Graduation Plan

Master of Science in Architecture, Urbanism & Building Sciences

MSc Landscape Architecture 2024 - 2025

Yifei Wu

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	Yifei Wu
Student number	6040918

II Studio / Lab information		
Name / Theme	Urban Forestry	
Main mentor	René van der Velde	Landscape Architecture
Second mentor	Diego Andres Sepulveda Carmona	Urbanism
Argumentation of choice of the LA graduation lab	My approach begins with the intention of understanding and designing the intricate relationship between humans and their environment. Trees, as essential and distinctive elements within both urban environments and landscape design, have engaged in a profound "dialogue" with humanity for centuries, embodying various roles and carrying rich cultural narratives (Magnus & Sander, 2019). This inspires me to focus on tree design as a specific lens within the discipline of landscape architecture, allowing me to critically reexamine the relationship and interaction between humans and the landscape (Jones & Cloke, 2002). Moreover, when considering broader territorial scales, forestry emerges as a compelling thematic "backbone" that can anchor my research, linking diverse questions and directions. Forestry offers both structure and adaptability, enabling exploration across scales. In my graduation project—centered on the transformation of a post-industrial landscape—I aim to leverage forestry to create a cohesive green network at the regional scale, while simultaneously shaping cultural and social spaces at smaller scales. This dual approach allows me to address both ecological connectivity and the human experience of place.	

III Graduation project	
Title of the project	From Fossil to Forest: Recasting post-industrial landscape through wooded commons
Context and aim of the project	
Location (region / area / site)	Nord-Pas-de-Calais mining basin, France

Problem statement	As the birthplace of the Industrial Revolution, European cities were among the first to face the crisis of post-industrial recovery after the collapse of industrial capitalism. The post-war recovery of the last century, coupled with the energy crisis and the environmental movements in Europe, provided the impetus for change, marking the beginning of post-industrial transformation. By the early 21st century, several cities or regions across Europe had successfully reversed their decline and achieved regrowth. In contrast to the successful transformation of metropolitan areas, other cities are experiencing contraction. While some perspectives consider urban shrinkage as a dynamic within urbanization—a temporary phase replacing previous growth stages and potentially leading to renewed growth—there is growing evidence that some areas will face prolonged "decline." This is driven by demographic aging in most European countries, as well as domestic migration from underdeveloped regions to more competitive ones (Wolff & Wiechmann, 2018). Manifestations of urban shrinkage include housing vacancies, underutilized infrastructure, fiscal constraints, and population aging, prompting widespread discussion of shrinking cities in 21st-century Europe. Urban shrinkage is deeply intertwined with the social, cultural, political, and economic conditions and histories of specific countries or regions. Consequently, shrinking cities lack a universal model or prototype (Haase et al., 2017), emphasizing the importance of site-specific studies. Research on European urban development patterns identifies the Nord-Pas-de-Calais Mining Basin in northern France as a case of "intermittent shrinkage in economically lagging regions" (Wolff & Wiechmann, 2018). This is characterized by employment-driven outmigration, particularly among young people (Galjaard et al., 2012), a hallmark of post-industrial societies. Another perspective on urban shrinkage highlights not the economic decline of one city, but the economic growth of neighboring cities (Wolff & Wiechmann, 2018). From this lens, the rapid development of the Lille metropolitan area in northern France may be an accelerant of decline in the Nord-Pas-de-Calais Mining Basin. This hypothesis aligns with broader patterns of intensified competition among cities for labor opportunities and urban amenities under increasing labor mobility (Batey & Friedrich, 2000). Given these dynamics, significant economic and employment growth in the Nord-Pas-de-Calais region appears

