

PERCEPTION OF URBAN RENEWAL: REFLEXIONS AND COHERENCES OF SOCIO-SPATIAL PATTERNS (BRNO, CZECH REPUBLIC)

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ABSTRACT:

Transformations of economy and society, which had begun in the Eastern and Central European countries in the 1990ies, have also occasioned a profound change of the urban environment. Extensive de-industrialization led not only to the rise of neglected and abandoned objects and industrial estates, but also to an increase of technical, environmental, and above all social deprivations and risks. Brno, a monocentric city, has been very important already in the pre-industrial era. Its abandoned production plants and attendant social and other problems are located mostly in the immediate vicinity of its historical centre (transitional zone or the inner city) which further increases citizens' negative perceptions of these phenomena. On the other hand, abandoned lots adjacent to the city centre often have the greatest potential for new construction. Grounded in theory and research of socio-spatial perception of the local populace, this study presents the revitalization possibilities and risks of exactly this kind of space, which can be viewed as both the largest development area in the city and simultaneously as an area which is abandoned and neglected, with a host of social, technical and other problems.

Key-words: *urban environment, revitalization, perception, Brno, Czech Republic.*

1. INTRODUCTION

In the past 20 or so years, the urban environment in Central and Eastern European countries underwent dramatic changes. These changes were associated with both economical and societal transformation, and therefore with intensive deindustrialization and demilitarization, and, on the other hand, with dynamic construction of residential, administrative or business complexes (Sýkora, 2008; Krzysztofik, Runge & Kantor-Pietraga, 2012). As documented in studies from the Czech Republic (Vojvodíková, 2005; Hercik, Šerý & Toušek, 2011), Poland (Krzysztofik, Kantor-Pietraga & Spórna, 2013), Hungary (Barta et al, 2006) or Romania (Filip & Cocean, 2012), it was particularly the impact of economic transformation that caused the abandonment of many industrial, military and transportation objects, or former community culture and sports facilities (brownfields in general), often located adjacent to the city centre. Regeneration of these locations, however, is financially very challenging, which leads to postponement of realizations. Entrepreneurial initiatives aside, cities alone do not have the means to revitalize all brownfields, leaving historical centres and vicinity often depreciated and

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underused (Cabernet, 2005). Brownfields pose a particular problem for so called industrial cities, whose development was significantly influenced by the expansion of industry and railway transportation (Rae, 2003). Along with the development of transportation and urbanization, the Industrial Revolution began forming city environments in Western Europe (namely England) and North America at the end of the 18th century; about half-a-century later also in Central Europe and parts of Eastern Europe. The mining of raw materials (black coal) for energy production and associated steel production dominated the economy, later to be joined by textile and mechanical engineering industries (Birch, MacKinnon & Cumbers, 2010; Hutton, 2010).

Cities, which had undergone the above mentioned historical evolution, share a common urbanistic structure, traditionally delineating so called concentric zones – i) Historical centre, ii) Transitional zone (sometimes also named "Inner city" with deteriorating residential environment and factories), iii) Working class zone, iv) Residential zone and v) Commuter zone in the suburbs (originally Burgess, 1924; Park, Burgess & McKenzie, 1925, later for example Rodrigue, Comtois & Slak, 2009). Burgess (1924) used the listed zones for classification of inner and outer city parts according to their inhabitants' socioeconomic status, working with the example of Chicago in the 1920ies. The transitional zone (inner city) with its concentration of abandoned residential buildings and production plants is the most widely discussed and controversial. Lersch and Hurt (2011) furthermore add that the transitional zone is the least suitable environment for city life because of poverty and criminality associated with deteriorated buildings, social deprivation and environmental risks.

Historical centres of big cities with original residential buildings (often protected heritage sites) in the USA, Europe, but nowadays more frequently even in the developing world, are being more-less naturally displaced by a new environment with predominant banking, business or other economic function. Thus formed Central business district (CBD) signifies economic power and represents a showcase of the national economy (Taubenböck et al, 2013). High-rise buildings, the hallmarks of CBD, emphasize the fundamental difference from other types of urban structures within the city (Hagget, 2001).

