Rethinking and Transforming Old Belgrade’s Riverfront

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RETHINKING AND TRANSFORMING OLD BELGRADE’S RIVERFRONT

BELGRADE - SERBIA

MASTER THESIS

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The design project shown in my Landscape Architecture Masters thesis is a complete reflection of the research process done in the first six months. The research process was focused on site analysis, problematic analysis, case study analysis and site specificity; therefore after this initial stage the goal was to start proposing solutions to the initial problematic that were found in the research stage. In the design stage it was very useful to keep going back to the research and thus be able to keep in mind the real issues that needed to be addressed in the intervention. But it was also very useful to begin the design process quite early, so design and research functioned not as separate but as a unity. This was very important since the projects born from the site in itself, and therefore understanding the context in all its complex forms was essential to guarantee a positive outcome.

The city of Belgrade is located in a privileged place; situated in the confluence of the Danube and Sava Rivers, this unique geographical landscape is an essential aspect of the city. However, because of historical and political reasons, the city seemed to grow apart from these water bodies and ended up spatially neglecting them. A present day Belgrade shows a fragmented relationship between the urban tissue and the rivers; instead of embracing them, the riverbanks are undeveloped and hold no significant function for the cities inhabitants. This particular situation is more evidenced in Old Belgrade, where a main vehicular road, train tracks and old abandoned industry act as a physical barrier that spatially separates the inhabited city from the river. The Mayornity and the urban planers of Belgrade are aware of this situation and have manifested interest in developing many of these abandoned areas in order to attract investment and bring people closer to the water. Nonetheless, it is evident that the city needs a bigger urban landscape project that bring coherence to the urban matrix rather than individual architectonic projects.
All these problematic situations can be seen as opportunities to rediscover Belgrade’s urban waterfronts and thus aim for a design project that can provide a new identity and restore balance between the city and the surrounding natural elements. Nowadays it seems very clear that river borders, (as well as ocean borders), should belong to the city and its people and be in harmony with nature rather than brownfield areas or private industries. Having all this in mind, how can the fragmented spatial situation between the rivers and the city be coherently rethought, sowed together and structured without damaging historical sites and disrupting Belgrade’s intrinsic identity and urban flows?

The design project aims to become a “carpet” that while improving the accessibility to the river, harmoniously connects the leftover space to the existing urban tissue. To achieve this it is important to understand the historical, cultural, political and social processes that have occurred in the city and their influence on the physical space. In this order of ideas, we can understand what this area was, what it is and what it can become. It is also important to learn from the typology of riverbanks in itself; from classic examples to contemporary interpretations in urban contexts. Therefore I have selected a couple of projects that, seen as a case study, can aid in the understanding of spatial strategies that include flooding considerations, recreational activities, continuity of green networks, public and private transportation etc. Also the projects looks at place making analysis; discovering the identity and essence of Belgrade, understanding its spatial organization by mapping, modeling and designing.
Fascination - The potential of urban riverbanks

BEFORE - riverbanks as industrial/brownfield areas

Transforming old/dysfunctional/industrial/abandoned and underused zones into quality locations

rediscovering and reinventing the urban waterfronts of a city

Belgrade shows a critical spatial fragmentation between city and river(s), providing a unique opportunity to rethink and re-structure its urban landscapes

NOW - riverbanks as essential public spaces for the people
THE CITY AND THE RIVERS
THE TWO CITIES - THE TWO RIVERS - THE TWO LANDSCAPES
The topography and the rivers of Belgrade clearly influenced the way the city grew. A high mountain range meets the rivers and is protected from the high water levels. It is a spectacular place where magnificent views are observed.
MEDIEVAL GRID
The city of Belgrade was born in the confluence. Being the highest point in the topography it became a strategic position for the first settlements. Here the fortification grew and it was protected from flooding’s and could defend the city from invasion attacks.

ROMAN GRID
In roman times a *cardus* and *decumanus* grid was installed in the city. The most logical position to place this grid was in the higher part of the city, behind the fortification for protection and topographical reasons. This situation started an attitude for the city to grow inland rather than towards the water.
TURKISH GRID
In the XV century after the Turkish conquest, the city’s grid changed and began to adapt more to the topography as opposed to the roman grid. Due to the high levels of the Danube River, the city began growing closer to the Sava in the steep mountain skirts.

