Reflection

The Port and the Automaton
Ana da Fonseca
4206142
Transitional Territories 2019

Tutors:

Stefano Milani
Nicola Marzot
Sjap Holst

Reflection

Aspect 1
Graduation Topic and Studio Brief

Aspect 2
Research Method

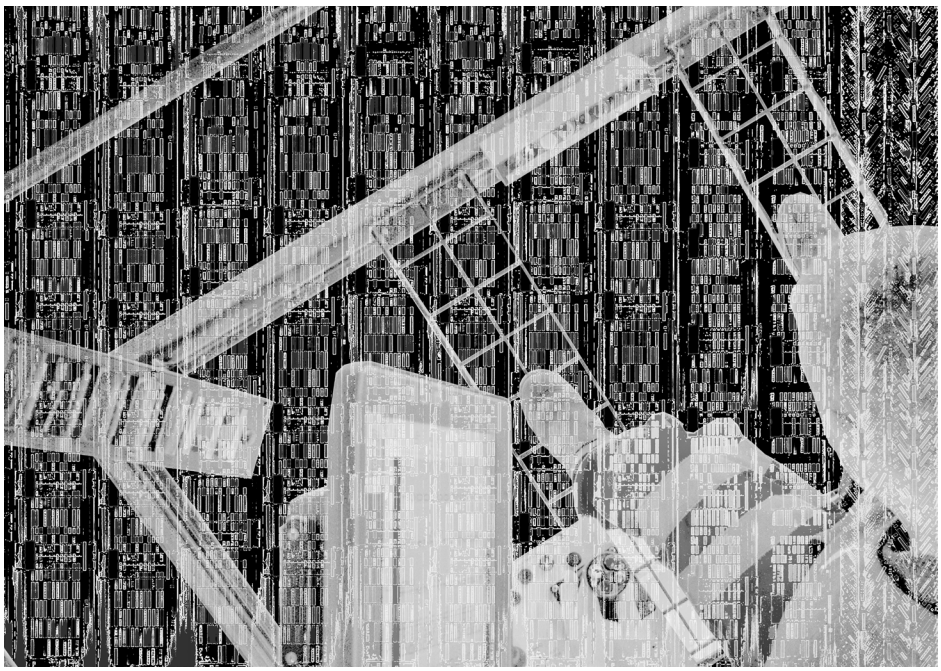
Aspect 3
The relationship between research and design.

Aspect 4
Wider Implications

Aspect 5
Ethical Issues

Aspect 1

Graduation Topic and Studio Brief



The transitional territories studio, under the chair of public building is an inter-disciplinary studio with designers, urban planners and water managers/engineers. This graduation project has its inception
in a theoretical framework based on the notion

The graduation studio Transitional Territories is focused on the viewing of space as a territory put forth by Claude Raffestin in which he argues that space is not a given construct but socially appropriated and "territorialised" by humans as the object of social practice and knowledge. He argues that territorial space has a certain territoriality (behaviour), consisting of relations between social groups on different social, spatial and temporal scales.

The choice of automation and the port as a graduation topic allows for exploration in the role of architecture and the architect in the design of logistical networks. A look into the formal manifestations of this territorilisation of the North sea.

The territorial and multi scalar nature of the studio intrigued me as it deals with the political and societal changes and their impacts on the built environment. The graduation project works within the scale of global networks and automation, and researches its manifestation on form and the local. An investigation into an automated port and its relation (if any) to the public.

Aspect 2

Research Method

The research began at the territorial scale using mapping as a method of knowledge generation. The process of generating an atlas through mapping the North sea using different "lenses" or themes, was an attempt achieving "order by ordering" (Corner,1999) . Mapping was used as a means to register architectural form and/or interpret spatial processes (Schoonderbeek, 2016) . These six themes were Climate, Flows, Geomorphology, Biotope, Politics, Social. The current and projected states were mapped with the use of literature and GIS data. The overlapping of the several layers of data in the form of maps, showed points of interest or stress points. Automation, Brexit, Sea level rise, The energy transition and the increase of shipping routes due to the artic corridor identified the Ports of the humber estuary as a key node within the overlapping territorial networks. This was then projected into into the visualisation above, of what the coastline could look like depending on these shifts.