The historic centres of Eastern and Central European cities manage to keep their look as well as their tourist and business function rather well, although they, too are beginning to develop certain forms of CBD on a smaller scale. The historical centre of Brno is a protected heritage area, naturally surrounded by other concentric zones (see **Fig. 1**). The aim of this study is to highlight, against a brief theoretical background, the challenges of revitalization of a city environment adjacent to the historical centre (i.e. located in the transitional zone) which is designated to become a new, more contemporary, broader city centre, or else to increase the existing centre's capacity (the name of this area is the new South Centre). Responders - citizens of Brno - have contributed to the evaluation of spatial, technical, social and environmental perceptions of the area, which, although scattered with dozens of brownfields, is still being partially utilized (details on **Fig. 1, 2** and **3**). The postulated hypotheses stand on the following premises:

- The perception of the area under study is largely negative, associated with social, technical and environmental risks, particularly in the eyes of better educated populace in the middle and higher age brackets.

- Tendencies for the revitalization and new functional utilization of the South Centre are towards residential and administrative buildings and public recreation space, whereas further production activities are more significantly opposed.

2. THE AREA UNDER STUDY

Brno, the second largest city in the Czech Republic with just under 400 000 inhabitants, has been an important centre of administration and economy even in the pre-industrial era. Intensive industrialization throughout the 19th and most of the 20th century (up to 1989) has been the leading urbanization influence. In this period, the above mentioned typical concentric zones gradually emerged around the historical centre, laying the foundation to the contemporary morphogenetic structure (Muliček, 2007; Kunc & Tonev, 2008). **Fig. 1** shows all brownfields larger than 0.5 ha identified in the concentric zones of Brno, and indicates the three most significant zones of their concentration. The subject of our study is an area adjacent to the historical centre on the south side, designated as a mixed zone and representing almost in its entirety the most problematic transitional zone, and named - in the specifically Central European context - the inner city.

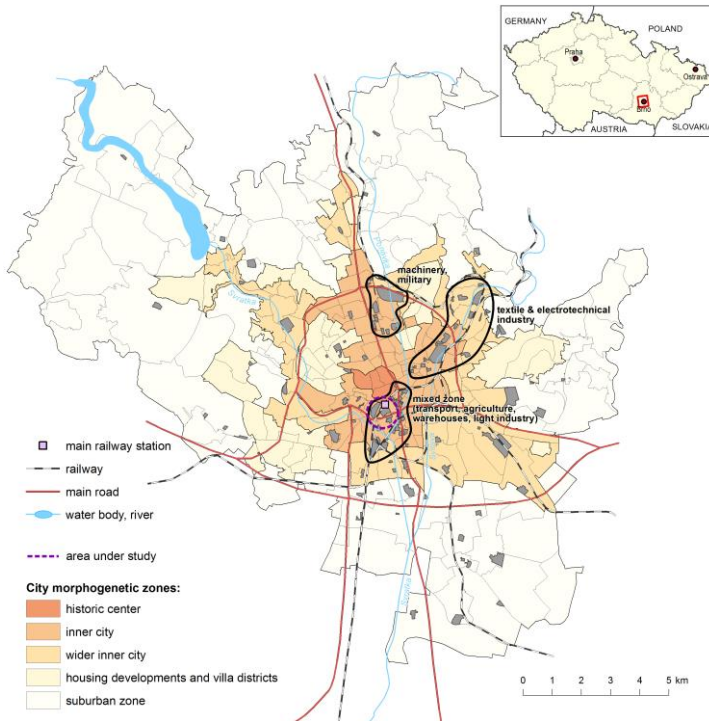


Fig. 1 Spatial distribution of brownfields and their location within the concentric (morphogenetic) zones of the city with the area under study marked off (2012)

(Source: Brno city municipality (brownfields database); authors' own processing).

This area has a great development potential and counts among the largest development areas on the municipal plan of Brno. However, it is as yet an unfulfilled urbanistic obligation of the city⁵. The location, formally named the new South Centre, is primarily connected with the increase of the historical centre's capacity, in particular with the

⁵ The Brno city hall had planned the relocation of the railway station and finishing of the so called South Centre as early as in the 1930ies and again in the 1960ies.

development of a new railway junction Brno in a so called removed location, about 700 m farther South than the existing Main railway station (see **Fig. 1, 2** and **3**), with construction of residential zones, recreation zones and also office and business complexes. In view of the so far unrealized gigantic plans, astronomical costs needed for construction and revitalization⁶ and mainly because of the unclear ownership issues linked to (among others) the political representatives of the city, the area is reminiscent of a single large brownfield – a megasite, or, as the case may be, a cluster of cleaned but unused areas, dozens of smaller brownfields (see **Fig. 3**, locations shaded red), several still functional production plants, warehouses etc.

