A Spatial Management major course at Cracow University of Technology on the revitalisation of waterfront post-industrial areas

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ABSTRACT: In this article, the author presents the objectives of the course, *Shaping of Waterfront Areas. Revitalisation and Restructuring of Post-industrial Areas* taught to students of the Spatial Management major offered in the Faculty of Environmental Engineering at Cracow University of Technology, Kraków, Poland. The introduction of this course into the curriculum had two main objectives. The first was to gain theoretical knowledge regarding the methods of shaping areas associated with water bodies, with particular emphasis on waterfront post-industrial areas. The second goal was the application of knowledge gained by students during the development of a conceptual design for the development and revitalisation for the area of a former river shipyard in Kraków. During the course, the students were able to work on an existing fragment of the city, one that is currently degraded, but at the same time is located in the particularly attractive surroundings of the river Vistula - both in terms of landscape and natural qualities.

INTRODUCTION

The revitalisation of post-industrial areas, especially those located in urban areas or in areas of substantial historical or environmental significance should be based mainly on countering the degradation of urbanised spaces and improving the quality of those spaces. The required actions need to be co-ordinated on various levels, including the reshaping of infrastructure, working with the local community, environmental education and preserving cultural identity. The areas that have remained after the cessation of industrial activity in many European cities are often located in central zones or even directly in city centres close to areas of historical significance. This is a result of the history of establishing such plants without regard to their surroundings. Other industrial plants that were built outside of cities have been *swallowed up* by large cities due to urban development and are now located in their central zones.

A particular example of industrial structures are those associated with waterfront areas, i.e. shipyards, cargo wharfs, storage container yards or areas meant for the storage of resources such as gas. They are usually placed in strict functional relation to a waterfront area, often in the centre of a city. Waterfront post-industrial areas often take up sizeable portions of a water body's shore, *cutting off* a city from water and making it impossible to make use of its potential to increase the attractiveness of urban space.

The economic development that occurred in Europe after the Second World War was a consequence of immense wartime destruction. The economies of European countries were rebuilt including the reconstruction of residential areas, industry and transport infrastructure. This occurred in all European countries regardless of political conditions. Similar to the situation in Western Europe, Poland saw the development of industrial plants, steel mills, factories, ports and shipyards after 1945. Some were built as new projects, for instance Nowa Huta in Kraków, while others were based on pre-war urban centres, such as the textile plants in Łódź, whose roots go back to the industrial revolution of the 19th Century.

In Poland, as a result of political and economic changes that started after 1989, and which were associated with the dissolution of the Soviet Union, in the so-called Eastern Europe countries that had been under Soviet influence, a capitalist economy started to develop. Many state-controlled, unprofitable industrial plants could not match foreign competition, which led to their being shut down. The economic development of Poland during the past several decades, including joining the European Union, has led to changes in the economic system and in production processes, which has led to many industrial and production plants that had previously been shut down being reopened.

Unfortunately, many Polish cities still feature inactive and abandoned factories, production plants or storage buildings [1]. That being said, many have been subjected to processes of revitalisation, which has resulted in many successful projects featuring both individual structures, as well as entire larger parts of cities [2].

Comprehensive legal regulations covering revitalisation were introduced in Poland in 2015 in the form of the *Revitalisation Act* [3]. This makes it possible for local government to undertake revitalisation projects for urban areas. It is the first of this type of legislation introduced by Polish lawmakers, which is why its introduction and practical implementation requires factual support and knowledge. Hence, one of the most important factors to support urban revitalisation is education, especially the education of students of majors, such as architecture, urban design and spatial planning.

ACADEMIC TEACHING OF THE REVITALISATION OF WATERFRONT POST-INDUSTRIAL AREAS

In the 2016-17 academic year, the author developed a programme for an optional course called *Shaping of Waterfront Areas. Revitalisation and Restructuring of Post-industrial Areas*, which was taught to students of the first year of the second tier studies of the major, Spatial Management, in the Faculty of Environmental Engineering at Cracow University of Technology. The Spatial Management major offered by the Faculty educates students in the planning, management and shaping of space, with particular emphasis on water-based assets and various environmental problems. As well, the implementation of sustainable development programmes in urban design is covered. The course programme developed by the author was the result of her long-term scientific and didactic work associated with the shaping of water-based layouts in architectural and urban design.

