Archipelago

a Landscape of social spatial opportunities.
In case of Petrzalka, South of Bratislava, Slovakia.
Archipelago
Landscape of opportunities
In case of Petrzalska, Bratislava, Slovakia.
MSc Thesis

Leela Leelathipkul
Mobile: +31617059243
leela.leelathipkul@gmail.com

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Mentor team
TU Delft, Faculty of Architecture, Department of Urbanism,
Chair of Landscape Architecture
Van der Velde, J.R.T.
J.R.T.vanderVelde@tudelft.nl

TU Delft, Faculty of Architecture, Department of Urbanism,
Chair of Urban Compositions
Luisa Calabrese, Dr. ir. L.M.
L.M.Calabrese@tudelft.nl

External Examiner
TU Delft, Faculty of Architecture, Department of Urbanism,
Chair of Environmental Design
Egbert Stolk
E.H.Stolk@tudelft.nl

In collaboration with
Faculty of Architecture, Delft University of Technology
MSc Architecture, Urbanism and Building Sciences
MSc track Landscape Architecture

Graduation studio: Flowscapes.
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REFERENCE
In this contemporary society, we are living with high self-awareness of Individualism. On the other end, we are the creature of pluralism society, we are obliged to contribute to the society. Therefore the collectivism idea is spreading around the globe. With these cultural dimensions, what can be the link towards landscape design?

In the post war residential area, building blocks are built repetitively. These duplicated structures give monotone perception to the area. Most of them are in need of structure’s reconsideration. Some of them were proposed to demolish or adjust the look of the blocks. However, another aspect that can be used is space arrangement – Landscape design.

The landscape in urban space should be the spatial arrangement of opportunities. The landscape that gives the sense of specific community and creates collectivism related to its context. In this research design project, I would like to explore these social dimensions toward landscape in case of Petrzalka, Bratislava, Slovakia in order to search for a Landscape of social spatial opportunities.
Introduction

1. Graduation Studio : Flowscapes
This graduation project has taken place in Flowscapes studio in master of Landscape Architecture at Delft University of Technology. Being part of Technical university, the academic approach forward technical aspect at the same time it also concerns social aspects, functional aspects, ecology, infrastructure and aesthetics. Therefore, structure of this thesis is the combination of essential and integral part between physical landscape and social spatial aspects.

1.1 Assignment
Thesis assignment is chosen from ten defined project along Rhine-Danube basin. The Rhine-Main-Danube Canal is the important part of European waterway. It connects 24 countries with the North Sea and the Black sea. Waterway lines through Europe concerning all types of political and financial debates.

‘The landscape architecture design challenge along the Rhine-Danube is found at the intersection of these debates about spatial quality, economic growth, green networks, habitat, biodiversity, urban development, flooding, urban water management, urban agriculture, drainage/irrigation, energy production, and a lot more pressing issues of high socio-political significance.’ (Nijhuis e.a. 2012)

Rhine-Danube
The studio started off with group analysis of the Rhine-Danube basin, defining existing condition, characteristics, development and future prospect. My personal interest concentrate at social connection and collectivity in space. Bratislava has significant social aspects related to its social engineer and its location.

1.2 Problem Statement
One of main ecological problems in Rhine-Danube Basin is flooding. Even main city along the basin is at risk in high peak water or when the dam break. The flood protection line affects each other which means flooding situation in city downstream depends upon flood management of city upstream.

The social spatial landscape is one of the most important aspects of urban life. Relationship between user and landscape itself is the driving force of the social development. The collective space integrates people and city thus create place attachment and sense of belonging. Significant social aspects seen easily in contrast between capital city and post war city. When the capital is developing base on its root, the city grow better and more sustainable. While the post war city continue growing without grounded foundation. The city raised from instant development which create no identity to place.
Petrzalka, south of Bratislava, Slovakia is the post war city. Its location and social status make an unsettle development city. The area become dull, unpleasant and lack of identity. Moreover, the city locates in floodplain area which flood during high peak water season. And it affect also to flood city downstream.

1.3 Research Question
How landscape can provide value to the urban space which recreate specific sense of community in floodplain area?
Sub-questions
How landscape can give social spatial opportunities while reconnect urban tissue and people of Petrzalka
How to reconnect the relationship of new-old establishment.
What are the strategies that can achieve the better quality space, provide the sustainable and livability city for people of Bratislava.

1.4 Research Structure
The structure is built upon a theme “Archipelago : a Landscape of social spatial opportunities. In case of Petrzalka, South of Bratislava, Slovakia.” The research consists of three parts reflected in the theme, the first part is concerning water management in close relation to social spatial development. And definition of Archipelago, both in physical and psychological meaning. The second part are the design of middle scale and residence area. Both parts of design concerning the integration of Archipelago concept towards water management and social engineer. The last part explores relationship and effects of new design to existing landscape.

Diagram:
- **Theme**
  - Petrzalka
  - Bratislava, Slovakia
  - Water management
  - Social / Urban Tissue
  - Landscape Challenges
    - Urban Challenges
    - Spatial Application
    - Water Flows
  - Place Attachment
    - Third Place
    - Radical Contextualism
  - Flood Protection
    - City’s water Retention
    - Water Purification

Regional Proposal
- Design - City Spine landscape: ‘Archipelago’
- Courtyard typology design: ‘sub scale Archipelago’
1.5 Perspective and Hypothesis
This thesis is approaching the stated problems in landscape point of view in Flowscapes studio context. Attempting to solve social aspects, spatial space require more than any physical elements. Because it concerns closely to the habitant whose need to integral themselves to this place to feel at home.
In order to use landscape as main experimental design, it needs to concern psychological level of Place attachment and Third place. When the feeling of place belonging emerge, the landscape can sustainable develop and merge in the specific place and culture.
2. Bratislava Background

This chapter will state the background information, context and problem field - the densely populated residential district in Central Europe - Petrzalska, Bratislava. Resulting in Problem statement, a main question and set of sub-questions are derived.

2.1 Basic Information

Bratislava is the capital of Slovakia and, with a population of about 500,000. Location is in southwestern Slovakia, occupying both banks of the River Danube and the left bank of the River Morava. Bordering Austria and Hungary, it is the only national capital that borders two independent countries. The city is the political, cultural and economic centre of Slovakia.

Bratislava started around 900 AD. The city has been developed through changing territory of Hungary and Austria. During 18th century, Bratislava raised as an important center city of the region but start to lose its importance in 1783 in an attempt to strengthen the union between Austria and Hungary. In the course of 18th century, the city became a center of Slovak national movement. In 1993, the city became the capital of the newly formed Slovak Republic following the Velvet Divorce. In the 1990s and the early 21st century, its economy boomed due to foreign investment. The city has also hosted several important cultural and political events.

City has been clearly defined into two parts; Old city and New city. The old city locates in left bank of the Danube river. It hosts historical settlement of the city. While at the southern part is mainly blocks of residential area. (wikipedia/Bratislava)
2.2 Geography

Bratislava is situated in south-western Slovakia, within the Bratislava Region. Its location on the borders with Austria and Hungary makes it the only national capital that borders two countries. It is only 62 kilometres from the border with the Czech Republic and only 60 kilometres from the Austrian capital Vienna.

