Graduation Plan

Master of Science in Architecture, Urbanism & Building Sciences

MSc Landscape Architecture 2023 - 2024

Antong Huang

Graduation Plan

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

I Personal information	
Full name	Antong Huang
Student number	5792185

II Studio / Lab information		
Name / Theme	FLOWSCAPES / Circular Water Stories	
Main mentor	Inge Bobbink	Landscape Architecture
Second mentor	Ulf Hackauf	Urbanism
Argumentation of choice of the LA graduation lab	I've always been very interested in the issue of water. I believe that water is one of the most dynamic and attractive elements in the landscape, capable of generating different degrees of strong connections and interactions with people and almost all other elements. The research, management, and adaptation of water is therefore critical and unavoidable on the path of landscape architectural exploration. Meanwhile, the Netherlands has a long history of in-depth research into water issues and a high level of scientific water management means. I chose the Poyang Lake water system as a traditional water system to study and was fascinated by the way people have adapted to and utilized this great natural dynamic change. They have considered the landscape as a system, turning the threats posed by water into opportunities as an extremely lively part of their productive lives. Consequently, I wanted to capitalize on this wisdom and bring this dynamism and flexibility into the design. I wish to construct integrated water-based systems that apply landscape means to provide solutions to the world's widespread relevant problems.	

III Graduation project	
Title of the project	The Breathing Lake: A Rural Adaptive Self-Circulating Natural-Social System Welcoming Water Dynamics
Context and aim of the project	
Location (region / area / site)	Poyang Lake, China
Problem statement	Over hundreds of years, A balanced and stable system has been developed in the Poyang Lake area, integrating the

	seasonal water level changes, with both high productive and ecological values. However, influences, such as changes in river (lake) connectivity by installing dams upstream, increase in outflows by sand mining, reduction of water retention areas caused by land reclamation, and over-use of fish stock caused by long-term exhaustive fishery practice, has led to changes in the hydrological processes and ecological conditions of Poyang Lake. This has disrupted the initially balanced system. As a result, a series of problems ensued, including floods and droughts, ecological degradation, and loss of livelihoods. Changes in river (lake) connectivity and an increase in outflows are the direct drivers of drought problems in dry season, reducing inflows and increasing outflows. Reduction of water retention areas, coupled with the inflexible boundaries of polder fields and reservoirs, cause the incapable of to cope with extreme rainfall in wet season, which leads to the increase in flood risk. Resource over-utilization corresponds to the problem of ecological degradation. Most of the population in the Poyang Lake area is rural, relying on traditional agriculture and fishery, which caused their vulnerability in the face of disasters. Consequently, the unpredictable water level fluctuations, extreme water events, ecological degradation, and the ensuing policy requirements have resulted in these populations losing their livelihoods.
Research question(s)	Which and how can landscape architectural tools be used to improve the ecology of Poyang Lake and integrate human activity more sustainably and circular in a spatial interesting way?
Design assignment	Based on the three major landscape types of Poyang Lake, polder, sub-lake,

	and wetland, with three layers of water, ecology and livelihood, the goal is to make the Poyang Lake area more resilient to water level changes and extreme water events, to enhance the ability of residents to cope with risks, to consider sustainable livelihoods, and to ensure ecological values. The water layer is the most basic and critical, mainly considering resilient spatial planning strategies, enhancing the capacity of Poyang Lake to store flood water, and meeting the capacity of water retention and water level control. In terms of ecology, the introduction of ecologically relevant landscape design methods, such as increasing habitat diversity, ecotone, and connectivity, will be considered. The expectation is to construct a relatively continuous and rich ecological gradient of the three patterns. The livelihood layer seeks to introduce more emerging and efficient sustainable industries, such as tourism, by building upon the construction of spatial strategies in the preceding dimensions. Simultaneously, it explores the revitalization of existing traditional industries, incorporating resource regeneration and reuse cycles. This will be achieved through three scales. The macro scale is the whole of Poyang Lake, as the scale of influence, adjusting and intervening according to conceptual strategy. The meso scale is the selected representative sites in Poyang Lake that contain three landscape types, as the scale of effect, intervening and designing space and circulation pattern according to strategy and toolbox composed of design principle. The micro-scale is the selected three sites among the representative

	plots for zoom-in design, mainly considering the spatial experience and details of the new system.

IV Graduation process

Method description

1Case Study
To analyze and study the traditional water system of Poyang Lake, with a focus on the region's ingenuity in constructing an integrated system that considers various elements.