The main goal of the classes taught was the transfer of knowledge on the design of urbanised areas in the vicinity of water bodies, especially degraded and post-industrial areas. Over the course of the semester students learnt to:

- determine existing spatial, compositional, functional, environmental and other conditions for the revitalised area;
- determine potential threats to, and opportunities for, its future development;
- develop solutions based on the knowledge associated with the design of water-based layouts in a modern urban environment with particular emphasis on the sustainable design of water reservoirs;
- carry out a spatial analysis, gather and process information obtained during on-site visits and, based on the obtained data, formulate conclusions that will allow the production of a conceptual design for the development and revitalisation of a post-industrial area.

The course was structured with 15 hours of lectures and 15 hours of design classes. The design classes were performed in groups and included on-site visits, discussions and design work on a final design solution. Participants in the course numbered 19 in the 2016-17 academic year.

The lectures mainly covered the urban and architectural design of areas located in the vicinity of water bodies, both natural and manmade. Students were familiarised with the historical ties between urban areas and water bodies in the development of European cities from ancient times to the beginning of the 20th Century. The lectures also covered a cycle of problems associated with the functioning of waterfront areas within a city. These include the use of the area's potential in terms of recreation, accessibility and circulation; exploiting the qualities of the natural environment; as well as the aesthetic shaping of an urban environment featuring water-based elements. It is highly important to transfer knowledge to students regarding the history of the establishment and development of industrial areas, the processes that led to their degradation and the condition in which they have presently found themselves. The processes for the revitalisation of waterfront post-industrial areas were analysed during classes, based on examples of various projects being implemented around the world. Students each selected a single example of such a project and delivered a short presentation to the class.

AREA OF KRAKÓW TO BE THE SUBJECT OF STUDY

The objective of the course was the development of a conceptual plan for the revitalisation of a waterfront post-industrial area in Kraków, i.e. the pre-war river shipyard located near the barrage in the district of Dąbie. The Płaszów river shipyard was built towards the end of the 1920s, when inland water transport of both cargo and passengers was very common and popular in Poland [4]. The shipyard specialised in the production and repair of cargo barges. Unfortunately, the start of the Second World War caused the shipyard to shut down. However, it resumed operation after 1945 and focused on the production and repair of ships, mainly transport barges, but also of other waterborne vessels, up to the 1990s. In 1992, the shipyard, as a state-owned enterprise, became bankrupt and was shut down. It was sold by a syndicate to a private company that manages the site to this day. A part of the port channel is used by the company Namarol for operations involving the construction, repair and maintenance of various types of waterborne vessels. However, these operations are considerably limited in scope. The shipyard's ramp, from which ships were launched, as well as a part of its technical buildings, have survived to this day, although they do not have much historical value. The majority of the port channel, as well as the areas that surround it, is occupied by various buildings that are rented out to other companies for use as storage spaces and offices.

During the period of the construction of the river shipyard, the district of Dąbie was located outside of the city centre of Kraków and mainly featured low single-family buildings, farms, meadows, pastures and fields. Over the course of the spatial development of the city, especially after the period of the Second World War, the areas that surrounded the plant started to be built up. The main transport arteries that surround it were built, i.e. Stoczniowców Street along with the

bridge across the Vistula River, and Nowohucka Street. As well, both multi-family residential and commercial buildings were built. The shipyard is linked with the Vistula by means of a port channel, in the area of the so-called Vistula Bend, which is a wide and expansive, flat-shaped green area adjacent to the river and which is a recreational and walking spot for the local inhabitants. The area is located near to a large area of family-owned allotment gardens. The location of the river shipyard in the vicinity of the Vistula and the large amount of natural green areas causes this area to have particularly valuable significance within the landscape of the city of Kraków.

