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Promenade as Landscape Architecture Strategy for Riverbanks of Small Danube Cities: Komárno and Štúrovo

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Abstract

The concept of promenade has moved from the city public spaces, from the streets and parks to shopping malls and to virtual public spaces. However, as many case studies of the waterfront regenerations show, the waterfronts possess the potential to enliven the concept of promenading in urban public spaces. Within the framework of the project DANUrB, we have tested the use of the concept of promenade as a landscape architecture strategy for the riverbanks of small Danube cities. We have examined and analyzed the potential of riverbanks in the selected pilot cities Komárno and Štúrovo, and using the method of research through design, we have elaborated proposals for their riverbanks, reflecting the principles of an ecologically sound riverfront design. Results obtained from the research and the design proposals have shown the potential of the riverfronts of small Danube cities Komárno and Štúrovo for the development of the promenades as viable urban places and as greenways, offering recreation possibilities in a balance between nature and social life.

Keywords: promenade, riverfronts, greenways, riverbank design, waterfront regeneration

1. Introduction

Promenade as a verb means to walk or ride leisurely for pleasure or for display and parade. As a noun it means a place, a road or path for such strolling, walking or riding—usually the main avenue of the city, at the park, or at the seashore or riverbank. The promenading phenomenon possesses a special significance for urban society. Promenades as mentioned by Borsay [1] host “kaleidoscopic crowd of dog-owners, courting couples, sun-bathers, juvenile delinquents, voyeurs, joggers, and just plain strollers”.

The origins of the promenade in Paris, as both an idea and an activity, from the reign of Louis XIV spread throughout the cities of Europe. The '*promenade de civilité*', the walk as a polite and civil activity, an extension of the elaborate social etiquette that had developed in the salons and the royal court, was peculiarly suited to strolling in a garden and influenced the development of the French garden. As the activity of strolling became democratized, it spilled beyond the bounds of gardens into the streets and boulevards. Bordered by footpaths and rows of trees to provide shade, boulevards integrated elements of the French garden into the urban landscape [2–4].

Today the '*promeneurs*' and '*flâneurs*' of city promenades have moved from the city public spaces, from the streets and parks to shopping malls and to virtual public spaces. The traditional practice of collective promenade as a sign of 'social visibility' moved to the space of internet social media, which supplies the needs of socializing and showing up. As said by Goldgate [5] the '*Cyberflâneur*' strolls through information space, taking in the virtual architecture and remaining anonymous. If the '*Flâneur*' was a decipherer of urban and visual texts, then the '*Cyberflâneur*' is a decipherer of virtual reality and hypertexts [5].

However, the mythology of the great city is still a place where the '*flâneur*' can exist, and as noted by Young [6], today, instead of being limited to the metropolitan promenade, '*flanerie*' has been displaced even to other locations. Though attractions are needed to enliven the concepts of the promenade and usually, *the programs of urban renewals* are those, which possess the potential to create the new sites of contemporary '*flâneur*', *as for example in the case of High Line in New York, or in the concepts of waterfront regenerations in many cities.*

Waterfronts, seashores or riverbanks have the traditions of promenading—in pre-industrial cities, waterfront areas were intensely used and thriving with people and activities. The close relationship between the waterfronts and the cities was interrupted with the industrial era and by the use of waterfronts as huge ports, for transportation uses, for commercial uses, industry, and warehouses [7, 8]. The economic changes, changes in transportation and trade, led to the abandonment of industrial plants and harbors, and with the increasing environmental awareness waterfronts were rediscovered for the city, and the phenomenon of waterfront regeneration emerged. Urban waterfront regeneration projects have become an effective tool for urban planning and politics in international dimension since 1980s [8].

Successful redevelopments of urban waterfront areas transformed the degraded harbor zones to new urban leisure centers of vital importance. Many examples and case studies show, that by creating public access, walkways and open spaces, by attractive urban design, landscaping and various land uses, the waterfronts become lively urban promenades. Many examples also show that aims to improve, protect and restore the natural features and functions of rivers and watercourses in urban areas, their hydrological, geological and biological characteristics, and the aims to restore riparian and in-stream habitats, create opportunities to use the water corridors as greenways—as green promenades for walking, cycling, with recreational, and sport functions, attractive for inhabitants and for tourists.

Within the framework of the Interreg Danube Transnational Programme project DANUrB, we have examined the possibilities to use and apply the concept of promenade as landscape architecture strategy for the riverbanks of the two selected pilot cities in Slovakia connected to the river Danube—Komárno and Štúrovo.

