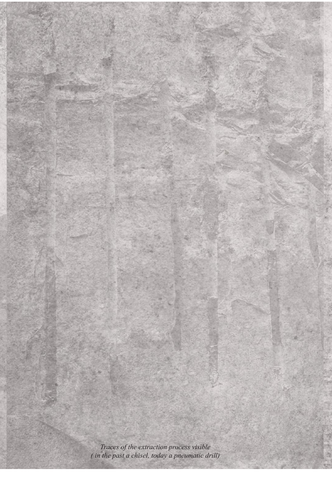
Cnemia Siphonophylia cylindrica

Michelinia Favosa (cnidarians)

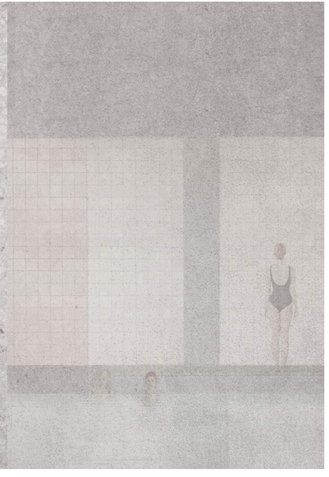
Zaphrentis crassus



*Traces of the extraction process visible
(in the past a chisel, today a pneumatic drill)*

*Surface sawing by special equipment, or a surface dressed by axe in a way to
acquire the stripes ornamentation characteristic for stone (Stoff-meisel)*

Concrete Tarazzo, limestone aggregate and powder can be used

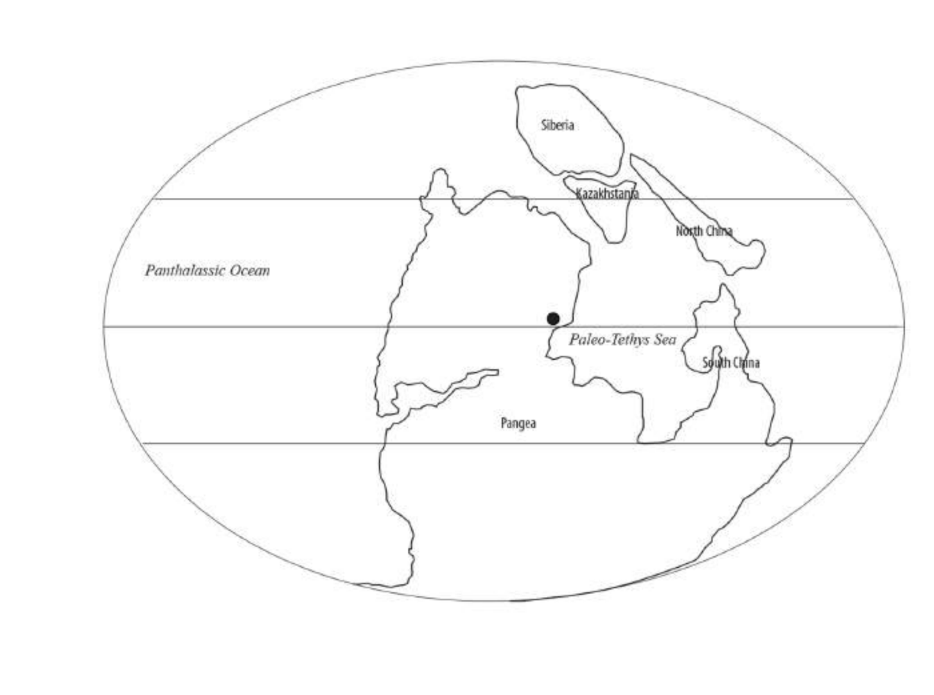


Liminality of the space:
reconnecting materiality and embodiment in the design of the swimming pool.

During the Carboniferous period, today's Belgian territory was the place of the tropical sea. 340 million years ago, a fossil of marine organisms in a tropical sea, entrenched in the micro-crystalline mass, was transformed in a process of sedimentation into the Belgian Blue Limestone. In a piece of limestone, numerous fossil marine animals have been tightly compressed, which gives it high durability. It is a very characteristic feature of Belgian Blue Limestone that those organisms are visible in the surface, thus the authenticity can be inferred from it. In its broken side one can find them in shining sparkles, whilst in its polished side, in white shapes.

Could be a better spolia in-re (the prehistoric world is hidden) and at the same time better material for reuse (in-se)?

|01



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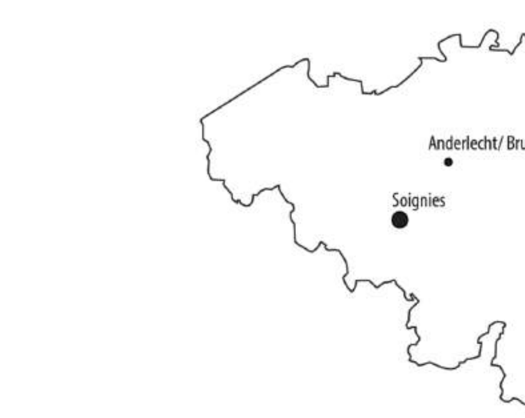
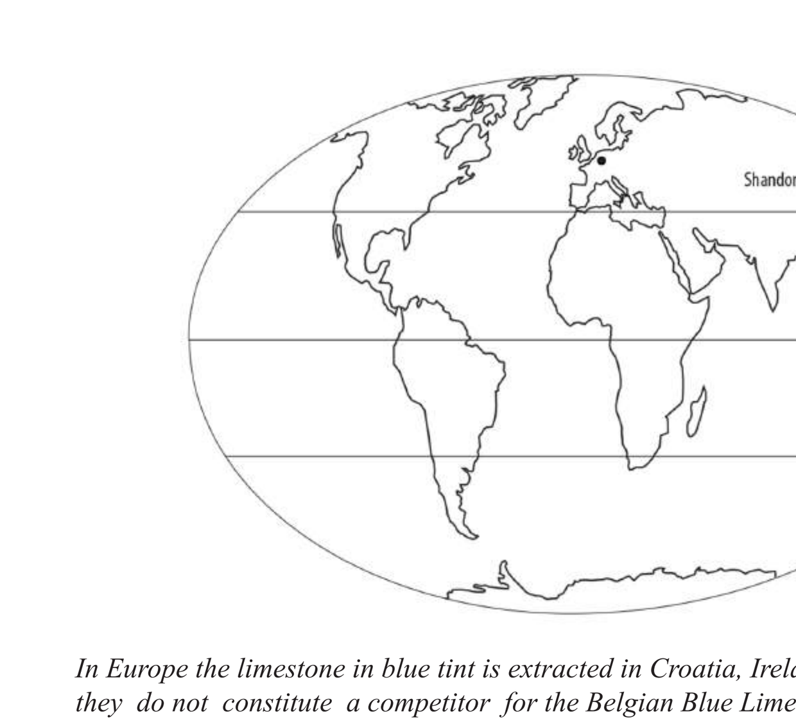


Belgian Blue Limesone quarries are located in the city of Soignies, 38 km from Brussels.



In Europe the limestone in blue tint is extracted in Croatia, Ireland, and Portugal. Nevertheless, they do not constitute a competitor for the Belgian Blue Limestone. The same cannot be said, however, for the province Shandong in China, where prices, despite transport costs, are very competitive. Nevertheless, the quality of imported imitations from Asia is way lower; they are neither as durable nor watertight. Moreover, substitutes of Belgian Blue Limestone have 16 times higher environmental footprint.

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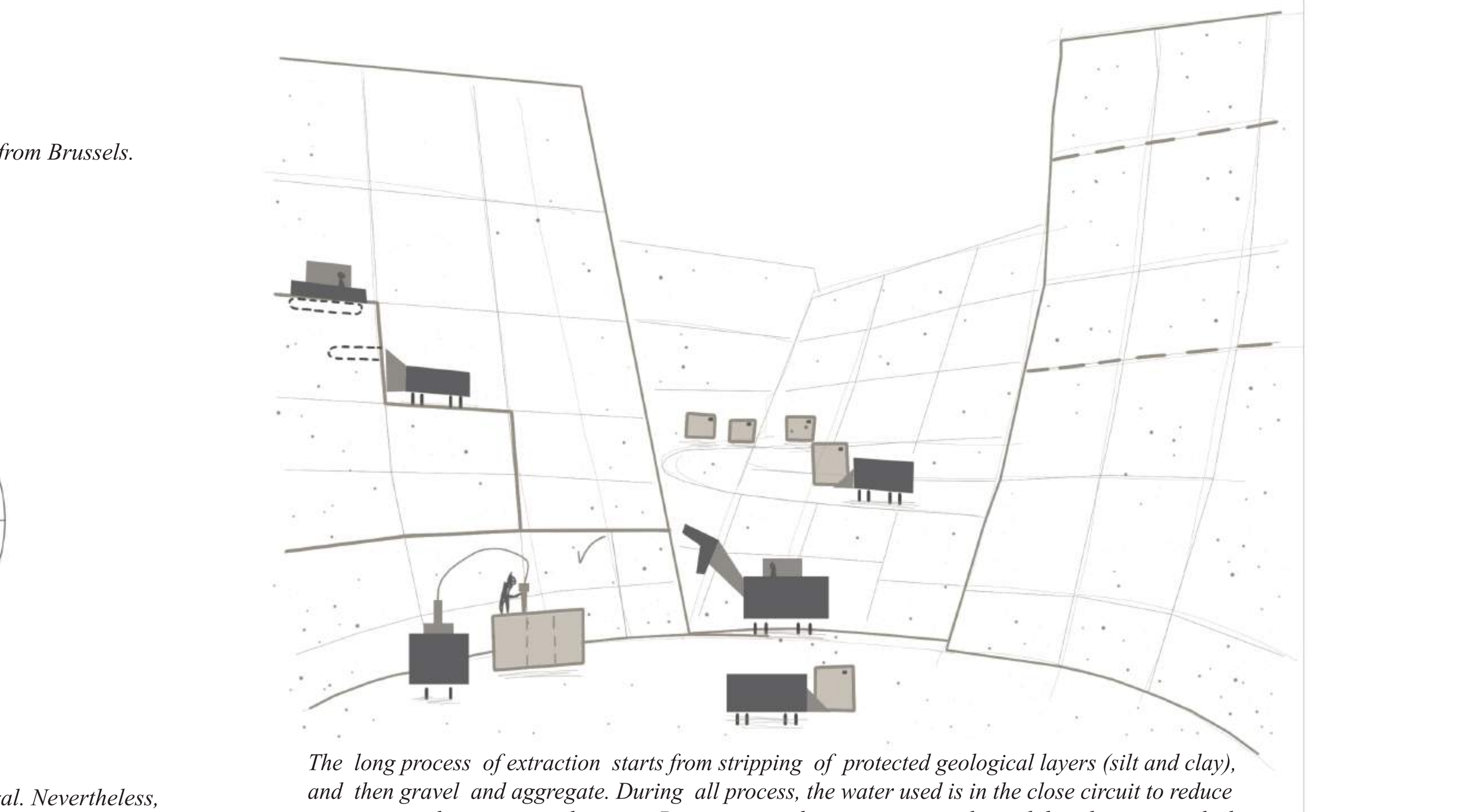
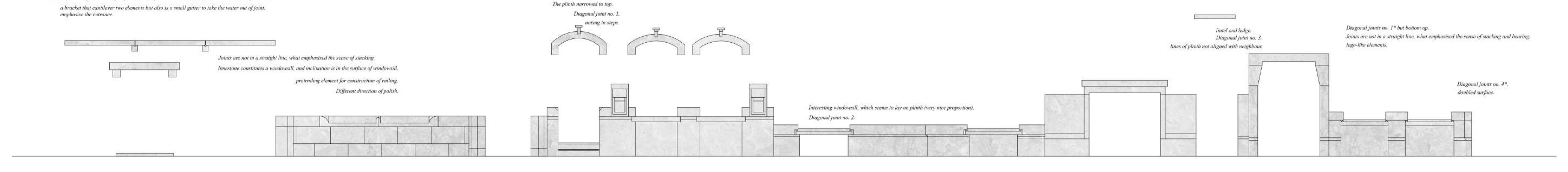


The long process of extraction starts from stripping of protected geological layers (silt and clay), and then gravel and aggregate. During all process, the water used is in the close circuit to reduce environmental impact and noise. Prior to cuts limestone, in geological benches, is marked according to sedimentation of the layers, and a white vein section. First, they used a giant chain saw on tracks — the coal cutter, and then a crawler-mounted coal cutter. 2 m width, hundreds of tonnes weight pieces are removed from the natural bed to be split into 2 or 3 blocks, 40 tons each. It is done by pneumatic drills, and the hydraulic spreaders placed in holes. Labelled blocks are conveyed by bulldozers to a raw materials processing area where they undergo measurement, squaring off, and selection. The upper production facility use a range of techniques for subsequent processing. What the machine is unable to do, the stonemason does.

|04

The idea of Samper, Stoffwechsel emphasised the cultural continuum in material culture It says about the possibility of using a knowledge and construction technique of one material even in a different one. At the beginning of the studio case studies of details and construction technique characteristic for limestone have been done, and its extended version is available in the design logbook. Those data was then presented as a bricolage of limestone elements, bricolage of spolias, made of surveyed elevation (plinths, portals). Plaster cast technique helped to find out the construction technology logic, understand the proportion and sizes in more haptic way. That survey will be very helpful in later design stage. Creating modern equivalents of old building practice could preserved the local identity.



