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Ageing infrastructure and urban transformation

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Maison du Canal along the Spiere Canal. The former lockkeeper's house has become a bar with a terrace. Three million euros were spent to dredge the canal after it got out of use for coal transport, and is now accessible for recreational purposes.
Sources: Geneanet (left), City Hall Spiere-Helkijn (right)

context

This design studio focuses on the **relation between infrastructure, architecture and urbanism**. Architects rarely design infrastructure. However, the presence or lack of roads, railways, waterways, sewage etc. significantly influence how we live in our urban environments. Especially in dispersed territories (low-density urbanisation) infrastructure networks can be considered **'lifelines'**. For example, it is only because of the abundant presence of roads and railways that it is possible to commute daily over long distances in low-density areas.

> "Architecture has been designed as the *art* and *science* of *designing* and *constructing* buildings and other physical structures for human shelter or use. In this definition the word shelter is meant in the broadest sense of the term. Going back to ancient times people needed shelter for protection against storms, rain and snow, direct sunshine and cold weather. For protection against hostile tribes cities were built surrounded by massive city walls. Dykes were built to protect against floods. Besides the need for shelter an increasing need for mobility emerged. For mobility of people roads and waterways were built. Aqueducts were built to transport water over long distances. With the industrial revolution there was also an increasing need of energy and energy transport, requiring the design and construction of energy supply systems. To save densely populated cities from catastrophic water pollution, sewage systems were designed and installed. Large railway systems were built to enable long-distance transport of people and goods by train. Via bridges, Viaducts and tunnels otherwise isolated transport networks became connected. All this illustrates that a modern society is inconceivable without a well-developed physical infrastructure." (van Breugel, 2017, pp. 53–54)

Today we are challenged to rethink our urban environments towards **more sustainable and resilient alternatives** due to large-scale urban questions such as a changing climate. At the same time, many of the underlying infrastructures are ageing. Infrastructure is either overused, underused, polluted, degrading, abandoned or simply outdated. Many of these 'lifelines' were constructed in the second

half of last century and have average service lives of 50 years. For example, a lot of bridges over waterways in Flanders are in urgent need of either renovation or replacement.

The decisions that we make for infrastructure today will define how we live in our cities in the coming decades, if not centuries. **What to do with these ageing infrastructures?** To renovate, restore, re-use, musealise, retrofit or renaturalise? In dispersed territories, city and land are intermingled, going beyond the traditional notion of a city as a compact figure. Dispersed territories have been put forward as 21st century cities. What is the infrastructure that we imagine for this 21st century city? The urgent challenges that their infrastructures are facing provides an opportunity to rethink dispersed territories.

These infrastructure challenges are complex and require answers on different levels (politics, policy-making, urban planning, engineering, heritage). While architects cannot solve these infrastructure issues on a large scale, we can reflect on their local impact and imagine future scenarios by using our design skills. Rethinking these lifelines could result in new forms of urbanity. As architects, we have the skills to imagine future scenarios that go beyond functionalities. What are the spatial qualities of existing infrastructure? And how can they contribute to more sustainable city-land dialogues?

This design studio deals with **punctual architectural interventions** that can re-imagine the territory on a larger scale. It operates at the intersection of urbanism, architecture and urban design. The output is thus an individual architectural intervention framed in larger infrastructure networks.

This design studio builds further on the results of a research elective 'Mapping lifelines and tracing tendencies in the dispersed city' (2020-2021 sem 2) and a summer school 'Eurometropolis 2.1: a blue space in transition' (summer 2021) that focused on the Eurometropolis Lille-Kortrijk-Tournai. This means there is a large amount of existing material available.

site of investigation

We will work on the territory of the **Eurometropolis Lille-Kortrijk-Tournai**. It was the first European Grouping of Territorial Cooperation (EGTC), established in 2008 as a legal instrument to improve cross-border cooperation. The region is situated at the heart of Europe and covers 3.589 km2 of Belgian (Flemish and Walloon) and French territory, including 2,2 million French or Dutch-speaking inhabitants (Eurometropolis, 2020). In total it consists of 157 municipalities, of which 39 in Flanders (South West Flanders), 23 in Wallonia (Wallonie picarde) and 95 in France (Métropole Européenne de Lille - MEL).

