

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	Jie Chu	
Student number	5002206	
Studio		
Name / Theme	Planning Complex Cities / Urbanism	
Main mentor	Dr. Lei Qu	Spatial Planning & Strategy <i>Expertise focus on regional planning and design, new planning models, with rich experience on socio-spatial transformations in Chinese villages</i>
Second mentor	Dr. Ing. Steffen Nijhuis	Landscape Based Urbanism <i>Professional landscape architecture on landscape-based urbanism, sustainable urban landscape development, design with natural processes</i>
Argumentation of choice of the studio	<p>Under the rapid urbanization, rural area in megacity regions is reinvented to fit city development, which is driven by modern industries, through top-down planning. Declining of the countryside and side effects brought by development reveal the limitation of the linear urbanization, we are standing at the cross of the transition.</p> <p>Consider this exploring interest, <i>The Planning Complex Cities</i> studio is the best choice for me to develop my graduation project in a systematic and practical way. With profound knowledge and rich experience in spatial planning, global urbanization, and governance arrangements, the studio could help me to understand the mechanism of the complex urban-rural system, deal with the conflicts through spatial proposal, and explore future possibilities of the countryside development in a typical Chinese megacity region.</p>	

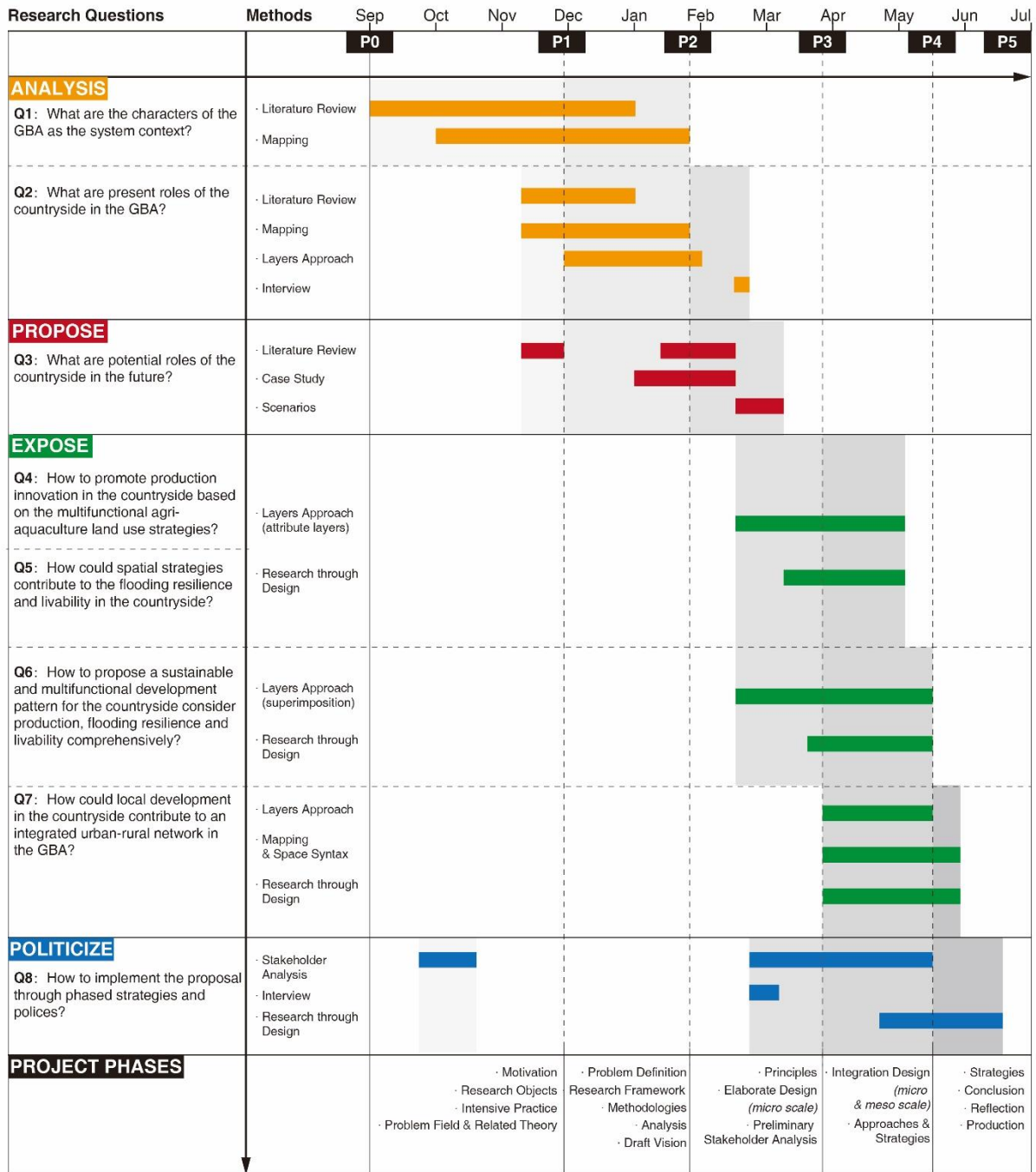
Graduation project	
Title of the graduation project	<p>"Xiangcun", A Productive Landscape Sustainable Countryside in the Urban-rural Integrating Megacity Region</p>
Goal	
Location:	<p>The Greater Bay Area, Guangdong-Hongkong-Macao, China</p>
The posed problem	<p>Since the reform and opening-up policy, miraculous urbanization happened within the GBA in the past decades.</p> <p>Declining Countryside: weak position in dual urban-rural relationship</p> <p>However, under the urban-centric development driven by market economy, countryside competes with cities in attracting product elements while providing resources for cities. Consequentially, the prices of the leap forward in the GBA are shrinking agriculture land facing flooding risk, labor losing due to limit work opportunities in rural area and increasing wealth disparity between the city and the village. Countryside is declining, and the agglomeration area is now the frontline of the conflicts between urban and countryside.</p> <p>Unsustainable Land Use: city-oriented and monofunctional development</p> <p>In order to maximize the value of the shrinking agriculture land in the GBA, the traditional multifunctional agri-aquaculture fields are reformed to extend specific functions for satisfying urban needs. Essentially, the monofunctional strategy which highly depends on regional cities is another form of the city-oriented urbanization, and would lead to the unbalanced development of the rural area. In the long term, the unsustainable pattern is insufficient to enhance the position of the countryside and deal with the issues caused by dual urban-rural relationship.</p>
research questions	<p>Main Question:</p> <p>How to develop the countryside sustainable based on multifunctional agri-aquaculture land use, in order to contribute to an integrated urban-rural network in the GBA?</p>

