

Chronicle

MSc3 Research Report

Gizmo

The Theatre of Automation in the
post-labour society of Hammerfest,
Norway.

MSc3 Research Report

Gioele Colombo

Under supervision of

Taneha K. Bacchin (first mentor)

Sjap Holst (second mentor)

Kaveh Dabiri (third mentor)

Francesca Rizzetto (tutor)

Delft, University of Technology
Architecture, Urbanism and Building Sciences
North Sea: Landscapes of Coexistence
Transitional Territories Studio 2019-2020

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Abstract

The following booklet is part of a series of three volumes that collects and presents the story of the project 'Gizmo. The Theatre of Automation', developed within the framework of the Transitional Territories Studio 2019-20.

Starting from the definition of territory as projection of labour as 'informed energy' (Raffestin, 2012), this research aims at investigating the impacts of automation on the social realm and its built environment, at the same time inspecting the human condition in relation with the changing conception of labour and leisure.

In particular, in the so-called Second Machine Age, the rise of automation has been examined in its production of automated landscapes along the territory, and in its consequent socio-economic reactions. While technological development is already firmly affecting the notion of labour and the consequent disposition of our cities and territories, the remote island of Hammerfest, in the Arctic regions of Finnmark, prefigures the conditions for a radical rebirth. The full extents of automation, resulting in a post-labour organisation of economy, envisions the return of the *homo ludens* and enhances play as fundamental base of the new society.

Key words: labour, automation, territorialisation, play

I.

Territories of Labour

'How did you go bankrupt?' Bill asked.

'Two ways,' Mike said. *'Gradually and then suddenly.'*

-Ernest Hemingway¹

Territory: North Sea

1.1. Labour and territoriality

1.1.1. Labour as political category

1. Ernest Hemingway, *Fiesta (The sun also rises)*, (London: Grafton Books, 1987).

2. Stuart Elden, *The Birth of Territory* (Chicago: University of Chicago Press, 2013).

3. John Locke, *Two Treatises of Government*, (S.L.: Hansebooks, 2019).

4. Claude Raffestin, "Langue et territoire: autour de la géographie culturelle", in *Kulturen und Raum. Festschrift für Professor Albert Leeman* Ed. B Welem (Zurich :Verlag Ruegger, 1995) pp 87 -104

5. Claude Raffestin, "Space, Territory, Territoriality", in *Environmental and Planning D: Society and Space*, 2012. Volume 30, pages 121-141. Retrieved from <https://journals.sagepub.com/home/epd>

Over the centuries, the North Sea has guaranteed the existence of the populations living along its coasts, who, in spite of the harshness of the waters, could take advantage of the great availability of natural resources coming from the sea. The progressive exploration and conquest of the sea and of the surrounding regions has established a solid order of appropriation of space. Nowadays, the rising amount of activities happening at sea, such as sand extraction, new forms of aquaculture and fossil fuels, calls for an even stronger rationalisation of its natural extents, blending the use of land with the use of high waters and enhancing a *territorialisation* of the North Sea.

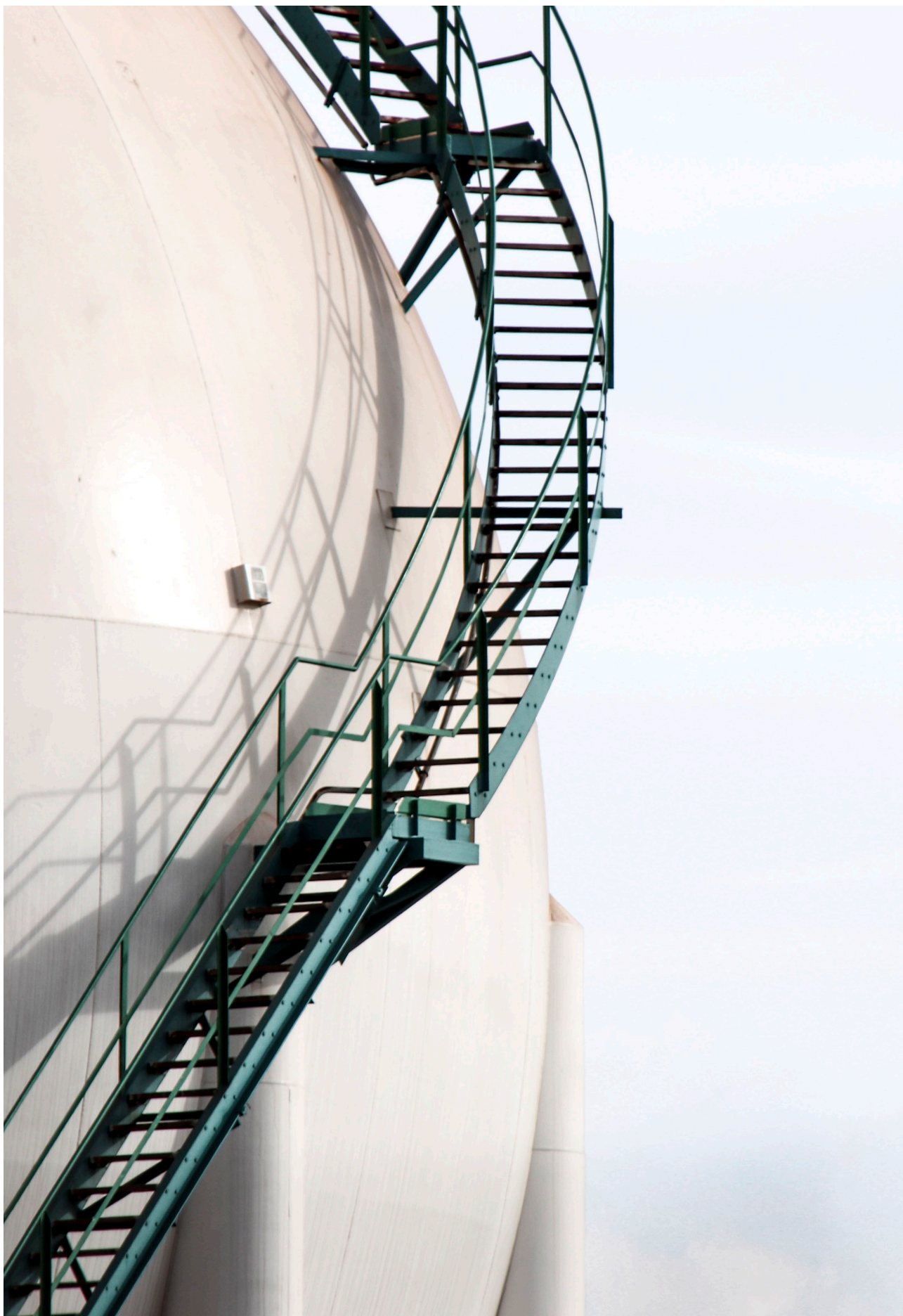
The complexity of the current trends, in light of an increasing urbanisation of the sea, poses the definition of territory itself into question. Although it has long been debated in the last decades, the right employment of such a term is indeed still unclear, especially if related with the controversial nature of the maritime entity, free, in our common imaginary, from the pressure of any rationale.

As a system of relations, the notion of *territory* first seems to emerge from a certain level of control, or order, posed on a physical context by means of an applied force (2). The claiming of the land can be identified as a primordial act of *territorialisation*, and still nowadays represents a great reason of dispute between groups. This act of violence on the exteriority is physically defined as *labour*, first as a main force generated on an object, and then as the consequent appropriation of its conditions.

For this reason, the birth of territory can be first of all justified by a concept of possession, which is intrinsically related to the nature of men. According to John Locke, the labour of the body and of the hands makes possession an innate characteristic of humankind, who 'have possession in their own person' (3). From the moment in which such force is externalised, men are legitimated to claim possession on a given thing, on a property, as the object is being removed from the state Nature had posed it in. This act of appropriation is exempt of any kind of consent, being recognized just as expression of violence. Establishing such a distinction between an organised and recognized possession and the *common*, labour, in its initial stances, would enable the conditions of an individual appropriation, proper to a singularity. It is by gathering these singular forces together that it is possible to consolidate the idea of territory.

Mobilizing and ordering a 'world of things', labour functions as the 'original mediator' (4) between the complexity of possessions and the project of a common geographical condition. More than a simple economic factor, as it might be considered, the value of labour indeed stands in canalising the human forces as the 'informed energy' (5), thus providing a solid ground on which the political power can be established, in relation with *exteriority* - the physical conditions - and *alterity* - the social conditions. The complexity of the landscape is thus subject to project of a human order. And it seems quite evident how the gradual appropriation of the North Sea, that has strengthened its intensity since the second half of the last century, represents an act of territorialisation coming from the projection of labour - as energy and information - by a certain community upon a given space.

Investigating and clarifying the connection between category of labour and act of territorialisation, Sandro Mazzadra, in his *Borders as Method*, highlights the reciprocal influence of labour and territorial borders, and the relevance of a variety of borders of geo-political context in shaping human possibilities of living. Against the popular opinion, the modern processes of globalisation, instead of creating a world with no barriers, generated a proliferation of borders, where labour power and migrating movements are seen and produced as a commodity. The political complexity of the North Sea, peaked even more with the fulfilment of Brexit and in line



with a global national segregation, reflects the increasing multiple ways in which the organisation of labour has to take place, in light of the ever-changing conditions of the physical context.

6. Raffestin, 1995, p. 90-91

7. Hannah Arendt, *The human condition* (Chicago: University of Chicago Press, 1958)

8. Arendt, 1958, p. 124

Providing the conditions where any kind of territoriality can lie, 'Labour builds everything, but labour also changes everything' (6). The current accelerated technological progress and the consequent ontological changes on the notion of labour are expecting to influence the territorial order once again, after the great transformations of the Industrial Revolution. The existence of the city itself, grounded on the need of concentrated workforce, might witness a new fluctuation in response to possible new definitions of labour.

1.1.2. Labour as Human Condition

Beside its territorial involvement, labour represents a major part of the human condition. For Hannah Arendt, labour embodies the first of three categories composing the human being: *labour*, *work* and *action* (7). Their concordance and the different degrees in which they relate with each other affect the life of humans. First, labour is defined as the set of activities that are necessary to maintain our biological existence, such as eating, drinking and sleeping. Work accounts for the production of our cultural artefacts, thus as the actions we all do to create objects that become part of our environment. Work allows us to live within a culture. And finally, action represents words and activities of citizens engaged in the social realm. Thanks to this active component, humans can communicate and gather in society, providing the cultural artefacts with a common meaning.

Coming from this definition, there are two main correlations worthy of further clarification. The first one is Arendt's discrimination between labour and work, while the second pertains with the impact of the first two components with the category of Action.

Both labour and work can be seen as physical and mental activities that humans carry out during their existence in a community. However, their temporal conditions differ. Labour denotes all the human activities canalised towards biological needs of self-conservation and reproduction of the species. Due to the impossibility of these needs to be ever satisfied, the occupation of labour is never stopping. For this reason, the fruits of labour are quickly consumed by humans who then have the need to produce them again, in continuous circles of production and consumption. The cyclical, repeated process of labour characterizes human life, so that man becomes *animal laborans*, where the use of labour is what separates humans from the rest of the biological species. A sense of futility embraces the perpetual existence of labourer.

On the other hand, work is directed to the production of durable objects, that shape our cultural conditions. Rather than object of consumption, the process of work provides us with values and tools to approach our biological existence, and its involvement stretches from the origin of the idea, to the realisation of the end product.

What is happening, under the waves of capitalistic production, is the transformation of work into labour. First, the technological development of the Industrial Revolution not only showed that processes of labour could be mass-produced thanks to the machines, but also prefigured the possibility for work to undergo the same processes. As a result, many of the things that were once considered to last long, assume now the same condition of disposable object of consumption. For Arendt, the major change consisted in 'treating all use objects as though they were consumer goods, so that a chair or a table is now consumed as rapidly as a dress and a dress used up almost as quickly as food' (8).

Her ruthless critique of modernity highlights the way work and labour affected the third component of the human condition, as in the active life. The greatest changes in labourisation of life are to be traced back to the Industrial Revolution and to the Spirit of Enlightenment. The

consecration of life to production completely affected the interaction between individuals, doing away with the realm of the political.

According to John Locke, the role of the political – what Arendt refers to as ‘action’ – is in its accordance of individuals that are willing to engage in community only to ensure their lives, liberty and property. In this view, politics emerges as a means to an end, where the particular end is the economic end of private property rights. However, that is not the only way politics can be perceived.

The overturning of the current scheme, where the realm of the political is a means to the economic end, to a political framework in which is the concomitance of labour and work to be subject to the realisation of an active life, seems still far from realisation. But the ever-changing nature of labour and work could one day entail new conditions on our environment

1.2. Identity - Historical precedents

The following cartographic investigation, part of an extensive collective research on the North Sea, seek to retrace and de-construct the labour-power-territory relation across the different centuries.

After the Neolithic revolution of Agriculture, the Industrial Revolution represented the Second Disruption happening in the given context, that re-shaped the territorial order and consolidated the power of the cities. The pervasive exploitation of the seabed, enhanced in the second half of the last century, identified the North Sea as a territory of production, while islands of power around it takes control over its geographic extents. The further processes of infrastructurisation reached the edges of this territory over the last century, with a significant expansion towards the prospected ‘fertile’ areas of the North.

De-constructing Power. Industrialisation in the 19th Century

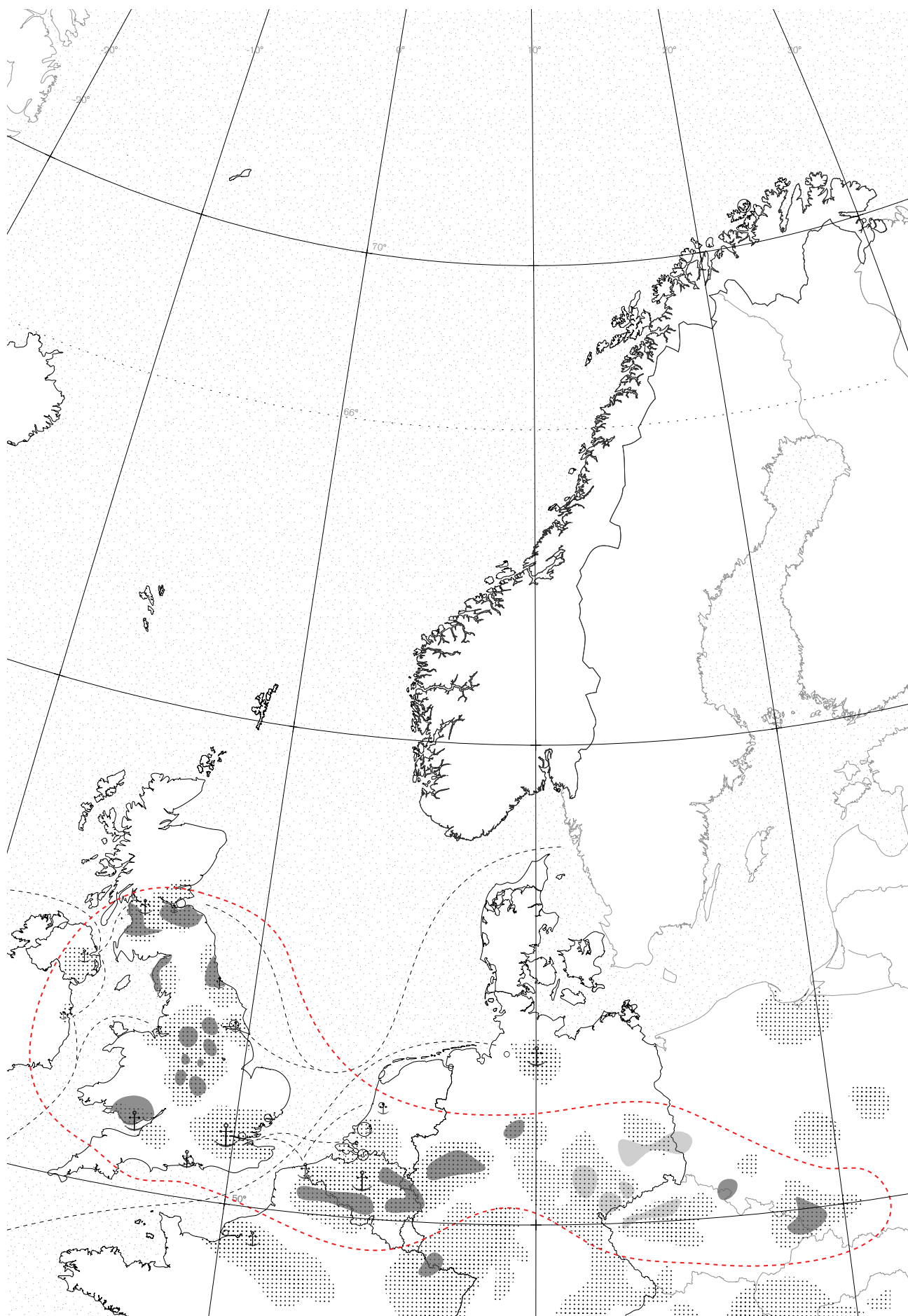
The first map seeks to depict the labour condition of the 19th century. Here, the consolidated power of the cities allows them to exert control over the rising processes of industrialisation and exploitation of minerals. In particular, industrialisation affects specific parts of the large territory, notably coalfields and densely-populated areas to further affirm the islands of power. Great accumulation is thus highlighted on the Southern part of the North Sea.

Scale 1:20.000.000

Source: Rutte, Reinout and Abrahamse, Jaap Evert, *Atlas of the Dutch Urban Landscape: a millennium of spatial development*. Thoth Uitgeverij, 2016.

Chand, Smriti. Important Industrial Regions of Europe, retrieved from <http://www.yourarticlelibrary.com/>

- ▣ industrialised area
- black coalfield
- brown coalfield
- ⚓ port
- ■ ■ power island
- - - productive extent
- - - shipping route



De-constructing Power. Consumerism in the 20th Century

The map aims to de-construct the labour-power-territory relation of the 20th Century.

From the previous condition, the expansion of territorial control goes along with the discovery and exploitation of oil and gas fields at the bottom of the Sea. The growing importance of the sea as a space for production, further increases importance of particular parts of the territory and brings industrialisation to new areas. The former fishing village of Aberdeen quickly grows to the Oil Capital of the region. Norwegian economics suddenly awakes and gains prominence. High populations are increasingly a symptom rather than a root cause of power, while the productive space of territory and starts separating from the internal domains of the city.