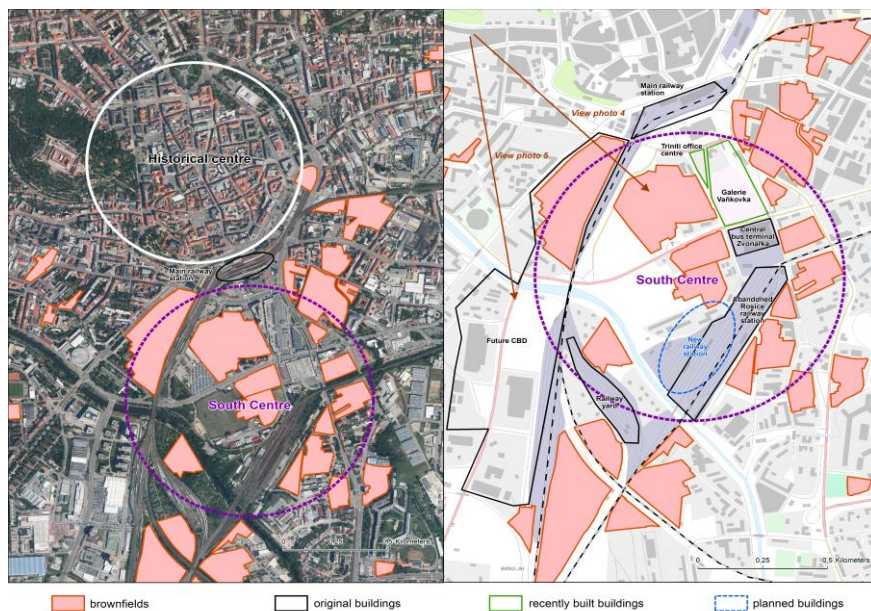


Fig. 2, 3 Location of the South Centre area under study relative to the historical centre with indicated brownfield locations and significant objects (Source: Czech Office for Surveying, Mapping and Cadastre; City of Brno Municipal Authority, authors' own adaptations and supplements).
 Note: Brownfields are marked in red colour in Fig. 3 (right).

The conversion of several buildings of the former Vaňkovka Foundry and Machine Works into the Galerie Vaňkovka shopping mall, a contemporary art gallery and the adjacent Trinity office centre, counts among the few realized revitalizations that are largely very positively regarded by Brno citizens (Kunc, Klusáček & Martinát 2011a; Kunc et al, 2011b). This means that roughly 5-7 % of the South Centre area (**Fig. 3**) have been newly utilized. The western margin of the broader new South Centre, situated beyond the railway tracks, is as yet the only location with concentrated development of office, business and partly residential projects with high-rise buildings, the foundation of a Central-European version of the future CBD. Approximately half of this area is already newly utilized (construction completed). (For details see **Fig. 3, 4** and **5**.)

⁶ The construction costs of the removed railway junction alone are estimated at 40 billion Czech crowns (approx. 1.6 billion Euro).



Fig. 4, 5 The contrast of free lots in the central section of the South Centre (left image, “view photo 4”) and the construction of a new administrative and business centre in the south-western margin (right image, “view photo 5”), as of September 2013. (Photo: Josef Kunc).

Note: The environment of both images is in reality contiguous, divided “only” by the railway tracks.

3. DATA AND METHODS

An original database of the City of Brno Municipal Authority has become, after the authors’ adaptation for the purpose of this study, the data source for illustration of brownfields in the city environs. The aerial image in **Fig. 4** was acquired from the Czech Office for Surveying, Mapping and Cadastre.

In the perception survey of the new South Centre, we have addressed permanent residents of the city of Brno, including some who live in the remaining, usually neglected residential buildings in the area under study. A vast majority of respondents had an awareness of the project in question. After a preliminary research and finalization of the questions inspired by other expert studies (Cobârzan, 2007; De Sousa, Wu & Westphal, 2009; Klusáček et al, 2011; Kolejka, Klimánek & Fragner, 2011; Kunc, Klusáček & Martinát, 2011a and others) and by our own experience, the evaluation utilized 541 questionnaires. The survey was accomplished in the spring of 2012 in the form of brief, standardized interviews carried out by trained interviewers - senior students of the Masaryk University. The responders were permanent residents of Brno, addressed in the vicinity of the South Centre. Responders were selected in a one-step random selection process, adjusted according to basic demographic attributes (gender and age) to match the proportions of average Brno demographics.