FRENCH - AUSTRIAN GRID
In more modern times, the city adapted urban ideas of boulevards and axis that would lay the foundations for the city to grow until present day. Still this urban plan neglected the proximity to the river and left it for industry and traffic; the BACKYARD.
FLOODING HAZARD
The flooding hazard comes mainly from the Danube River and can flood inland up to 3 to 4 meters. The city of Belgrade did some initial protection systems and now the flooding is controlled.

GREEN NETWORKS
Most of the natural areas are in third and second Belgrade. Large portions of wild land that yield to the dynamics of the river. In old Belgrade the Fortress has now become the most emblematic urban park and is an open-air museum of the city’s history. This conglomerate area is divided into several parks and a zoo.
ROADS AND NODES
The train track also interrupts the road network, isolating the inhabited city from the river. Important nodes come together where the roads meet but still no way to access the river.

INDUSTRIAL AREAS
How can the fragmented spatial situation between the rivers and the city be coherently rethought, transformed, sowed together and structured without damaging historical sites and disrupting Belgrade’s intrinsic identity and urban flows?
HOW CAN THE FRAGMENTED SPATIAL SITUATION BETWEEN THE RIVERS AND THE CITY BE COHERENTLY RETHOUGHT, TRANSFORMED, SOWED TOGETHER AND STRUCTURED WITHOUT DAMAGING HISTORICAL SITES AND DISRUPTING BELGRADE’S INTRINSIC IDENTITY AND URBAN FLOWS?

SUB QUESTIONS

WHAT NEEDS TO CHANGE IN ORDER TO ACHIEVE THIS? WHAT NEEDS TO REMAIN THE SAME? WHAT PRINCIPLES CAN BE USED TO GUARANTEE A BETTER USE OF THE EXISTING SPACE?
It is extremely important to understand the city and its "borders" to propose methods of reaching the river. In recent times the city is about to burst and overcome its barriers and finally introduce itself to the rivers. These empty spaces will be filled with new uses that include housing, working spaces and recreational areas. That way the city will control the sprawl and reinvent itself in abandoned areas that have a very big potential. The design strategy is to also include a new urban tissue that extends the urban squares to the river border.

The railway area is a forbidden area for Belgrade and its citizens. It is a cargo route that barely runs anymore and therefore can be seen as an abandoned area. The design strategy is to maintain a language of industrial movement but adding new elements that facilitate its new use as recreational spaces for people rather than heavy traffic. The intention is also to introduce a new tram line and vehicular roads that cross the crack to make the area more accessible.

Each water border has a different condition and spatial situation; therefore it must be understood and treated in a specific way. The main design strategy is to permit the water fluctuations permitting the river to move more or less freely and at the same time create dynamic and useful public spaces and at the same time protect the city from the dangers of increasing water levels. At the same time bringing the water to the city will create a more direct connection and will ensure new and interesting activities for the citizens.
NEW VEHICULAR ROADS
The strategy is to continue the main roads towards the river and therefore generate continuity between the city and the future development areas.

NEW WATER
The project suggests as a strategy that not only should the city go to the river but also bring the river into the city. A new harbor for the city of Belgrade and a natural river lake that shift inland could create a stronger relationship between the urban and natural areas.
THE LINEAR PARK
The position behind the design is to transform the derelict train area and turn it into an active green urban park that becomes the connector between city and river. This green zipper would become the threshold between old and new, urban and water.

LARGER SCALE ECOLOGICAL CORRIDOR
This linear park would become part of a bigger green network that includes the War Island, the Kalemegdan Fortress and would continue freely along the river border of the Danube. This corridor would be very important for native flora and fauna that inhabit the area.
TRAM EXTENTION
The tramline is Belgrade’s main public transportation network. It is important to extend it and therefore facilitate rapid public transportation. The proposed tramline joins and adds to the existing one.