	<p>Sub Questions:</p> <ul style="list-style-type: none"> • Redefining the countryside in the GBA <ul style="list-style-type: none"> <i>Q1: What are the characters of the GBA as the system context?</i> <i>Q2: What are present roles of the countryside in the GBA?</i> <i>Q3: What are potential roles of the countryside in the future?</i> • Sustainable Development in the Countryside <ul style="list-style-type: none"> <i>Q4: How to promote production innovation in the countryside based on the multifunctional agri-aquaculture land use strategies?</i> <i>Q5: How could spatial strategies contribute to the flooding resilience and livability in the countryside?</i> <i>Q6: How to propose a sustainable and multifunctional development pattern for the countryside considering production, flooding resilience and livability comprehensively?</i> • Urban-rural Integration in the GBA <ul style="list-style-type: none"> <i>Q7: How could local development in the countryside contribute to an integrated urban-rural network in the GBA?</i> <i>Q8: How to implement the proposal through phased strategies and policies?</i>
<p>design assignment in which these result.</p>	<p>The project is aiming to redefining the roles of the countryside in the GBA, proposing sustainable strategies for rural development based on multifunction land use, in order to deal with the dilemmas brought by linear urbanization and contribute to an integrated regional network.</p> <p>Through combining multiple instruments of the spatial planning, the project should be developed from broad to specific. The expected result of the project would be a practical planning proposal with various priorities on different scales, and should balance the top-down and bottom-up process considering this coherence.</p> <p>On regional scale: Providing a flexible planning framework. The framework would be build based on a vision and supported by related principles, which could guide the sustainable transition and ensure the implementation of the proposal.</p> <p>On local scale: I am going to take typical sites in the rural area within the GBA as cases in the expose phase. The result on this scale would be more like rehearsal possibilities follow the guiding principles than fixed construction design. The elaborate design is aiming to present the ideal development under the proposal strategies.</p>