The DANUrB Project aims to enhance tourism, and create a sustainable cultural and tourism strategy for small Danube towns, proving social and economic benefits for local inhabitants [9]. Within the project DANUrB we have studied various aspects and strategies—for example, we have examined the green infrastructure of the city Štúrovo for the selection and inclusion into the thematic location-based audio tours offered by the mobile application [10]. One of the aims of the project DANUrB is also to strengthen the Danube regional cultural identity by creating a comprehensive spatio-cultural network—a ‘Danube Cultural Promenade’, as a common ‘Danube Urban Brand,’ a brand that can increase the number of visitors and tourists in the small Danube towns [9]. Strategic place branding is often used as a methodology for tourist attraction [11]. For the strategic place branding of Danube cities, the most important spaces are the riverfronts. Very important in this process is that international knowledge and practice is implemented in local conditions, the creation of common strategy is based on individual approach and is site-specific. We have studied the riverfronts of the selected pilot cities, and tested the possibilities to improve the quality of their river landscapes.

2. Material

Komárno and Štúrovo are the only settlements on the Slovak side of Danube, except Bratislava, the capital of the Slovak Republic, having the statute of a city. They have been selected as pilot cities for testing the concept of promenade as landscape architecture strategy for riverbanks of small Danube cities.

2.1. The characteristics of the pilot city Štúrovo

Štúrovo is situated on the left bank of the Danube at the Slovak-Hungarian border. Its twin city on the Hungarian bank of Danube is Esztergom and the two cities are connected by the bridge of Maria Valeria.

The city has a rich history. Its surrounding area was first settled in the Stone Age. During the Roman period it was the site of the ‘Anavum’, the military garrison of the Limes Romanus, through the middle ages it was the site of the settlement ‘Kakath.’ Situated on the natural border created by the Danube, it was fortified as a strategic place during the Tatar invasions and later during the Ottoman Empire, when it was called ‘Ciğerdelen.’ Later it was called ‘Párkány.’ In 1724 it was granted town status and the rights to hold markets. In 1850, it became a station on the railway track from Bratislava to Budapest. In 1895, the bridge to Esztergom was opened. After World War I, the town became a border town of Czechoslovakia. In 1938, as a result of the First Vienna Arbitration, it was returned to Hungary. After World War II, by the annulment of the Vienna Awards, the town became a part of Czechoslovakia again. It was renamed to Štúrovo in 1948 [12].

Today Štúrovo has a population of 10,666 inhabitants, according to the census in 2013. Its location in the southern—hottest part of Slovakia, in the Danubian lowland, together with natural resources of thermal water in the thermal spa Vadas create opportunities for summer recreation. The city is famous for its tolerance—throughout the centuries, people of different nationalities and religions have lived here together, what gives the city a special atmosphere

and flavor. Its main economic sectors are pulp and paper industry, agriculture, and tourism. The main employer is the Kappa Štúrovo paper plant.

2.2. The characteristics of the pilot city Komárno

Komárno is situated in the southern part of Slovakia at the confluence of the Danube and the Váh rivers, on the left bank of Danube. Its former suburb Újszőny, today Komárom, is situated on the right bank of Danube, in Hungary. Komárno and Komárom are connected by the Elisabeth Bridge, which used to be a border crossing between Slovakia and Hungary.

Komárno is an old settlement. First findings stem from the Neolithic, Eneolithic period, and the Bronze Age. Many archeological remains indicate that the area was settled by the Celts toward the end of the first century BC. During the first century AD, the Roman Empire extended its frontiers over the region forming the province of Pannonia. The Romans established the military camp and the settlement Brigetio on the southern shore of the Danube, and a chain of fortifications built along the Danube shores protected the camp and the town. On the northern shore the fortified bridgehead of Celemantia, was built at the beginning of the second century. Gothic, Slavic and Avar findings have been excavated here from the seventh and eighth century AD [13].

In the early tenth century the territory came under the rule of the Magyar tribes. According to the medieval chronicle *Gesta Hungarorum*, one of the Magyar tribal chieftains, Ketel established his domain near the mouth of the Váh river, and his son Alaptolma later built a castle there. Since 1075, it was known as Camarum.

King Béla IV, in 1265, granted the settlement town status and privileges. In the sixteenth century, Komárno became one of the centers of defense for the Habsburg Empire against the expansion of the Ottoman Empire. However, it was occupied by Ottomans between the years 1594–1599. In the eighteenth century, as one of the biggest towns in the country, it began to flourish. Maria Theresa granted the city the status and privilege of a free royal town in 1745. During the eighteenth century, Komárno experienced many natural disasters including floods, fires, earthquakes, and epidemics as cholera and plague. The two earthquakes, in 1763 and in 1783, completely destroyed the town. Komárno played a significant role in the Hungarian Revolution in 1848. It remained the last bastion of the Hungarian resistance against the Austrians until 1849, when the fortress and the town were finally surrendered. During the years of Austrian absolutism, it became a strategic military base. Komárno is famous for its historical fortification system, which is a unique system of forts, bastions, and fortifications in and around the towns of Komárno and Komárom on the banks of both the Danube and Váh rivers. It was started to build in 1546 on the place of the former castle and the whole fortification system was completed in 1871–1877 when the last Igmand fort was built [13].

