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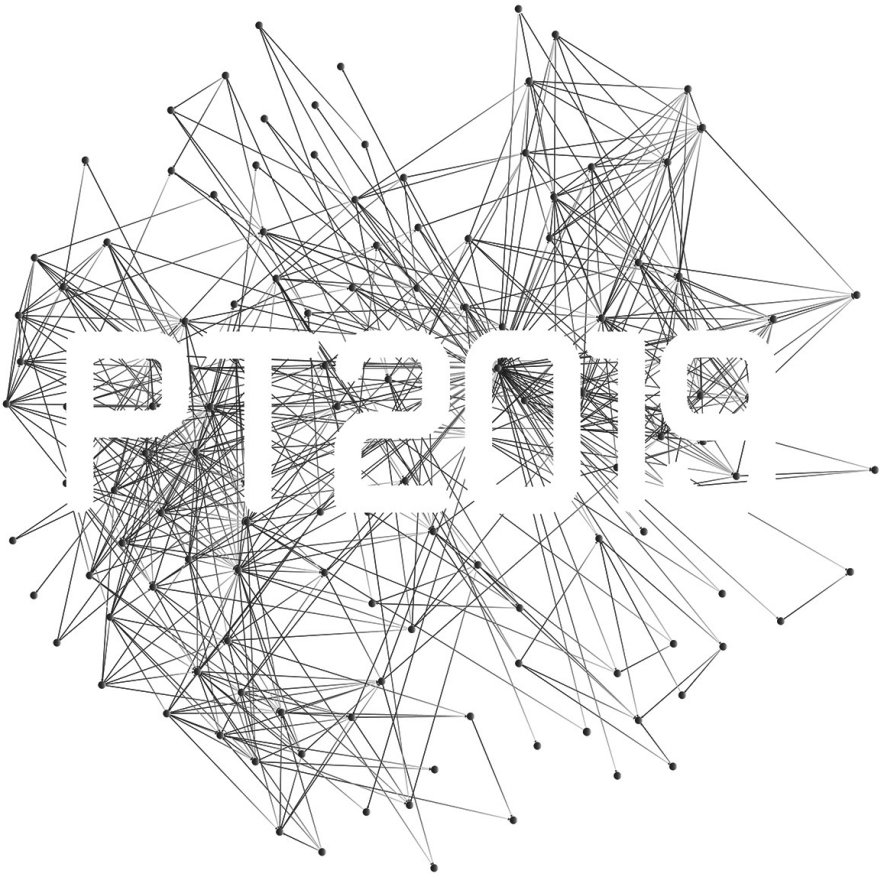

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THE MULTIPLEX TYPOLOGIES OF SHRINKING CITIES

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ABSTRACT

The globally known concept of shrinking cities has matured last years. A lot of international scientific knowledge has been collected and the local profiling of shrinking cities, as well as the overview of their extent and geographical distribution have been conducted in almost all countries and regions that are facing this phenomenon. However, there are still some 'empty niches' in the concept which can be found for the future research. The most of them are those that bridge different local and the regional meanings of a shrinking city and/or urban shrinkage. Therefore, they are crucial for the further progress in global knowledge about urban shrinkage.

One of these open questions in the concept of shrinking cities is their typology. More concretely, typologies, because the phenomenon has become so common that multiplex typologies can be identified. Furthermore, there are many attempts to form local and regional typologies or the typologies based on the most prominent criteria, i.e. on the significant determiners of urban shrinkage. The aim of this paper is to review global knowledge regarding the present typologies of shrinking cities and to understand their complexity and relations. As an outcome, the presentation of different typologies of shrinking cities implies their better understanding, but even more it can contribute in the recent proposals how to find appropriate responses on urban shrinkage.

Keywords: shrinking cities, typology, urban planning, spatial complexity

1. INTRODUCTION – SHRINKING CITIES AND THE PROBLEMS FACING THEIR TYPOLOGIES

The concept of shrinking cities is no longer a novelty. The concept was internationally promoted since the early 2000s. The main contribution was certainly done though three international scientific-research projects that had urban shrinkage and shrinking cities as topics:

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- "Shrinking cities / Schrumpfende Stadte" (2002-2008), sponsored by the federal government of Germany;
- "Shrink Smart- The Governance of Shrinkage" (2009-12), sponsored by the EU through 7th Framework Programme;
- "Cities Regrowing Smaller" – CIRES (2009-13), the COST Action sponsored by the EU through European cooperation in science and technology.

