BROWN LINE REVOLUTION---
open space net-work development in post-indutrial city by reusing abandoned industrial transportation infrastructures (canal and train tracks)

Ruohao
4229185

Studio: Flowscapes: infrastructure as landscape, landscape as infrastructure
Studio Teachers: Steffen Nijhuis, Daniel Jaustin, Sjef Jansen
First Mentor: Rene van der Velde,
Second Mentor: Roberto Rocco
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Propose Network

- Ecological sustainable oriented network
- Social spatial behavior oriented network
- Master plan

6. After P2 Plan
Fantasy

Emscher Landscape Park

IBA: The spatial retreat of the coal and steel industry left behind large amount of brown field that are sprained as the centennial chance of urban development and may give new impulses to the open space system.
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

Duisburg-nord Landscape Park
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Master Plan

6. After P2 Plan
Lack of connection between open spaces

The gap between the regional developing vision and the realization of the projects
Lack of connection between open spaces

1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Master Plan

6. After P2 Plan

Disconnection between green lands (ecological, experimental)
Lack of connection between open spaces

The urban open space are not been sufficiently used by people (don't know it, don't use it or can't use it)
Object:
Integrated and networked open space system
Abandoned industrial transportation infrastructures

Brown Lines

1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

Abandoned industrial transportation infrastructures
Brown Lines

Train Tracks
Canals
Research Question: How to develop a open space network by reusing the abandoned industrial transportation infrastructure in Ruhr Metropolis? using Essen as test project.
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

Method:
Field trip
Interview
Case study
Mapping
Photographing
Literature Reading
.....
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

Open space Situation

Public open space
Public used open space
Water
Urban forest
Urban parks and squares
Sports-Leisure facilities
Farms
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
6. After P2 Plan

Current open space network

- New developing open space recreation centre
- City centre pedestrian street
- Traditional open space recreation centre
- Regional famous open space project-Zollverein

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

Centre
Connection
1. South & north difference

2. Problem Statement

3. Research Question

4. Current Situation

5. Proposed Network

- Ecological sustainable oriented network
- Social spatial behavior oriented network
- Mater Plan

6. After P2 Plan

Small country town 1961

19th Century, numbers of mines to explode
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

1. South & north difference
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

2. Relate to water ways

Green space
Water connected green space
Nature water
Artificial water lines
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Master Plan

6. After P2 Plan
4. Zones

1. Nature recreational centre
2. Modern city

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

3. History and new city centre
4. Residences and universities
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

5. Industrial area

Necessity
Low high
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

Green network---Ecological sustainable oriented public open space network

Nature Flow

Yellow network---Social spatial behavior oriented public open space network

People
GREEN NETWORK
Ecological sustainable oriented public open space network

a. Eco-system stable — Green corridors
b. Facing Climate change — Flooding prevention
c. Nature Preservation
5. Proposed Network

Ecological sustainable oriented network

Green corridors

Social spatial behavior oriented network

Mater Plan

6. After P2 Plan
Situation
5. Proposed Network

Ecological sustainable oriented network

Green corridors
Social spatial behavior oriented network
Mater Plan

6. After P2 Plan

Regional Scale---Current situation---green isolation in the centre Ruhr

Green heart

New green heart

Green heart
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
6. After P2 Plan

Ecological sustainable oriented network

Green corridors
Social spatial behavior oriented network
Mater Plan

Regional Scale---Possible green corridors
5. Proposed Network

- Ecological sustainable oriented network
- Green corridors
- Social spatial behavior oriented network

6. After P2 Plan

Essen-Green spaces

Green Heart

Map showing urban green spaces and network planning.
5. Proposed Network

Ecological sustainable oriented network

**Green corridors**

Social spatial behavior oriented network

**Mater Plan**

6. After P2 Plan

![Essen-New Green Corridors](image)
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network

Ecological sustainable oriented network

Green corridors

Social spatial behavior oriented network

Mater Plan

6. After P2 Plan
1. Fantasy

2. Problem Statement

3. Research Question

4. Current Situation

5. Proposed Network

- Ecological sustainable oriented network
- Green corridors
- Social spatial behavior
- Mater Plan

6. After P2 Plan

Essen-New Green Corridors
Situation
5. Proposed Network

Ecological sustainable oriented network

Flood prevention
Social spatial behavior oriented network Mater Plan

6. After P2 Plan

Essen, Summer, 2007
5. Proposed Network

Ecological sustainable oriented network

Flood prevention

Social spatial behavior oriented network

Mater Plan

6. After P2 Plan

Inspiration

Possibility

River basin management

Rainwater management

Water runoff

Flood protection

Ecological water management

Water supply

Wastewater discharge

Sewage sludge utilisation

Groundwater management

Combined heat and power station

Sewer network

Wastewater treatment

Sewage treatment plant

Pumping station

Waterworks
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
   - Ecological sustainable oriented network
   - Flood prevention
   - Social spatial behavior oriented network
6. After P2 Plan

