through the cracks

habitat
ruin
soil

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01 INTRODUCTION

Maastricht is a city growing along the banks of the river Maas. It is along these very banks that the old industrial site of the Sphinxstraatkwartier is situated. Once home to thriving industries fed through man-made waterways, today, this site is positioned in-between the inner city and the urban hinterlands, with remnants of its industrial character seen throughout the site. Underneath the fast pace of the city and factory, nature moves slowly, cascading down from the lock towards the fortifications, ever growing through the cracks.

Studying this life through the cracks, the city reveals the constant tension between the natural and constructed elements out of which it is built. By use of the themes *habitat, ruin and soil*, this project investigates the relationship between the strata of city, factory, nature and architecture.

Viewed through the lens of these themes, architecture is not just the building. The project thus concerns itself with the position of the architect as someone who deals with buildings as nodes of human and non-human flows.

By doing this, we can see that humans and architecture are part of the cycles of nature, the cycles of growth and decay.

The project redefines the relationship between the school and the outside world. The typology of the open air school shows how a habitat does not have to be seen as a closed shell or separated territory, but can be an opportunity to reconnect. The street, the park, the courtyard, all become part of the building. Within their daily routines at school, children see that even in the city there are spaces to coexist with nature.

02 NATURAL AND CONSTRUCTED: ON THE PRESENT ROLE OF THE URBAN ARCHITECT

And though it may sometimes seem that our impatient appetite for production has ground the earth to thin and shifting dust, we need only poke below the subsoil of its surface to discover an obstinately rich loam of memory (Schama, 2004, p.574)

As humans, we cannot see nature in an objective manner, always framing it in relation to ourselves. Changing culture and society have historically led to changes in the human view on nature. The human is the wanderer above the clouds, the man taming the wilderness, the scientist collecting natural artefacts. However, current discourse increasingly concerns itself with the materials and flows that guide everyday life in cities. Nature is also the grass growing between the cracks in the pavement or the housecat chasing the mouse. Within this coexistence, humans do not just use or discover nature, they are a part of it. The human is the one who constructs the city: underneath, in between, overhead of the natural. As the land is shaped into urban form, nature in the city simultaneously shrinks to the human scale and expands, running up to the borders of the city and devouring the earth's resources. As humans keep on building, they discover their interrelations with nature, and how environmental concerns require nature to be included in their plans. Consequently, the opposition between nature and city disappears and is replaced by a friction between natural and constructed.

Adapting to this view, architects are left with the task of reinventing what it means to coexist with the natural in the city. The question that lies before us is how we can rewrite the act of building, how we can move away from the broad and empty concept of sustainability towards a grounded view on the natural and constructed as productive parts of the city. Therefore, architects need to find the points of friction between the two elements and take a new look

at their own practices, not only as professionals but also as living beings. This essay is an exploration of the role of the urban architect through the themes of habitat, ruin and soil.

Habitat

Habitat is both a human and non-human concept that describes our common need for a place of residence that sustains our demand. Originating from the fields of biology and anthropology, the term has strong connotations with non-human organisms. Only during the mid-twentieth century the term habitat started to be used by architects. During this time, architects such as Alison and Peter Smithson applied theories from biology to illustrate the different ways of living on a landscape, grounding autonomous architectural objects in their context (Van den Heuvel, 2020, p. 9). They opposed the countryside as a place where humans formed their habitat in landscape with the city where the human habitat is landscape. In cities, our feet move from slab to slab, our heads can find cover under a roof anywhere, our bodies are enclosed in the climatized spaces in between walls. Consequently, the ecology in the city is increasingly determined by human architecture.