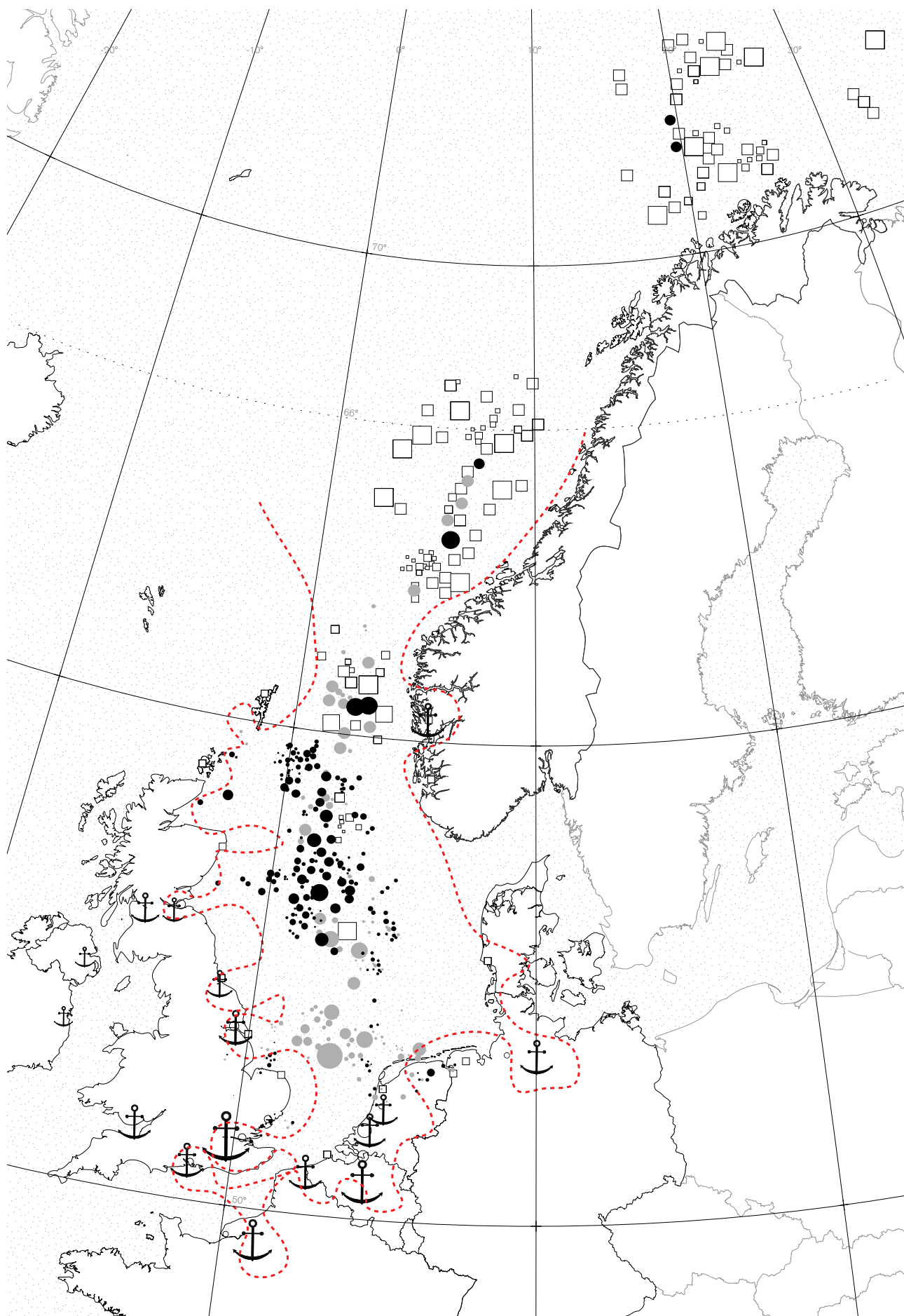
From the North Sea Atlas, 2019-2020. The Oceanic Project

Scale 1:20.000.000

Source: Rutte, Reinout and Abrahamse, Jaap Evert, *Atlas of the Dutch Urban Landscape: a millennium of spatial development*. Thoth Uitgeverij, 2016.

Transitional Territories Studio. North Sea Atlas, 2018-2019. TU Delft, 2019, pp. 56-57.

- ▣ industrialised area
- ⚓ port
- oil field
- gas field
- power island
- - - productive extent
- - - shipping route



De-constructing Power. Globalisation and Digitalisation in the 21st Century

The map attempts to de-construct the labour-power-territory relation of the 21st Century.

In the given period, it is possible to witness the return to contraction of the power around key North Sea ports. Industrialisation declines in importance, while the tertiary sector advances, as well as the ever-growing exploitation of the sea. However, infrastructure expands towards the less populated regions of the North. The ideology of interconnectivity expands the territorial order.

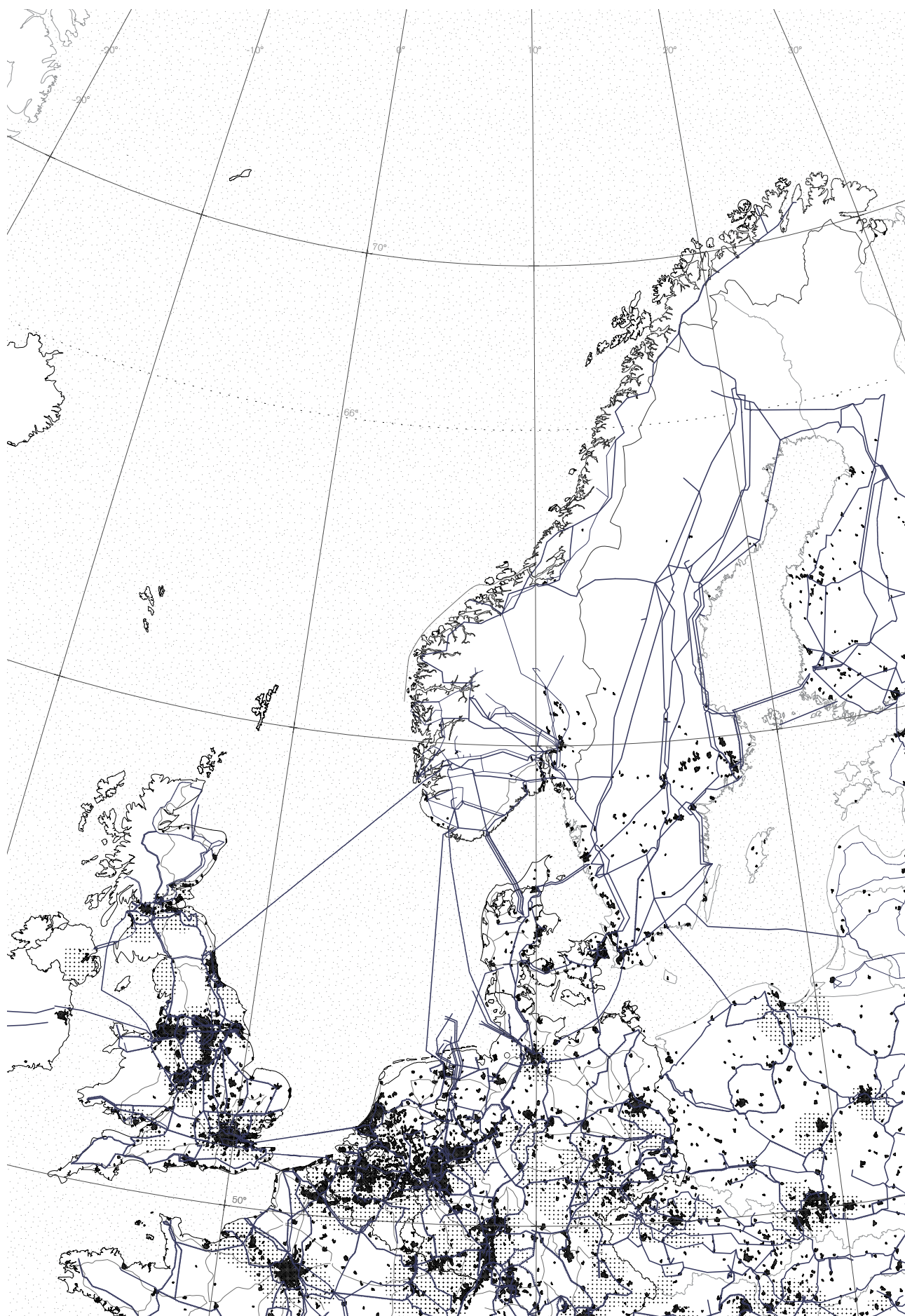
From the North Sea Atlas, 2019-2020. The Oceanic Project.

Scale 1:20.000.000

Source: Rutte, Reinout and Abrahamse, Jaap Evert, *Atlas of the Dutch Urban Landscape: a millennium of spatial development*. Thoth Uitgeverij, 2016.

Transitional Territories Studio. North Sea Atlas, 2018-2019. TU Delft, 2019, pp. 56-57.

- ▣ industrialised area
- urban area
- high voltage / electricity grid



1.3. Territorial Projections

Altered Logistic Flow

The map shows the projection of the labour-power-territory dynamics of 2150, with particular interest to logistic flows in the North Sea.

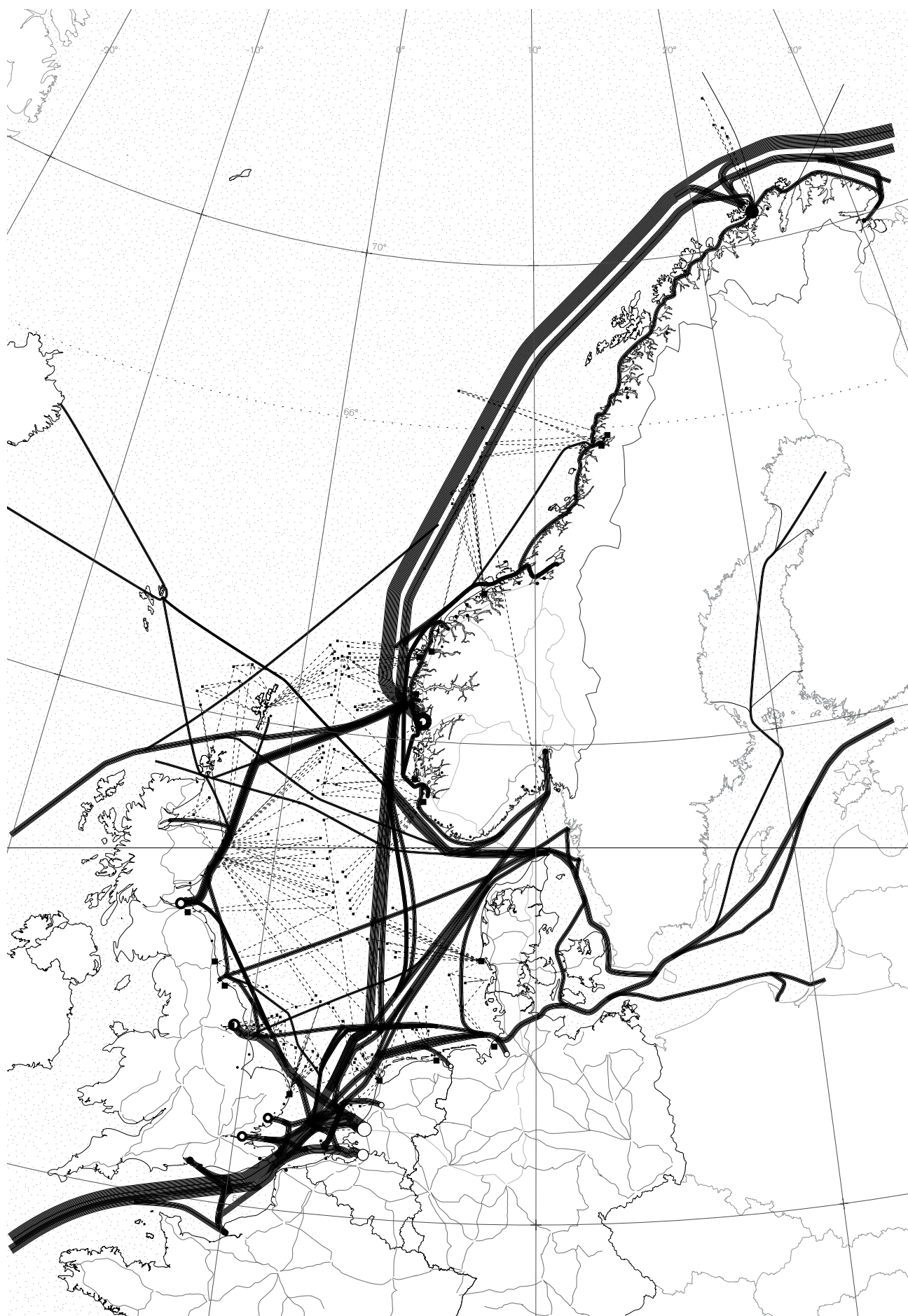
The overexploitation of the Southern part of the North Sea, has made dredging of the major harbours not longer feasible. At the same time, the breach of the North Arctic Sea Route and the melting of the polar ice cape, resulted in the growing importance of the Northern section of the North Sea and of the Norwegian maritime areas. New ports are being opened or expanded along the main logistic routes, on the edge of the fjords where the depth of the waterbed is deep allows future ship to be accommodated.

As a consequence of Brexit, the United Kingdom enhance its port capacity along the coast, while Norwegian ports take care of most of the products coming to Europe.

Scale 1:20.000.000

Source: North Sea Atlas, 2018-2019

- Harbor growth (fast)
- Harbor growth (slow)
- Small harbor
- Oil/gas platform
- Pick-up point
- Service route
- Shipping flow



1. Territories of Labour

1.4. Problem Statement

The progress of technological development has always affected the notion of labour, defining the modes of production, as well as the temporal conditions of such human activities. Over the centuries, the North Sea has played an important role in leading the socio-economic changes of Europe and in witnessing the evolution of labour.

Starting in the United Kingdom with the advent of the textile industry, the First Machine Age represented a great disruption in human history, producing an irreversible change in the productive system and thus affecting the economic sphere and finally the social setup. The need for large amounts of grouped workforce consolidated the space of the cities, against the rural life of the surroundings, concentrating power and production in the urban environment. The main propeller for change is thus to be identified with new versions of steam power, that James Watt turned into a scalable tool for motion. Great Britain and the North Sea represented the forefront of such unprecedented changes, witnessing a rapid growth of infrastructure that could connect the cities with their territory of production.

In the Second Industrial Revolution, the implementation of electricity and fossil fuels represented a first step in loosening the dependence on organic forms of labour, such as human and animal labour, in favour of machines and repeatable processes. Besides revolutionising the way people worked, the fundamental skills and the notion of labour itself, the introduction of machines radically changed the lifestyle and the personal expectations of each individual.

Nowadays, the ultimate acceleration in technological progress unveils new possible futures, not only re-shaping the conditions in which we work - in an even stronger connection with digitalised systems - but deeply affecting our everyday life.

1.5. Research Question

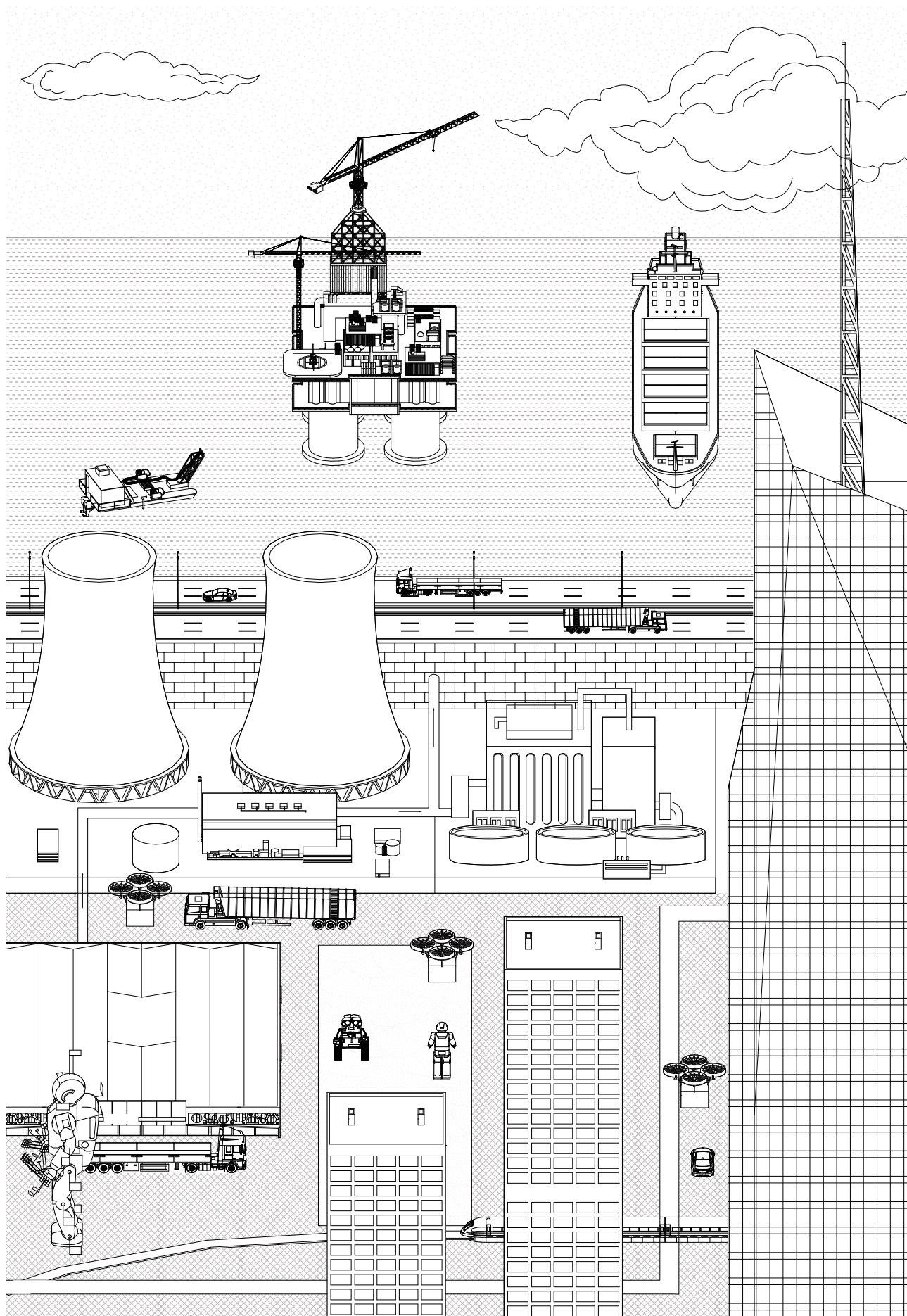
What is the future of labour in North Sea region? What is the ultimate impact of technological development of the North Sea on the definition of labour?

Sub-questions

- 1. Considering the strong relation labour-territory, how will the future definitions of labour affect the notion of territory itself?*
- 2. Will labour, not as 'informed energy' anymore, still perpetrate its function of 'mediator' between the free landscape and the project of the territory?*
- 3. How can a possible change of labour, according to technological development, affect the human condition and the configuration of society?*

Technological Evolution

*From the North Sea Atlas, 2019-2020
 "The dual nature of externalities" Scenario:
 Cyber-evolution*



II.

The Second Machine Age

Alas!

Eternally impenetrable

Are the eternal laws

Of human economy!

Without warning

The volcano opens and lays waste

the region!

- Bertlod Brecht ¹

Territory: North Sea

2.1. Information Unbound and the Rise of Automation

1. Bertold Brecht, Saint Joan of the Stockyards (1929), in *Bertold Brecht: Plays, Poetry and Prose*, eds. John Willet and Ralph Manheim, Vol 3 (London: Bloomsbury, 1991).