After World War I With by the Treaty of Trianon, the territory to the north of the Danube was ceded to Czechoslovakia with the territory to the south of the Danube remaining in Hungary. Komárno found itself in Czechoslovakia, separated from its southern part in Hungary. In 1938, under the First Vienna Award, Komárno was returned to Hungary. After the World War II, the territory on the north bank of the Danube and Komárno became part of Czechoslovakia again [13].

Komárno today is Slovakia's principal port on the Danube, the town's largest industrial facility is the Slovak Shipyard Komárno, which was completed in 1950 and greatly promoted the economic development of the town. New factories were constructed on the west side of town near the shipyard and create a new industrial district. It has a population of 34,561 inhabitants, according to the census in 2013.

3. Methods

We have analyzed the riverbanks of the pilot cities and developed landscape architectural proposals for the riverbank promenades using the method of "education by research" and the method of "research by design"—we have involved students from Faculty of Architecture, the Slovak University of Technology in the analytical and also in the design stage of the research [14].

To understand the historical development of the cities and their riverbanks and to understand the development of the relationship between the urban and natural phenomena we have studied historical literary, visual and map sources. To understand the current state and future development trends we have conducted on-site surveys, using various landscape and urban planning analytical methods to analyze the riverbank sites—their current functions, their use, their accessibility, the conditions and features of their riparian and in-stream habitats and the requirements of nature protection, we have studied the available urban planning documents, development intentions and requirements in collaboration with the local municipalities. The estimations of problems and potentials of the riverbanks as results of SWOT analyses were the starting point of the design stage.

As noted by Schönwandt and Voigt [15, 16], the focus of planning processes is on the systematic and methodological identification and solution of spatial problems or the prevention of their emergence. Planning problems are tasks as yet unsolved. The point of departure may be a state of affairs perceived as negative that is to be improved, or a situation which is viewed positively but assumed to require planning and action in order to persist. The clear definition of a problem is a prerequisite for improved problem-solving. Planning usually responds to a need or unsolved issue and is based on a distinct underlying approach.

According to Schönwandt and Voigt [15, 16], planning approaches consist of four components: a set of problems (problem views), a set of aims, a set of methods and defined background knowledge. These four components always interlock and depend on each other. There are many different planning approaches and they act like lenses through which we look at a situation and it is always possible to choose among a variety of approaches.

As mentioned by Zimmerman et al. [17], design thinking is the term often used to describe what designers bring to problem-solving. By design thinking Zimmerman et al. [17] mean the application of a design process that involves grounding—investigation to gain multiple perspectives on a problem; ideation—generation of many possible different solutions; iteration—cyclical process of refining concept with increasing fidelity; and reflection.

The research through design approach allowed to get various different design solutions for the riverbank promenades in Komárno and Štúrovo developed on the basis of the site analyses, identification of problems and potentials.

4. Results

From the first analytical part of the research, we have obtained results identifying the main spatial planning characteristics, problems and potentials of the riverbank sites in the examined cities Komárno and Štúrovo.

From the second design part of the research, we have achieved results in the form of design proposals identifying landscape architectural strategies for the riverbank promenades of the examined cities.

4.1. Results of the analytical part of the research

4.1.1. Results of the analysis, problems, and potentials of the riverbanks in Štúrovo

In the analytical part of the research in the city of Štúrovo we have gained results covering the characteristics of the main problems and potentials of the Štúrovo riverbanks in the broad spatial context, in the context of landscape and nature protection requirements, in the context of urban functions and transport requirements, in the context of historical development and cultural heritage, and in the context of socio-economic and socio-cultural development requirements.

The riverfront of Štúrovo consists of parts with a vegetation of alluvial-softwood floodplain forests in the wettest areas which are regularly flooded, with willows, poplars and alders, and of urban part—where the main pedestrian street of the town is connected with the Danube. The public urban spaces of the urban part of the riverfront and also the natural parts of the riverbank lack basic tourist and recreational infrastructure typical for riverside location.

The waterfront offers spectacular views of the basilica, cathedral, and castle across the river in Esztergom, but it is underdeveloped, it does not offer restaurants, cafes or bars, or exterior rest places to enjoy the view, or places and facilities for other activities which are typical for urban waterfronts. For example, the personal port in Štúrovo, consists only from ship pontoons. The ship cruises stop usually on the opposite side, in Esztergom.