The use of the term habitat helps to see the human as one among many organisms. From this perspective, the opposition that the Smithsons saw between the human habitat and the landscape disappears. The habitat is not only the house, but includes all aspects of life. Rediscovering where our constructed world meets the natural, requires looking at our habitat from a new perspective. Within this expanding frame all of the city's inhabitants are included. Acknowledging the cohabitation of the human and non-human reveals unresolved imbalances. In a natural situation habitats are fully entangled. Imbalances exist but are compensated by moving and adapting. In cities, and on the smaller scale in architecture, the human habitat becomes dominant. An architecture that is receptive to the entanglement of habitats, might also be an architecture in which the human requires less so to give space to others. Not all spaces need to be climatized. Not all need to have a roof, a wall, a window. Not all need to constantly be inhabited by humans. Furthermore, to bring balance back into the city, architecture needs to accommodate adaptation. The human and non-human can grow and shrink, changing with the seasons and with the building's individual users.

Whilst the demands of human habitats

have remained similar, the landscape of which it is a part and the technology available for its construction have altered over the past decades. The fundamental principles underlying architecture have long been explored. During the 18th century, Laugier reframed architecture by reducing it to the image of the 'primitive hut'. Architecture is depicted as a basic shelter, created as an imitation of and a collaboration with nature (Laugier, 1977, pp. 11-12). Reducing architecture to its basic elements, as done by Laugier, contrasts with the contemporary self-functioning machine that architecture has become. However, the basic elements of architecture are no longer enough if we look at the extents of the urban habitat. The experience of the city is an unidyllic one, filled with polluted views, noises and smells. Therefore, a contemporary building, more strongly than ever, filters and recreates the outside world in its interior. A sensitive approach to architecture takes account of the way daylight enters in different seasons, how a building heats itself up and cools down, how the air enters and leaves the building. Instead of using material to create issues and subsequently using machines to solve them, the architecture itself is the most important tool in creating suitable conditions for living.

Ruin

Even though humans might try to set buildings in stone, this stone weathers over time, by algae, wind, human touch. Ruination symbolizes the overtaking of the natural over the constructed. In the ruin, decay of what is constructed by men offers a place of growth for nature. However, as described by Georg Simmel, out of the friction between the natural and constructed arises a new whole (Simmel, 1959, pp. 259-260). In this whole, the human accepts the impact of nature on their construction, making the material take a turn back towards its roots. The image of the ruin shows that architecture is not about creating objects. Instead, it is about making a node of flows that evolves over time (Latour & Yaneva, 2012, p. 109). Over time, the unpredictability of architecture becomes visible. The built grows further away from what the architect drew on paper.

The architect can take the ruin as a guiding theme to view the building as part of natural processes. As urbanist Frits Palmboom explains, both landscape and architecture are solidified versions of time (Palmboom, 2010, pp.34-37). Even though architecture is constructed within months, the building takes position in a longer stretch of time,

interrelated with the slow development of the landscape and of urbanism. Growth and decay, slowing down and speeding up, designed and undesigned, manifest in architecture. Cyclical movements of different tempos show themselves in façade and interior, in load-bearing construction, in technical installations, in finishes (Palmboom 2010, p. 37).

In the context of the ruin, the architect alters their human-centered perception of time in order to visualize the multilayered changes caused by nature. Whilst a person cannot truly understand climate change, they can imagine the weathering of a material or the moving of soil. By making the impact of nature small, it can be increased once again. In architectural design this can be done in a direct way, by offering places for nature to overtake, but also in an indirect way. An example is the work of Peter and Anneliese Latz, in which sites are approached as ruins. By gleaning elements of the site and using them anew, their work is a practical and metaphorical display of survival (Iliescu, 2007, pp. 158-165). In similar fashion, architects can use collage of existing elements and the image of the ruin as a tool to evoke a series of human and non-human memories and possibilities.

Soil

To the human eye a building is made up of layers or floors existing on a surface. Poking below this surface demonstrates that it is more than merely a plane that we can use for transportation, production or being. Historically, the invisible mass of the earth has been visualized as a multilayered carpet. Visualizing the soil, even if only artistically, displays something otherwise uncharted (Leatherbarrow, 1999, p. 175). In case of the earth, visual representations display pedogenesis or soil formation. This process of layering is usually determined by substrate and parent material, climate, topography, vegetation and fauna, and time (Viganò & Guenat, 2022, p. 53). Formation of the urban soil is determined by another factor: human intervention.