	unlikely in the near term, rendering urban shrinkage an inevitable trend for a period. This raises critical questions about how to reshape a post-industrial territory amidst the inevitable trend of shrinkage. The Nord-Pas-de-Calais Mining Basin represents a complex, layered post-industrial landscape characterized by cultural heritage, coal mining legacies, and unique regional traits. Beyond the cultural sites and mining heritage, the distinctive urban layout and public spaces contribute to the region's identity. These elements—including green architecture and areas influenced by mining but not officially recognized as heritage—together form the unique character of the region's landscape. Despite their historical significance, these spaces often remain underutilized, fragmented, or lacking future-oriented cohesion, missing opportunities for ecological improvement and community engagement. Urban forestry, particularly through the creation of communal woodlands, offers a potential strategy for transforming this post-industrial territory into spaces that foster collective memory, social resilience, and ecological regeneration. This thesis explores how urban forestry can serve as a transformative tool for reshaping relationships between social, economic, and ecological systems in post-industrial territories, rebalancing human and non-human interactions, and promoting regional sustainability.
Research question(s)	How can urban forestry serve as an **ecosystem services** tool to reshape the **post-industrial territory** and foster **socio-environmental adaptation**? Sub-questions: How does forestry contribute to **ecological regeneration** in the Anthropocene? (supporting&regulating) How does forestry facilitate **socio-economic transformation** in post-industrial landscape? (provisioning) How does forestry improve **socio-cultural resilience** in the context of urban shrinkage? (cultural) How does forestry balance between different roles in the new paradigm of adaptation? (reflecting)
Design assignment	The transition from industrial to post-industrial societies is often accompanied by serious socio-economic problems, such as population loss, housing vacancies, and economic decline, socio--cultural problems, such as social isolation, injustice, cultural

	identity loss, as well as ecological problems like environmental degradation and reduced biodiversity. These are particularly evident in the context of urban shrinkage. The overall regional development indicates that the continuous urban shrinkage in the Nord-Pas-de-Calais mining basin must be acknowledged. This recognition shapes the future development trajectory, which aims to enhance quality of life and promote sustainable development. It calls for a recasting of post-industrial territory through landscape approaches, that prioritize ecosystem services and foster socio-environmental adaptation within the Anthropocene context. Objectives: Environmental Regeneration: Use urban forestry to restore ecological balance, enhance biodiversity, improve air and water quality, and boost climate resilience through a hybrid agroforestry system integrating heritage, infrastructure, and water management. Socio-economic Transformation: Design green spaces that foster social cohesion, promote community engagement, create green jobs, and address urban shrinkage and social exclusion. Cultural Resilience: Incorporate industrial heritage into the design, using forestry to preserve cultural memory, enhance local identity, and connect communities with their historical roots. Multi-Scale Strategy: Develop strategies at regional, urban, and neighborhood scales to address challenges and promote equitable, resilient transformations across the landscape.

IV Graduation process

Method description

Finding

Guided by personal motivation and fascination, the Nord-Pas-de-Calais mining basin was identified and confirmed as the site for this research.
Through initial site analysis, the site was understood and key issues were identified.
Through literature review, the primary theoretical framework was established: post-industrial society, urban shrinkage, social environmental adaptation and ecosystem services, urban forestry.
Exploring the theoretical framework in conjunction with the site, serves two primary purposes: first, by facilitating an understanding of the characteristics and causes of post-industrial society, and exploring the issues and solutions of urban shrinkage in a post-industrial context (problem statement); and second, by recognizing that regional issues stem from insufficient social environmental adaptation to the transition from industrial to post-

industrial society, highlighting the need for increased social environmental adaptability in future transformations (design aim); Finally, combining the theory of ecosystem services and urban forestry dimensions, to build an integrated and appliable approach as a design tool (approach).

Scoping

Raising Research Question: How can urban forestry serve as a transformative tool for reshaping post-industrial regions?
Develop the sub questions by highlighting different roles of ecosystem services and questioning for how to balance.