The administrative grouping of these three regions is no coincidence: South-West Flanders, Picardy Wallonia and Lille Metropolis have a rich **shared history and culture**. For example, a large part of what today is the *département du Nord* [North Department] in France used to be *Frans-Vlaanderen* [French Flanders], part of the historic county of Flanders until the eighteenth century. During the nineteenth century, declining agriculture and crafts stimulated Belgians to work in the strongly industrialising North of France (Demasure, 2011, pp. 432–434). A remnant of this shared history and culture is the mixed use of French and Dutch language across the territory. Similar to social and cultural networks, infrastructure networks like waterways and roads don't stop at administrative borders. Moreover, some even show a strong coherence within the cross-border region, such as the water network, forming a *carré bleu* [blue square], even called a Blue Park (Debaere & Noels, 2018).

The development of the Eurometropolis as a dispersed territory has strongly relied upon a number of infrastructures. However, many of these face the above-mentioned challenges linked to ageing. For example, the bridges of the river Lys require renovation due to their crumbling concrete, numerous historically important former flax sheds are in such poor condition that the only option seems to be tearing them down, and canals have become too narrow for new ships and need constant dredging to prevent siltation. The challenges of ageing infrastructure in the Eurometropolis are both general and very specific. As these infrastructures are the lifelines of the dispersed territory, rethinking them could be a way to reimagine the whole territory.

assignment

PART 1 - analysis (territorial scale) - in group, W1-3

In the first weeks we explore the larger scale of the infrastructure networks based on existing mapping data. We start mapping the ageing infrastructures and grouping them accordingly. This results in a list of ageing infrastructures across the Eurometropolitan territory.

PART 2 - analysis (from territorial to local scale) - in smaller groups, W4-6

Each group studies the (hi)story behind the ageing infrastructure and maps its past and current condition. What is or was it used for? Why is it 'ageing infrastructure'? And what are the different future scenarios? What are the potential opportunities and threats that arise if the infrastructure would be:

- renewed? To extend its existing use.
- redesigned? To convert the capacity to support different modes.
- repurposed? To convert to an alternative function.
- removed? To take the infrastructure out of the space it occupied.
- …

This list is based on the four options of Givoni & Perl (2020), who studied how to rethink transport infrastructure.

PART 3 - design (architectural scale) - individual or small groups, W7-12

The main and final objective of the design studio is to come up with an architectural intervention that takes advantage of the qualities and potential of existing infrastructures. This can be done individually or in small groups. How can these existing structures become catalysts for a new way of living, working and dealing with the landscape in dispersed territories? These punctual interventions can range from interventions in public spaces, a construction or building.

methodology

fieldwork

In part 1, in order to get to know the territory we'll spend time on site to explore, take pictures, sketch, do interviews etc. The results will be brought together in atlases with a collection of mappings representing the analysed territory.

design exploration

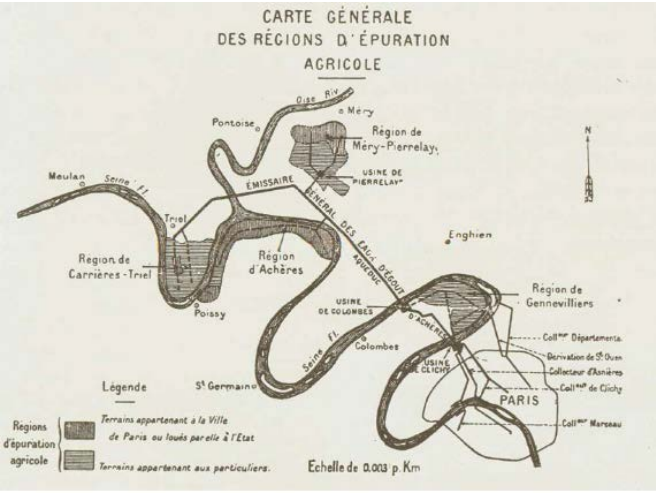
In part 2 and 3, we'll focus on different types of drawings to explore the design possibilities of the chosen sites.

