

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	Tobias Macchione
Student number	5006295

Studio	
Name / Theme	Flowscales / Circular Water Stories
Main mentor	Inge Bobbink
Second mentor	Elena Longhin
Argumentation of choice of the studio	The Circular Water Stories lab within the Flowscales Graduation Studio is since many years an interesting research- and design environment focused on water systems. Although the ultra-regional territorial scale, that marks a large part of my project, has rarely been tackled before in this Lab, previously developed methodologies in this setting inspire and inform my learnings. In particular, the framework that has been developed to design for circularity in water systems will be relevant for the project, which relates to the watershed of an european river.

Graduation project	
Title of the graduation project	More than River: (re)imagining the Meuse landscape
Goal	
Location:	Meuse river watershed, north-western Europe
The posed problem,	<p><i>1. Landscape architecture as an imaginative, multi-disciplinary practice situated in the rivers of the Anthropocene</i></p> <p>In the constant dance between freshwater and its landscape, the river system, we humans construct life among other species. Through and with water, embodied in particular river flows, we have inhabited rivers in order to survive (Savenije et. al., 2014). The present time, however, challenges our role as a (dominant) species in the world (Hellström-Reimer et. al., 2022). The entangled relation between human cultural systems and the ecology of a river basin at large can inform our reflection on how to be,</p>

act, care as one species among many on Earth (Kelly et al., 2019). In current times, river territories become therefore a metaphor for a larger planetary system of relations: situated case studies for how to act in our environment. As *relational ethics* and *reciprocity* become increasingly part of the concerns of landscape architects (Yiğit-Turan et. al., 2022, p. 5), positioning as a landscaper in the river territories of the Anthropocene becomes a pressing necessity.

Thinking of relational alternatives for river territories lies in the practice of *imagining* new ways of inhabiting this environment. Drawing from the humanities and human geography in particular, the following definition will be adopted in this project referring to the capacity to operate a spatial change. “*Imagination as an activity of consciousness, whether willfully directed or passively experienced, that presents images or ideas of what is not immediately given in perception, and may potentially transform them*” (Gosetti-Ferencei, 2023, p.11). An ongoing research debate identifying this generative capacity of imagination in architecture- (Havik & Sioli, 2021) and landscape architecture practitioners through images and design operations (Hirsch, 1990) informs this interdisciplinary framework.

2. The evolving Dutch Delta requires new research methods and spatial strategies that address the international scale of its major rivers.

The increase in extreme fluctuations of water quantities and qualities in the Rhine-Meuse Delta make river management a crucial issue in Dutch spatial planning (Van der Brugge & De Winter, 2024). However, not all water management challenges can be addressed within Dutch borders. Both Dutch scholars and organizations (Deltares, 2023 ; Van der Brugge & De Winter, 2024), the EU (Boon & Lee, 2005) and other european states, advocate for transboundary monitoring, cooperation, and scenario-making, lamenting a lack of knowledge of upstream river cultures.

In the present and future of the Meuse, as the coexistence of all (economic) objectives posed

	<p>to its waters is impossible, and the living space of its (non-human) inhabitants is compromised (Descy, 2009), an holistic view on this complex system is needed (Schielen et al., 2006 ; DeWit, 2008).</p> <p>Identifying the Meuse as a watershed rather than a linear entity allows for a territorial inquiry of its actors, objectives, and challenges (as extensively defined in the thesis introduction). Situating this project within current theoretical discussions in landscape architecture, urbanism, and human geography, the Meuse will be framed as a <i>hydrosocial territory</i> (Boelens et al., 2016). It is defined as: “The contested imaginary and socio-environmental materialization of a spatially bound multi-scalar network in which humans, water flows, ecological relations, hydraulic infrastructure, financial means, legal-administrative arrangements and cultural institutions and practices are interactively defined, aligned and mobilized through epistemological belief systems, political hierarchies and naturalizing discourses.” (Boelens et. al., 2016, p.2).</p> <p>The latter notion, emerged in the Dutch and the international political ecology debate, will be used to propose an innovative landscape analysis method based on the relation between the collective, political <i>imaginaries</i> in the watershed and their materialisation through water infrastructures and landscape compositions (Hommes et. al., 2022).</p> <p>Understood as key components for the shaping of political imaginaries, but also as alternative voices for the territory’s reimagination, <i>landscape narratives</i> will also be defined and deployed as a set of methods.</p> <p>Their specificity to the landscape discipline will be argued for and tested in a section of the Meuse analysis (Potteiger & Purinton, 1998 ; Daniels & Lorimer, 2012 ; Havik & De Wit, 2017 ; Yiğit-Turan et. al., 2024).</p>