Once the port was identified as an interesting node in the network to investigate further, a morphological study of a few case study ports suggested that due to the increase in vessel sizes and the cost of dredging, ports are not only increasing in size, but are moving further out into sea. Through research , the typology of port related production came into question, and an investigation into the manufacturing of windblades and the automation that comes with it brought forth an initial design proposal.

Overall the Methods used were not limited to one, and at each scale a different one was applied. The link however was the use of images as a means to abstract and also conclude certain research outcomes. This was seen throughout the process.

Aspect 4

Relationship between Research and Design

The basis of this project began with the exploration and research into the cultural, social, political and environmental shifts present within the North Sea. At the premis was the viewing of the North sea as a territory, one that is appropriated and molded by the actors within it. The research was initiated by readings of Claude Raffestin and his notion of space as possesing a certain territoriality (behaviour), consisting of relations between social groups on different social, spatial and temporal scales (Raffestin, 2012). Mapping was used as a tool to order thoughts and processes related to the North sea.

After the overlapping of the research maps, a series of projections were made , that in themselves were already influencing my final design, although I did not know it at the time. The drawing of the coastline through several political shifts was a choice that we as a group felt best depicted the relationship between the volatile sea and its adjoining land. By making this drawing I realized the power of mapping as a tool of informing further design, but also the effect it has on the scale of the project. The Port coastline became central to my fascination from that exercise onwards, the harbour as a point of expulsion but also as a point of introduction. Mapping allows you a certain distance that is necessary in order to understand the overall working of the network however its translation into the scale of the architectural object is much harder to achieve.

Through analysis of the port infrastructure of the Humber estuary and its development, A comparison arose in my mind, to a machine which is constantly updating. Layers of infrastructure being overlayed on each other as technology evolves and scales increase. The research showed that ports were expanding outwards to sea, claiming more land and simultaneously dredging deeper channels to allow for larger vessel access.

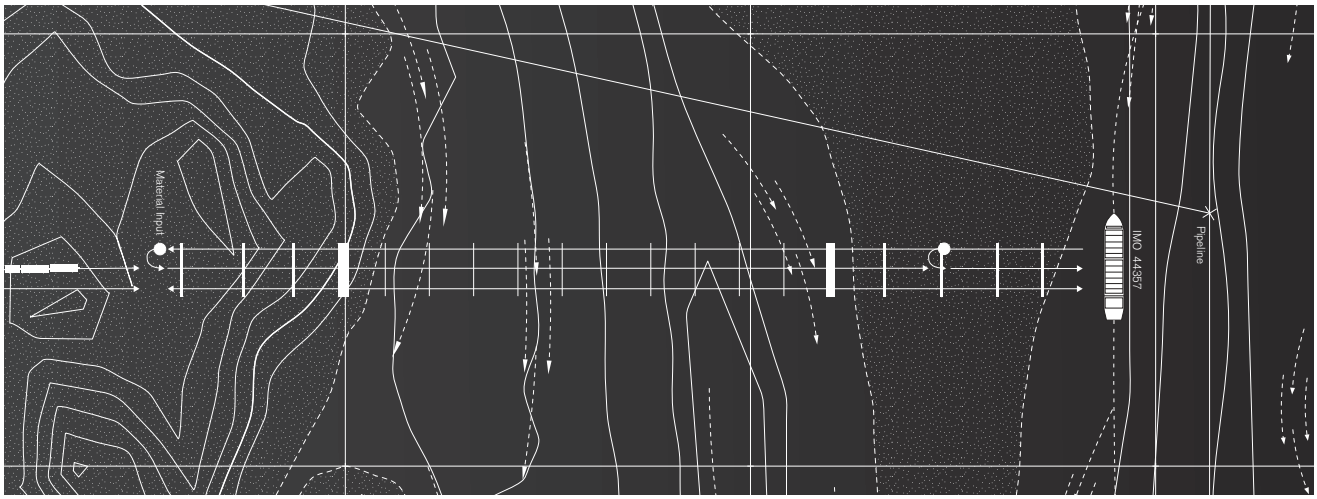
The research led to my design scenario. A moment in which automation takes over, the port expands to make way for larger production capacity and storage of offshore windblades. The studio trip through the North Sea coast allowed us as humans to experience the physical implications of this automated infrastructure. A space designed not for humans but for machines, a physical manifestation of a process in which a path is purely linking point A to point B. An endless sprawl of industrial sheds and concrete parking lots, gated for security and ever changing in its configuration.