In the past, human activity in cities has been has been defined by soil-destructive acts such as pollution. The current aim for coexistence with nature emphasizes the soil-regenerative qualities of the layers that architecture adds to the soil. In the city, the multilayered carpet of the soil becomes an unordered patchwork that is constantly in motion. An urban soil is one in which natural and constructed coexist within the layers. For example, the uppermost parts

of the urban soil are often made up of exogenous materials such as demolition waste or compost (Viganò & Guenat, 2022, pp. 54-55). The rapid formation of the urban soil reflects the dynamic system of cultural, climatological, productive and ecological functionalities (Viganò & Guenat, 2022, pp. 57). Nowadays, designs on an urban scale take into account how this life above is intertwined with the life of the soil below.

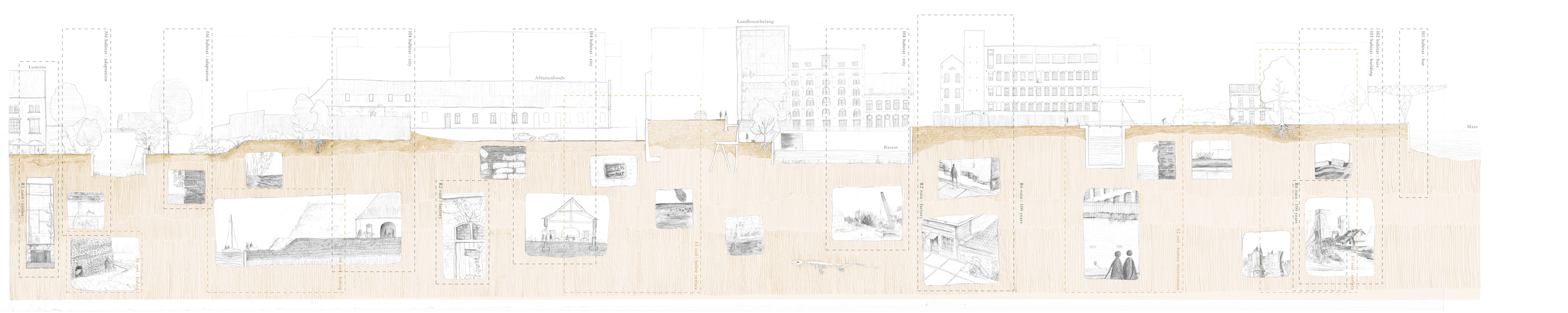
The soil below our buildings is a milieu of its own, tightly bound together with habitats such as the human one. Architecture weaves together the plan and section of the soil, leaving its traces on both. Within this act, the architect acknowledges the conflicts that remain within the coherency of their design (Schwarz,1949, as cited in Moravánszky pp. 80-82). Buildings replicate the surface of the ground, meanwhile sealing the soil and preventing further soil formation. Still, architecture can affect the soil and its milieu without destroying it. The architect leaves open ways for the soil to be in contact with climate, vegetation, fauna and time above. Instances where the soil and surface meet are highlighted, with elements such as a drainage pipe, a small gradient difference, a slope making explicit how the building functions in relation to the soil (Bianchetti, 2022, p. 89)

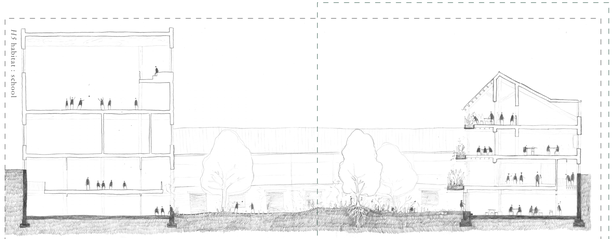
Conclusion

Shaping the mutual relationship between nature and city is architecture, the urban architect, who consciously works against their own human-centered perception of the city. The themes of habitat, ruin and soil highlight how architecture causes friction between the natural and constructed. The architect uses this friction, not only as a static given, but as a process directed by time. The building is designed as a node for the ecological flows of the city, providing habitats for various organisms. Lowering walls of the city, of the building, letting the non-human through, increases the friction between the natural and constructed but also provides grounds for cohabitation.