Process

Method description

Thesis Plan:



Combining sub research questions and related methods with my graduation timeline, the form explains the process I am going to explore answers of the questions step by step for achieving my research aim. The research and design program could be divided into four phases: “Analysis, Propose, Expose and Politicize”, which were developed by Marcuse (2008) for critical planning.

Methods such as literature review and case study play important roles in analysis and propose phases as the theoretical basement for understanding the urbanization context and the meaning

of the countryside. And in order to build connections between theoretical and spatial research, layers approach is more significant in following phases for guiding analysis and design through its analysis framework based on various perspectives. Besides, the mapping is another key method throughout the project, it offers a visualization method for information represent and could be used to answer both research and design questions combined with other methods.

Description of the Key Methods:

Transcalar Mapping

Description:

Mapping is a method combining observation and representation. Harley and Woodward (1987) described it as a process for understanding the research objects spatially. The tool could help with translating the source data into visual information and translating theoretical notions into elements for spatial analysis.

By creating maps, the data-translation process in Mapping provides significant and spatial based evidence for understanding mechanism of the GBA system. The method is implicated throughout analysis and design phases in my project. For example, the structure maps extract spatial information would be the analysis basis of the layers approach.

Tools:

GIS data Visualization

Mapping through GIS data visualization is an important method in spatial analysis, the analysis is based on the open data calculated by multi-institutions and the visualizing platform (QGIS). The graduation project is going to using open data in the GBA mainly provided by Openstreet Map and RESDC (Resources and Environment Science and Data Centre). The method is using for analyzing morphology and distribution of the elements in the research area. The limitation is that the data in Chinese rural area is incomplete and hard to access. Error and timeliness of the resources data might influence the accuracy of the analysis.

PST Analysis

PST developed by KTH school is an open-source tool for spatial analysis. The tool is based on the theory of the space syntax and infrastructure network created in GIS. It uses three geometric features including segments lines, unlinks and attraction for analysis, the result

Steps taken during analysis:

1. Defining: analysis elements
2. Data Collecting: source data collecting
3. Analysis and translation
4. Information representation

Layers Approaches

Description:

The analysis process should separate a whole complex image into simpler components and explore their interrelations (Kim W Todd, 1985, Nermeen Dalgamoni, 2014). Ian McHarg provided layers approach as an efficient tool for analyzing spatial system influenced by composite elements in Design with Nature (McHarg, 1969).

Considering the complexity of spatial planning, the method is applied in the project to understand the iterative and multiscale interdisciplinary research object (Nijhuis, et.al.,2016). For example, to achieve the aim of reconstructing the human-land relationship based on the

agriculture-productivity innovation, the sustainable development path within the region could be deconstructed into different perspectives including economic, environmental and social aspects. So that the theoretical elements defined in the conceptual framework could be transformed into specific spatial issues which are linked to these three aspects. The information on different layers could be detailed in the analysis and design process. Through overlapping, outcome of the methods is more than conclusion on each layer, but how could the sub-themes interact with each other and merge into the optimized integrated system.

The method provides flexibility for various projects, it is not only a method but also a practical logic for research. In past practices, though layered elements basically build on the "social-spatial network model" provided by Dupuy (1991), the content of layers could be adjusted to deal with various focus issues. Besides, the ordering of the layers defines the priority of the elements to a certain extent under the method framework.