research questions and

Research and design goals

Building its theoretical framework on interdisciplinary dialogs, this project aims at promoting a new view and methodology in the context of river studies in landscape architecture. As this will be tested within the case-study of the international Meuse river basin, the project will react on specific challenges to reach a conceptual and multi-scale spatial resolution of and beyond water management issues. At the intersection between landscape analysis and the understanding of engineering and political dynamics of river territories, the goal is to inspire, critic, and challenge exclusively technical approaches in the planning of large rivers. When designing for the river, at the territorial and local scale, the planned spatial compositions will combine conflicting objectives posed to the river, and improve the human relation to it as a contemplative, free space.

Main research question:

How can a strategy-based and localised reimagination of the Meuse be informed by the mapping of its hydrosocial territory, considering the coexistence of national imaginaries and the importance of landscape narratives in its French section?

Sub research questions, corresponding to the first two chapters of the thesis report:

-How can the imaginaries of the Meuse watershed as hydrosocial territory, in which three national imaginaries coexist, be reviewed and mapped?

-How does the study of coexisting landscape narratives help to form alternative river imaginaries, and constitute the collective imaginary of the French Meuse?

design assignment in which these result.

The first two chapters of the thesis report, exploring the reimagination of the Meuse river will result in a first design motion, on the scale of the entire river. In the form of spatial strategies, as cartographies on the regional scale of the river, this conclusion of the territorial analysis is a transition between the research and the design part of the thesis work. The scenario-based strategies, reimagining the river in the two extremes of flood and drought, will be propedeutic to the main spatial design assignment.

Preliminary design assignment

-Can the reimagination of the Meuse result in a spatial translation, through scenario-based regional design strategies?

Main design assignment:

-How can a landscape-based design of the riverbanks of Sedan and its surrounding territory reflect and inform the reimagination of the Meuse?

Design context and brief:

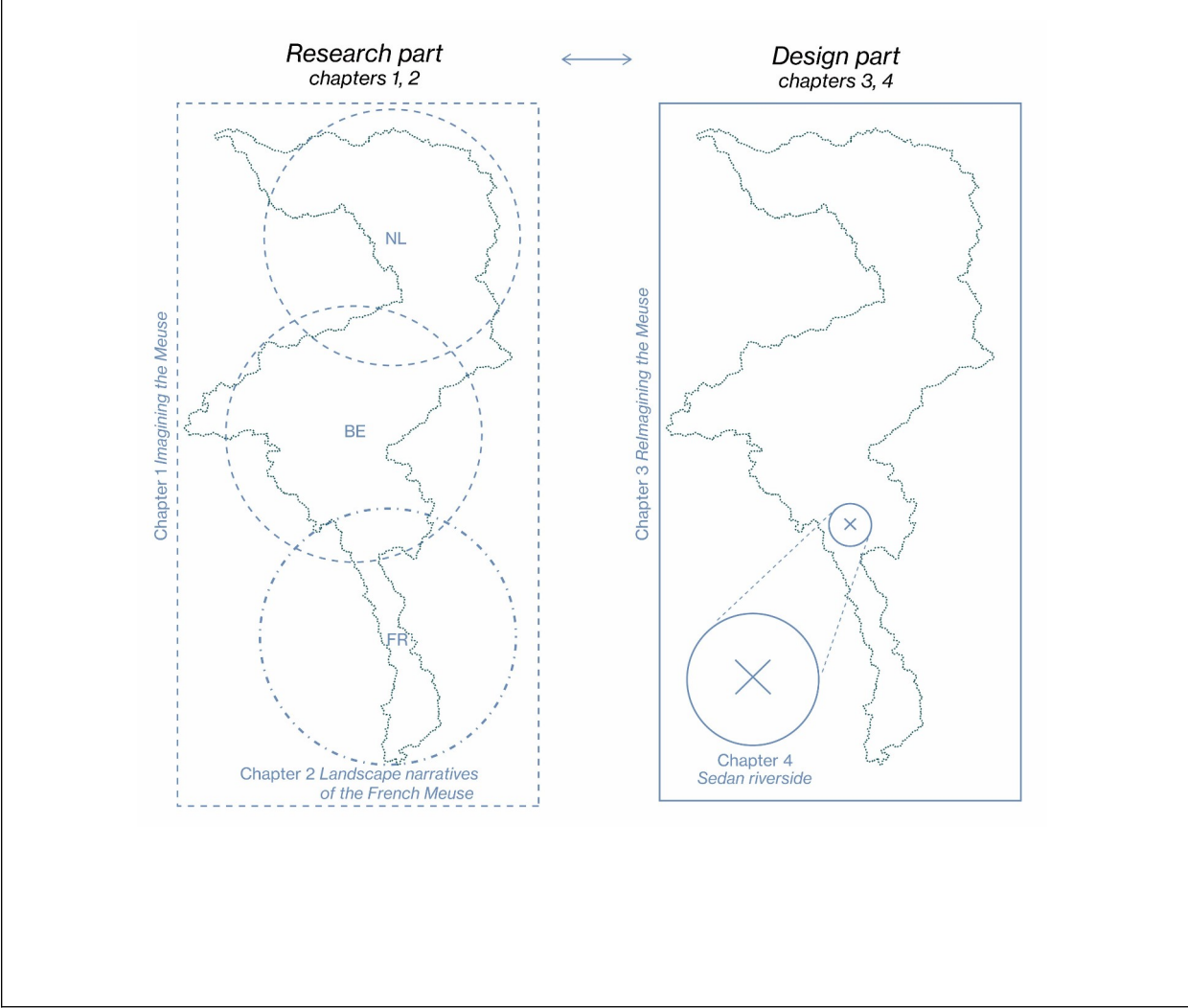
Since 2020 a real design brief is consolidating in the French town of Sedan, in the lower Ardennes region. The city, partly built in the floodplain of the Meuse, and its upstream rural area are facing infrastructural works aimed at improving the water safety of some neighbourhoods. To compensate the withdrawal of space from the river's floodplain, larger floodable buffer-lands are planned outside of the city in the larger Sedan area. As the river in this part faces other, not less important challenges, like drought consequences, biodiversity loss, demographic depression and lack of care of the river space, this realistic project could be the premise of a more nuanced, intersectional spatial response, using the tools of landscape architecture. The design will create a projectual vocabulary to be potentially applied in other landscapes of the Meuse river.

At the broadest scale, the design will focus on enhancing the riverside as a connective public realm, linking the urban fabric with the water. The

	<p>presence of architectural heritage related to the city's economy and the use of the river for industrial purposes. Moving down in scale, the interventions will gradually refine this connection, integrating pathways and public spaces that invite to engage with the river in varied ways, whether through leisure, recreation, or contemplation. The habitat of non-human species, and ecological processes at large will be strongly taken into consideration in this process.</p> <p>The materiality of the design will reflect the fluidity of the river itself, with elements that change over time—like water features, seating that adapts to seasonal fluctuations, and planting that responds to the riparian environment.</p>
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Process

Method description



Chapter 1 explores the first sub-research question of the thesis:

-How can the imaginaries of the Meuse watershed as hydrosocial territory, in which three national imaginaries coexist, be reviewed and mapped?

