Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

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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	Victoria Maura Lye Imasaki Afonso
Student number	

Studio		
Name / Theme	Flowscapes - Resilient Coastal Landscapes	
Main mentor	Steffen Nijhuis	Landscape Architecture
Second mentor	Fransje Hooimeijer	Urbanism
Argumentation of choice of the studio	This studio allowed me to articulate my graduation project with the theme of my Honours Program because of their shared topics, such as water-sensitive design, resilience and the "watershed approach".	

Graduation project	
Title of the graduation project	The River and the Mosaic: Regenerative Cycles in Production Landscapes
Goal	
Location:	Upper Paraná River basin (Brazil) for analysis and principles Três Lagoas city and surroundings to test the principles in a small scale design

The posed problem,	As early as 1833, when Charles Darwin was researching around South America, local inhabitants would already report the Paraná river as being subject to intense seasonal floods and droughts. Almost 200 years later, anthropogenic climate change has arguably worsened the cycle, as wet seasons become less wet, and dry seasons become even dryer. In 2019, the Paraná river basin presented the lowest water levels in 77 years, causing economic and environmental damage. The landscape got marked by marshlands drying, vegetation burning, shores getting exposed, and sandy islands appearing in the river, with fish stranding in the shallow water. Current human occupation and management of this landscape only exacerbates drought, as the previous Atlantic Forest, a rich biodiversity hotspot, got replaced by a tapestry-like commodity landscape woven by the hands of agribusiness titans. Sugarcane plantations, grazing fields for livestock, and eucalyptus forests are extensive to the point they reach the horizon. While lucrative, these forms of land use are problematic in the sense they facilitate the erosion, compression and impoverishment of soils, sharply decreasing water retention capacity. Therefore, the Paraná river basin has a reality of severe threats and structural vulnerabilities. To avoid further socio-environmental and economic losses, spatial occupation in this basin has to be rethought, taking the physical landscape and its remaining ecological processes as the basis. As the basin is home to millions of people and to an established commodity-oriented economy, frameworks and spaces that allow for new forms of coexistence should be considered as a strategy for mitigating drought.

research questions and	**[Main question]** How can adaptive spatial design, developed upon a landscape architecture approach, enhance water retention and resilience in the Upper Paraná River basin in the light of drought and uncertain future challenges? **[subquestions]** A) How did the Paraná River Basin socio-ecological system work before, and how does it work currently? How did deforestation and agribusiness impact it? What are the main challenges and potentials of the current physical and cultural conditions? B) It is impossible to rebuild past "pristine" baselines, because the basin is now home to millions of people and to a robust agribusiness-based economy. Given these current conditions, what are the main landscape architecture-based principles and strategies capable of negotiating with such, and therefore enhancing water retention capacity and resilience within the Upper Paraná River Basin? C) How can these principles and strategies be translated into situated landscape architecture design?

design assignment in which these result.	Subquestion A) Understanding of how the system used to work before versus how it works after so much human interference. The result would be maps and diagrams capable of communicating and problematising such findings. Subquestion B) Building upon the problematisation stated above, the next step would consist of formulating a set of landscape architecture principles and strategies that could be applied at a basin level, or at units of the landscape - if Subquestion A reveals strong clusters of similar areas amid commodity production. Subquestion C) The final act would be to test the principles formulated in subquestion B in a small scale landscape architecture design. Ideally, there would be a cyclical dynamism between B and C, as the latter tests the principles in order to potentially perfect and reformulate B. Three sites were chosen to depict these principles in diverse and comprehensive contexts: a remaining patch in the middle of a sugar cane plantation; an existing urban square with a water source, and an existing riverside public space. This selection aims at representing significant typologies of land use of the basin.

Process

Method description

This research would work with three main methods. They consist of on-site research, readings (about case studies, about planning and design concepts), and research by design.

The on-site research part happened this year, from January 3 to 7. It consisted of a trip to the surroundings of the Paraná river, always departing from the city of Três Lagoas and exploring the biggest Eucalyptus industry in the world, endless sugarcane plantations, grazing fields and the margins of the Paraná river. The trip was essential to understand how these agricultural industries work (how much water they consume, how they manage the land, the soil, etc.), who are the people in the landscape (where they work, how is their everyday routine, what are their leisure practices, etc.) and what is their current relationship to the Paraná river (for recreation, for leisure, for commerce, etc.) A more direct outcome of the trip is the selection of three different sites for small scale design explorations: an agricultural field, an urban square, and a riverfront area. These three samples would allow me to test my principles (outcome from Subquestion B) in the main types of existing land use in the basin.

More information about the trip can be read in the Travelogue, a printed notebook that will be available during my P2 presentation.

Readings would consist of thematic groupings of texts according to specific research topics. For instance, on-site research hinted at three principles to answer Subquestion B (01. Soak, slow, spread: mitigate the negative effects of deforestation; 02. Take care of the soil, of the remaining green patches, and of existing fauna; 03. Find ways to conciliate socio-economic development, culture and ecological care for the biosphere), and each of these has a targeted group of theoretical texts and case studies to thicken their proposals.