The goal of the survey was to evaluate correlation of perception of the area image, risk level, revitalization plan preferences, satisfaction with realized revitalizations and their impact, and perception of challenges associated with the utilization of individual parts of the area under study, relative to basic segmentation criteria: gender, age and education. Similarly, correlation of the above mentioned variables and the distance of the respondent's permanent address from the area under study was monitored as well. Correlation of responder satisfaction with the impact of realized revitalizations and their perception of the revitalization development potential was also evaluated.

To begin with, rate analysis of the questionnaire survey was carried out, and the results were expressed as response rates for individual question groups. As the collected data could be mostly plotted on an ordinal scale, medians were used to identify the central response

position. Mutual correlation of responses was then assessed based on the degree of statistical significance of Kendall tau rank correlation coefficients at three basic levels $p < 0.05$, $p < 0.01$ and $p < 0.001$. (The degree of statistical significance is differentiated by intensity of shading in the tables; negative correlations are identified by the symbol *.)

4. RESULTS

As was mentioned in the introduction, the South Centre of Brno is rather expansive and internally diversified area. Evaluation of the set goals therefore depends on the city residents' knowledge of the area character. The responders were therefore asked first to express their opinion on their current perception of the South Centre area as a whole. Essentially we performed an image evaluation based on a structured survey tool application. The responses indicated that the South Centre is perceived predominantly as an area with majority of neglected or abandoned production and non-production sites and objects (54 % of responders), which quite confirmed our premises, and that the area is perceived essentially as industrial brownfields. Functioning production plants are seen as typical for this location by 19 % of responders, office and administrative spaces by 18 %, and residential by mere 9 % of responders.

4.1. Perception of current risks in the South Centre area

Table 1. Perception of basic types of risks in the South Centre location.

	Environmental risks	Technical risks	Social risks	Economic risks
Certainly without problems	7.9 %	3.9 7%	2.6 %	8.5 %
Rather without problems	25.7 %	14.4 %	7.6 %	20.7 %
I don't know	30.8 %	29.5 %	19.6 %	33.6 %
Rather with problems	21.0 %	33.6 %	30.8 %	21.4 %
Certainly with problems	14.6 %	18.6 %	39.5 %	15.9 %
Median	I don't know	Rather with problems	Rather with problems	I don't know

Source: Authors' own survey and processing






The responders perceive the South Centre brownfields as sites associated with technical and social problems (more than 50 % of responders perceive them as problems), while particularly social risks are being emphasized (see **Table 1**). On the other hand, environmental and economic risks associated with the brownfields are not perceived as a significant threat (less than 50 % of responders perceives them as problems). This fact is quite surprising particularly regarding environmental risks, which roughly one third of responders does not consider a rather significant problem, which to a degree does not support our whole hypothesis. Generally, the responders did not exhibit a "positive", but rather a neutral attitude toward the environmental and economic risks. The responders considered concentration of the homeless and the Roma minority, who live in the adjacent quarters, to be the most serious social risk (68 % of responders each), but persons with drug

dependencies ranked also high (59 %). Regarding environmental risks, 40-43% of responders considered contamination of water, soil and air to be a problem.

Table 2. Pair correlations of perception of brownfield-associated risk types and problems of particular South Centre locations with sociodemographic characteristics of the responders.

	Location 1 – Galerie Vaňkovka and vicinity	Location 2 - Central bus terminal Zvonařka	Location 3 - new Railway junction Brno	Location 4 - the abandoned Rosice railway station	Location 5 - minor neglected and abandoned plants	Female	Age 15-30 years	Age 31-45 years	Age 46-60 years	Age 61 years and older	Education – elementary	Education - high school without school-leaving exam.	Education - high school with school-leaving examination	Education - higher technical schools	Education – college	Residence > 10 min walk from the Main railway station
Environmental risks								*								
Technical risks																
Social risks								*								
Economic risks																*
Soil contamination			*								*					
Water contamination		*										*				
Air contamination		*							*							*
Concentration of the homeless																*
Concentration of the Roma minority								*								
Concentration of persons with drug dependencies		*				*										

Legend:

-  95 % correlation
-  99% correlation
-  99.9% correlation
-  * Negative correlation
-  Statistically inconclusive correlation

