

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information		
Name	Yizhao Du	
Student number	5111838	
Studio		
Name / Theme	Planning Complex Cities	
Main mentor	Dr. Roberto Rocco	Spatial Planning & Strategy
Second mentor	Dr. Dipl.-Ing. Alex Wandl	Environmental Technology & Design
Argumentation of choice of the studio	Regional development and urban sustainability have always been my research interests. In my master's degree project, I will also focus on this topic. Under the dual predicament of the transformation of resource-based industrial cities and the marginalization of secondary cities in regional development, how Handan will develop and how to integrate into the regional network and benefit from it is the starting point of this project. In this process, topics related to urban and regional complexity, such as regional justice, urban economy, and social harmony, will be discussed. In addition, this project will take spatial development strategy planning as the main research output. Therefore, this is a typical urban development issue, and research approaches related to complex cities are a powerful way to solve this issue.	
Graduation project		
Title of the graduation project	Transformation and Revival —Research on Urban Development Strategic Planning for HanDan under the Dual Dilemma of Resource-based Industry Transition and Regional Spatial Marginalization	
Goal		
Location:	HanDan municipality, HeBei province, PR China	
The posed problem,	Handan is an ancient city with thousands of years of human civilization. It was also one of the first batch cities in ancient China that developed due to the centrality of regional politics. For thousands of years, it	

has been a representative of fashion and prosperity, and it has nurtured a diverse and splendid cultural system. However, with the advancement of China's industrialization process, although it has a profound cultural heritage, Handan was planned as a resource-based industrial city due to its rich mineral deposits and advanced production technology.

Since the establishment of Handan Steel Plant in 1956, this city began to rely on resource-based industries to development. This has caused two industrial problems. On the one hand, like other resource-based cities, Handan's industrial structure is unitary, heavy industries is prosperous, but other industrial sectors have not developed well. On the other hand, the local culture that could have contributed to the development of the city has not been well valued, and the corresponding cultural and creative industries have not played their roles. In addition, due to the long-term development of heavy industries, the human settlement environment of Handan has been destroyed, making Handan one of the cities with the worst air quality in the world.

In 2002, the central government began to promote "new industrialization" throughout the country, the core content of which is to promote the informatization and sustainable industrial upgrading. According to the 2013 "China Resource-Based Industrial City Transformation Development Plan", Handan, as a "developed resource-based industrial city", was required to undergo industrial transformation to achieve the goal of sustainable development. Obviously, Handan was not ready because of long-term dependence on heavy industrial development. Handan's pillar industries, the steel and coal industries, were required

to reduce production, and many small companies were shut down.

To make matters worse, due to defects in the industrial structure, Handan does not have the basis to attract emerging industries, Handan's economy was severely hindered. This has caused a decline in industrial vitality. Not only that, the city has ignored the training of talents and the support of scientific research institutions. The lack of support from advanced technology has made Handan's industrial transformation road bumpier. Factory shutdowns have also led to the emergence of many abandoned post-industrial spaces in cities, which are undergoing or will undergo urban regeneration. However, most urban regeneration projects are based on economic interests, and do not fully respect social needs and local cultural presentation.

In 2012, in the "new urbanization" proposed by the central government, "urban agglomerations" were used as a concept to strengthen urban cooperation. However, under the catalysis of the market economy, the competitive relationship between cities in the region still exists widely and intensified. Handan is surrounded by four mega-regions, with national-level regional central cities such as Beijing, Tianjin and Zhengzhou around it, as well as provincial capitals such as Jinan, Shijiazhuang, and Taiyuan. Compared with the strong attractiveness of these bigger cities, Handan does not have enough capacity to attract investment, talents and other development resources, nor can it retain young laborers because of the decline in industrial vitality, lack of good employment opportunities, and un-friendly entrepreneurial environment.