03 THROUGH THE CRACKS

The scroll is a non-linear representation of the project and its site. The three themes, divided into index cards, guide you through the section, from Maas, to fortification, and back again.


Lumière
f6 habitat : adaptation
f6 habitat : adaptation
f4 habitat : city
Affuitenloods
f4 habitat : city
Landbouwbelang
f4 habitat : city
Bassin
f1 habitat : bar
f12 habitat : bars
f13 habitat : building
Maas
R1 rain : cycles
S6 soil : hedges
S6 soil : hedges
R2 rain : factory
S3 soil : below surface
R2 rain : factory
R6 rain : 100 years
S2 soil : human intervention
R2 rain : roofs
S1 soil : surface



ff1 habitat : school

R2 ruin : 2 year 1
R3 ruin : an hour

S3 soil : nesting

S4 soil : dripline

H1 HABITAT: HUT

Over 6000 years of human settlement here, in Maastricht, started with huts built nearby streams or rivers (Het vakwerkhuis, p. 28-31). The timber pile, dug halfway into the soil, supports the roof made of sods or grass. Sticks, twigs, loam enclose the space. Time moves quickly, mold eating away at the piles.

H2 HABITAT: HUIS

Farmland is taken up. The building needs to last as long as the land. No longer using the soil as its stabilizing element, the structure above ground has to keep itself upright. In Maastricht, the vakwerkhuis is built. A stone foundation, stone base, timber and loam walls, a thatched roof. Time leaves it traces on the building more slowly.

H3 HABITAT: BUILDING

On the site, a monastery is built. The stone is taken from the marl quarries nearby. It is one of the first made of this material in Maastricht. Ten years pass, nothing seems to happen. A hundred years pass, can I see the footsteps carving out the stairs? Two hundred years pass, can I see the traces of the rain on the façade? Only as the monks move out, plants can start to grow and walls crumble. Who's territory is it now?

H4 HABITAT: CITY

Human hands take down the monastery and build the Bassin. More people are moving around, in buildings of brick, timber and steel. As the fortifications turn factory, the cannons are taken out of the Affuitenloods, and people move in. Around the Affuitenloods, floors of asphalt and concrete and steel fences attempt to drive out the other inhabitants of the riverside. The factory becomes an island only accessible to trucks and workers. As pollution grows, the buildings for humans increasingly filter the outside world in their interior. Nowadays, the human habitat constructs the landscape of the city.

H5 HABITAT: SCHOOL

Where once was a hut, a farmhouse, a monastery, a factory is now a school. As people are let into the factory walls, industry merges with living. As nature is let into the walls of the school, it merges with learning. The school, sunken behind its walls, is sheltered from the city. During the day, however, the walls open up, letting the outside influences in. The children share their open air classrooms with what grows outside. Closest, these are the plants growing in the shallow planters. The plants grow, flower, wilt. Different insects visit on occasion. Besides seeing how nature can thrive in places where space is made for them, they see it pop up in places it shouldn't.

H6 HABITAT: ADAPTATION

Outside the walls of the school, in the courtyard, in the park, the black redstart adapts by moving its nest from a cliff to a factory building or ventilation duct. In a pile of sand discarded under a bridge, a bee colony builds their settlement. St John's wort throws out thousands of pollen, making sure that one settles between the cracks of the pavement. The butterfly bush thrives on the marl grounds, growing everywhere, growing even more. The lizard still climbs the fortification walls that were once built to protect the city, but now protect them. Decay of the fortifications offers a place for passage, part of the habitat humans are willing to share.

R1 RUIN: CYCLES

Bright and clean yellow plaster cover the walls of the Lumière cinema. Until a few years ago, the natural overtook the construction of this former wood workshop. Architects and builders removed the traces of time from the outside. On the inside these layers are still visible in the discoloration of columns and walls. The building's skin has undergone a cycle of building to ruin to rebuilding.