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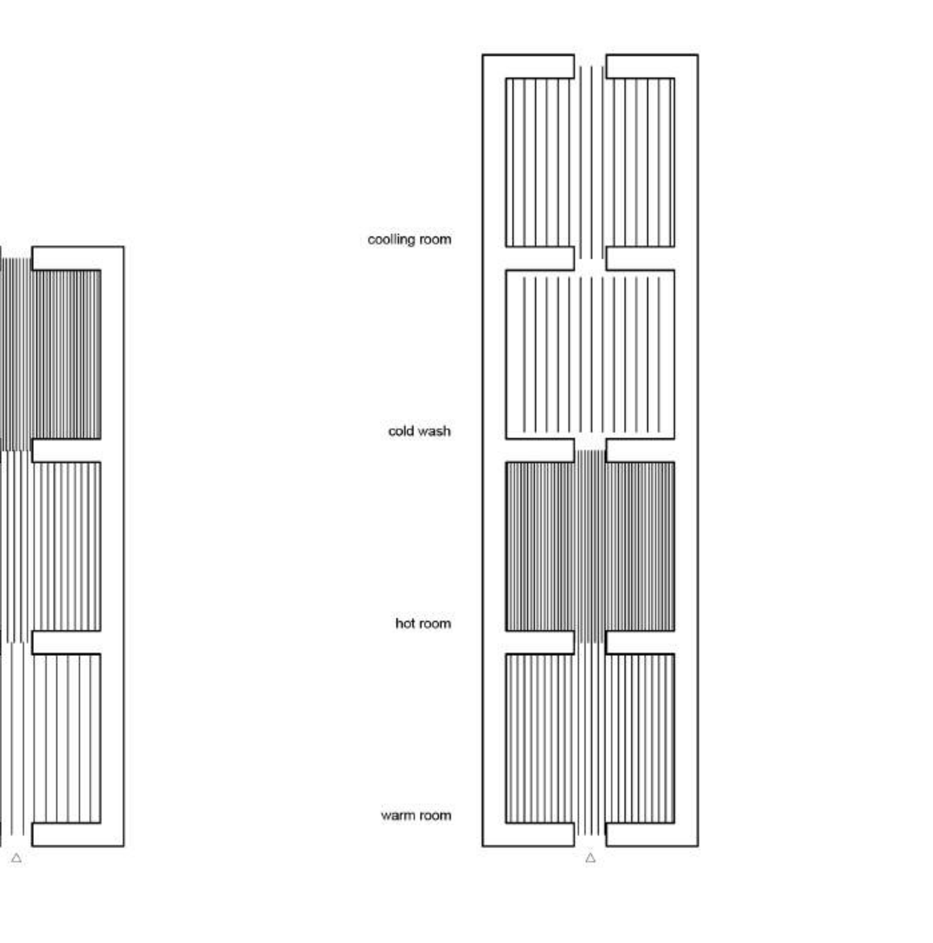
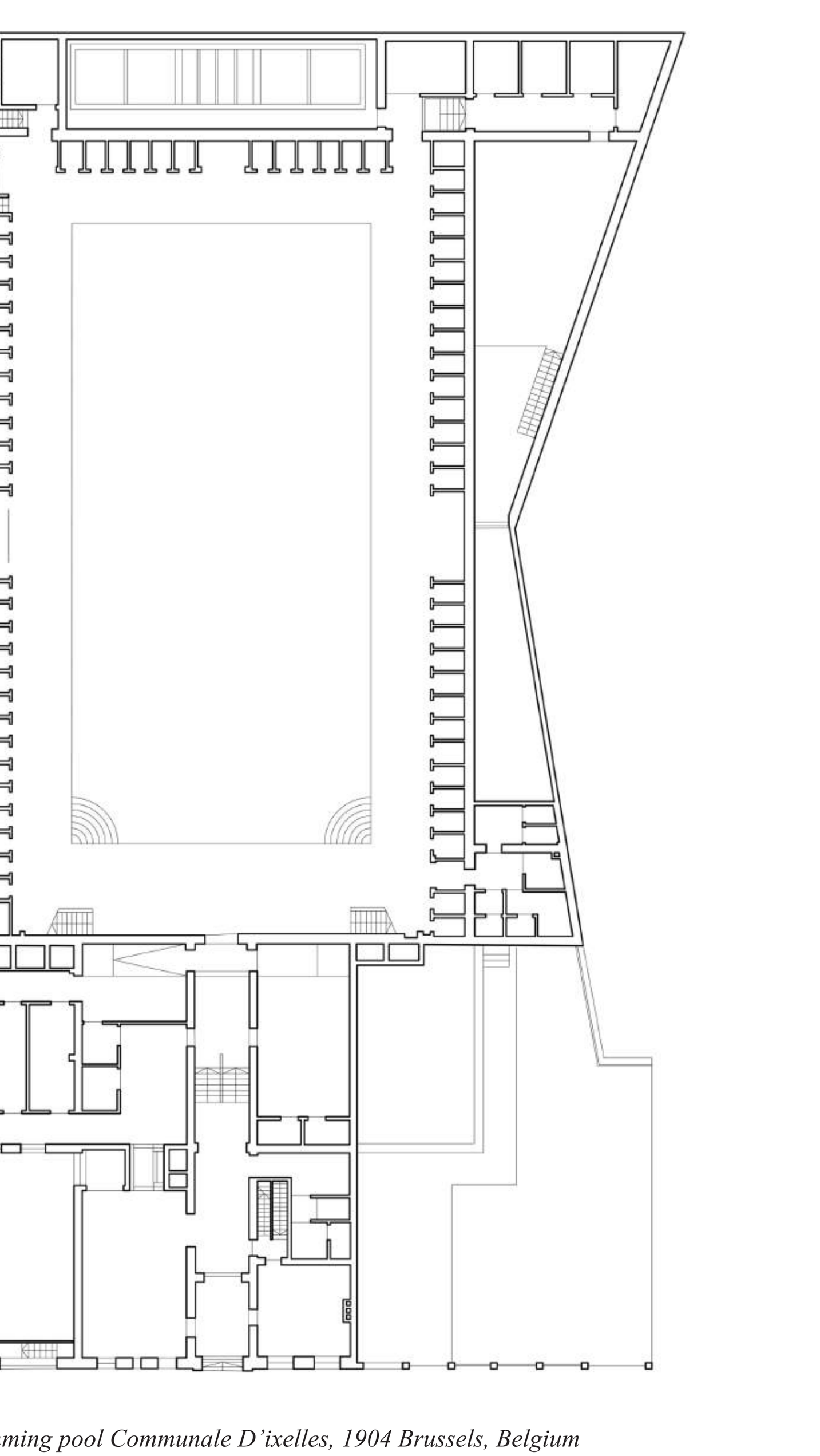


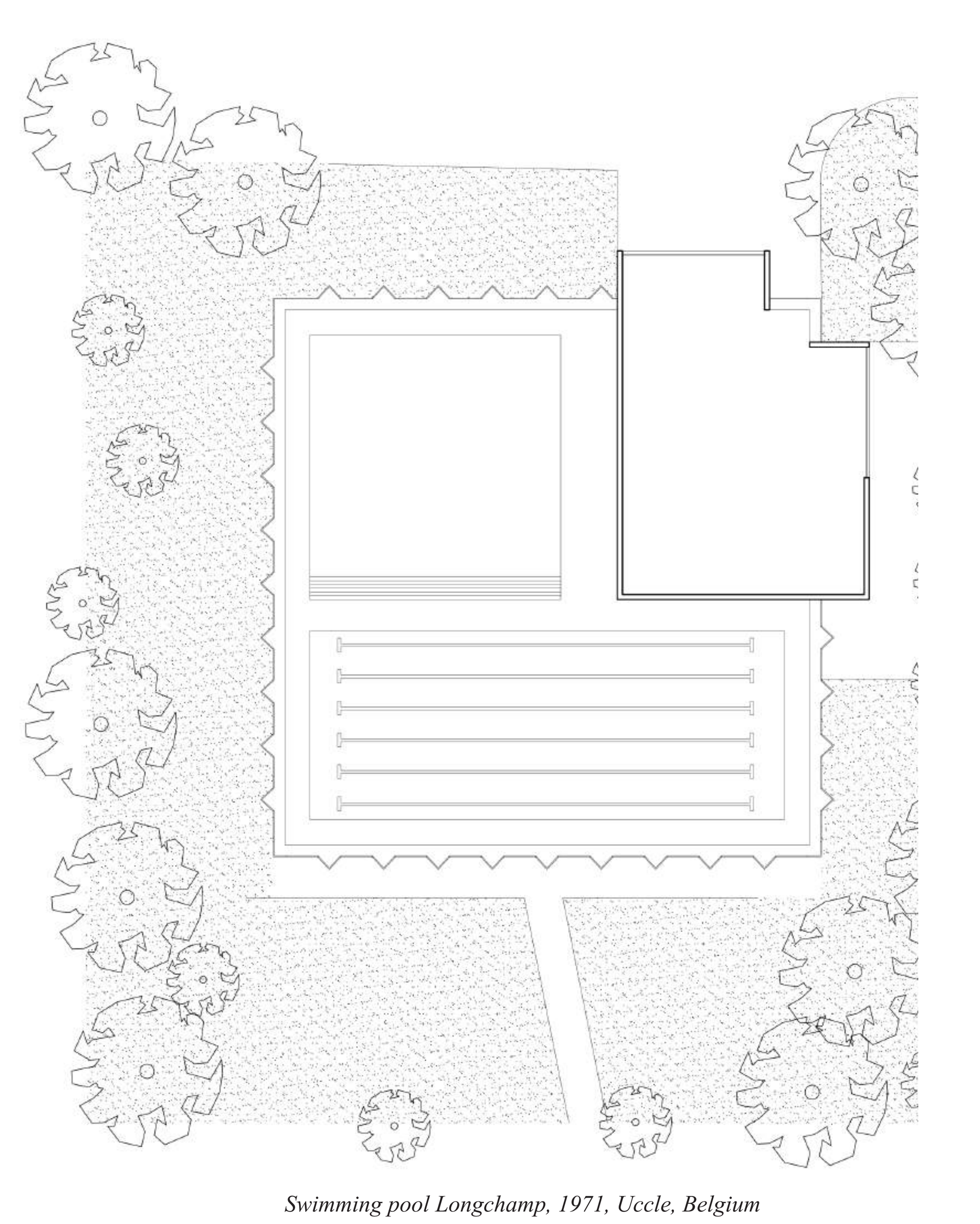
Sequence of rooms in Roman and Turkish Bath

|08



Swimming pool Communale D'ixelles, 1904 Brussels, Belgium

|09



Swimming pool Longchamp, 1971, Uccle, Belgium

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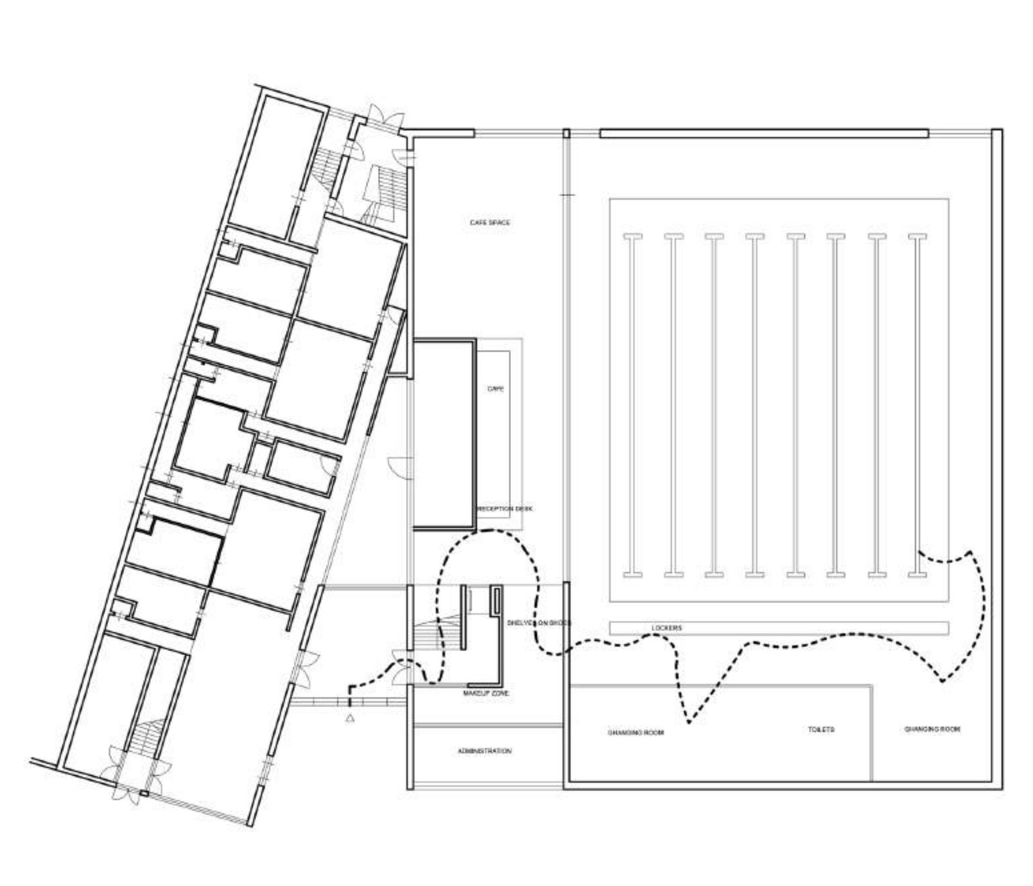

2521 Swimming pool Blokweer, 2014, Alblasserdam, the Netherlands

|11

MATERIALITY, TIME AND EMBODIMENT

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Contents

INTRODUCTION

The group of Spolia, I was assigned to at the beginning, was exploring terms of spolia in-se (material), and spolia in-re (non-material). Critical evaluation of Anderlecht district has resulted in an organisation of the research according to the following perspectives: materiality, architecture, and bricolage. Then, these topics were organised on a timeline — from a deep analysis of prevailing material, Belgian Blue Limestone, its sedimentation, extraction, stoffwechsel idea, spolia in-re, and spolia in-se, to the introduction of terms to spoliate, to assemble, and to appropriate. My individual part was the materiality perspective, thus the focus was put on the first part of the timeline, whereas the last three terms were analysed by other group members. In the time of pending obsolescence, the survey, prepared by the group, aimed to be a starting point for the discussion about potentiality to be used as a spolia. Therefore, the research question was a quest for spolias in the Anderlecht district (What has a potential to be used as a spolia?), which will help to answer the question posed by the chair: "what is worth keeping?".