NEW URBAN AREAS
Part of the problem that the city of Belgrade has is that there are no urban developments along the Danube area; therefore it is crucial to extend the urban grid and activate this area of the city.
MASTERPLAN DIAGRAM
The Kalamegdan fortress area and park becomes a crucial node in the Diagram, for all the influences are born from this point highlighting the cultural, urban and historical importance of this site for the city.
This area, in front of the Sava River, is one of the oldest settlements of Old Belgrade. It is a lively district with high quality architectonic buildings and privileged views of the city. During the night time it becomes an active place for dining and dancing. It is one of the few areas of old Belgrade that touches the water giving new identity to the place.
PROBLEMATIC ANALYSIS
AREA 1 - KARADORDEVA STREET AND SAVA MALA NEIGHBORHOOD

- Mediocre Solution
- Irregular Planting
- Lack of Sidewalk
- Degraded Architectonical Elements
- Physical boundary
- “Industrial” Finishing
- View Blocking
- Rough Finishing
The Beton Hala is a train tunnel and old docks that have been transformed into restaurants and shops. Also a recent competition to create a new urban waterfront towards the Sava River was made to find new ways to connect the city to the river. It is an active place where old industrial buildings have been renewed to adapt to new dynamics and uses of space.
PROBLEMATIC ANALYSIS
AREA 2 - BETON HALA

Disorganized Parking

Industrial Border Character

View Blocking

Mediocre Solutions

Irregular Planting

Physical Boundary
The Kalamegdan Fortress is Belgrade’s biggest and most important historical and cultural jewel. It holds many relics of different historical eras and is an active urban park used by Belgrade’s citizens. It has changed uses over time but still holds an important place in the history of the city.
AREA 3 - Kalamegdan Fortress

- No Pedestrian Paths
- Underused Heritage
- Unclear Routing
- Disorganized Parking
- Solitary Structures
- Interrupted Connections
- Physical Boundary
- Physical Boundary
This active sports center is also one of Belgrade’s emblems. Nevertheless it is disconnected from the city and ironically it is located in the exact position where Old Belgrade meets the Danube River. Its isolation is owed mainly to the train track and therefore its accessibility is quite complicated.
PROBLEMATIC ANALYSIS

AREA 4 - Milan Gale Sports center

Disorganized Parking  Physical Boundary  Vast Space - only for flood protection  Few Activities

Poor Urban Furniture  Unfriendly Connections  Mediocre Solutions  Undefined Green Space
New developments will come to the city of Belgrade giving a new face to the city and introducing the Danube River. This area will almost double the built area bringing a huge amount of people to this area in the city. For this site not to be considered as an island it needs a clear connection to the rest of the city so the positive changes and influences expand everywhere.
Generate new spaces and activities that attract people to the Rivers

Work with existing heritage structures that provide a unique quality to the site

Increase and organize green networks

Create physical and visual connections between the rivers

Eliminate physical barriers that interrupt flows

Create more logical pedestrian connections

Improve public transportation routes and connections

Improve bike routes and connections

Creating a Corner in the Confluence of the two Rivers

Sowing the existing Urban fabric with the Rivers

Improving the Physical and Visual edge between city and Rivers

Return public space to the people
Spatial Relationship with the Edge

Hafencity, Hamburg, Germany - Miralles Tagliabue EMBT

While up until now boats have been the dominating feature here, as part of the HafenCity project a new and dynamic development aimed at people is underway.

A variable landscape shall be created adapted for visitors and which shall, in part, acquire its energy and atmosphere from the tides bringing people closer to the water.

This area has changed continuously throughout its history, in keeping with various harbor and industrial uses. The alternating ebb and high tides characterize the typical appearance of the port basin.

As protection against storm surges, new mixed used construction surfaces for central inner city functions such as residence, work, commerce, culture, and leisure will be elevated by approx three meters in the course of the development.

The new profile of the land has been studied thinking of human needs, so that people can feel relaxed here. The new urban planning brings the public in a fluid movement from the new housing blocks down to the water, making for everyone's enjoyment a new artificial landscape that is inhabited by natural elements: water and plants. People can find water and trees on every level of the public space.