The Mapping of the flows for one process allowed me to zoom into one system within the network and rethink its physical manifestation. The design question becomes how to design for this new automated and changing process, and can a new port typology offer a balance to the system. The research led to the design question of the relationship between form and automation. The machine is an object, designed to obtain an efficient outcome, it carries in its design the tools and forms necessary to achieve its action. Can a new productive infrastructure for the port be combined with transport and storage, into one object, a building that functions as a machine? With this search into automation came the writings of Carlo Sini and the designing of an automated building. Automation and machine understood as " a machine that moves by itself, or that has in itself the principles of its movements. Something that moves at the will of an other, a machine equipped with automatic systems." (Sini, 2009)

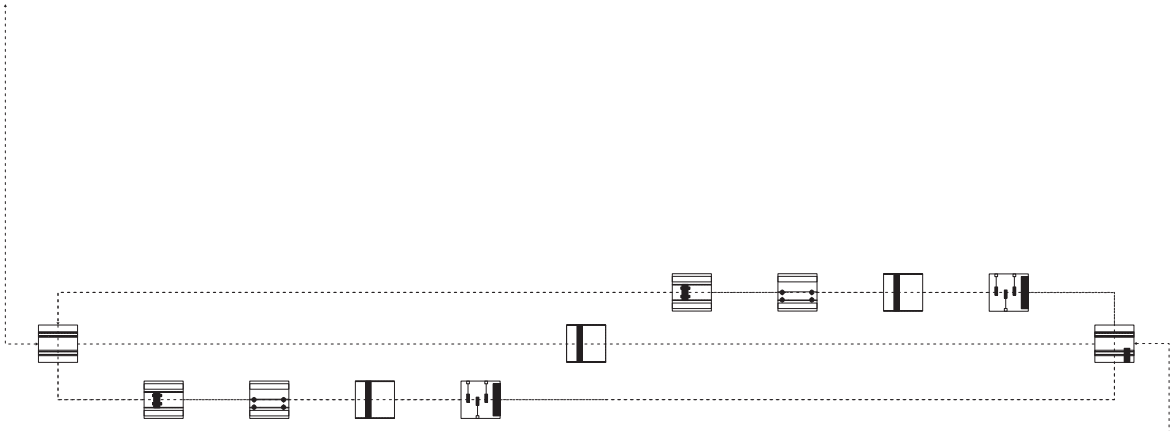
The initial design was the abstraction of the production process of wind turbine blades, a new development planned for the humber estuary gave the design opportunity to visualise a new typology or formal relationship between the process being carried out in the shed and its formal expression. A shed but also a pier, producing whilst bypassing the need for dredging as in its form in bridges the distance between the land and the seaAs Martin Pawley wrote in his book terminal architecture , The real barometer of the value of buildings today is not the aesthetic pedigree, but their usefulness as terminals in the maze of networks that sustain modern life). Authentic architecture has been disurbanised. It survives only in the shape of buildings like distribution centres, factories, petrol stations that are designed as Instruments not Monuments (Pawley, 1998).

The design choice was to invision a process without humans, in which the shed goes from being an anonymous object to depicting the process in its form. The form becomes the production process, and linear path of repetitive actions, in which humans cannot enter, but can experience from a distance the "wunderkamer" of the process. The research then became a search in the creation of this form, how to invert the shed? how to make the invisible formally visible?

