

## **CURRENT PROBLEMS OF CHANGING INTERNAL URBAN STRUCTURE**

**(Danube Waterfronts and their Public spaces; Novi Sad /Serbia/ in comparison to Bratislava /Slovakia/)**

**Petra Plachtinská**

*FACULTY OF ARCHITECTURE, Institute of Urban Design, Slovakia*

### **Abstract**

Most of the great cities in the world once depended on their rivers for trade, and communications, but industrial age has frequently left these places without a heart and the previous connection to water lost its importance. This paper will analyse the relationship between city and water. It will compare the present state of waterfronts in cities of Novi Sad (Serbia) and Bratislava (Slovakia), as the European regions that are significant by their hydrograph.

Through analyses, different criteria are being used: characteristics of present urban morphology, distribution of functional programs, social aspects, the relation to environment, historical identity and urban memory of space. The paper will critically address especially water edges (how the riversides of Danube are transformed by urban and architectural development today) and will try to develop theoretical framework for a redesign of public space on Danube waterfronts in Bratislava and Novi Sad.

**Keywords:** waterfront, urban structure, public space, Danube, Bratislava, Novi Sad.

## **ТЕКУЩИЕ ПРОБЛЕМЫ ИЗМЕНЕНИЯ ВНУТРЕННЕЙ ГОРОДСКОЙ СТРУКТУРЫ**

**(Береговые линии Дуная и их общественные места; Нови-Сад/Сербия/по сравнению с Братиславой / Словакия/)**

**П. Плачтинска**

*Факультет Архитектуры, Институт Городского Дизайна, Братислава, Словакия*

### **Аннотация**

В прошлом большинство больших городов, расположенных на берегах рек, осуществляли с их помощью торговлю и взаимосвязи, но в эпоху индустриализации реки потеряли свое важное значение. Статья анализирует отношения между городом и водой. В статье сравнивается нынешнее состояние береговых линий в городах Нови-Сад (Сербия) и Братиславе (Словакия), которые являются значимыми для гидрографии в европейском регионе.

Для анализа используются различные критерии: характеристика нынешней городской морфологии, распределение функциональных программ, социальные аспекты, отношение к окружающей среде, историческое своеобразие и память городского пространства. Статья критически рассмотрит водораздел (как сегодня прибрежные полосы Дуная трансформируют городское и архитектурное развитие) и попытается развить теоретические основы для реконструкции общественного пространства набережных Дуная в Братиславе и Нови-Саде.

**Ключевые слова:** береговая линия, городская структура, общественное место, Дунай, Братислава, Нови-Сад.

## INTRODUCTION

People have been moving towards towns and cities in great number for the past two centuries. While it's far from a new trend, there is as much uncertainty as there ever has been. Our roads are overcrowded, our cities are polluted, and more and more unsold land is being turned into sprawling housing and shopping developments. There are many factors that could change the future shape, urban structure and character of our towns. Some of them we can control and some not.

How will we live, work, shop or enjoy ourselves in 10, 20, 30 years from now? We don't know. That doesn't mean that we can't plan and design. What it does mean is that we need to plan flexible frameworks that can accommodate change.

In thinking about the future, we need to understand the past and the present. We need to know about physical characteristics of the places we are planning, including their landscape, waterways and ecology. We also need to know about the people who live there – how they live, how they work, how they move around the area and what they hope for in future.

### 1. AIM OF THE RESEARCH WORK

Most of the great cities in the world once depended on their rivers for purpose of trade, and communications, but industrial age has frequently left these places without a heart. At present, Slovakia, as well as Serbia, is in the process of dynamic changes, which influence our lives and our cities. These changes bring positive, but also negative impact on the cities. This current situation is a reason to make a specific research, to analyze it and to try to find a new solution or principles in planning process of river waterfronts. This paper will analyze the relationship between the city and the water. It will compare the present state of waterfronts in Novi Sad (Serbia) and Bratislava (Slovakia), as regions of Europe significant by their hydrograph.



Fig. 1. The signs of observed cities.

Through analyses, different criteria are being used: characteristics of present urban morphology, distribution of functional programs, social aspects, and the relation to environment, historical identity and urban memory of space.

The paper would critically address especially water's edges (how are riversides of Danube transformed by urban and architectural development today) and try to develop theoretical framework for redesign of public space on Danube waterfronts in Bratislava and Novi Sad, based on two considerations:

- 1) the main morphological characteristics in Bratislava and Novi Sad
- 2) the potential of waterfront urban design as an important part of development

## 2. CASE OF THE RESEARCH WORK

- The topic of waterfronts is very topical in present cities located close to the river waters.
- Exploitation for the current and future development of waterfronts in Novi Sad (Serbia) and Bratislava (Slovakia), as well as successive development for the rest of the cities located close to the Danube River.