Under such circumstances, Handan's industrial development and the

agglomeration of emerging industries become more difficult, and it cannot truly integrate into the development of the mega-region and benefit from it. Within the Handan municipality area, the cooperative relations between counties are not close enough. In order to pursue economic interests, competition relations also exist widely among counties. The fragmentation of culture and geographical inconvenience have also exacerbated this problem.

In 2015, the promulgation of the "Beijing-Tianjin-Hebei Coordinated Development Plan" meant that a new world-class mega-region was born in the northern China. In this plan, Handan, as a functional expansion zone in the southern part of the region, undertakes the task of receiving the manufacturing industry and other industrial sectors relieved from Beijing. To this end, Handan established the "Southern Hebei New District" as a new industrial zone, some factories relocated from big cities such as Beijing and Tianjin have already settled in. However, Handan still has not cultivated an industry with local characteristics that reflects the glorious culture, which has made its status in the mega-region continue to decline, becoming a simple industrial "evacuation area", and its bright culture has begun to fade.

In summary, Handan, like many other resource-based industrial cities, is facing a transformation dilemma. Worse, the special location (in the middle of the four mega-regions) aggravates the disadvantage of this secondary city in the regional competition. Because of the dual dilemma, Handan has two problems. From the perspective of industry, the vitality of the industry is decreasing, and the population is exodus; from the perspective of regional development, Handan is not truly integrated into the regional system and is

	continuously spatial marginalized. In addition to these two issues, Handan has an excellent landscape pattern, spatial resources and cultural advantages, but these potentials are not fully respected and utilized in the process of urban development.
research question	Facing the double dilemma of regional spatial marginalization and difficulties in the industrial transition, how can spatial regeneration of the post-industrial sites help Handan transform from a traditional resource-based industrial city to a new innovative metropolis?
design assignment in which these result.	<p>First of all, this project aims to summarize the current development problems faced by the secondary cities in the region that once relied on resource-based industries as their development pillars. Related literature review and theoretical research are the research foundation of this project.</p> <p>Second, based on theoretical research, this project will focus on the analysis of Handan’s cultural system, industrial status, and spatial renewal, and propose planning and design principles.</p> <p>Third, based on design principles and research purposes, strategically implant design and planning, and establish a sequence of different scenarios to evaluate the problems and potential of planning implantation.</p> <p>Finally, the stakeholders of planning and development, time path, space selection, and other pathways for achieve the research aim will also be proposed.</p>
<p>[This should be formulated in such a way that the graduation project can answer these questions. The definition of the problem has to be significant to a clearly defined area of research and design.]</p>	
Process	
Method description	

Method and materials

Sub-research question 1:

What **spatial consequences** did industrialization bring to Handan, and what **opportunities and potentials** that followed?

Local scale **City scale** **Regional scale**

Question definition:

The first research question is an analysis of the status quo based on the conceptual framework. Spatial regeneration is one of the concepts of this project, and it is also considered as one of the opportunities to achieve the research aims. Therefore, this question first conducts analysis of the spatial consequence of industrialization in the Handan municipality area, based on this, the specific opportunities and potentials will be explored in this project, existing challenges and problem will be summarized.

Method to be applied:

The research methods involved in this question mainly include:

Literature review: study past research on Handan industrialization and summarize the research results;

Policies census: The Handan Municipal Government has issued some policies related to urban development and industrialization;

Site survey: conduct on-site surveys of selected typical spatial regeneration projects to check the development status;

Mapping: Use maps to depict the opportunities and challenges of the city.

Resource and material:

Existing literature on the research of industrialization in Handan City

Industrialization policies provisions issued by the Handan Municipal Government

Data collected by field survey

Interview record

geographic data and GIS database

Research objectives:

The goal of this research question is mainly to analyze the impact of the industrialization process on Handan, especially what kind of spatial consequences it has caused, based on these spatial consequences, explore the opportunities and challenges that exist, and think about how it can help planning and design.

