Future Relics

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Master Thesis: Final Reflection

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North Sea: Landscapes of Coexistence
Transitional Territories Studio 2019-2020

P5 Reflection

Future Relics:
About Doel's de-polderisation and eventual destruction in the Post-Anthropocene era.

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Relationship between research and design.

Transitional Territories is a cross-disciplinary studio which, because of its hybrid nature between architecture and urbanism, strongly pursues a multi-scalar approach of research and design. This holistic process is for me a clear example of a modern method of addressing the design process and its contemporary issues.
In fact, the studio does not envision design as "problem solving" but as media to anticipate, understand and unfold different architectural scenarios.

As emerged from the lectures and seminars organized by the chair during the first semester, different water-related areas of the world are affected by similar but equally destructive environmental phenomena. In such vast, complicated and ever-changing context like the one of these "*territories in transit*", the process of design cannot disregard the socio-economic, geo-political and ecological issues. For these reasons, the studio is following a '*research by design*' strategy, where the outcome of the project is not based upon a final product per se, but on the knowledge that can be drawn from the process of design. This means that despite the geographical area and the set of problems were pre-assigned, each student was free to develop his/her very personal vision within the general theoretical and geographical framework.

The personal research I have carried out as a starting point of my personal project was indeed a corollary of the collective work conducted by the whole studio on the North Sea. The background knowledge provided by the collective work was certainly decisive in stimulating my fascination and in delineating my area of interest and my research questions. The design process was then conducted following the aforementioned "multi-scalar", gradually zooming-in from the macroscale of the the North Sea, down to the architectural detail 1:5.

My personal research on the North Sea and the Scheldt estuary individuated the Doelpolder as land of conflictual relationships between human settlements, environmental crisis, and man-made infrastructures, which are all paradigms of the so-called Anthropocene era. The site comprises the village of Doel, the natural reserve of Saeftinghe, the nuclear power plant of Doel and the largest dock of the Port of Antwerp (Deurganckdock) in a 2 km long prone-to-flooding area, which is currently facing complex anthropic phenomena such as pollution, infrastructural expansion of the harbor and dismantlement of the nuclear power plant.

In its process of northbound expansion at the expense of the estuarine territory and the polder-land, the Port has turned Doel into a ghost town by means of expropriation and economic pressure, while the flora and fauna of Saeftinghe are endangered by the alteration of their brackish habitat caused by pollution and water level rise. This everlasting dichotomy between natural and anthropized processes poses here the dualistic problem of extinction/preservation and (how) can architecture depict a self-healing survival scenario for the site in the Post-Anthropocene, attempting at climate change mitigation and nature metabolism at the same time.

The project first addresses the aforementioned issues within a regional strategic and energetic plan which foresees the "*de-polderization*" of the area, its transformation into a controlled tidal zone for soil and water recovery and the simultaneous expansion of the natural reserve. The area is in fact both a "gateway" to Antwerp and a buffer between the port infrastructure and the rural environment; it could become in the future part of a flemish coastal green 'cushion' for the mitigation of flooding and sea-level rise and also area for 'digesting' the polluting action of the near port.

Finally, the thesis wants to takes a position regarding the future re-use of (parts of) the nuclear power station starting from 2025, namely the date Belgium is supposed to start the phase out of nuclear energy.

On the smaller scale, the architecture here implemented is a "*knowledge ark*" with laboratories and academic-related spaces, a facility which can exploit not only the world-level Port infrastructure for an optimized logistic (coldchain) but also the proximity of the natural reserve and the former agricultural vocation of the area. This repository building consists of a *seed vault* and a *frozen zoo* for the conservation of species through cryopreservation technique, but most importantly is an architectural object designed to resist or accommodate time and territorial transformations, for guaranteeing a possible rebirth of both nature and culture.

The final conclusions and assumptions of the project are rather speculative: the design tries to depict the future scenarios in case of failure of humans in their personal strive at a more sustainable and eco-based built environment or more in general in the battle against climate change. The architecture imagined for the Doel site is physically linked to the water-level-rise process. When/if the level of the Scheldt rises above 5 meters (worst case scenario), the whole area will be flooded and any human survival unlikely. In these circumstances, the water will trigger the self-destruction of the facility, spreading the seeds contained in the vault all over the area and thus favouring the rebirth of nature in unpredictable climatic conditions. In the end, the Seed Vault/Frozen Zoo constitutes, like Doel, the nemesis of the Port but, also like Doel, will eventually evolve into a ruin in case of loss in the fight against anthropization, pollution and climate change.