## 3. MAIN OBJECTIVES AND EXPECTED RESULTS

- to evaluate importance of the history and facts, that influenced shape and changes of the Danube waterfronts
- to map the current situation of waterfronts in Bratislava and Novi Sad and compare these cities according the selected criteria
- to get an impression of similarity of the waterfront problems in these two cities
- to give a suggestion for the flexible model of physical waterfront structures for European city, so that the cities are functional to their citizens and allow all changes with places reorganization (land use)
- to define the functions that will be preferred at the Danube walking paths in present time

## 4. THE CONNECTION BETWEEN THE CITIES AND ITS WATERFRONTS

Waterfront is natural phenomenon, which has always been attractive to people of all cultural epochs. It was a cradle of many cultures and civilizations: from Nile to Tiber, from Gang to Thames. Cities and water are an inherent spatial, economic and cultural, as well as historic entity. Water is the heart of their evolution. River was the only travel communication in past and therefore a great resource of life. It was a place where cities were arising, a place where many rituals and ceremonies were held. Water flows and surfaces determinate development of many cities which became known by their waterfront: Hamburg, Rotterdam, Sydney, Hong Kong, New York...

Development of nautical technology and industry era had affect on urban transformation of river waterfront and seaside. Water transport and harbours were also modified and for this reason many storages and industry halls were left behind to be reconstructed and given new function. Harbours are changing into exhibition places, cultural centres, and art studios. Pedestrian zones became an important part in socialization of spaces. Millennium Bridge (Foster Partners) integrated the old core of London and St. Paul cathedral with the Tate Modern museum (Herzog and de Meuron).

*Brief preview of waterfronts  
historical development in  
European city:*

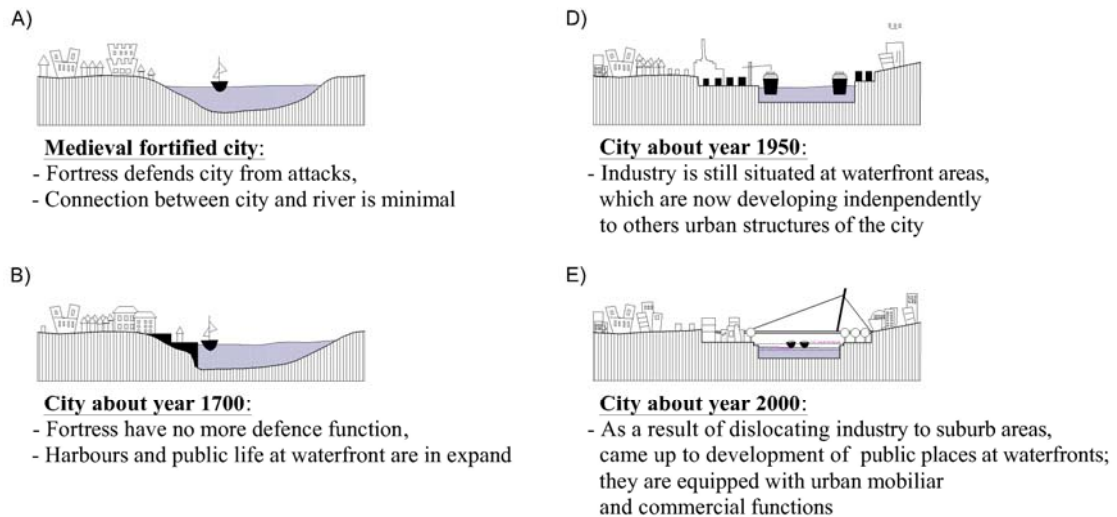


Fig. 2. Brief preview of waterfronts' historical development in European city.

Culture and religion of the East developed special relation with nature, especially with water. In Chinese and Japanese gardens water is an essential element. Japanese are giving great importance to waterfronts, as well. In spite of that, their cities are uncontrolled places of "hi-tech" architecture with big amount of skyscrapers which are result of profitable trade policies. The waterfronts in Kyoto, Osaka and in other cities are allocating to another more human side of these cities. Waterfront in Kyoto is a public place with relatively low buildings, where water area and built area are one homogeneous entity. Waterfront in Osaka is enriched with cultural buildings, public and social places and places for various festivals. This is the reason why these waterfronts became an important social spot of the city, and social magnet as well.

