Graduation Plan

Master of Science in Architecture, Urbanism & Building Sciences

MSc Landscape Architecture 2023 - 2024

Martijn Bisschops

Graduation Plan

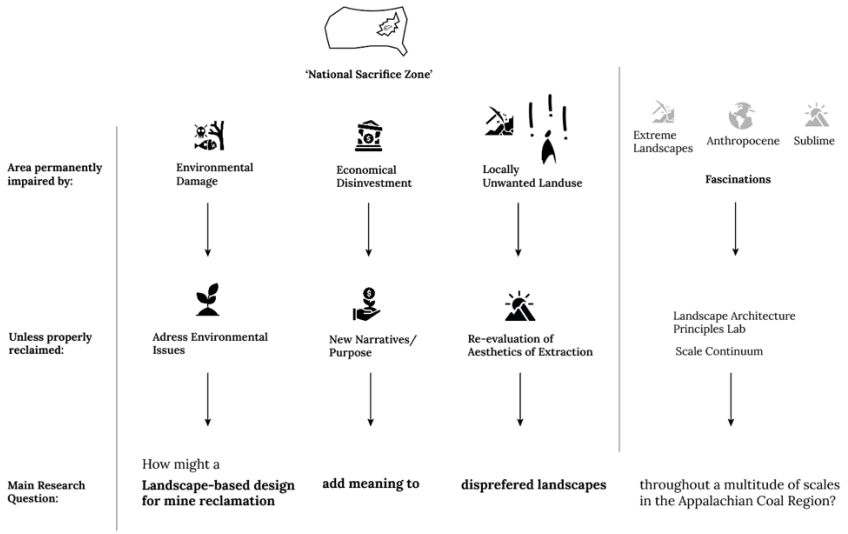
Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), your mentors and delegate of the Board of Examiners one week before the P2 date at the latest.

I Personal information	
Full name	**Martijn Hubert Jan Bisschops**
Student number	5397340

II Studio / Lab information		
Name / Theme	FLOWSCAPES – Landscape Architecture Principles Lab	
Main mentor	Denise Piccinini	Landscape Architecture
Second mentor	Taneha Kuzniecow Bacchin	Urbanism
Argumentation of choice of the LA graduation lab	In the **Landscape Architectural Principles Lab (LAP LAB)**, we explore landscapes as a historical palimpsest, as natural processes, as a bodily experience, and this year's main principle: landscape as a **scale continuum**. Inspired by a visit to the Hambach open-cast mine in Germany, during the first year of my Master's, I am now confronting the immense scale of devastation caused by surface mining in the Appalachian Coal Region. Hooked by this topic and inspired by the recently growing interest in the concept of the Anthropocene within landscape architecture, I chose the Landscape Architectural Principles Lab to critically reflect on myself and our field when dealing with these large-scale phenomena. Here, I want to explore my role as a landscape architect to bring together the very large scale posed by the Anthropocene, and the smaller scale of the human experience.	

III Graduation project	
Title of the project	**Valuing Extreme Alteration** a multiscale landscape approach to new narratives for the Central Appalachian coal region
Context and aim of the project	
Location (region / area / site)	The Central Appalachian Coal Region (USA: KT/WV) Design Site (Area of Control): Hobet-21 Mine, West Virginia