The city has a total area of 367.58 square kilometres, making it the second-largest city in Slovakia by area (after the township of Vysoke Tatry). Bratislava straddles the Danube River, which it had developed around and for centuries was the chief transportation route to other areas. The river passes through the city from the west to the south-east. The Middle Danube basin begins at Devín Gate in western Bratislava. Other rivers are the Morava River, which forms the north-western border of the city and enters the Danube at Devín, the Little Danube, and the Vydrica, which enters the Danube in the borough of Karlova Ves. The Carpathian mountain range begins in city territory with the Little Carpathians (Malé Karpaty). The Záhorie and Danubian lowlands stretch into Bratislava. The city's lowest point is at the Danube's surface at 126 metres above mean sea level, and the highest point is Devínska Kobyla at 514 metres. The average altitude is 140 metres.
Bratislava had gradually growing development until after World War II, the population has raised sharply. The new urban development focused on building new residences, then government decided to construct them at southern part, Petrzalka.

The Danube course has been changing. From 1763-1887, water course was running through middle of southern part. The river had more channel to flow. But since 1983, the connected channel disappeared. Until now, there is only one central creek cut through the city.

2.3 Timeline Development.

![Timeline development](image)

*Fig 5: Timeline development displays sharp rise of population after WWII.*

*Fig 6: Urban tissue and water course through times.*
2.4 Future Development - City planning
From Municipality of Bratislava, the future planning was laid in 2008. It relates to the project “Bratislava’s Border land”. Bratislava will be group with neighbor cities: Vienna, Budapest and Brno. The project aims are to connect the territory and merge border in order to
- renewal of historical connections to Austria and Hungary in an urban structure
- restoring the natural locality in the form of projects for recreation, sport, free time and tourism
- communal activities of the quadrilateral territory by promoting a common territorial solution.
The plan is divided into two categories: Land Planning and Nature and Recreation area.

2.4.1 Land Planning
Land planning focuses on linking Bratislava access crosses the border. It will result in renewing the relations between neighbors which will improve development of urban and transport infrastructure (ring roads). Adding the walking and cycling connections along the Danube (in the area of Devínska Nová Ves) while connecting to the existing urban structures. Restoring historical relations and ties with neighboring Austrian and Hungarian municipalities in the southern part of the city Petržalka – Berg – Wolfsthal – Hainburg Building up a central space around and alongside the historical route to Vienna.

Anti-flood protection of Bratislava in the form of the new Danube channel, which will bring back the phenomenon of water to the urbanized environment of the city, as well as recreational areas. In Petrážalska area, residence development will expand toward southern part while connect with future tram station.

2.4.2 Nature and Recreation area.
Bratislava lies at intersection of two natural phenomena: it is the meeting point of the mountain massifs of the Carpathian arch and the last peaks of the Alps, which have the confluence of the Morava and Danube border rivers.

The border areas include in “Natura 2000” protected areas - The transformation of extensive areas of agricultural land to be used for recreation, free time and tourism in an attractive natural environment
Bird migration: systemic creation of conditions for converting agricultural land into meadows, pastures and woodland to retain the protected species, the Great Bustard
Linking up natural environments with territories in Austria and Hungary by revitalising old Danube channels
Preserving the natural character of the Danube and Morava embankments and the natural vistas of Danube floodplains
In my graduation project I would like to focus on Petrzalska area because of the location at border line of two countries, the natural geography of floodplain and city's structure of social dimension.

Petržalka is the largest borough of Bratislava, the capital of Slovakia. It is the city at border line close to Vienna. Situated on the right bank of the river Danube, it is home to approximately 120,000 people in area of approximately 28.7 km². It is divided into three official parts, Dvory, Lúky and Háje, and further into unofficial parts, Ovšište, Janíkov dvor, Kopčany, Zrkadlový háj, Starý háj, and Kapitulský dvor. The area is the most densely populated residential district in Central Europe. It is primarily a residential area, with most people living in blocks of flats called paneláks, a neologism for buildings built from concrete panels joined together to form the structure, which were widely deployed throughout the Eastern Bloc during the communist era. As the borough was built primarily as a residential area, it has no clearly defined centre. The area connects to Bratislava by main two bridges.

Petržalka has high rate of education comparing to other parts of Slovakia. 78 percent of inhabitants is of high school and university degree. 12.7 % of inhabitants is of pre-productive age, 74.6% of productive and 8.8% of after-productive age. Social situation of Petržalka inhabitants is determined also by low rate of contracted marriages, permanently decreasing birth rate, and growing number of inhabitants of after-productive age but also by overall decline of inhabitants resulting from emigration. Unemployment rate has been held under 6% for a long-term period.

Within transfer of some competencies to villages and higher territorial units, several of such competencies related to education have been transferred also to city district Petržalka. 17 elementary schools, 22 kindergartens, 20 school canteens and kitchens at kindergartens as well as Centre of School Services have been transferred into its scope of constituting activity. In Petržalka there operate several facilities of social character, mainly Facility of Day Care at Mlynarovičova street and Facility with Day Care at Medvedova street, both of them being managed by the city district. We closely cooperate also with other social – charity, humanitarian organizations and associations of citizens such as the Daily Psychiatric Sanatorium at Haanova street, Sanatorium AT, the House of Nurses of Mother Teresa, crises centre Gate to Life (Brána do života), centre Hope (Nádej), Silesian centre at Mamateyova street and others.

In Petržalka at the State Race-ground there are regularly organized important horse-races. Among important and much-sought-for events of cultural and social life belong theatre Aréna.

The Seat of the University of Economics is located in Petržalka. On last June Saturday Petržalka citizens traditionally always gather in the area of the race-ground š.p., in order to celebrate the day of Petržalka by rich cultural and sport program. In recent years Petržalka citizens have been offered high-quality services in newly-built shopping centers such as Carrefour, Tesco or Aupark. State of Petržalka regarding cares for green vegetables, living yards has been managed to change, building of apartments is being started though this relates mainly to segment of apartments in private ownership. (City of Bratislava, 2008)

These southern part of Bratislava nowadays remains in poor conditions both physical and social perception. The landscape is undefined and unused, social connection is lack of collectivity, identity is lost and etc. With population of merely 80% as an active worker, the area should be filled with activities program to serve the communities. Without design interventions, local uses Petrzalska as a sleeping place not a home.

From these critique points, the question raises. How can Petrzalska develop the social spatial connection while recreate a sense of local identity? To solve the problems, we must understand the challenges of Petrzalska both in urban and landscape aspects.
Fig. 9: Petřzalka Identity, Graphic Design Boris Melus, Published by O.K.O. & Slovarť
Fig 10: Petrzalka context and urban tissue.
2.6 Urban Challenge

2.6.1 Form/ Movement / Scale
Current city is developing without relationship of the scale. The residence building is 36-54 meters height which disconnected to the ground. The square form shapes total urban tissue. This form is repeatedly and give no direction or movement to the area. Being present in unrelated scale and no direction space can demolish the livable city appearance.

2.6.2 People and Identity
Petrzalska area has mix race of nationality; Austrians, Czechs, Germans, Hungarians, Jews, Serbs and Slovaks. However, they have been living together more than 40 years, therefore they are Slovakian. But in this area, they do not perceive themselves as Petrzalska local. Because of this area represent a lower life quality. In Petrzalska documentary made by Bratislava director. The habitant says negatively about the area, they would like to move out and live at other places.

2.6.3 Panel Housing
The neighborhood of Petrzalska built as 9-13 floors concrete buildings. The buildings is pre-fabrication panel fixed with building structure. The housing is low maintained. During high demand period, the building is constructed by duplicated each other which affects all the city to look alike. The different level between ground-residence room reflect less connection to the open space. The blocks turn introvert to themselves without interacting to the green central spine.

2.6.4 No Collectivity
Even though each building has its own open space, activities happen rarely. Mostly open spaces attach to parking lots and roads which lead to no privacy for the habitat. The open space in residence area can be divided into 4 categories; self courtyard, parallel path, scattered space and share courtyard.