Many scientists acquired a profound knowledge and skills regarding shrinking cities in these projects, so they have continued to scientifically develop the concept of shrinking cities locally and globally. Their joint work has become visible, so the term 'shrinking city' is not seen as a taboo now, which was a common stance in the early 2000s (Oswalt, 2005; Schlappa and Neill, 2013). In last few years, these two tendencies can be easily perceived. In one hand, many new scientific works (monographs, scientific articles) targeting the global research framework on shrinking cities have been published after 2010. In the other hand, general media has started to be interested on this topic since this year and many well-known media (the Economist, the Business Insider, the Guardian, Financial Times) have posted articles and the other information about it. This divergent development of the concept confirms that the issue of shrinking cities has been admitted globally.

Although this 'maturation' of the concept is undisputable, there are still many elements of the concept that can be significantly improved and better explained. One of them is the typology of shrinking cities. Maybe it is more precise to speak about their multiple typologies. The formation of typology/typologies in a concept is also seen as critical to significantly contribute to its full establishment (Collier, LaPorte and Seawright, 2012). Thus, the collecting and systematisation of the typologies of shrinking cities is an important step forward for the entire concept.

The whole process carries challenges, too. The main problems to properly address the typologies of shrinking cities are generally related to the right definition of the term of shrinking cites. And, even beyond. In essence, it is critical how to define 'urban' (Bernt, 2016). To illustrate, it is still questionable how to determine the limits of a city/urban area or how to research conurbations – all included cities separately or together. With the global recognition of the concept and the term, the identification and explanation of such questions have just turned to be even more complex and diverse (Avila de Sousa et al, 2011; Haase et al, 2016). As a consequence, there are several widespread interpretations of the term of a shrinking city today (Cieśla, 2012).

For the purpose of this research, the definition of shrinking cities proposed by Shrinking Cities International Research Network – SCIRN is selected as probably the most accepted globally. By SCIRN, a shrinking city is an urban area that (Wiechmann, 2006):

- is dense and includes physically rounded (built-up) urban territory;
- has minimum 10,000 inhabitants before population decline;
- faces population decline;
- has accompanied economic problems ; and
- has these demographic and economic problems more than two years.

The aim of this paper is to review the global knowledge regarding the present typologies of shrinking cities. The focus of the paper is their collecting and systematisation. Nevertheless, the understanding the complexity and relations between these typologies is crucial for the further research in the topic of urban shrinkage and shrinking cities. In accordance to this, the final conclusions of the paper are tailored as guidelines how these multiplex typologies can be utilised for the future straightening of the concept of shrinking cities.

2. METHODOLOGY

This research is shaped as a review paper. Thus, its main intention is to analyse the numerous literature and the other scientific and public sources about the concept of shrinking cities and to extract the elements that are important for their categorisation and, eventually, typologies. It is developed in three steps: (1) to explain in brief the main points of the concept that are related to the research of typologies of shrinking cities; (3) to present the most acceptable typologies of shrinking cities globally; and (4) to make the overview about the typologies by giving new advices how to use them for the wider content of the concept of shrinking cities.

3. THE MULTIPLEX TYPOLOGIES OF SHRINKING CITIES

The problems that are related to the still contested international definition of a shrinking city have directed the better understanding of this term at national level. For example, many national typologies have been created, including: France (Cunningham-Sabot & Fol, 2007), Australia (Martinez-Fernandez & Wu, 2007), Brazil (Moraes, 2007), the United States of America – USA (Beauregard, 2009), and Portugal (Guimarães, Barreira and Panagopoulos, 2015; Abrantes et al, 2017). Similarly, there are regional typologies, such as the typology of cities in developed countries at the west (Pallagst, 2005). Therefore, despite local and regional efforts, the conclusion is that there is no a unique, globally accepted typology (Guimarães, Barreira and Panagopoulos, 2015).

The previous explanations clearly illustrate the complex process to derive the usable typologies of shrinking cities. However, several such typologies have gained an international prominence and they are worth to be presented.

3.1. Typology 1: according to the economic causes of shrinkage

The first typology is based on the economic causes of urban shrinkage. Although the most visible determiner of urban shrinkage is a population loss in a certain urban area, the most prominent cause of this process is the problems in the city economy (Storper and Manville, 2006). Moreover, urban shrinkage is usually cased by the decline of industry, as a key economic sector of a modern city. Knowing that, this typology is very important for the concept of shrinking cities in whole.

