Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences
### Personal information

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<thead>
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### Studio

<table>
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<tr>
<th>Name / Theme</th>
<th>Delta Interventions / North Sea: Landscapes of Co-existance</th>
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<tbody>
<tr>
<td>Teachers / Tutors</td>
<td>Taneha Kuzniecow Bacchin and Nicola Marzot</td>
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**Argumentation of choice of the studio**

1. **Ever-changing Interpretation of the Seas**

   The sea, the biggest eco-system of the planet earth is a complex and malleable habitat, interspersed by infrastructures, networks of consumption and transportation. With climate change and the mandatory transformation from hydrocarbons to sustainable forms of energy, water management and design are undergoing a paradigm shift, meaning that conventional know-how and predefined territories are changing. These changes are positing the sea as a new geography for water-related urbanism. Where the sea is conceived as ‘a place’ rather than an extra-territorial space.

   Within this context, the planning and the future of the North Sea comes into debate of the status quo. Thus, the planning, governing and the designing of the North Sea as a territory is a challenging hot topic in the discourse of urban and architectural design. Zeekracht by OMA is one of the renowned examples of this changing approach to the North Sea, which defines the sea as place.

2. **Climate Change and the Sea Level Rise**

   Climate change and its drastic consequence of rising sea levels, gave an unprecedented significance to water related design more than any other time in the planning history. Although some societies are more accustomed and adapted to catastrophic consequences of the events like storm surges and tides – like the Dutch or Chinese living nearby the North Sea and The Pearl River Delta respectively – societies who inhabited the densified coasts of the sea faced with destructive and deadly consequences of Hurricane Katrina and others. Blue Dunes proposed by WXY and West 8 is a phenomenal design which is opening a new perspective how to design with climate change in diverse operational scales. Even though this proposal is not yet realized, concrete proposals exist, such as ‘Governors Island Park and Public Space Master Plan’ by West 8, which was completed in 2016, where Adriaan Geuze implemented a rewarding master plan in response to the sea level rise in New York.

   Finally, it should be acknowledged that in the process of changing interpretation of the seas and the adaptation to climate change and the sea level rise requires a pretty agile capacity of design with technical work but also with the imagination, with design and with art. Thus, my main intention behind the choice of studio is to specialize in designing the deltas through extensive research and following a design project.
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<th>Graduation project</th>
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<tr>
<td><strong>Title of the graduation project</strong></td>
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<td><strong>Goal</strong></td>
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<td><strong>Location:</strong></td>
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<td><strong>The posed problem</strong></td>
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The research is carried out in three different scales and each scale is posing different problems. The first scale is the Wadden Sea Area (from The Netherlands as the westernmost extremity to Denmark as the northernmost). The second scale is the West Frisian Islands and Northern Netherlands, with the third scale being the Island Schiermonnikoog.

**Scale 1: The Wadden Sea**

The problems posed in that scale are problems which directly relates with its legislative status of the Wadden Sea. The whole Wadden area is shared by three countries: The Netherlands, Germany and Denmark. These three countries have agreed on a 'The Trilateral Cooperation on the Protection of the Wadden Sea'. This cooperation is called 'Common Wadden Sea Secretariat'. Like this trilateral cooperation, Wadden Sea is protected by other legislative initiatives like: UNESCO, Natura 2000 and Ramsar. The major problems posed by these authorities are:

1. **Loss of Habitat**
   The Wadden Sea is a unique habitat for mammals and birds. The loss of its habitat is threatening the species living around this heavenly habitat. Sea level rise and gas extraction around the Wadden Sea is a serious threat to its unique habitat.

2. **Need for a Sustainable Tourism**
   The area is also a favourite destination for tourists, especially for the bird watchers since it is on the flyway of numerous bird species. Some also use the islands and sandbanks to leave their eggs and to breed. Thus, tourism is an important source of income but these activities should meet sustainability criteria.