2.6.5 Sense of Belonging
With lack of activities and expressive space, local people does not feel belonging in their own city. This brings also problems concern perception of security in the area. People of Petrzalska uses the area as the place to sleep not to live in. Worker leaves the house early and comes back late at night. The middle spine is often unused during weekdays.

2.6.6 Lack of Identity
The vast panel buildings look similar in total of the area. The area itself can not identify the center of the area.

2.6.7 Future urban development.
In the near future of Bratislava, the government has planned to expand the city towards southern part. Nevertheless, the plan include making new water channel to reduce the flood damage. Making new 7 tram station from old city, crossing the river then end at south's end of Petrzalska. The plan aims mainly to construct new settlement but not to improve the existing spatial quality.
Fig 11: PETRZALKA IDENTITY
Film by Juraj Chlpič
Source: http://festival.azyl.sk/player/play.html?id=1338
2.7 Landscape Challenge

2.7.1 Blue-Green Network

Petrzalska is situated in between the National reserved park of Austria and National reserved park of Hungary. The city cut this green corridor connection. The species of flora and fauna disconnect. However, the Sad Janka Karla- the oldest public park of Bratislava is located in the riverfront area which provide the possibilities of reconnect this corridor.

As a river course, the Danube is run along the edge of the city. The Danube run from Devin area towards South of Petrzalska. The city has block the water course, create the “Bottle Neck” which affect to flooding.
2.7.2 Flooding
Bratislava bases its flood risk by 9 dams along the Danube river. In case of high water level or the dam break, the city can get severe flood. In the picture, Bratislava was flooded at 5th June 2013 affected several damage to urban conditions. In order to deal with this flood condition, the municipality decided to build a steep bank which results unrelated city space to the water. (City of Bratislava, 2008)

In Petrzalka, the geography is low, the soil type is sandy soil (river alluvial fan). Mainly, the city is filled with parking lot and residences. 75% of area is made by non-permeable materials and statistic shows discharge water is getting higher every year. These aspects result in city's unable of water control.

During summer, the water level reaches its high fluctuation. From Rhythm of precipitation, evaporation and percolation, the surplus is 141 millimeters which means the water will flood the total city area for 14 centimeters height if there are no water container. However, this access water can be store will less surface depending upon the depth of the water storage.
2.7.3 Inaccessibility

Petrzalska has open space in the central of the city. This central spine connects continually from north to south for 6 kilometers long. However, the northern part of the spine loses its connection to the riverfront area because of the widen highway (D1, D2). The circulation switches up to high bridge with rarely accessible by bike. The main two bridges are Most SNP and Kosicka bridge. Both bridges have bicycle lanes but there are barely use.

![Fig 17: Inaccessible areas with lost connection and undefined entrance.](image17)

![Fig 18: Most Sta. Bridge, the main connection between north-south area.](image18)

![Fig 19: D1 Highway (Google)](image19)
2.7.4 Edge

The edge of the city is spatially unconnected to its context both at the riverfront and neighborhood areas. The riverfront area: government has built the steep slope bank in order to prevent the city from flooding. This element makes the city unrelated to the water.

Neighborhood area: the landscape has no transition to its spine. The transition function is the key of understanding public space. But this edge is missing which makes landscape ambiguous access.

Fig 20: The edge between urban tissue and open space has no scale transferring elements.
2.7.5 Unused space - Vacancy

There several vacant sites in the city. In term of scale it can be categorized into three different type:

City’s open space is unorganized. In northern part, the riverfront is left unused. Even though riverfront is partially connect to Sad Janka Krala, the oldest public park in Europe. The area has no activities and facilities.

City spine has walking route along city’s creek but the route is unconnected. The small bridges cross the creek are low maintained.

Neighborhood open space, the in between area situates in almost every residential blocks but no one is using the area due to its lack of privacy and place attachment.

Fig 21: Open spaces are left and unused.
2.7.6 Fragmentation
These several vacant sites in the city, form the network of fragmentation landscape. The existing vacant lands include forests, recreational route, abandoned land under highway or power lines. Their fragmentation lead to the disorganization of the city edge, and their undervaluation begs for sprawl to continue. Without consideration of the whole as a single network, these spaces will continue to languish.

2.7.7 Landscape Identity
Landscape of the area has no identity. The unclear usage and scattering of elements in the area lead to unorganized spatial development. Planting on the site is uncontrolled, leaving vast areas of empty spaces in the city. The landscape has no psychological connection to the local usage which is the result from lack of local collectivity corporation.

Fig 22 : City's fragmentation cause by transportation network.
2.8 Spatial Potential of Petrzalska.

2.8.1 Nature
As natural aspects, the location is situated in between green corridor but development of the city has cut this corridor.
However the green corridor can be reconnected through the riverfront space and adding another route in city’s spine. They can perform integrate function of recreation into the city.
The urban wetland can perform as Flood protection by giving room to the river. The river water has more space to flood and water tile can slow down the speed. The open city space can contain water from household then retain and discharge at the right moment. The area can become permeable and water storage related to the spatial area approaches.
2.8.2 Activities
The existing weekend activities in this southern part area is commonly related to the water; the present activity is water skiing in river branch and dam area. By recreating the new spatial landscape, the riverfront area can support these activities.

Fig 25: RECREATE NEW ACTIVITIES

Fig 26: RECREATE NEW ACTIVITIES
2.2.4 New Tram stations
The city has planned to construct new 7 rail tram stations along green spine of Petrzalka. The tram will connect from old city, cross the river, go through central open space and then stop at the south border which will support the future development of the area.

The tram stations are designed to connect to main hub of current context. With these conditions, the new landscape design can use this opportunity to link people network circulation and open spaces of the city.

New functions can be generated along tram track and city’s spaces. The new function includes housing, new urban agriculture areas. These programs should be placed consistency to link connection of new city scape and its resident.

2.8.3 Open Spaces
The lefted spaces can be reorganized into the utility lands related to new urban structures. Designing landscape will be adjust by needs of local usage at the same time for support the new programs.
3. Design Theory

In this chapter is talking about Design theory and Design Toolboxes connect to the design research. I would like to use ‘Place Attachment’, ‘Third Place’ and Water Management Toolboxes approaches in corporation with the context of Petrzaska to create design language which match to existing condition.

3.1 Social Theory
3.1.1 Place Attachment

As the urban challenges in the previous chapter, Petrzaska needs to recreate the sense of community which affects the perception of local habitat to bond with the place.

“Place attachment is the emotional bond between person and place and is a main concept in environmental psychology. It is highly influenced by an individual and his or her personal experiences. There is a considerable amount of research dedicated to defining what makes a place “meaningful” enough for place attachment to occur.” (Florek, Magdalena (2011). “No place like home: Perspectives on place attachment and impacts on city management”. Journal of Town & City Management 1 (4): 346–354.)

The structure of Place Attachment references to three parties; Person, Place and Process. These parties are the cooperated factors. In order to create place attachment, it needs time-processes and spatial area both in social and physical develop.

In journal of Environment Psychology on Place Attachment: Conceptual and empirical questions has highlight that: “1) attachment to neighborhood is the weakest; 2) social attachment is greater than physical attachment; and 3) the degree of attachment varies with age and sex.” Therefore creating place attachment landscape can be very challenging especially in the neighborhood scale. Design concept should focus on social development and attachment. Tectonic elements need to relate to spatial process of various characteristic of local understanding.
3.1.2 Third Place

Understanding what make place attachment is the great way to link social spatial attachment. Third Place directs to this method. Third place is the communal space after First place (home) and Second place (school/work place). It is the space that allow informal meeting in between the semi-public space. The people in community has a chance to communicate in the area which lead to social integration and place attachment bond.