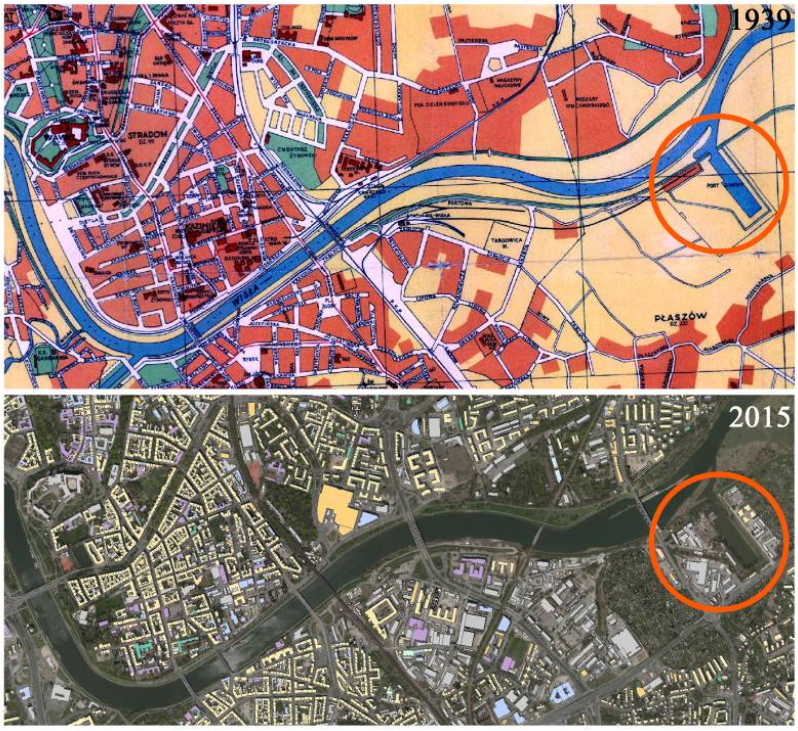

Figure 1: Location of Kraków's river shipyard Płaszów on the map from 1939 and 2015. The picture shows the changed development around the shipyard through the decades [5].

Figure 2: Fragment of the Local Spatial Development Plan for the *Myśliwska* area, which consists of the river shipyard area [6].

In 2010, the entire area was covered by the Local Spatial Development Plan for the *Myśliwska* area [6]. It is a document passed by the City Council of Kraków, which defines the forms of use and types of buildings for new projects in the area of the river shipyard. The areas directly adjacent to the port basin are assigned for service buildings that are commercial in character (marked on the map with the letter *U* and a red colour); multi-family residential buildings with services (marked on the map using the letters *MWU* and a pink colour); as well as structured and unstructured greenery (marked on the map using the letters *ZP* and *ZL*, respectively, and a green colour).

Currently, most of the parcels surrounding the reservoir are more or less developed. The areas assigned for residential buildings are the site of the construction of a new housing estate, while the areas assigned for commercial services feature a large number of bigger and smaller buildings housing mainly storage spaces, offices, services and stores. The building environment in this area is most chaotic, having been built without any urban plan, and the architectural quality, and technical condition of many of the structures is also very low. The main problem with this area is the overall neglect of public spaces, which have been assigned here by the development plan. Despite being located in a highly accessible part of the city, near Krakow's city centre and in direct proximity to the Vistula River and attractive green areas, the former river shipyard is a neglected and ugly site. In light of the lack of attractive public spaces, neglected road infrastructure and no recreational programme, it is a place that is not readily visited by the residents of the city. Green areas and natural landscape close to the Vistula River give the shipyard an ability to become a new, attractive place in the city for recreation, which is an important element in the development of social life [7].

Figure 3: The port channel and the shipyard ramp with technical buildings as at the present time (Photograph by the author).

STUDENT ACTIVITIES IN STUDYING THE SUBJECT AREA

Familiarisation and Investigation

During design classes, the students familiarised themselves with the history of the site and analysed historical documents, the local spatial development plan and current legal documents for the river shipyard area. They then undertook an on-site visit. They were tasked with performing an urban analysis of the site in order to determine its current condition and familiarise themselves with the natural qualities of this part of the shore of the Vistula. The urban analysis was performed with the use of photographic analyses, as well as observations and measurements from a survey map.