EuroVelo 6—‘The Rivers Route’ which passes through Štúrovo is a long-distance cycling route along the courses of Europe's major rivers, and almost the entire length of Europe's second longest river, the Danube. The flood barrier in Štúrovo offers the linear corridor for this route, but is not equipped with cycling and walkway infrastructure, the natural parts are not used for recreation or sports purposes.

The examples of the graphical presentation of the results of the analytical part of the research are given in **Figures 1** and **2**. The example of the analysis of the pedestrian, cycling and public transport connections of the riverbank in Štúrovo elaborated by students is given in **Figure 1** and the example of the specific “atmosphere” analysis of the Štúrovo riverbanks elaborated by students is given in **Figure 2**.

4.1.2. Results of the analysis, problems, and potentials of the riverbanks in Komárno

In the analytical part of the research in the city of Komárno, similarly as in Štúrovo, we have obtained important results identifying the characteristics of the main problems and potentials of the Komárno riverbanks, crucial for the second-design part of the research.

In Komárno, the historical city center and the largest fortress of the famous fortification system are not connected with the riverfront because the riverfront is occupied by the industrial area of the port and the shipyard. The port area and the shipyard at present partially lost their former functions. The area is suitable to host new urban functions and waits for redevelopment and revitalization. It offers the opportunity to develop a promenade incorporating the industrial heritage and the specific *genius loci* of the former harbor area with cranes and rails.

The attractive confluence point of the rivers Váh and Danube, which is also the corner point of the fortress, is not accessible, and its potential of the landscape architectural point of view is not used.

The green spaces of the Váh riverbanks offer the possibilities of recreational greenways, however, today, similarly as in the case of Štúrovo, they are not equipped with cycling and walkway infrastructure.

The Elizabeth Island, the green area with gardens and few family houses, with the historical plane tree allée, offers possibilities to develop a promenade and to valorize the potential which is not used today. The corner point of the island is not accessible, as former industrial is not used and is suitable for the development of the personal port.

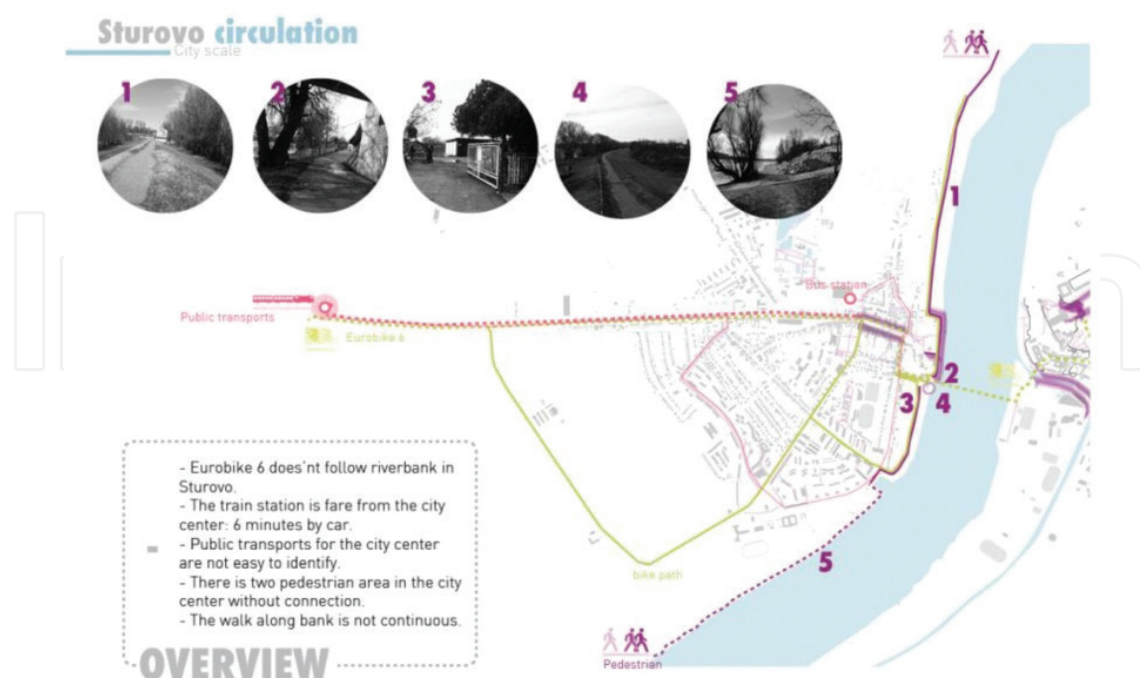


Figure 1. Analysis of the pedestrian, cycling and public transport connections of the riverbank in Štúrovo by students Florence Tiberghien, Noa Schumacher, Camille Clap, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.

