P4 Reflection

This reflection reviews the development of my graduation project of the last two semesters, focusing on the interaction between research and design, the effectiveness of my approach and the role of feedback in shaping my direction. My project explores how paludiculture, the agricultural use of wetlands, and the rewetting of peatlands can establish a regional, regenerative material chain for Berlin. Using the SETS (Socio-Ecological-Technological Systems) framework, I translated landscape-scale research into an architectural proposal: a Cattail-panel factory on the river Spree that acts simultaneously as a production facility, an education hub and a mediator between rural ecological restoration and urban climate adaptation.

1. What is the relation between your graduation project topic, your master track (A, U, BT, LA, MBE), and your master programme (MSc AUBS)?

My research and design efforts focus on the intersection of architecture, ecology and regional material systems. Within the MSc architecture track and the AUBS program, the project contributes to ongoing discussions on regenerative design, circular material flows and architecture's role within broader territorial systems.

This relationship – between territory, material and architecture – reflects the program's emphasis on the built environment as a socio-ecological construct rather than an isolated object. The design scales - from peatland hydrology to industrial architecture to urban adaptation - demonstrate this multilayered integration.

2. How did your research influence your design recommendations and how did the design recommendations influence your research?

The project was developed through continuous feedback loops between research and design. Early research into peatland degradation, hydrology, paludiculture logistics and German rewetting strategies revealed that biomass from rewetted landscapes offers a functional, scalable material solution for the Berlin construction sector.

The SETS framework was crucial in structuring these findings.

- the ecological layer explained the hydrological thresholds that determine cattail growth and the ecological benefits of reestablishing the original form of the landscape.
- the social layer highlighted emerging labor profiles (e.g peatland climate managers, peatland-farmers) and the importance of public acceptance
- the technological layer identified gaps in certification and a lack of demonstrator buildings

These insights shaped the decision-making:

- the building, which is lifted off the ground by stilts, allowing water and vegetation to move beneath it becomes a climate machine with a storm water management system, a microclimate creator against the urban heat island effect and the filtration system of rainwater.

- the façade becomes a fog catching, atmospheric condenser, directly tied to hydrological cycles

- the factory operates within a dense inner urban environment, re-establishing the manufacturing process as an integral part of the urban environment.

- the Spree River edge functions as an ecosystem pier and civic learning landscape.

Conversely, design questions revealed gaps in the research. Designing the hydrological loop required deeper research into evaporation rates and stormwater retention, and the idea of a factory within and an urban fabric demanded understanding of the social dimension of *making*.

3. How do you assess the value of your way of working (your approach, your used methods, used methodology)?

My methodology combined literature reviews, GIS mapping, fieldwork, interviews, site visits and systemic modeling. This mixed-methods approach was appropriate, because the project deals with intertwined ecological, social and material processes.

What worked well:

- GIS mapping clarified the spatial potential for paludiculture and helped quantify biomass outputs, as well as determine stormwater amounts and flow direction at the site
- interviews with peatland farmer Mr. Petri of Lindow/ Brandenburg about new farming methodologies and future challenges and Prof. Grit Bürgow of Landscape architecture and Blue- green environment from the TU Berlin about inner urban swamp on lands (Block 6/ Berlin-Kreuzberg) offered practical insights that literature alone could not provide
- the SETS model helped translate complex systems into design logic

What was challenging:

- the projects breadth initially made it difficult to define architectural agency
- hydrological processes required more technical learning than anticipated

4. How do you assess the academic and societal value, scope and implication of your graduation project, including ethical aspects?

Academically, the project contributes to the discourse of regenerative design by showing how architecture can operate as a mediator within landscape-based value chains. It reframes peatlands not only as ecological assets, but as cultural and material infrastructures with architectural consequences.

Societally, it addresses three urgent issues:

- the need for climate restoration through peatland rewetting
- Berlin's energy retrofit demands (27 % of apartments require immediate upgrading)
- the separation of the urban fabric city from its capabilities and facilities of making

5. How do you assess the value of the transferability of your project results?

The system I developed is rooted in Berlin-Brandenburg's landscape, yet the underlying methodology is transferable. Across Europe, peatlands cover about 10 percent of the lands surface, and 90 precent of them are drained or otherwise degraded. Therefore, the approach could be applied in other regions with wetland ecologies and degraded soils. The architectural model - combining factory + public interface + ecological infrastructure – offers a replicable typology for regenerative urban manufacturing. However, successful transfer depends on local governance, hydrology, labor structures and cultural acceptance.

6. How did working with a single renewable material like cattail as both a research topic and as a design driver influence the architectural outcome, and what limitations or biases did this material-centric approach create?

Working with Cattail both as a research subject and a design driver created a high degree of coherence between material, construction and environmental agenda. The decision after P2 to base the project on one single plant only forced a deeper engagement with the material.

The biggest limitation was that Cattail alone could not solve all structural, weathering or fire safety demands. The project therefore demanded a hybrid system with timber and brick cores. Ultimately, working with a single material sharpened my understanding of how material research can both empower and restrict architectural decision making – a negotiation that became central to the development of my project.

7. To what extent can an architectural project realistically integrate ecological processes such as hydrology, filtration, and habitat formation without compromising spatial, technical or operational performance?

The hydrological research in my case transformed the design fundamentally: instead of treating water as a constraint, the building began to operate as a large filtration and retention system. Filter strip, meander zone and biotope became active infrastructural *layers* rather than decorative landscape. This approach strengthened the project's spatial identity and produced new forms of publicness under the elevated building.

However, working with ecological processes also introduced tensions. The desire for habitat formation and water retention had to be balanced with safety and accessibility, and the operational clarity of a factory. The project intentionally makes these ecological systems visible and explorable, yet the underlying principle is transferable beyond this demonstrative context. Ecological integration does not have to be spectacular to be effective. Historical precedents, such as Block 6 – an inner-city urban wetland system established in Berlin-Kreuzberg already in 1986 – show that embedded ecological infrastructures can operate quietly, reliably and resiliently within dense urban environments.

8. Reflection on feedback and learning

Tutor feedback pushed me to clarify the architectural mediation between the scales. Early in the design process the focus of the project remained solely on the ecosystem services, just later the perspective of manufacturing within the urban fabric became part of the project, strengthening the proposal immensely.

The feedback also emphasized:

- strengthening the communicability of the production process which led to the spatial layout of the factory.

- showing atmospheric and spatial qualities: resulting in the ecosystem pier and the opened ground floor

- defining program hybridity, leading to the integration of research labs, education and spaces and the public canteen

- the development of the fragment in the first weeks of MSc 4 gave me conceptual ideas on how the building relates to the surrounding landscape

-Another important learning point was recognizing the potential of the factory as a mediator building, not only for Cattail material, but for a new socio-ecological architecture of making.