During an excursion to Anderlecht, my attention was immediately caught by the regular appearance of elements made of greyish stone — Belgian Blue Limestone. Local used materials are very interesting topics of investigation as they always carry some historically proven logic. These materials, their qualities always meet the requirements of the prevailing climate better than others. Limestone itself is very durable and presents a high resistance to the water (rain, chlorine, sea salts), harsh weather conditions, pollution, different temperatures. Its resistance is due to non-porosity and density. Deep analysis on the base of material biography helped to understand the surveyed material; its properties, tectonic, weight, haptic qualities, the relationship between the body and material, and historical and social values it has. The idea that really catches my attention is Semper's idea of Stoffwechsel. It emphasised the cultural continuum in the material culture. It says about the possibility of using a knowledge and construction technique of one material even in a different one, so time plays also a significant role in that consideration. In the limestone, a straight correlation, can be seen between extraction

technique to processing and even ornamentation. Quarryman, no matter if its a limestone, marble, or travertine, using a pneumatic drill, bores holes to split a massive block. In material, parallel concave holes, trace of that process, are visible. Then saws, on a different stage of processing, also left a similar mark. That cultural logic is then transformed to a finishing touch of Belgian Blue Limestone. Can it be either a surface sawing in a right direction, by special equipment, or a surface dressed by axe in a way to acquire the stripes ornamentation characteristic for stone. In that way, a reminiscence of the extraction process and human agency is visible in a product on all stages. In that research, the knowledge of limestone building technique is transported to a different material - concrete.

Kenneth Frampton, in a book: "Studies in Tectonic Culture"[1] argues that tectonic and tactility in a modernistic turn was omitted. The author formulated the idea that emphasised the importance of tectonics, together with topos (the site) and typos (the meaning). It resulted in a higher awareness of building's materialisation and object's studies, thus it was a starting point for the new architectural discourse (e.g. Zumthor, Andrea Deplazes).[2] In a modern discourse of architecture, not only was tectonic to be ignored, but also the importance of embodiment as an essential factor in designing was equally overlooked. The focus put on the form and function was so strong that architects seemed to forget the articulation of the senses and the human body in architecture as the base of experience of being in the world, and interaction with that world. Moreover, ignoring the fact that people varies considerably: has a different memories, experiences, bodies, needs and imaginary world, they were designing unified spaces, where everyone is the same and lives the same way. In my research I focused on materiality in connection to practice, time and embodiment.

The research aimed to answer the research questions regarding material culture topic: "What is a technique of building from Blue Belgian Limestone?", "What's are the properties of Belgian Blue Limestone (prevailing material on site)?", and those of more embodied nature: "How the materiality is shaped by the aspects of our bodies?", "How embodiment influences the perception of the materiality of space?".

[1] Frampton K., "Studies in Tectonic Culture",MIT Press Cambridge, 1995, p.2,
[2]Schreurs E., "City of Stone",booklet of the Chair of Interiors Building Cities, Impressed, Pijnacker, 2018, p.8,

Methods

Deep analysis of the prevailing material, Belgian Blue Limestone, on the base of a material biography is to be conducted. Both, Marxism and phenomenology positions on material culture will be incorporated, simultaneously limiting the structuralist and semiotic perspective. The aim is to understand the surveyed material fully, and answer a research question: what has the potential to be a spolia? Therefore, the research is carried out on the two levels that the findings can interact with each other, hence allowing a deeper analysis. Both parts gather the data that could help to understand the material properties, tectonic, weight, sound, haptic qualities, the relationship between the body and material, psycho-psychical impact, and historical and social values it has. Nevertheless, when the first part puts focus on the material origin, sedimentation, and extraction, the second surveys the processing, and the construction technique.

SEDIMENTATION | EXTRACTION

In the first part, I was collecting the data on sedimentation, and extraction of local material, the Belgian Blue Limestone. To experience the situated craftsman practice, I *visited the quarry (Carrieres du Hainaut) and* the Documentation Centre of Blue Limestone (Le centre de documentation de la pierre bleue Durée) in Soignies. Not only did I buy precious samples from that trip but also, using a comparison, I was able to recognise a particular fossil animal type inside the surface of a limestone sample.

DETAILS | CONSTRUCTION

In the second part, analyses through case study — elements made from the Blue Belgian Limestone — were conducted by analytic writing. Photographing and phenomenological evaluation are to help the investigation of details and construction technique characteristic. Gathering all those data helped in understanding a characteristic of limestone building tradition. Rotor — actor available in the surveyed site — would always take limestone elements during their inspection because it's a precious material. Therefore, it has a high potential to be used as a spolia. Taking that into consideration, and thinking about the building as a repository of spolias, I decided that making a bricolage of elevations (plinths, portals) as a plaster cast (model making) would be a great tool. That could help to answer the research question: "What has a potential to be used as a spolia?", and to emphasise limestone as a spolia in-se and in-re. Even though the surveyed building may not be intended for demolition, similar can be found all around the country, and be saved for that purpose. Plaster casting would help to find out the construction technology logic, so that knowledge could be used even in a different material (Stoffwechsel idea). It also helps to understand the proportion and sizes, in a very haptic way, what could influence the design as well (thinking by making). In that part of the research, I also visited a professional stonemason from Delft, who helped me to prepare additional samples of limestone; old (darker), and new (lighter, blue). Both are a great source of information as every side was processed differently. When I was there, to take a part in the process, I found a lot of leftover pieces. That led me to think about them as a great source of spolia too, waiting to be appropriate again and used somewhere else.

Then, according to Semper's idea, Stoffwechsel, I am going to transport the knowledge of limestone building technique to a different material- concrete. I would like to continue a research by making; either by casting concrete or by visiting places specialised in a production of concrete. Doing so, I would like to also research the more sustainable version of concrete. In cast I would like to experiment with the by-product of extraction (aggregate, limestone powder) to see what kind of tint I can obtain, either in terrazzo or in concrete. That would let me be more specific about the design and get to know the craft. Creating modern equivalents of old building practice could preserve the local identity. From the gathered information — bricolage of potential spolias — a toolbox of possible modern interpretation (material, details, connections, proportion) could be created. Below some examples of contextual modern interpretation of old building practises are presented.

Ex.1| Example of modern interpretation of typical Portuguese tenement house (division, proportion, frames, ceramic tiles), Lisbon, Portugal.

Ex.2| The example of modern architecture that took an inspiration from the typology of surrounding (villas with garden enclosed by walls). Barozzi Veiga, Ragenhaus Music School ,Bruneck, Italy, 2012–18,
source: https://barozziveiga.com/projects/music-school




Ex.3| Example of modern interpretation of portuguese house (division, proportions, window frames, pitched roof),House Brotero, Phdd arquitectos, 2017, Lisbon, Portugal.
Photographs: Francisco Nogueira, source:
https://www.archdaily.com/892628/house-brotero-phdd-arquitectos

Moreover, in my research, I connect materiality with embodiment; the way the materiality is shaped by the aspects of our bodies, and the way our embodiment influences the perception of materiality of the space. A striking correlation between tectonics and embodiment can be seen, even in the etymology of word tekton signifying craftsmanship, but also the notion-of-making itself, connecting materials to the practises. Richard Sennett, in the book “Craftsmanship”, describes the link between characteristics of specific crafts, way of thinking and doing things, and tools and developments of required skills. The author emphasised that all skills start from the body’s activity, which uses its wisdom that one gained by touch and movement in his or her hand. [3] In the past, the settlements were built only by human agency. That required the direct cooperation of a body’s ability to perform, and material capacities. Only the respect of those limitations could bring the desired results. In comparison to a technocratic industrial production, that seems to be significantly different. At the same time, previous organisation resulted in a more humanised built environment. Therefore, the implementation of the human body aspect to architecture does not seem without significance. Pallasmaa points out that "in earlier modes of life, intimate contact with work, production, materials, climate, and ever-varying phenomena of nature provided ample sensual interactions with the world of physical casualties"[4]. He argues that "Embodiment is not a secondary experience; the human existence is fundamentally an embodied condition.”[5] Human and architecture exist in the tissue of the world in the reality of matter and time. It is their location at the same time that allows them to exist. Here, the person of Tim Ingold and his reconsideration of relation between human (artefacts) and nature also brought additional layer to my research.

To capture the topic of time in my research, a phenomenological description of chosen examples could be helpful. Sequences of photographs could be the most accurate way of researching it. Work of Martin heidegger, a book “Being and Time” would also contribute to the research. As all of mine considerations stay against the Cartesian dualism and perspectivalism, books written by Pallasmaa, Zumthor, and Rasmussen were read. They put a spotlight on the importance of the body in the process of designing, which in some architectural discourse was forgotten. Even phenomenological approach that I took, is at odds with separation of mind and body. Thus, emphasis is to be put on more empirical cognition.

[3] Sennett R., “Craftsmanship”, Penguin Books Ltd, United States, 2009, p.35,
[4] Pallasmaa J., “Myśląca dłoń..Egzystencjalna i ucieleśniona mądrość w architekturze” [The Thinking Hand. Existential and Embodied Wisdom in Architecture], Kraków, Instytut Architektury, 2015, p.18,
[5] Ibidem, p.19,

MATERIALITY

In Praise of the Limestone

"[...] Dear, I know nothing of
Either, but when I try to imagine a faultless love
Or the life to come, what I hear is the murmur
Of underground streams, what I see is a limestone landscape."[6]

During an excursion to Anderlecht, I was assigned to a group researching a spolia topic. My attention was immediately caught by the regular appearance of elements made of greyish stone. No later than 20 minutes from that moment, I received a piece of information that it is a very characteristic material of that region - Belgian Blue Limestone. Local used materials are very interesting topics of investigation as they always carry some historically proven logic. These materials, their qualities always meet the requirements of the prevailing climate better than others. Limestone itself is very durable and present a high resistance to the water (rain, chlorine, sea salts), harsh weather condition, pollution, different temperatures. Even repetitive periods of freezing and thawing do not alter a limestone. Its resistance is due to non-porosity (water, temperature differences do not filter in) and density (higher resistance). Other stones or imitations (especially Asian substitute) can oxidize, but the original one, when it is unpolished, patinated with age. [7] That reveals the hidden beauty of that material even more. It can be used for interior or exterior design, and furniture. Every piece has its own unique pattern, therefore there is no repetition. Numerous variations of patterns that bring to mind the human DNA, resulted in a lack of monotonousness. When you meet that precious stone, it seems to meet all history of its origin - with all organisms that create its alive surface. When meeting them you feel similar to being in some part of Rome, where one meets the cultural heritage of all generations. It is amazing that the spirit of these organisms, hidden in a limestone, still seem to be visible in a material tactile qualities. Could be a better spolia in-re (the prehistoric world is hidden) and at the same time better material for reuse (in-se)? Deep analysis on the base of a material biography can help to understand the surveyed material; its properties, tectonic, weight, sound, haptic qualities, the relationship between the body and material, psycho-psychical impact, and historical and social values it has.

[6] W.H. Auden, In Praise of Limestone, 1948,
[7] Website Carrieres du Hainaut https://www.carrieresduhainaut.com/en/about-us/stone

During the Carboniferous period, today's Belgian territory was the place of the tropical sea. 340 million years ago, a fossil of marine organisms (crinoids, coral, foraminifera, bryozoa, brachiopods, and molluscs) in a tropical sea, entrenched in the microcrystalline mass, was transformed in a process of sedimentation into the Belgian Blue Limestone. In a piece of limestone, numerous fossil marine animals have been tightly compressed, which gives it high durability. It is a very characteristic feature of Belgian Blue Limestone that those organisms are visible in the surface. This is what distinguishes it among different product, thus the authenticity can be inferred from it. In its broken side one can find them in shining sparkles, whilst in its polished side, in white shapes. In the Documentation Centre of Blue Limestone in Soignies (Le centre de documentation de la Pierre Bleue Durée) a few types are presented e.g. Zaphrentis Crassus, Crinoids, Michelinia Favosa (cnidarians), Syringopora ramulosa, Caninia / Siphorophylia cylindrica. The small exhibition the Documentation Centre shows how to recognise the particular fossil marine animal in the surface of the sample. For instance, in visible rings, stems of crinoid can be distinguished.