2. Richard Conniff, "What the Luddites Really Fought Against?". *Smithsonian*. (March 2011)

3. Erik Brynjolfsson, Andrew McAfee, *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* (Vancouver, B.C.: Langara College, 2014)

Image credits: *The Leader of the Luddites*, unknown, 1812

In 1811, the English town of Nottingham was the scene of great riots by organised groups of workers. Following the example of Ned Ludd, the protesters started attacking several industrial buildings in the city, damaging the newly introduced textile machineries, considered to be detrimental to their working conditions. The echo of the protests spread in great part of Britain, reporting great events in Yorkshire, Lancashire, Derbyshire and Leicestershire, with the consequent and cruel repression by the English police, who, in some cases, deported and ordered the hanging of the rioters. Only after a few years, in 1817, the implementation of greater repressions, with legal and military forces, and the general improvement of the national economy could stop the wide wave of riots.

The Luddite Movement – that was the name given to the great number of protests from their initial leader – was the first, well-known case of opposition to the rising automation of industrial production, seen as future cause of unemployment and lower salaries. The 'fraudulent and deceitful manner' (2) of machineries was accused to be fatal for the role of humans, gradually replacing them with a new kind of labour.

However, although suppressed, the movement did not cease to exist. From that moment on, the term Luddite has indeed been applied to any kind of social opposition to automation, digitalisation or industrialisation in general. Over the last century, even if in different shapes, such concerns have recently regained prominence.

The perpetual economic tendency to innovate as a request of efficiency and competition, and to constantly revise the means of production by renovating the involvement of humans, is now moving towards new outbreaks. The growing abundance of information, as well as recently introduced methods of collecting and using data, is rapidly affecting the world of the machines, enabling new kinds of performance and application, both physical and cognitive.

In the *Second Machine Age* (3), automation reduces human assistance to minimum levels, replacing the role of labour in the production of our society. In particular, while work and labour are brought closer by our consumerist lifestyle, the serially automatic reproduction of cultural objects would interest both repetitive tasks, as well as all these activities that only human creativity and craftsmanship could perform.

At the edge of these new disruption, two fundamental aspects are investigated.

On the one hand, in light of the relation labour-territory, automation has effective impacts on the constitution of the human landscape, altering the spaces of activity. The North Sea, as a territory of production, is witnessing the imposition of new dynamics within the activities that on it are taking place.

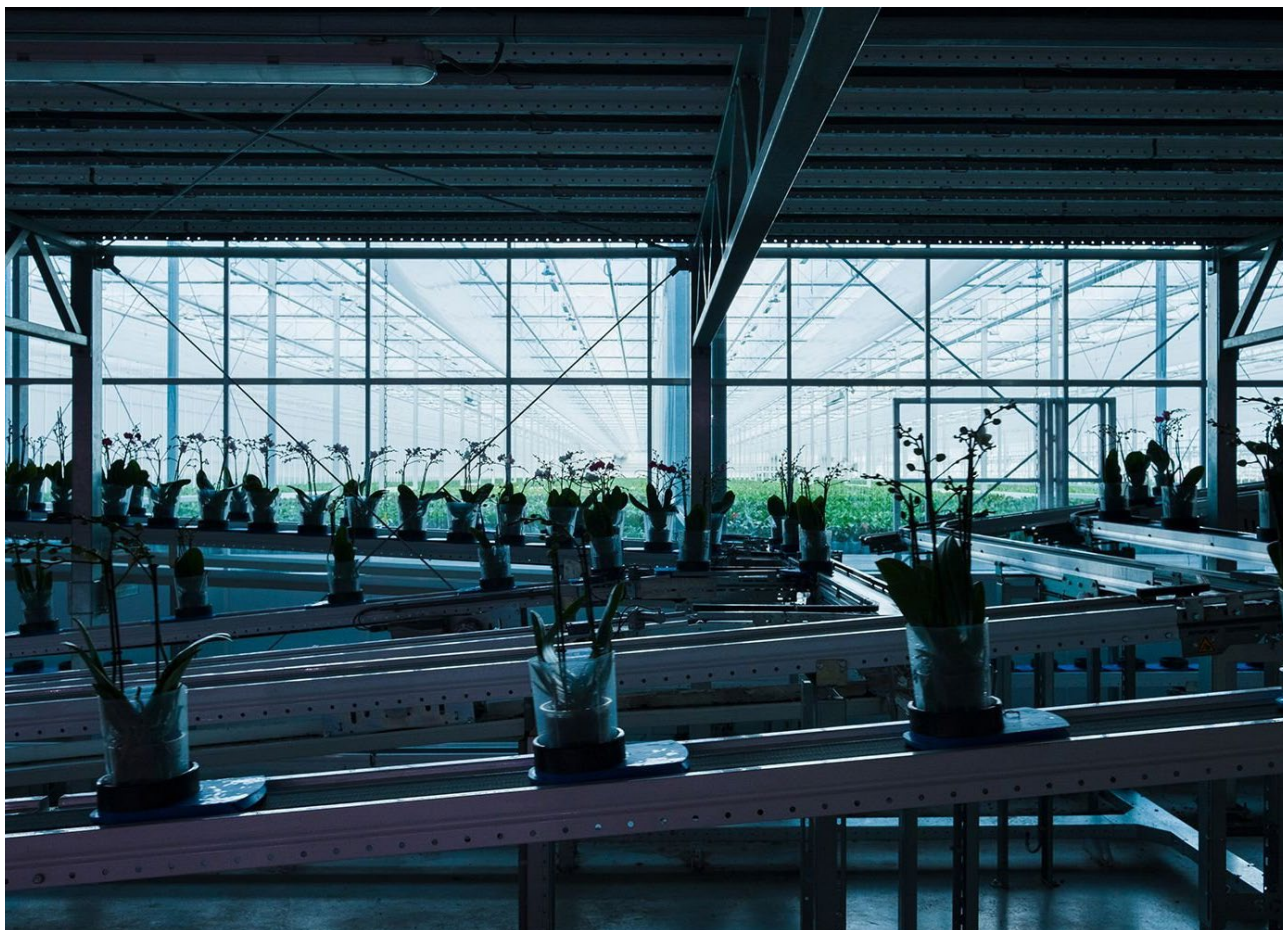
Second, the social aspect of such automatising, highlighted by the extreme conditions of full automation. In spite of the different predicable degrees in which automation is expected to intervene in our socio-economic environments, the assumption of full automation becomes more likely to be realised in connection with the less populated regions of the Arctic. The opening of future new maritime routes, resulting from the mean temperature rise and the reduction in the polar ice extents, is already generating a clash between these small communities and activities of global interest. The harsh conditions of such areas will urge the emergence of a society in which labour can be completely delegated to the mechanical.



2.2. Automated Landscapes

The disruptions resulting from the rise of automation are not only related with the mere economic sphere. Its influence is becoming more and more evident also in the configuration and use of entire parts of the territory, where mechanic control defines the preconditions for production to continue.

As already mentioned, the dense data infrastructure of the North Sea allows an even greater expansion of automated tools over the physical space, affecting its main labour practices. From the automated agricultural landscape of the Netherlands, to the digitalisation of the offshore industry and the decline of human presence in the port authorities, automation challenges conventional territorial assets, as well as architectural realisations, dilating the distance between humans and production. Far from the urban centres, these spaces become the epicentres of labour transformation.



Data Infrastructure

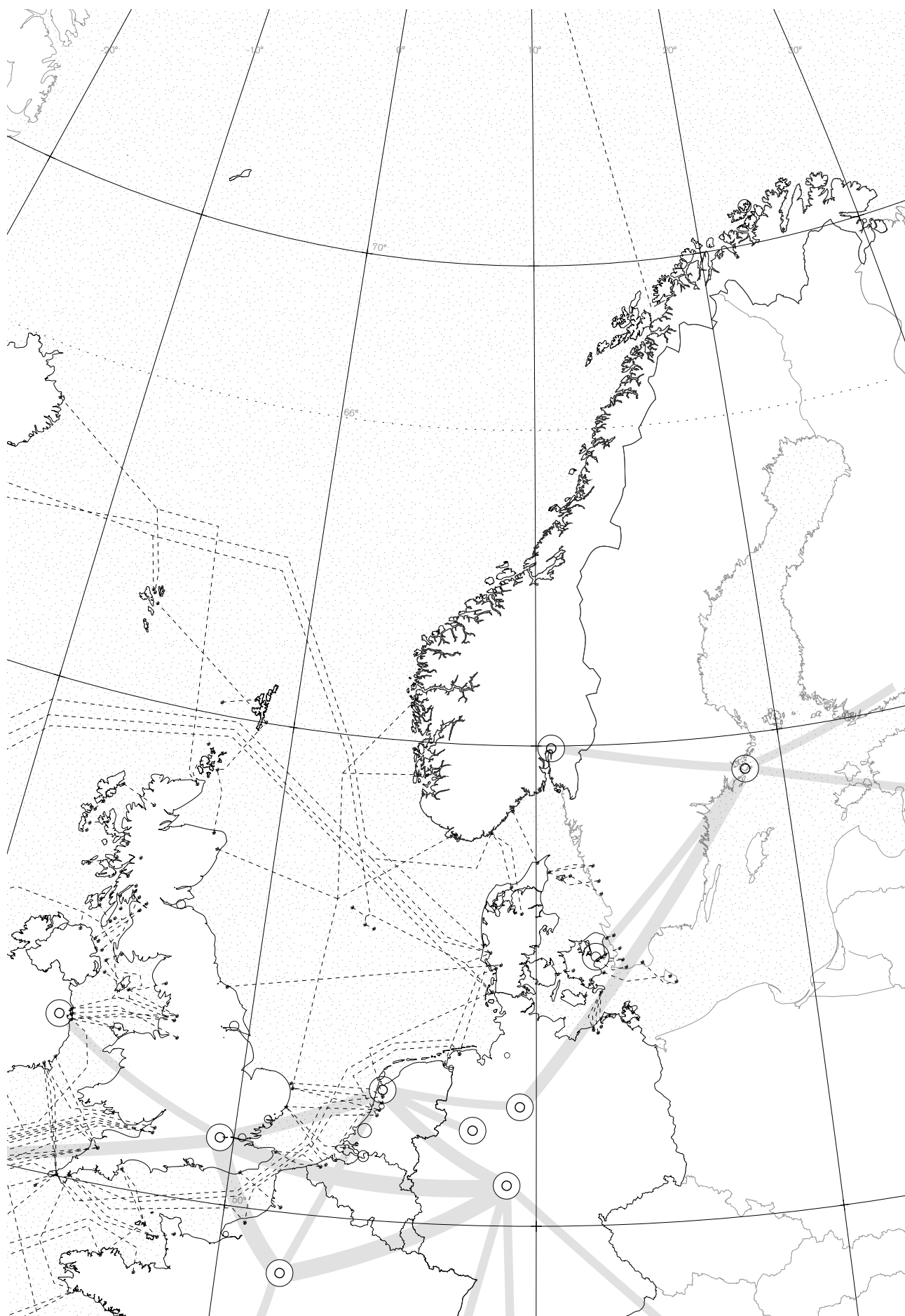
The removal of barriers in intra-European mobility, the end of the Cold War and advent of globalisation shrunk time/space for information flow. The growth of capitalism, neo-liberalism and the effects of the third industrial revolution (computerisation and automation of processes) increased information flow. With telephone and telegram lines and radio/satellite signals already forming a basis for communication between countries and continents, the development of the internet, private and public networks at the end of the millenia induced the need to create a backbone of infrastructure to serve the needs of information flow. Firstly using cable and then optic fibre cables as they were developed, underwater lines have become the norm and backbone to our global networked connectivity (along with satellites). The adjacent map depicts underwater lines primarily in the North Sea region (cables in other regions e.g. Mediterranean are not shown). Parallel to this are the top hub cities (as ranked by international capacity in Gbps) and their highest capacity links. The cities with the highest capacity in Europe are Frankfurt, London, Amsterdam, London (global leaders) followed by Stockholm and Marseille. The thickness of the line indicates the size of capacity, therefore, the London-Amsterdam line depicts that both are hubs but the London-Dublin line shows that Dublin is a spoke (city with a lower capacity link).

From the North Sea Atlas, 2019-2020. A Pervasive Ecology of Flows

Scale 1:20,000,000

Source: Telegeography Global Internet Map, 2018; Telegeography Submarine Cable Map 2019.

- submarine optic fibre cable
- capacity traffic (in Gbps)
- ⊙ data traffic node

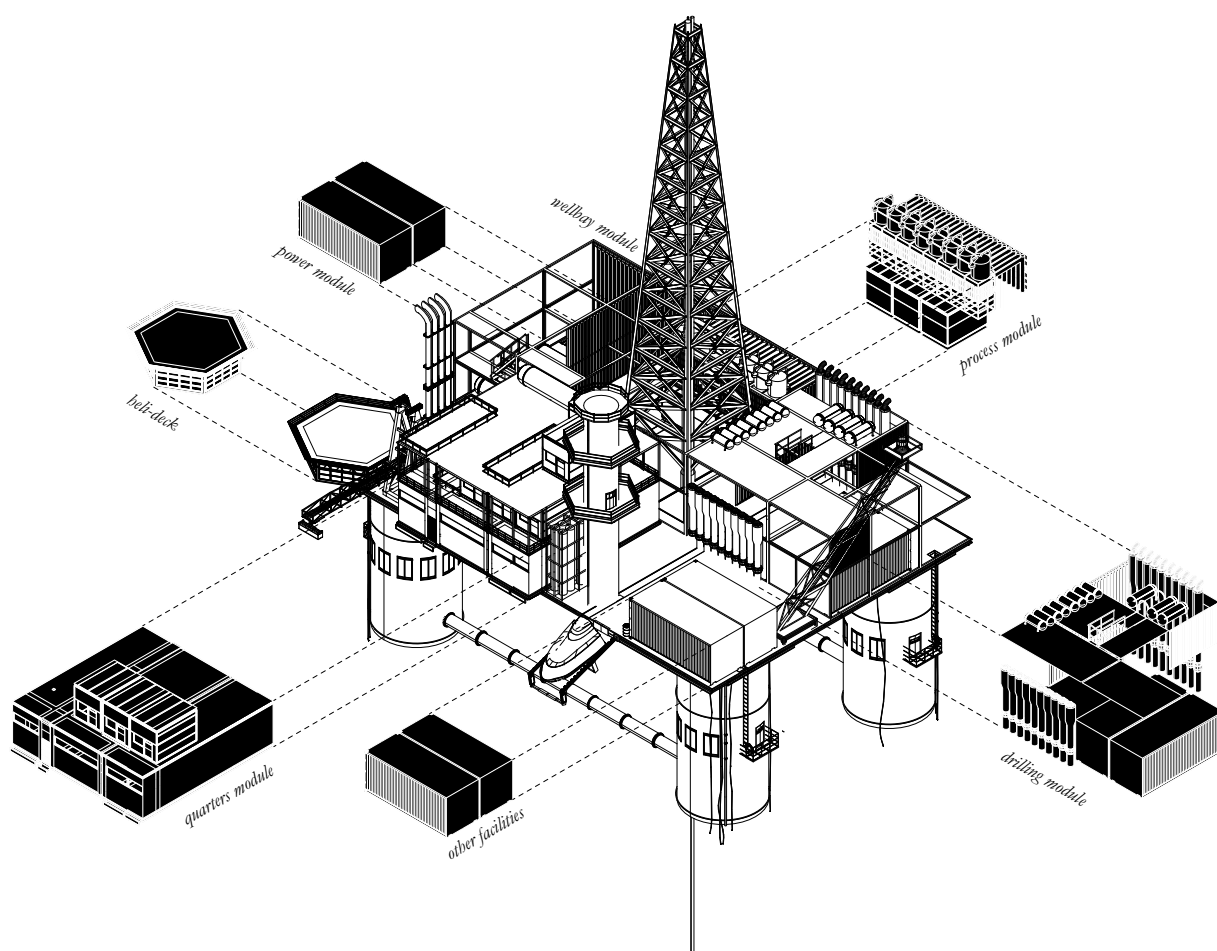


Automated: Offshore Industry/ 1

The rapid advance of digitalisation and automated processes represents a great factor of novelty in the oil and gas industry. A dense data infrastructure, running across the North Sea and the neighbouring maritime and terrestrial regions, allows the operations of oil platforms from specific remote-control locations on land, thus redefining the onshore-offshore dynamics.

The implementation of Digital Twin is not new and it has been applied for more than a decade. A digital twin consists of a 360-degree digital copy of a given physical component, or of an entire platform, that enables data collection and analysis, as well as the full remote monitoring of production. Thanks to that, it is possible to identify problems before failures occur, preventing downtime and improving safety for the system. Only in recent years, the improvement of technological softwares has allowed a greater adoption and experimentation, regardless of the future decline of the whole industry. Operational costs are strongly diminished, together with the human presence on offshore installations.