Relationship between graduation (project) topic, studio topic, master track (A) and master programme (MSc).

As of today, we are witnessing exponential growth in the awareness around some crucial problematics and themes related to the so-called Anthropocene era, like climate change and pollution. These issues have recently started entering the design field not only in the form of more technologically and materially sustainable design but also in other ways and both in architectural and artistic form. Many architecture universities around the world, like TU Delft, have lately started to focus on the "territorial agency" by carrying out projects on topics such as extreme weather and sea-level rise, both on a technical and theoretical level.

In this framework it is possible to inscribe my graduation project and more in general the Transitional Territories method, whose main vocation is to lead an exploratory design trying to address the complexity of socio-economic and climatic issues in a specific location of the North Sea. This was carried out firstly by reflecting on the possible scenarios of these processes over different timeframes and secondly by envisaging a consequent urban configuration with a more paradigmatic vision regarding the relationship between architecture, culture, water, and natural events. Furthermore, as provided by the general didactic of the Faculty, said vision had to be tested not only through a programmatic speculation but also through a weighted technical solution.

In the specific case of my graduation project, the Doelpolder and the town of Doel are emblematic of the ongoing conflictual relationship between human settlements, environmental crisis, and man-made infrastructures: the site is in fact situated between a swampy tidal natural reserve (the drowned land of Saeftinghe), a nuclear power

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plant and the Port of Antwerp. Beside the common problems related to climate change and water level rise, the area had to face and succumb to the destructive process of growth of the Port infrastructure, which is now the second biggest in Europe. After having vastly expanded towards north over the last five decades by engulfing the natural habitat of the estuary and the former polder-land near the national border, the Port is now threatening the survival of Doel town and the estuarine ecosystem of the natural reserve of Saeftinghe. The traces of this anthropizing action are not just recognizable in the banks of the Scheldt but also in the lives of the inhabitants of Doel and in the flora and fauna of Saeftinghe, once more demonstrating the necessity of a cross-disciplinary study for a full understanding of the total effect of such infrastructural events on the territory.

Research methods.

The same process of mapping applied to the North Sea, was carried on in my thesis with a great caution on not treating the existing just as the physical manifestation of the territory (topography, water, roads, buildings, vegetation), but trying to reveal in the form of layers the hidden (networks of) forces which underlie the structure of a geographical area.

In particular, the Scheldt estuary emerged, together with the Rotterdam and Hamburg ones, as an incredibly dynamic system, where temperature, salinity, turbidity and flow all varies on a day-to-day basis. This vivacity makes the estuary an incredibly fertile and prolific habitat, while their conformation and position make them strategical under a logistical point of view, therefore most suitable for port placement.

On the other hand, the Scheldt catchment area has a high population density and is very industrialized, resulting in significant hypoxic conditions up to 30 kilometers in length across the estuary. In that polluted environment, the danger of extinction pertains not just to plants and animals but also to humans.

Diagrams and schemes were at this point useful to grasp and show the magnitude of anthropic phenomena such as (air, noise, water) pollution related to the port of Antwerp's operations and industries and their impact on the environment, thus completing the picture of a territory under intense process of transformation. Moreover, an energy transition adds up to the already changing environmental conditions, with the nuclear power plant of Doel, the closest in Europe to a such densely populated area, which is expected to completely switch off its reactors by 2025.

The catalog of the species of Saeftinghe was another helpful mean in the understanding of the territory, specifically of the flora and fauna of the natural reserve, which are today endangered by means of pollution, anthropization and climate change.

Furthermore, the site visit and the photo reportage of Doel gave an even more complete perspective on the area verifying the guesses made by the process of mapping on the bigger scale. Subsequently, the reading of news articles on the topic contributed to the research by adding an updated social and political insight.

From the intersections between the socio-environmental emergencies and the status quo, I have drawn the possible scenarios of interventions, always keeping the Anthropocene as a general framework for defining the conceptual and spatio-temporal coordinates of the project.

As a matter of fact, the research seemed to bring out different temporal frames for delineate the project.

The first one in chronological order would be the 'post-nuclear scenario', when the power plant is closed, the reactors dismantled, and the area remediated. In such picture, the cooling towers can remain as landmark and monument of the industrial past of the place or be re-converted into a seed vault/frozen zoo, while the rest can be demolished.