<table>
<thead>
<tr>
<th>Public Realm</th>
<th>stranger or categorical</th>
<th>the world of strangers and the 'street'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parochial Realm</td>
<td>communal</td>
<td>Characterized by sense of commonality among acquaintances and neighbors who are involved in interpersonal networks that are located within 'communities'</td>
</tr>
<tr>
<td>Private Realm</td>
<td>intimate</td>
<td>Characterized by ties of intimacy among primary groups members who are located within household and personal networks</td>
</tr>
</tbody>
</table>

Third place definition by Oldenburg is “anchors” of community life and facilitate and foster broader, more creative interaction. All societies already have informal meeting places; what is new in modern times is the intentionality of seeking them out as vital to current social needs.

To create Third place, the semi public space, the area has basically requirements as follow: Neutral grow, Leveler, Conversation is main activity, Accessibility and accommodation, the regulars, a low profile, the mood is playful and a home away from home. In conclusion, third place is the easy and casual meeting place which has on-going activities. It is the place that local user can easily reach in the neighborhood. The location should be clearly identify and accessible.

Adding this third place combining with new active function/program in the area will support the creation of strong community.
3.2 Water management

The location of Petrzalska is on river alluvial fan, the soil is sandy and dry-clay. The area can not contain water. It results to water overflow and flood at city downstream. The solution is to integrate water management in the area. Concerning flood problem, giving room to the river, decrease water flow rate and adding dynamic landscapes are increasing good chances of water solution.

3.2.1 Flood Management Toolboxes

Flood Plain

This process is used in irregular interval floodplain. The water level can fluctuate by several meters. The floodplain areas themselves can be under the water between a few days or several weeks. The land is adaptive depending on season aspects. It will serve vast ecology ranges.

River Bed Current

The process assemble the small-middle size river. The temporary flow fluctuations are relevant in both vertical and horizontal raising. It allows river land processes, sedimentation process on riverbed. It create impression of a varied, near-natural riven water.

River, space, design.
Dynamic river landscape

By removing the existing structure line of river (red line), it reinforce the river bank. The river can be developed by their own dynamics. The river can carry away some of its bank with the current and extend into flood plane area. The movement of the natural phenomenal create specific watercourse in the area.

River, space, design.
3.2.2 Water Retaining Toolboxes

The toolboxes selection references possibility of storing water in the city depending on site context and urban tissue. In Petrzalska, residence buildings fill up the area, the water storage can be done by using exiting roof structure to contain water in green roof profile or create the common storage in the community. On public street, water can be collect, purify and store in many ways for examples, the Bioswales along street acts as a purification of dirty water, the root of plant is purifying water then discharge to middle creek of the city.

Moreover, the public space can be used as water embankment, while being recreation space. Urban wetland, Retention pond or Nature revere are the basic examples of this case.
3.3 Archipelago

In the present urban structure, we are living in the contemporary city. Which results in fundamental changes that are irreversibly transforming our daily lives, our way of thinking and perceiving the world and our way of living together. People gain self awareness and become more individual. We live in the first place and go to work/study in the second place. But we have not developed the sense of Place attachment in our own residence and Neighborhood.

In this Urban Archipelago structure, I would like to explore relationship of urban structure towards people and recreate the sense of community. With the collectivism structure as a main core, the landscape is designed to link the Individualism and Pluralism while maintain the balance of individualistic freedom.

In term of creating Place Attachment, Third place and Collectivity in the urban tissue. It requires the understanding of each site context. With Petrzalska background of flood, water management problems, landscape and urban challenges using the Cultural dimension of Archipelago is one of the solutions.

The Cultural dimension divided into 3 part; Pluralism, Collectivism and Individualism. Each parts reference with spatial typology. The pluralism bases with the public realm creating the sense of encounter while the individualism bases with private realm of retreat and self-sustain senses.

The ‘Third place’ of community is trying to create the sharing space in collectivism zone. This zone locates in between both ends. Design base research is trying to organize / create the collective activities related to cultural dimension of local users.
4. Research and Design Method.

This research will be the input for a middle scale landscape and small scale intervention for Petrzalska. In this chapter discusses the methodology behind this thesis, in order to show that design and research can be related in such a way that the outcome can contribute as academic knowledge.

4.1 Design as research method.

4.1.1 Research Based Design
The graduation plan Archipelago is part of the Flowscapes, Landscape Architecture graduation lab. The lab theme is focusing on landscape as a form of infrastructure.
“The studio explores infrastructure as a type of landscape and landscape as a type of infrastructure, and is focused on landscape architectonic design of transportation-,green- and water infrastructures. These landscape infrastructures are considered armatures for urban and rural development. With movement and flows at the core, these landscape infrastructures facilitate aesthetic, functional, social and ecological relationships between natural and human systems.” (Nijhuis, Jauslin, & De Vries, 2013,p.1)
In this project, it is focusing on water management related with existing urban condition. The approach is implementing urban theories of Place Attachment and Third place combining with lessons learned from River, space, design methodologies.

The graduation process is taking the step further to deal with the Contemporary society that we are living. In case of Petrzalska, Bratislava, the location is at delta area of Danube River which is a floodscape area. The project is creating the adaptive framework for the contemporary city relate with the flood solving solution in order to prevent the flood of downstream city of Bratislava.

4.1.2 Petrzalska as a case study.
From this methodology framework, Petrzalska becomes a specific experimental design combining with knowledges to test the research theory. The experiment can give a new insight, possibility and another prospect to the field.
In order to make that possible, the design is working through the scales; regional design proposal, middle scale landscape design, small scale intervention. The covered detail and explanation can be found in further chapter of the plan.
The design method is based on Cultural dimension of Archipelago approach. The approach is adaptive on three area scales. The design drawing will proof how the solution can be fit in the context and how it is actually work.

4.1.3 The relationship between the project and the wider social context.
Nowadays, the city is made by objects. The commute spaces are scattered with no relation. The contemporary city has changed the society structure, people become self-center. However, the future is the sharing society. The idea of defining and recreating the neighborhood can generate these prospect opportunities. The archipelago framework can transform these notions where a multi-layered understanding of the landscape is being advocated.
4.2 Research and Design Method - Application.

Petrzalska

4.2.1. Archipelago

a Landscape of social spatial opportunities.
The background on specific and generic research resulted in both middle scale planning and neighborhood intervention. Both plan are integration of Landscape and Urban challenges combining with the water management systems. The following topics will explain the details.

4.2.2 Social Attribution : Building Territory / Connecting collective spaces.

With the existing landscape and urban challenge, Petrzalska is dealing with landscape entity. Defining the social spatial in landscape should appear physically to form relation of collective spaces. Shaping physical appearance affects social reaction which bring awareness of spatial usage.

Nowadays, local perception towards landscape is negatively. They perceive Petrzalska as separated land which has been lost of connection. People go and move around in same sequence without exploring landscape. Worker uses space as only bedroom. Spatial landscape affects negatively to local mental and social contribution.

By landscape design, space can attribute to the social structure. The interrelationship can be create in the place which later continually to place attachment. To deal with landscape of social spatial opportunities, this has to be tackle in different scales to build the relationship between local and landscape space. From one unit of human relink to bigger structure of public space, the design should be inter connection between middle scale, neighborhood scale and residence scale.

These scales relation concern building territory and connecting collective space. They manage each scale with different social concept.