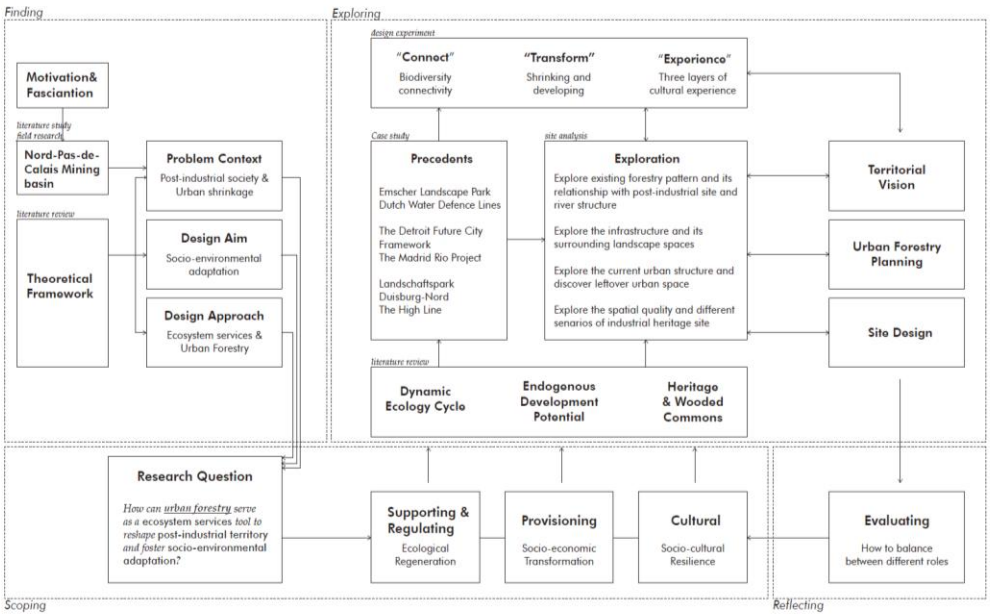
Exploring

Site research on the Nord-Pas-de-Calais mining basin involves site analysis and fieldwork to investigate spatial qualities and identify specific issues on the site. The design theories and methods under the sub-themes are explored through literature review and precent study, providing a network of references. Design experiments are conducted to examine how forestry can influence existing relational networks and facilitate various regional transformations.
During the process or research by study and study by research, the final design proposal will emerge slowly, showing continuity and relevance through interpretation on different scales (territorial, urban, neighborhood).

Reflecting

Upon completion of the design, the entire research process is summarized and reflected upon, evaluating how the design addresses the research questions.
Exam the final design outcome by reflecting on the role balance (the forth sub questions).
Review on the whole graduation research journey.

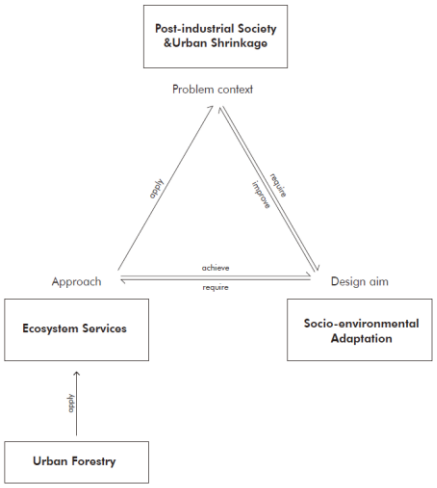
Methodology Framework



Literature and more applied references

Theories central to thesis:

-Post industrial society
-Urban shrinkage
-Socio-environmental adaptation
-Ecosystem services



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Precedent:
Emscher Landscape Park (Ruhr Valley, Germany)
Landschaftspark Duisburg-Nord (Duisburg, Germany)
Dutch Water Defence Lines (Netherlands)
The High Line (New York, US)
The Madrid Río Project (Madrid, Spain)
The Detroit Future City (DFC) Framework (US)
Cleveland's Vacant Land Reuse Program (US)

V Reflection on the project proposal

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

Post-industrial landscapes are often marked by environmental degradation, social fragmentation, and a loss of cultural identity. As a landscape architect, I am interested in using ecological processes, such as the reintroduction of forests, to restore both the physical and social fabric of these spaces. Urban forestry becomes a critical strategy in this process, as it not only improves the environmental quality by enhancing biodiversity, air quality, and water management but also promotes resilience and memory, revitalizing a collective sense of place and history by delicate spatial design.
In my research, urban forestry is not seen simply as the planting of trees but as a dynamic process that intertwines human experience, ecological restoration, and cultural preservation. It aligns with the central design brief of landscape architecture master graduation.

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

From a social perspective, by using urban forestry as a transformative tool, my work emphasizes the importance of creating inclusive, resilient, and regenerating spaces that bring communities together. In a broader social context, my research contributes to building more sustainable, equitable, and livable urban environments, helping communities reconnect with both their natural surroundings and cultural heritage.
From a professional perspective, as cities around the world strive to address the legacy of deindustrialization, landscape architecture is increasingly called upon to tackle the complexities of post-industrial urban revitalization. My research provides practical insights into how these strategies can be applied in the specific context of post-industrial regions, offering case studies and design methodologies that can inform future professional practice.
From a scientific perspective, my work contributes to the fields of urban ecology, landscape planning, and post-industrial studies. Additionally, the research demonstrates an interdisciplinary approach that could offer valuable perspectives for future related studies.