Unfortunately, no rebirth future can be imagined for the town of Doel as it is a small country town which has over time lost both its agricultural vocation and its '*nuclear function*'. The hamlet can instead be turned into a memorial or "*relic*" city, a reminder of the stubbornness of its inhabitants who in the remote past resisted to flooding while recently survived the pressure of an infrastructural economic force such as the Port of Antwerp.

The second timeframe could be the '*depolderization project*', which would transform the polder into a controlled tidal area while merging it with the natural reserve, whereas the dock, the dike, the town and the nuclear power plant would remain untouched by water as they would be either structurally protected or located in an advantageous elevated position.

Lastly, the third modification in time takes into account the possibility of apocalypse and failure of this society in fighting climate change. Even in this scenario the system of buildings would still stand as a "sanctuary", symbol of the catastrophic past but also reservoir for the possible rebirth of society.

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

As already anticipated, in the Anthropocene era architecture has the potential to increase human destruction of the environment, but also "*to invent more sustainable ways of living and more aesthetic experiences of inhabitation*" *(Elizabeth Grosz, 2013)*. In other words, as designers, we still should believe that we can induce changes in the built environment through our work, whether these are technical, social or environmental. This is an always underestimated aspect of our field: architecture has the capacity of being a "monument" and conveying a certain message.

Like demonstrated by the last Triennale held in Milan in 2019, the current climatic and socio-economic crisis calls for a revision of the relationships between humans and nature and now, maybe more than ever, this link has to be enhanced through design as it is the first step to raise awareness and start having a positive impact on the environment. With this in mind, even if, for its context and premises, my graduation project could not separate the speculative vision from the realistic feasibility of certain measures, the ambition of the thesis is not only to be sustainable in a broader sense but also (somehow) to design an architecture(s) which awakens in people, designers or users, a reflection regarding the consequences of humans actions and the debt they owe to the natural forces.

In the end, as the North Sea and the Scheldt Estuary are the battlefront of natural and anthropic flows, the project tried to take these ecological contradictions as starting point to later make them paradigmatic of a current attitude of society and of a future imaginary. The whole ensemble of the project was in fact designed according to the criteria of an alternative dystopic scenario distant in time and the same temporal criteria were also applied to the very building materials which were assembled according to their expected degradation in a long-time span.

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Time is indeed a crucial aspect of this project: "*Architecture is often, and for readily apparent reasons, considered through spatial perspectives but in an epoch where we witness intense transformations in weather, species, and geology, at an unprecedented rate, it is necessary a (re-)consideration of its temporal qualities. Indeed, the ways that architecture shifts, changes, transforms, degrades, breaks down, and evolves anticipates particular kinds of futures through its various territorializations and movements over time." (Elizabeth Grosz, 2013)*
If E.Grosz' argument is true, then the architecture resulted from this master thesis is actually belonging to another time and is aimed to produce a distortion in our perception which warns us about our future.

Ethical issues and dilemmas I have encountered in doing the research, elaborating the design and potential applications of the results in practice.

The project started from a reflection on the Anthropocene and its on-going radical changes and from the awareness that the trope of (environmental) apocalypse, has always been historically present in every society throughout history. The future imaginary was never more concrete than it is now, making dystopia and utopia two very possible scenarios of our reality. The rather cynical position of the project starts from the assumption that extinction/death is a condition of the Anthropocene (Bratton, 2013) and thus a matter of design.

The final supposition was something like "if apocalypse really happens what will its architectural manifestation be or viceversa what kind of architecture would deserve to survive the apocalypse and why?"