Drainage Situation
5. Proposed Network

Ecological sustainable oriented network

Flood prevention

Social spatial behavior oriented network

Mater Plan

6. After P2 Plan

Storm water management coculation

Suitable: $0.9 \times 10^4 \text{ m}^3$
Max: $3.6 \times 10^4 \text{ m}^3$

1.05 x $10^6 \text{ m}^2$

100mm per 24 hours

5.26 x $10^4 \text{ m}^3$

2.4 x $10^4 \text{ m}$
Suitable

11.6x10^4 m
8.72x10^4 m^2
(0.5 deep)

Max

0.773x10^4 m
3.32x10^4 m^2
(0.5 deep)

Flood prevention

Social spatial behavior oriented network

Mater Plan

6. After P2 Plan

5. Proposed Network

Ecological sustainable oriented network

Fantasy

Problem

Statement

Research Question

Current Situation
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
6. After P2 Plan

Ecological sustainable oriented network

Landscape Preservation

Social spatial behavior oriented network

Mater Plan

nature & landscape reserve
nature monument
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
6. After P2 Plan

Ecological sustainable oriented network

Social spatial behavior oriented network

Mater Plan

Green Network

Preserve
Corridors&green heart
Water way
New water way
YELLOW NETWORK
Social spatial behavior oriented public open space network

a. Social interaction
b. Slow Transportation
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
   Ecological sustainable oriented network
   Social spatial behavior oriented network
6. Social Interaction
   Mater Plan
6. After P2 Plan

GEMEINSAM STARK IN ESSEN
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
   - Ecological sustainable oriented network
   - Social spatial behavior oriented network
6. After P2 Plan

Public interaction centre
- Current public interaction centre
  - Multifunction (need to be there)
  - Transportation accessible (easy to go there)
  - Attraction (want to go there)
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
   - Ecological sustainable oriented network
   - Social spatial behavior oriented network
6. After P2 Plan

Public interaction centre
Current public interaction centre

Social Interaction

Master Plan
Situation

5. Proposed Network
Ecological sustainable oriented network
Social spatial behavior oriented network

Social Interaction

6. After P2 Plan

Public interaction centre
Current urban programme situation
Multifunction

City centre
Residence
Recreation
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
   - Ecological sustainable oriented network
   - Social spatial behavior oriented network
6. After P2 Plan

Social Interaction

Mater Plan

Public interaction centre

Current urban programme situation

Multifunction

- Transportation
- Health Care
- Education
- Work
Situation
5. Proposed Network
Ecological sustainable oriented network
Social spatial behavior oriented network
Social Interaction
Mater Plan
6. After P2 Plan

Public interaction centre
Multifunction

Popular area
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network

Social Interaction

Master Plan

6. After P2 Plan

Public interaction centre
Multifunction
Transportation accessible

City centres---Highly developed
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network

Social Interaction

Mater Plan

6. After P2 Plan

Proposed Public Open space centre

"The Priceless Age"

1 University Park
2 Resort Park

Connecting the south

Universities
Public Recreation Facilities
Hospitals
Situation
5. Proposed Network
Ecological sustainable oriented network
Social spatial behavior oriented network

Social Interaction
Mater Plan
6. After P2 Plan
1. University Park
Design for the Youth--need

Youth

Immigrates

Poverty

Ecological sustainable oriented network
Social spatial behavior oriented network

Social Interaction

Master Plan

6. After P2 Plan
1. University Park
Design for the Youth---close community

Social Interaction
Mater Plan

6. After P2 Plan

Ecological sustainable oriented network
Social spatial behavior oriented network

Situation
5. Proposed Network

- 1.
- 2.
- 3.
- 4.
- 5.