R2 RUIN: FACTORY

If ruination symbolizes the overtaking of the natural over the constructed, can the Sappi factory be considered a ruin? On its site, building upon building is built into a maze of foundations, bricks, wires and concrete that even its users do not understand. Materials are decomposing. Growing up from here are the plants that creep up through their cracks.

R3 RUIN: AN HOUR

An hour passes by, children and their parents gathering at the entrance under their umbrellas. Rain fills up the gutters, they can see it move back to the ground. Rainboots dirty the floors of the hallways.

R4 RUIN: A DAY

A day passes by, children work inside and outside. They concentrate to learn how to count, and they play during the break. They read a book in a quiet space, and build a hut outside. One of the plants in their outdoor classroom grows a new leaf.

R5 RUIN: A YEAR

A year passes by, children learn and grow up. Inside, they are the main indicators of time passing, leaving footsteps and traces of hands. Outside, once well-kept terraces start to become emptier in places, growing over in other spots, seasons passing by. The timber columns start to turn grey.

R6 RUIN: 100 YEARS

A hundred years pass by, is the building still a school? Is what I drew on paper no longer there? Will it start ruinate like its neighbours, where the human use lessens, and the natural takes over? Will it be rebuilt like its neighbours, where a new building is constructed on top of the remains of the old? Or will it be upkept, like the cinema, and polished up again?

S1 SOIL: SURFACE

Following the city scape of Maastricht, we see the silhouettes of buildings, trees, the places where they touch the concrete, asphalt, the ground. Only in some places, the city hints at what is below. The roots of the maple tree crack through the pavement. The lock moves water down deeper than the surface we can see, plants on its walls and people in boats disappearing under street level.

S2 SOIL: HUMAN INTERVENTION

We start to notice the differences in terrain. From the river Maas, dug deeply into the landscape is a nineteenth century system of canals and sluices. 46,23m above NAP, a carved stone on the façade of the Affuitenloods tells us. Formation of the strata of the urban soil is determined by one main factor: human intervention. On the factory site, 46,23m above NAP, the uppermost parts of the soil are made up of exogenous materials. The buildings are built on demolition waste, material from the fortifications and from the city's ceramic and metal industries.

S3 SOIL: BELOW SURFACE

Poking below the surface, we discover how life at the level of the roots is heavily influenced by what is happening above. The water isn't empty, kelp is growing below its surface. The bridge is not hollow, but filled with soil and cables. The asphalt on the parking lots shields the soil from water, growth and regeneration. The Affuitenloods is held up by its brick foundation, resting on the soil.

S4 SOIL: DIGGING

Digging away the asphalt and soil on the site, the Affuitenloods foundations are uncovered. At 43,23m above NAP, new concrete foundations are cast. The school building sinks behind the Affuitenloods and below the bridge. Its concrete floor replicates the surface of the ground, meanwhile sealing the soil and preventing further soil formation. The building surrounds a courtyard, where the soil is in contact with climate, vegetation, fauna and time above.

S5 SOIL: SENSING

Going into the building, the ground sinks below the level of the city. In the building, instances where the soil and surface meet are highlighted. A drainage pipe, exposed on the façade, brings the water down, spouting out at ground level and touching the rocks. In the playground, children play with a water pump that brings rain water up again. Below the colonnade passage, hiding inbetween the Affuitenloods foundations and new built walls, children feel as if they are underground. Inside the building, with a small gradient difference, a slope, they can look out over the soil at different levels, experiencing how it is to be below.

S6 SOIL: HIDING

Underneath their feet, going deeper into the soil, traces of past habitation remain. What we cannot see are the timber piles of the first settlements, the tools they left behind, the Mesasaurus that used to swim here. Some of these historic traces can still be experienced above ground, where the fortifications were built overhead and underneath. Where the school connects to the outside park, children find an extension of their playground, a place for discovery with passages crossing underneath the soil.

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