Steps taken during analysis:

1. Defining attribute layers through previous research
2. Elaborating details analysis and design on single attribute layer
3. Analysis interactive relationship between different layers through superimposition.
4. Integrated analysis for the overall system

Scenarios

Description:

"The method of scenario is a useful tool to deal with uncertainty and complexity. Scenario planning encourages strategic thinking and helps to overcome thinking limitations by creating multiple futures. In this way, it can help to shape the future according to the values and desires of society." (Stojanović, et.al, 2014)

The outcome of the scenarios should be the most reasonable program within the comparable alternatives related to key elements. The alternatives should be influenced by key factors, in order to predict possible developments under specific challenges and opportunities. In this project, the outcome of the scenarios would be optimal development strategies for countryside dealing with uncertainty and complexity of the megacity region system.

Steps taken during analysis:

1. Scenario Field: Clarifying the opportunities and risks to deal with
2. Key Factors: Identifying different principles for research field
3. Generation: Developing different scenarios based on different principles
4. Transfer: Comparing and select the most reasonable scenario as strategies

Literature and general practical preference

Literatures:

Theories of urbanization and Spatial Planning

Balz, V. E. (2021). Contemporary Theory for Regional Design. In *The Routledge Handbook of Regional Design* (pp. 66–86). Routledge. <https://doi.org/10.4324/9780429290268-6>

Leino, H., & Puumala, E. (2021). What can co-creation do for the citizens? Applying co-creation for the promotion of participation in cities. *Environment and Planning C: Politics and Space*, 39(4), 781–799. <https://doi.org/10.1177/2399654420957337>

Liu Jinghua. (2018). Rural Urbanization: Its Course and Experiences in Europe. *History Research and Teaching*, 0(1), 18–27.

Neuman, M., & Zonneveld, W. (2021). The Routledge handbook of regional design. *The Routledge Handbook of Regional Design*, 1–464. <https://doi.org/10.4324/9780429290268>

Theories of Sustainable Development

Campbell, S. (1996). Green Cities, Growing Cities, Just Cities?: Urban Planning and the Contradictions of Sustainable Development. *Journal of the American Planning Association*, 62(3), 296–312. <https://doi.org/10.1080/01944369608975696>

Mensah, J. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Http://Www.Editorialmanager.Com/Cogentsocsci*, 5(1). <https://doi.org/10.1080/23311886.2019.1653531>

Theories & Research about Countryside and Agriculture

Knickel, K., Ashkenazy, A., Chebach, T. C., & Parrot, N. (2017). Agricultural modernization and sustainable agriculture: contradictions and complementarities. *International Journal of Agricultural Sustainability*, 15(5), 575–592. <https://doi.org/10.1080/14735903.2017.1373464>

Liu, Y. (2018). Research on the urban-rural integration and rural revitalization in the new era in China. *Acta Geographica Sinica*, 73(4). <https://doi.org/10.11821/dlxb201804004>

Long, H., Liu, Y., Li, X., & Chen, Y. (2010). Building new countryside in China: A geographical perspective. *Land Use Policy*, 27(2), 457–470. <https://doi.org/10.1016/j.landusepol.2009.06.006>

OMA. (2020). *Abstract of Countryside, A Report*. OMA Website. <https://www.oma.com/publications/countryside-a-report>

Urbanization and Agriculture in the GBA

Hui, E. C. M., Li, X., Chen, T., & Lang, W. (2020). Deciphering the spatial structure of China's megacity region: A new bay area—The Guangdong-Hong Kong-Macao Greater Bay Area in the making. *Cities*, 105, 102168. <https://doi.org/10.1016/j.cities.2018.10.011>

Mihai Craciun. (2001). Ideology. In *Great Leap Forward* (p. 109). Taschen.

