

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



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	Martijn Rogier Vos
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Studio		
Name / Theme	Transitional Territories	
Main mentor	Jacques Vink	Architecture
	Sjap Holst	Building Technology
Argumentation of choice of the studio	I have been interested in oil and gas infrastructure and processes for a long time. I also worked as research assistant at the department of MBE and co-wrote a journal article about the use circularity in discourses around urban redevelopment projects in port-city interfaces. The themes and scale of this studio fit perfectly within this framework of interests that I developed and want to explore more.	

Graduation project	
Title of the graduation project	Declining North Sea ports in times of transition: Reusing obsolescent refinery structures to establish a healthy port-city interface in Dunkerque, France
Goal	
Location:	Port of Dunkerque, France
The posed problem,	Due to capitalism and globalization industrial production sites are upscaled, centralized and have moved to cost-effective locations. Such places are ever less in the North Sea region. Port sites are historically the places for water-based heavy industries. We are facing a decline in industrial port activities, as large international industrial enterprises are moving their production sites away from North Sea ports. The focus for North Sea ports is nowadays mainly on roll-on-roll-off transport and containers, which are increasingly automated. This means that the amount of jobs in ports are declining, even though the port may be increasing in size. This is especially a problem for cities that have a strong dependency on their port on a (socio)economic level. Due to global warming and intensification of activities to sustain the ever-growing human population, we are trying to transition our

	<p>energy system towards renewables and increasingly try to close resource loops. This means there will be less demand for fossil energy infrastructure in the coming decades, especially in the more developed North Sea countries. Large parts of fossil energy infrastructure consist of refining and processing activities, which takes place in oil refineries, gas processing plants and petrochemical factories. Especially oil refineries in the North Sea are subject to closure in the near future, due to the described global changes above. In the Port of Dunkerque in France, this already happened. Their two refineries left the port after years of deindustrialization in their port, leaving a declining city behind that was dependent on their port industries. The historically strong relation between the city and port form a showcase of what is likely to happen in many more places in the world over the coming decades. How can such a port-city interface be made socially, culturally and environmentally healthy again with the help of obsolescent refinery structures and without being dependent on global capital forces?</p>
research questions and	<p>Territorial level How can fossil energy infrastructure be repurposed to facilitate a healthy port-city interface in transition?</p> <p>Architectural level In what way can we gradually adapt obsolescent refinery infrastructure to reconnect them with urban ecological and social systems?</p>
design assignment in which these result.	<p>To create a modular building system that can be used to construct several types of spaces on top of the existing refinery structure (mainly the structural elements) and to design the base structure that these modular systems can be built upon. Refinery structures often consist of very rigid, geometric steel structures that support the vast amounts of pipework, chemical containers, etc. At the same time, we are now trashing those structures and maybe recycle some of the materials when a refinery is decommissioned. The project aims to try to keep as much of the structures as possible. The ideas of the modular building system ideally should be applicable to other refineries as well, while the program may differ in a different site. Most refinery sites also face soil pollution issues, that's why the modular building system is on top of the existing refinery structures. Most refinery structures are naturally lifted from the ground already. By building the structures on top, the soil can slowly be cleaned with the help of bioremediation.</p> <p>Program wise it is not an entirely fixed program. The idea is that the inhabitants of Dunkerque (or elsewhere) can opt-in for a piece of the old refinery site and/or structure and create their own company or community-oriented program there. To avoid that the repurposing of the site becomes too expensive and thus automatically is sold to the next global, profit-oriented investor, it</p>