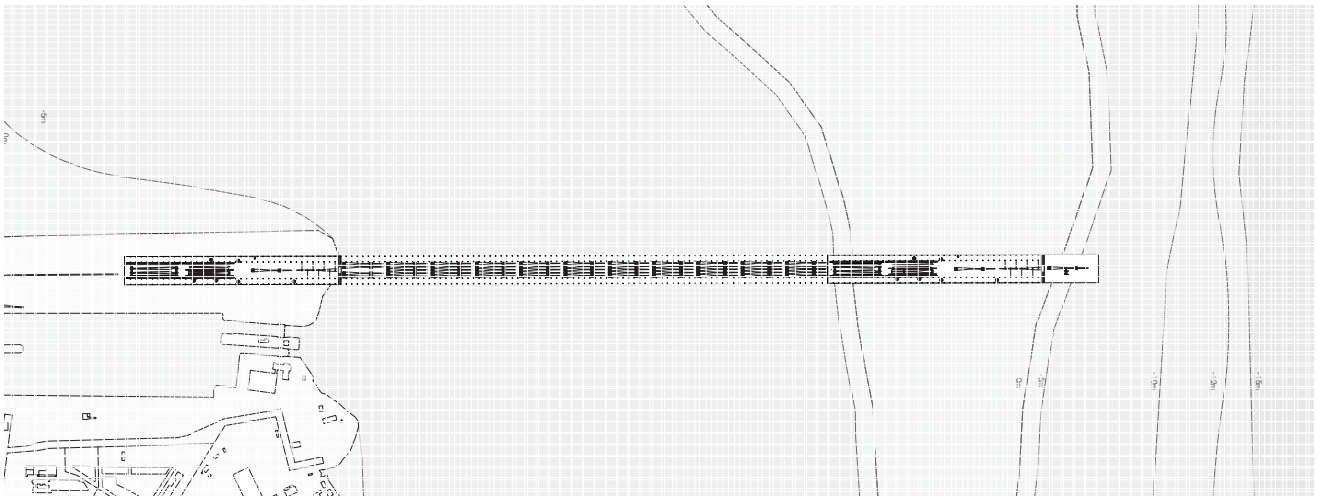
In this brief example, in which research into the process informed the design question, and in turn the initial design also led to further research. The process was definitely not a linear one, but a constant cycle of research and design. As you design, more questions arrise which require perhaps further research, research is used as a tool with which you can design, but also a tool in which design can be tested against.



Mapping of Flows



Actions and Spaces



A productive pier

Aspec t4

Wider Implications

Within the wider context of the energy transition and sustainability but also the splintering nature of global networks, the idea of a productive infrastructure for offshore wind that allows the public to witness the process even if briefly is perhaps a step towards the coexistence of global networks on local environments.

The shed is inverted, a place not designed for humans is kept as such but the translucency attempted in the design is a means of engagement with the context. The infrastructure is not designed to be walked upon by humans, but is designed to be witnessed. Just like a stage, a framework designed to showcase a story.

The automated pier structure houses the full circular process of blade assembly and dissasembly. At the node between land and sea, the raw material arrives at one end, connected to the railway network, is processed and housed within the pier, before being shipped offshore. Simultaneously, the old blades arrive at the opposite end, and are either maintaned or dissasembled into smaller pieces which can then be transported to recycling plants through the same railway that provides the material. The infrastructure allows for a rail to ship connection in which no truck is involved, and simultaneously reduces the need for dredging. The overall environmental impact is significant, as this is a means of attempting to contain the physical affects of the automated network on the context.

The use of material also introduced wider implications into the process. The use of Grass fiber composite beams in the construction of the infrastructure is an opportunity for the industry to look into the recycling of these blades being introduced into the manufacturing of the building materials for the infrastructure itself. This is the first attempt at creating a circular system within the building process of these sheds. Due to its durability in offshore climates, this material can be dismounted and reused according to the changes in scale of production.

Regarding the question of wider societal relevance, the process of creating a cyclical system not only reduces waste, but the countainment of this in one elongated structure allows for the process to be appreciated in a local setting, It a globalised world where the splintering of the local by global networks seems to be out of control, this design seeks to contain this automation and push it outwards towards sea, freeing up the land once again for public use. The object also becomes a part of the context, a showcase or "wunderkamer" of a global process in a local setting.