Chapter 2 relates to the second sub-research question:

-How does the study of coexisting landscape narratives help to form alternative river imaginaries, and constitute the collective imaginary of the French Meuse?

Chapter 3 presents the process and outcomes of the preliminary design assignment:

-Can the reimagination of the Meuse result in a spatial translation, through scenario-based regional design strategies?

Chapter 4 presents the process and the outcomes related to the main design assignment:

-How can a landscape-based design of the riverbanks of Sedan and its surrounding territory reflect and inform the reimagination of the Meuse?

Research part chapters 1, 2

Chapter 1 Imagining the Meuse

Literature review of research on the watershed idea for the Meuse, its national imaginaries and landscape analyses of the river sequence.

Mapping of actors, boundaries, relations, objectives and challenges in the hydrosocial territory of the Meuse.

Chapter 2 Landscape narratives of the French Meuse

-Personal narratives

Cycling as a landscape research method, *storytelling* my journey and site *transect* through a graphic novel

Interviewing daily users of the Meuse to transcribe their stories

-Historical narratives and their traces

Mapping Traditional water systems, elements and stories along the French Meuse through the *Illustrative Method*

Political narratives

Interviewing institutions of the Meuse and transcribing their narratives

Literature review of main institutional reports that address the Meuse

Design part chapters 3, 4

Chapter 3 Reimagining the Meuse

Precedent study of a river system, the Loire, that underwent a change in its identity, and a reimagination of its landscape strategies

Regional design strategies

that spatialize the reimagination of the Meuse. The objectives and challenges in the hydrosocial territory are recalibrated to two scenarios, flood and drought.

Chapter 4 Sedan riverside

Literature review of the real design brief

Mapping of objectives, challenges and opportunities of the city urban tissue, river space, and territorial situation.

Design experiments based on the two global Meuse scenarios, flood and drought

Precedent studies of successful river designs focusing on human interaction and ecology, and identity-making: the Aire river and the Vilaine river projects.

Site analysis to map and interpret the existing situation

Project referencing to introduce new material realities to the site location

Research methods

The first chapter focuses on the interpretation of the entangled imaginaries within the Meuse hydrosocial territory (Boelens et. al., 2016). The concept of the watershed for this river will be reviewed, in parallel to a literature review of studies on the national imaginaries within it.

The mapping (Cosgrove, 1999) of the geographical delimitation, watershed relations, objectives, and challenges, will then be used to inventory the spatial translation of these imaginaries.

To make up for the lack of literature regarding the national imaginaries of the French section of the river, the second chapter will unravel landscape narratives as readings of- and stories in- the riverine landscape (Havik & De Wit, 2017 ; Yigit-Turan et. al., 2024). A personal site analysis and narrative, in the form of a river transect through cycling (Diedrich et al., 2014; Liu et al., 2021), will be presented as a graphic novel. Historical narratives as landscape stories in the river valley, which describe the interaction between humans and water, will be mapped and represented using the illustrative method specific to the lab in which this research takes place (Bobbink et al., 2022). To review existing political readings of the landscape, telephone interviews are planned with representatives of key French institutions connected to the river.