**Scale 2: West Frisian Islands and Northern Netherlands**

1. **Coastal Squeeze**
   In the current state, the densification of urban, industrial and agricultural areas on the coast threaten this naturally very vulnerable landscape with coastal squeeze. Coastal squeeze is another threat to Wadden's unique habitat than sea level rise and gas extraction. Unlike the sea level rise and the gas extraction, the coastal squeeze is a problem developed over centuries during the Holocene development of the Northern Netherlands. Starting form 500 BC, the ebb-tidal delta of the Wadden Sea was getting smaller during centuries. And finally, with the effect of the land reclamation processes it is taken today's shape.

2. **Drought & Salination Threat**
   Climate change, land subsidence and new water demands may lead to
droughts in the Netherlands, despite it being a relatively wet country. Additionally, climate change leads to salination of the fresh water as well, which may lead shortage of fresh water for houses, agriculture and factories in the near future.

3. Moving Islands
Large amounts of the Wadden islands are moving, causing them to demonstrate a highly dynamic morphological pattern. The direction of their movements is changing in time and their moving rates are proving to vary differently. Importantly, the highest mean shifting rates are reported from the Netherlands. The current land reclamation policies of the Netherlands are against mobilisation of the islands of Texel, Vlieland, Ameland, Terschelling and Schiermonnikoog. For that purpose, sand nourishment on the beaches, dikes and sand drift dikes are implemented against the dynamic nature of the islands. But in the future, especially with the contribution of the sea level rise, these implementations may not be enough to keep the islands in their static state.

Scale 3: Island Schiermonnikoog

1. Most Dynamic Island
Island Schiermonnikoog is the most dynamic island among all other West Frisian Islands. This implies that the Dutch Government must allocate a higher budget for the sand nourishment than they spend for other islands. Especially with the effect of sea level rise, this situation may create a conflict between immobilisation of the island and the sand budget.

2. Highly Affected by Tidal Changes
Since the island is a part of an ebb-tidal delta, the sea level is changing twice a day. From Den Helder to Bremen, the water level difference goes from 1,4m up to 4,4m. Thus, the daily tide difference in the island is between 2 - 2,5 meters. However, during the storm surges the maximum recorded setup in the water is about 3,4 - 4 meters. These numbers are expected to get higher with the effect of climate change.

Prologue
The Dutch has a long-standing and widely-esteemed history for water management. They have built their civilisation between the solid and liquid states. Polder landscapes, dikes, canals and heroic water infrastructures shaped and changed the landscape over centuries and the social structure and governance respectively. Eventually, designing with water - by sometimes keeping the water out, sometimes welcoming it in - is in the DNA of the Dutch design for architecture, landscape and urbanism.

Luctor et emergo (Translation from Latin: I struggle and emerge) is the heraldic motto of the Zeeland. It is given as a name to the project because the interpretation of the long-standing tradition of the battle between the Dutch against water is the central tenet of this project.

The research tracing the myth of “making new land” by investigating four major themes adopted from a recent publication ‘Sweet and Salt: The Water and The Dutch’. Because these four themes are perceived as a thematic backbone of the Dutch waterscapes, in other words the thematic ground of the battle with water. Therefore, the intention was to analyse the Wadden Sea and the Island Schiermonnikoog by using the themes: conflict, concord, profit and pleasure.
## 4 Themes

**Conflict:**
The conflict means the conflict between the wet and dry. The disastrous floods, breaking dikes, sunken ships are representing the conflict between the solid and liquid states. Intervening the nature with heroic structures are also part of this conflict. For example, the Afsluitdijk which turned the Zuiderzee into a lake, changed the dynamics of water and split the sweet and salt.

**Concord:**
The amphibious life of the Dutch means concord. Concord comes to life where the water management behave the enemy – the water - as an ally. When the Dutch give a room to the enemy by the canals, but also combining it with dams and locks, they somehow proved that they concord with the water.