Expected outcomes:

A summary of the impact of the industrialization process on Handan;

An atlas of the spatial consequences of industrialization development;

The results of the SWOT analysis, and a summary of the potential for spatial development and renewal.

Sub-research question 2:

How to use the **key drivers for innovative urbanism** to create a **vision for HanDan with multiple planning perspectives?**

Local scale **City scale**

Question definition:

The second question is mainly based on theoretical research, summarizing key drivers for innovative urbanism, and exploring how these innovative drivers should be applied to the urban development and industrial transformation of Handan. On this basis, set the project's vision for the future development of Handan, and a multi-dimensional planning perspective to promote innovative urbanism in Handan.

Method to be applied:

The research methods involved in this question mainly include:

Literature review: study past research on Handan spatial regeneration and summarize the research results;

Policies census: Summarize the relevant regulations and goals of Handan City's policies on urban innovation;

Site survey: conduct on-site surveys of selected typical spatial regeneration projects to check the development status;

Interview: Interview with stakeholders (government officials, users, planners, indigenous people);

Mapping: Use maps to depict the opportunities and challenges of the city.

Resource and material:

Innovative urbanism policies issued by the Handan Municipal Government

Literatures and previous studies on innovative urbanism

Data collected by field survey

Interview record

Research objectives:

The research objective of this research question is to explore how to apply innovative urbanism drivers to the vision of Handan's strategic planning, and define a multi-perspective planning perspective to pursue the realization of innovative urbanism vision. Therefore, this research question will be divided into two parts. First, through theoretical research, summarize the detailed drivers of innovative urbanism, and define its related standards and influencing factors. Second, explore how these drivers affect the strategic planning in this project.

Expected outcomes:

A summary of the innovative drivers for the strategic planning of HanDan;

An evaluation criteria for innovative urbanism;

Vision and planning perspectives for innovative urbanism of HanDan.

Sub-research question 3:

What **regenerative strategies** can promote the transformation of innovative urbanism in HanDan, and how can these strategies help the city **integrate into regional network**?

Local scale **City scale** **Regional scale**

Question definition:

This question mainly studies the regenerative strategy to promote Handan's innovative transformation, which is based on the planning vision. These strategies not only promote Handan's innovative transformation, but also help Handan integrate into the regional development system with a new identity.

Method to be applied:

The research methods involved in this question mainly include:

Case study

Mapping: Region mapping;

Pathway designing: From the dual perspectives of time and space, explore the pathway of planning and development;

Stakeholder analysis: Discuss the stakeholders that may be involved in the implementation of the plan and explore the relationships between them;

Resource and material:

Maps and evaluation criteria for innovative urbanism in HanDan

Research objectives:

The purpose of this research question is to formulate a strategic plan for the transformation of Handan's regional development domain, combining Handan's own development potential and innovative drivers, and propose specific strategies for innovative transformation.

Expected outcomes:

Strategies for innovative vision in HanDan;

Master plan for regional strategic planning.

Sub-research question 4:

How can innovative urbanism strategies be implemented spatially, especially at local scale?

Local scale **City scale**

Question definition:

The last question will continue to zoom in and eventually reach the local scale. On the one hand, test planning Whether the strategies can really promote Handan's innovative urbanism and promote its completion of industrial transformation and integration into the regional development system, on the other hand, explore the stakeholder engagement in combination with the existing stakeholder system. Eventually form the path of implementation and the steps to realize the planning vision.

Method to be applied:

The research methods involved in this question mainly include:

Case study: study the local case and applied designing tools.

Mapping: Region mapping;

Pathway designing: From the dual perspectives of time and space, explore the pathway of planning and development;

Stakeholder analysis: Discuss the stakeholders that may be involved in the implementation of the plan and explore the relationships between them;

Scenario building: Establish a sequence of scenarios and discuss how strategy implantation can promote the city to become a regional innovative node.