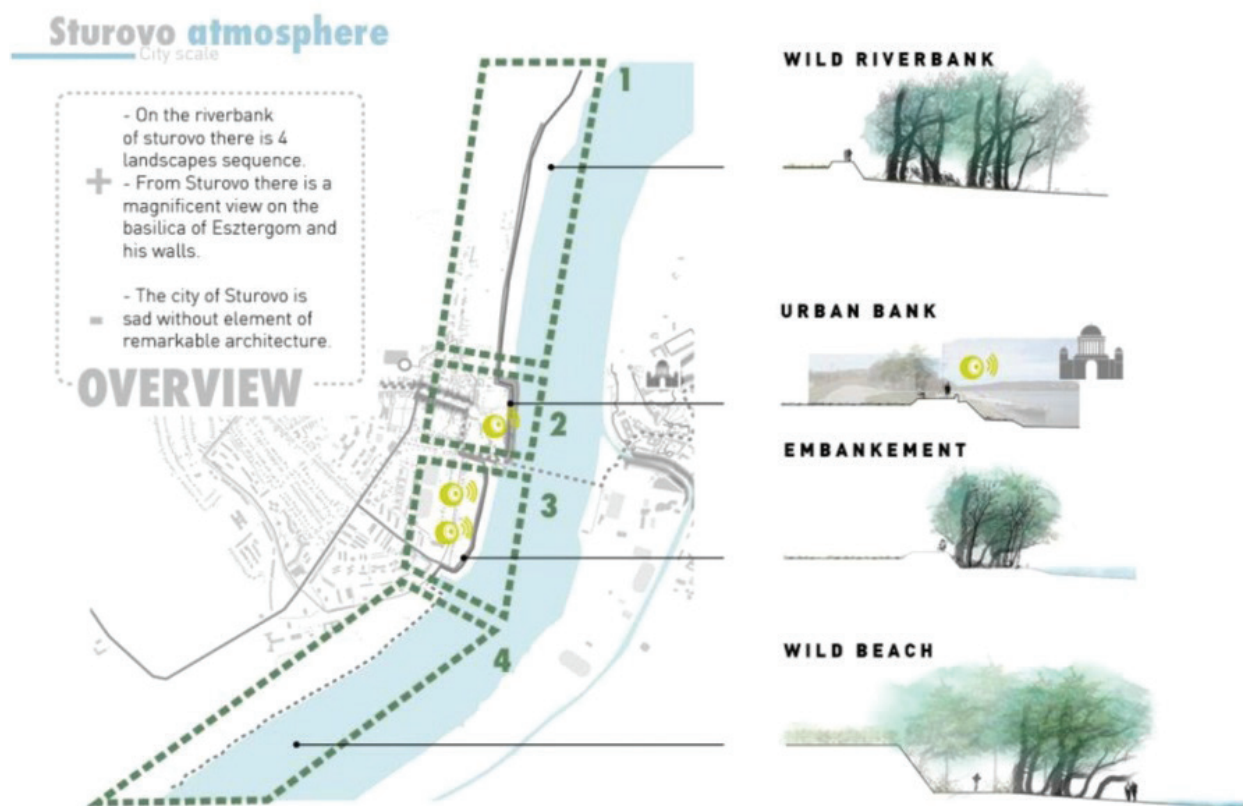


Figure 2. Analysis of the atmosphere of the Štúrovo riverbanks by students Florence Tiberghien, Noa Schumacher, Camille Clap, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.