Source: Neeraj Bhatia, Mary Casper. 'The petropolis of tomorrow', 2013

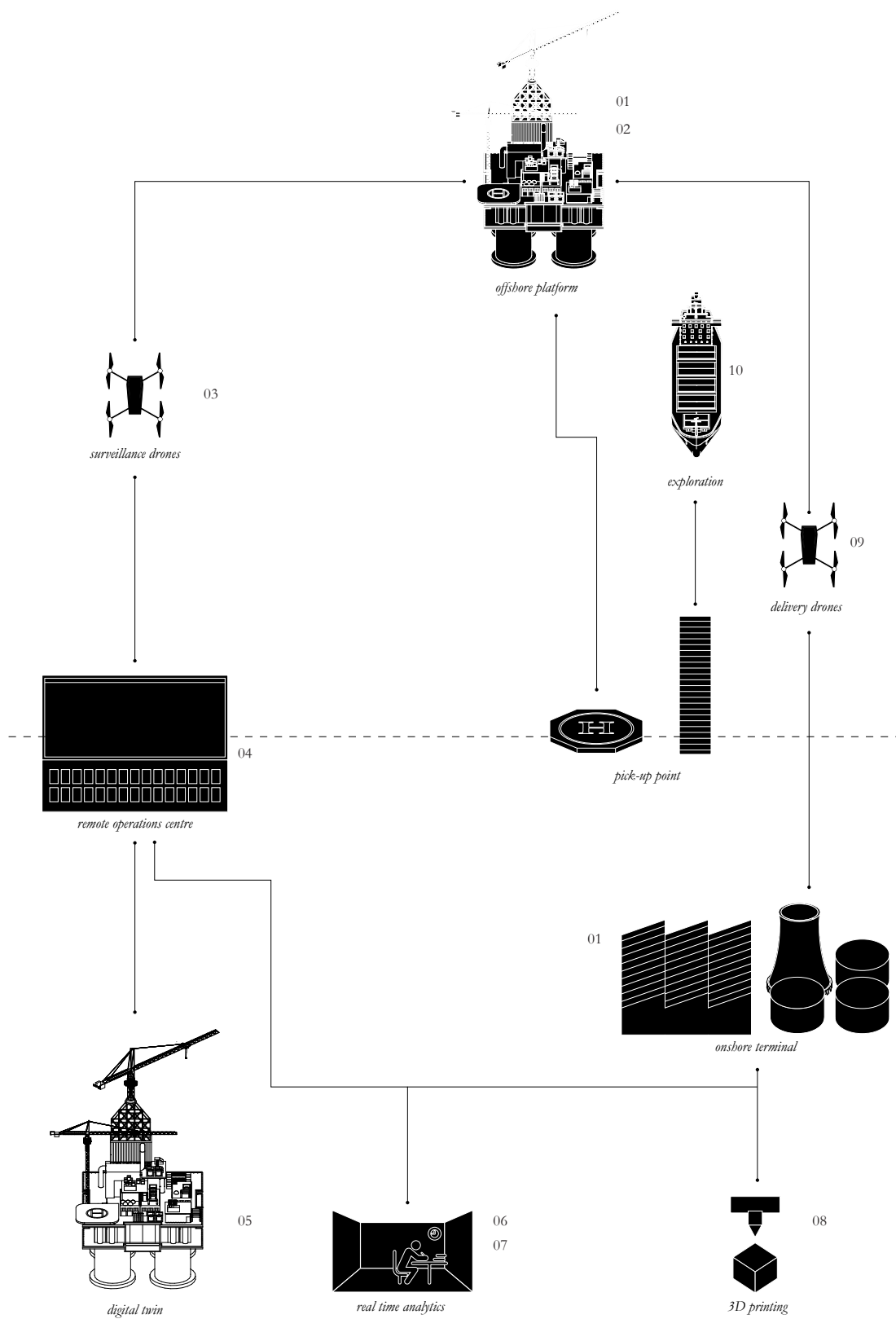


Automated: Offshore Industry/ 2

Scale

Source

- 01 Sensors on the rig detect abnormal temperature
- 02 Automation improves levels of management, monitoring and maintenance
- 03 Drones investigate the offshore rig and share real time data
- 04 Control operations from remote locations
- 05 Engineers receive alerts and platforms diagnosis via interactive 3D models
- 06 Predictive data analytics determine maintenance needs based on surveillance data; integretd supply chain orders new parts
- 07 Smart devices alert and provide details to onshore engineers
- 08 Parts and tools required to fix the issue are printed in real time using 3D printers
- 09 Onshore drones deliver parts to the offshore rig
- 10 Mapping the seabed through seismic imaging

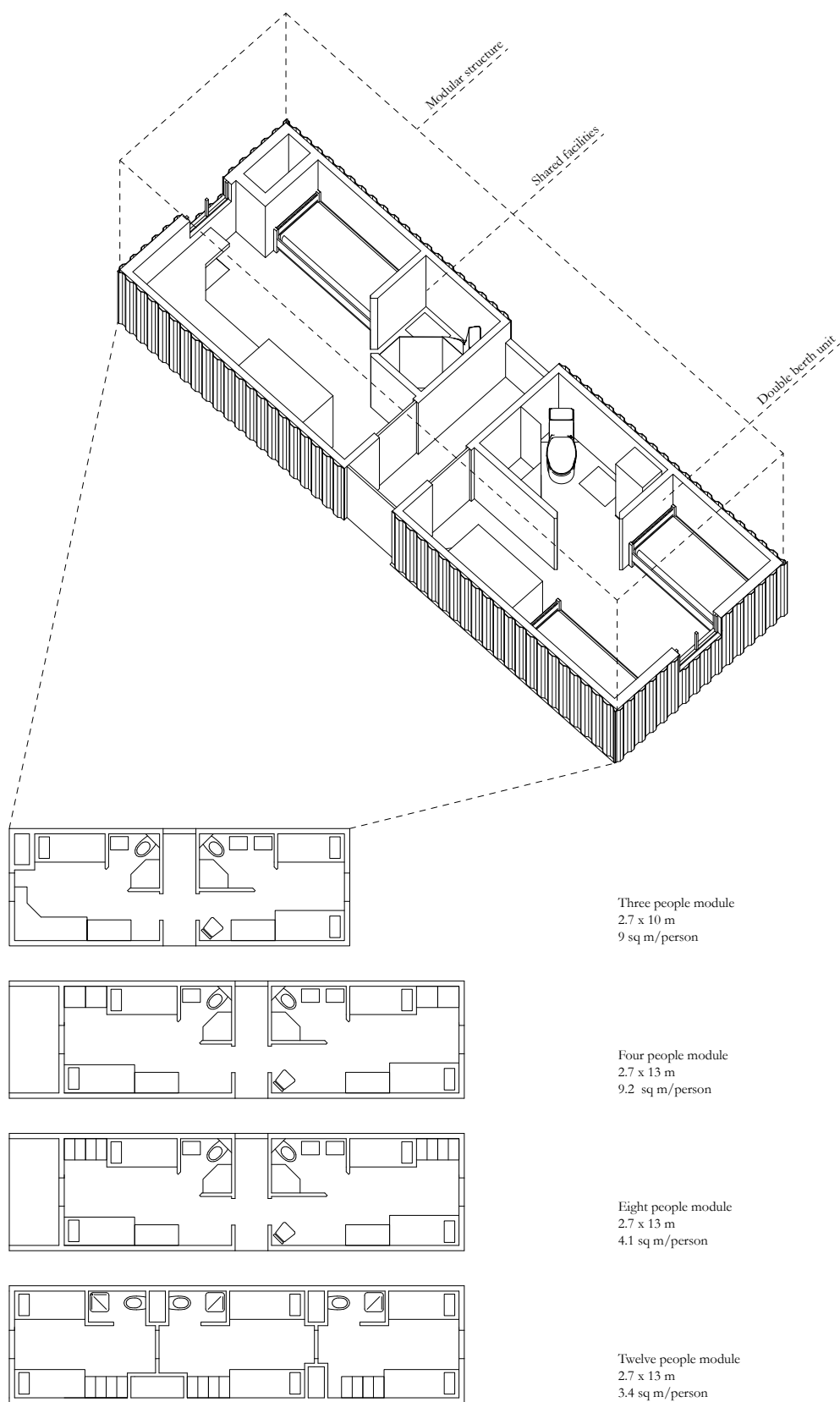


Automated: Offshore Industry/ 3

Typical offshore accommodations pose questions of *existenzminimum*, where living spaces are reduced to the bare minimum. The inevitable lack of private space can highly affect worker's mental and physical health.

The modularity of the housing units accomplishes needs of possible future expansion or modification of the quarters. In the same reduced space, the units can accommodate different configurations for rooms, that in most cases respond to the different tasks of workers on the rig.

The rapid digitalisation of extraction activities is now resulting in a further compression of human tasks, as well as of human spaces on the platform. The substitution of labour-force has already firmly re-shaped the composition of the industry, with effects on the coastal cities that used to host the offshore workers on leave.



Automated: Logistics/ 1

The automation of the Port of Rotterdam can be dated back to 1984, with the adoption of machines for operational services. However, from its opening in 2015, the Rotterdam Maasvlakte II is the World's most automated container terminal, with more than 80% of the movements proceeding without human control. The rest of the activity is performed remotely.

The facility, entirely constructed on reclaimed artificial land from the North Sea, is the first one to adopt remotely-controlled cranes to move containers from the vessels. The use of 62 battery-powered Lift-Automated Guided Vehicles makes the port traffic faster and more efficient.

The almost complete substitution of manual labour in the port, in spite of its delicate implication, enhances the efficiency of the logistic movement, being more reliable in terms of scheduling.

Images credits: APM Terminals, Rotterdam Maasvlakte II

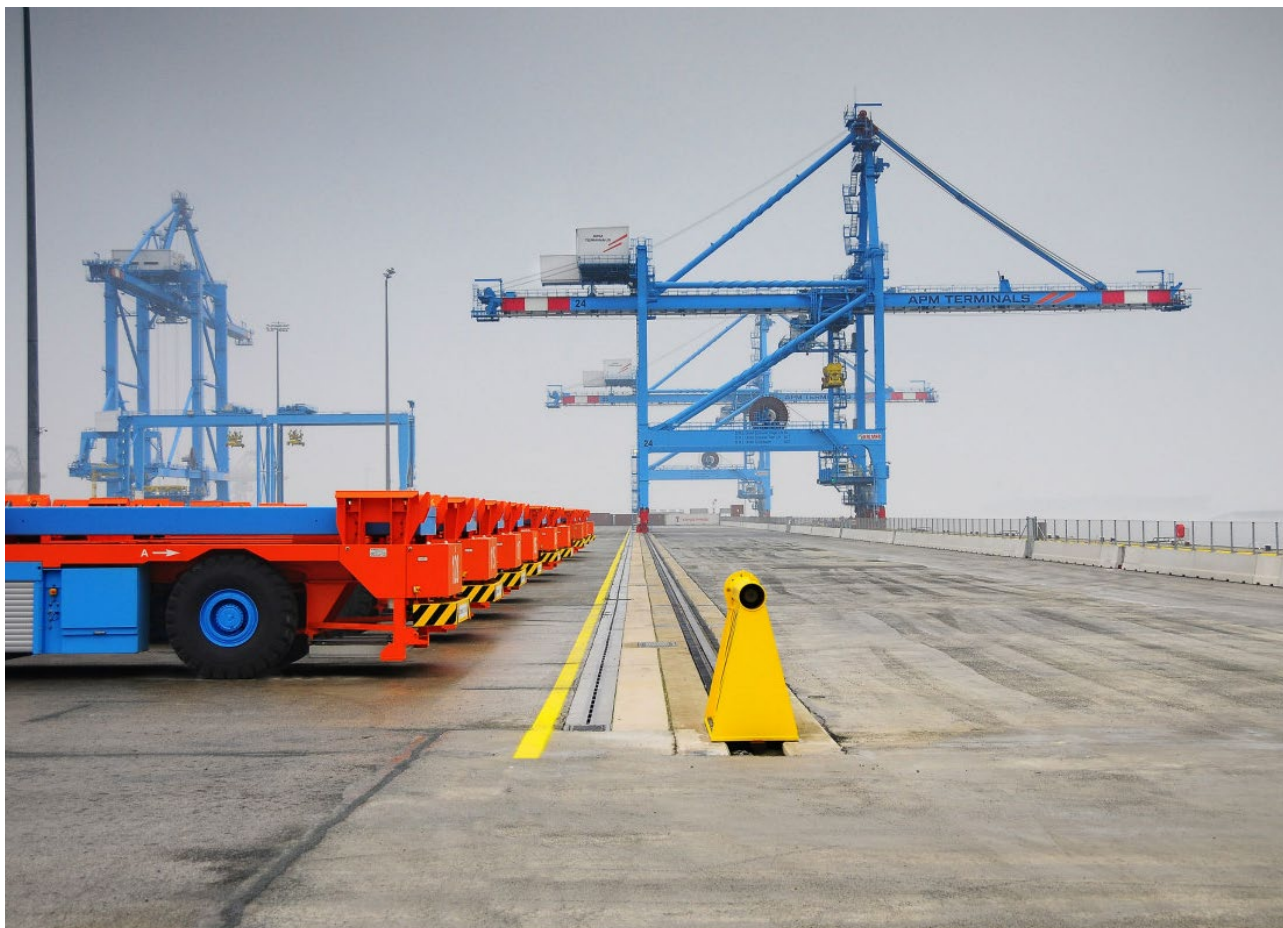
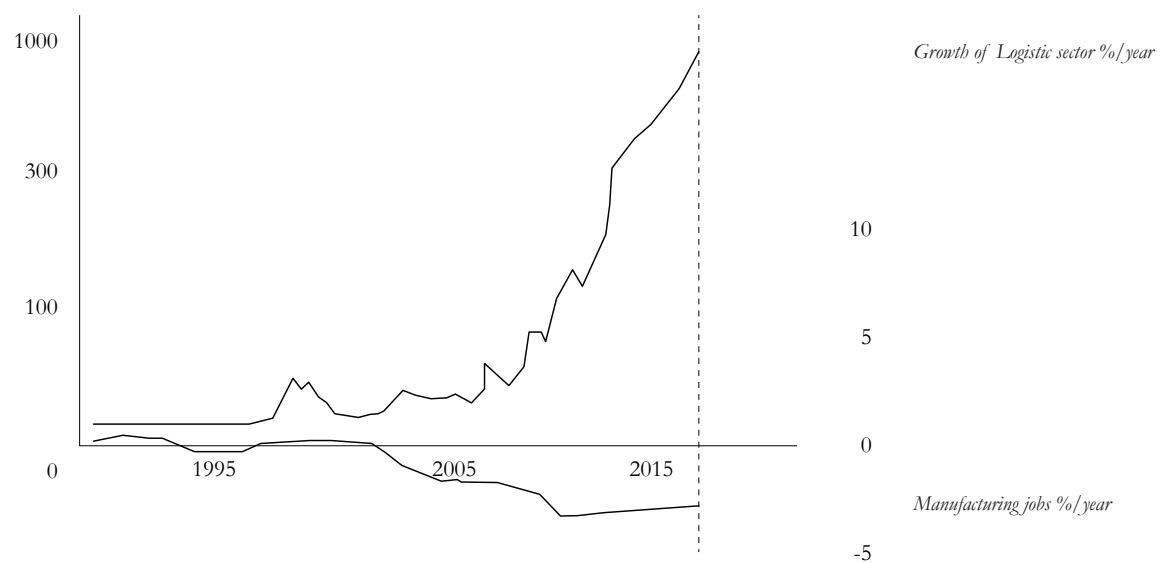


Automated: Logistics/ 2

The graph illustrates and compares the latest trends in logistic and manufacturing sectors in EU. While the logistic sector is growing steadily and is expecting to follow the tendency, the share of manufacturing jobs is drastically diminishing. According to scholars Frey and Osborne (2013), who worked on possible scenarios of automation in the United States, the large set of non-repetitive tasks of transportation and logistics occupations would make these activities the first one to undergo a drastic mechanical substitution of labour-force.

Source: McKinsey Global Institute

Images credits: APM Terminals, Rotterdam Maasvlakte II

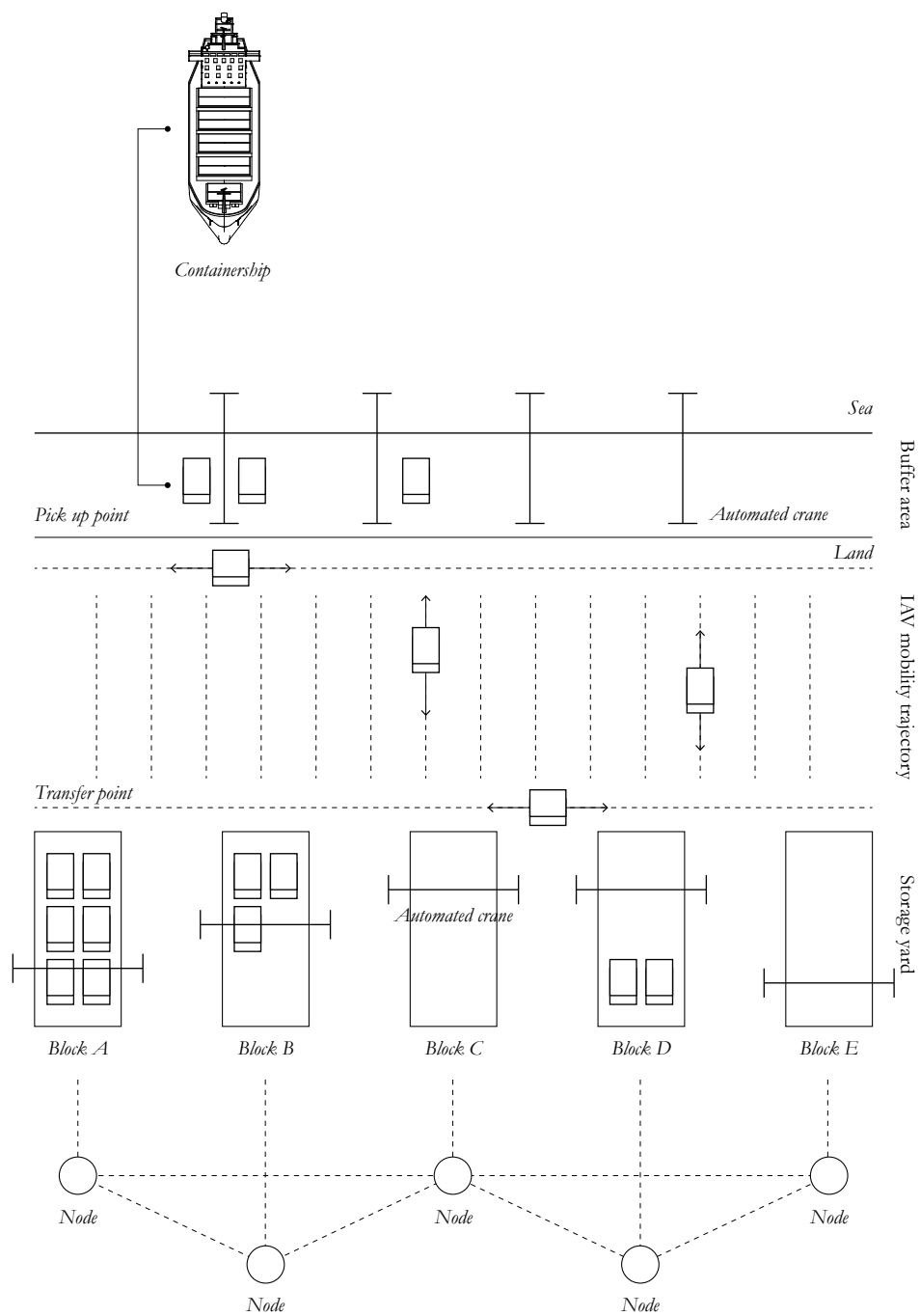


Automated: Logistics/ 3

The diagram illustrates the layout of an automated container terminal from the unloading area of the cranes to the nodal point for logistic distribution to the territory.

The rise of fully automated or remotely-controlled systems, while compressing the human spaces, enlarged the footprint of such facilities. Wide, seamless extensions of logistic operations now extend on vast portions of the countryside or metropolitan areas, where an architecture without humans stores and distributes goods over the urbanised territory.

Source: Bahnes, Nacera & Bouabdellah, Kechar & Hafid, Haffaf. (2016). Cooperation between Intelligent Autonomous Vehicles to enhance container terminal operations. *Journal of Innovation in Digital Ecosystems*. 10.1016/j.jides.2016.05.002.