Problem statement	The Appalachian Mountain range, known for its impressive geological features, biodiversity, and national parks, forms stark contrasts with its destructive mining industry, specifically 'Mountain Top Removal' surface mining. According to non-profit organisation Appalachian Voices (2021), approximately 633,000 acres of post-mining sites require some form of landscape restoration. This includes de-compacting, stabilizing, and reshaping of soils to resemble the original mountain contours, as well as some form of 're-greening'. Often done by spraying a mix of fertilizer and non-native grasses creating strange habitats of olive trees and meadows, opposing the originally rich Appalachian forests. Acid mine drainage, caused by exposed minerals pollute large amount of surface, ground, and even drinking water. Because of increased mine bankruptcies, the costs of reclamation are unmet by mining companies and governments, even though, they are by law obliged to do so. Consequently, many mines are left untouched or poorly reclaimed. The result is named a 'National Sacrifice Zone': an area permanently impaired by environmental damage or economic disinvestment (Goodell, 2006). The social consequences are enormous. While miners can have incomes of six figures, the counties in this toxic landscape rank among lowest on employment, income, and life expectancy in the US (Appalachian Regional Commission, 2017). There are many examples of proper mine reclamations so the 'solutions' are there. Yet, effective, and restorative action is inadequate in the light of the ongoing extraction and because the needed economic and political resources are limited. These 'Technical Lands' (Nesbit & Waldheim, 2022), are deliberately fenced off from the public and need decades to restore. Instead, false promises are made by politicians claiming prisons and large-scale industrial plots are a quick 'fix' to solve a declining economy (Fleming, 2022). Alternatively, the question is how we can design to match this scale of extraction through giving communities back cleaner landscapes and remove the socio-economical barriers that prevent more natural, spontaneous reclamation operations from scaling up. If there appears to be no economic incentive, we need to find new engaging and greener narratives that can bring hope to a landscape of crisis. Because it is impossible to 'fix' everything, we need to find out on what scale we can engage with these topics as designers. Small interventions could have impact on a landscape level and large masterplans

	require detailed design to illustrate the ideas. This research aims to explore this notion through finding relations between different scales that defy the gap between the vastness of depletion and the human scale.  Fig.1 Problem Field
Research question(s) This should be formulated in such a way that the graduation project can answer these questions.	<u>Main Research Question</u> How might a landscape-based design for mine reclamation add meaning to disprefered landscapes throughout a multitude of scales in the Appalachian Coal Region? <u>Specific Research Questions (and their relation to the L.A.P.)</u> SRQ 1 - Analysing (Historical Palimpsest and Natural Processes) What Natural and Anthropogenic Processes formed the Appalachian Coal Region to the point of becoming a 'National Sacrifice Zone'? SRQ 2 - Understanding (Scale Continuum related to the other principles) What means Scale Continuum as a Landscape Architectural Principle in the context of this extraction landscape and what design strategies are intrinsic to a certain scale? SRQ 3 - Designing (four principles combined, relating Scale Continuum with Bodily Experience) How can a landscape-based design be implemented that creates new meaningful narratives for the mined landscape throughout multiple scales? SRQ 4 – Reflecting (Scale Continuum related to the other principles)

	What do the outcomes of the project teach us about scale continuum as a landscape architectural principle?
Design assignment [The definition of the problem has to be significant to a clearly defined area of research and design.]	Research Aim: -Realizing the Coal industry has a huge legacy but little future, this thesis aims to design for the beginning of the end for the Appalachian Coal Region as a landscape of extraction. After grasping the scale of depletion, new engaging narratives opposing the current industrial perspective on reclamation, are needed to offer a sense of reflection, restore ecological integrity, and provide a positive social and economic outlook for this badly injured landscape. Opting for a more adaptive, nature inclusive approach to reclamation that considers the intrinsic aesthetic values that these landscapes have, the landscape could become more meaningful for a wider audience. -Within the context of the landscape architecture principles lab, the aim is to re-examine and sharpen our knowledge about the foundational pillars commonly used by the TU Delft's section of Landscape Architecture: landscape as a historical palimpsest, processes, a bodily experience, and this year's main theme, landscape as a scale continuum. Design Objective: To explore how landscape architects can address the scale of depletion in the Appalachians and mark the beginning of the end for the Appalachian Coal Region as a landscape of extraction, drawing meaningful connections between the vastness of mining landscapes and the human perception. The Hobet-21 Surface mine in West Virginia is chosen as design location for it is currently showing all stages of both an active mine site and its reclaimed parts. Through an integrated approach across various scales, the goal is to design new engaging narratives for the region, meaning, breaking the current downward spiral of extraction and depletion for regenerative and nature-inclusive alternatives. Expected Outcomes: -A deep understanding of the natural and anthropogenic processes, historical events, and perceptual qualities of the Appalachian Coal Region, mapped on a mine site that is representative to the larger region, to describe the current situation and possible futures. -A better understanding of the four landscape architectural principles. Scale continuum being the lens through which both the chosen site, as well as the other principles will be examined to create a theoretical position for the project. A larger scale

continuum is explored to find out which principles are intrinsic to which scale. This will consist of two parts, the first part being an understanding of the larger landscape systems within and surrounding the site, i.e. water networks or ecological connections. Secondly, during a site visit a deeper understanding of the smaller scales will be formed to help understand the human perception of the mine landscape.