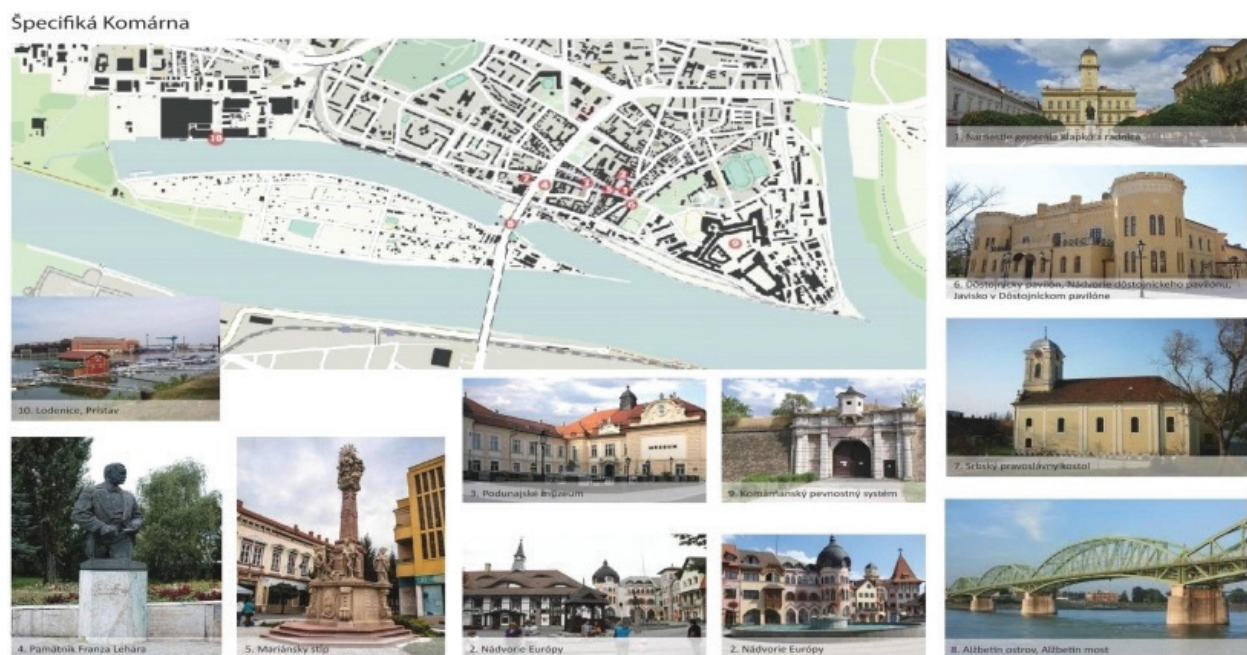


Figure 3. Analysis of the specifics, attractions and cultural heritage linked to the waterfront in Komárno by students Katalin Maga and Krisztina Nagy, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.

A substantial part of the research was devoted to the analysis of cultural heritage. From the research of historical literary, visual and map sources we have learned that many values of the historical urban and cultural landscapes of Komárno vanished. The results of the examination of extinct values and vanished phenomena of historical landscapes of Komárno and its intangible cultural heritage have been used in the second-design part of the research.

The main findings of the analytical part of the research, for example the analysis of the specifics, attractions and cultural heritage linked to the Danube waterfront, analysis of the functions and composition of the island riverfront, or the analysis of the landscape specifics of the Váh riverbank have been graphically expressed in the student works, showing results of various aspects of examination.

The examples of analyses of the riverfront in Komárno elaborated by students, are given in the **Figures 3–7**.

4.2. Results of the design part of the research: promenade as landscape architecture strategy for the riverbanks of small Danube cities

In the second-design part of the research we have tested the use of the concept of promenade as a landscape architecture strategy for the riverbanks of Komárno and Štúrovo. The results of the design part of the research are represented by several design solutions for the riverbanks in Komárno and Štúrovo elaborated by students and showing various possible landscape architectural approaches toward development of promenades.

Funkčno - prevádzková analýza - Alžbetin ostrov, Komárno



Figure 4. Analysis of the functions of the island riverfront in Komárno by students Katalin Maga and Krisztina Nagy, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.

Kompozičná analýza - Alžbetin ostrov, Komárno



Figure 5. Composition analysis of the island riverfront in Komárno by students Katalin Maga and Krisztina Nagy, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.

Landscape architectural proposals for the promenades in Komárno and Štúrovo have been developed on the basis of knowledge obtained in the first analytical research step. They offer various urban attractions of riverfronts, apply the principles of an ecologically sound riverfront design, interpret cultural history and heritage, create recreation possibilities or enhance greenway functions of the riverbanks.

4.2.1. Results: design proposals for the riverbank promenade in Štúrovo

Students have proposed landscape architectural solutions for all parts of the riverfront in Štúrovo: for the main urban node of the promenade, where the main axis of the historical center—its main street opens to the river and offers views to the opposite bank—to Esztergom, with its landmark—the basilica (**Figures 8 and 9**), and also for the natural parts of the riverfront, which offer the closest contact with water.

Students understood that the uniqueness of local natural and cultural heritage in Štúrovo, are the major assets for the development of the promenade, and they appropriately used these assets in their proposals.

For the urban part of the promenade in Štúrovo students have proposed commercial services and facilities which are typical for urban waterfronts—restaurants, cafes, exterior rest places, and also spaces offering place for various uses, and for various specific exterior activities, for example during festivals and markets, which are regularly organized in the city and take place on the waterfront. Some student works proposed also a new terminal for the personal port.



Figure 6. Analysis of the sequences of the Váh riverbank in Komárno by students Marie Cushing and Federica Petti, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.

