Figure 6. The extensive growth zone—distribution of urbanly unused areas by size

of the present main growth zone, the intensification potential of which approaches that of the extensive growth zone.

Figs. 7 and 8 show the main geometric features to the spatial distribution of areas not put to urban use within the city's built-up area. The extensive growth zone can be seen to account for the highest proportion of the city's spatial reserves, and thereby exhibits the greatest potential for intensification. Average sizes within this zone also reach their highest values anywhere in the city, thus offering potential for space-demanding functions (like industry) to be allocated. The current trend for the extensive growth zone thus involves application of all combinations of functional use of existing spatial reserves, mainly in line with the locations of particular UUAs: residential zones are being augmented by missing outfitting of a city-service (endogenous) character, while it is along the main traffic radials and in production areas that city-forming (exogenous) functions are mostly located. However, UUAs of smaller sizes dominate, and reveal centripetal tendencies, which means that they adjust to their new surroundings with their new functions, mostly copying the implemented func-

tions of nearby areas. New functional zones are not growing up anymore.

The greatest size-related variability to areas not put to urban use is to be noted within the main growth zone. This fully corresponds to the trend for the development of the city centre as a significantly differentiated area in functional terms. This fact has thus far resulted to a certain extent from atypical main-growth-zone spatial development over recent decades. Theoretically, values for the sizes, size variability and intensification potential of UUAs in this zone should be closer to those reached in the annexed settlement zone. Unlike it, in main growth zone must dominate city-forming (exogenous) functions in the future. UUAs of smaller area (up to 5,000m²) in the northern part of the main growth zone will assume the functions of their surroundings (via a centripetal tendency). Larger areas in the southern part of main growth zone are buds of the new functional zone of city-forming (exogenous) outfitting (a centrifugal tendency), the role here being to relieve the burdens on the functionally overfilled city core—precisely because it is in its immediate vicinity. Through transformation

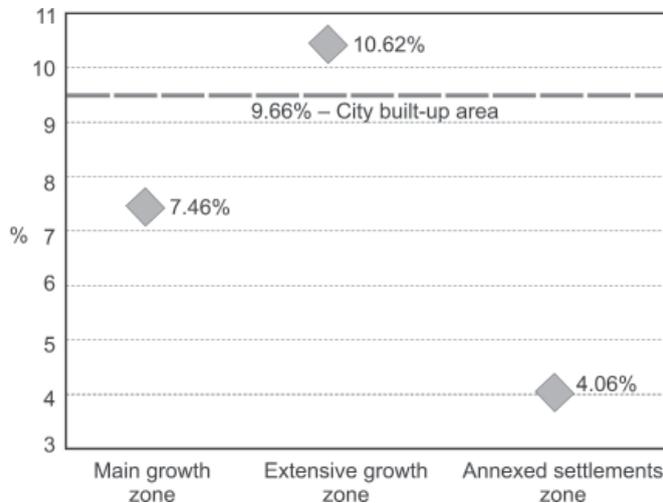


Figure 7. Relationships between the portion of unused areas in individual city zones and overall city built-up area (dashed line)