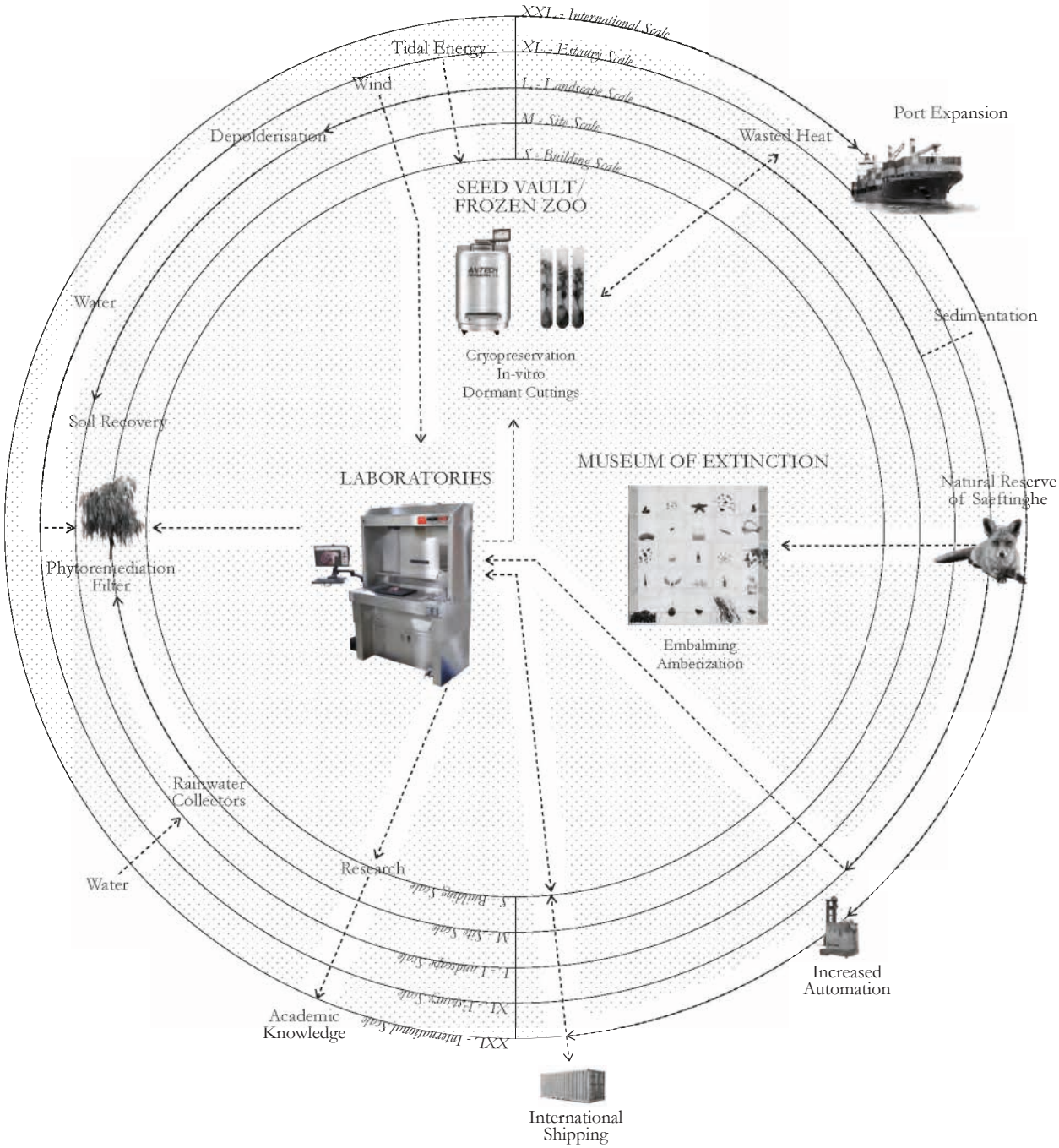
As a consequence of such premises, the thesis questioned the concept of resilience as the best attitude towards sustainability and against the afore-mentioned climate disasters.

Sustainability is an undoubtedly overused, and often misused, word within the architectural debate of our time, but the prominence of the term is nonetheless harbinger of a general positive interest of architects (and mankind in general) to realize a less destructive relationship with nature, not only as strategies to address climate change, sea-level rise and pollution, but more importantly as a radical change of mentality and possibly of lifestyle. This last aspect is even more crucial nowadays as the main approach towards climate change remains the technological, performative, engineering one, whereas a universal, more cultural and aesthetic operation would be required.