**Profit:**
Profit means, profiting by this amphibious life mentioned above. It sometimes comes into life with ships which were like some small replicas of little Dutch towns. By this way, with a strong navy and seafaring they prosper by harvesting the seas. But in the mainland, they also prosper by the utilitarian landscape that they have designed. Windmills are the most beautiful examples of how to keep the land dry, by pumping the water out but also profit from it by using it for production and habitation.

**Pleasure:**
Pleasure means to cherish the dynamics of this landscape and states of water. Pleasure is about the lifestyle. For example, taking your boat at the weekend and sailing with your boat or skating on a frozen lake is pleasure in the amphibious life.

After the investigation of these four themes, the motive here is to project them into the future by using a scenario method. The project envisions a future when or after the West Frisian Island Schiermonnikoog is left to the nature and slowly disappears in the currents of the North Sea. Depending on that scenario the intervention narrates a new myth “guarding the water” by using the typology of a fort.

### Research questions
What would be the new myth of water defence which response and works with the accelerated dynamics of the Wadden Sea in the future?

How these four themes: conflict, concord, profit and pleasure can be implemented in future designs and what would be the spatial consequences of interpretation of these themes?

### Design Assignment in Which These Result

**Masterplan**
The Masterplan aims to interpret four themes behind the myth of ‘making new land’ into the context of the disappearing island Schiermonnikoog. New meanings are attained to these themes by considering the new status of the territory and the problems that have posed before. These new meanings are also narrating a new myth ‘guarding the water’ by a typology of a fort.
The thematic background of the masterplan according to the new meanings of the adopted themes:

**Conflict:** Regarding the scenario of the island disappearing: Leftovers of the island would be protected by a fort, with the intention of turning it into a water structure. According to that scenario the disappearing land would be mobilized, for the first time after long years of land reclamation, and turned into a playground of the nature. On the other hand, the fort remains immobilized nearby this natural playground. These two mobilized and immobilized lands represent the conflict in the new context. On the other hand, the conflict between the solid and liquid states still remain.

**Concord:** In the new context, since the island is mobilized and erodes and disappears in time, concord means ‘behaving this dynamic landscape as if it is the sea’. By doing that new means of navigation is coming to stage. So, this theme can be explained by concord by navigation.

**Profit:** Profit has a double-entendre. Since the fort is defining conflicting parts in the territory, profit means to benefit from these. So, in the context of mobilized landscape, profit of dynamic landscape means protect by release. So, the natural landscape of the Schiermonnikoog is intended to be protected by mobilizing it. With this strategy, the tourism in the island will have a new motto as well: ‘protect and prosper’. On the contrary, inside the fort, protection is achieved by preservation. In other words, by ‘guarding the water’. This theme would bring solution to expected droughts in the near future.

**Pleasure:** The new meaning for pleasure is the cyclical life of the islands and their territory. Migratory birds, ships, sediment streams, tides, islanders and tourists are all protagonists of a cyclical life of this unique habitat. They are different agents of this cycle and each performs in different time scales but operating in the common ground of the Wadden Sea.

These themes don’t comply with a particular scale, particular time or a building. They are major components of the strategic approach to the island Schiermonnikoog. According to this strategy, the masterplan aims to design a utilitarian landscape that manages the fresh water sources whilst succeeding in diversification and enrichment of the existing tourism activities.

**Buildings**

1. **The Fort**
   According to masterplan, the fort building will function as a water reservoir. Which filters and preserves the water by using dunes as a natural instrument for filtration. For the water preservation, a cistern like ground work is proposed to prevent the water from mixing with salt water on the ground. This may also help reduce water evaporation right after the catchment. This complex is not only imagined as a sole utilitarian infrastructure, but also as a leisure space using the water as a powerful element.

2. **The Bath**
   The water retained can be also used to feed a civic bath replacing the water currents of the Wadden. The strategic position of the island also enables the geothermal power coming from the North of the Netherlands as a source to heat the water and empower this civic building.