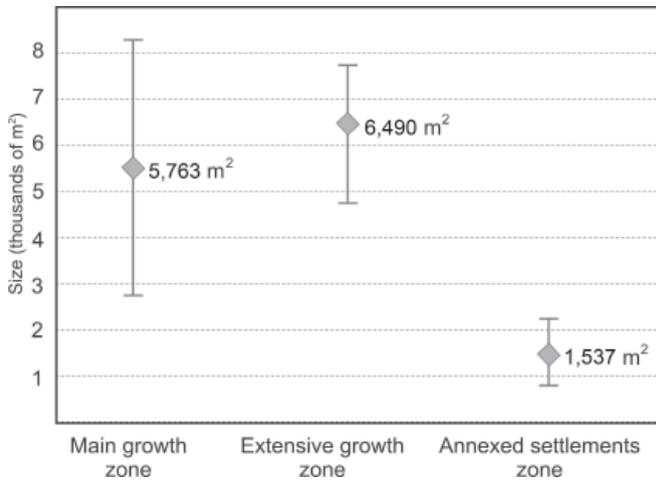


Figure 8. Mean values and ranges of unused areas size within respective zones

of the aforementioned UUAs into urban functional areas, the main growth zone is taking on the typical signs of the city centre of the future, from the view of its morphology and functions at least. The first example put into effect entails the building of the *Europa* complex (Shopping Centre and Business Centre) on what had been one of the largest reserved areas on the borders of the northern and southern parts of the main growth zone.

Due to its small number and limited variability in size of areas not thus far made subject to urban use, the annexed settlement zone exhibits the most limited intensification potential. In general, intensification processes are only of a point character in this zone. An optimal solution involves allocation in relation to small-scale public facilities of a city-service (endogenous) character (e.g. restaurants, playgrounds, parks, etc.). This reflects the way in which an increase in inhabitants' purchasing power is accompanied by greater need for the functional use of an area to serve this purpose. It would strengthen the feeling of affiliation among inhabitants vis-a-vis the local community, while from the urban planning point of view also offering functional and morphological heterogenisation of mostly monofunctional

residential parts of the city. Perhaps unfortunately, this seems unrealistic given the high degree of attractiveness of these properties where the building of housing estates is concerned. This is attested to by the general observed trend for the smallest UUAs to evolve in the annexed settlement zone, this mostly implementing functions from the surroundings (via a centripetal trend). This explains why they do not participate in the functional heterogenisation of the space in which they are located.

The morphological intensification of a city's spatial structure is the most remarkable manifestation of recent societal changes in the transforming of post-communist cities. Depending greatly on the history and economics of overall city development, individual districts have different potentials for intensification. In general, the greatest potential for intensification is displayed by parts that developed during the socialist period. These typically have both a high portion of spatial reserves (areas not put to urban use) as well as sizes that often reach the greatest values to be encountered anywhere in the built-up area. While at first sight, a city's spatial reserves are distributed evenly, a detailed look at their spatial structure reveals certain relationships. This

contribution mainly attested to the presence of a smaller number of relatively smaller areas within older city parts, a higher proportion of more spacious areas in the parts developed during the socialist period and related variability of intensification processes.

When it comes to the great number of historical and socio-economic factors shaping the spatial development of urban structures, the evaluation of city intensification potential requires that further information be considered. These are, in particular, ownership, accessibility, legal regulation, architectural plans, etc. The processing of such an amount of information implies the use of principles from among the multi-criteria decisionmaking techniques applied in regard to optimal land allocation, as well as other advanced techniques. These signals ways in which the present study might be continued.