- Drawings that link the **larger scale of the network(s) to the specificity of the intervention sites** e.g., by superimposing large- and small-scale maps.
- Drawings that express the **specificity of the local surroundings** e.g., axonometric drawings, site plans and transects (landscape sections).
- **Conceptual drawings** that explain the opportunities and threats of the chosen sites e.g., schemes, collages and sketches.
- Drawings that express the **architecture of the developed interventions** e.g., materiality, dimensions, sections, plans and structures.

references and inspiration

Nijhuis, S., & Jauslin, D. (2015). Urban landscape infrastructures. *Research in Urbanism Series*, 13-34 Pages.

https://www.rius.ac/index.php/rius/article/view/66

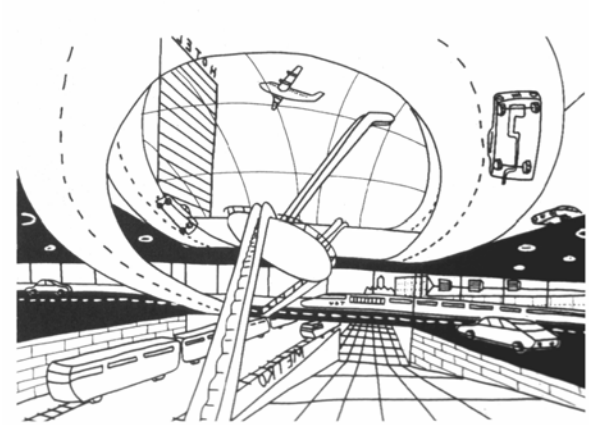


Gerard Richter - atlas

https://www.gerhard-richter.com/en/art/atlas

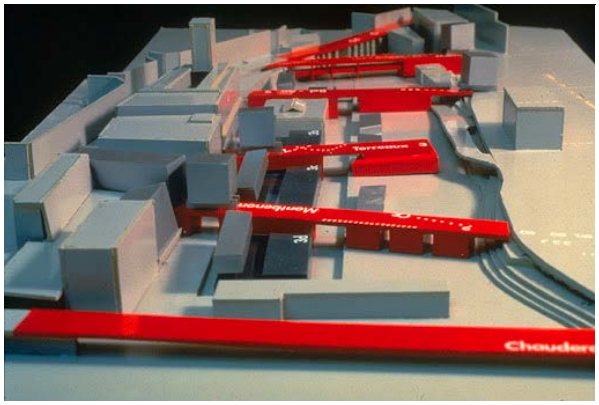
OMA - Euralille, Lille Métropole

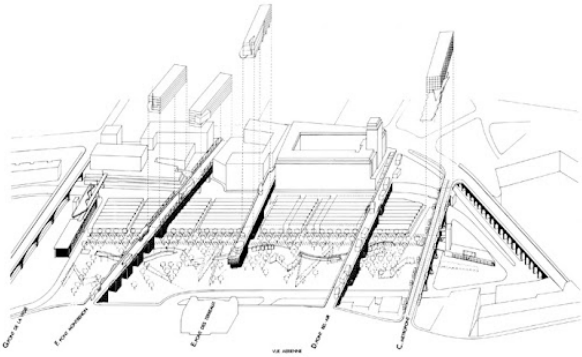
https://www.oma.com/projects/euralille



Tschumi - Bridge City, Lausanne

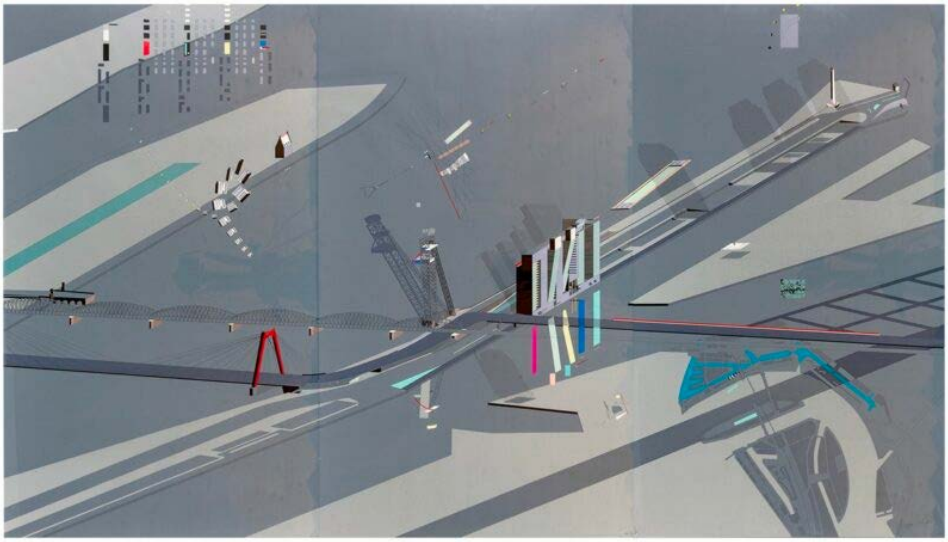
http://www.tschumi.com/projects/31/





OMA - bridge Boompjes, Rotterdam

https://drawingmatter.org/boompjes/



Luc Deleu - De Onaangepaste Stad

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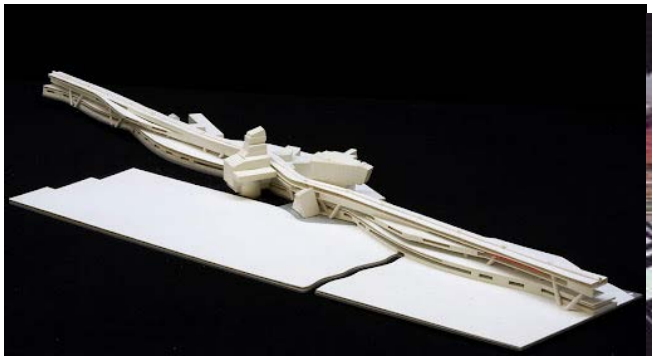
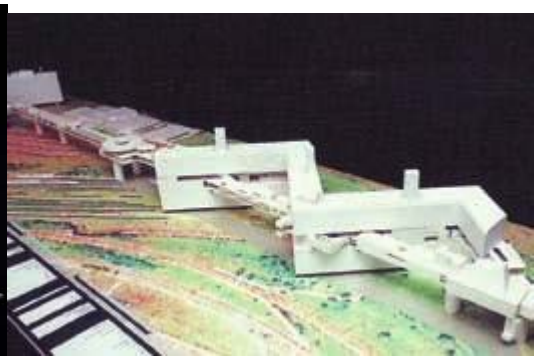
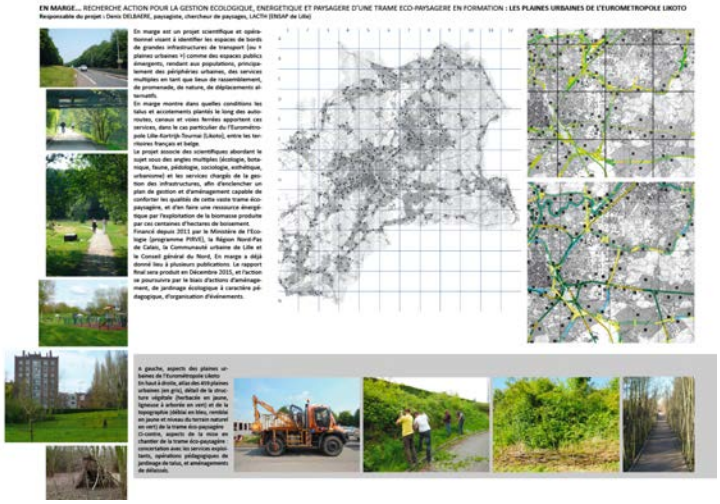