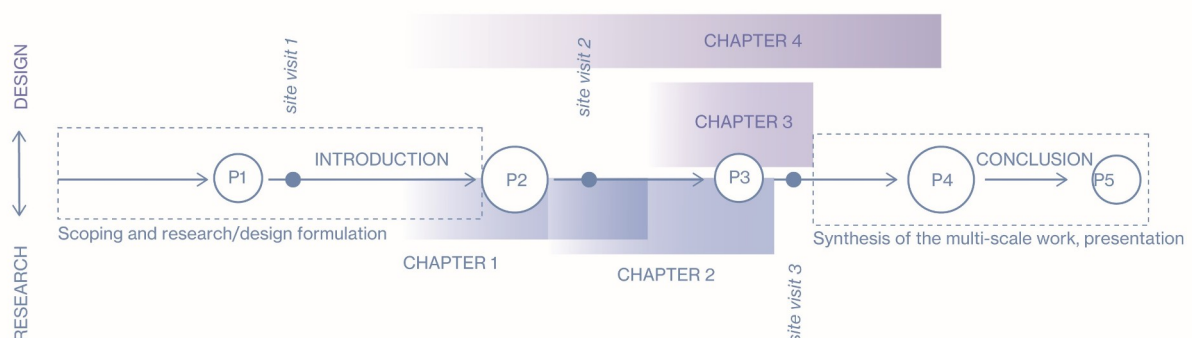
Design methods

Ending this analytical part of the thesis work, a first design phase will formulate territorial strategies at the scale of the whole river (Kempenaar & Van den Brink, 2018). To inform this phase, the precedent study of the Loire river will be used to study how its new imaginary determined a shift in its regional design strategies (Marmioli & Voisin, 2021). The choice of a valid, federating imaginary or set of them will allow for a spatial adaptation of the Meuse river space to the two extreme scenario's of flood and drought.

In the localised design phase, various methods, such as mapping, precedent studies, and site analysis, will contribute to a successful response to the design brief, engaging with the iterative design process that encompasses the well-established research-through-design approach (Nijhuis & De Vries, 2019). The reciprocity between the findings of this localized design and the watershed scale will also be clarified through this methodology.

Planning

Underneath a planning to clarify the order in which the chapters, and consequently their methods, will be worked out. This includes the moments of the site visit, crucial both for the research and the design parallel phases of this research.



Literature and general practical references

Problem statement

- Asselman, N., Barneveld, H., Klijn, F., & van Winden, A. (2018). *Het verhaal van de Maas: De Maas uit balans?*
- Boon, P., & Lee, A. (2005). Falling through the cracks: Are European directives and international conventions the panacea for freshwater nature conservation? *Freshwater Forum*.
- Buitink, J., Tsiokanos, A., Geertsema, T., ten Velden, C., Bouaziz, L., & Sperna Weiland, F. (2023). Implications of the KNMI'23 climate scenarios for the discharge of the Rhine and Meuse.
- Boelens, R., Hoogesteger, J., Swyngedouw, E., Vos, J., & Wester, P. (2016). Hydrosocial territories: A political ecology perspective. *Water International*, 41, 1-14.
- Boon, P., & Lee, A. (2005). Falling through the cracks: Are European directives and international conventions the panacea for freshwater nature conservation? *Freshwater Forum*.
- Corner, J., & Hirsch, A. B. (2014). *The landscape imagination: Collected essays of James Corner 1990-2010*. Princeton Architectural Press.
- Daniels, S., & Lorimer, H. (2012). Until the end of days: Narrating landscape and environment.
- De Wit, M. (2008). *Gouttes de pluies flux de Meuse - une gestion transnationale de l'eau par temps sec et humide*. Veen Magazines.
- Geertsema, T., ten Velden, C., Bouaziz, L., & Sperna Weiland, F. (2023). Implications of the KNMI'23 climate scenarios for the discharge of the Rhine and Meuse.
- Gosetti-Ferencei, J. (2023). *Imagination: A very short introduction*. Oxford University Press.
- Havik, K., & De Wit, S. (2017). Narrating places beyond the subjective. *Afstudeerprojecten TU Delft. OASE*, 98, 92-94.
- Havik, K., & Sioli, A. (2021). Stories for architectural imagination. *Journal of Architectural Education*, 75, 160-169.
- Hommes, L., Hoogesteger, J., & Boelens, R. (2022). (Re)making hydrosocial territories: Materializing and contesting imaginaries and subjectivities through hydraulic infrastructure. *Political Geography*, 97.
- Kelly, J. M., Scarpino, P., Berry, H., Syvitski, J., & Meybeck, M. (2019). *Rivers of the Anthropocene*. University of California Press.
- Potteiger, M., & Purinton, J. (1998). *Landscape narratives: Design practices for telling stories*. John Wiley & Sons.
- Schielen, R., Reuber, J., & Barneveld, H. J. (2006). Preparing a river for the future: The River Meuse in the year 2050. In *Floods, from defence to management: Symposium proceedings of the 3rd international symposium on flood defence* (pp. 159-169). Routledge.
- Savenije, H. H. G., Hoekstra, A. Y., & Van Der Zaag, P. (2014). Evolving water science in the Anthropocene. *Hydrology and Earth System Sciences*, 18, 319-332.
- Tsiokanos, A., Geertsema, T., ten Velden, C., Bouaziz, L., & Sperna Weiland, F. (2023). Implications of the KNMI'23 climate scenarios for the discharge of the Rhine and Meuse.
- Van der Brugge, R., & de Winter, R. (2024). *Deltascenario's 2024: Zicht op water in Nederland*.
- Yigit-Turan, B., Keravel, S., Hellström-Reimer, M., Leger-Smith, A., Lima, F., Ruiz Arana, U., & Wieser Benedetti, U. (2024). The politics of landscape narratives

