urban public space design to enhance the city interaction and develop a sustainable living environment

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FASCINATION

Landscape has two things. Firstly, it brings nature to us. Secondly, on the basis of it, we practice or try to practice our dream of the world. Use the power of landscape to influence urban organization, function and development and get the balance of urban itself.
RESEARCH GOAL

The goal is to use landscape as infrastructure of urban public space to enhance the interaction of Petrzalka by transform the site from mono-function dormitory area to a vital part of Bratislava and creat high-quality living environment.
Bratislava is the capital of Slovakia and, with a population of about 500,000, the country’s largest city.

Population: 411,228 (2011)
Elevation: 134 m
Area: 367.6 km²
Petržalka
Population: 105763
Area: 28.7 km$^2$
Activity

- **Park**: buffer zone for flooding; recreation
- **Grassland**: traffic; walking the dog
- **Small square**: traffic; walking the dog
- **Pond**: fishing
PROBLEM STATEMENT

1. Poor quality of public space
2. Poor infrastructure system
3. Limited space
PROBLEM STATEMENT

Poor quality of public space (green space)
With only one public park along the bank of River Danube, the rest green public space of Petržalka simply consists of empty grassland and a few trees which looks empty and untidy.
Problem Statement

Poor infrastructure system
Cycling, walking, jogging and other activities share the same thin path without any other infrastructure.
PROBLEM STATEMENT

Poor infrastructure system
Platform without any facilities makes the space useless.
Poor infrastructure system
Fragmentized and limited cycle network brings inconvenience to bicycle riders, and hence increase the difficulty to promote cycle as a public transport.
Limited space
As a new city area of Bratislava, Petržalka is blocked by country boundary lines of Austria, Slovakia and the River Danube. The urban area of Petržalka is fixed and limited. The current urban land use structure cannot meet the future development.
PROBLEM STATEMENT

Country boundary blocks the development.

Mt. Strimina blocks the development.

Bridges link two parts.

The Danube cuts through urban area.

Bratislava urban area

Farmlands

Industry area
PROJECT RESEARCH
Layer approach will be used throughout the whole planning process. The basic problem of Petržalka is disordered infrastructure network, to solve it, new layer approach will be used to analysis the current context and help to develop organize the network and fine situation for further function.

Layer Approach can date back to the Overlay Maps by Ian McHarg who promoted landscape as the instrument of environmentalism and helped shape national policy on the environment(Sprn, 2000). As the classical layer approach, the Overlay Maps can be regarded as an analytical tool. In the book of Design with Nature, McHarg explained this sustainability approach theory, which also can be called as Layer Cake Mode, tried to define the problems of modern development and present a methodology or process prescribing compatible solutions(Schnadelbach, 2001). Though some landscape architects argued that too much insights of science, In McHarg’s practice, Classic Layer Approach helped to understand how a place came to be, identify problems and opportunities and quiet revealed important but unaware issue.

In the Netherlands, the ideas of McHarg are of great influence not least though the persona of one of his students, Meto Vroom, a Professor of Landscape Architecture since 1966(Roncken, 2003). The rather complex layer cake of 3 + 8 + 17 successive layers in the time of McHarg are adopted at Wageningen for Landscape Architectural education into a comparably simple textbook version of ‘trixel-layer’ (Kerksra, 1976). Landscape, regarded as a system which is formed with complex entities, is divided into three layers: abiotic layer, biotic layer and anthropogenic layer. There exists a kind of dependence among three layer though they are not quite clearly hierarchy systems.

The pre-supposition of the classical mode is that there is this dependency of human patterns on biotic and through those on abiotic patterns. When this dependence is lost the model no longer functions as a tool for analysis. However, with modernization, development of artificial fertilizer and the change from rural to industrial and to service economy, there was a loss of soil-dependency.

Nowadays, networks of infrastructure start organizing the landscape when soil dependency is no longer structuring and explaining landscape. Development of the internal combustion engine and the consequential ease of transport in an economic system have (over) emphasized the importance of situation over that of site.