Denis Delbaere - La forêt lineaire (the linear forest), Lille-Kortrijk-Tournai

https://journals.openedition.org/paysage/9032



Maxwan - Leidsche Rijn Bridges, Utrecht

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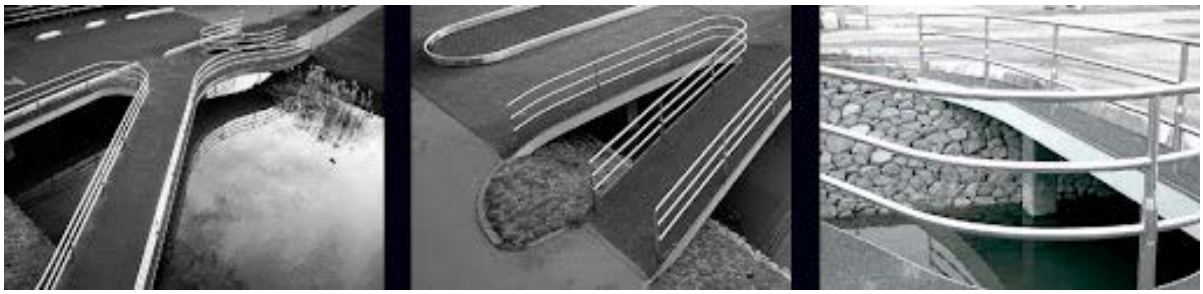

Ney - City Bridge Nijmegen

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Gilles Clement - Environment Approaches for tomorrow

https://www.cca.qc.ca/en/events/2750/environment-approaches-for-tomorrow

https://www.youtube.com/watch?v=4ukll2qZOy8

Shannon & Smets - The Landscape of Contemporary Infrastructures

http://www.planum.net/journals-books/the-landscape-of-contemporary-infrastructures

Folded Space

HOENHEIM-NORD TERMINUS

Strasbourg France
Architect Zaha Hadid Architects
Date 1999-01

The city of Strasbourg prides itself on the development of a tramline which encourages commuters to leave their cars parked on the periphery and use public transport to access the city center. They have invited artists and architects to make designs at key points along the lines – elevating the usually utilitarian transferiums into places of an enlargened and attractive public realm. Zaha Hadid, acclaimed for her fluid structures, fusing land and architectural interventions through the sculptural folding of surfaces, was commissioned to develop the tram station and 800-car park at the northern apex of Line B. As such, the Hoenheim Terminus station/parking complex is representative of the fusion into a new composite attitude. Its synthesis among ground, walls, light and space establishes a relationship between dynamic and static elements at different scales. At the edge of Strasbourg, where transport lines (highway, bus and tram) converge, the terminus building appears as a series of superimpositions, of vectors and space grounded in motion. Sharp diagonals guide cars and passengers towards a minimally enclosed volume of the station. The ensemble appears as an elongated, folded ground plane, at once a car parking surface, a roof canopy and sheltering walls.

The expansive car surface slopes towards the station and initiates a series of simple, yet powerful and sculptural 'folds' of the landscape. The surface itself was envisioned as a 'magnetic field' of slightly curving (responding to site boundaries) white lines on the back asphalt. Car parking spaces have vertical lampposts, which work reciprocally with the tilt of the land – where the tilt of the land is more, the posts are higher; their height decreases as the tilt lessens. The overall effect is one whereby the void becomes a generator of form and whereby the new ground plane is unidentifiable from a pre-existing condition. Infrastructure fuses with landscape producing a new 'artificial nature' which articulates the transition of open landscape, public interior space and the flows of mobility.

Marc Mimram - TGV Station Marseille

https://www.archdaily.com/557081/marc-mimram-reveals-design-for-new-tgv-station-in-montpellier/543d0f62c07a801fe70001f7-marc-mimram-reveals-design-for-new-tgv-station-in-montpellier-image

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