Resource and material:

Master plan of regional strategic planning

Mapping for current situation in local scale (and related GIS database)

Research objectives:

The purpose of this research is to develop planning strategies, and to explore how regional-scale planning strategies can play a role at the local scale to truly promote innovative urbanism. On this basis, designing principles and spatial tools will be defined and applied in local scale design.

Expected outcomes:

Spatial principles and tools for strategic implementation at local scale;

Site design for local scale.

Literature and general practical preference

The main literature and general practical preference in this project are required based on the theoretical framework:

The literature study of this research is based on the timeline of China's industrialization and urbanization development, which is mainly divided into three aspects:

(1) The theory of industrialization and transformation of resource-based industrial cities

Since the founding of New China in 1949, this country has begun to talk about the process of industrialization. The country has supported a series of resource-based industrial cities to strengthen the country's heavy industry strength. However, as the concept of "sustainable development" began to develop in depth and resource-based industrial cities began to transform, the difficulties encountered in this process are important issues that this research focuses on.

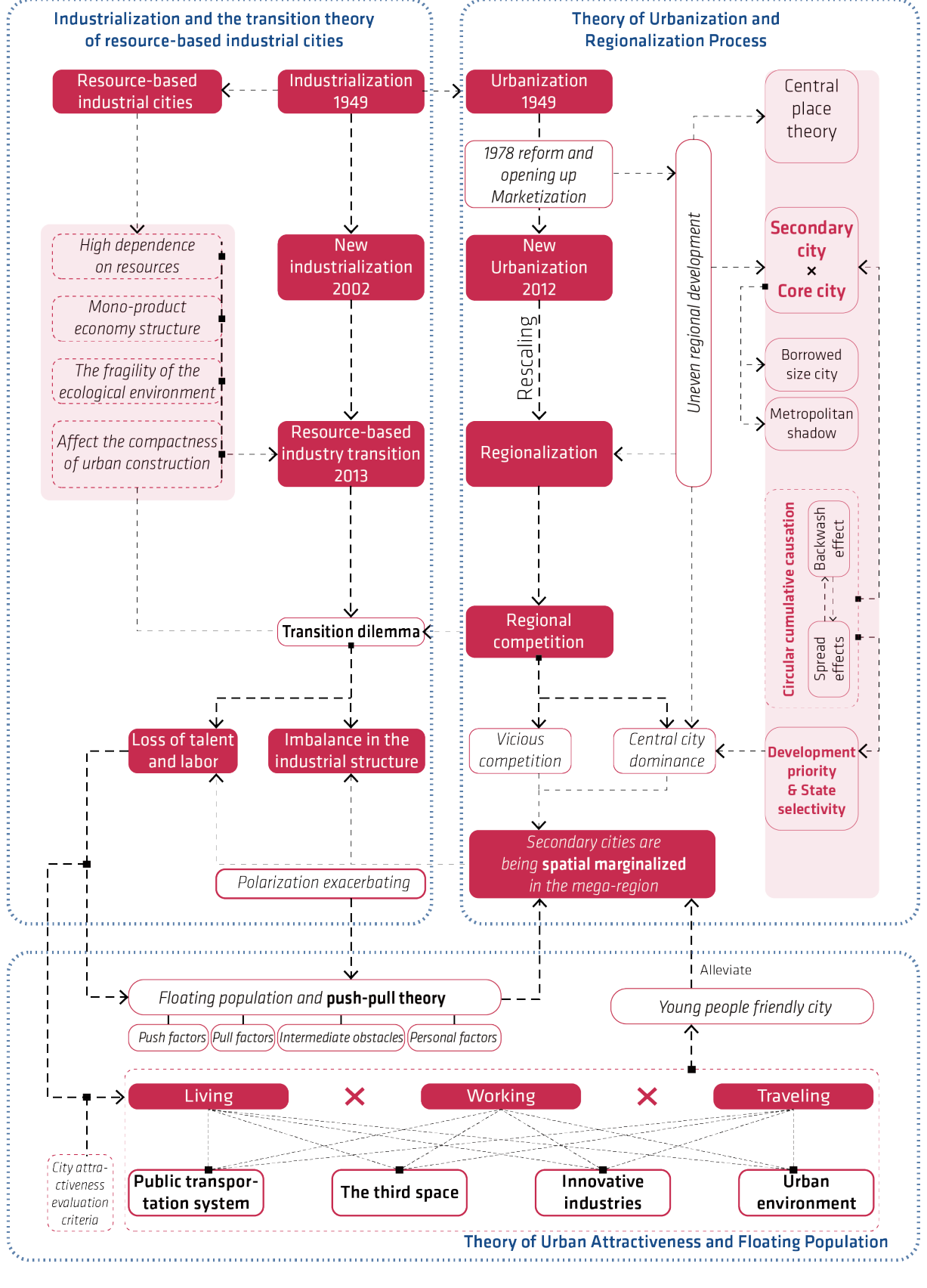
(2) Urbanization and regionalization process theory

