

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

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

Personal information	
Name	Huiyuan Zhang
Student number	5796733

Studio		
Name / Theme	Designing resilient coastal landscapes	
Main mentor	Steffen Nijhuis	Landscape-based urbanism, sustainable urban landscape development, design with natural processes, designed heritage landscapes & gardens, digital landscape architecture, and visual landscape research
Second mentor	Lei Qu	Spatial planning and design
Argumentation of choice of the studio	I am interested in site research and landscape design in the Pearl River Delta. My home is in the Yangtze River Delta, which shares with the Pearl River Delta the difficulty of balancing urban development and sensitive natural coastline protection. I am interested in how the landscape can deal with this problem at the biological, social, and economic levels. In this lab, I can study how to create a social-ecological inclusive landscape and how to use landscape to alleviate ecological degradation while promoting sustainable urban development and ensuring people's production and life.	

Graduation project	
Title of the graduation project	Fishermen Landscape: From Water to Land - Rebuild gradient-landscape in PRD
Goal	
Location:	Guang dong, China
The posed problem,	<p>Urban development ignores the joint advancement of economy and ecology.</p> <ul style="list-style-type: none"> In the past, the urban development model has always focused on economic development first, ignoring the ecological and environmental problems brought about by evolution. After economic development reaches a certain height, much time and money are spent on ecological restoration. Such a vicious cycle needs to be replaced by a new

virtuous cycle. For example, by applying a sustainable development model while developing the economy, we will consider the ecological problems it brings, prevent and deal with them, and put environmental and economic interests at the same level.

The lives of fishermen are under threat.

- As one of the regions with the fastest economic development in China and even the world, the Pearl River Delta naturally focuses its urban planning and development on the economy. However, urban development that prioritizes economics has exacerbated a series of environmental degradation problems, such as water pollution, habitat destruction, biodiversity loss, etc. These problems have seriously affected the production and life of fishermen who rely on water for their livelihood. These problems have reduced fish populations and made it difficult for fishermen to make ends meet. The high cost of urban living leaves them wandering on the water, unable to gain a foothold in the city. Even if they move to land because of government support, they still do not have enough life skills to gain a place in the rapidly developing city.

Landscapes and traditional lifestyles are undervalued.

- To improve local fishermen's and rural residents' lives, the government's approach is to build clustered communities and high-rise buildings, provide fishermen and farmers with specific compensation for demolition, and let them give up their traditional lives and move directly into the city. These fishermen and farmers moved into the city, but they needed to gain skills to survive in the town and could not promote further urban development. But in fact, the landscape created by their production and lifestyle is a potential social-ecological inclusive landscape. Fishermen relied on the original natural environment and fish resources to survive. As time went by, they further

	<p>created various aquaculture methods, which can also be understood as "artificial fish habitats." Fish habitat connects nature and society. At the same time, fishermen live extensively at the interface between water and land. Therefore, fishermen's habitat is a gradient landscape that can be used to restore the gradually hard boundaries of the Pearl River Delta, thereby alleviating various natural problems caused by urban expansion and ensuring the safety of fishermen. Life.</p>
<p>research questions and</p>	<p>Research Question: How to create new resilient design principles and re-establish the social-ecological system in the Pearl River Delta to restore nature and ensure the survival of fishermen, further contributing to the sustainable development of the city.</p> <p>Sub-question: What is the current relationship between urban development, natural degradation, and the lives of fishermen?</p> <p>Why can the productive lifestyle of fishermen help build a gradient landscape? Why is the fishermen's landscape a socio-ecological landscape?</p> <p>How to develop resilient principles based on the fishermen's landscape type? How to apply principles to specific sites to rebuild the gradient landscape and the social-ecological system?</p> <p>Can the research model on fishermen's landscape be applied to other marginalized groups to create different social-ecological landscapes in a targeted manner?</p>
<p>design assignment in which these results.</p>	
<p>Principle design: Develop principles focused on rebuilding gradient-land scape (fisherman living environment, ecological environment, and economic aspect)</p> <p>Zoom in site design:</p>	

Apply principles to two typical sites in PRD (saltwater and intersection water area; freshwater area) to test how landscape design can provide fishermen with a better living environment while reducing ecological degradation and promoting sustainable urban development.

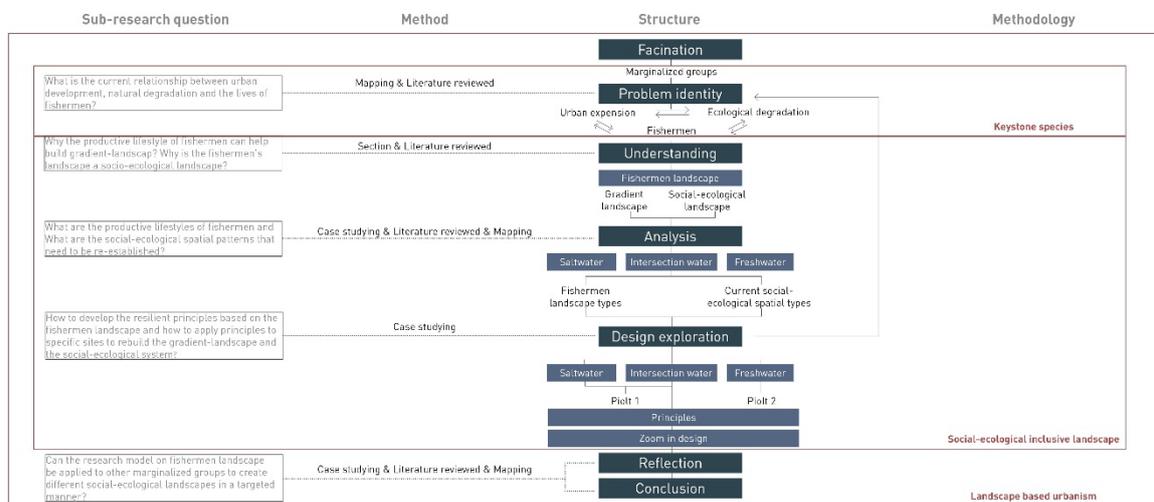
Large scale:

Creating a gradient-landscape buffer zone vision for the entire Pearl River Delta region.