Source: Authors' own survey and processing

The comparison of correlations for the first group of dependent variables, i.e. the above mentioned brownfield-associated risk types, again confirmed a portion of postulated research hypotheses (see **Table 2**). It can be stated that the degree of perception of social and technical problems (but not of environmental ones) exhibits a significant positive correlation with the degree of perception of a location as problematic, particularly in case of the abandoned Rosice railway station, often frequented by drug-dependent persons. It is interesting that the responders do not perceive social risks in the area of the current Central bus terminal Zvonařka, where the presence of drug dependent persons has been established, too. Arguably, the greater number of people present, both residents of Brno and surrounding countryside who use the bus service, weakens the perception of social risks, despite the responders' subconscious awareness of these risks. Minor neglected and abandoned production plants in the south-western section of the location are perceived as problematic in all aspects; highly significant correlations with all responses were recorded here.

The planned construction of a new contemporary railway junction influenced the responders' consideration of environmental risks. Citizens associate the future construction with a necessary broad clean-up and decontamination, and therefore do not perceive this section of the South Centre (in contrast to the other sections) as ecologically problematic (negative correlation). The responders' socio-demographic structure indicates that women are more sensitive towards environmental risks, and that the youngest age categories are, quite understandably, more tolerant regarding drug dependency issues. There were no significant statistical correlations concerning responders' education. Permanent residence distance from the area under study likewise did not show evident correlations, except perhaps for perception of air contamination by responders who live closer to the South Centre.

4.2. Preferences for revitalization plans in the South Centre area

In accordance with our premises and the postulated hypothesis, responders prefer those planned revitalizations that include public recreation space (85 % of positive answers), and also residential construction and parking (see **Table 3**).

Table 3. Perceptions of preferences for revitalization plans in the South Centre location

	Public recreation spaces	Residential construction	Parking	Shops	Office and administrative buildings	Light industrial production buildings
Certainly suitable	59.4 %	33.6 %	25.7 %	13.8 %	12.7 %	8.9 %
Rather suitable	25.8 %	28.4 %	28.0 %	19.4 %	21.2 %	13.1 %
I don't know	7.6 %	22.3 %	33.4 %	25.1 %	34.9 %	23.6 %
Rather not suitable	4.4 %	7.6 %	8.1 %	22.3 %	17.7 %	23.3 %
Certainly unsuitable	2.8 %	8.1 %	4.8 %	19.4 %	13.5 %	31.2 %
Median	Certainly suitable	Rather suitable	Rather suitable	I don't know	I don't know	Rather not suitable

Source: Authors' own survey and processing






This evidently expresses Brno citizens' fear of further uncoordinated building of administrative and shopping complexes (notwithstanding the negative attitude to production plants) which were planned for the area in some studies. Shopping malls and vast office complexes are perceived as further threat to weaken the historical centre and its former commercial and administrative function. It is impossible, however, to exclude this type of construction in the South Centre altogether, particularly with respect to the emergent new CBD in the western section, which will for practical purposes become a part of a more broadly defined South Centre in the future.

The second group of dependent variables consisted of preferential types of new activities, or revitalization plans, in the South Centre (see **Table 4**).

Table 4. Pair correlations of preferences for new activities and problems of particular South Centre locations with socio-demographic characteristics of the responders.

	Location 1 – Galerie Vaňkova and vicinity	Location 2 - Central bus terminal Zvonářka	Location 3 - new Railway junction Brno	Location 4 - the abandoned Rosice railway station	Location 5 - minor neglected and abandoned plants	Female	Age 15-30 years	Age 31-45 years	Age 46-60 years	Age 61 years and older	Education - elementary	Education - high school without school-leaving exam.	Education - high school with school-leaving examination	Education - higher technical schools	Education - college	Residence > 10 min walk from the Main railway station
Residential construction									*							
Public recreation spaces		*			*			*	*		*		*	*	*	*
Shops					*										*	
Office and administrative buildings					*				*	*	*					
Light industrial production buildings	*	*				*										
Parking								*	*							

Legend:

	95% correlation
	99% correlation
	99.9% correlation
	Negative correlation
	Statistically inconclusive correlation

Source: Authors' own survey and processing

There is evident negative correlation to suitability of revitalization of the area by means of light industrial production, which fully supports our hypothesis. With increased perception of smaller brownfields as problematic, the responders' preference of suitability of the new utilization of these areas as public recreation space or for office and administration buildings declines, which again confirms our premises. The preference for parking lots in the area is fairly interesting namely in the young, economically active populace, accustomed to use cars even for trips to the city centre.