The students were divided into three groups, which performed an urban physiognomic, compositional and functional analysis, respectively. The physiognomic analysis was aimed at assessing each of the elements of the area in order to determine their visual value, character and technical condition. The compositional analysis determined the spatial relations within urban interiors, identifying valuable architectural, natural and landscape elements. The functional analysis identified the use of each of the area's fragments or of the buildings themselves. After the field research, the groups presented the results of their analyses, which were followed by a lively discussion covering the appearance of the site, its functioning and the qualities of individual structures, as well as of the water body itself. The on-site visit was a very important element of the classes as it made the students aware of the scale of the site and how it functions, but also that it is highly neglected.

After performing an urban analysis, the groups formulated conclusions that constituted the main guidelines for further design work. In the next part of the course, various methods were used to create possible models for the river port area in the future. Elements of a SWOT analysis were used, which included strengths (S), weaknesses (W), opportunities (O) and threats (T). Schemes were developed searching for transport, compositional, functional and other links to the city. Potential future users who could use the area were identified, e.g. the residents of nearby housing estates, tourists, students and commuters.

Revitalisation and Development Plans

In order to develop the final conceptual design for the revitalisation and development of the area of the Płaszów shipyard, the students were once again divided into three groups that differed in profile from the ones that performed the urban analyses. Each group was meant to develop its own idea for transforming the area and describing the process of revitalisation, as well as the methods used to achieve it.

Three conceptual designs for the transformation of the area were developed during the group work phase. These included a centre for young creative companies with recreational facilities; the headquarters of an international IT corporation with a public space; an office centre for Kraków's companies and a museum of the former river shipyard. Each of the conceptual designs related to areas surrounding the water body assigned to commercial services - see the local spatial development plan, Figure 2, areas marked with the letter *U*. It was decided that the existing office and storage buildings, which had little value in historical or architectural terms, were to be demolished. The remains of the buildings of the shipyard, especially the ramp for launching ships, were assigned different functions in each conceptual design. In one design the ramp was preserved as a site with limited economic activity to see how small waterborne vessels, such as boats and yachts were repaired. Other ideas centred on the ramp as a place for the production of ships or as a zone of rest and recreation associated with water.

The final outcome of the semester-long work of the students was three papers containing the materials gathered during the semester with a description of the revitalisation process, and a conceptual design for the area of the river shipyard for the future. In addition, the design was presented in graphical form as spatial models made by each of the groups, illustrating their final design (see Figure 5). Each of the models was made during classes that lasted two school hours (2 x 45 minutes). This turned out to be an interesting experience for the students as they had to transfer their ideas about the design into a material form and learn to co-operate in a group. It needs to be added that the work on the model surprised even the students themselves, as they had no previous occasion in which to perform this type of artistic activity.

Figure 5: Students' models of the shipyard revitalisation (Photograph by the author).

CONCLUSIONS

The revitalisation of urban areas, and especially post-industrial ones, is a difficult and complicated process that must concurrently address the social, environmental and spatial aspects. Neglecting or ignoring one of them can lead to a situation in which, for example, an area can be developed with beautiful, modern architecture, but without respect for natural assets or it can lack social spaces in which the residents of a city could congregate. Such an area will not function properly as a living fragment of the city. In order for a process of revitalisation to be implemented successfully, it needs to take into account the interests of all stakeholders, e.g. municipal authorities, property owners and the residents. In addition, the natural qualities of an area and its cultural heritage need to be respected.

In order to achieve the goal of revitalisation, a series of studies need to be performed on a site, including familiarisation, reviewing historical documentation important to the preservation of the cultural identity of a site, through to various analyses of its current condition. It should be determined how the area currently functions and what are its greatest assets, and what are the results of neglect. It is necessary to formulate the ties to the city of the area being revitalised and to outline transport arteries. New forms of use can be identified and the natural and landscape qualities, as well as the recreational capacity associated with a water body, highlighted. In a city such as Kraków, which is rapidly expanding, every attractive area linked with greenery and water becomes precious and care is needed to maintain or restore it for the city. Educating students in this regard equips them with the necessary knowledge and tools to take action, and gives hope that they will become competent persons who will be able to successfully carry out revitalisation projects in Polish cities.

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