Process

Method description

Framework



Guide theory

Landscape based urbanism

In landscape-based urbanism, content is thus linked to a process of promoting social-ecological inclusiveness, diversity, and flexibility. (Nijhuis 2022)

Social-ecological inclusive landscape

The socioecological entity that we are defining is based on interdependence, it should reconcile humans and nonhumans, but should first also achieve a (re)conciliation between humans among themselves. (Barrière 2019)

Keystone species

Keystone species are critical to maintaining community stability and species diversity. (Mills et al. 1993)

Framework:

Problem identity:

degradation in the Pearl River Delta, I learned about the relationship between urban expansion, natural problems, and fishermen, which helped answer: What is the current relationship between urban development, natural degradation, and the lives of fishermen?

Understanding:

By reading the literature, drawing the overall section of the area, and reviewing the information to map and research the current fishermen's settlements, I answered the question: Why the productive lifestyle of fishermen can help build a gradient landscape? Why is the fishermen's landscape a socio-ecological landscape?

Analysis:

Through case studies and literature, I drew village maps and sections, summarizing fishermen's landscape type, which helped answer: What are the productive lifestyles of fishermen?

By mapping nature, villages, and cities and overlaying them, I summarized the urban space types of the Pearl River Delta, which helped answer: What are the social-ecological spatial patterns that need to be re-established?

Design exploration:

Through case studies, principles were drawn based on the actual conditions of the site, which helped answer: How to develop resilient principles based on the fishermen's landscape?

Through mapping, the three elements of urban, village, and nature of the site were analyzed, and the location of the reconstructed gradient landscape was confirmed.

Then I applied those principles to do the detail design, which helped answer: how to apply principles to specific sites to rebuild the gradient-landscape and the social-ecological system.

Reflection:

Combining case studying, the literature reviewed, and mapping, I can answer: Can the research model on fishermen's landscape be applied to other marginalized groups to create different social-ecological landscapes in a targeted manner?

Literature and general practical references

Nijhuis, S., Sun, Y., & Lange, E. (Eds.). (2023). Adaptive urban transformation : urban landscape dynamics, regional design and territorial governance in the pearl river delta, china (Ser. The urban book series). Springer.
<https://doi.org/10.1007/978-3-030-89828-1>

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<https://doi.org/10.1007/978-3-319-78111-2>

Walker, Brian, and David Salt. Resilience Thinking : Sustaining Ecosystems and People in a Changing World, Island Press, 2006. ProQuest Ebook Central,
<https://ebookcentral-proquest-com.tudelft.idm.oclc.org/lib/delft/detail.action?docID=3317645>.

Mills, L. S., Soulé, M. E., & Doak, D. F. (1993). The keystone-species concept in ecology and conservation. *BioScience*, 43(4), 219-224.

Wang, Y.; Kindong, R.; Gao, C.; Wang, J. Identification of Keystone Species in Ecological Communities in the East China Sea. *Fishes* 2023, 8, 224.
<https://doi.org/10.3390/fishes8050224>

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)?

In the past, as a landscape architect, I used to talk about focusing on responding to natural change and the eco-efficiency of the landscape. But the fact is that the human influence on the landscape is huge, and so is the impact that the landscape has on people and cities. In this project, I try to connect marginalized people with nature through landscape from the perspective of marginalized people and help the city cope with natural changes while improving the living conditions of marginalized people.

Through my previous studies, I realized that landscape can reflect the mutual compromise between humans and nature. The past development model of the Pearl River Delta has forced nature to compromise with urban sprawl while requiring

marginalized people to compromise and disregard their interests. But now, to ensure the sustainable development of the PRD, the interests of nature and marginalized people should be put in a higher position for systematic landscape design.

To achieve this goal, in this project, I have combined my previous studies of water systems, ecosystems, economic systems, and other systems, and plan to create a new mode of operation that mitigates natural threats and promotes urban development while ensuring the livelihoods and economies of marginalized populations.

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

In the project, I tried to think about the future development of the Pearl River Delta from the perspective of marginalized people.

In the past, the urban development model has always focused on economic development first, ignoring the ecological and environmental problems brought about by evolution. After economic development reaches a certain height, much time and money are spent on ecological restoration. Such a vicious cycle needs to be replaced by a new virtuous cycle.

Meanwhile, the Pearl River Delta is China's manufacturing hub and attracts migrant workers from all over the country, but their living conditions are worrying, and their incomes are low. These young adults came to the big cities to work hard, while older people and children at home became the vulnerable groups left behind in the countryside. They have no source of income and are highly vulnerable to natural forces. These people have not enjoyed the dividends brought by economic development, but if we want to promote the sustainable development of the economy and cities, we need to protect the interests of these marginalized groups and improve their living standards.

Landscapes play an important role in creating a new virtuous cycle as a link between humans and nature. I have explored this by studying the lifestyle and farming practices of fishermen in the Pearl River Delta, incorporating new technologies and new urban needs. Design attempts have been made on typical sites. By creating a new gradient landscape buffer area, it is possible to improve the lives of the fishermen and at the same time slow down the degradation of nature, helping the city to cope with natural changes and promoting sustainable urban development.