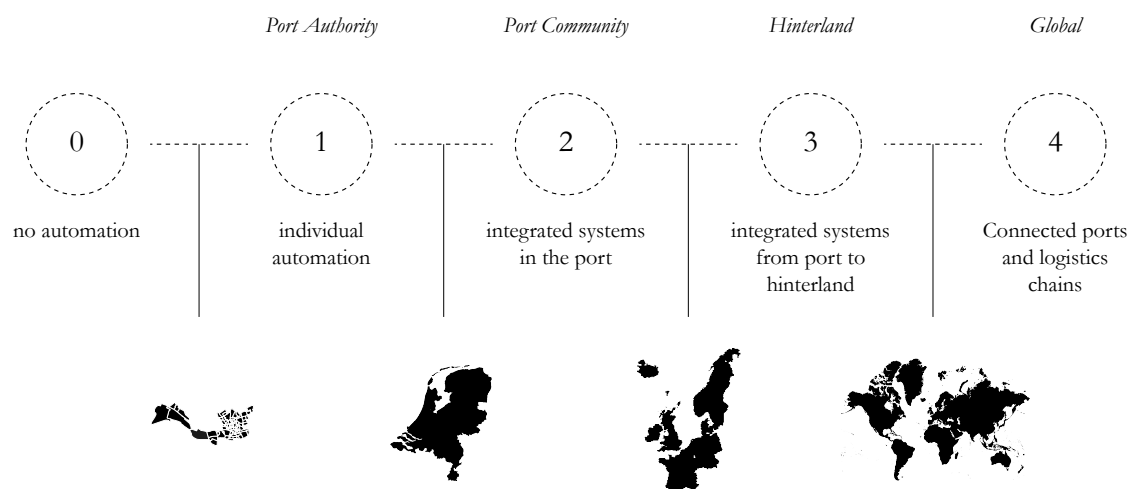
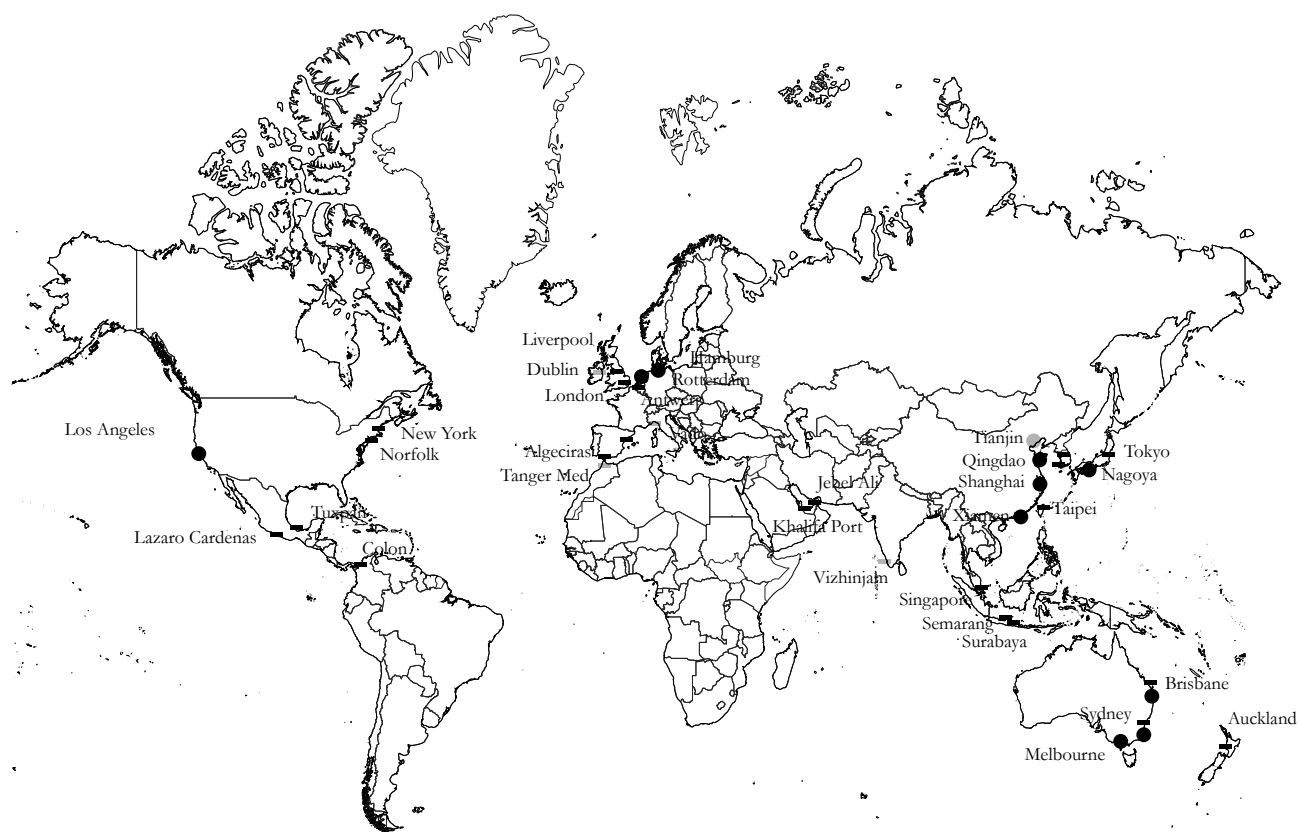
Transcalar Automated Trends

The map shows the main automated and semi-automated port terminals already in function, or in planning development.

Scale
Source: Strategic Analysis of the Automation of Container Port Terminals through BOT (Business Observation Tool), Alberto Camarero Orive, José Ignacio Parra Santiago, María Magdalena Esteban, Infantes Corral and Nicoletta González-Cancelas

● Fully automated
■ Semi automated

● Fully automated planned
■ Semi automated planned



2.2. Dream of Idleness

Besides accelerating the production and reducing labour costs, the advantages of automation relates with the possible implementation in hazardous environments, where the working conditions could exceed human capabilities. From this perspective, the growing relevance of the Arctic regions is boosted even more by the unveiling possibilities of technological progress. In such locations, the scarce presence of humans is likely to experience the greatest confrontation with machines, that can operate even under extreme temperatures or extreme hazards and weather conditions.

The northward shift of activities appears to be prominent in the future labour dynamics, expanding the territorialisation in the North by means of automated infrastructural systems. However, together with this territorial conversion, a more social repercussion can be envisioned. The peculiar physical and atmospheric configurations of the Arctic regions, in connection with the highly infrastructured landscape of the North Sea, prefigure the extreme limits of the application of automation. In a context of mainly monotonous labour, the extent of automation can be full, covering the whole share of workforce.

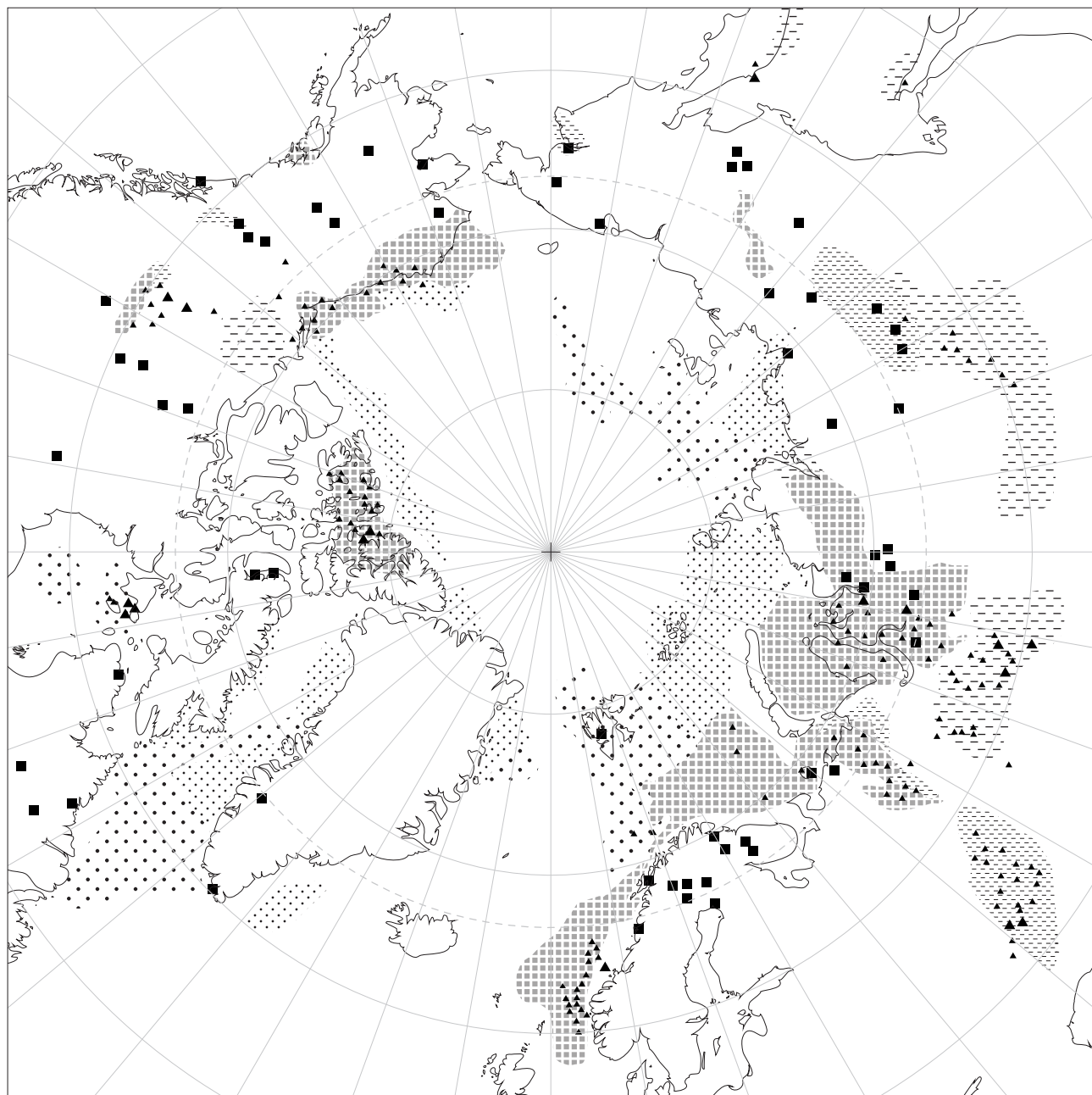
Under these circumstances, labour assumes the connotation of a far memory, while the dream of inactivity unfolds its drawbacks.



Arctic Resources

Scale
Source: Nordregio.org

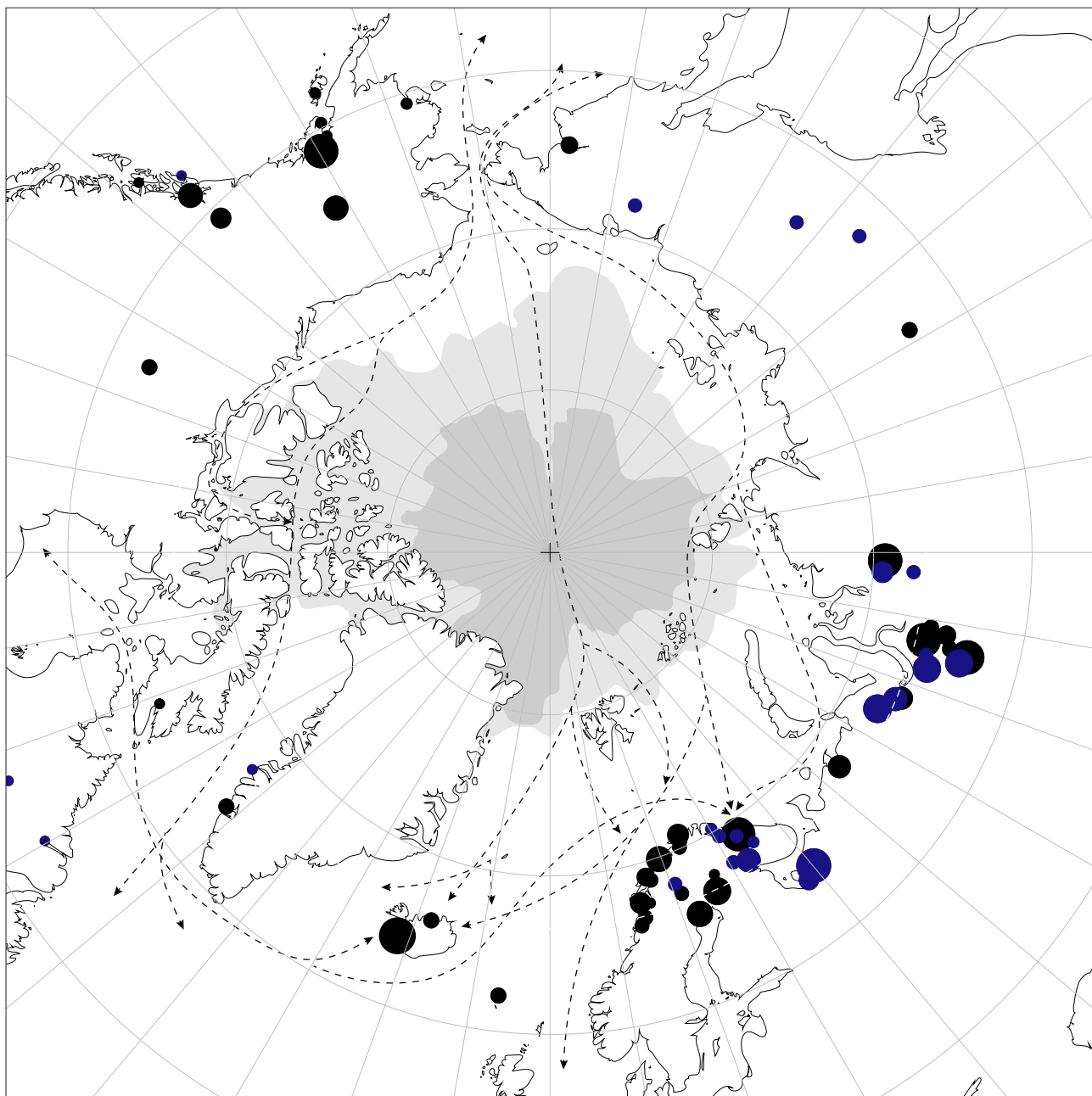
- ▲ Oil and gas exploration and production sites
 - Main minig sites
 - ▣ Prospective areas for extraction
- Potential oil and gas fields:
- ▣ Medium (30-50%) at sea
 - High (>50%) at sea
 - ▣ Medium (30-50%) on land
 - ▣ High (>50%) on land



Arctic Settlements

Scale
Source: Nordregio.org

- Population growth
- Population decline





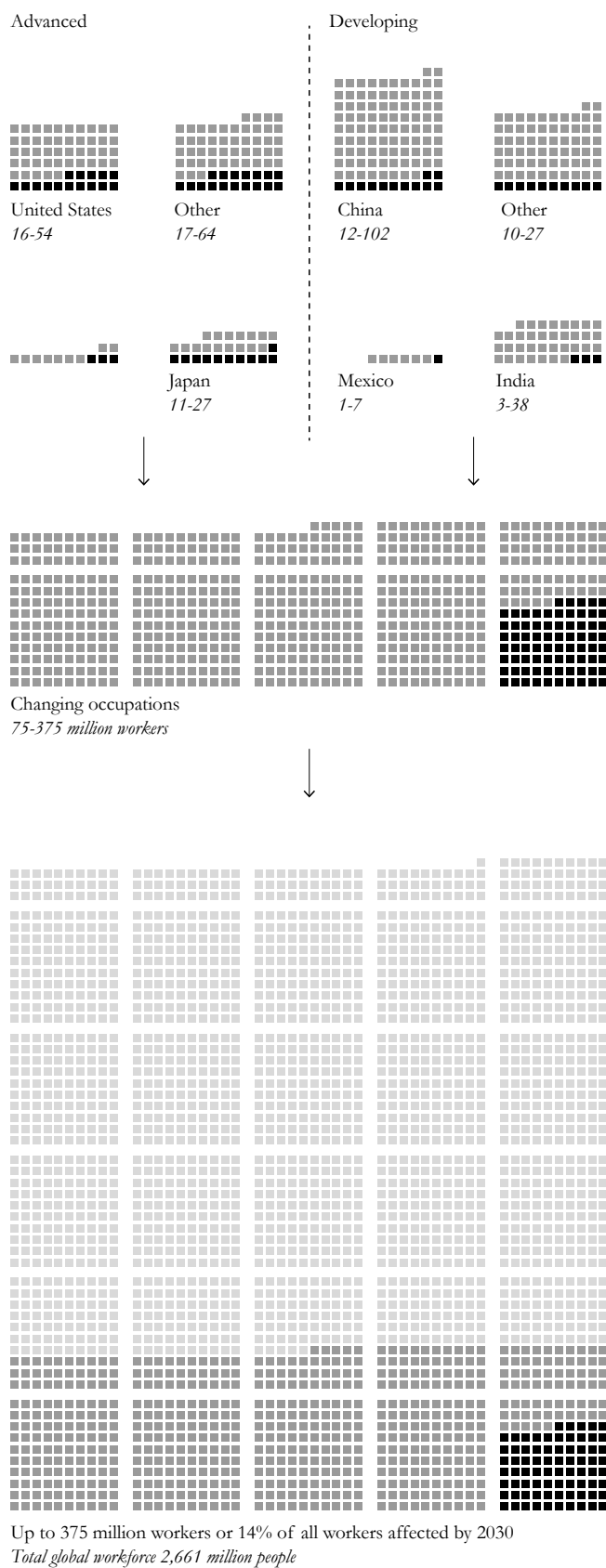
Technological Unemployment

The diagram illustrates the number of workers needing to change occupation at a global scale. As suggested by the study, the workforce transition could be of great extent, accounting for around 375 million employees switching occupation due to the adoption of automated systems.

Overall, China will face the biggest impact, with around 100 million workers in need for a new job if case automation is implemented rapidly (12% of the 2030 total labour-force).

Source: McKinsey Global Institute

- midpoint automation
- additional from rapid automation adoption
(1 block = 1 million workers)



Labour Projections

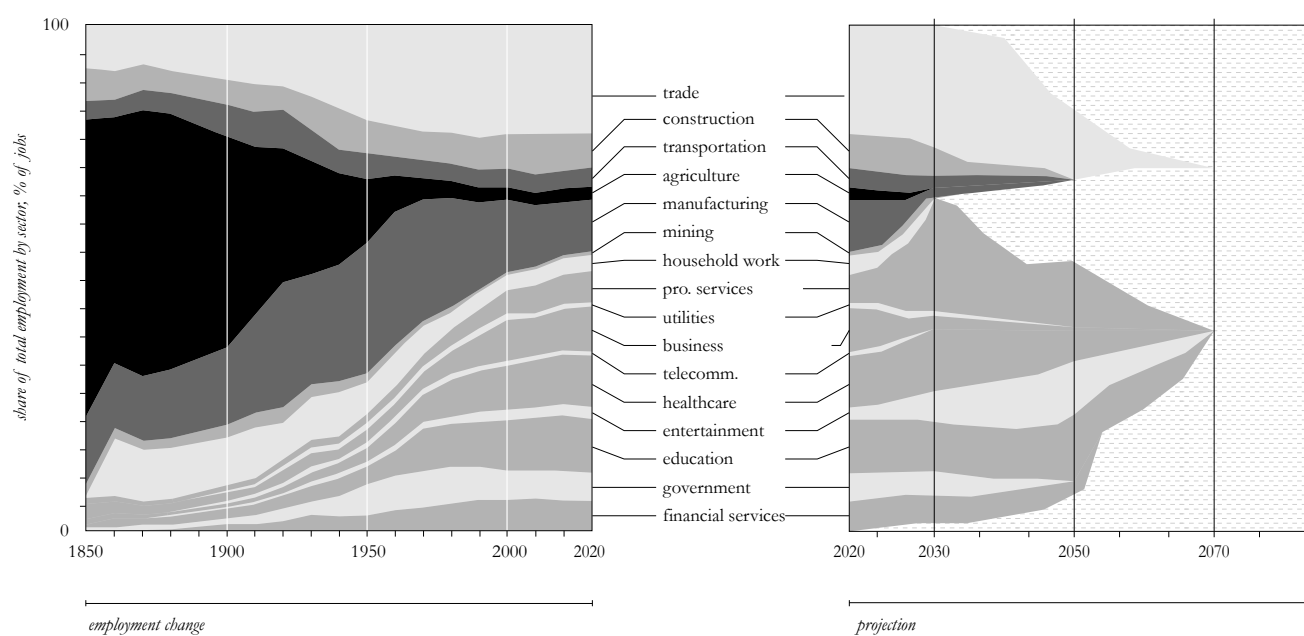
The diagram shows the change in share of total employment by sector in OECD countries from 1850 to current day and a speculative projection from to 2070.