-A landscape design for the Hobet-21 mine, across various integrated scales, demonstrated in strategically chosen site interventions. Together the design will address the three main problems from the introduction. Environmental degradation will be addressed on the location itself, and its shared watershed with a masterplan that allows multiple stages of succession and development to happen at the same time. Where possible, new programme and production will be added to serve mainly the local communities, keeping the material flows as local and circular as possible, allowing the land and economies to restore. Lastly, opening the mines to the public will generate new possibilities for a wider audience, that in return can have a positive effect on the larger region. For this the existing mine and recreational infrastructure will be combined to create a creative journey throughout the larger Appalachian Coal Region.

-A critical reflection on the social, professional, and scientific relevance of the project regarding its applicability to other locations, as well as to the four landscape architectural principles, specifically the scale continuum.

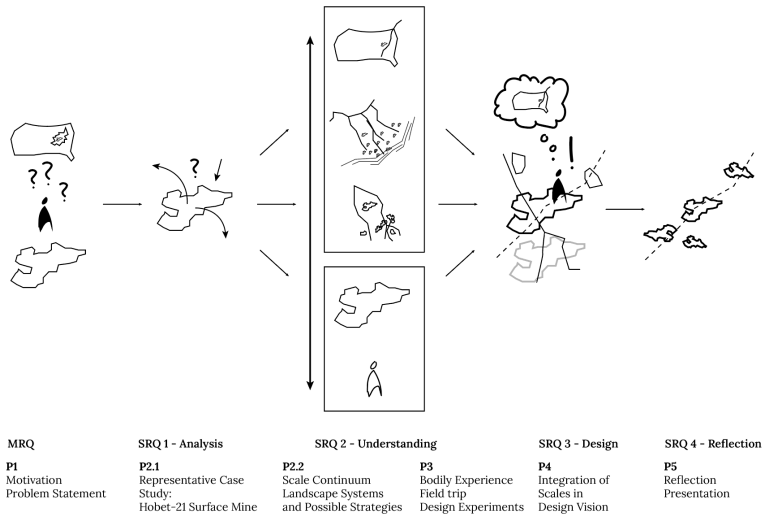


Fig. 2 Design Framework

IV Graduation process

Method description

The methods used in the Landscape Architecture Principles Lab revolve around the four principles: Historical Palimpsest, Natural Processes, Bodily Experience and Scale Continuum. Depending on which phase of the project, the principles can play a different role.

-The four principles as a paradigm used in the theoretical framework and literature study
-The four principles as a starting point for landscape analysis
-The four principles used as site-based landscape design method, first described by Marot (1999), and later as Landscape Based Approach by the Landscape Architecture Section at TU Delft (Bobbink et al., 2022)
-The four principles used as a lens for reflection on the project

The other, overarching, method that will be used in this project is Research Through Design, supported by literature review, precedent studies, a field trip planned in March 2024.

Additionally, during the design phase, special attention will be given to the project's 'Area of control, Area of Influence, and Area of Effect', as described in Burns and Kahn (2020).