From 1998 onwards, the layers model and the resulting layers approach became an important subject in an already vivid discussion about the regional level in planning, about the balance between local and national responsibility for spatial planning, and about the importance of water-related and infrastructure problems in spatial planning(Schaicka and Klaasena, 2011). Dirk Simons, one of the founding fathers of Dutch layers approach, used “layers model” instead of the “layer approach” and stated it as “a strategic proposal to organize a multitude of spatial tasks and projects” (Simons, 2002). When the layer approach became interpreted in practice, it turned into different ways. Teunissen stated 5 points for its further development in 2002 (TEUNISSEN, 2002). In the Fifth Meerandum, Zonneveld gived explanation for the rift between the layers approach analytical framework and the content of spatial policies(Schaicka and Klaasena, 2011). Hans van der Cammen and Len de Klerk reconstructed the rise of layers approach and regarded it as a spatial framework of water management, increased mobility and new concept of urbanization and ‘natural’ landscape(Van Der Cammen and De Klerk, 2003). Vonk Noordegraaf focused her analysis of layer approach on the version as it was developed in RPD(2011) and concluded that the layer approach was ‘not of value’ to create a spatial plan(Schaicka and Klaasena, 2011). Werksma, Daureiller, Maring and Puyllact had a more positive attitude towards the layer approach that it offered possibilities for interdisciplinary and intersectional planning process(Schaicka and Klaasena, 2011).

After the transition, criticism focused on the assumptions regarding the level of dynamics. New layer approach can be used as a tool for understanding modern landscape. Regarded as complex entities, landscape is divided into new three layers: abiotic layer, network layer and cultural layer. These layers depend on each other though there is no absolute hierarchy as well. Abiotic layer continues to play a role as the large systems, consisting of bedrock, soil, rivers and streams, climate. They are mostly beyond our control and act as long time frames. Network layer refers to large expensive and immobile man-made systems, such as infrastructure, economy and services. Cultural layer refers to the patterns of human settlement and activities depending on trade, cycles of development and recessions and depression.

Applying layer approach in the project, it plays two roles as analysis tool and design tool. The classical layer approach is a good analytical tool for understanding vernacular landscapes. From the perspective of hydrology, the river Danube brings advantage and obstacle to Bratislava. It makes Bratislava itself. The new layer approach, a tool for understanding man designed landscapes. From this field, we can read how and why people develop the city into current image. Based on it, new layer approach not only bring question to landscape also the answer to which kind of landscape people really need and expect.

Generally speaking, the analysis process of layer approach (understanding landscapes) helps us avoid mistakes and realize the existing reason of landscape. Through that, we can find the right location and shape of landscape. The use of layer approaches offers site-based and situation-based in designs by responding to particularities and developing these particularities.
Jaroslava, Specifics of urban soils (Technosols) survey and mapping
ABIOTIC LAYER

wind

35m

15m

6m

3m

1.2m
shadow range of Mar. 21th
shadow range of Jun. 21th
shadow range of Sept. 21th
shadow range of Dec. 21th

ABIOTIC LAYER
sun
Green Space

- Rural Green Space: 42.61%
- Park Green Space: 1.95%
- Attached Green Space: 3.93%
- Roadside Green Space: 3.93%
- Residence Green Space: 3.93%
CULTURAL LAYER

LANDUSE

- PARKING: 25.86%
- COMMERCE: 12.36%
- RELIGIOUS BUILDING: 0.35%
- HOSPITAL: 0.62%
- EDUCATION/OFFICE BUILDING: 6.20%
- OTHER BUILDING: 14.19%
- RESIDENCE: 40.42%
What makes a place great?

Basedmap from Petřžalka Masterplan | Bratislava Slovakia | Marko&Placemakers + GutGut + LABAK
PLACE MAKING
Project for Public Spaces (PPS) is the central hub of the global Placemaking movement, connecting people to ideas, expertise, and partners who share a passion for creating vital places.
Cities fail and succeed at the scale of human interaction.

- Ethan Kent
PLACE MAKING

interaction

City

Neighbourhood ➔ important spot

Family
PLACE MAKING

To enhance human interaction in Petrzalka, best to start from the centre.

Site Reading

- City Centre – Spatially, and has potential to be real city centre in the future.
  - Area: 330ha (3.3km²)
  - Length of Canal: 4007m
  - Population: around 14553 people (Population Density: 4410people/km²)
  - Families: around 4851 families (3 people/family)
  - Regular Parking: around 4851 cars

- Next to railway station and city council proposed to construct a tram line along the canal and connect Bratislava in the north.