There were not any significant statistical correlations concerning gender and age. Regarding the distance of permanent residence from the area under study, it is rather logical that responders who live farther away do not consider public recreation areas a suitable revitalization mode, since they would hardly ever get to use them (negative correlation).

5. CONCLUSIONS AND DISCUSSION

Conflicts, risks and contradictions, but also possibilities and challenges crop up during mere consideration of revitalization of urban environment, not to mention attempts at its realization (Krzysztofik, Kantor-Pietraga & Spórna, 2013). This holds true particularly for areas in the vicinity of historical city centre with great development potential on the one hand, and a host of social, technical and environmental problems on the other hand (Lersch & Hurt, 2011). The area under study – the new South Centre in Brno – is exactly one of these locations.

Evaluation of perceived risks associated with the South Centre area confirmed that major part of the area has a negative image, where most of the responders perceive social and technical risks as the gravest. Social risks are mostly associated with concentrations of socially excluded persons (e.g. persons with drug dependencies), social minorities (the Roma community) and also with criminality. Technical risks originate in poor technical state of the brownfields in the area, which is quite common. Both social and technical risks strongly correlate with abandoned and neglected locations. Perceptions of environmental risks (water and air pollution, dust pollution etc.) and economic risks (high revitalization costs etc.) are not as negative, probably because of the necessary decontamination of the environment in case of new construction, which, as many responders know, is often financed by the city itself (similarly Birch, MacKinnon & Cumbers, 2010), and, last but not least, because the risks which are less "visible" at the first sight are not perceived as keenly.

The statement by Lersch and Hurt (2011), "...considering practically all risks, it is the least suitable zone for city life..." directly applies to the south part of the city of Brno adjacent to the city centre (the transitional zone). Various brownfield-associated problems in transitional zones and beyond are also documented in the studies of Barta et al. (2006); De Sousa, Wu and Westphal (2009); Krzysztofik, Runge and Kantor-Pietraga (2012); Popescu and Pătrășcoiu (2012) and a number of others.

The second tested hypothesis concerned preferences for new activities and new utilization of the South Centre. Respondents expressed unequivocal support for non-production forms of activities, namely for public recreation areas, but also for residential and parking areas, which represent a strategic and logistic problem the city has been trying to solve for a number of years. A neutral to slightly skeptical attitude prevailed towards controversial business and administrative objects, which have rather saturated the market in Brno, and which are being built also in the emergent CBD nearby. Responders rejected the idea of production activities. Correlations indicated them as unsuitable particularly for both railway station locations, which are to be reconstructed as well. Similarly, pair correlation

excluded suitability of revitalization of existing minor brownfields in the South Centre via free recreation areas and offices. This attitude is somewhat surprising in the case of offices; we believe that this type of commercial space can be acquired more suitably by reusing old buildings than by greenfield construction (similarly also Sarní, 2010; Hercik, Šerý & Toušek, 2011; Kunc, Klusáček & Martinát, 2011a).

As a consequence of economic and social changes and necessary deindustrialization, a number of cities in Central and Eastern Europe acquired free space which has been converted into the most lucrative development zones city-wide (Barta et al, 2006; Hutton, 2010). New construction and utilization of these areas are on principle socially and economically relevant, because they support reurbanization and suppress a suburbanization trend, which in the end generates energy savings in transportation, infrastructure, supply delivery etc.

Ostrava, the third largest city in the Czech Republic, has already developed a part of a new quarter contiguous with its historical centre (Kun, Klusáček & Martinát, 2011a). Extensive construction of a new quarter in Brno, centered on the flagship project of a new railway station, is being postponed; activities here are rather minor in scope (Mulíček, 2007). The emergent new CBD in the western section, which will become a part of a more broadly defined South Centre in the future, is an exception. Among the reasons for so far limited investment activity, dampened in addition by the global economic crisis, are continually increasing cost estimates, political speculations regarding lucrative plots, but also the number of risks associated with concentration of brownfields or socially problematic groups of people, toward whom the inhabitants of Brno are rather sensitive. The extent to which the current plans are going to be realized will depend not only on the city representatives and businessmen, but also on the citizens themselves.

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