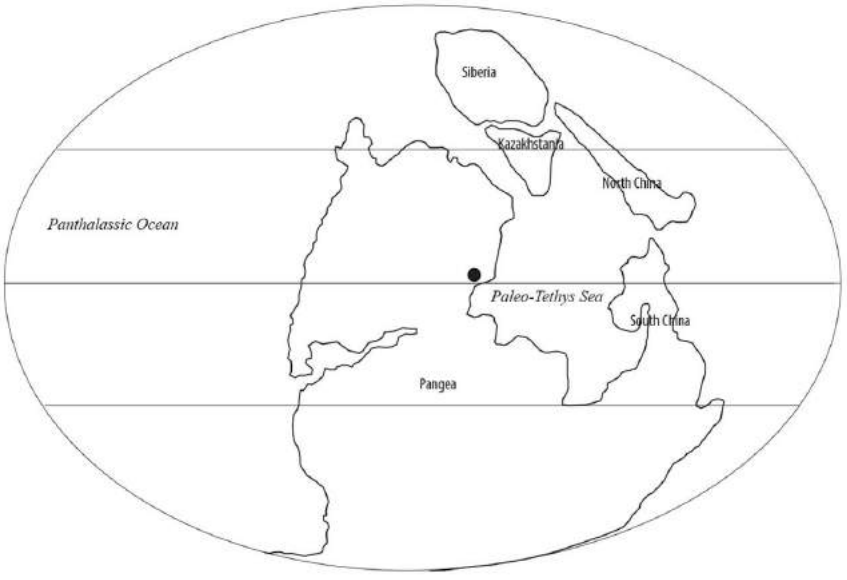
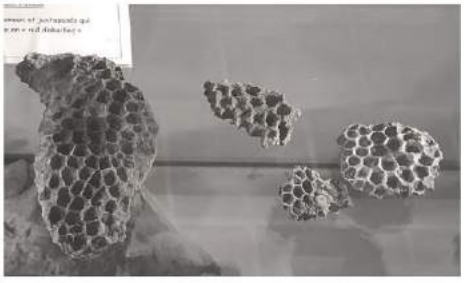


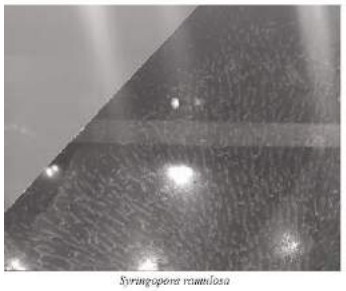
Fig. 1 | Today's Belgian territory 340 million years ago during the Carboniferous period

Zaphrentis crassus

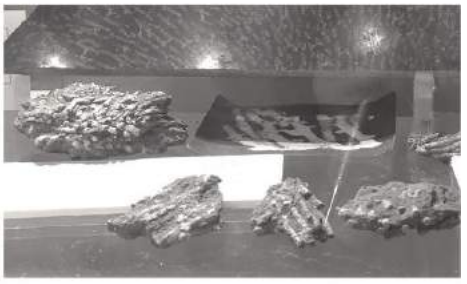
Crinoids

Michelinia Favosa (cnidarians)





Syringopora ramulosa



Camera / Siphonophyllia cylindrica

Fig. 2 | Photographs of fossil marine animals and their recognition in the surface of the limestone. Photographs have been taken in the Documentation Centre of Blue Limestone in Soignies (Le Centre de Documentation de la Pierre Bleue Durée).

What is also worth mentioning, Belgian Blue Limestone was formulated only in one specific carbonated geological vein that goes from the East to the West of Belgium and then to Ireland. In the city of Soignies, 38 km from Brussels, it goes closer to the surface[8], so the quarrying is possible. There are also different parts of Europe, where the limestone in blue tint is extracted: Croatia, Ireland, and Portugal. Nevertheless, they do not constitute a competitor for the Belgian Blue Limestone. The same cannot be said, however, for province Shandong in China, where prices, despite transport costs, are very competitive. Nevertheless, the quality of imported imitations from Asia is way lower; they are neither as durable nor watertight.The cost of Belgian Blue Limestone is generated because of the deep embedding, cost labour and strict regulation in Belgium. The long process starts from stripping of protected geological layers (silt and clay), and then gravel and aggregate. As only blue limestone is the aim of extraction, the greyish type above is a by-product to be taken off. During all processes, the water used is in the close circuit to reduce environmental impact and noise. Prior to cuts limestone, in geological benches, is marked according to sedimentation of the layers, and a white vein section. First, they used a giant chain saw on tracks — the coal cutter with 6m long arm (3 cm/ minute), and then a crawler-mounted coal cutter (4-8 cm/minute). 2m width, hundreds of tonnes weight pieces are removed from the natural bed to be split into 2 or 3 blocks, 40 tons each. It is done by pneumatic drills, and the hydraulic spreaders placed in holes. Labelled blocks are conveyed by bulldozers to a raw materials processing area where they undergo measurement, squaring off, and selection. Wire cutting is used to cut and square off the selected block into the desired sizes for each of subsequent processing. The upper production facility, where the limestone is cut using a range of techniques. What the machine is unable to do, the stonemason does. For complicated ornamentation, the CNC cuts all shapes in a geometric way, but then it is human to be able to carve a smooth surface. It is striking that only 25% of extraction will undergo examination in the upper production facility. In Belgium there are strict regulations about the size of cracks visible in the limestone. Namely, if they are big enough, some material surrounded them has to be removed. Of course, all regulations depend on the functional purpose of the element.

Fig. 3 | City of Soignies, 38 km from Brussels and Anderlecht.

[8] "The Blue Limestone of Hainaut", accessed December 11, 2019, https://www.carrieresduhainaut.com/en/about-us/stone.

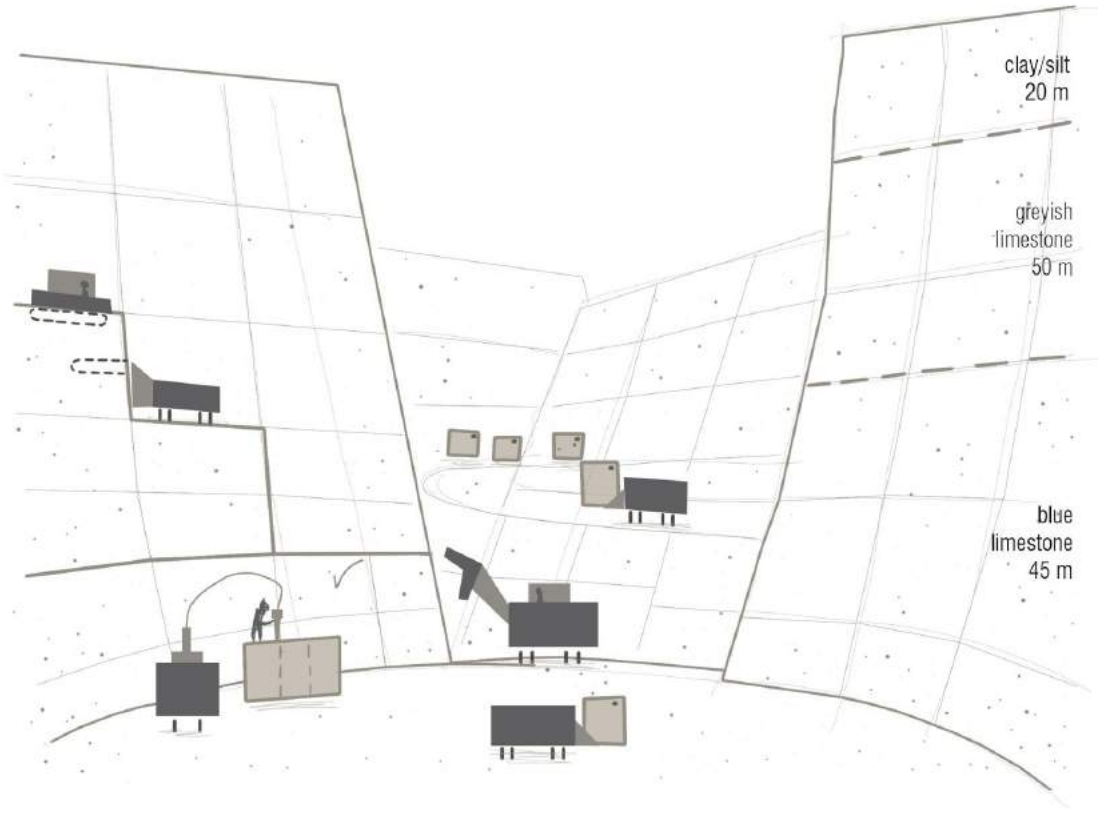


Fig. 4 | Scheme of Belgian Blue Limestone extraction.

Two main players, Carries du Hainaut and Pierre Bleue Belge, advertise the product as a very ecological choice; “Difficult to choose a more local sustainable material”.[9] It is difficult not to agree that it is a local material but the sources that have to be exploited to extract it, is a real barbarism, and for sure cannot be called the sustainable, ecological-friendly practice. Digging the tremendous size of the hole in the ground is a rape on a landscape. Quarries have very eminent character of melancholy. They are undoubtedly beautiful places, but also a place of the enormous imposition of human power on nature. Therefore, the material should be used advisedly; in situations that its qualities: durability and long lifespan is needed, and not purely because of aesthetic reason. On the other hand, thinking of the whole picture, substitutes of Belgian Blue Limestone, either an Asian stone or production on ceramic tiles have an even bigger environmental footprint.[10] According to Scientific survey realized by the laboratory of the Belgian University of Liège (Le Laboratoire de Génie Chimique de l’Université de Liège) the Asian limestone has sixteen times bigger environmental footprint, whereas the ceramic tiles’ production presents enormous impact, which is sixty times bigger than the Blue Belgian limestone.[11]

Fig. 5 | In Europe the limestone in blue tint is extracted in Croatia, Ireland, and Portugal. Nevertheless, they do not constitute a competitor for the Belgian Blue Limestone. The same cannot be said, however, for the province Shandong in China, where prices, despite transport costs, are very competitive. Nevertheless, the quality of imported substitute from Asia is way lower; they are neither as durable nor watertight. Moreover, substitutes of Belgian Blue Limestone have 16 times higher environmental footprint.

[9] “Blue Limestone and Quality”, accessed December 11, 2019, https://www.carrieresduhainaut.com/en/frequently-asked-questions.
[10] “A Social and Eco-responsible Company”, accessed December 11, 2019, https://www.carrieresduhainaut.com/en/about-us/environment.
[11] Dethier, P., *“La Pierre belge, exquise & durable”*, Pierres et Marbres Wallonie, 2011, http://www.pierresetmarbres.be/publications/. (Scientific survey realized by the laboratory of the Belgian University of Liège (Le Laboratoire de Génie Chimique de l’Université de Liège))

As mentioned above, the idea of Samper, Stoffwechsel emphasised the cultural continuum in material culture. It says about the possibility of using a knowledge and construction technique of one material even in a different one. The examples of stoffwechsel can be found: In Greek temple, where stones were cut in a way to resemble the archetypical timber structure, or in first cast of concrete, which was done in wooden frames as that was a technique widely used. Then the reminiscence of a wooden frame was visible in a congeal surface of concrete. In the limestone, a straight correlation can be seen between extraction technique to processing and even ornamentation. Quarryman, no matter if its a limestone, marble, or travertine, using a pneumatic drill, bores holes to split a massive block. In material, parallel concave holes, trace of that process, are visible. Then saws, on a different stage of processing, also left a similar mark. That cultural logic is then transformed to a finishing touch of Belgian Blue Limestone. Can it be either a surface sawing in a right direction, by special equipment, or a surface dressed by axe in a way to acquire the stripes ornamentation characteristic for stone. In that way, a reminiscence of the extraction process and human agency is visible in a product on all stages. In the past, a chisel was used to extract the natural stone. Then, that knowledge was transformed to different tools. Figure 2 presents holes, which are visible in a limestone surface after the pneumatic drill. That aesthetic can be found in numerous finishing touches. In the Documentation Centre of Blue Limestone in Soignies (Le centre de documentation de la pierre bleue Durée) they are presented, including sableuses, pointes/ broques, grave, ciselets, boucharde, gradines, ciseaux, tamponne, brut. There are some archeologists specialising in the dating of limestone elements. Not only is that possible according to ornamentation but even more in reference to tools that could be used to produced them. That means that simple stripes can be dated differently only by tools that were used to do them. It is worth mentioning that the characteristic stripes frame, which goes around is not barely an ornamentation. There is a functional reason behind it. For centuries, that was the way to obtain a perfect square. If one did not chisel a frame around and did only parallel stripes on all sides of a block, never a right angle would be attained.

Fig. 6 | Carrières du Hainaut, Soignies, Belgium; holes visible in a limestone surface after the pneumatic drill.

Fig. 7 | Photographs of tools used for extraction and processing of limestone in the past. Photographs have been taken in the Documentation Centre of Blue Limestone in Soignies (Le Centre de Documentation de la Pierre Bleue Durée).