- Contains typical building forms and community types in Petrzalka.

- Including water and continuous open spaces which has potential to be a recreation centre and core of open space network.
PLACE MAKING

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Site Reading
SHOP & STORE

• More convenient for people to stores.

ACTIVITY

• Survey: keep nature and more space
• More types of recreation for people with landscape architecture.

SPACE

• Take advantage of current spatial mode.
PLACE ONE
the beginning of canal

PLACE TWO
a turn of river leaves water room and closing to
train station makes it a new meeting spot

PLACE FOUR
green space in neighbourhoods

PLACE THREE
located by pond and with good
sunshine condition, lacking
recreation spots around, the end of
canal

bird watching
water garden
extreme sports
children's garden
platform
open concert

0 16 48 96(m)
PRINCIPAL FROM LAYER APPROACH  PLACE MAKING

Wind
- heavy wind - plenty of trees
- soft wind - few trees

Sun
- shadow - rest
- brightness - activities

Water System
- canal - plants canalside
- wetland - plants

Green Space
- roadside - trees
- park - multiple planting

Traffic
- tramway - both sides trees
- bikeway - at least one side trees

Landuse
- main VS main - recreation spot
- main VS secondary - rest corner
- footway - free
- secondary VS secondary -
SITE DESIGN PLACE MAKING

- Noise/View from Main Street
- Noise/View from Neighborhood
- Proof Gap: Slopes & Passageway
- Independent Green Space

Diagram showing site design elements with arrows indicating directions and relationships between different areas.
SITE DESIGN PLACE MAKING
SITE DESIGN PLACE MAKING

Wind

Sun

Water system

Green space

Traffic

Landuse

- heavy
- brightness
- darkness
- canal
- roadside green space
- park green space
- tramway
- main route
- secondary route
- bikeway
- footway(main)
SITE DESIGN PLACE MAKING

PLACE TWO

Potential interaction
SITE DESIGN PLACE MAKING
SITE DESIGN PLACE MAKING

Wind
- heavy

Sun
- brightness
- darkness

Water system
- canal
- wetland

Green space
- roadside green space
- park green space

Traffic
- tramway
- bikeway
- footway (main)

Landuse
- main route
- secondary route
SITE DESIGN PLACE MAKING

PLACE THREE

MAIN ROAD
SITE DESIGN PLACE MAKING
SITE DESIGN PLACE MAKING

SPORTS STORE & RESTAURANT

INDOOR TRAINING

spatial – routes to link outside
sitE desiGN PlAce MAKING

spatial – view’s fields towards surrounding

ponds cape

park

rural foreset

plaza
SITE DESIGN PLACE MAKING

Platform for rowing boats
SITE DESIGN PLACE MAKING

1. toilets
2. restaurant
3. supermarket
4. cinema
5. stores
6. corridor
7. free zone
8. rowing boats storage room
9. rowing exercise rooms
10. fitness sports
11. exhibition
12. cafe
13. office
1. toilets
2. restaurant
3. supermarket
4. cinema
5. stores
6. corridor
7. free zone
8. rowing boats storage room
9. rowing exercise rooms
10. fitness sports
11. exhibition
12. cafe
13. office
1. shape from surrounding condition
2. change the width according to specific size.
3. adjust space shape to contain more people
4. sketch model
5. empty wall for better view corridor and attract passers’ attention
6. rotate roof to expose stage to sunshine and shelter grandstand.
7. support structure
8. curve roof to lead rainwater
9. set planting bed where water gathered
SITE DESIGN PLACE MAKING
It is followed the design principle used in PLACE ONE, where a gap is used to decrease the disturb from street.
SITE DESIGN PLACE MAKING

Wind
- heavy
- mild
- soft

Water system
- canal
- pond

Sun
- brightness
- darkness

Green space
- roadside green space
- park green space

Traffic
- tramway
- bikeway
- footway (main)

Landuse
- mian route
- secondary route
SITE DESIGN PLACE MAKING

SPACIAL CONTRAST

yard
SITE DESIGN PLACE MAKING

SHADOW ZONE
EXPECTATION
THE END