The western end of this new part of town is blessed with a variety of urban open spaces: squares, large and small, promenades running beside and onto the water, as well as two leafy parks. Large parts of the area were landscaped by Spanish architects and most of them are already finished.

Infrastructure and connectivity - a sequence of public spaces

Hafencity, Hamburg, Germany - Miralles Tagliabue EMBT

The importance on public space along the riverbank.
Spatial Relationship with the Edge

- Sowing the existing urban fabric with the river.
- Improving the visual and physical edge between the city and the river.
- Returning public space to the people rather than to industry or transportation.
- Improving the connectivity between people, boats and river.

Marco Polo Terraces - Hafencity, Hamburg, Germany

- Street level (+7.50): The pedestrian and playing places are provided at street level.
- Low promenade level (+4.50): This level is mainly for pedestrians, host small cafes and permit a relax promenade overlooking the water.
- Water level (+0.00)
- A big floating platform provides access to small boats, sport boats and ferryboats, as well as leisure areas.

Green Networks

- Increasing and organizing green networks.
- Generating and creating new spaces that attract people to the river.

Marco Polo Terraces - Hafencity, Hamburg, Germany

- Liquidambar in higher levels
- Willow trees that stand occasional flooding
- Swamp Cypress tree, stands heavy flooding
- Green islands that soften the urban feeling

CASE STUDIES
### Flood Defence System

- **Marco Polo Terraces - Hafencity, Hamburg, Germany**
  - Old relationship between city and river; flooding situation
  - New relationship between city and river; flooding situation

- **Street level that is prevented from flooding.**
- **4.50m - terrace that can handle occasional flooding. The vegetation and furniture can handle being underwater.**
- **Volatile Water level; level changes drastically depending on the season.**

### Unique Design Strategies

- **Magellan Terraces - Hafencity, Hamburg, Germany**
  - Space designed to host different activities
  - Pavement design brings unique quality to the space
  - Stairs are also urban furniture
  - Furniture design brings unique quality to the space
  - Creating new urban marinas

- **Increasing and organizing green networks.**

- **Sewing the existent urban fabric with the river.**
Spatial Relationship with the Edge

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The western end of this new part of town is blessed with a variety of urban open spaces: squares, large and small, promenades running beside and onto the water, as well as two leafy parks. Large parts of the area were landscaped by Spanish architects and most of them are already finished.
How to descend the wall?
How to work in the intermediate space?
How to bring the river to the city and the city to the river?
How to maximize and highlight heritage structures?
When you enter the Park, the expectation of the Fortress gets bigger; it draws the visitors' attention and is clearly the dominating element of the place.
Looking back and retracing your steps is a constant while routing. At this point it is the last moment when you look back and feel the presence of the city behind you. You begin to enter a different spatial domain where the pace changes.
PEDESTRIAN ROUTING SEQUENCE
KNEZ MIHALIOVA STREET TO THE RIVER

Entering the Kalamegdan Fortress is an experience in itself. It is a labyrinth like experience, where the routing is free and one can wander around. The visitor is constantly walking through a sequence of open and closed spaces.
When you reach the fortress border THE RIVERS APPEAR! You get a clear notion on the three Belgrade's and the magnificent view is overwhelming. It is one of the most popular sites in the city.
Because of the steep fall in the terrain, this area becomes an urban balcony where the best views of the natural landscape are, (specially at sunset). Here the Sava River and the Danube River are present.
At this moment one has the feeling the experiences is over, that the river is something down there not to be experienced but just observed. The routing becomes less clear and not attractive.
Once one has descended, the river disappears again and the presence of the fortress is evident again. It is an enclosed space with heritage structures where the ancient city used to be.
The sequence of gates and open/closed spaces continue until the end. To access the river one must pass this last gate and finally be at water level. This area is now a complete backyard and parking lot.
In Old Belgrade, the Sava river is infinitely more present than the Danube. Due to the steepness of the terrain, sometimes the river appears through small urban cracks, though still public space is not entirely welcoming to descend to the water.
This pedestrian street is perhaps one of the most beloved spots in Belgrade. Here the view towards the Sava river and over to New Belgrade is impressive. It is an active spot where people gather to enjoy the view or have a conversation. Either way the river seems as something unaccessible, like a static landscape only to be viewed.
Historical stair ways to the river, now banned, present a perfect opportunity to be restored and used as important access points in between river and city.
INITIAL SKETCHES
The chosen focus area for the design is a very complex and dynamic one. It is the point where the Sava River finishes and joins the Danube River creating a confluence point filled with movement. It is also the spot where the city of Belgrade originated and therefore it is a site rich with history and layers of past structures.