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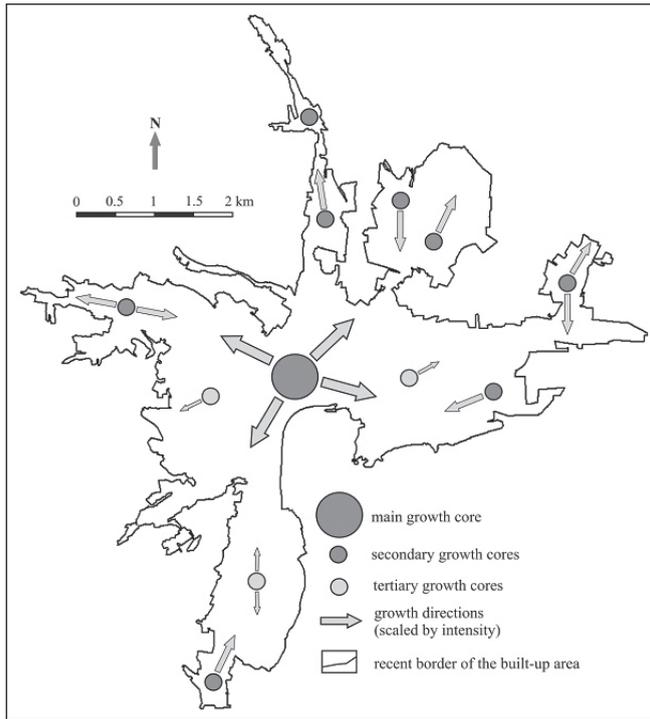
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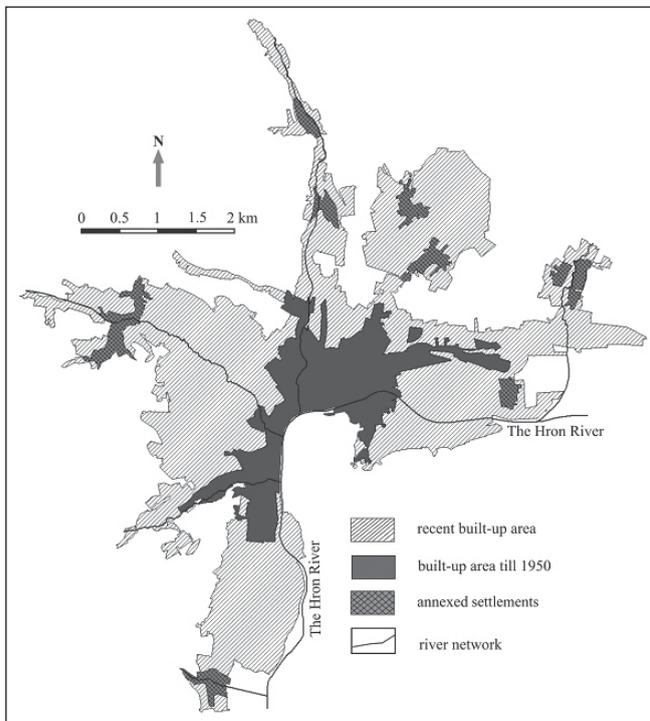
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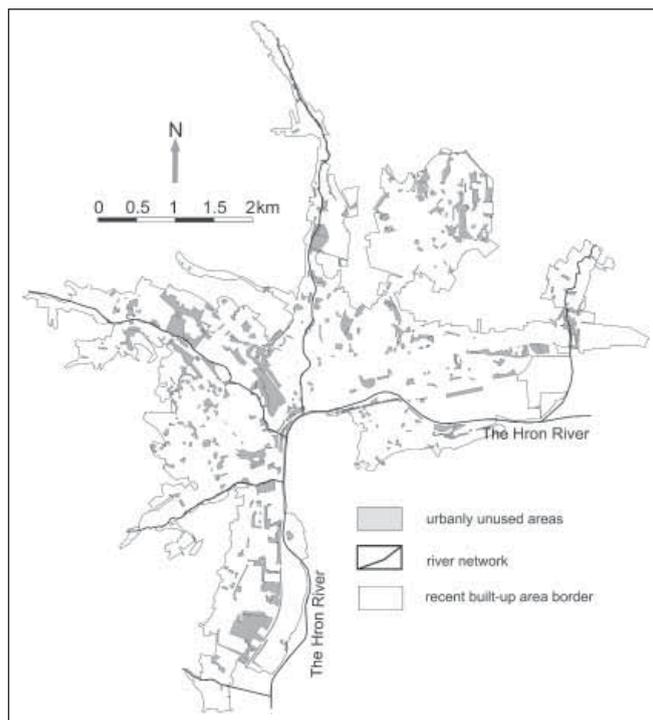
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Annex 1. Growth cores of the Banská Bystrica city built-up area since 1950



Annex 2. Zones of the functional and spatial development of the Banská Bystrica city



Annex 3. Urbanly unused areas in the Banská Bystrica city built-up area