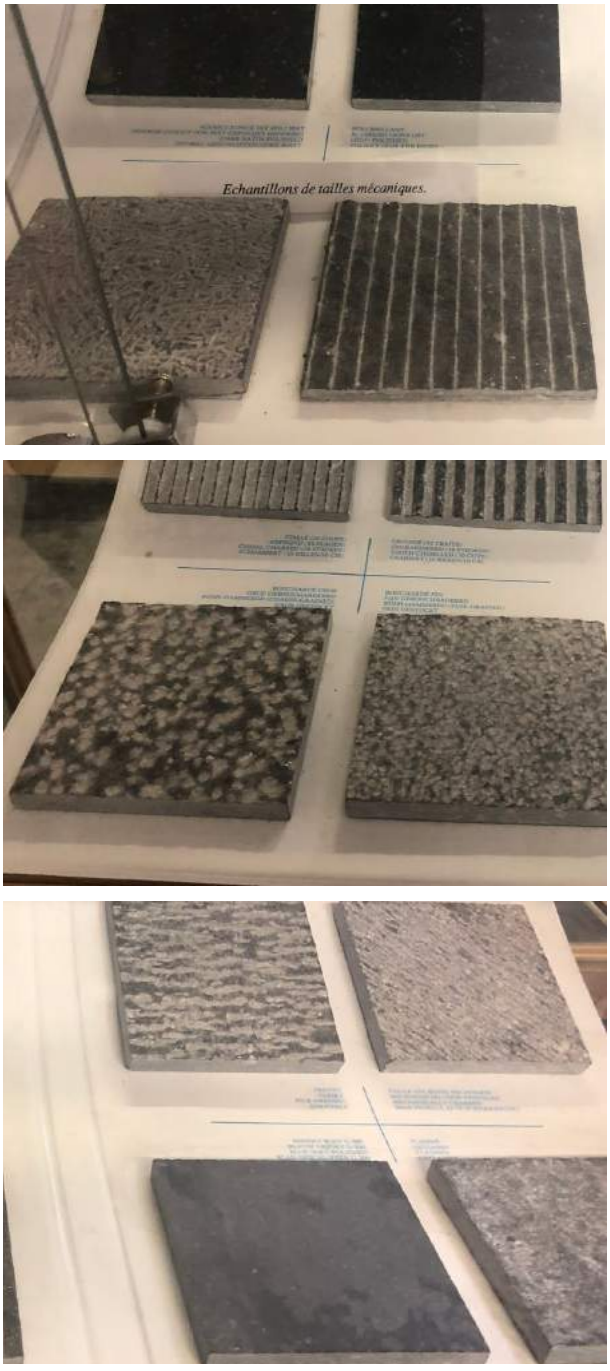


Fig. 8 | Photographs of different processed surface of limestone. Photographs have been taken in the Documentation Centre of Blue Limestone in Soignies (Le Centre de Documentation de la Pierre Bleue Durée).

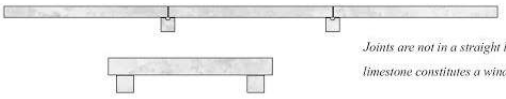
Fig. 9 | Photographs of different processed surface of limestone and the tools, which were used. Photographs have been taken in the Documentation Centre of Blue Limestone in Soignies (Le Centre de Documentation de la Pierre Bleue Durée).

Fig. 10 | Photographs of different tools using for processing. Photographs have been taken in the Documentation Centre of Blue Limestone in Soignies (Le Centre de Documentation de la Pierre Bleue Durée).

At the beginning of the studio case studies of details and construction technique characteristic for limestone was done. It was based on photographing and phenomenological evaluation, whose extended version is available in the design logbook. Gathering all these data helped in understanding a characteristic of limestone building tradition. Especially that even today, new products made of that material are characterised by similar solutions, what only increases their potentiality to be used as a spolia. Among those solutions, following features of Blue Belgian Limestone construction technique were distinguished: *lego-like elements, numerous types of joints, lack of monotonousness, different direction of polish and way of processing, the sense of stacking and bearing, entrance and windows emphasised, very often limestone constitutes a windowsill, and inclination is in the surface of windowsill, the plinth narrowed to top, gutter shape aligned to elevation, nosing as a frame (steps), joints are both in a straight line, and not in a straight line, plinth not aligned with neighbour, doubled surface, convexities and concavities, elements create continuity, no mortar (in higher quality of assemblage), chiaroscuro vulnerability, patinasing, a straight line cutting preferred.* Here, mentioning the Rotor, an important actor available on site, seems to be not without significance. The company works on recycling materials and then sells them for reuse. That makes me think about the building as a repository of spolias. Limestone has a priority; Rotor would always take it because of its preciousness. Hence, the idea was to present these data as a bricolage of limestone elements, bricolage of spolias, made of surveyed elevation (plinths, portals). Even though the surveyed building may not be intended for demolition, similar elements can be found all around the country, and be saved for that purpose. In the next stage, I decided that plaster casting would be a great tool for further investigation. That technique helped to find out the construction technology logic, understand the proportion and sizes in a very haptic way, thus the importance is given back to the embodiment. That survey will be very helpful in later design stage. Creating modern equivalents of old building practice could preserve the local identity.

the sense of stacking and bearing emphasised. | lego-like elements|lintel functions as a bearing element.

a bracket that cantilever two elements but also is a small gutter to take the water out of joint.
emphasise the entrance.



Joints are not in a straight line, what emphasised the sense of stacking.

limestone constitutes a windowsill, and inclination is in the surface of windowsill.

protruding element for construction of railing.

Different direction of polish.

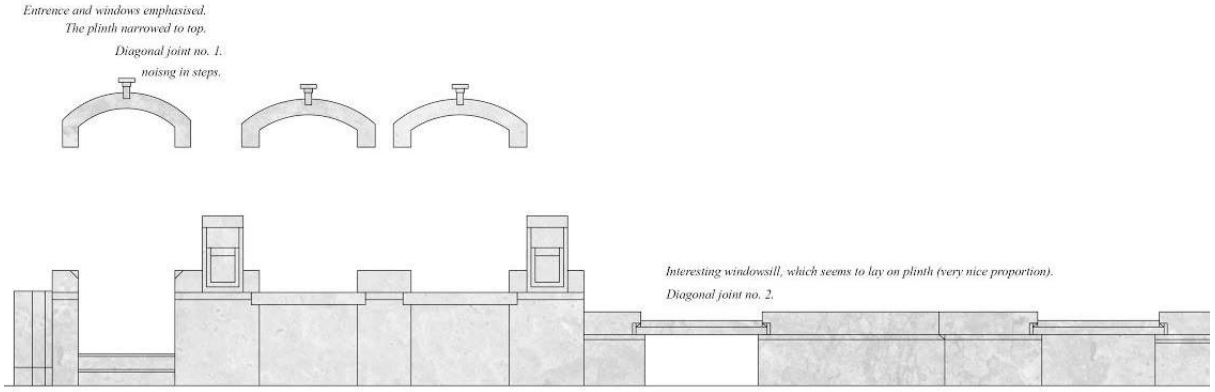
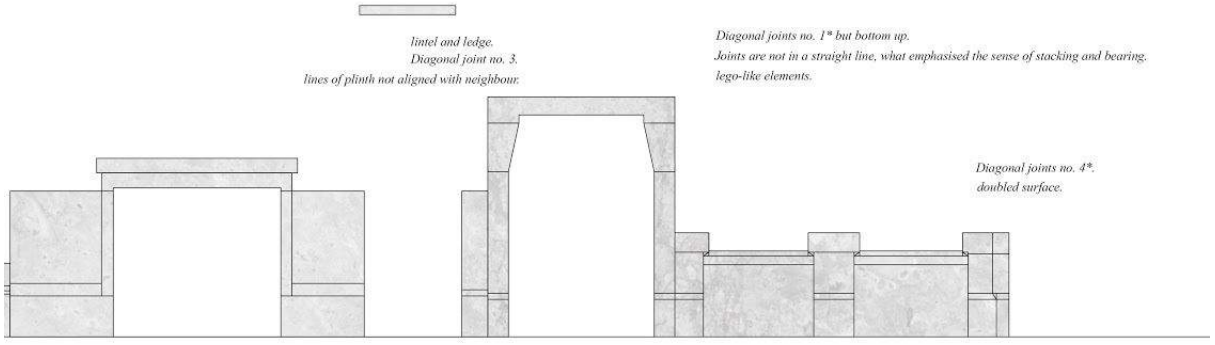


Fig. 11 | Bricolage of spolias


lintel and ledge.
Diagonal joint no. 3.
lines of plinth not aligned with neighbour.
Diagonal joints no. 1* but bottom up.
Joints are not in a straight line, what emphasised the sense of stacking and bearing.
lego-like elements.
Diagonal joints no. 4*.
doubled surface.

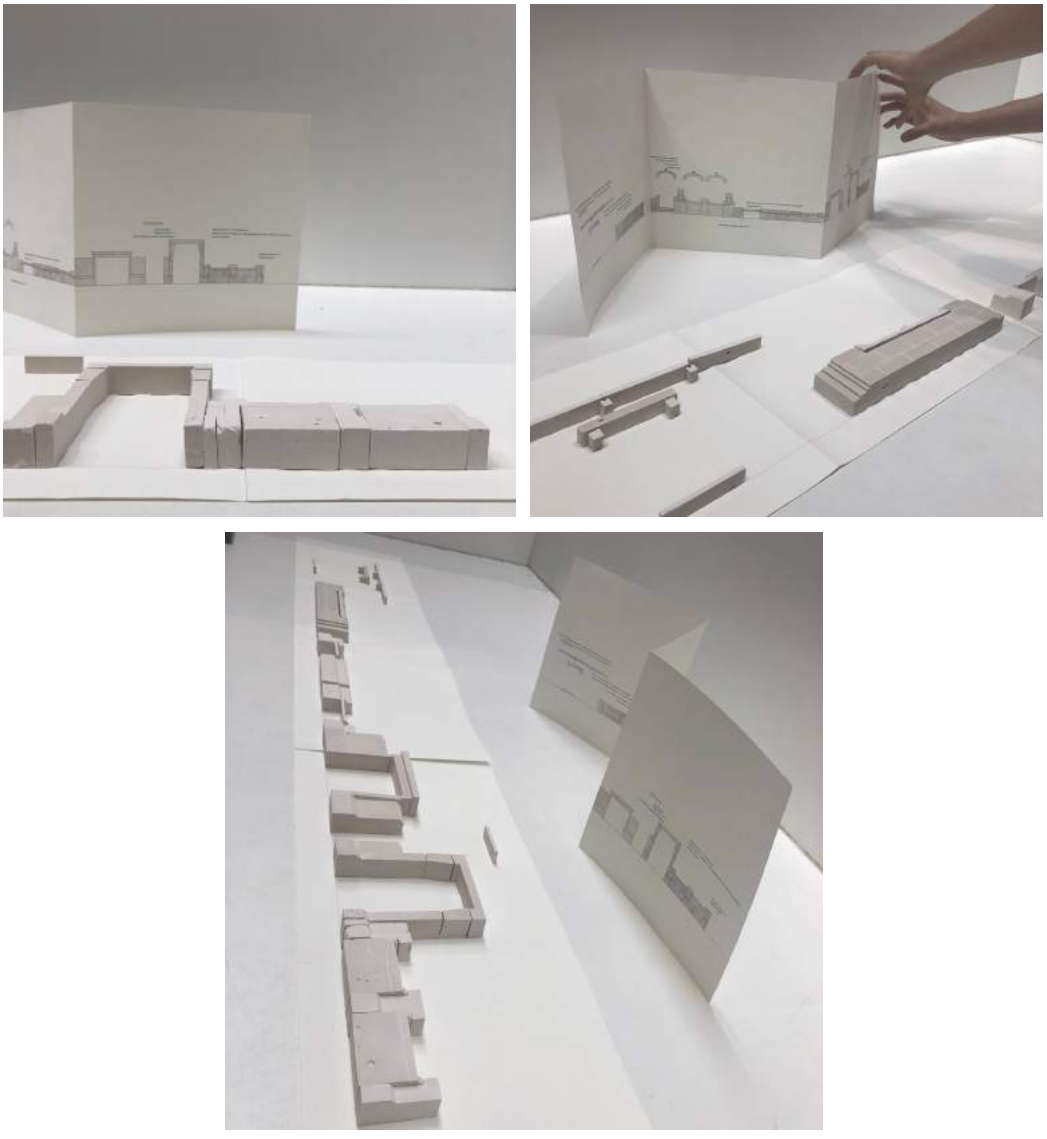


Fig. 12 | Bricolage of spolias (plaster cast)

An interesting relation between culture and nature in the material biography theme can be found in Tim Ingold' s essay. Our reliance upon the opposition between these two elements from a perspective informed to some extent by Heidegger is questioned. "In nature organisms grow, when cultural artefacts are made[...] Natural forms like the shells of marine creatures are generally considered to have been grown from within, direct by genetic pattern, while artefacts are formed from without."[12] The difference is contingent on whether the object surface is shaped from the inside (DNA) or outside (human agency). Thus it is the surface of the object that is presented as a critical boundary in this consideration - a point where nature is confronted by culture. As Tilley C. said: "The surface is where the substance meets action, and the growth of natural things is immanent within the substance itself. [...] Form is cultural where the substance is natural, so that culture appears to be a cognitive phenomenon which floats over the surface of the material world without ever penetrating it."[13] The Ingold presents a challenging example in this matter - a basket weaving. The surface of basket doesn't exist prior to the weaving process. However, its shape emerges by adding reeds, rather than imposing a power upon a body. This way Ingold put a spotlight on the fact that the forces that create natural objects or artefacts both "extend between any entity and its environment"; are not contained in any surface. The waver uses his or her skills, power of muscles and characteristics of the body to produce the product.[14] When we analyse the limestone we see that it grows from within, from natural organisms, but then reshaped by human agency it comes into being as cultural artefacts: a symbol of endurance, cultural identity, wealthiness and even power. In a limestone, an agency of people working in quarries from centuries seems to be embodied. The enormous endurance they have to perform in the past to extrude the material is visible in a final object. Nevertheless, the material is still considered natural. That interesting dichotomy (human-nature), which is contained in one material is possible to be found only in natural material.