Methods

- Aït-Touati, F., Arènes, A., & Grégoire, A. (2022). *Terra forma: A book of speculative maps* (Vol. 1). MIT Press.
- Bobbink, I., Chouairi, A., & Di Nicola, C. (2022). Visualizing water. *Blue Papers*, 1, 107-117.
- Caquard, S. (2013). Cartography I: Mapping narrative cartography. *Progress in Human Geography*, 37, 135-144.

Caquard, S., & Cartwright, W. (2014). Narrative cartography: From mapping stories to the narrative of maps and mapping. *Cartographic Journal*, 51, 101-106.

Cosgrove, D. (1999). *Mappings*. University of Chicago Press.

Daniels, S., & Lorimer, H. (2012). Until the end of days: Narrating landscape and environment.

Diedrich, L., Lee, G., & Braae, E. (2014). The transect as a method for mapping and narrating water landscapes: Humboldt's open works and transareal travelling. *New American Notes Online*.

Havik, K., & De Wit, S. (2017). Narrating places beyond the subjective. *Afstudeerprojecten TU Delft. OASE*, 98, 92-94.

Havik, K., & Sioli, A. (2021). Stories for architectural imagination. *Journal of Architectural Education*, 75, 160-169.

Kempenaar, A., Van den Brink, A. (2018). Regional designing: A strategic design approach in landscape architecture. *Design Studies*, 54, 80-95.

Marmiroli, B., Voisin, L. (2021). La Loire existe-t-elle ? Tentatives d'identification d'un fleuve par ses luttes entremêlées. *Cahiers de l'Ecole de Blois*, 144.

Liu, G., Krishnamurthy, S., & van Wesemael, P. (2021). Conceptualizing cycling experience in urban design research: A systematic literature review. *Applied Mobilities*, 6, 92-108.

Nijhuis, S., & de Vries, J. (2019). Design as research in landscape architecture. *Landscape Journal*, 38, 87-103.

Ogundiwin, B. A. (2024). Subaltern cartographies: Exploring geographical imaginations of the agricultural landscape. *Cultural Geographies*, 31, 81-101.

Pernet, A. (2021). *Au fil du trait: Carnets d'un arpenteur*. Parenthèses.

Roe, M., & Lyons, A. (2021). Dark ecologies: Creative research in multi-species water environments. *Green Letters*, 25, 33-52.

Theoretical framework per topic: Imagination

Jennifer Gosetti-Ferencei (2023). *Imagination: A very short introduction*. Oxford University Press.

Tim Ingold and Monica Janowski (2012). *Imagining Landscapes. Past, Present, Futures*. Ashgate.

James Corner, & Alison Bick Hirsch (2014). *The Landscape Imagination: Collected Essays of James Corner 1990-2010*. Princeton Architectural Press.