Research through design, as stated by Nijhuis and de Vries (2020) is a “research strategy or a culture of thinking” that assigns an inquisitive attitude to creative work, which then addresses a specific research question. In the case of this research, Research through design will make it possible to speculate how the principles coming from Subquestion B can sit within the physical landscape, what opportunities and challenges they create, how they would influence local ecology and spatial environmental quality. As mentioned above, there would be a two-way road between the outcomes of Subquestion B and Subquestion C, in which B informs C and C tests B, which should then be reviewed accordingly.

Visited sites:

São Paulo State Archive: home to the report produced after the first expedition along the Paraná river (1905), which describes de original dynamics of this landscape.
Parque das Neblinas, BR: research center for ecosystem restoration set in a former eucalyptus forest.
Aguapeí National Park, BR: preserved patches of riverine ecosystems close to the Paraná river
Suzano Wood pulp factory, BR: biggest cellulose processing center in the world.

Planned visits:

Bodemzicht, NL: regenerative food production farm

Literature:

01. Already read

_Ahern, J. (2011). From fail-safe to safe-to-fail: Sustainability and resilience in the new urban world. In Landscape and Urban Planning (Vol. 100, Issue 4, pp. 341–343). Elsevier BV. https://doi.org/10.1016/j.landurbplan.2011.02.021
_Bellacasa, M. P. D. L. (2021). Soil Times: the Pace of Ecological Care. In Jaque, A., Verzier, M. O., Pietroiusti, L. (Ed.), More-than-Human (pp. 396-429). Netherlands: Het Nieuwe Instituut.
_Cattoor, B. (2019). Mapping and Design as Interrelated Processes: Constructing Space-Time Narratives. In T. Coomans, B. Cattoor, & K. De Jonge (Eds.), Mapping Landscapes in Transformation: Multidisciplinary Methods for Historical Analysis (pp. 63–93). Leuven University Press.
https://doi.org/10.11116/9789461662835
_Comissão Geographica e Geologica do Estado de S. Paulo (1911). Exploração do Rio Paraná. São Paulo: Typographia Brazil de Rothschild & Co.
_Dramstad, W. E., Olson, J. D., & Forman, R. T. T. (1996). Landscape ecology principles in landscape architecture and land-use planning. Washington, D.C., DC: Island Press.
_Furlan, C. (2019). Unfolding Wasteland: In Mapping Landscapes in Transformation (pp. 131–148). Leuven University Press. https://doi.org/10.2307/j.ctvjsf4w6.8
_Hillege, M. (2021). In Search of Eden. SPOOL, Vol. 8 No. 3: Landscape Metropolis #8. https://doi.org/10.7480/SPOOL.2021.3.6218
_Marris, E. (2011). Rambunctious garden. New York, NY: Bloomsbury Press.
_Myers, N. (2017). From the Anthropocene to the Planthroposcene: Designing gardens for plant/people involution. In History and Anthropology (Vol. 28, Issue 3, pp. 297–301). Informa UK Limited. https://doi.org/10.1080/02757206.2017.1289934
_Nijhuis, S. (2022). Landscape-Based Urbanism: Cultivating Urban Landscapes Through Design. In: Roggema, R. (eds) Design for Regenerative Cities and Landscapes. Contemporary Urban Design Thinking. Springer, Cham. https://doi.org/10.1007/978-3-030-97023-9_11
_Sijmons, D. (1991). Het Casco-concept: een Benaderingswijze voor Landschapsplanning, (IKC-NBLF, Utrecht)
_World Bank, 2021. A Catalog of Nature-based Solutions for Urban Resilience. Washington, D.C. World Bank Group

02. To be read (in continuous construction)

_Veenstra, P., Feddes, Y., Schaap, M., Ekamper, T. (2021). Sponsland Groningen. Reis door het landschap van de toekomst. Groningen, GRAS Publishers.
_Bellacasa, M. P. D. L. (2017). Matters of care. Minneapolis, MN: University of Minnesota Press.
_da Cunha, D. (2018). The invention of rivers. Baltimore, MD: University of Pennsylvania Press.
_Ferdinand, M. (2021). Decolonial ecology: Thinking from the Caribbean world (A. P. Smith, Trans.). Oxford, England: Polity Press.

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)?

My topic (mitigating drought in the Paraná River Basin) and my studio (Resilient Coastal Landscapes) find a common ground in the scope of dealing with unbalanced water conditions (floods or droughts) and preparing landscapes for an uncertain future. This theme sits within the larger umbrella of Landscape Architecture, which can be defined in endless ways. One of them is by stating it focuses on designing open space by thinking of ecological processes, natural features, resilience and adaptability. This is only one discipline of the many within AUBS that deal with designing space living beings navigate within.

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

Climate is becoming more and more unstable everywhere, with some places getting more rain than usual, and others less. As a discipline, Landscape Architecture has to have the knowledge to propose spatial designs to address both extremes. And such knowledge is never “one solution fits all”, it’s rather a very site-specific universe of demands for each location. According to the IPCC (Intergovernmental Panel on Climate Change), South America will suffer more and more from drought and lack of precipitation in the future. Therefore, it is very valuable to think on how to prepare the region for these increasing challenges. Moreover, this situation of “commodity landscapes” is frequently found in many developing countries whose economy depend on exportation, so hopefully this research can inspire researchers and practitioners working in areas beyond South America.