[12] Tilley C., Keane W., Kuchler C., Rowlands M., *Handbook of Material Culture*, (SAGE Publications, London, 2006), p.53,

[13] Ibidem, p.53,

[14] Ibidem, p.54,

In Praise of the Concrete

Concrete, a modern material that is characterised by the appearance similar to stone, but the way it is obtained is different. First, a fluid mixture of water (7.5%), cement (~ 13%, naturally occurring mineral material (limestone or marl clay)), and fine and coarse aggregate (~ 80%) is being prepared. Then, the mixture is poured into a formwork prepared before to obtain the desired form. When the concrete sets, formworks are unmounted with help of mould-release agent, and a shape is visible. Because of its liquid properties, the material does not dictate the particular application or form of the building as it can be said about different materials; wood, glass, steel, natural stone, fabrics, which qualities always influence the final result. In concrete, it can be even said that it is the material of the formwork that has a bigger impact on its final result. Nevertheless, similar to plaster cast that was done in the previous chapter, and different to sculptor, builder has to think in a negative. As a cast, concrete has huge flexibility of form, surface or even ornament. Probably thanks to that and its fire resistance, wide availability and durability gained great popularity and constitute a main building material of cities.

In the past, the most popular cement was a lime-based, rarely used was a hydraulic cements (e.g. Portland cement). The latter forms Portland cement concrete, which is made to resemble the Portland stone and its very white appearance.[15] From the typical mixture, a concrete cast is grey, but its tint or texture can vary depends on colour and characteristic of local ingredients. It also can be changed by adding pigments, special glass, metal, or organic aggregate[16].

[15] Bye, G., Paul Livesey, Leslie Struble, “Portland Cement”., London : Institution of Civil Engineers Publishing, 2011, p.21,

[16] Peck, M., “Modern Concrete Construction Manual : Structural Design, Material Properties, Sustainability”, München, DETAIL, 2014, p.18,

Fig. 13 | Holiday House on the Costa da Morte 2010, (Ensable studio, Antón Garcia-Abril).
Photographs: Roland Halbe, source: https://www.dezeen.com/2010/04/27/trufa-by-anton-garcia-abril/

Concrete is very often considered only as a modern material. However, in Rome, a tradition of binding liquid made of lime and volcanic ash is dating 2,000 years back. Those local natural stones were used to reduce the cost of more expensive binding agents.[17] It is not a coincidence that the first building made of concrete can be found in Rome. In 125 A.D the Pantheon was built. Even though it was finished in precious travertine, inside so-called Roman concrete created the structure. Roman builders tried to optimise the construction reducing the used materials and maximising their performance. They decreased the weight of construction the higher it went. To do so they adjusted used materials; to tuff rubble they added either brick rubble, brick chippings, or pumice respectively. Sometimes even empty clay pots were used to reduce the weight of construction.[18] Today, we can observe numerous ways of concrete adjustments to desired functional purpose. A multitude of measures is available. "This can be done by varying the material's prosperity, using different proportions of ingredients or functionally graded concrete [...] more efficiently adapting the forms of structural components to make use of the distribution of forces and a further property that only concrete offers: free formability. Examples of such components are shaped-optimised support structures, ultra light hollow profiles, filigree rods, and the like."[19] Today mixture of concrete contains not only the basic ingredients but also additives, admixtures, and air.[20] Those additives constitute only up to 5% of the mixture, but present a big impact on concrete durability, workability, hardening[21] and even maintenance. Today, there is a lot of different types of concrete (steel-reinforced concrete, shotcrete, spun concrete, decorative concrete, exposed concrete, vacuum concrete, lightweight concrete, heavy concrete, flowing concrete, wet mix aggregate, prestressed concrete, tamped concrete, textile concrete, high-performance concrete, refractory concrete, translucent concrete, wood-fibre reinforced concrete, insulating concrete etc.), and all of the present a different qualities. [22]

[17] Ibidem, p. 22,
[18] Ibidem, p.11-14,
[19] Ibidem, p.11,
[20] Ibidem, p.12,
[21] Ibidem, p.13,
[22] Ibidem, p.13,

Fig. 14 | Tamped concrete in Bruder Klaus field Chapel near Wachendorf (Peter Zumthor).
Photographs: Dr. Leeke Reinders

Reinforced concrete used the fire resistance and the high comprehensive strength of concrete and a high tensile strength of iron or steel creating a material with great parameters. Nevertheless, it also inherited the drawbacks of metals: corrosion and sensitivity to high temperature. To minimise these defects, the metal is insulated in 3 cm concrete substance, thus the distance between reinforcement rods is usually 3 cm.[23] Today the use of high-strength and self-compacting fine-grain concrete (max. size 2 mm) in Prefabricated Ultra High Performance Concrete (UHPC) enabled reducing the thickness of components to extremes (3cm).[24] Although, scientists are still looking for a new solution to minimise skeleton of concrete even more and eliminate the drawbacks of iron and steel. They experiments with textiles fibres, polymers, glass. Those innovations as far were used only to repair the existing building's facade, because of a high cost of material.[25]

Today there are strict regulations about the measurement of concrete structure in most European countries. To ensure safety and durability a special calculation has to be done by engineers. Structures designers starts from classification of environmental conditions into "exposure classes" to be able to adjust the class of concrete (C12-C115), cement content, water-cement ratio, possible additives or micro-pores of air (to increase a frost resistance).[26] There are also different additives and admixtures that can be added to concrete to improve its performance. Type I of additives are not involved in hardening process, but they can improve the properties of fresh and hardened concrete by filling the gaps between particles. Type II contains mainly hard coal fly ashes (produced from non-combustible part of natural coal) and silica fume (by-product of silicon production). They have a hydraulic effect contributing to a concrete's strength. The latter considerably improve the bond and material's strength, thus is used to the production of high-performance concrete. Whereas additives are solids added in big amounts to fresh concrete, small amount of admixtures (chemical liquids or solids) are added during manufacture process or when the concrete is still wet. They improve properties of material and facilitates the construction process. They can be used to delay hardening of concrete in the situations when the temperature outside is warm or concrete structure is large, and smooth joints or monolithic character have to be ensured.[27]

[23] Ibidem, p.15,
[24] Ibidem, p.15,
[25] Ibidem, p.15,
[26] Ibidem, p. 24-26,
[27] Ibidem, p.31-32,

In the past, the concrete surface was precisely hidden. Then, from the beginning of the XX century, it has started to be deliberately exposed. Not only was it formerly the aesthetics reason but very often a technical demand; uninsulated exterior surface could get cracked, when the temperature outside was lower. To obtain the consistent concrete appearance from both sides of the wall, different materials (membranes, thermal insulation) had to be added. It was until the 1960s when insulation concrete (lightweight) was developed and purely concrete walls finally can meet the requirements of energy efficiency. Scientists reduced the weight of material keeping its low-bearing properties and improving the insulating qualities.[28] To give the material a higher insulation capabilities gravel and sand was replaced by foamed glass and foam clay respectively. In a house in Chur, in Switzerland (2003) we can observe success in this matter (2003, Patrick Gartman). The building has exterior walls fully made of construction insulating concrete (without additional insulation) and their thickness varies from 45 to 65 cm.[29] Nowadays, prefabricated building methods are getting more popular than in-situ. In some way they resemble the limestone construction technique; they comprise lego-like elements that have to be fixed together to create the whole. That method has numerous advantages; shorter construction time, higher quality of properties, higher control and precision, higher energy efficiency, no scaffolding and storage space needed.[30] The produced surface is flawlessly smooth, what was the desired results for a long time. After 1960 a coated plywood formwork started to be used giving even higher smoothness of the surface. The new quality became part of architectural language. At the same time, the notion of authenticity, brought back the trend for traditional formwork and different manual finishing methods to expose the three-dimensional aspect of that material. [31]

[28] Peck, M., Ibidem, p.36,

[29] Ibidem, p.15,

[30] Ibidem, p.34-35,

[31] Ibidem, p.54,

The timber formwork requires specific professional skills, which are no longer taught, thus currently it constitutes a difficult task which has to be preceded by numerous trials (preferably on a big surface). In the past, usually low-quality wood was used. Preventing leakage was very important to avoid undesirable dark discoloration. Raw timber absorbing air and water bubbles close to the surface of concrete prevents the visibility of pores. Helpful to obtain a smoother surface was also an application of oil. Such prepared formwork could be used several times. Industrial manufacturing also helped to reduce the cost of planks and increase their qualities. Today, numerous matrices and matrix formwork (8-10 mm thick rubbery elastic mat) are available to use. Moreover, OSB formwork and tamped concrete also gained popularity. Using the latter can bring various interesting effects. It has a very porous texture, thus compressive strength of such concrete cannot be qualified. The test on small samples cannot be considered as meaningful as the material works differently in large volumes. At the same time the addition of reinforcement cannot be used; partially exposed metal would easily corrode. Therefore, today the focus is put on the production of its appearance, rather than on classic construction technique. Concrete with low mortar is used and placed by tamping or external vibrator is used to concrete placed in layers. Interesting “exposed” effects can be also obtained by subsequent treatment of processing surface: washing, acid etching, sandblasting, drove work or bush hammering.[32]

[32] Ibidem, p.54-60,

Fig. 15 | Comparison of precast sandblasting concrete (I) with polished (II) and recycled glass reconstituted stone(III)
https://www.architonic.com/en/product/selected-by-materials-council-architectural-precast-concrete-sandblasted/1184320

The surface of site cast concrete can tell a beautiful story of its own. The same cannot be said about prefabricated elements. Whereas the first has been done in formwork, which depends on its age, roughness and smoothness, gives the material its specific appearance, the second is characterised mainly by its mixture, additives and aggregate. From the surface of site cast concrete, it is even possible to read the weather which was during the day that the concrete was poured. [33] Cracks visible in a concrete surface are like a map of forces acting in the structure. Moreover, it is material made from natural ingredients, which is very close to nature. The proof can be provided by such projects as Bruder Klaus field Chapel near Wachendorf (Peter Zumthor) or Holiday House on the Costa da Morte 2010, (Ensable studio, Antón Garcia-Abril). Both examples are far from characterless and sterility. It is remarkable that in site cast concrete, which was done using the natural material for formwork, the human agency seems to be embodied in the material, and stoffwechsel is visible in shuttering traces (page 16). The multitude of possibilities that it creates is rare. One concrete surface can have a totally different characteristic than other. “Concrete” is only a category; category with numerous showpieces.

[33] Ibidem, p.17,

Fig. 16 | Bruder Klaus field Chapel near Wachendorf (Peter Zumthor). Photographs:Samuel Ludwig, Thomas Mayer source: https://www.archdaily.com/106352/bruder-klaus-field-chapel-peter-zumthor

EMBODIMENT

In a modern discourse of architecture we observe the diminishing importance of the articulation of the senses and the human body in architecture. The beginning of that process can be found in the Enlightenment, when a specialised function began to emerge. At that time the number of scientific studies increased considerably. The skip from the body as an essential factor in designing to more mathematical criteria was accepted by academics.[34] The latter, cartesian approach was considered as a rational, pure knowledge, whereas knowledge derived from sensual experience was treated as irrational. Therefore, the new criterias to evaluate architecture were emerging and in the middle of XVIII century and engineering schools were launched. They focused on effectiveness, utility and minimisation of cost, whereas holistic and artistic aspects of architecture were taught in different type of schools.[35]

Today, our experience of architecture is often narrowed down to its visual evaluation, and aesthetic arguments. Nevertheless, the sense of sight is not the only one, which influences one's perception. Exploring the world is much more complex, what architects in a time of hegemony of eyes seem to forget[36]. On the other hand, architecture should not be reduced to a purely pragmatic assessment, ignoring its aesthetic values. That common topic of a dispute constitutes a base of phenomenological reflections in a field of architecture. Phenomenology studies relations between architecture and human experience structures. Needless to say that our embodiment pays a crucial role in those considerations. The importance of the senses was emphasised in a strategy of XX century philosophy of Edmund Husserl, Maurice Merleau-Ponty, or Martin Heidegger. In architecture, that practice can be found in books: "The Thinking Hand. Existential and Embodied Wisdom in Architecture", and "The The Eyes of the Skin. Architecture and the Senses" by Juhani Pallasmaa, but also to a less extent in Peter Zumthor's "Thinking Architecture", and " Experiencing architecture" by Steen Eiler Rasmussen.