3. **The Navigation Posts**
   These small pavilions are imagines as small structures which distributed to the land according to some principles. They can be also used by touristic facilities. The positioning of these posts will become clear with further research after P2.
**Process**

**Method description**

**Analysis of Water Infrastructures**
The proposal of a water structure requires a good understanding of the typology and engineering required to build these structures effectively, necessitating thorough research.

**From Literature to Design**
The four themes adopted from the publication ‘Sweet & Salt: Water and the Dutch’ were a great inspiration and helped to make a solid start to clarify the concept and to have a deeper look into water works and their impacts on society and culture.

**Scenario Method**
The project envisions a future when or after the West Frisian Island Schiermonnikoog is left to nature and slowly disappears in the currents of the North Sea. And according to same scenario, only the leftovers of the island will be protected by fortification.

**Morphological Analysis of Moving Islands**
Since the whole Wadden Islands are always in a dynamic state within the effects of the sediment sharing, water currents and storms, a comprehensive research was carried out to understand the morphology of these islands.

**Hydrology of West Frisian Islands**
To understand the hydrology of the island is as important as to understand the morphology. Learning about the configuration of fresh and salt water in the site, types of fresh water lenses in the dune areas, flowcharts of hydrological systems in the Frisia islands were major steps that had been taken.

**Literature and general practical preference**

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Title and Publisher</th>
</tr>
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<tbody>
<tr>
<td>Jesse M. Keenan and Claire Weisz.</td>
<td>Blue Dunes: Climate Change by Design (New York: Columbia Books on Architecture and the City, 2016)</td>
</tr>
<tr>
<td>Ilka Ruby and Andreas Ruby.</td>
<td>Infrastructure Space (Berlin: Ruby Press, 2017)</td>
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## Reflection

**Relevance**

It was understood that future advanced research would need to investigate alternative designs than conventional mitigation methods that create hard edge conditions. Design initiatives like ‘design by nature’ or ‘climate change by design’ are manifestations for a new era where dynamics of nature became part of the design process. The project acknowledges this paradigm shift and speculates about an alternative scenario for the future of Island Schiermonnikoog by re-wildering and mobilising it.

## Time Planning

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<thead>
<tr>
<th>JANUARY</th>
<th>FEBRUARY</th>
<th>MARCH</th>
<th>APRIL</th>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
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<tbody>
<tr>
<td>Week 2.7 P2 presentation preparation</td>
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<td>Week 3.4 Etudes on plans and sections</td>
<td>Week 3.8 Analysis and etude on the surrounding tidal landscape</td>
<td>Week 4.2 Preparation for P4</td>
<td>Week 4.7 Finalisation of revisions and starting model making</td>
<td>Week 4.11 P5 presentation</td>
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<tr>
<td>Week 2.8 P2 presentation</td>
<td>——</td>
<td>Week 3.5 Finalisation of plans and sections</td>
<td>Week 3.9 Landscape design</td>
<td>Week 4.3 Preparation for P4</td>
<td>Week 4.8 Model making</td>
<td>Week 5.1 P5 presentation</td>
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<tr>
<td>Week 2.9 Further analysis on the morphology and hydrology of the island</td>
<td>——</td>
<td>Week 3.6 Analysis of materialisation together with façade etudes</td>
<td>Week 3.10 Analysis and Etudes of Structure</td>
<td>Week 4.4 Preparation for P4</td>
<td>Week 4.9 Final preparation of the presentation materials: visualisations, diagrams and others</td>
<td>Week 5.5 P5 presentation</td>
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<tr>
<td>Week 2.10 Further research on water infrastructures (a focus will be given on water reservoirs)</td>
<td>——</td>
<td>Week 3.7 Analysis on restoring tidal wetlands</td>
<td>Week 4.1 Finalisation of all panels: plans, sections and elevations</td>
<td>Week 4.5 P4 Presentation</td>
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**Note:**

- **Weeks** refer to the 2023 academic year. 
- **P2, P4, P5** indicate presentation stages in the project.