In the landscape architectural design of the promenade, in both its urban and also natural greenway part, students have incorporated the cycling route EuroVelo 6, and equipped the corridor of the cycling and walkway route with accompanying infrastructure, offering points of rest places and also points of attractions and activities.

For the natural parts of the promenade, they proposed recreational paths with places to rest, play, or to the sport and also educational paths to learn about the natural biotopes and habitats of Danube landscapes.

4.2.2. Results: design proposals for the riverbank promenade in Komárno

Students have proposed landscape architectural solutions for all the parts of the riverfront in Komárno. They created the main urban promenade in the part where the historical city center and the largest fortress connect the Danube bay, with attractive and vibrant facilities (**Figure 10**) and the recreational greenway along the Váh and the fortification system (**Figures 11 and 12**).

They tried to valorize the potential of the attractive confluence point of the rivers Váh and Danube and also the edge point of the island by the location of a landmark—or 'brand mark' of the city.



Figure 7. Analysis of the interesting landscape structures of the Váh riverbank in Komárno advisable for protection and for conservation by students Marie Cushing and Federica Petti, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.



Figure 8. Proposal for the main urban square at the riverfront of Štúrovo with the congress center using the motive of containers and with the view of the basilica at the Hungarian side of Danube, by students Nika Partaš, Loïc Favorini and Louis Laheurte, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.



Figure 9. The proposal for the main urban part of the riverfront in Štúrovo, by students Florence Tiberghien, Camille Clap, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.

On the Elizabeth Island, they proposed spaces for recreation, sports facilities and the promenade on the flood protection barrier. They have incorporated the cycling route EuroVelo 6, in urban and greenway parts of the riverfronts. In the landscape architectural design of the riverbanks, students took into account many aspects, for example, water fluctuation and flooding, or ecological interests.

They adopted various design strategies and they created differentiated embankments. They created green riparian zones with riparian vegetation, and they created public spaces, beside the river, with direct contact with the water at various levels. To develop attractive and pleasant



Figure 10. Conceptual proposal for the 'Danube cultural promenade' in Komárno, by students Lívia Pires and Tanja Bozhinova, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.

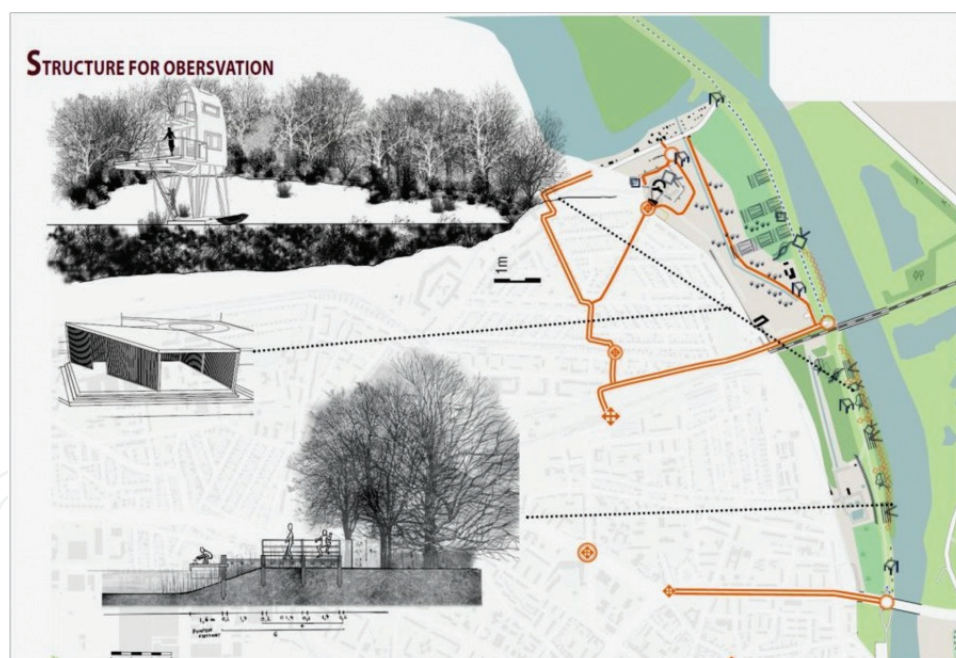


Figure 11. Landscape architectural proposal for the promenade and observation structures at the riverbank of Váh in Komárno by students Marie Cushing and Federica Petti, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.

places close to the water they designed broad terraces to access the water, walkways at the water edge, submersible board walks, or floating elements.

To preserve the genius loci of the industrial area and harbor, they incorporated the rails and the cranes as visual highlights of the promenade.