2 Mapping & data analysis
Analyze the influencing factors and their consequences, leading to the disruption of the water system's equilibrium, study their operation mechanism and underlying logic, clarify the altered landscape and the affected landscape area, and provide the basis for providing targeted solutions

3 Literature Review
Synthesize and study the academic literature to provide a theoretical foundation for scientifically grounded solutions to the project. Align the study with the contemporary landscape academic theoretical framework.

4 Typologies & Pattern languages
Analyze and summarize the spatial composition, sub-lake, and wetland- as a foundational point for the design.

5 Layering
Constructing water, ecology, and livelihood, and overlaying the design in different dimensions.

6 Toolbox
Collect feasible strategies from the design and research frameworks, constructing a toolbox to evaluate the performance of the strategies in different landscape types and dimensions. Test their temporal and spatial coupling.

7 Plan with a continuous scale
Construct macro-scale, mesoscale, and micro-scale scales, focus on different priorities, and construct a cohesive narrative.

8 Perspectives & Sections
Consider human experience in the design and illustrate the spatial expression of the design to elaborate on the spatial aspects.

9 Conclusion & Reflection
Summarize the project with a view to providing a universal model.

Literature and more applied references

Landscape Resilience:
Literature in this field has emphasized that the sustainability and resilience of rural areas is positively correlated with their diversity and comprehensiveness.

Ashkenazy, A., Calvão Chebach, Tzruya, Knickel, K., Peter, S., Horowitz, B., & Offenbach, R. (2018). Operationalising resilience in farms and rural regions – Findings from fourteen case studies. Journal of Rural Studies, 59, 211–221. https://doi.org/10.1016/j.jrurstud.2017.07.008

Scott, M. (2013). Resilience: a Conceptual Lens for Rural Studies? Geography Compass, 7(9), 597–610. https://doi.org/10.1111/gec3.12066

Sophea, T., Isabelle, P., Sien ,Teamhy, Yim ,Soksophors, Soben, K., & Liniger ,Hanspeter. (2023). Strengthening climate resilience of rural communities by coproducing landscapespecific integrated farming systems in Cambodia. Journal of Land Use Science, 18(1), 152–175. https://doi.org/10.1080/1747423X.2023.2190740

Circular Economy:
This literature summarises four models of the circular economy: The inner circle, Long term circulation, Cascaded use, Pure circles.

Circular economy in landscape architecture 2nd edition by Danske Landskabsarkitekter - Issuu. (2022, March 21). Issuu.com. https://issuu.com/danskelandskabsarkitekter/docs/circular-economy-in-landscape-architecture

V Reflection on the project proposal

1. What is the relation between your graduation topic, the lab topic, and your master track?

The lab topic is the basis of this final project, which leads to a focus on traditional water systems. Traditional water systems represent the high vitality of water within the landscape and the interconnection between humans and nature, showcasing the ingenuity of individuals in utilizing and managing water. In the case of Poyang Lake, the study of the traditional water system enabled the graduation project to build a deep understanding of its site, including not only the basic information of the site but also the culture, spirit, and identity. By learning the strengths of the traditional water system, a spatial and temporal continuum of landscape development and evolution can be constructed from the palimpsest perspective of the landscape. As the research transitions toward the graduation project, the aim is to construct a new integrated landscape system based on the full consideration of the traditional water system, which in a way can be considered a great span of renewal design. Considering the site's natural context in the Poyang Lake area, the landscape wields considerable influence. Both the preliminary exploration of traditional water systems and the subsequent design of the graduation project are rooted in the perspective of landscape architecture. Consequently, there is anticipation surrounding the

exploration and demonstration of the significance, feasibility, and potentialities of landscape architecture in addressing water-related issues.

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

My graduation project will be grounded in a spatial planning strategy designed to address the challenges of flooding and drought, which represent classic and pervasive water issues. However, the project is more than that. Based on the analysis of the population, it is clear that extreme events brought about by flooding, drought, and ecological degradation issues would be devastating to the rural population with high vulnerability. This is one of the areas of concern and desired goals of this project. Landscape is not just landscape; it establishes a profound connection with the social sphere. Space serves as the foundational element for all considerations, and the diversity of human activities that can take place in the existing space, as well as those can be foreseen are the tentacles of the landscape reaching out to other fields. More possibilities, such as new industries and new life, can take place on these lands, and the land itself is the stage for human life. Thus, the project builds not only a more resilient and sustainable landscape, but also the possibility of a new way of life.