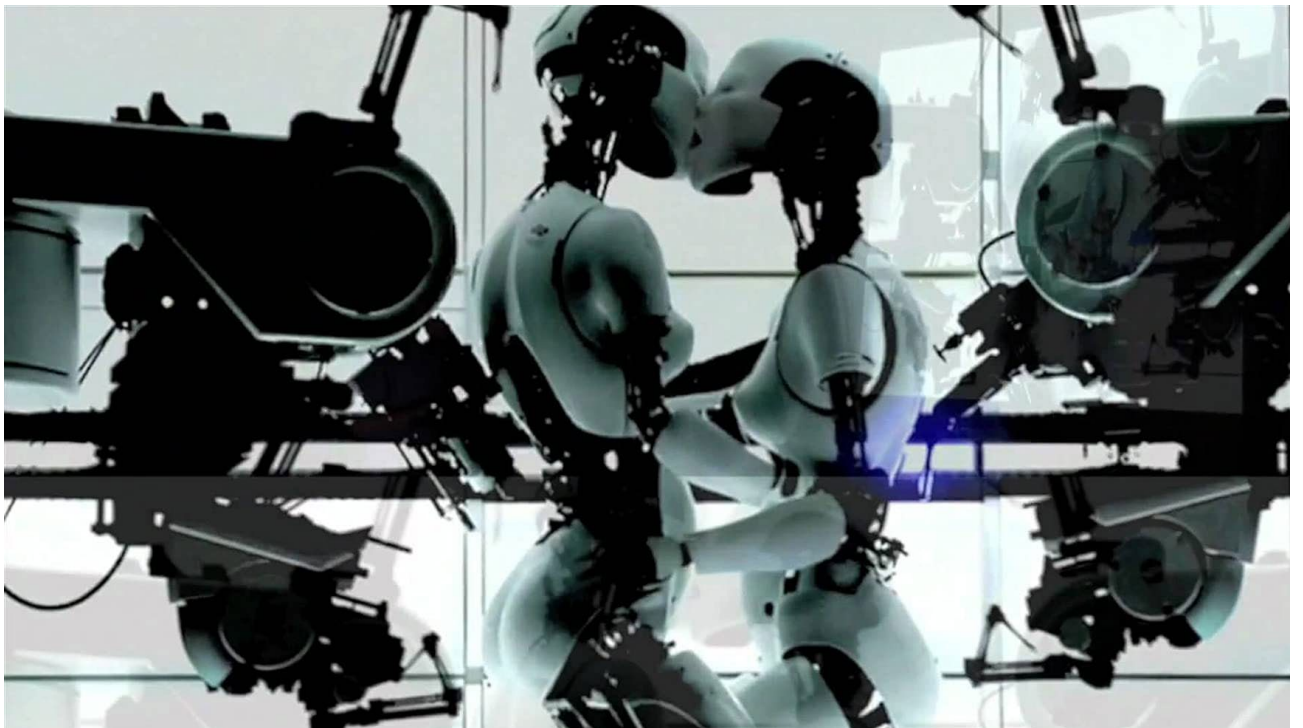
The left section of the diagram - retrieved from a study led by the McKinsey Global Institute - illustrates a consistent contraction in employment concerning agriculture, mining and, from the second half of the 20th century, manufacturing activities. Household work and transportation are also slightly diminishing towards the beginning of the new century, while trade, healthcare and education are especially on evident growth.

The right side of the chart shows a projection of such trends in the coming future. Based on Frey and Osborne's estimates, the 47% of the jobs will be automated already by 2050. This brings the already declining activities, such as agriculture, mining and manufacture, to a fast end even at the start of the 2030s. While in the first period the share of other forms of occupation might increase - in response to the loss of most of the manual jobs and to the switch to high-skilled labour - the further technological progress will then replace even cognitive tasks, concerning sectors such as business, construction and government. By 2070, even the most delicate sectors of healthcare and education will undergo the same processes of digitalisation and machine/algorithm substitution.

Scale

Source: McKinsey Global Institute (employment change). projections by author, based on different estimates (Frey and Osborne)





2. The Second Machine Age

2.3. Problem Statement

The rise of Automation, contributing to new forms of production and labour, could represent a Third Disruption in human history. On one hand, the surge of automated landscapes questions our perception and definition of the territory, where work can be performed without human intervention and thus can be moved out of our living environment. On the other hand, the realisation of full automation challenges the configuration of our society, as well as the political framework.

In a world where labour defines who we are - up to a point that, while being introduced, our occupation comes right after our names - and where labour represents our personal contribution to the collective well-being and thus to the sustainability of our society, the demise of labour can be critical.

2.4. Research Question

How can society react to the demise of labour, as a consequence of increasing automated landscapes and of the realisation of full automation?

Sub-questions

- 1. Given the relevance of automation in the North Sea and the rising prominence of the Arctic regions, how is it possible to envision a change in such territories?*
- 2. What impact of full automation, and the consequent demise of labour on the constitution of society?*

Human Flood

Symposium: Territory as a Project, 2019
 (Giuseppe Pellizza da Volpedo, Il Quarto Stato, 1901 + Étienne-Louis Boullée, Project of a Metropolis in the days of darkness, 1784 + William Vradford, Icebergs in the Arctic, 1882)



III.

Site. Hammerfest and the New Society

*MADAME RANEVSKY. Don't you see? I was born here, my father
and my mother lived here, and my grandfather; I love this house; without the
cherry orchard my life has no meaning for me, and if it must be sold, then for
heaven's sake sell me too!*
-Anton Chekhov¹

Site: Hammerfest

3.1. Identity - Historical Precedents

1. Anton Chechov, *The Cherry Orchard*, 1904. Act III, p 32
At the end of the play, Lyuba Andreyevna (Madame Ranevsky), after trying everything she could to keep the dear Cherry Orchards, is forced to sell it to pay her debts. While leaving, the noise of the trees falling at the ground marks her sad goodbye. The Cherry Orchard and the futile love for it cannot deal with the doomed destiny of Russian aristocracy.

Located on the 70th parallel North in the Norwegian county of Finnmark, Hammerfest claims to be the northernmost settlement in the world, with a population of ten thousand inhabitants. The municipality accounts for three large islands - Seiland, Soroya and Kvaloya, where the biggest settlement is situated - and is surrounded by a maritime area of vast oil resources and great shipping traffic.

The peculiar geographical location of Hammerfest, at the extreme inhabited lands, has always provided the town with a condition of both border and point of encounter between cultures. At its origins, the small settlement of Hammerfest thrived thanks to the richness of its waters, always clear from ice even in winter, allowing the establishment of a stable activity of fishery. Over the century, the town became an excellent base point for all the explorations towards the Arctic, as well as for bear hunting on the Barents Sea. The symbol of the municipality itself is meant to keep memory of such past.

Its strategic position, at the turn of different territorial interests, was highlighted in times of war. Under Napoleon's expansionist dream, Hammerfest was bent and controlled; during the Second World War, the Nazi regime conquered the town to keep control over the neighbouring regions.

Nowadays, the relevance of Hammerfest is still strongly connected with its physical conditions. As industrial city, the main source of income is represented by natural gas and oil extraction and port logistics, while fishery is on strong decline.

From 2007, the small island of Melkoya, close to the city centre, was totally reconverted to an inland processing station for natural gas (the biggest in Europe), bringing optimism and economic growth to the town. The increase in population that, in recent years, has resulted in the area is considered to continue steadily. In addition to that, the presence of one of the largest logistical node in the Arctic has benefit the economy of the island. The PolarBase, not far from the main town, is expected to double in size within the next years, in response to the increasing maritime traffic over the Arctic Ocean.

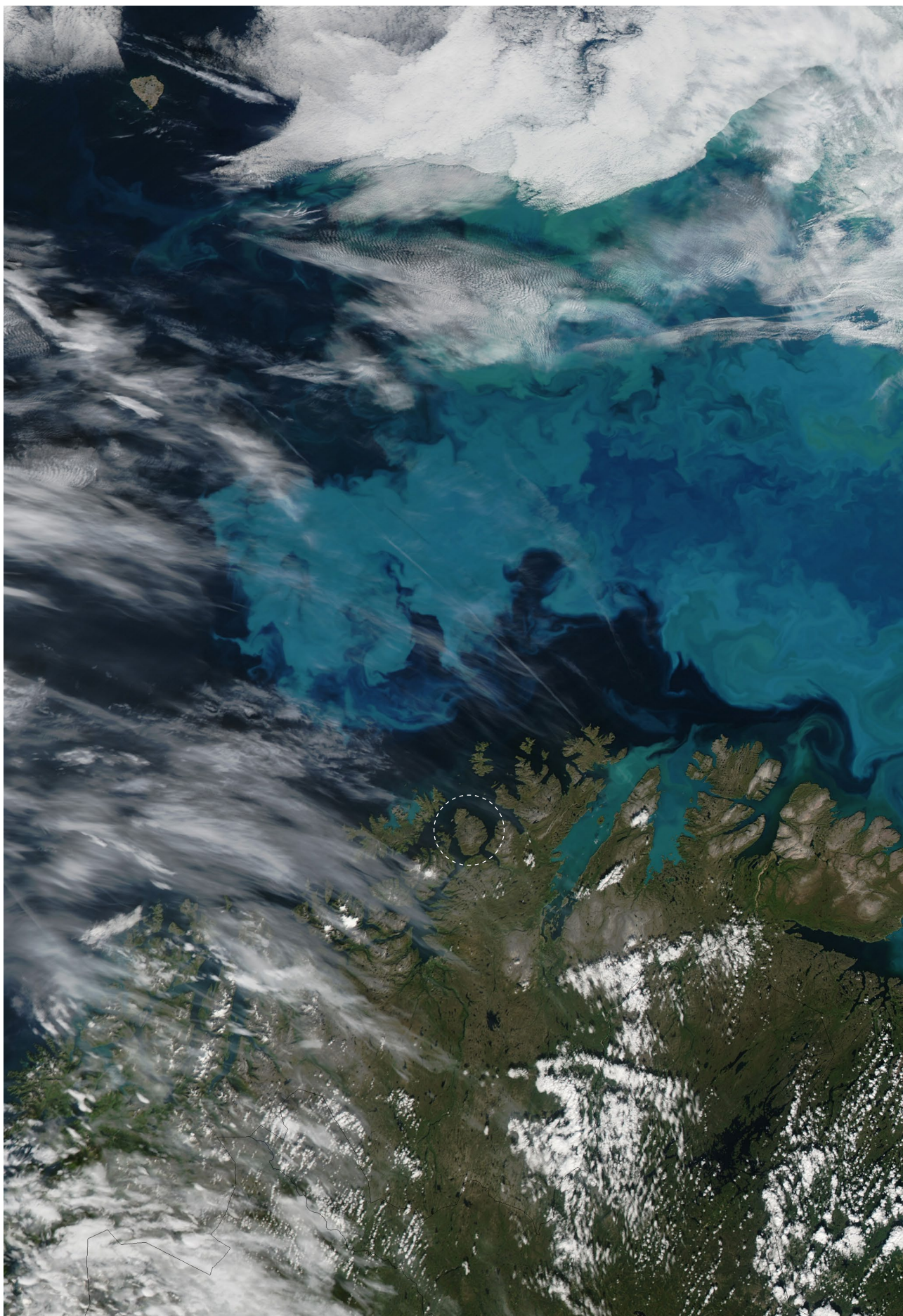
Both of these activities, that appear as the main economic pillars of the area, are undergoing fast processes of digitalisation and automation, leaving workers behind. In a condition in which the harshness of the weather makes no other options available, the chances of full automation are high with enormous consequences on the community.

Moreover, while logistics is exponentially growing, the end of the offshore industry seems inevitable - even for Norway. A conflict between layers makes the urgency of a change even more needed.

3.2. Site Analysis

The Barents Sea represents a contested territory of transition between the over-exploited North Sea and the fragile ecosystems of the Arctic regions. The examination of such context, with particular attention to the Finnmark county, in which the Municipality of Hammerfest is located, reveals strong contrasts between untouched landscapes and the heavy intensification of infrastructure and human presence.

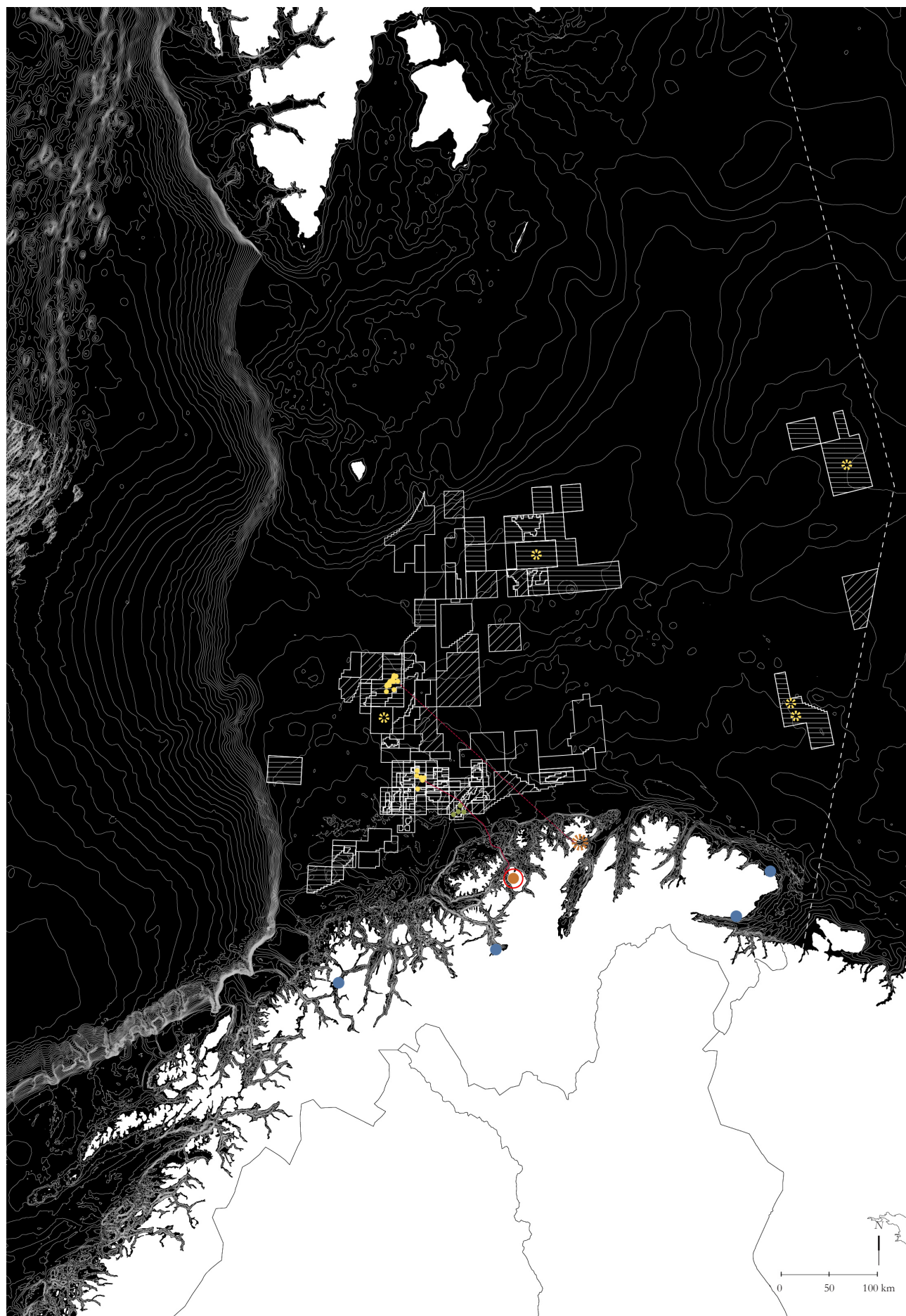
Bloom on the Barents Sea
The image shows the great bloom of the phytoplankton happening every year in August.
In the circle, the island of Kvaloya, in the Municipality of Hammerfest.
Source: NASA



Offshore industry on the Barents Sea

Source: Geonorge.no, Equinor

- oil well
- gas well
- ⦿ oil wells to be opened
- active license
- pipeline
- - - - new pipeline development under evaluation
- landfall processing
- ⦿ new landfall processing under evaluation
- city of Hammerfest



Land use and disturbances

Source: Vera H. Hausner, Sigrid Engen, Camilla Brattland, Per Fauchald (2019), Sámi knowledge and ecosystem-based adaptation strategies for managing pastures under threat from multiple land uses, *Journal of applied ecology*. Geonorge.no

- road

++++

power line

■

hydroelectric power plant

●

dam

■

wind power farm

●

wind turbine

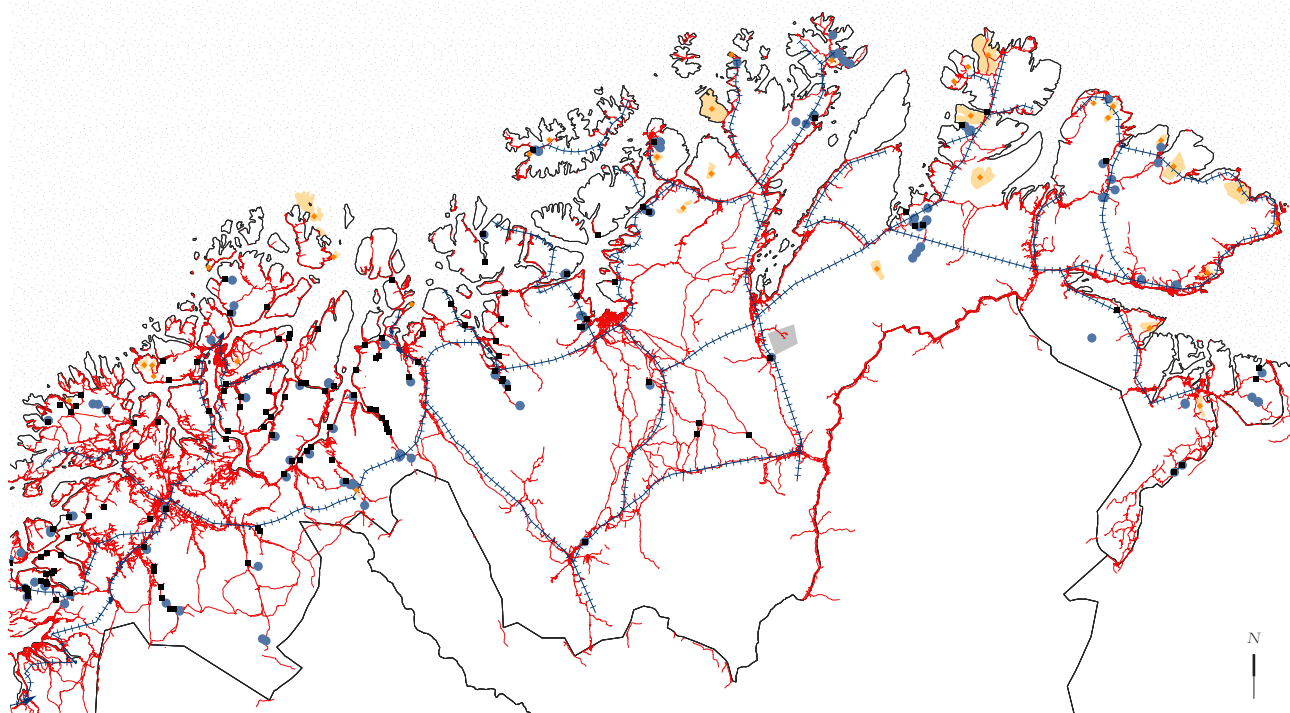
■

military area
- ☐

summer pasture
- ☐

spring/autumn pasture
- ☐

winter pasture



Habitat Fragmentation

As a consequence of the increased infrastructural system, demanded by projections of labour on the territory, natural habitats are fragmented and separated, with strong impacts on biodiversity.