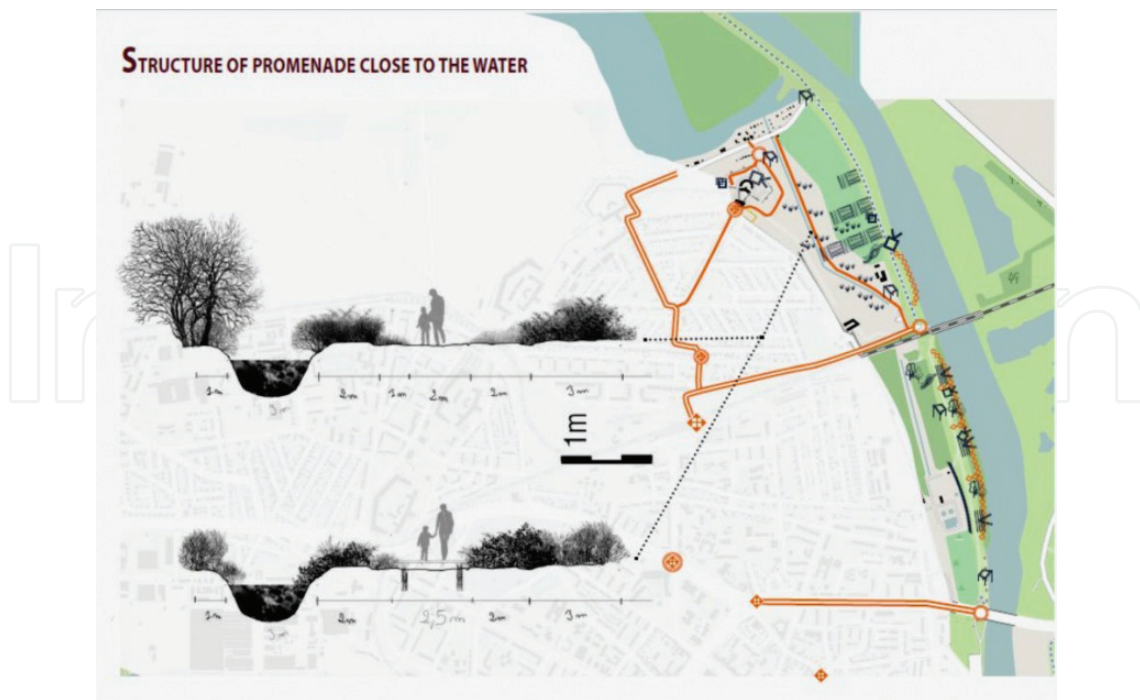


Figure 12. Landscape architectural proposal for the promenade at the riverbank of Váh in Komárno—Natural habitats close to the water, by students Marie Cushing and Federica Petti, 2017, supervisor Katarina Kristianova. Source: Archive of Institute of Urban Design and Planning, Centre for Landscape Architecture.

5. Conclusion

As noticed by Prominski et al. [18], the design of urban river landscapes as attractive locations and highly prized recreational environments must fulfill a broad range of requirements—flood control, open space design, and ecology are as a rule the three dominant themes. The design must be flexible and take into account the changing water levels, shifting seasons, erosion, and sedimentation, the river environment must be understood as a process.

As mentioned by Cengiz [19], with the well-planned restoration of urban rivers, multiple ecosystem services that have been lost or deteriorated can be recovered to some extent, and these restorations demonstrate the apparent benefits to human well-being such as health, economic value, life quality and contribution to regional renewal. Planning river management and urban development of waterfronts considering impacts on ecosystems can prevent or minimize the adverse effects, and appropriate mitigation methods can be determined to achieve the important and socially beneficial river functions [18].

Results obtained from the research and the design proposals made by students have shown the potential of the waterfronts in Komárno and Štúrovo for the development of the promenades, as viable, vibrant and popular urban places, and as greenways, offering recreation possibilities in the balance between nature and social life. The design process itself and its results, the various different design solutions for the riverbank promenades, became a way to acquire new knowledge on the possibilities to apply landscape architecture strategies of promenade development in small Danube cities. The results of research and the student proposals can serve the municipalities of

Komárno and Štúrovo to detect the values of riverbanks and to adopt new strategies to valorize their potential. The application of the landscape architectural concept of a promenade, as an inter-regional and interdisciplinary model for research, evaluation, and implementation, can be transferred also to other regions and small cities, respecting their site, natural and cultural specifics.

The multilateral aspects of the relationship between human settlements and water represent specific values for the urban structure related to water bodies [20, 21]. As the results of the research in Komárno and Štúrovo suggest, the landscape architectural strategies and the promenade concepts are able to rediscover the urban, socio-economic, recreational, ecological, cultural, historical and esthetic potential of urban riverfronts.

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