Nijhuis, S., Xiong, L., & Cannatella, D. (2020). Towards a Landscape-based Regional Design Approach for Adaptive Transformation in Urbanizing Deltas. *Research in Urbanism Series*, 6, 55–80. <https://doi.org/10.7480/rius.6.94>

Sun, C. ;, Nijhuis, S. ;, & Bracken, G. (2019). Learning from Agri-Aquaculture for Multiscale Water-Sensitive Design in the Pearl River Delta. *Landscape Architecture (Fengjing Yuanlin)*, 26(9). <https://doi.org/10.14085/J.FJYL.2019.09.0031.14>

TIAN, M. (2019). Seeing from Above: Observation of Contemporary Dike-Pond Landscape. *Landscape Architecture Frontiers*, 7(4), 130–138. <https://doi.org/10.15302/J-LAF-1-050004>

Yeh, A. G. O., & Li, X. (1999). Economic Development and Agricultural Land Loss in the Pearl River Delta, China. *Habitat International*, 23(3), 373–390. [https://doi.org/10.1016/S0197-3975\(99\)00013-2](https://doi.org/10.1016/S0197-3975(99)00013-2)

Methodologies

Stojanovic, M., Mitkovic, P., & Mitkovic, M. (2014). The scenario method in urban planning. *Facta Universitatis - Series: Architecture and Civil Engineering*, 12(1), 81–95. <https://doi.org/10.2298/FUACE1401081S>

Nermeen Dalgamoni (2014). Reading Sites: A Framework toward Comprehensive Site Analysis Teaching Strategies

Practical Preference for Case Study

The Green Heart Planning in Randstad (agricultural modernization under the network region)

Zonneveld, W. (2020). Randstad : From a spatial planning concept to a place name. *The Randstad*, 227–254. <https://doi.org/10.4324/9780203383346-15>

Versterking Overschild (MVRDV, 2018)

Reflection

1. Relation between the project, the studio topic, Urbanism, and MSc AUBS

"Sous Les Pavés La Plage", the radical slogan from the last century, could adequately summarise my understanding of urbanism: the discipline is more than the science for cities. It is the imagination of future possibilities based on research and understanding of the complex system. This is the broad but root motivation of my graduation project which focuses on the rural area within a global megacity region.

With the sustainable development concerning and systemic research approach, the department of Urbanism in TU Delft provides me with the chance to understand urbanization from a different perspective and deeply explore the development possibilities beyond the urbanized area. Because of the nature-based feature of the countryside productions, I analysed the countryside as a comprehensive human-nature system with support from my second mentor, who is from the landscape theme of the faculty, and realised the importance of cooperation between different disciplines. The inclusive and cooperative academic environment is the solid backup force and diverse idea hub for me to contribute specific knowledge on sustainable development as an urbanist.

For specific research in my project, my graduation studio, Planning Complex Cities, provides me with profound theoretical and practical knowledge for researching the GBA as a coherent system. With wide interest in global agglomeration areas and across scale thinking, projects under various contexts in the studio result in different possibilities but present the common vision for making the world a better space to live in in a sustainable way. The research on the rural area under Chinese urbanization influence could contribute to this developing diversity and be a part of the exploring for possibilities of sustainable development in the future.

2. Relevance of my work in social, professional and scientific framework.

Edward Glaeser described the city as the "greatest invention" of the human in his book *Triumph of the City* (2011). However, the high-speed urbanization around the world is causing a series of problems: the ecological resilience of the land is lost due to the expansion of the hard pavement, the agricultural land is shrinking during the resource competition, and the wealth disparities between settlements are increasing. The condition of people's life is related to the place they live, and the unfairness is continued as the result of urbanization running out of control.

The countryside is becoming an agenda today due to this growing environmental and social crisis. Worldwide architects and urbanists start to reflect on the methods people developed settlements in past centuries. The

countryside reattracted number of attentions because of the extensive area and characters of nature-based production which is different from the urban development model. However, a relative experience that combining theory and practical research is scarce.

The thesis of my project is a discussion under the Countryside agenda from the perspective of a planner in the future. The project aims to contribute specific spatial knowledge to the broad topic, and explore new opportunities for the rural area, the traditional but ignored settlements based on eco-production, in order to propose a justice relationship between cities and villages and decrease disparities. Sharp social and environmental conflicts are the reason why I chose the countryside in an international megacity region as a typical research objective.

Furthermore, the proposal for countryside development is not a radical denying of urbanization, but an optional possibility for quality and just settlements in the future.