There are three major types by this typology (Bontje, 2005):

1) Industrial (Fordist) type – This type of shrinking city can be named as 'ordinary', which means that urban shrinkage occurrs and gradually develops with the decline of industrial production. The name 'Fordist' is derived from Henry Ford, American pioneer of industrial mass-production and the founder of the "Ford Motor Company", which has eventually become an apotheosis of 20th-century big-format industry. The gradual decline of such industry in dominantly industrial cities in the last third of the 20th century has defined this type of a shrinking city.
2) Mono-structural type – The main difference to the previous, 'ordinary' type is that a mono-structural type happened in the case of cities predominantly orientated to one industrial sector or, even, one huge industrial plant (company). This means that the fate of the entire city was linked with this sector/plant, so production decline in it immediately caused the collapse of local economy and, as a final consequence, a rampant urban decline. This type of urban shrinkage is very often in post-socialist countries where many one-factory cities

were formed by planned socialist economy. Many of them have witnessed a sharp decline in the last 25 years (Fig. 1).

3) "Shock therapy" type – This type of shrinking city can also be named as a "post-socialist type". The reason is that it connected to the sudden and uncontrolled collapse of socialist economy in Central and Eastern Europe in the early 1990s. This economic downfall had a strong imprint in post-socialist cities, where planned economy collapsed and, then, population sharply declined.

Figure 1 (left): Eisenhüttenstadt in the former Eastern Germany was formed as a socialist role-model city, developed with huge steelworks (shown in background). The city has a sharp urban shrinkage since the early 1990s due to the collapse of the steelworks (Author: B. Antonić)

Figure 2 (right): Gorizia in Italy has shrink by the negative combination of economic and political factors. Becoming a border-city after the World War II, Gorizia lost the most of its gravitation zone, which has consequently limited local economy.

3.2. Typology 2: according to the economic-political causes of shrinkage

Many times, it is hard to determine the economic and political causes of urban shrinkage, because many of them are interrelated (Fig. 2). Therefore, K. Pallagst (2005) elaborated a new typology, close the previous one, based on economy, but which also includes political causes. This typology identifies four types of the shrinking cities, derived on the main characteristics of their economic-political context:

1) Long-term changes in industry – the transition from one economic level to another one;
2) Sudden economic downturn;
3) Economic threats – such as hazardous pollution; and
4) Political changes – political-economic transformation in the former socialist countries.

3.3. Typology 3: according to the character of shrinkage duration

Taking in account the determinant of the duration of urban shrinkage, there are two main types of shrinking cities (Alves et al, 2016; Stryjakiewicz and Jaroszewska, 2016):

1) Constant shrinkage, which refers to the shrinkage of the entire urban area; and
2) Fluctuating shrinkage, which refers to the shrinkage of some urban parts; these parts are usually inner ones, in contrast to outer parts (suburbia), which have growth.

Moreover, both types have two sub-types. In the case of constant urban shrinkage, the sub-types are following (Stryjakiewicz and Jaroszewska, 2016):

1) Long-term constant shrinkage, which lasts more than one decade and it is multilayer; and
2) Short-term constant shrinkage, which lasts less than one decade and with serious (new) consequences.

In the case of periodical urban shrinkage, the sub-types are following (Hartt, 2016):

1) Cyclic shrinkage and
2) One-term periodical shrinkage.

3.4. Typology 4: according to the shrinkage timeline

This fourth typology is extracted from the previous one. It is developed on the stability or alteration of the economic and demographic patterns of urban shrinkage and growth. In line with these prerequisites, Hartt (2016, p. 57) singles out three types of shrinking cities, plus three other types pertained to urban growth:

1) Shrinkage – continuous shrinkage throughout time;
2) Stabilized shrinkage – shrinkage followed by stabilization and growth with overall net loss;
3) Cyclic shrinkage – cycles of shrinkage and growth with overall net loss;
4) Cyclic growth – cycles of shrinkage and growth with overall net gain;
5) Recovery – shrinkage followed by stabilization and growth with overall net gain; and
6) Growth – continuous growth throughout time.

3.5. Typology 5: according to the seriousness of shrinking process

This typology is developed on the observed cases of extreme shrinkage, where cities have lost the substantial part of the former population, which eventually trigger their general functioning. Therefore, two types can be differentiated:

1) "Ordinary" urban shrinkage and
2) Extreme urban shrinkage.