In spite of the fact that thoughts and opinions of users of waterfront places are very important, we cannot ignore importance of actual experiences of other cities, especially European, which can be good examples for resolving this too complex problem. Even if there are many excellent examples of cities that have already realized revitalisation of their waterfronts and thus created their own identity (Paris, London, Boston...), notable changes in accepting importance of city waterfronts are being implemented only in the last decades of the 20th century. The rivers are no more only transport corridors and backgrounds of cities, but their importance is more and more confirmed in spatial and urban plans all over the world. There is a big sought for new and adequate exploitation of waterfronts as they suppose to assure higher level of lifestyle of citizens and help to create new image of the city. The importance of this topic is nowadays confirmed by large amount of books written to this subject, as well as many international associations dealing with the subject matter of waterfronts and their revitalization. Expenses, as well as large size of areas that are demanding new waterfront zones tells about importance of the topic in urban design and about importance of shaping waterfronts in cities around the world.

## 5. NOVI SAD, CHARACTERISTICS OF THE TOWN AND REGION

Novi Sad is the capital of the northern Serbian province of Vojvodina, and the administrative centre of the South Bačka District.

Novi Sad is Serbia's second-largest city, after Belgrade. Its population is about 350 000 and encompasses the surface of 702, 7 km<sup>2</sup>. The city is located on the border of the Bačka and Srymia regions. Novi Sad lies on the left bank of the river Danube, namely on the 1255th km of its flow and on the mouth of one of the Danube-Tisa-Danube canals and its estuary into the river Danube. Novi Sad is located between the 19th and 20th degree of the east longitude and 45th and 46th degree of the north latitude at the altitude of 72 to 80 m. The old city, part of Novi Sad, was developing by centuries in close connection with its waterfront, and was pointed on Danube itself.

Since Novi Sad was founded in 1694, it became the centre of Serbian culture and earned its nickname Serbian Athens. In history, almost every Serbian novelist, poet, jurist, and publicist at the end of 19th century and at the beginning of 20th century lived or worked in Novi Sad for some time of his career.

During the history, Novi Sad was devastated and degraded several times.

Sadly, Novi Sad last came to public attention during the war in Kosovo, when the bridges spanning the Danube in and around the city were bombed and destroyed. Novi Sad was left without all of its three Danube bridges, communications, water, and electricity. Residential areas were cluster bombed several times while its oil refinery was bombarded daily, causing severe pollution and widespread ecological damage. Since May 2002 cruise liners are again able to sail past the city and onwards to the Danube Delta. And since 2005 reconstruction work are being completed.

Nevertheless, Novi Sad is a large industrial and financial centre of the Serbian economy and it is also one of the biggest construction sites in the region.

The city has a couple museums and many galleries, public and privately owned, located all over the Novi Sad. Also, Novi Sad is one of the Serbian most important centres of higher education and research, with four universities and numerous professional, technical, and private colleges and research institutes.

The number of tourists started to increase since the year 2000 when Serbia started to open to Western Europe and the United States. Every year, at the beginning of July, during the annual EXIT music festival by the Danube, the city is full of young people from all around Europe.

The most recognized structure in Novi Sad is the Petrovaradin fortress, which dominates the city and provides scenic views of the city. The mighty fortress of Petrovaradin is one of the largest fortifications in Europe. Besides the fortress, there is also historic neighbourhood of Stari Grad (Old Town), with many monuments, museums, cafes, restaurants and shops. There is also a National Park of Fruška Gora nearby, approx. 20 km from the city centre.

Novi Sad is a hospitable and open-hearted city, kind to all of its visitors, built by measure of a man. It is a city one gets to know and love easily, but also a place hard to forget and leave forever.

## **6. BRATISLAVA, CHARACTERISTICS OF THE TOWN AND REGION**

Bratislava, the capital of the Slovak Republic and the country's largest city, is an administrative, economic, industrial and cultural centre of the country that is situated in the centre of Europe, in the south-western part of Slovakia. Bratislava has 426 000 inhabitants with the density 1157 people per km<sup>2</sup>. The total area of the city is 367, 6 km<sup>2</sup>.

Bratislava has a long and famous history dating back 2000 years. Despite of this, Bratislava is one of the youngest capitals in Europe. From its beginnings and throughout its historical development, it has played an important role in the spheres of economic, political, administrative, cultural, national life, and in social transformations as well as in decisive historical events.

The location of Bratislava in the European context has a great importance. The city lies close to the border with Austria, Hungary and Czech Republic. The city spans on both banks of the second longest river in Europe, the river Danube. The Slovak Danube region boasts not only a unique natural environment with many rare animals, plants, and historic boat-mills, but also the largest subterranean fresh water reserves in central Europe. Danube connects the city with other countries lying along the Danube.