Source: Geonorge.no.

- undisturbed wilderness area
- city of Hammerfest



1900



1940



1990



2000

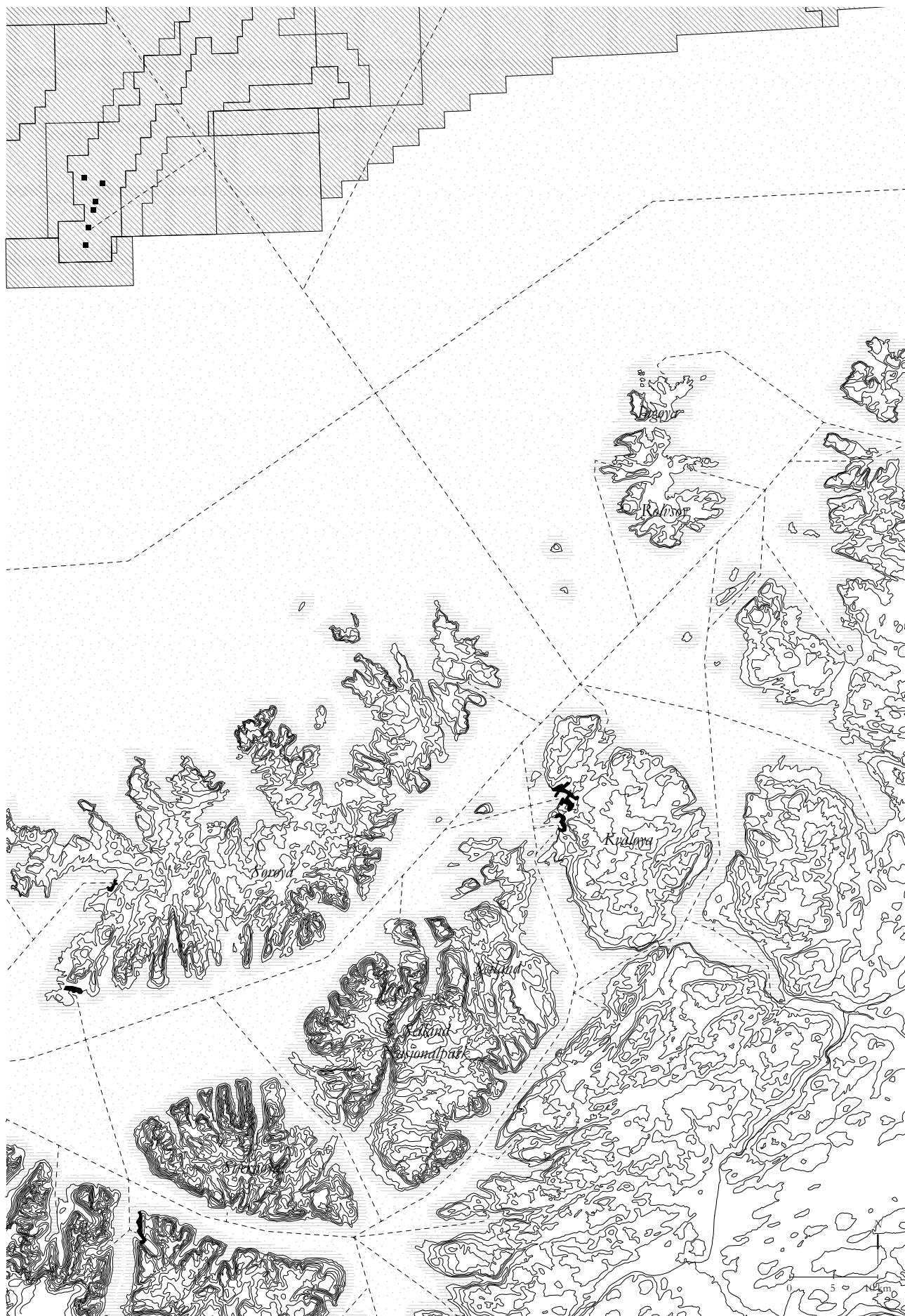
Municipality Area

Hammerfest city have around eight thousand inhabitants in its urban area, while the population of the whole municipality accounts for around 10 500 people. Located on the Kvaløya island, Hammerfest represents the main urban centre. A multitude of small settlements is scattered along the shoreline of the municipality area, comprising villages that host a population even below the hundred. Ferry lines and roads connect these communities with the main urban centre.

200 miles away from the coast, great maritime flows bring goods between the North Sea and the rest of the world. Close to the oil and gas fields, the city of Hammerfest operates as the main base for all the activities happening offshore, from maintenance of the facilities to the exploration of the seabed.

Source: Geonorge.no.

- populated settlement
- gas well
- maritime route
- road
- contour line
- ☒ active licence



Natural Landscape

The South of the municipality hosts two wide protected areas: a marine area and the Seiland National Park. Here, two substantial glaciers are situated. Above the tree line, the municipality of Hammerfest has scarce forests and low vegetation, with a typically Arctic composition. The only forests are located along the coast, far from the human presence.

Source: Geonorge.no.

-  marine protected area
-  protected area
-  marine natural habitat
-  glacier
-  forest
-  swamp



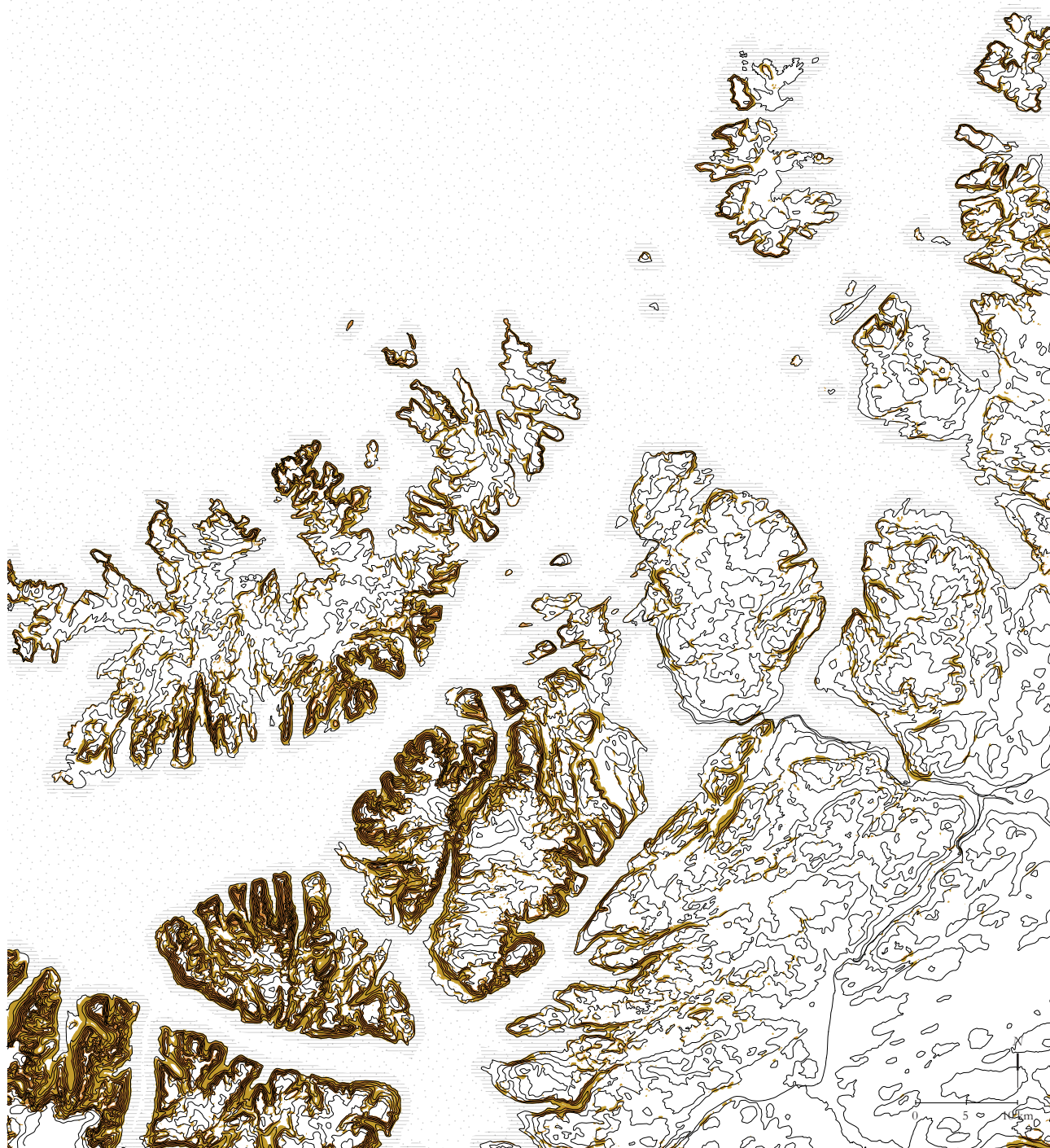
Risk of Avalanches and Landslide

The predicted increase in heavy precipitation, as a consequence of climate change, enhance the risk of landslides and avalanches in the area.

From the map, the most populated areas appear to be far from places with highest risk of avalanches. Nevertheless, landslide are threatening the location of the main settlements.

Source: Geonorge.no.

- risk of avalanche
- risk of landslide
- road
- contour line



Contrasts

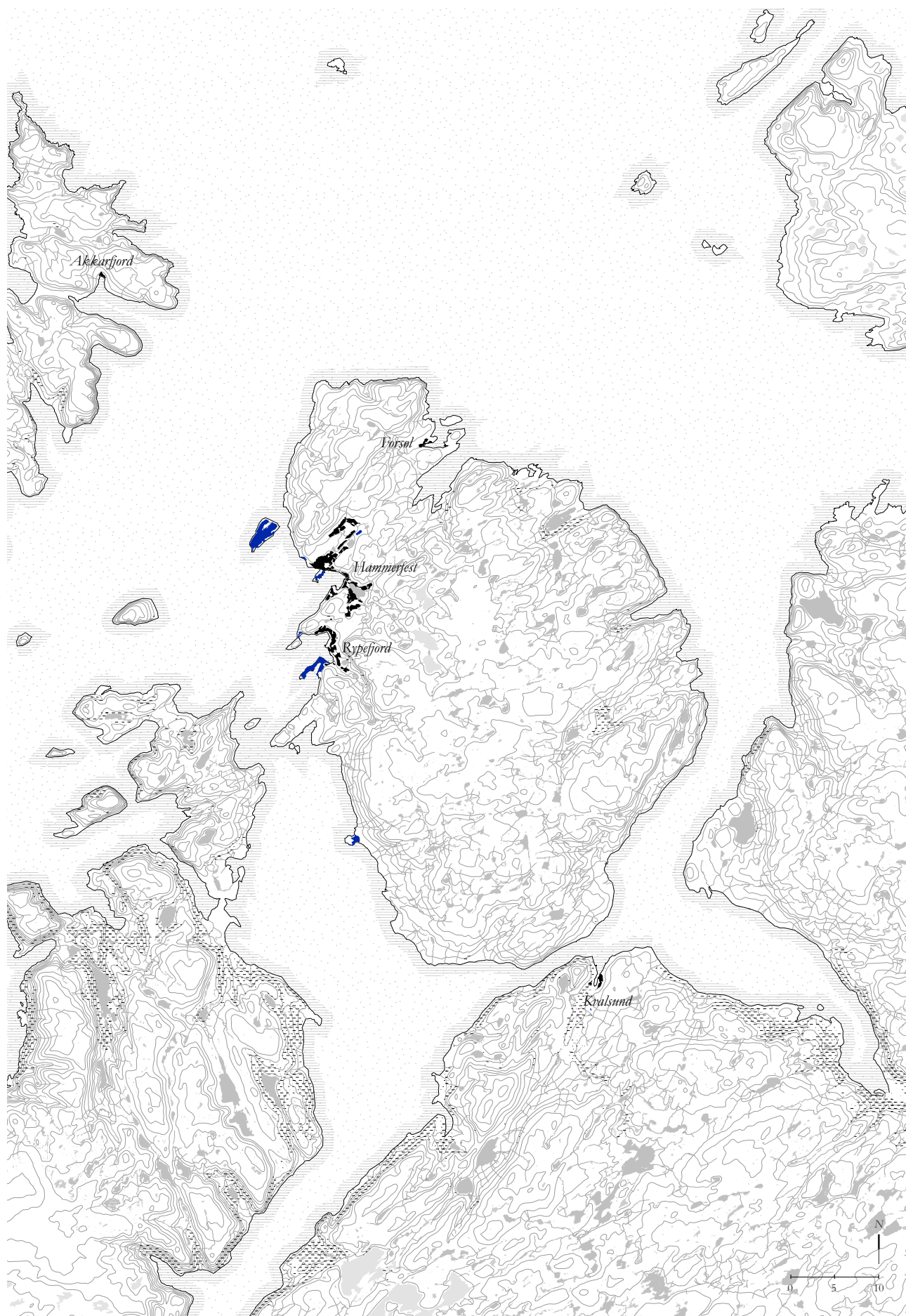
Polar Base, Hammerfest
Picture by author



Kvaløya Island

Source: Geonorge.no.

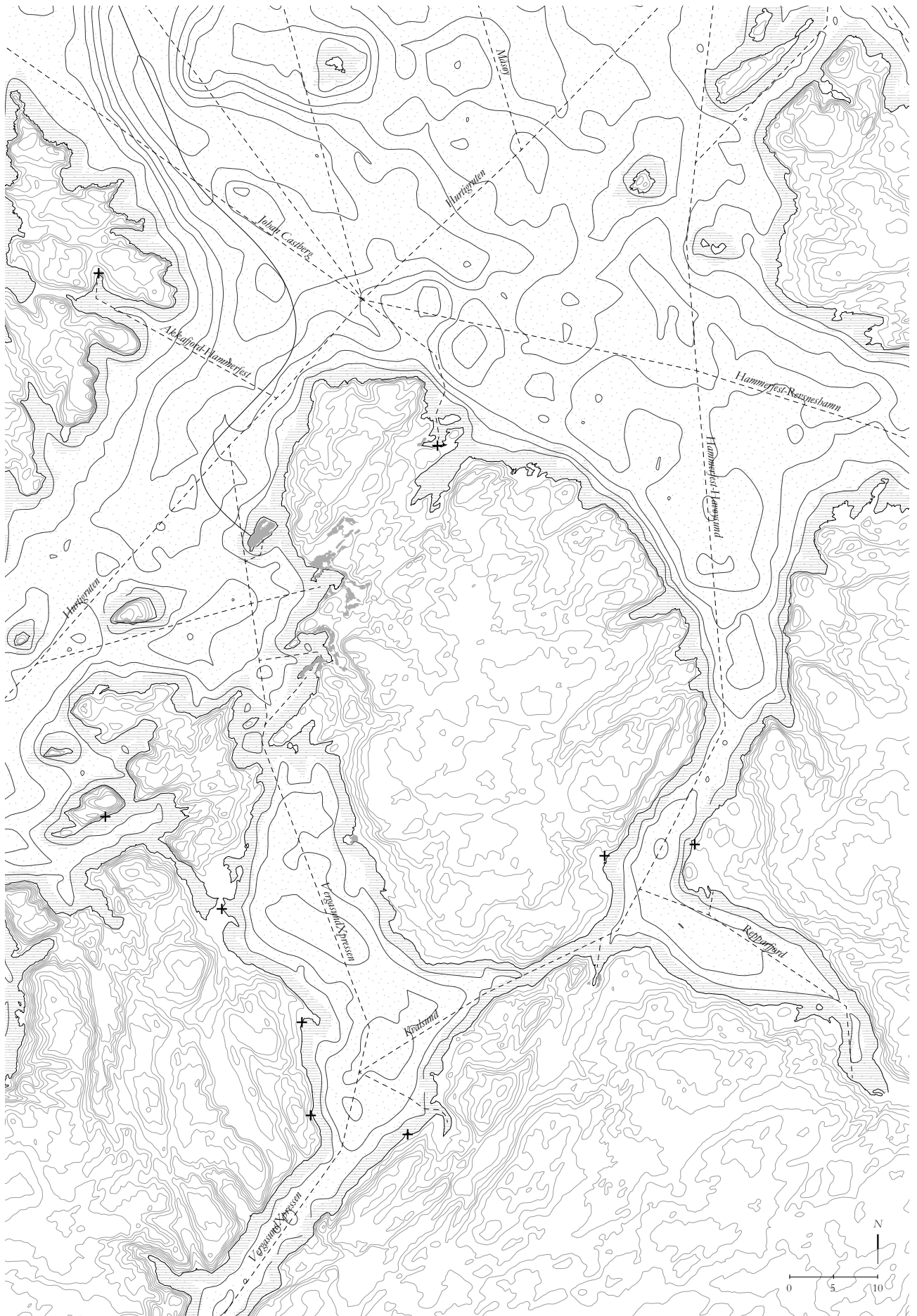
- urban settlement
- industrial area
- fresh water body
- ▨ forest



Kvaløya Island

Source: Geonorge.no.