The extreme cases of urban shrinkage are very often in spotlight of both scientists and media. Such examples are well-known: Detroit in the USA, industrial cities in the former Eastern Germany or mining cities across the former USSR. Interestingly, the threshold between these two types is not well defined by science. Adelaja (2010) marks out extreme shrinking cities as those cities which have lost more than 25% of population during last 40 years. He defines this threshold according the previous research of Schilling and Logan, who equalise the appearance of extreme shrinkage with the point when the abandonment and bad state of city built stock become visually evident at glance (Schilling and Logan, 2008). Similarly, Burkholder (2012) thinks that extreme urban shrinkage is that where more than 50% of properties are empty, which consequently makes a serious disturbance on the functioning of the entire city. These definitions clearly show that of extreme urban shrinkage links non-spatial issues (demographic and economic decline) with spatial ones (physical and functional decline of relating properties in a shrinking city).

3.6. Typology 6: according to the spatial level of shrinkage

Spatial levels in shrinking cities are frequently mentioned and analysed topic. Thus, just many points are given in this typology. Basically, there three type of shrinking urban areas according the spatial level of urban shrinkage:

1) Urban areas that are shrinking as an totality;
2) Urban areas, where central core (administrative 'city') is shrinking, while inner parts (suburbia) are growing; and
3) Urban areas where specific and important parts (certain quarters, urban municipalities, wards, urban neighbourhoods or blocks) are shrinking.

The first type is usual for post-socialist countries, where many cities enlarged their administrative

area during socialism. However, such cities can be found in West. The second type is typical for the USA and similar, neo-liberal countries with low density (Canada, Australia), where urban shrinkage is just related to an (inner) city in its administrative borders. In contrast to it, outer or suburban settlements in urban zone are growing, sometimes very fast. This process is well-known as a suburbanisation (Hollander et al, 2009).

Both explained types are easy to research due to the use of administrative borders in both cases. However, the third type of urban shrinkage (shrinking quarters and neighbourhoods) has more challenges. For example, the threshold of minimum 10,000 inhabitants cannot be obtained for it. Many statistical demographic and economic data are not collected at this spatial level, too. Thus, this type requires new parameters to investigate shrinkage patterns. For example, proposed parameters are: (1) urban density, (2) the change of population density, (3) the consumption of new urban area, and (4) the number of new dwellings in an newly-developed urban area (Siedentop and Fina, 2008, p. 7).

3.7. Typology 7: according to the size of shrinking city

This typology is intentionally given as the last one. The main reason is that it is indirectly extracted from the general literature where this issue is not is in spotlight instead of concrete references that should tackle it. Two major researches about the widespread and general ratios of shrinking cities globally (Oswalt, 2006) and in Europe (Turok and Mykhnenko, 2007) both consider just cities/urban areas with more than 100,000 inhabitants, which is very indicative. Restrepo et al (2016) conclude that there is a distinction between bigger and smaller shrinking cities, because bigger ones posses the critical number of inhabitants to wider and diversify economic prospects and overrun shrinking pattern thereof. At contrary, smaller cities are more prone to long-term and more extreme urban shrinkage. Therefore, two types of shrinking cities by their size are:

1) Bigger shrinking cities, with urban areas more than 100,000 inhabitants; and
2) Smaller shrinking cities, with urban areas less than 100,000 inhabitants.

4. CONCLUSIONS

The presented different typologies of shrinking cities imply several major highlights:

- The general knowledge and resources relating the concept of shrinking cities has become abundant, so they enable the in-depth examination of elements in the concept, such as the categorisation and classification of shrinking cities;
- However, the same knowledge and resources are so diversified that a clear typology of shrinking cities globally is still questionable. This means that it can be rather developed in the form of multiplex typologies to properly describe the whole phenomenon of urban shrinkage and shrinking cities as its spatial reflection;
- The presented typologies of shrinking cities are also interrelated and interdependent. For instance, this is evident in the case of the typology according to the character of shrinkage duration and the typology according to the shrinkage timeline.

The better understanding of these typologies can be guidelines for some new research within the concept of shrinking cities. First, it is obvious the concept and the definition of shrinking cities are not enough to research the phenomenon within a city, at quarter and neighbourhood level. Second, extreme urban shrinkage, despite its frequent mention in research and media, is not well-determined and new elements to consolidate it are necessary. Third, many types of

shrinking cities are derived by the relation between urban shrinkage and growth – this number indirectly reveals that this relation should be further investigates to eventually decrease the number of possible types. The last but not the least, the political aspect of urban shrinkage, which is included in the second typology, is a generally neglected field, so it needs the further research, especially respecting the shrinkage of border cities and the influence appeared from the proximity of political/ national borders.

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