4.2.3 Water Management and Purification.

Petrzalska situates in the river alluvial fan. The city soil is unable to contain water by itself. Most of the area (75%) is non-permeable, concrete pavement which mostly parking lots. These condition affected flooding in lower city. The project aims to prevent the lower flooding by retaining and discharging water at right moment. The flood management and water retention techniques are used depending on suitable scale and area.
4.2.3.1 Water Management relation.

The water toolbox is chosen with relation to scale.

The regional scale is focusing in the riverfront area and Bypass river area. The proposal is to give room for the river by extending the space for the water while building the urban wetland to reconnect the green corridor. It is the interconnect border between Slovakia and Austria relating to future plan of Bratislava municipality. The new water way will give variation of species, plantation and provide new function to public spaces.

The middle scale or the city scale is dealing with existing creek and refurbish the environment. The city’s creek is changed by new water features. The activities can be create around the central creek which attract local usage. The path along the roads is treated by adding Bioswale - landscape besides the road with purifying function.

The neighborhood scale is using water retention as a new linking place for the residence. The center courtyard of each building block can generate the sense of belonging in their environment. The retained water will be stored and discharged at the low level fluctuation.

Fig 35 : Water Toolboxes usage related to scale.
Flooding Toolboxes
Source: Prominski, M et al. (2012) River.Space.Design,
Water retention toolboxes : Illustration by Author
4.3 Scale Application
The design application concerns both social attribution and water management aspects. The design can be generate according by this scales :

4.3.1 Regional proposal
The aim of the proposal deals with water management and green corridor connection of the region. Proposing flood channel structure can be opportunities to decrease flood risk in the future. Water channel will become the new recreation area of the border land connect to neighbor country (Austria). With the two level water flow channel, the area supports water fluctuation. Besides, the seasonal change will effect plantation in this channel. The area will become all year round multifunction usage with different landscape sceneries.

4.3.2 Middle scale landscape : Fluid Landscape.
The middle scale landscape is central spine of the city cover the riverfront area. Petrzalska riverfront can lower it steep bank which result in reconnection of local usage and river landscape. The green corridor can complete its structure through the riverfront. This landscape functions as relinking connection between the local usage and their own open city space. The terrain spans from north to south part of city spine. The continually scape has character of fluid water as a metaphor of flowing landscape in Archipelago. The connection between the fluid landscape and neighborhood defines by border of each archipelago. The island border is the edge of connection which essential for territory recognition.

4.3.3 Neighborhood Archipelago
Island is being use as the metaphor of neighborhood of Petrzalska. The exiting context shapes and treat each area separately, using archipelago physical feature is enhancing this characteristic. By define territory, the border of each neighborhood become clearer. This gives each area their own identity. The entrance of each island passes through bridge which accentuate the territory.

4.3.4 Residence connection.
The smallest unit of social space is created in courtyard of each residence. In this urban tissue of Petrzlaska, the courtyard locates within the building enveloped. The courtyard defined into 4 categories (upon the building pattern) : self courtyard, parallel path, scattered space and share courtyard. Even though area is excessively, but space is rarely used. In order to create collective space, Third place concept is being used. Area of this collectiveness should be on semi-public area which indicate ownership of each residence. The semi-public space is missing in this courtyard because it is directly connect to road or parking lots. The approach from road is direct to the building, then it create no action to courtyard landscape.

To create the collectivity and active spaces, the method is to enclose space. The enclose courtyard defines sequence of spaces and acts as buffer from public scape to the residence. At the same time it functions as a garden of community. The design elements contain water storage, community pavilion and allotment. Each typology of courtyard is being deal with different design elements, depending on its context.
5. Design intervention.

5.1 Regional scale proposal

5.1.1 Green- Blue corridor

The regional proposal is focusing on large scale of water management. The water channel runs along the border line between Slovakia and Austria. The bypass flows river water which connect from Devin area directly to southern part of Petrzalska. The water run through two level section channel which provide for water fluctuation.

Besides, functioning as water bypass The channel is the green corridor with seasonal aspect change. The bypass link the existing Natural reserve park of Austria and Hungary. This will create the green corridor connection, make more various natural species and adding the fertilization in the area.

Fig 36: Design proposal for regional scale. Connecting green-blue corridor to other existing corridor.
Source: google, illustration by author.
The Blue-green corridor is changing through season depending on flood fluctuation. The area become new recreation area of the city which link to the border line country related to future plan of Bratislava municipality.
Archipelago
why - how

5.2 Middle scale

Petržalka as Archipelago

Petržalka is divided into three official parts, Dvory, Lúky and Háje, and further into unofficial parts, Ovsitě, Janíkov dvor, Kopčany, Zrkadlový háj, Starý háj, and Kapitulský dvor. The existing urban structure of Petržalka is a composition of concrete residences from post World War II. The concrete panel buildings are range in 9-13 floors. The city is dense with same type of function, therefore it has no clearly defined center.

The structure of transportation between each parts are mainly wide roads which blocks physical assess of pedestrian circulation. These 6 parts of city have been perceived as different areas for local user perception. Each parts act as islands which has been separated by roads. However this city has no identity because of its plain context. The sense of community is missing in the area. Local user can not define the landscape identity of him/her area. The same condition goes for central spine. The land is used by local people but the area is a simple green open space without function or interesting programs.

With this existing physical and social structure, the city is acting already an Archipelago. The design aims to sustain these problems in the floodplain area by giving the surface to store water while the same time use water as tool to recreate the sense of community. By separating the structure for each community it will increase the sense of uniqueness in each area.

Fig 39: Existing condition of Petržalska (Source: Google).
5.2.1 Urban structure of Archipelago

Archipelago represents an interesting physical feature and intriguing social context. It shows opportunity of network. We are now living in the contemporary society. The global connection makes people interaction faster but at the same time reducing the actual physical connection between human being. We have become more individualist than ever. This is the metaphor of island, being isolation. However, we are the social creature, we have fundamental requirement to share parts of the society. Nevertheless, recent study shows future of urban structure is the share society. (Dailymail.co.uk. 2015.)

In this landscape, using archipelago can be used as the opportunity to connect without destroying oneself individualism. The single habitat of the island can choose to remain in the territory or connect between islands at the border or at connector levels.

![Fig 40: Cultural dimension of Social Archipelago.]

![Fig 41: City structure relates to Archipelago concept.]
5.2.2 Social Network of Archipelago

- Separation for Identity -

From existing condition, Petrzalska social connection is lost. The appearance of physical objects is plain flat. The area is dull by high grey concrete panels. The separation of each neighborhood will create awareness of space recognition. Both in physical and physiological levels, the city transformation emphasize different location which bring uniqueness to the area. In each island, the different typology of courtyards apply. The new organization of landscape can create the identity of each neighborhood. in each typologies, the integrate theme is urban food corridor. Therefore, smallest scale of single residence garden can relate to middle scale of neighborhood food production and biggest scale of organic food urban agriculture in central spine.

Fig 42: Physical separation of islands.

Fig 43: Projecting social network structure.
5.2.3 Elements of Archipelago.

Archipelago is physically compound with water and islands. Water is the essential element which keep the archipelago alive. Therefore in this landscape design water is represented by the spine of the city. The central creek uses concept of Fluid landscape. This landscape functions as a connector from north-south of Petrzalka. It connects the riverfront to the end of the city. Being fluidity is represented by contour concept. The continuing contour separated into 3 steps divided by the function of each step.

The island is the archipelago body. It represents the situation of this complex. The local perception perceives the area as a separated district because of the existing infrastructures. In between each island, the border become a critical edge because it determines territory.