■ urban settlement
+ fishery activity
--- maritime connection

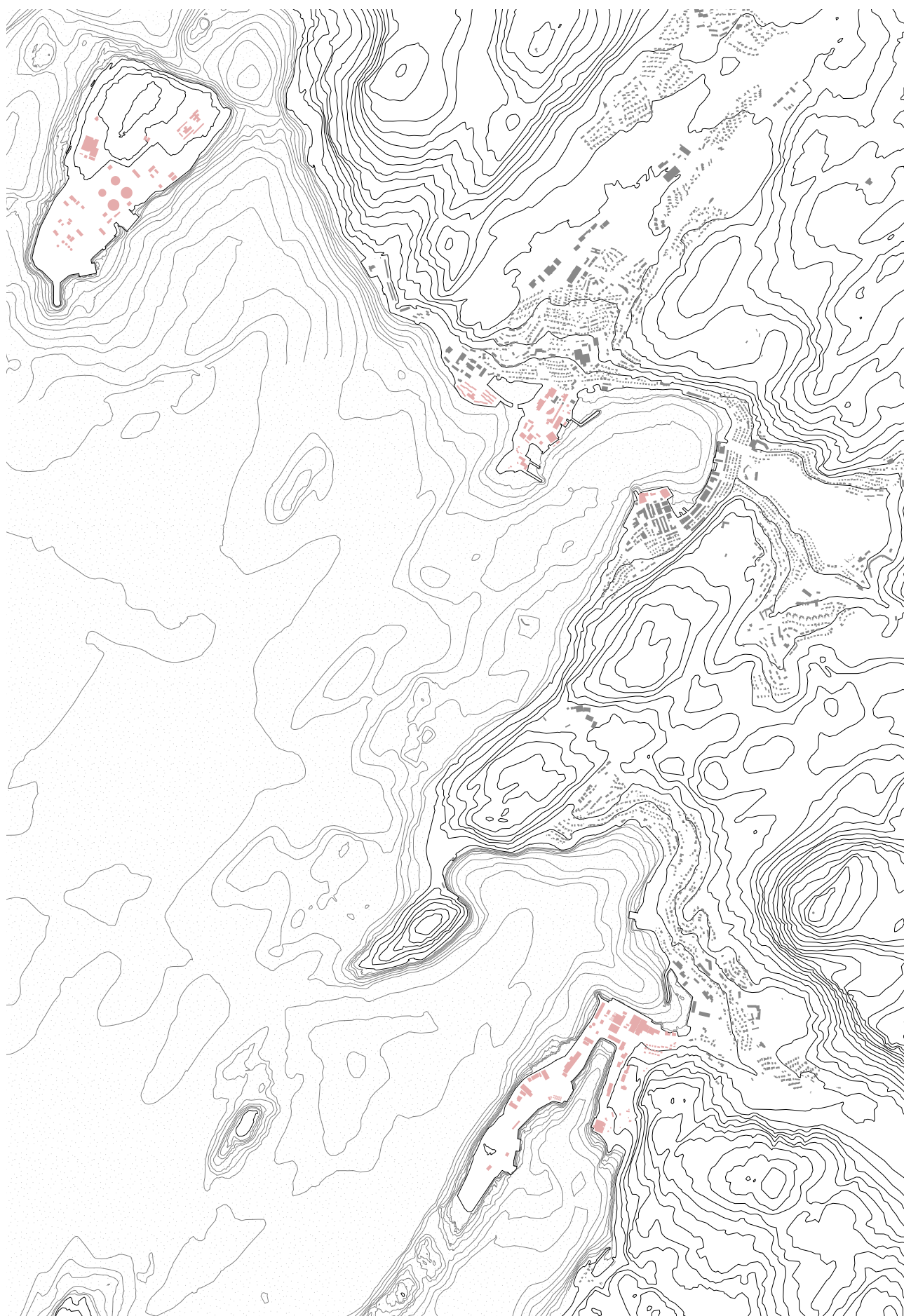


Industry - Settlement

The population of Hammerfest city is around 8000 and of the whole municipality around 10 500 people (NL.wikipedia.org, 2019). The region is characterised by scattered small settlements, with a population ranging from tens to hundreds, with Hammerfest as the main urban centre. These small settlements are situated along the shoreline, connected with ferry lines or roads to the city.

Source: Geonorge.no.

- urban settlement
- industrial area



Operational Landscape

Since its opening in 2007, the Melkøya island hosts the biggest landfill processing facility for natural gas in Europe.

The gas arrives to the site by means of a 168-kilometre long pipeline from the Snøhvit fields in the Barents Sea. After being liquefied, the gas is shipped with large vessels to Western Europe and North America. Moreover, great amounts of gas arrive from Russia to the port of Hammerfest, where it is reloaded onto Norwegian vessels. These operations are part of the Yamal's project, that expects the arrival of 16,5 million tons of LNG every year, boosting the economy and the maritime importance of Hammerfest and the near town of Honningsvåg.

Source: Equinor Photo Archive

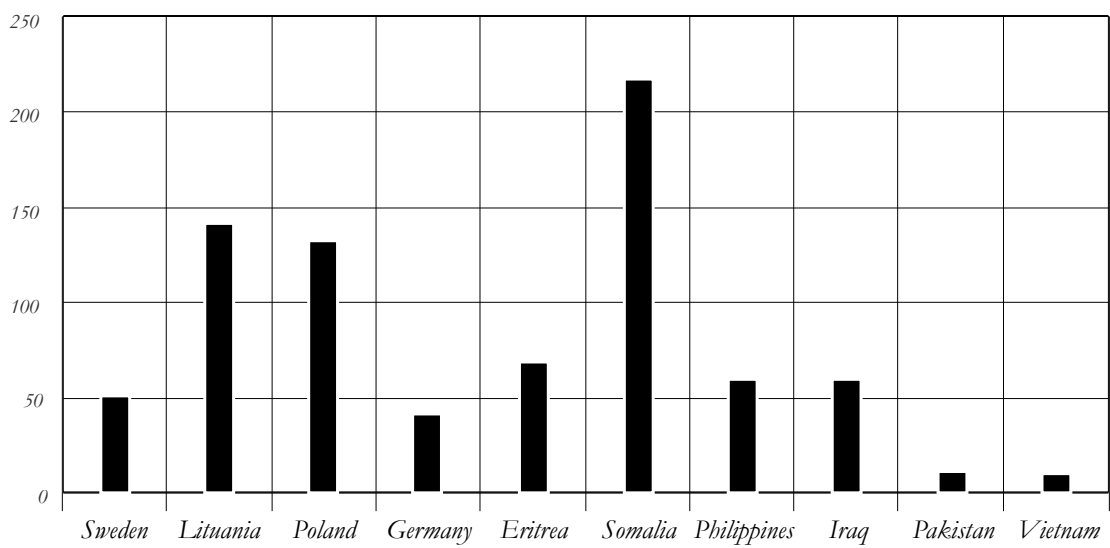


Seasonal Labour

The extreme environment in which Hammerfest is located determines the seasonal character of some of the activities, that have peak periods over the long summers. Moreover, the particular shifts of the offshore industry allows a FIFO (fly-in, fly-out) kind of employment, where workers go back to their hometowns in Norway during the weekends, or during their off-periods.

The multicultural composition of the community can be a symptom of such dynamics, offering imported labour-force for harsh jobs.

However, as seasonal labour becomes increasingly expensive, the adoption of automated solutions is enhanced.



Operational landscape

Polar Base, Hammerfest
Picture by author



On top of the World

The city of Hammerfest was taken as first point of a chain of survey triangulation carried out by the astronomer Friedrich Georg Wilhelm Struve between 1816 and 1855. The so-called Struve Geodetic Arc stretches from Hammerfest to the Black Sea, crossing the borders of ten countries and reaching over 2,800 km of extension. Thanks to this experiment it was possible to precisely measure a segment of meridian and therefore to have a proper understanding of the real proportion of the Earth, beyond the cartographic reductions.

Besides its scientific relevance, the Struve Arc has implications in the perception of our world, where the small settlement of Hammerfest represents both the Northernmost limit of life and the first point of an existential mapping.

In light of the current processes of automation and technological enforcement, Hammerfest embodies the most prominent node, the neuralgic point for a future re-mapping, where a new society is taking place.

Source: UNESCO, <https://whc.unesco.org/en/list/1187/>







IV.

Playing against Boredom

The end of labour is to gain leisure.

- Aristotle ¹

play /pleɪ/

1. Engage in activity for enjoyment and recreation rather than a serious or practical purpose.
'the children were playing by a pool'

2. Take part in (a sport)
'I play squash and badminton'

3. Be cooperative
'he needs financial backing, but the building societies won't play'

4. Represent (a character) in a theatrical performance or a film.
'early in her career she played Ophelia'

5. Perform on (a musical instrument)
'a man was playing a guitar'

6. Move lightly and quickly, so as to appear and disappear; flicker.
'little beams of light played over the sea'

(Oxford English Dictionary)

Site: Hammerfest

4.1. From Labour to Play

1. Aristotle, *Nicomachean Ethics*

2. Constant Nieuwenhuys, "New (sic!) Babylon", in *Work, Body, Leisure* (Berlin: Hatje Cantz, 2018) p. 73-76

3. John Huizinga, *Homo Ludens: A study of the play element in culture*. (Ranchos de Taos: Angelico Press, 2016)

4. Marina van Zuylen, "A Proper Occupation". *Work, Body, Leisure* (Berlin: Hatje Cantz, 2018) p. 145-153

The complete automation of production and the demise of occupation is an inescapable future that neither our fears nor our morals can prevent. The end of human labour not only means a change in the economic market, but it determines the dissolution of the only possibility every individual has to serve as a link in the societal system (2). As a common fight for the conservation of our species, this participation to society indeed provides every human being with an opportunity to exist, so that if anyone wants to life and survive, they need to work. By removing the chance of such a contribution, automation deprives humans with their right to exist. How can they find a way to live together?

After losing their action (as defined by Hannah Arendt) due to the capitalistic imposition of economics over political interests, and overlapping the notion of work to the one of labour as a consequence of the technical reproducibility of the artefacts, the intervention of automation will eventually take labour away from the human condition and enforce a nihilistic condition. In reaction to that, Dutch historian Johan Huizinga identifies in the role of play an important component of human life. The condition of the *homo ludens* is the one limited to the dimension of a playful engagement with the surroundings, that brings together all the animal species (3). From cubs to infants, the discovery of the outer world by the newborns is through the action of playing, that in such manner assumes a pre-cultural definition. The lack of intentionality and spirituality of these primordial gestures makes play a meaningful act by itself, beyond biological necessity or individual urgency. Nevertheless, in its delirious faculty, in its intensity, the essence of our cultural nature is preserved. And the free action of playing becomes the first element of a culture.

Within the ludic deliria, a domain of absolute order controls the exterior space of play. Against the imperfect anarchy of the pre-cultural conditions, players establish a perfect, temporal set of rules within which to play. Even the smallest violation ruins the game, depreciating its value. In these plays of social disposition, it is possible to identify, according to Huizinga, the highest form of human interaction. Therefore, the role of the *homo ludens* would supply for the individual needs for occupation.

On such premises, the birth of a new, ludic society can find in Hammerfest the perfect prerequisite to materialise. The transition from a total devotion to production and labour, to a condition of exclusive play, is enabled by the strong enforcement of automation on the territory.

4.2. Boredom and Otium

In opposition to the laborious and fatiguing activities of *negotium*, the Latin culture used to identify the restorative and constructive condition of *otium*, as a state of complete distension and pleasant meditation. The social composition of that society indeed allowed a restricted group of citizens to completely dedicate themselves to philosophical thinking, while the labour of the rest provided any necessity.

In our current society, the complete absorption of work and technology rises an issue of boredom, in philosophical terms. The full-time scheduled sequence of our lives appears to be totally unprepared to the inactivity brought by the demise of labour, while a frantic busyness pervades the meaning of our existence. "The combination of intensive repetitive motion not only blurs the boundaries between work and leisure, but splits up form and content, space and time" (4).

Therefore, a vast branch of philosophic research highlighted the ontological importance of the



5. Van Zuylen, 2018. p. 145-153

6. Friedrich Schiller, *On the Aesthetic Education of Man*, trans. Reginald Snell (Mineola, New York: Dover, 2004)

Image Source: Constant Nieuwenhuys, 12 RADIERUNGEN ZU NEW BABYLON-Interieur met beer, 1970. Collection Fondation Constant

notion of boredom, seen as a fundamental feeling that allows us to re-gain perception of our surroundings, raising our consciousness. This restorative power of boredom was first observed by Thomas Aquinas, who defined it the “sorrow for the divine good” (5). The depressive, painful feeling of inaction and usefulness could be identified as a divine gimmick to remind us of our temporal decaying nature.

Against the violence of such condition, the role of play engages individuals in a meaningful activity, escaping the sorrow of boredom. According to Frederick Schiller, the relevance of play resides in its reflectiveness, despite the levity of its realisation. Instead of shrinking our perception of the world, play would allow us to see the external reality with new curiosity, promoting an optimistic turn of our nature (6).

4.3. New Babylon and the Liberation from the City

From the same assumptions, in 1959, Constant Nieuwenhuys stated his life-time project for New Babylon, the anti-capitalistic city of the future. In a world where automation did away with the notion of labour, Constant attempts to materialise the urban space of the free men, who liberated from the burdens of production, can completely dedicate themselves to the levities of play.

Presupposing the gained ability to shape one’s own living space, Constant’s proposal limits to the definition of an infrastructural space within which the maximum extent of freedom could be guaranteed. As nomadic communities, humans can freely move along this ludic infrastructure, using movable, modular structures to compose and re-shuffle their ever-changing environment.

New Babylon represented only the first attempt to reflect on the possibility of the new way of inhabiting the urban environment that derives from the advent of the *homo ludens*. While working on his first proposal, Constant made contact with the members of the Situationist International, in particular with Guy Debord, with whom shared a common view on social alienation deriving from the contemporary political framework.

Ruthlessly criticising the status of the city, Constant and Debord worked on the theorisation of the so-called Unitary Urbanism.

From its early stages, Unitary Urbanism suggested the use of the territory as a defence practice against the planning strategies of rational urbanism, considered to be guilty of creating spaces of alienation for both individuals and society. A legitimate reactionary purpose aimed to encompass aesthetics, architecture and politics in the making of the urban fabric, strongly opposing to a method that manipulated human beings as objects in the space.

Rather than an aloof, technocratic project of the city, the situationists promoted a more sensitive, intimate approach to the city, where space is loses its functional, profitable value, in favour of a more social constitution.

In that regard, the rejection of the utilitarian use of public space, proper of a rationalistic approach to urbanism, runs parallel with a ludic promotion of life, where the free play and the free use of urban forms are symptoms of an informal, less-deterministic project of the city. Thanks added ludic value of space, the subject (human) could reconnected with object (the urban space), thus resulting first in the enhancement of active, public life, and then in the establishment of a new society based on the union between the city and its inhabitants: hence the name of Unitary Urbanism.



Com. Fant
II / VIII



Playgrounds of Hammerfest

Pictures by author





Playgrounds of Hammerfest

Pictures by author





Playgrounds of Hammerfest

Pictures by author



4. Playing against Boredom

4.5. Problem Statement

The social value of play, resulting in the engagement in a shared purpose, can be regarded as a counter-solution against the inactivity carried by boredom. The end of production, in particular circumstances of Hammerfest, could mean the total conversion from the such processes of economic profit to the freedom of playing in the outside. The separateness of the island, as a closed system, could allow the success of new dynamics. A new society is possible to be realised.

2.4. Research Question

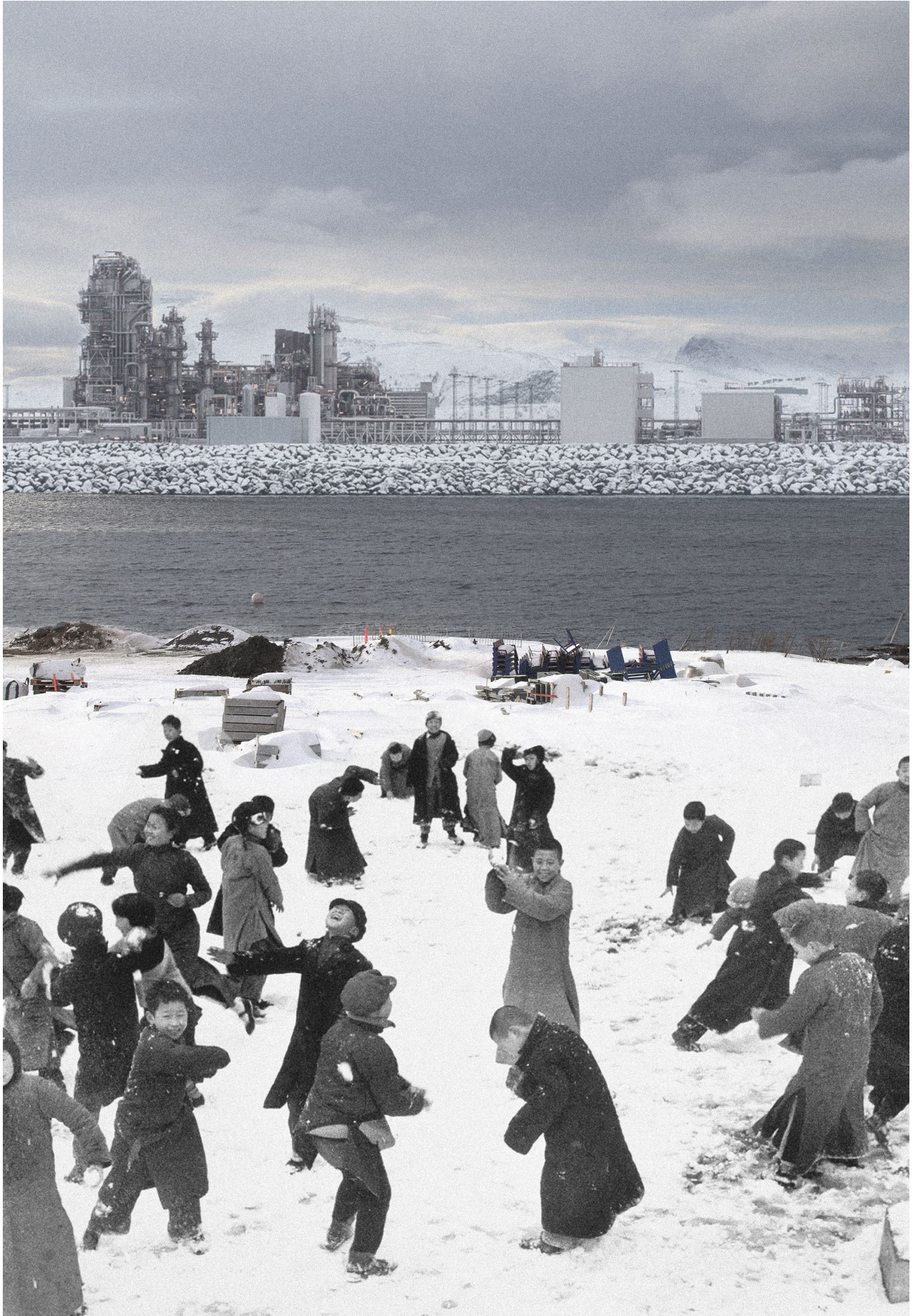
How is it possible to envision the passage from labour to play in the community of Hammerfest, as a necessary response to full automation?

Sub-questions

1. *How can play become a lens through which read the upcoming change in the landscape of the island?*
2. *How can architecture be an agent that materialises the new condition of homo ludens?*
3. *What specific form of play can endure the social cohesion between individuals, and between their bodies and the landscape?*

Play-scene

Collage by author.
 Source: Hanku, March 1938. *Children Playing in the Snow*. Picture by Robert Capa
 © International Center of Photography / Magnum Photos
 Melkoya Island, Hammerfest. Picture by Olaf Schneider.



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