	<p>should be a structured, cooperative (bottom-up) redevelopment project. There will be some facilities created to launch the project and make the long-term redevelopment project successful. Ideally the total program would reflect the flows that go through the (sustainable) port-city on a small scale (energy, food, water, knowledge, production etc. etc.).</p>
Process	
Method description	
<p>A lot of literature research has already been conducted, to learn about theoretical subjects such as urban metabolism, capitalism, port-city interfaces. There also has been a lot of desktop and literature research been done about the project location and site already.</p> <p>In the next phase it is most important to see how the sometimes highly theoretical frameworks can be applied the project design. This will be done by researching the flows of the port and city of Dunkerque. Furthermore, researching modular building systems with the use of minimal amounts and local building materials is needed. A project with a refinery like this has never been done before, but things can be learned from other industrial infrastructural redevelopment projects.</p>	
Literature and general practical preference	
<p>Current reference projects:</p> <p>Landscape: Nordsternpark, Ruhr area, Germany</p> <p>Social/ technical: De Keuvel, Amsterdam</p> <p>Social: Werkspoorkwartier, Utrecht</p> <p>Landscape/ Social/ Technical: Westergasterrein, Amsterdam</p> <p>Current Literature used for theory and location/site analysis:</p> <p>Allmendinger, P. (2009). Critical Reflections on Spatial Planning. <i>Journal of Environmental Planning</i> 41:11, 2544–2549.</p> <p>Bahers, J., Tanguy, A., Pincetl, S. (2019). Metabolic relationships between cities and hinterland: a political-industrial ecology of energy metabolism of Saint-Nazaire metropolitan and port area (France). <i>Ecological Economics</i> 167:106447, 1-11.</p> <p>Barnes, P. (2006). <i>Capitalism 3.0: A Guide to Reclaiming the commons</i>. San Francisco: Berret-Koehler.</p> <p>Berghe, K. Van den, Vos, M. R. (2019). Circular Area Design or Circular Area Functioning? A Discourse-Institutional Analysis of Circular Area Developments in Amsterdam and Utrecht, The Netherlands. <i>Sustainability</i> 11:4875, 1-20.</p> <p>Berking, H. (2012, October 17). Harbour cities without harbours. <i>Eurozine</i>. Retrieved from: https://www.eurozine.com/harbour-cities-without-harbours/</p> <p>Bird (1963). <i>The major seaports of the United Kingdom</i>. London: Hutchinson</p> <p>Boniface, X., Curveiller, S., Goris, J., Harbion, C., Lebel, A., Mélis, J., Oddone, P., Pfister, C. & Villiers, S. (2001). <i>Dunkerque: 1000 ans d'histoire</i>. Dunkerque: Punch.</p> <p>Brenner, N. Marcuse, P. & Mayer, M. (2009). Cities for people, not for profit, <i>City</i>, 13:2-3, 176-184, doi:10.1080/13604810903020548</p> <p>British Petroleum (1952). <i>Official inauguration of the new refinery at Dunkerque</i>. Paris: BP.</p> <p>Buchanan, R. (1992). Wicked Problems in Design Thinking. <i>Design Issues</i>, 8:2, 5-21.</p> <p>Bueren, E. M. van, Klijn, E., Koppenjan, J. F. M., (2003). Dealing with Wicked Problems in Networks: Analyzing an Environmental Debate from a Network Perspective. <i>Journal of Public Administration Research and Theory</i>, 2003, 13:2, 193-212.</p> <p>Capitalism (n.d.). In Merriam-Webster dictionary. Retrieved on December 27, 2019 from https://www.merriam-webster.com/dictionary/capitalism.</p>	

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In the next phase I will focus more on bioremediation, reusing refinery structures, healthy cities and the building systems. I plan to visit the city and port that I'm working with and if possible, the refinery. I have a contact in the municipality in Dunkerque, that can hopefully help me to arrange data for the research and visits. If necessary, I will conduct some interviews with local people.

Reflection

1. The studio focusses on areas in transition in the North Sea, with a focus on territorialism, infrastructure space and how they relate to nature and culture. The project touches all these aspects, by approaching it from a global point of view, in a sensitive location that is subject to environmental changes, pollutions and the project has a strong relation with water given its seaport location. The fact that the site is already abandoned and what that did to the city's citizens, relates to the social aspect. I believe that this type of infrastructure that is part of the reason ports slowly became disconnected from their cities can now help to bring back this connection by redeveloping it with a social approach in mind. This relates to Architecture as the architect is also there to help shape healthy communities and minimizing impact on the world.
2. We are currently aimlessly wasting decommissioned building structures or give them away to other polluting powers, because that's the cheapest way to fix the (money) problem, but at the same time also the burden of our capital system. We are reaching the limits of the system, so it is now the time to come up with ideas to facilitate a change in mindset. At the same time, we can't ignore the way our economic system is and the way humans tend to behave. It is therefore the challenge to come up with solutions that are not too dependent on the flawed systems or behaviour that we have today. Architects can help in facilitating this shift in mindset, as many solutions are through design. The project could be a great showcase of what could be done with minimal interventions and minimal budgets, given the location that we're working with. Looking at modularity and widespread applicability helps in shaping a flexible and adaptable future for the built environment.