

REFLECTION REPORT

AQUA-PURIFIER PHYTO-FAÇADE SYSTEM

'Exploring the contribution of a green façade in the purifying of wastewater and canal water in an urban environment'

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ASPECT 1

THE RELATIONSHIP BETWEEN RESEARCH AND DESIGN

The focus of the Architecture Engineering Studio is mainly the innovation in its broader sense. In architectural field, innovation can be technical with building technology (new materials, new building technics, etc.) as spearhead. It can also be conceptual, think of the (re)invention of new typologies/ type of dwellings. It can even be a socio-economical innovation which, for example, may rethinking the relationship between the building and its users.

In the begin of this graduation project, my intention was to develop a SCS (Standardized Components System) of a green façade (of cause including the roof and the floor as 5th and 6th façade), which could be fit everywhere and could purify any type of polluted water. But during the site research it slowly became clearly that the green façade should more related to the site than being standardized. By site related solutions, I don't mean the façade (even the building itself) aesthetically fitting in its direct surroundings, but that this phytoremediating function of the façade should be developed and designed specifically for Marineterrein to increase its effectivity. Instead of designing a floating building, which could be moved to another place and still effectively purify polluted water, I chose to make a fixed building custom-made for Marineterrein canal water. This decision brought few consequences on the building shape itself and on the functioning of the Wetlands systems. As I started deeply analyzing the water pollution on the site, it became clearly for me that a custom-made solution was more suitable even if the applicability of the system other existing buildings gets lost and its effectiveness slightly attenuated. The case-study of precedents projects have reinforced this idea of a custom-made design for Marineterrein. Therefore, the final design is a landscape building on canal water, integrating a CWS (Constructed Wetlands System) in its Voronoi-shape as a metaphor or mimicry of this organic shape of plants and aquatic organisms responsible of phytoremediation.

ASPECT 2

RELATIONSHIP BETWEEN PROJECT TOPIC AND THE STUDIO TOPIC

In AE studio, the focus is more on innovation and the research and design approach is more interdisciplinary than in the other studios. The studio tends to focus on finding new solutions for current issues in the building sectors and in our society in general. My project topic tends to deal with the issue of water pollution in the building environment by associating CWS with the building façade. This asked a totally different approach than usual, and an interdisciplinary research had to be conducted in order to understand the filtration principles and their applicability on building.

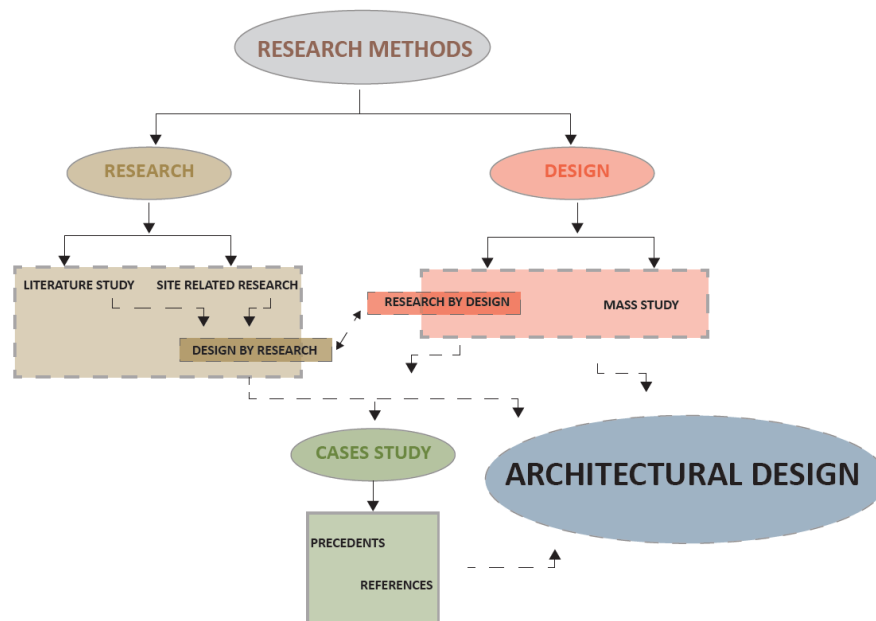
The research- and design methods of AE studio may differ with other graduation studio, but the essence of Architects Engineers is to provide durable solutions and alternatives to the currents problems that our society is facing. As architects or urban planners, we all must deal with those issues by proposing alternative solutions while meet to the 'zeitgeist' of contemporary society.

ASPECT 3

RELATIONSHIP BETWEEN THE USED RESEARCH METHOD & APPROACH AND THE METHODOLOGICAL LINE OF INQUIRY IN THE AE STUDIO

In the beginning of this project, my biggest challenge was to identify an actual issue susceptible to fit into the site needs and to transpose it into an architecture design. The water pollution issue may sometimes appear not related to architecture, but since it can affect the built environment and directly the citizens life, it is important to be integrated in architecture and urban planning profession. Generally, this identified problem of water pollution is a worldwide issue related to a specified context, but the proposed answer was largely specific for Amsterdam context.

The research method was mainly about literature study and cases study of the different CW systems and façade typologies. In the later design phase, there was a technical and conceptual exploration of the already existing projects with the sole purpose of translating the findings into an architectural and landscape design. Note that all those processes (research and design) were happening simultaneously compared to the normal AE research method in which the research takes place more in the beginning of the project.



ASPECT 4

RELATIONSHIP BETWEEN MY PROJECT AND THE WIDER SOCIAL CONTEXT

Urban pollution has become the big issue for cities and it can sometimes become a brake on its development and a threat to the health of its inhabitants. Water, air or soil pollutions are responsible for many diseases and problems in the cities. In an urban environment where green spaces are mostly non-existent, the building façade can become an alternative solution to tackle the water and air pollution. My graduation project of a new type of green building which actively filter wastewater, can help to solve the water pollution issue in an urban area and therefore having a positive impact on its direct surrounding. As there are no precedents of buildings with an active green façade which can clean water, it raises the question of the new role of architect in our profession. The contemporary architect must become a 'catalyser' of knowledge with a transdisciplinary methodological approach in order to reinvent our profession and come out with innovative concept.

ASPECT 5

ETHICAL ISSUES AND DILEMMAS AND THE APPLICABILITY OF THE RESULTS IN PRACTICE

'Even if the problem of water pollution on Marineterrein may meet the requirements of the client (in my case the municipality of Amsterdam wants for this area to be and remain a place where innovation takes place), my response must be also universal for the sake of necessity. As Herman Wagter (2017) states in his manifesto for innovation *Incubator for dreamers* 'here on Marineterrein we're laying the foundations for what people will encounter in the city over the next thirty years... products and systems that will replace outdated structures'(Marineterrein, 2017). Since the beginning, it was clear for me that Marineterrein must become a 'showcase' for ongoing sustainable innovations on the field of water as a kind of '*scaling for impact*'. So as a designer of the era of computing design, I must be aware of this universality of my choices and the interconnected effects (climate, economic or political effects on society) they may cause if I don't think in a broad frame.' (Position paper)