The building blocks is physical object surround the heart of the island which presently the concrete blocks have no relation with both city spine and their own courtyard.
5.2.4 Petrzalska Local Network Diagram

The diagram shows present spatial usage of the area. During weekdays, local commutes within their own neighborhood because of facilities provided closely to their residence for example, school in housing courtyard. Without active destination, collectivity is rarely happen. In weekend, outer route along Danube river is used for recreation purposes, the middle spine is also used for local recreation purpose. But existing entrance and path connection are poorly connect. The middle spine has undefined zoning. The active and passive zones are not physically emphasizes.
5.2.4.1 Local Network Diagram

The diagram shows the relation of current situation related to its context and design solution aiming to create Collectivity in the area. From the existing city network, current routing of pedestrian does not integrate into the city spine. The local collectivity is placed scatteringly in the community with no link to each other.

In this fig 44, the upper graphic shows the relationship of spatial network. Yellow lines represent local usage network end at blue dots which show no further connection. The Z shapes mean existing collectivity space which is now scattered in the area. In the central spine, first design attempts to reconnect the lost connection (blue dots). And if the surrounded area lacks activities, the design will add the collective function. Second, if the area is filled with close-by functions the design reconnects this dots and purpose the direction of organizing the spaces.
Fig 45: The area of city spine is designed to reorganize the spatial framework. The spine of the city is expanding cover the front part of Petrzálka. The riverfront is considered a destination. The central spine connect also cross way to neighborhood areas.
5.2.5 Programming

The middle spine is divided into 3 landscape aspects according to its context.

With related location to the old city, the Cultural landscape situates at riverfront. The landscape try to attract Petrzalska people to use the new function space. Programming in the area includes sport facilities, floating stage, urban wetland, marina and new housing typology.

The social landscape links mainly to existing urban tissue. The central spine links between each neighborhood. The main focus of the area is the collective space which join local collaboration. Each local can gather for activities in the area.

The Natural part connects directly from urban tissue to existing nature in southern part of Petrzalska. This area acts as water purification landscape to purify water before discharge to the river. This part includes educational landscape mixes with recreation space.

Fig 46: Land composes with Cultural, Social and natural landscape.
5.2.5.1 Programming relation

Relationship in spatial landscape related both in long and cross section. Long Section are Central spine landscape application and Urban room connection. The contour is the main design element because it connects north-south direction smoothly. Cross section displays relationship between neighborhoods and the central landscape. The tram stations will be hub of transition between neighborhood and central spine.
Fig 49: Design of city spine.
6. Design Intervention Application.

City spine and riverfront.

6.1 Fluid Landscape of Archipelago.
City spine as a connector

The middle spine of city lays along north-south direction. In this metaphor design, the spine is the connector of each islands. The contour fluid landscape flow smoothly the circulation of total city while trying to reconnect the riverfront of the city. The contour separate each usage: residence use, transportation and pedestrian recreation scape.

Fig 50: Circulation is divided into contour paths.
Fig 51: Contour divide the circulation usage by step difference.
Spatial Section in Landscape.

Fig 52: Section shows transformation in central spine of Petrzalka related to other parts of the city. The landscape connects and creates identity of the area under the theme of urban allotment.

Section A-A
Cut through Market place and Urban Wetland.

Section B-B
Displays relationship between Neighborhood relates to urban room (in the section shows Water Theatre).

Section C-C
Displays relationship between Neighborhood and Urban Allotment.

Section D-D
Displays relationship between Neighborhood, Central Spine and Natural landscape.
Section C-C: Displays the relationship between Neighborhood and Urban Allotment.
Fig 53: City spine scape changes into active-passive area which will be use during the year.
Fig 54: Urban room location.
6.2 Room in Urban space.

Social Transformation will make critical change in spatial landscape of Petrzalska. However, Archipelago structure aim to benefit the choice of selection between Individual and Collectivity. Integrating in the central landscape, it is important that users should be able to perform this choice.

Three urban rooms create individual function, to be inviolateness in urban space at the same time contribute to collective society. Each urban rooms situate apart in each landscape types (Cultural, Social and Natural). The characteristic captures space which form strong boundary. The territory wall isolates outside and inside world.

6.2.1 Urban Pool

Urban Pool is destination in Cultural landscape. The pool lays in the Danube river among the new urban wetland. The wetland become new recreation space integrate with social network both from old city and Petrzalska.

Fig 55 : Urban Pool relates to old city and its river.
6.2.2 Water Theater

Because of the location is very commute, over social interaction can easily over contributed. The water theatre is placed to maintain balance of this social happening.

The 4 meters height wall acts as buffer from outside world while still provide enough room for sanctuary. Inside the theater, the reflecting pool keep the stillness of the place.

The theatre location is related to historical city creek. The design integrate creek and enlarge water surface.

Fig 56: Water Theater is the sanctuary of central spine. People have their chance of choosing to share or retreat his/her personal space.
6.2.3 Nature Gate

Nature Gate shape like Dike as a landmark of connecting two world: urban and nature.
The defined gate mark territory between each area. The continually contour from central landscape ends with rectangular space which capture the attention of spatial transformation.

Fig 57: Nature gate defines urban - nature area.
6.3 Cross Function

6.3.1 Tram Hub
Cross function is designed integrally with Tram station. The new 7 stations will be constructed along the central spine. The tram location are already relate to city tissue. Therefore building the collectivity close to tram station will link all possibility of collectivity. It will encourage the usage for the local both in weekday and weekend.

The station design connect between the neighborhood to central spine. The hub composes with activities and gathering spaces such as exercise platform, meeting place and collective gardening.

6.3.2 Neighborhood Garden
The Neighborhood garden is community pavilion which gather people from many residences to join the allotment. The location is closed to Tram station of each neighborhood. The garden is the collective space which encourage semi public space usage.

Fig 59 : Tram acts as connector from neighborhood to city spine.

Fig 60 : Neighborhood garden along tram hub.
6.4 Territory Border

Border between Neighborhood

Applying concept of Archipelago is instantly create isolation of each island. The neighborhood has been separated which bring awareness of spatial change. The border is one of most seen element of Archipelago because it clearly show at the entrance of each islands.
The border defines territory of each neighborhood. Brings new intervention and application to the area. the water from residence area is stored at this border. The edge of island changes from existing sharp grassland to soft border of water scsape as a buffer to the street. This soft border brings various of plantation and species. The area can also be well function as neighborhood recreation area.
Fig 61: Border of neighborhood became identify. The buffer makes the area become soft edge connection.

Fig 62: Recreation area with path function.
Fig 62: path connection in between border's water.
6.5 Residence scale

*Retreat - Sharing - Encounter*

The smallest scale of Petrzalska Archipelago is residence unit. In each residence, the sub island has its own territory and its courtyard. Unfortunately, the territory becomes unclear. The space is perceived as public space which does not create the sense of belonging in each residence. Courtyard is directly connect to parking lots or main road.

The solution is to define its territory. Organizing semi public space will encourage resident to use the courtyard more. The area has new function of gardening and pavilion as a living room for the habitat. In each typology, the design element shapes differently with main theme of enclosing space to create clear territory. This territory will define sense of belonging and identity.

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**Fig 65**: Residence pattern analysis, future plan is to gather local to use space and join for collective spaces by enclose their courtyard.

**Fig 64**: When the landscape is shaped, the social structure adapt to its situation which in this case creating the social aspects of place attachment, third place and landscape identity.
Courtyard Typology

Self courtyard.
The enveloped courtyard by single residence gains its own privacy but it connects directly to parking lot. The design is using water retention as a barrier. This buffer water differs usage and indicates added central function.