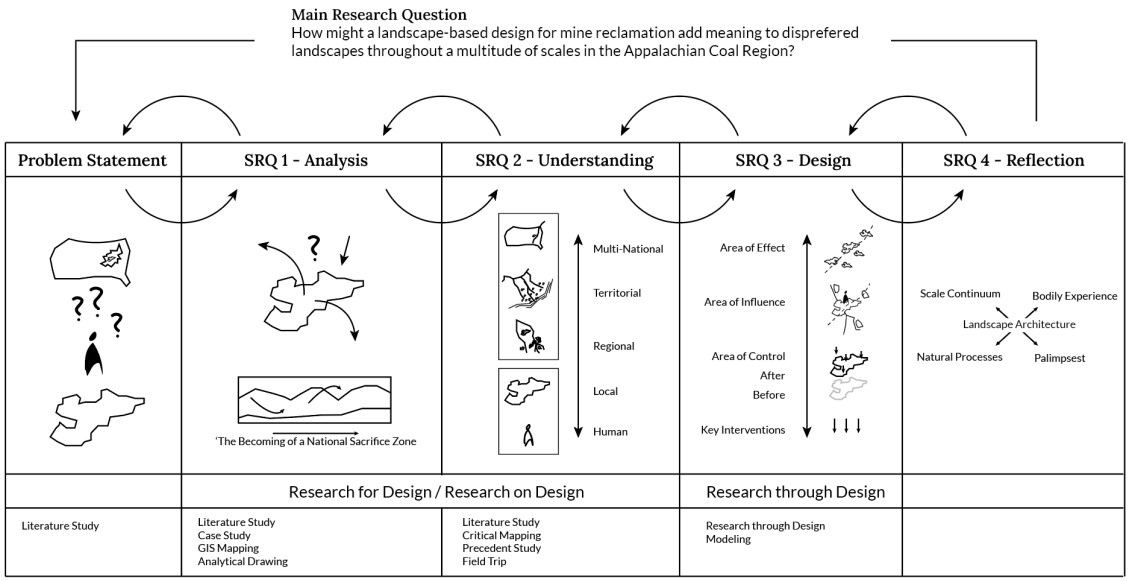


Fig.3 Methodological Framework

Literature and more applied references

Landscape Architecture Principles

Bobbink, I., Cattoor, B., Cipriani, L., de Wit, S. I., Luiten, E. A. J., Nijhuis, S., Piccinini, D., Pouderoijen, M. T., Tillie, N., van der Velde, J. R. T., van Loon, F. D., & Verschuure, G. A. (2022). *LA.X Celebrating 10 years of Landscape Architecture Education: 2010/2011 - 2019/2020*. Technische Universiteit Delft, faculteit Bouwkunde.

Burns, & Kahn. (2020). Why Site Matters. In *Site Matters* (2nd ed.). Routledge.

Luiten, E. A. J., & Piccinini, D. (2023). *LAP Lab Description in Flowscape guide 2023-2024*.

Marot, S. (1999). The Reclaiming of Sites. In J. Corner, *Recovering Landscapes: Essays in Contemporary landscape Architecture*.

Nijhuis, S. (2013). *Principles of landscape architecture* (pp. 52–61). https://doi.org/10.13140/RG.2.1.1446.3126

Steenbergen, C., & Reh, W. (2009). *Architectuur en Landschap. Het ontwerpexperiment van de klassieke Europese tuinen en landschappen.: Vol. 2e druk*. Uitgeverij THOTH.

van der Velde, R. (2018). Transformation in Composition: Ecdysis of Landscape Architecture through the Brownfield Park Project 1975-2015. *A+BE | Architecture and the Built Environment*, *9*, Article 9. https://doi.org/10.7480/abe.2018.9.2396

Theories

Corner, J. (1992). Representation and landscape: Drawing and making in the landscape medium. *Word & Image*, *8*(3), 243–275. https://doi.org/10.1080/02666286.1992.10435840

Crutzen, P. J. (2002). Geology of mankind. *Nature*, *415*(6867), Article 6867. https://doi.org/10.1038/415023a

Lenzholzer, S., Duchhart, I., & Koh, J. (2013). 'Research through designing' in landscape architecture. *Landscape and Urban Planning*, *113*, 120–127. https://doi.org/10.1016/j.landurbplan.2013.02.003

Fairbrother, N. (1970). Fairbrother, Nan New Lives, New Landscapes: Planning for the 21st Century. New York: Knopf, 1970, 389 pp., $12.50, L.C. 79-98645. *American Behavioral Scientist*, *14*(1), 138–138. https://doi.org/10.1177/000276427001400155

Fleming, B., & McCullough, A. L. (2022). Hell on a Hill: Un/Building the Coalfield-to-Prison Pipeline. In *Technical Lands: A Critical Primer* (pp. 172–187). Jovis Verlag.

Morton, T. (2013). *Hyperobjects: Philosophy and ecology after the end of the world*. University of Minnesota Press.