[34] Bloomer, K.C, Moore, C.W., "Body, Memory, and Architecture", New Haven, Yale University Press, 1977, p.15.
[35] Ibidem, p.17,
[36] Term introduced by Juhani Pallasmaa in his book "The Eyes of the Skin",

In the book, “The Thinking Hand. Existential and Embodied Wisdom in Architecture”, the importance of body and a sense of touch in cognitive interpretation of the world was emphasised. Author called the body "an embodied wisdom", what emphasize the holistic nature of the being. Unfortunately, our existence is still rarely understood as the object of our interaction with the world.[37] Referring to numerous scientific surveys of neurologist, anthropologists, and philosophers Pallasmaa makes evident that the human experience of the world has embodied character. It means that our sensual system and body itself are central for our cognition. As Noël Arnaud once said “I am the space where I am.”[38], what emphasizes direct projections of the environment onto the subject, including its embodiment. Our body recognizes our location in the world and reacts by producing behavioral responses.[39]

Since the experiences of memory and imagination are similar, art creates experience and emotions similar to those of a real life. In his works, the philosopher Edward S. Casey pointed to the body as a place of remembering[40]. Since the studies shows that the imaginary picture is recorded in the same brain groups as a real experience (an image of visual perception) and both are characterised by similar authenticity[41], it seems clear that art works, if not prolongs, influence our existential wisdom. As Pallasmaa argues; “Fundamentally, in a work of art we encounter ourselves, our own emotions, and our own being-in-the-world in an intensified manner. A genuine artistic and architectural experience is primarily a strengthened awareness of itself. [...] In this way, art is tautological; it keeps repeating the same basic expression over and over again: how it feels to be a human being in this world.”[42] As Ludwig Wittgenstein notes, “work in philosophy is - as in many respects work in architecture - actually more work on oneself. Over proper comprehension. On how things are perceived (and what is required from them).”[43] Thus, the artist is involved in his subjectivity rather than the problem per se. It can be said that he creates projections of a self image for a given problem. The process of creation requires simultaneous thinking from two perspectives: the world and the subject. The result, as Pallasmaa emphasizes, is the “microcosmic representation of the world and the unconscious self-portrait” found in a work of art. During this process, the boundary between the subject and the world is interpreted.[44] “How would the painter or the poet express anything other than his encounter with the

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[37] Pallasmaa J.,op. cit., p.17,

[38] Ibidem, p.20-21,

[39] Ibidem, p.128,

[40] Casey E.S., “Remembering: A phenomenological Study”, Bloomington - Indianapolis: Indiana University Press, 2000, p.148,

[41] Kojo I., Mielikuvat ovat aivoille todellisia [Images are real to the brain], “Helsingin Sanomat”, 16 March 1996

[42] Pallasmaa J.,op. cit., p.144-145,

[43] Wittgenstein L., “Uwagi Różne”, [Culture and Value (Vermischte Bemerkungen)]Warszawa: Wydawnictwo KR, 2000, p.40

[44] Pallasmaa J.,op. cit., p.139,

world,"[45] asks Maurice Merleau-Ponty. The work of art is always an expression of the condition of the artist's inner world and his understanding of the world. Architecture is not just a shelter for our bodies, it interprets the world using the metaphorical matter, light, structure, space, and weight. There are no works of art that were created in complete unreality. Even abstract art and all contemporary current of non-figurative art present a synthesis of reality. Art and architecture express our existential experience in the world and thus affect our consciousness.

Anaxagoras, as opposed to the idea of Cartesian dualism, did pursue a thesis that having a hand is the reason for human intelligence and thinking itself.[46] Many archaeologists and prehistoric scientists have also proved the importance of a palm in the process of human development.[47] "*In this way, thanks to the hands, the process of constructing and consolidating new neural connections is being developed, which causes the brain to become enculturated, i.e. it adapts to the specific cognitive environment*".[48] Martin Heidegger in one of his works, "*What is called thinking*", also linked the human palm directly with the ability to think (cogito), giving each gesture the mark of thinking.[49] When the remains of Lucy, who lived 3.3 million years ago, were discovered in the village of Hadar in Ethiopia in 1974, scientific theories dominated that the human brain evolved as a result of the use of tools. It was particularly important that the thumb moved to a perpendicular position to the other fingers, which enabled precise grip of the tools and facilitated their use. Numerous studies also prove that there is a relationship between language development and hand and brain co-evolution.[50] In addition, it is estimated that as much as 80% of human communication takes place as part of non-verbal communication, some of which are carried out even at the chemical level (the behavior of organisms can be conditioned by the odor stimuli of other organisms directly affecting the bodily chemistry of these organisms).[51] In turn, George Lakoff and Mark Johnson in the book "*Metaphors We Live By*" emphasize the role of the body and its interaction with space in the construction of metaphorical language.

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[45] Merleau- Ponty M., Modern Movements in European Philosophy, Manchester University Press, Manchester and New York, 1994, p.82,

[46] Depraz N., Phenomenology of the Hand, In Radman Z., (eds) The hand, an Organ of the Mind, Cambridge, Mass and London: MIT Press, 2013, p.186,

[47] Klekot E..,Przestrzenność rzeczy myślącej [Spatiality of thinking matter] In Pallasmaa J., Myśląca dłoń..Egzystencjalna i ucieleśniona mądrość w architekturze [The Thinking Hand. Existential and Embodied Wisdom in Architecture], Kraków 2015, Instytut Architektury, p.7,

[48] Menary R., The Enculturated Hand, In Radman Z., (eds) op. cit.,

[49] Heidegger M., Co zwie się myśleniem [What is Called Thinking], Warszawa- Wrocław, PWN, 2000, p.60-61,

[50] Pallasmaa J.,op. cit., p.41,

[51] Lakoff G., Johnson M., Metafory w naszym życiu [*Metaphors We Live By*],Warszawa, PIW,1988, p.25,

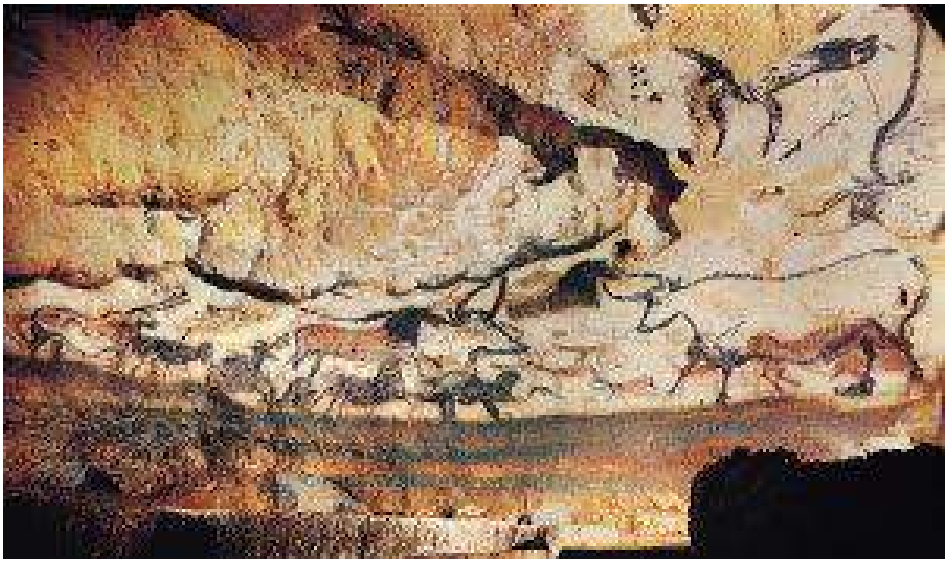

Fig. 17 | Left wall of the Hall of the Bulls in the cave at Lascaux, France, ca. 16,000-14,000 BCE. source: https://klimtlover.wordpress.com/art-before-history/paleolithic-art/
Sea animals hidden in the surface of limestone seems to be similar to those placed in the surface of Lascaux Cave - both are a membrane between the world of the living and the ghosts; a spolia of the past world.

For centuries, art - a product of culture - has shown the condition of human existential knowledge and strengthens the understanding of the continuity of tradition and history. Each of art shows a different way of thinking that is characteristic of it, reflected by the artist's hand and body. Not only does act of creation convey the influence of world experience on artist's inner life, but also the influence of artist on the world. Thus, how Salman Rushdie pointed out, the boundary between the world and subject is blurred.[52] Juhani Pallasmaa speaks of architecture as "*existential and metaphysical [kind] of philosophizing through space, structure and light.*"[53] David Lewis-Williams provides an extremely interesting theory about the beginnings of the production of art in the neolithic caves, in the book "*The Mind in the Cave: Consciousness and the Origin of Art*". He argues that the Cro-Magnons had a more advanced neurological structure than the Neanderthals. This affected their higher awareness and the opportunity to experience shamanic trances. The vivid mental images seen in the process were later painted on the walls of caves forming a membrane between the world of the living and the ghosts.[54]

[52] Rushdie S., Is Nothing Sacred? The Herbert Read Memorial Lecture, "Granta: The Magazine of New Writing", 1990, no.31, p. 98,

[53] Pallasmaa J.,op. cit., p.27,

[54] Williams D.L., The Mind in the Cave:Consciousness and the Origin of Art, London: Thames & Hudson, 2002, cover,

Pallasmaa description of the impact of used tools on the way of thinking is also interesting: "In the same way that boundary between the hammer and the hand disappeared in the act of hammering, complicated tools such as musical instruments merge with the user's body; a great musician plays himself rather than on a separate instrument. In drawing and painting, the pencil and the brush become inseparable extensions of the hand and the mind. A painter paints by means of the unconscious intentionality of mind rather than the brush as a physical object."[55]

Cartesian Perspectivalism

European culture, art, architecture or philosophy is strongly oculocentric with a particular appreciation for Cartesian perspectivism, from which it actually arises. Inventions such as printing, telescope and microscope have contributed to the development of such characteristics. In the essay "Scopic regimes of modernity", Martin Jay divides it into three main visual trends: Cartesian perspectivalism, the Dutch art of describing, and the Baroque subculture. The first of them, the hegemonic model of visuality, has achieved a dominant position in the visual arts of the modern era. It is identified with the Renaissance concept of perspective described by Alberti and the Cartesian idea of subjective rationality in philosophy. This trend argues that it refers to the "natural" eye experience, however, it is highly selective - focusing on one point eliminates the remaining moments surrounding it and thus displaces a subject from space. This is the total opposite of the homogeneous "spherical space" proposed by Leonardo da Vinci or Paolo Uccello, which has some features of Einstein's finite infinity.[56] Alberti's veil (velo) lacks the natural dynamics for the vision function - the eye of the observer is static, isolated, focused on one place. The eye is singular, not double as in normal visual experience. In the vision, the moment of erotic projection is lost - as Martin Ray notes - the emotions and bodies of the creator and recipient have been omitted in the name of the absolute eye, and its supposedly disembodied being.[57] Juhani Pallasmaa devotes a lot of attention to the alternative of concentrated vision - peripheral vision. It gives him key importance in participating with space as the one who places our body in that space, or to use an ontological terminology of Heidegger - the one who let dwell in that space. Not only is the human body seen a medium of identity and self-presentation, a tool of social and sexual attractiveness, but also a place of imagination, and memories. According to the Merleau-Ponty's philosophy, our existential experience, contained in the body, has a big impact on the perception of the surroundings.

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[55] Pallasmaa J.,op. cit., p.56,

[56] White J., "The birth and rebirth of pictorial space",New York, Thomas Yoseloff, 1958, p.208,

[57] Jay M., "Scopic Regimes of modernity", in Przestrzeń, Filozofia i Architektura [Space, Philosophy and Architecture] ed. Rewers E., Wydawnictwo Fundacji Humaniora, Poznań 1999. p. 78,

Pallasmaa emphasizes the importance of unfocused vision as an important factor in experiencing space and its atmosphere. He recalls medical research that gives prime peripheral vision over focused in the perceptual and mental system.[58] This vision immerses the recipient in the tissue of the world, giving him a sense of being in it. The Finnish architect claims that these issues were ignored in contemporary architectural discourse for the sake of the building's form.[59] Moreover, in one of the categories of contemporary visuality presented above - Cartesian perspectivalism - there is a gradual denarratization and detextualization. Increasingly, rendering the spatial values of the stage itself has become an end in itself; the discursive function of art was ignored. The autonomy of the image / form in relation to any content has become a characteristic feature of modernism.[60] "The effect of realism was consequently enhanced as canvases were filled with more and more information that seemed unrelated to any narrative or textual function. Cartesian perspectivalism was thus in league with a scientific world view that no longer hermeneutically read the world as a divine text, but rather saw it as situated in a mathematically regular spatio-temporal order filled 'with natural objects that could only be observed from without by the dispassionate eye of the neutral researcher.[61] "In the epistemology of Cartesian perspective, the eye is completely universal, transcendental. This means that for every person, regardless of their experience, located in the same tissue of time and place, the image will be the same.[62] Nietzsche made a critique of this understanding of things in the nineteenth century, arguing that no transcendental[63] worldview is possible since everyone has their own camera obscura through which they see differently.[64]

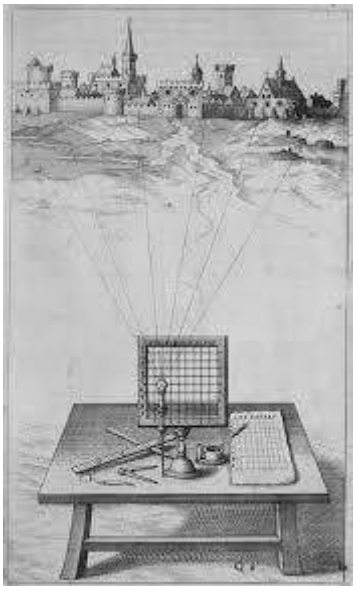

Fig. 18 | Alberti's invention —Velo,
Source Robert Fludd's Utriusque cosmic maioris scilicet et minoris metaphysica. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