Current Situation

Proposed Network

- Ecological sustainable oriented network
- Social spatial behavior oriented network

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1. University Park

Design for the Youth---Possibility

Social Interaction

Mater Plan

6. After P2 Plan

Universities

Green Space

Community
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
6. Social Interaction
7. Mater Plan
8. After P2 Plan

University Park, Irvine
2. Resort Park Design for the Elders

Green

5. Proposed Network
Ecological sustainable oriented network
Social spatial behavior oriented network

Social Interaction

Mater Plan

6. After P2 Plan

Health Care

Necessity
Social Interaction

Mater Plan

6. After P2 Plan

Situation

5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network

Lower Factory Pond

3. Emscher Valley Quarter --- Regional Communication Centre
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
6. After P2 Plan

Social Interaction
Mater Plan
3. Emscher Valley Quarter

3. Emscher Valley Quarter --- Regional Communication Centre

Social spatial behavior oriented network
Ecological sustainable oriented network

1 University Park
2 Resort Park
3 Emscher Valley Quarter

Emscher Regeneration
1. Fantasy

2. Problem Statement

3. Research Question

4. Current Situation

5. Proposed Network
   - Ecological sustainable oriented network
   - Social spatial behavior oriented network

6. After P2 Plan

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3. Emscher Valley Quarter
   - Multifunction

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Virgin territory in the city----

a new, urban quarter that should offer space for work, free time, and culture
Situation

5. Proposed Network
Ecological sustainable oriented network
Social spatial behavior oriented network

Social Interaction

6. After P2 Plan

3. Emscher Valley Quarter --- References

Re-Cultivating the Forest City
5. Proposed Network
Ecological sustainable oriented network
Social spatial behavior oriented network

Social Interaction

Mater Plan

6. After P2 Plan

University Park
Emscher Valley Quarter
Proposed Public Open space centre

South & North Open Space Corridors
Resort Park
Situation

5. Proposed Network
Ecological sustainable oriented network
Social spatial behavior oriented network

Slow Transportation
Mater Plan

6. After P2 Plan

Traffic Jam. A40
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network

Slow Transportation

Mater Plan

6. After P2 Plan
Situation
5. Proposed Network
Ecological sustainable oriented network
Social spatial behavior oriented network
Slow Transportation
Mater Plan
6. After P2 Plan

Bike network---Current situation

Current situation
Trian track based bike route
Situation

5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network

Slow Transportation

Mater Plan

6. After P2 Plan

Bike network---Missing link

Urban Function

Important transportation node
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
   - Ecological sustainable oriented network
   - Social spatial behavior oriented network
6. After P2 Plan

**Slow Transportation**

**Mater Plan**

**Bike network---Missing link**

- Tran track based bike route
- New centres
Situation
5. Proposed Network
Ecological sustainable oriented network
Social spatial behavior oriented network

Slow Transportation
Mater Plan
6. After P2 Plan

Train Line centred Bike net-work

- Identity
- Multifunction
- Safe

Main route (on tainline)
New Main route (on tainline)
Main route
New Main route
Branch route
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
   Ecological sustainable oriented network
   Social Spatial behavior oriented network
   Mater Plan
6. After P2 Plan

Proposed open space centre
Original open space centre
net-worked bike system
green routes
Open spaces
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
   Ecological sustainable oriented network
   Social spatial behavior oriented network
6. After P2 Plan
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
   - Ecological sustainable oriented network
   - Social spatial behavior oriented network

Mater Plan
6. After P2 Plan
Situation
5. Proposed Network
   Ecological sustainable oriented network
   Social spatial behavior oriented network

Mater Plan
6. After P2 Plan

1. Canals bring Green

Before

After
1. Fantasy
2. Problem
3. Statement
4. Research
5. Current
6. Situation

5. Proposed
Network

Ecological sustainable
oriented network
Social spatial behavior
oriented network

Mater Plan

6. After P2 Plan

1. Canals bring Green

Before

After
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
6. After P2 Plan

Ecological sustainable oriented network
Social spatial behavior oriented network

Mater Plan
Before
After

2. Train tracks bring people
1. Fantasy
2. Problem Statement
3. Research Question
4. Current Situation
5. Proposed Network
6. Mater Plan
7. After P2 Plan

3. Canals + Train tracks = Beautiful Life!

Ecological sustainable oriented network
Social spatial behavior oriented network

Mater Plan

Open Space Centre
Emscher Valley Quarter
University Park
Resort Park
GREEN!
HEALTHIER!
HAPPIER!
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Master Plan

6. After P2 Plan

Mater Plan
Complete the Open space network Mater Plan
5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network

Master Plan
Complete the Open space network

Zone in
Spatial design of University Park

6. After P2 Plan
Situation

5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Master Plan

6. After P2 Plan

Mater Plan
Complete the Open space network Mater Plan

Zone in
Spatial design of University Park
Situation

5. Proposed Network

Ecological sustainable oriented network
Social spatial behavior oriented network
Master Plan

6. After P2 Plan

Mater Plan

Complete the Open space network Mater Plan

Zone in

Spatial design of University Park

Reflection

Open space network design in high density post-industrial cities by reusing the abandoned transportation infrastructures.
Thank you!