Bratislava's location on the banks of the River Danube and at the crossroads of ancient trading routes right at the heart of Europe predestined it to become a meeting point of various cultures. It was the home of the Celts, the Romans, and the Slavs...

The strategic position had already in the past secured for Bratislava a significant post among other cities.

The rich mix of cultures and nations not only left its mark on the language spoken here, but also in the customs, cuisine and lifestyle. The people of Bratislava enjoy promenading through the streets of the city centre, taking time out for a coffee in any of the many cafes.

Nowadays, Bratislava is experiencing a boom once more. Buildings are popping up, deals being made, people studying, and everything is on the move. Experts regard it as one of the most dynamically developing and most prospective regions in Europe. It welcomes tourists, business people, and investors, who are attracted to this blooming city and its lively atmosphere. There are many cities in Europe that can boast their own special unique charm, and Bratislava is definitely one of them.

## 7. PRESENT SITUATION

### a. PRESENT SITUATION OF THE WATERFRONTS IN BRATISLAVA AND NOVI SAD

When compared by the size, Danube is the second largest river in Europe (2888km), right after Volga. It originates in the Black Forest in Germany as two much smaller rivers which soon join and pass through several Central and Eastern European capitals, before emptying into the Black Sea.



Fig. 3. Danube and cities where this river flows through.

Waterfront of Danube is linear path, which we can understand as a region of linear entity, long a few hundred or even thousand kilometres, from it's origins to the delta. Also, this relative indeterminate spatial concept can be considered as part of this big area. Because of this, it's very important to underline, that this research work will analyze only Danube waterfronts in parts, where this river flows across the two cities: Novi Sad and Bratislava.

Danube cuts area of Novi Sad with its middle flow. Its length in Serbia is 587km. In area of Novi Sad path of Danube is about 13,5km. On the other side, Danube length in Slovakia is 172 km. By many historians and writers, Danube is a very important part of the history of both of these cities.

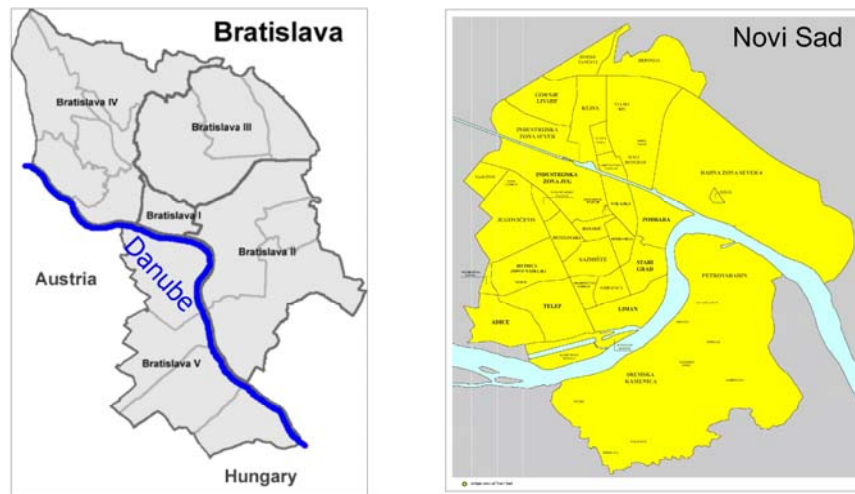


Fig. 4. Urban morphology of cities Bratislava and Novi Sad.

It's not easy to shortly present the current situation at Danube waterfronts of Bratislava and Novi Sad, because of the fact, that through ages, many builders and styles left their marks at this land. It's also important, that development of these parts of cities was not continuous and the same part of area was not always upgraded. This has resulted in linear but non consistent entity in meaning of connection to the river, architecture, traffic solutions, landscape, etc. Nevertheless, heterogeneousness and natural surrounding are still dominant factors in this area and promenade, which is located close to the river, groups various architectural forms with different functions into one coherent entity. On the other side, there are also negative consequences of these parts of cities. Besides very strong winds that change their direction during the day, season or year, waterfronts have also increased insolation, which is a result of sun reflection from the water. Very important problem for both these cities is high density of traffic and roads and their proximity to walking zones. Humidity, very frequent fogs and flooding threats are also the basic problems at waterfronts. Another very important fact is utilization of the spaces where opened and closed walking areas have a special meaning in the social life of a city.

In spite of all that, spotted areas are very attractive and important parts of cities Bratislava and Novi Sad and play a great role in the image of these two European cities.

