

The summary of PhD thesis:

„Functional and spatial transformations of terminal railway stations
in the context of demolition and urban regeneration.
Selected case study from the European cities”

The impact of rail transport was crucial for the development of spatial and functional systems of industrial cities. This is demonstrated, among others, by the intensive use of areas where lines and railway stations are located. Around the station, municipal functions cooperating with the railway were created (e.g. storage, warehouse, factory). The purpose of these operations in the process of shaping the organization of urban space was to minimize the costs and time of reloading supplied raw materials and manufactured products, and thus to streamline transport and increase production efficiency. Passenger transport was initially of a secondary importance, which, however, in some regions of Europe in the nineteenth century (and in others later) became the priority or at least an equally important issue. Passenger transport enabled faster migration of people to cities. It improved the commute to work from suburban areas, and also gradually stimulated the growth of spatial mobility of Europeans.

The author attempts to present the matter of analyzing the conditions and consequences of spatial and functional urban transformations, which are the result of the reconstruction of leading railway stations in three selected cities in Europe: Vienna, Austria; Leipzig, Germany and Łódź, Poland. The context of the conducted research were demolition and urban regeneration that accompany such transformations. The main goal of the conducted redevelopment was to give the stations the transit capacity, the investments were implemented as revitalization megaprojects.

The **main research problem** was formulated as a question: how does the reconstruction of a terminal station implemented as part of a revitalization megaprojects (core of a megaproject) affect the spatial and functional structure of the city?

To address the above question using the scientific method three **additional specific questions** were developed which structure the course of analytical proceedings adopted by the author and specify further research stages:

1) What was the character of the spatial and functional structure of railway stations and their surroundings just before the reconstruction began?

2) What forms of spatial and functional transformations occurred in railway areas as a result of the reconstruction?

3) What are the characteristics of the new organization of the revitalized urban space?

The field studies carried out relied on the **hypothesis** that the extent, size and type of spatial and functional consequences of the revitalization process of railway areas that accompany the reconstruction of the terminal station into a through-going implemented as a megaproject, depends on: the mode of running the megaproject, the method of obtaining throughput and the location of the facility in the city.

To deal with the research problem introduced in the dissertation, the author used the method of multiple explanatory geographical case study with three immersion units, in which he additionally included five research methods specific to the settlement geography: field studies performed *in situ*, geographical analysis, statistical methods, mathematical methods, and historical methods. In the adopted methodology, the analyzed title cases are the reconstruction of leading railway stations aimed at adding the capacity function.

In-depth research was carried out in the analyzed cities, aimed at analyzing the morphogenetic and spatial-functional structure with a focus on the inventory and photographic documentation of fragments of cities adjacent to selected railway stations. Field studies were complemented with a comparative analysis between the assumptions of programmed design and completed projects. In addition, the rhythm of space utilization in the area covered by the study was identified by recording pedestrian patterns and the availability of individual parts of the area.

Each of the analyzed reconstructions confirmed the validity of the adopted hypothesis. In Vienna, it was stated that the new transit station Wien Hauptbahnhof was created as the core of a revitalization megaproject carried out as a **one unified project** (Bahnhof Wien – Europa Mitte), which is managed entirely at all stages by the city authorities. There, throughput was obtained by elevating the tracks above ground level (to the flyover), and the station along with other service points were located under them. In Leipzig, field studies have shown that obtaining the throughput of the Leipzig Hauptbahnhof station was possible thanks to the construction of a tunnel, which resulted in the release of significant surface areas. A revitalization megaproject, in which the reconstruction of the station is the core, was carried

out as a **continuous project with several stages**. The first stage was the construction of a tunnel, thanks to which the transit function was obtained. The next stages of this megaproject has been sequential actions taken in subsequent years, the purpose of which is the spatial and functional transformation of the areas around the main station. the staging nature of above mentioned megaproject is primarily related to the investment opportunities (availability of funds) of the city's local government. On the other hand, during research in Łódź it was established that although Łódź Fabryczna station was fully prepared to function as a transit station, it is unfortunately still a terminal station at the moment. This is due to many factors that result in delays in the construction of the cross-city tunnel. The redevelopment of the Łódź Fabryczna station together with the revitalization of the former EC1 power plant complex are implemented almost at the same time as the two-element core of the revitalization megaproject New Center of Łódź carried out in areas of 100 ha centrally located in the city. The new Center of Łódź was classified by the author as a **fragmented megaproject**. It is implemented as separate, individual executive projects by many investors simultaneously. The uniqueness of the concept of the New Center of Łódź results from the existence of a two-element core of a revitalization megaproject. Each of its components (train station and EC1 City of Culture) differently stimulates spatial and functional transformations in the megaproject area and neighboring areas. In this regard, the New Center of Łódź is a unique project in the group of studied megaprojects.

The research procedure and results obtained during field studies, complemented by quantitative analysis carried out using the Perkal method, confirmed the formulated research hypothesis. All the cases examined in European cities: Vienna, Leipzig and Łódź clearly show that the extent, size and type of spatial and functional consequences of the revitalization process of railway areas that accompany the reconstruction of the terminal station implemented as a megaproject depends on: the mode of running the megaproject, the method of obtaining transit capacity and the location of the facility in the city.