Due to flooding circumstances, previous war attacks and heavy infrastructure, the area became neglected and therefore it lost the significance it once had. The main design strategy is to return this space to the urban grid and by generating active spaces that respond to ecological problematic as well as urban ones.
DETAILED AREA
FLOODING
SAVA RIVER AND CONFLUENCE

LOW WATER LEVEL
DETAILED AREA
FLOODING
SAVA RIVER AND CONFLUENCE

MEDIUM FLOODING LEVEL
DETAILED AREA
FLOODING
SAVA RIVER AND CONFLUENCE

HIGH FLOODING LEVEL
DETAILED AREA CONNECTIVITY AND FLOWS

VEHICULAR ROAD
DETAILED AREA CONNECTIVITY AND FLOWS

FROM THE CITY TO THE RIVER
DETAILED AREA CONNECTIVITY AND FLOWS

FROM THE CITY TO THE RIVER
THE SAVA BORDER

The Sava River promenade is currently very narrow because of the train. Once it is removed, the space completely changes and the old walls appear as the main facade of the city. They also serve as flooding protection in case of very high water levels. Two different pedestrian levels are proposed that change with the dynamics of the river.
THE CONFLUENCE TERRACES

The Sava River promenade is currently very narrow because of the train. Once it is removed, the space completely changes and the old walls appear as the main facade of the city. They also serve as flooding protection in case of very high water levels. Two different pedestrian levels are proposed that change with the dynamics of the river.
THE CONFLUENCE TERRACES
THE WATER PROMENADE

This promenade is perhaps the strongest and most symbolic element of the park. It visually and physically connects the Danube River to the city and opens some framed views filled with color and reflections. Apart from being a connector it is also the beginning, (or end) of the linear park.
THE BEACH STAIRED TERRACES

These terraces are conceived as urban stairs that descend to the confluence beach. The river currents are completely present leaving their sediments and allowing the people to interact and witness the constant changes of a natural river border.

- Water cascade axis
- Grass and mulch
- Concrete floor with iron rod divisions
- River sand and sediments
THE DANUBE BORDER

The Danube river has a faster current and higher tides than the Sava river; therefore the design contemplates a stronger border but one that still changes according to the dynamics of the river. It is a hard soft border that allows wild vegetation to grow but does not interrupt the docking of ships and flow of the river.
THE NATIONAL PROMENADE

This pedestrian promenade is the main axis that joins the city and the rivers. It is the principal element that organizes the park and distributes the areas into hierarchies. This line has a strong character and symbolism and brings coherence to the project and its context.
Historically this area used to contain water; to remember this situation the design contemplates a monumental space that commemorates the importance of the rivers for the city of Belgrade. It also imitates the natural dynamics of the river and becomes a changing urban space for the city.
THE LINEAR PARK

The linear park is thought of as a space of reclamation. Where it is now a space nearly abandoned and forbidden for the people, it would become an active urban green space; a zipper that connects instead of dividing. The identity of the place is very much inspired by the existing industrial feeling. Therefore the train tracks remain but are slightly transformed by the adding of a new layer that is superimposed to create a more dynamic urban landscape. People are free to move in different ways and enjoy the park in different rhythms, materials and vegetation.
THE ORCHARD

The orchard, like the linear park, is also seen as a connector. In this case, the connection is between the upper fortress and the lower area. As of the moment, there is no interesting or clear link that connects these two areas, and therefore the experience towards the water ends. The design proposal is to create an orchard of plum trees that attracts the visitor to descend, (or climb), and therefore the steep mountain hill is no longer a defense border, but an active natural public space.