Parallel path.
Situate along the road, this is a strip courtyard in front of buildings. The space is 6-8 meters width. Existing material condition is grass with random plants. This courtyard cut by pedestrian way direct to the building. The design creates the join space of this long strip, networks walkway connection. In order to add active spaces. Water border is raised 1 meter height which buffer vehicles road.

Scattered space.
The courtyard is not physical existing in the area because the buildings are placed scatteringly in the landscape. Therefore landscape became undefined. Giving territory to both buildings and landscape, is enclosing the space and encourage landscape usage.

Share courtyard.
The residences (3-4 buildings) are enclose each other, form big middle open space (200-300 m. width x 300-400 m. length). These 13 floor residences are introvert from city spine. By their height, the courtyard has no level reference for habitat. The ground become unconnected to the user. In this space, the building is enclosing courtyard already, adding central water storage will bring attention into middle space.
Fig 66: Residence areas of collective space.
The Pavilion is new collectivity space of the residence.

It is a residence living room. Compose with living - dining space, pantry, toilet, toys storage, gardening tools storage and book shelves.
6.5.1 Self courtyard

This courtyard design focuses on enclose itself from the exiting parking lots. By defining clearly territory, the resident has their own world separated from outside world. The collective space in smallest scale of one unit can happen here.

**Existing condition**

**BORDER WATER**

*Separated residence from traffic and parking lot.*

*Tracking local trail.*

**Proposed condition**
Fig 67: Courtyard with water buffer itself from parking lots.

Existing condition
6.5.2 Parallel Path.

With the existing condition, the local separated themselves from busy circulation. Road in the middle make no space for recreation. The design is raised elements to protect habitat from busy road. The pocket space behind water line increasing the chance of encountering.

**Existing condition**

**RAISED BORDER**
Define strip area.
Protect from traffic.
Create waterfall sound.

**Proposed condition**
Fig 68: Adding pocket space creates opportunities to join and commute.
6.5.3 Scattered space. Because of existing condition of scattered place, design elements is used to define territory to capture the semi-private space of the area. Giving territory to the habitat to locate his/herself of ownership. The landscape become floating scape surrounding with water storage.

Existing condition

ISLAND DEFINED
Add territories and arrangement. Specific functions in each island.

Proposed condition
Fig 69: Defining territory to each blocks is earning perception of belonging.
6.5.4 Shared courtyard.

The buildings have blocked the connection from outside to inside which give private space to the residences. But it affects to lost connection to city spine. Even concentrate to the center, the activities are not happening. The design aims to bring attention of collective space by concentrate the central space of the area. At the same time providing new routing connected to the spine.

**CENTER PLACE**
Define usage area by centralize space.
Add Leading elements.
The new housing with 2-3 floors is transferring vertical scale. Adding new housing is creating variation of people and space usage.
The new building itself has green roof as a community garden which accessible from outside the building.
7. Relationship

7.1 Social Spatial Relationship

Petrzalska has been a temporary city for at least 40 years. Because of its unpleasant situation which lack of identity and place attachment.

The social aspects is in bizarre relationship. Mostly worker uses the area as only bedroom, just only to sleep. They do other activities in the old city even in weekend, they go to other place to find entertainment. Housewife and unemployed people has no place to go. Besides their daily life routine, the daily circulation changes rarely to other route. The city spine has a potential of becoming a central space that these people can gather and join the recreation space.

Children go to school inside their courtyard or close by area. by this routine, they are not exploring outside of their residential zone. The link between each neighborhood and link to central spine will increase the opportunities to reach assembly spaces.

When landscape design has make this urban tissue into Archipelago. It creates instantly separation to each neighborhood. This separation promotes uniqueness. By dividing itself, each place become different which create different uniqueness. From plain urban residence, the area has more variety of Archipelago which eventually brings out the identity of place.

In between each islands, the water border separates the connection. This makes awareness of crossing and entering. The relation between each islands has been emphasized. The bridge and pathway connections are crucial to the design. Walking through this linked urban tissue, walker can feel the ambient of residential gardening and urban allotment.
7.2 Form Movement Scale relation.

The design elements use in the project can be clearly seen as two typologies; pure form of square and circle and fluid form of movement. The reasons behind this design can be categorized into 3 aspects as follow.

7.2.1 Capture

Pure form is universally recognizable. Using this forms in design aims to capture the collectiveness in urban space. The square form used in Residence area capture the parameter of its courtyard structure which remind the usage of space for residence people.

While at the same time, transferring this form to urban room (recreate the enclose semi private space from the residence to the city space condition). The duplication of form is reminding individualness and collectiveness that can be achieve in both residene garden and city spine.

Fig 72 : Pure form capture collectivity of the place.
7.2.1 Movement

People movement is essential in this project, the form use is carefully selected both in transferring motion movement and functioning circulation.

The transition of pure form to curvy form is leading the people movement from residence area to the city spine. Which create togetherness and sense of joining in the urban space.

Fig 73: thickening line and open space indicate the movement of the central spine

7.2.3 Feeling of Scale

Transferring scale from Existing enormous blocks to Intermediate and smaller scale through form recognition which create the sense of closeness as exploring in ‘Third place’.


Fig 74: The central spine is transferring its scale to the ground by using landscape elements.
7.3 Water System Management.

Scale relationship

In this project, the water management is the key of landscape design. The water has hierarchy in design scale. Because of flooding, the new landscape of the city want to store and discharge water at the right moment. The main idea of store water should be recognizable in town scape.

As upper diagram and below section, they describe the order of containing water. The water system first establishes in the neighborhood structure. The common courtyard in each residence can collect water from rain/storm water from surrounding buildings. The water will be transfer to the border ring of the neighborhood. Then water passes through water treatment area (Bioswale) before going into the central creek. From this creek it will pass through purification landscape before discharge to the river.
7.3.1 Residence area

The courtyard in each residence is collecting rain water. Rain water come through roof pipe and retains in sediment tank. Then the cleaner water passes through Route zone reed field, stores at residence pond before discharge.

Fig 77: Water purification system in Residence area.
7.3.2 Neighborhood Border.

The islands define by water border. In this zone water creek has both recreation and purification function. The Helophyte plantation is used as a filter at this stepped water scape. The creek acts as a buffer to protect residence zoning. The water from residential courtyards are collected here.

Fig 78: Water purification system in Neighborhood border.

The landscape along roads is Bioswale. The Bioswale is attached to slopped street. The street water run to this landscape and it has been treat with plant root purification system, then water is transfer to underground pipe.

Fig 79: Helophyte Vegetation
from left to right: Bulrush, Common Clubrush, Reed Sweet Grass, Yellow Flag and Sweet Flag.

7.3.3 City Spine.

City Spine purification system is using Free Water Surface system to dissolve overall chemical in waste water before discharge into nature system. The open water area is densely vegetated basins. This constructed wetland is efficient in pathogens removal due to high exposure of UV sunlight. This system use mostly in polishing stage. (Source: Water Purification, TU Delft, 2013.)

Fig 80: Water purification system at City spine.
The area has soft-wood alluvial forest. The vegetation is separated into 2 parts: the riverfront area connected to Reserve park of Austria and Hungary and Vegetation in the central spine.

The riverfront area, the existing trees are dominant species. The inserted plantation use the same species to collaborate into the area. The urban wetland use both trees and water vegetation from local species.

The middle spine use the existing trees species as main theme plant. The adding plant is Weeping willow which has a strong route to hold the soil for contour landscape along the water. It is the emotional plantation which define fluidity of the central area. The willow gives beautiful yellowish color according to the season. The shrub and meadow is the edible plant as allotment theme.
7.4.1 Variation of Ecology

The plantation is vary into 6 categories both in existing and proposed condition. Vegetation used relates to existing area of function. The users can experience difference in each areas.