The implications of this project on myself as a designer was one of an increasing learning curve. The lack of knowledge and time spent researching these networks also showed the need for cross-disciplinary interaction. There were certain insights that were only achieved, specially ones linked to the manufacturing process and materiality that only arose in conversation with structural and manufacturing professionals.

I believe that for future reference, getting in contact earlier on in the process with specialists from other fields could have contributed in a smoother design process as a whole.

Aspect 5

Ethical Issues

The Ethical issues I have encountered in the research and design process was mainly who benefited by the introduction of a large scale automated infrastructure.

Within this context, my project showcases areas in which humans role is at a minimum and decreasing. However the role is not obsolete, it no longer happens within the confines of the infrastructure. My argumentation for this project is that more then ever, the formal expression and design of these automated infrastructures become important, as their contribution to the local is infact one of pure admiration.

The local is invaded by the global, but through the design of the project as a showcase of the process, an attempt is made to connect visually with the local.

The aim of the project was to evaluate the relationship between automation, the port and the local context. It is a depiction of automation, contained in one element, a building, an object housing several objects, something to look at in curiosity rather then something that symbolises the anonimity of the global network it is a part of.

References

Theoretical Literature

David Harvey, Rebel Cities (London: Verson, 2012)
Bruno Latour, Making things public (Cambridge: MIT, 2005)
Stephen Graham, Splintering Urbanism (London: Routledge, 2001)
Dirk Sijmons, Het casco concept: een benaderingswijze voor de landschapsplanning (NBLF, 1991)
Henri Lefebvre, The production of space (translation by Donald Nicholson Smith (Oxford: Blackwell Publishing,
1991)
Claude Raffestin, Space, Territory and Territoriality (Geneve: University of Geneva, 2012)
Carlo Sini, L'uomo, la macchina, l'automa. Lavoro e conoscenza tra futuro prossimo e passato remoto (Bollati Boringhieri, 2009)
Martin Pawley, Terminal Architecture (Reaktion Books, 1998)

Research Approaches

Ray Lucas, Research Methods for Architecture (London: Lawrence King Publishing Ltd, 2016)
Mark Schoonderbeek, Mapping and experimentation in architectural design in Prototypes and Paradigms (Delft: TU Delft, 2016)
Linda Groat & David Wang, Architectural Research Methods (New Jersey: John Wiley & Sons, Inc., 2013)
Carlo Ratti, Mobile landscapes: using location data from cell phones for urban analysis (2006)
Denis Cosgrove, Introduction: Mapping Meaning in: Denis Cosgrove (ed.), Mappings (London: Reaktion Books,
1999)
James Corner, The Agency of Mapping: Speculation, Critique and Invention, in: Cosgrove, Mappings, (London:
Reaktion Books, 1999)
Marc Schoonderbeek, Prototypes and Paradigms (Delft: TU Delft, 2016)
John Caroll, Five reasons for scenario based design (Virginia: Virginia Tech, 1999)
Donald Schon, Design as a Reflective conversation with the situation (New York: Basic Books, 1983)
Royston Landau, Notes on the concept of an architectural position (London: AA, 2015) 113.

Practical and Port Specific Literature

Dirk Sijmons, Het casco concept: een benaderingswijze voor de landschapsplanning (NBLF, 1991)
Carola Hein, Port Cities: Dynamic Landscapes and Global Networks (Routledge)
Fransje Hooijmeijer, Drawing the subsurface: An integrative design approach (Delft: TU Delft, 2017)
IPCC, Global warming of 1.5 degrees a summary for policy makers (Switzerland: IPCC,2018)
Department for Transport, UK port freight statistics: 2016 (London, 2017)
Maarten Hajer & Peter Pelzer, 2050—An Energetic Odyssey: Understanding 'Techniques of Futuring' in the
transition towards renewable energy (Utrecht: Utrecht University, 2018)