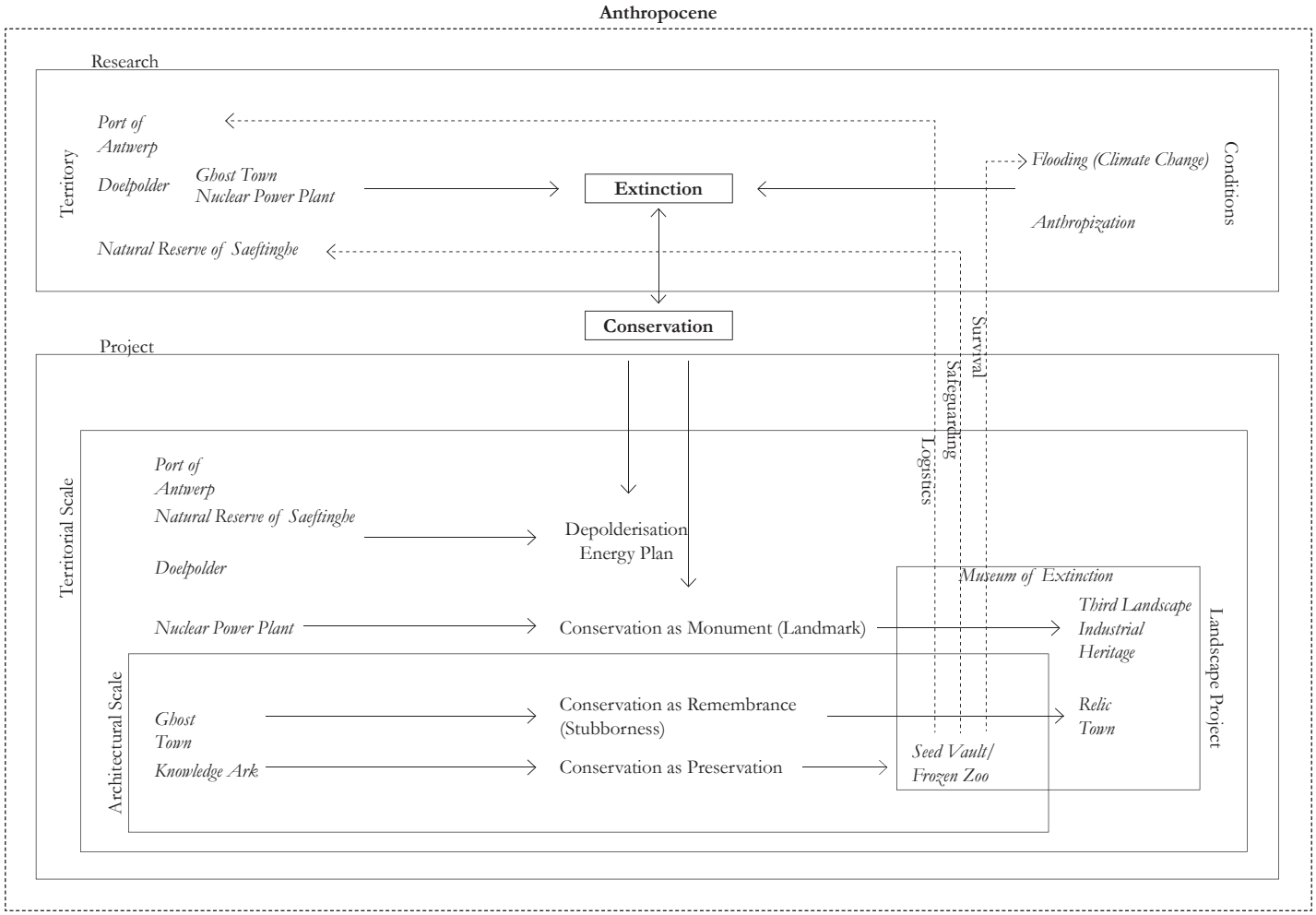
Architecture alone (but also urbanism) is, by definition, incapable of solving such problems, but it can perhaps be designed to perform accordingly to the natural system or to natural disasters. The idea itself of a spatial synthesis of nature and architecture should not be taken for granted, as it means the union of two perfectly antithetical elements, the first ever-changing, the second striving for being eternal.

These days, we tend to (too) frequently use the term resilience to denote the tactic of loosing the anticipated dichotomy between nature and architecture. Such concept is exemplary of the current attitude towards climate change, which is reacting blow by blow and trying, after each catastrophic natural event, to return to the status quo, a state which is not necessarily always affordable or sustainable (Keenan, 2014, 18-32).

Indeed, the role of designers in times of climate change cannot just count on scientific projections and statistics, which would prefer a resilient plan, but it has to go beyond the economic or merely architectural decision-making as the dimension and complexity of these phenomena transcend any logic of scale or policy (Keenan, 2016, 162) for reaching a more symbolic philosophical value.



Programmatic Ecosystem



Thesis Summary Diagram

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