Along with industrialization, the process of urbanization in China has also developed rapidly. In the wave of globalization, the concept of "urban agglomerations" appears in national territorial planning as a mechanism for strengthening regional city cooperation. However, due to issues such as regional governance, central cities take the initiative, and secondary cities are being spatial marginalized. Among these secondary cities, there are many resource-based industrial cities that need to be transformed. There is no doubt that this regional competitive environment is a nightmare toward these cities.

(3) Urban attractiveness and floating population theory

Urban attractiveness and floating population have been studied by many scholars as direct representations of urban development and vitality. In this project, the core of the theory is the "push-pull theory". At the same time, various urban attractiveness evaluation criteria are also included as important theoretical components discussed in the chapter.

Theoretical framework:



Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

This project will be based on in-depth multi-scale urban analysis. In this process, complex urban approaches are the primary research path. On the basis of urban analysis and theoretical research, urban design is used as a method to explore how to achieve the research objectives from the perspective of strategic planning. Therefore, this is in line with the research path of Complex cities, and it is also a research topic in line with urbanism track.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

Social relevance

Due to long-term dependence on resource-based industrial development, Handan, a city with thousands of years of splendid history and culture, has not used its cultural advantages in its urban development. Facing the dual dilemma of industrial transformation and regional spatial marginalization, Handan's economic vitality and social vitality continue to decline. The city cannot provide young people with a good life, employment, and travel environment. This has formed a vicious circle that makes the city of Handan Attraction and regional competitiveness continue to decrease. This floating-out population is also the focus of this project.

Based on the analysis of social issues, the research goal of this project is to explore the potential of local culture in promoting industrial transformation and urban social harmony and plan strategic implantation to help Handan transform into a youth-friendly city. This is the optimized framework for the main research and exploration of this project. This optimized framework can provide a reference for the development and transformation of other cities facing the same problems. From a social perspective, this research will focus on improving the attractiveness of the city using strategic planning methods, and in this way, to improve the existing problems of injustice in regional development and lack of social culture.

Scientific relevance

First of all, in the field of regional planning and design, most planners and scholars often positioned themselves on regional central cities to conduct researches. The cities that this project focuses on are regional secondary cities. Such cities do not take the initiative in regional development and are often in a passive position. Such a research perspective will promote the progress of regional cooperative research.

Secondly, this research attempts to find more opportunities and possibilities for the former resource-based industrial cities in a difficult situation of transition. In this process, local culture and spatial regeneration are considered to be a concept that can be studied in depth. How can local culture play its potential to help

cultivate innovative industries, the combination of local culture and spatial regeneration projects, the paradigm and existing problems of current urban regeneration projects, and the possibility and feasibility of spatial regeneration projects contributing to urban vitality. These questions are important issues to be considered in this project, which will contribute more development possibilities to the urban industry and urban vitality study.

All in all, from the theoretical point of view, the relevance of this thesis lies mainly in the intention of filling the knowledge gap and enrich the research content in the relevant field.