Klaske Havik, & Angeliki Sioli (2021). Stories for Architectural Imagination. *Journal of Architectural Education*, 75, 160-169

Imaginaries and hydrosocial territory

Lena Hommes, Jaime Hoogesteger, & Rutgerd Boelens (2022). (Re)making hydrosocial territories: Materializing and contesting imaginaries and subjectivities through hydraulic infrastructure. *Political Geography*, 97.

Carlota Houart, Jaime Hoogesteger, & Rutgerd Boelens (2024). Power and politics across species boundaries: towards Multispecies Justice in Riverine Hydrosocial Territories. *Environmental Politics*.

Bruno Marmiroli, & Lolita Voisin (2021). La Loire existe-t-elle ? Tentatives d'identification d'un fleuve par ses luttes entremêlées. *Cahiers de l'Ecole de Blois*, 144.

Lotte de Jong, Gert Jan Veldwisch, Lieke Anna Melsen, & Rutgerd Boelens (2024). Making Rivers, Producing Futures: The Rise of an Eco-Modern River Imaginary in Dutch Climate Change Adaptation. *Water (Switzerland)*, 16.

Rutgerd Boelens, Jaime Hoogesteger, Erik Swyngedouw, Jeroen Vos, & Philippus Wester (2016). Hydrosocial territories: a political ecology perspective. *Water International*, 41, 1-14.

Elizabeth Barham (2001). Ecological Boundaries as Community Boundaries: The Politics of Watersheds. *Society & Natural Resources*, 14, 181-191.

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)?

How do we (spatially) organize our territories, and those of other living beings, in relation to water and its all-reaching implications? When situated in the delta of the Netherlands, the academic setting of this very research, the question emerges regularly in scholarly, informal, and governance discussions. An important part of the research agenda of the Landscape Architecture Department of the TU Delft addresses the topic of systemic thinking of water territories, made urgent by the complex geographical positioning of the Delta and the challenges posed to its subsistence. In the lowlands and its university hallways, (representation of) waters are everywhere.

This Master Thesis project situates in this thriving research context, within the Graduation Studio “Flowscapes”, and more specifically in the Circular Water Stories Lab (CWS).

The Graduation Studio stimulates a systemic approach to landscapes and their flows, of which water is central to this project not only as one of the vectors of territorial movements/processes, but as the central focus of the landscape understanding and design. As for the larger research agenda of the CWS Lab in which this research takes place, the focus is on the understanding of an existing water system and its particular (cultural) modifications that keep circular and local processes in place. Through the analysis of traditional interactions with the water landscape (as landscape narratives in the french Meuse), and the re-design of the system to adapt it to future challenges and scenarios (Bobbink et. al., 2024), my project follows the footsteps of previous students in the lab.

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

Professional and scientific field

This work represents a pivotal moment in my professional development, learning how to conduct a one-year project between experimentation and discipline, needed for the planning of its phases. It aims at situating as an example of interdisciplinary landscape research, particularly in the context of river territories. The freedom to define both the project theme and approach has provided a valuable platform for integrating diverse perspectives, making me evolve as a student and future professional. The extensive research period has allows me to deeply engage with current discussions within the scientific field of landscape architecture. Ultimately, this work serves not only as the culmination of my education but also as a foundational step toward my future career, where I aim to contribute to the evolving conversations surrounding landscape architecture, narratives, and the imaginative processes that inform the analysis and design of territories.

Societal field

I have formulated this project as my positioning as a landscape architecture student, and human, towards some of the challenges that this time poses to our society: spatial justice, equal distribution of resources, care for the non-human life, adaptation to the consequences of global climate change. The reimagination of the river system I work on, which I claim being a metaphor for larger responses to these issues, will show that possible futures are possible, and that creative solutions are the key to “reinvent” life in our environment. This possibility also importantly lies in the acceptation that landscapes are cultural constructs, that many processes that operate within them are humanly induced, as consequences of political (thus societal) decisions. This will hopefully inspire the people next to me, that will read this work, to look more carefully at landscapes, beyond the romanticised gaze that disempowers our impact as humans.