The existing soft woof forest and wetland vegetation emphasize texture in the green corridor. The central spine is filled with emotional plantations such as Weeping willow and Reed for its character of fluidity and movement. While the residence garden has more of solidity shape of vegetation to define and capture the collectivity in the courtyards.

Fig 82: Landscape Typology
7.5 Materials and Textures

Main material of the project is local limestone. The limestone has been used in Bratislava from city historian period as seen in Castle Bratislavsky Hrad and city's old buildings. The paving materials are various on existing condition. In order to build new design elements, form of each place will be different depending on function. Therefore the main material is limestone to keep the characteristic of the place.

Texture of Nature

The variety of plantation is giving a good texture to the area. Using exiting forest trees will essence the dense of trees texture at riverfront area. While adding the texture of wetland plant will enhance the landscape perspective.
7.6 Future development.

The project strategy is focusing on both BOTTOM UP and TOP DOWN processes. Because of the new tram line is currently constructing over the Danube river. Therefore the municipality has budget for Petrzalska development which focus on central spine.

Starting to build the central spine will make local people realize the difference. The spine acts as core of the project. It is a pilot area of urban allotment. The projects are estimate to be finish in 10-15 years.

During the period of city’s spine construction, the residence courtyards should start to develop its inner projects. The bottom up is working by using local activities which link to bigger scale.

In the semi period of central spine and riverfront construction, the by pass proposal can start to develop which will eventually link the central spine to the regional scale of blue-green corridor.
Discussion and Conclusion
Archipelago is the driving design element that can be used to develop the city of case study, Petrzalka. The merging design element integrate in water management and social aspects. The water create from Archipalego concept is storing excessive water in the abandoned area. The water way becomes a new value space of the city. The connection in the city can be fluidly connected.

The Archipelago concept is working through scales encountering the principles of optimizing social spatial usage and ecological aspects. On the large scale, it connects flow of networks. Moreover, it divides neighborhood under the theme of separate for uniqueness which create identity of place. In the small scale, it provide the choice for each single user whose can choose to join and retreat from collective society. Archipelago is integration of various functions, ecology, water management and community base project.

Reflection on Research Question
In the beginning the research question stated:
How landscape can provide value to the urban space which recreate specific sense of community in floodplain area?
The answer to the raised question is triparties; addressing a practical solution to long term effects and improvement for the future of Petrzalka.
The first part based on theory of Social Archipelago. Which giving choice of possibility for collective space.
“Forming a sense of Community that can transcend the purely individual without destroying the freedom of Individuation.”(Source : Hertweck, F, 2013. The City within the City.)
The approach suggests the understanding of Individual Collectivism and Pluralism which can be into landscape design.
The Archipalego City
Piecing together Collectivities

Europe Metropolis
Central ambiguity its historic centers float in larger metropolitan fields - Historical facade mask the pervasive reality of the un-city.


Contemporary Society

Contemporary society, according to social and political scientists, is characterised by at least three fundamental directions:
- Increasing human interconnection through a network of relationships that is progressively covering the whole planet;
- The pace and depth of the evolution of human ways of life determined by technological innovation represent an absolute novelty in human history;
- The scale of anthropological and ecological transformation due to the interaction between evolutionary factors (social, cultural, economic, and technological) has no historical precedent.


A tension in the contemporary city in its inability to combine a traditional form of public space, offering cohesion and a sense of community, with the extensive desire for individuation that is also part of contemporary society.

Fig 86: City is made by Objects.

Individualism

Individualists promote the exercise of one’s goals and desires and so value independence and self-reliance and advocate that interests of the individual should achieve precedence over the state or a social group, while opposing external interference upon one’s own interests by society or institutions.

Fig 87: Individual unit

- Individualism is the belief that personal needs are more important than the needs of society as a whole.
- It is said to have first developed among Baby Boomers, born after WWII.
- The researchers examined factors commonly thought to be linked with cultural individualism.
- These included the use of so-called individualist words in books, such as ‘I’ and ‘me’, during the past 150 years.
- They also looked at the percentage of single-child families, how many adults now live alone, divorce rates and the prevalence of unique baby names.
- All of these factors, especially uniqueness, are deemed to be key drivers of individualism.

Source: Dailymail.co.uk. 2015. Study finds society shifted towards individualism century ago.
The second part concerned the stage of landscape and urban challenges which Petrzalka is facing. This part is addressing also the sub question as follow: How landscape can give social spatial opportunities while reconnect urban tissue and people of Petrzalka? How to reconnect the relationship of new-old establishment? What are the strategies that can achieve the better quality space, provide the sustainable and livability city for people of Bratislava? This part is answering by design in city spine and courtyard typologies. The design interventions are promptly integrate in urban tissue while transforming the city.

The third part is the future development of Petrzalka. The long term perspective of city plan. Directly, the city is building the new tram station. Integrating this Archipelago structure can be done with the city development. Design interventions can be parted into phases in next long term of 20 years. However, because the thesis concerns closely to social network, it is important for community to take its role in this plan which create both top-down and bottom-up approach.

Archipelago is addressing the needs of social spatial organization in the city and network connection of its inhabitants. Using physical structure of Archipelago to create territory. It brings specific sense of community, connecting the social network using fluid landscape, create active-passive function and room for urban and introducing semi-private collective space for each residence. The psychological meaning of Archipelago provide opportunities for local habitat to choose his/her own willing to share to the society or retreat at the right moment. Being float upon the water is soul challenging. It gives the prospect and serenity while raising awareness senses of living with water.
Feasibility

The Archipelago concept seems like an utopia of urban tissue. However, Petrzalska is in need of interventions to create the identity community. The realization of Archipelago needs a cooperation between government, municipality, public organizations and community. It is the bottom-up and top-down approach. The government can lays the structures of tram station and city spine. At the same time the community are in charge to grow and maintain their own yards. Because of its character of water retention and purification, the project is flood protection which can raise fund from government. The community earns financial support from the food production and market from their courtyards and central urban allotment area.

The new function can provide active-passive space will encourage space usage and gathering of people in Petrzalska and the old city. Archipelago plan raises a big change in the area which will make resident of Petrzalska’s local be skeptical. But in order to make changes which this city needs, there could be an opportunities for this plan within a period of ten years. The developing of surrounded cities will eventually force Petrzalska to develop itself, hopefully in sustainable way which maintain identity of itself.
Lessons learned

The graduation academic year aims to produce a knowledge towards landscape design application which can be adapt in various situation. The same goes for Archipelago of Petrzalska. The ideas of using existing urban tissue and transforming base on its context is suitable for any area. In this case study, the city integrate closely to riverside which raised the topic of water management. And another main topic is social connection. The combination of water management and city structure can transform and result a very intrigue outcome. Using exiting condition of soil type and capacity of water storage, the concept of Archipelago is emerged. The area become floodplain as its true condition (Floodplain Alluvial) while still maintaining the urban tissue. The social interaction is very important in Landscape design. Because it will be the main driving force for spatial usage. Not only encouraging collective space usage, but also use design element to giving choices for the user. The local habitant will feel less intimidate to use the space. He/She can choose to be individualism or collectivism.

I believe, there are many more of post war city which have similar urban tissue problems: unconnected open space, transportation roads cut through the city, lack of connection, no collective space and etc. Each of site selection would definitely has its own way for dealing with their issues. But the major lessons from Archipelago are the knowledge of adaptive resilient landscape transformation in existing urban condition concerning social aspects of place attachment, identity and third place.
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