Prominski, M. (2014). Andscapes: Concepts of nature and culture for landscape architecture in the 'Anthropocene'. *Journal of Landscape Architecture*, *9*(1), 6–19. https://doi.org/10.1080/18626033.2014.898819

Roncken, P. A. (2018). *Shades of sublime: A design for landscape experiences as an instrument in the making of meaning*. https://doi.org/10.18174/427612

Thayer, R. L. (1994). *Gray World, Green Heart: Technology, Nature, and the Sustainable Landscape*. Wiley.

Weller, R. (2021). The hype of representation: Some thoughts on the roles of the hyperreal and the hyperobject in contemporary landscape architecture. *Ri-Vista. Research for Landscape Architecture*, 30-39 Pages. https://doi.org/10.13128/RV-10254

Weller, R., & Fleming, B. (2020). *HAS LANDSCAPE ARCHITECTURE FAILED?*

Subject

Berger, A. (2008). *Designing the Reclaimed Landscape*. Routledge & CRC Press. https://www.routledge.com/Designing-the-Reclaimed Landscape/Berger/p/book/9780415773034

Corner, J., & MacLean, A. S. (2000). *Taking measures across the American landscape*. Yale Univ. Pr. http://www.gbv.de/dms/bowker/toc/9780300086966.pdf

Perdue, R. T. (2018). Linking Environmental and Criminal Injustice: The Mining to Prison Pipeline in Central Appalachia. *Environmental Justice*, *11*(5), 177–182. https://doi.org/10.1089/env.2017.0027

Renton, D. J. J. (2014). *I-68/I-70: A WINDOW TO THE APPALACHIANS*.

Morin, R. S., Cook, G. W., Barnett, C. J., Butler, B. J., Crocker, S. J., Hatfield, M. A., Kurtz, C. M., Lister, T. W., Luppold, W. G., McWilliams, W. H., Miles, P. D., Nelson, M. D., Perry, C. H., Piva, R. J., Smith, J. E., Westfall, J. A., Widmann, R. H., & Woodall, C. W. (2016). *West Virginia Forests*, *2013* (NRS-RB-105; p. NRS-RB-105). U.S. Department of Agriculture, Forest Service, Northern Research Station. https://doi.org/10.2737/NRS-RB-105

Additional Sources
-King Coal Documentary
-Youtube, Peter Santentello, Aidin Robbins, Plundering Appalachia
-100 days in Appalachia.com , News site
-Appalachian Voices.org, Non-governmental Organisation
-Appalachian Regional Commision, ARC

Precedents
-Appalachian Trail
-Fresh Kills Park
-Emscher Park / Duisburg Nord

Research Data (GIS)
-Google Earth
-USCS, Watersheds
-USFS, Tree Canopy
-Skytruth, Cumulative Mined areas 1985-2022
-SRTM DEM Data
-Natural World

V Reflection on the project proposal

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

The topic of addressing issues posed by the scale continuum of depletion in the Appalachian Coal Region is related to our graduation lab, which is about the essence of our Master Track and, consequently, the Flowscapes studio since we are exploring the four foundational pillars of our Master's programme that are commonly used by the TU Delft's section of Landscape Architecture: Landscape as a historical palimpsest, processes, a bodily experience, and this year's main theme, Landscape as a scale continuum.

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

Social Relevance
As described in the problem statement, the environmental, social, and emotional impact of coal mining in Appalachia is enormous. This project aims to offer relevant new perspectives on mitigating these problems. During a site visit I hope to connect to locals who can teach me more about their personal experience with the landscape.

Professional Relevance
In potential, this research offers new insights in dealing with the reclamation of mining sites that can be used by governmental, non-governmental and private organizations that work in this field. For this purpose, during the graduation project I will actively reach out to relevant institutions during my field trip to increase the validity of the outcomes.

Scientific Relevance
By critically reflecting and sharpening the four principles of our Master Track, the project can contribute to the discussion about the core of the landscape architecture discipline. Relevant new insights and methods can be a starting point for upcoming students that will work on the other 3 principles, as well as other scholars that are interested in learning about landscape as a scale continuum or want to work on similar large scale extraction landscapes.