#### **b. ANALYSIS OF INQUIRY**

A dialog with citizens of Novi Sad and citizens of Bratislava has been chosen as a method of gathering information on people's opinion. Its aim was to better understand how people perceive the waterfront areas, what they like the most on Danube waterfronts and what they expect from these places in the future. The conversations were made by the already well known method of Kevin Lynch, but this method was only partially applied. The difference is that Kevin Lynch made analysis of the whole city area, while in this paper was analyzed only one exact part of the city, the Danube waterfront.

Inquiry was informative and consisted of 15 questions. 20+20 persons gave their own answers. Our aim was to find different people with respect to their age, education or employment. (It should be mentioned that about  $\frac{1}{4}$  of the enquired people live close to the analyzed area, at distance approximately 15min walk. As a result, they were expected to be interested in the discussed area.) So, the aim was to create a group of people, who would present a more or less

common opinion of citizens of Novi Sad or citizens of Bratislava. The relatively small number of citizens, who participated in the inquiry, gave us only a vague image and it certainly is not the real public opinion. However, their answers to our questions provide very valuable information for this research work.

All the individual answers were analyzed word by word. The frequency of some used words was important. As a result, the received material can be considered as 'public meaning'. It pointed out importance of waterfronts in Bratislava and Novi Sad as well as their negative aspects. Even if there are variations in answers, this analysis refers to common facts that resulted from these conversations.

We have found out that people come to Danube waterfronts only few time a month because of the absence of time and because the waterfronts are not attractive. They come to river walking or by car, and just a couple of them by bicycles. They come here for walk or for recreation, because they like the proximity of the river, green places, views or they come to restaurants. All of them agree that the analyzed area is neglected and dirty and that they do not like the busy traffic on the road, which is nearby the pedestrian path. They also highlighted bad access to the pedestrian zones and their deficient maintenance. They also said that there are sufficient green places, but also that they are not cultivated. The citizens of Novi Sad evaluated the Exit summer festival, which is held every year at the waterfront of this city, as an extremely positive happening. The citizens of Bratislava and Novi Sad considered as a basic point separation of the pedestrian path from the cycling path. They accent the importance of the open access to every part of the river and river beach. They also accent absence of architectural programs, which would invite more visitors to the riverside. They would like to have more sport fields, parks, tourist and cultural objects and activities by the river.

Finally, about 80% of them said that the waterfront of Danube is one of the three most beautiful places in their town. They see waterfronts as a great potential for the city. This confirms their urgent revitalization and their additional development.

## **8. THE NEED FOR COMPARISON**

The comparison was the main task in this work. We tried to use it as much as possible - comparing Bratislava with Novi Sad, comparing their waterfronts, comparing the structural elements of the morphological city and making often the temporal comparisons too.

The main aims of the comparison are:

1. to find out similarity in the urban morphology and water flows between both Danube cities
2. to value the most important characteristics of the existing status of these two waterfronts (landscape, urban and architectural elements, program)
3. to compare waterfronts in detail with their urban equipment, also the history of urban morphology and their public spaces.

## **9. DIRECTIVES TO FOLLOW-UP ANALYSES**

In accordance with the above listed characteristics of the analyzed areas, this research work should help us to specify the shape and usability of waterfronts in the future. Therefore, the follow-up analyses should concentrate at the following aspects:

- on the program and content level,

where we are suggesting transformation of existing condition, forming important programs and defining possibilities of using public spaces

- on the spatial and shaping level,



where we are defining public places with carefulness and accent on natural and city forming elements

- on the communication level

where we form good transport solution and great visual contact

## CONCLUSION

*... The best way to predict the future is to help to invent it!*

The present situation of waterfronts of both cities is a result of their history and influence during their development. Revitalization of places should start with evaluation of the existing conditions and factors that influenced them. Many destructive impacts and events in previous periods affected Bratislava and left the traits of lassitude in active exploration of this area. On the other hand, waterfronts in Novi Sad passed the war destruction and were not revitalised to satisfaction of citizens' expectations, due to lack of resources. But, in both cities, these zones became central and very important for everyday life of their citizens, so there is an intensive need for their future redesign and revitalisation.

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**DATA ABOUT THE AUTHOR****Petra Plachtinská**

Dipl. Ing., architect, Faculty of architecture, Institute of Urban Design, SUT in Bratislava, Slovak Republic

<http://www.fa.stuba.sk/>

**ДААННЫЕ ОБ АВТОРЕ****П. Плачтинска**

Дипл. инженер, архитектор, факультет Архитектуры, Институт Городского Дизайна, Братислава, Словакия

<http://www.fa.stuba.sk/>