[58] See Ehrenzweig A., "The Psychoanalysis of Artistic Vision and Hearing: An Introduction to a Theory of Unconscious Perception", London, Sheldon Press, 1975,
[59] Pallasmaa J., "Oczy skóry. Architektura i Zmysły" [The eyes of the skin. Architecture and the senses], Kraków, Instytut Architektury, 2012, p.18,
[60] Jay M., op. cit., p.81-82,
[61] Ibidem, p.82,
[62] Ibidem, p.83,
[63] term *Transcendentality* (Latin transcendere - "going beyond borders") refers here to the philosophy of Immanuel Kant, and refers to what conditions all possible empirical knowledge,
[64] Ibidem, p.83-85,

Nowadays, we combine science with rationality and objectivity, and art, on the other hand, with irrationality, subjectivity and emotions. Cartesian perspectivism, with its ideals of rationality, transparency, logic, finds its reflection in the city model planned on the Cartesian grid. Examples of such urban planning can be found both in ancient Rome and Greece (Hippodamian Plan, e.g. Miletus), in the Renaissance and Enlightenment era, modernist cities, modern densified suburbs, or in the most exaggerated example - New York. Homogeneity of such a system has met with criticism many times because of the dehumanization of space and the ease of getting lost in it. Martin Jay, as an alternative, pointed to cities associated with the second of the mentioned authorities of the pattern (the Dutch art of describing) - "Delft, Haarlem, and of course Amsterdam itself represent cities spared the imposition of geometricalized grids or intimidating monumental vistas. Persectivalist effects are self-consciously absent, as streets and canals provide informal curved views that defy a central vanishing point. The textures of building materials and the interplay of stone, brick and water create as much a haptic as purely visual experience; clear form is less important than atmosphere. As a result, such cities seem less like visual incarnations of the disciplining state bent on controlling its citizenry through surveillance and more like comfortable sites of an active civil society. [...] And as Alpers notes, the views of their cities by Ruisdael, Cuyp, and Vermeer reveal a close continuity between urban and rural life very different from rupture between "culture" and "nature" evident in Cartesian perspectivalist urban space.[65]" The striking correlation can be seen here. The one that Cartesian philosophy, this time implemented to the urban planning, creates a dehumanised space of modern cities. The space which is the result of concentrated vision (picturesque vistas) and rationalism (grid), namely disembodiment in a design process.

[65] Ibidem, p.92,

TIME

In the past, time was measured by sun, clepsydras or changing seasons, then by the calendars and clocks. Its passage changes everything that is in it: materials, buildings, and also people. In the case of short-time units these are impermanent changes, as for instance the chiaroscuro. A great example can be a comparison of the same sculptural elevation made of limestone elements when it is in sun and in shadow (Fig.14). It seems to be very vulnerable to the encounter of time. The way sun rays changed its surface into three-dimensional shining thousands of sparkles surface is unavailable. Apparently it comes alive with all organisms hidden inside, which are always visible in a broken side of limestone. In the case of longer time units, materials can be more or less durable, but on all of them time leaves its mark. In limestone, the process of patinaising, similar to dematerialisation, seems to uncover the real spirit of a limestone. Like all those congeal marine animals would be exposed, giving the material a second life, or at least a second stage of life. That gives a kind of reflectiveness to the surface, which is more characteristic for minerals. Could the material be more tactile than when it is exposed by that process? It is far away from the modern sterility. Nevertheless, in a time of rushing obsolescence and novelty regime, people make every effort to clean it neatly, whereas architects are amazed by its authenticity of the ageing process. But time is also a process. In time material arises, changes, evolves. Based on the analysis of sedimentation and extraction of Belgian Blue Limestone a lot of information was elicited.

Fig. 19 | Comparison of the same elevation made of limestone elements when it is in sun and in shadow. Because of sculptural qualities of limestone it is very easy to shape it into blocks, bricks, and even into ornamentation.

Nevertheless, interesting way of measuring time can be found in the old culture of Turkish bath. It starts in a warm room, then a hot room, after which they wash in a cold water. After performing a full body wash bathers finally go to the cooling-room for a period of relaxation. In Roman bath the sequence of rooms is reversed; it starts in cold room (frigidarium) to warm (tepidarium) and finish in hot (caldarium). Therefore, it can be said that time and meaning of space, because of this sequence, is measured by temperature. The same as catharsis is.

Fig. 20 | Process of patinasing found in Anderlecht.

Man and architecture exist in the tissue of the world, in the reality of matter and time. It is their location at the same time that allows them to exist. On the other hand, it is an architecture that creates this reality and builds experience. As Pallasmaa wrote: “Architecture tames and domesticates space and time in the flesh of the world for human habitation. It frames human existence in specific ways and defines a basic horizon of understanding. [...]architectural structures ‘humanise’ the world by giving it a human measure and cultural and human meaning.”[66] This beautiful interpretation of correlations related to time, being and architecture raises the latter to the supreme rank in the process of perception. It is in space that we place ourselves learning the properties of the world. However, the same author provides an interesting interpretation of time and space changed by our ability to dream an imaginary world. He points out that the ability to imagine something “ [...] liberate oneself from the limits of matter, place and time”[67]. “The characteristically human mode of existence takes place in the worlds of possibilities, moulded by our capacities of fantasy and imagination. We live in worlds of the mind, in which the material and the mental, as well as the experienced, remembered and imagined, completely fuse into each other. As a consequence, the lived reality does not follow the rules of space and time as defined by the science of physics.”[68]. Paradoxically, this detachment from time and space links the subject to the experienced space (real) with the help of existential space (imaginary) even more. The latter is interpreted on the basis of meanings and values, own memory and real experience (experienced space). However, space-time undergoes multiplication and dilaceration.

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[66] Pallasmaa J.,“The Thinking Hand. Existential and Embodied Wisdom in Architecture”, op. cit., p.25 p.141,

[67] Pallasmaa J.,“The Thinking Hand. Existential and Embodied Wisdom in Architecture”, op. cit., p.25,

[68] Pallasmaa J.,“The Thinking Hand. Existential and Embodied Wisdom in Architecture”, op. cit., p.25 p.140-141,

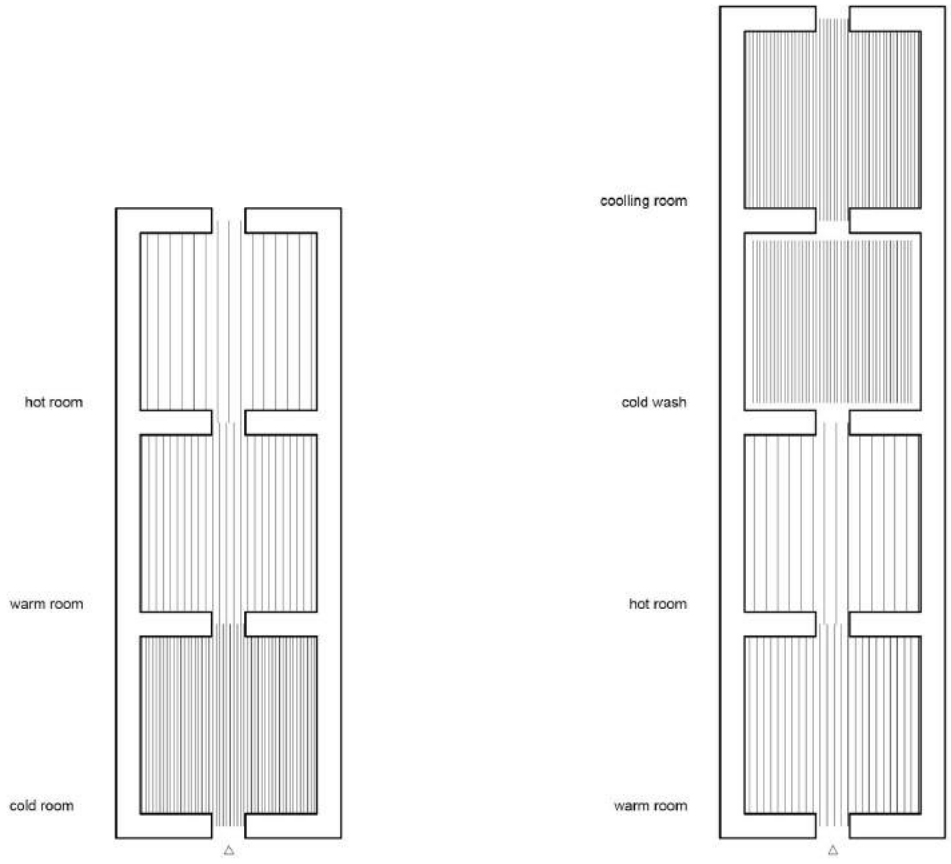

Fig. 21 | Sequence of rooms in Roman (left) and Turkish baths (right).

RESEARCH TRANSFORMED INTO PROJECT

"The image is not a certain meaning, expressed by the director;
but an entire world reflected as in a drop of water."[69]
Andriej Tarkovsky

Prepared research is to be introduced to the project in a shape of spolia in-re and spolia in-se. Construction technique of Belgian Blue limestone is considered as local tradition, which has a social importance, thus it can be qualified as spolia in-re. That knowledge will be used either in limestone or in different materials (e.g. concrete). On the other hand, old limestone elements are perfect for reuse and will be incorporated to the project as well (spolia in-se). The designed building plays partly with existing, most probably concrete structure building, what is also relevant to the studio topic (spolia). Moreover, the front elevation of the swimming pool is aligned to traces of Senne' river's wall. In front of the building a shallow paddling pool will be located. It will create a preludium of the building itself and a nice meeting spot for habitants; a substitution of Senne river.

Moreover, watertightness of limestone is an inseparable feature of its extraction and even sedimentation (during an extraction few times size of olympic swimming pool has to be pumped out every day). That feature and sea animals hidden in the surface of limestone inspired me to design the Public Baths. That is also a function, which emphasises one's embodiment in space and gives him or her ample sensual interaction. To prepare a program I investigated a swimming pools of Belgium and the Netherlands, what gives me a closer look to the characteristic of that function. Inspired by Roman and Turkish traditional bath, a sequence of cold, warm and hot rooms is to be designed in the interior. The focus was put on how users experience the space; how they experience the transition from an inside aisle through a swimming pool to an outside garden; how they experience the sequence of gradually lighten and darken rooms. In general, space was design in a way that aisles are darker than a big space of the swimming pool where the visual connection with tree crowns and sky was designed. Other windows are only from North-East side to enable people to go out to the outdoor garden. Such layout results in space, which is vulnerable on the encounter of time; is changing during seasons, weather and time of the day.

[69] Tarkovsky A., "Sculpting in Time - Reflection of the Cinema", London, The Bodley Head, 1986, p.110,

For my research, books of Pallasmaa were very important. He raised the issue of today's consumerist media culture that bombards human perceptions with numerous information that flattens our world and an ability to imagine. The multitude of images is so overwhelming that there is not enough space for dreaming an imaginary world. The imaginary world that has similar importance for our perception as a real experience. Moreover, the interpretations of banal media images that are given already interpreted to us, relieve our imagination dulling our senses and emotions. Human's need for neuronal stimulation rose to the level that everything below "entertainment" does not catch the attention. In this situation, the role of art and architecture, as Pallasmaa rightly points out, should defend the "autonomy of individual experience and its independence [70].

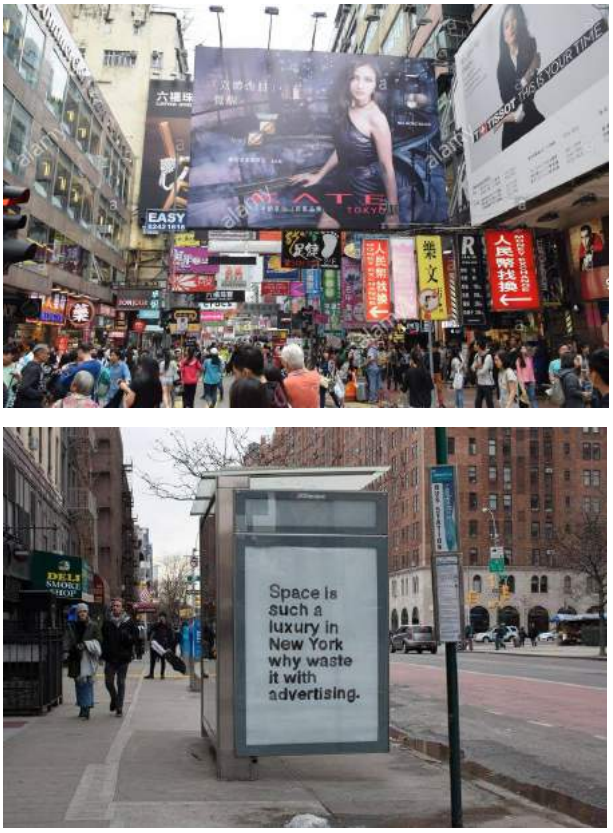

Fig. 22 | Consumerist culture visible on the street and (anti) advertisement that emphasises that issue.
top: Sergio Capuzzimati
https://www.alamy.com/stock-photo-hong-kong-china-street-signs-and-shops-advertisement-in-the-busy-streets-125662105.html
bottom: https://www.graffitistreet.com/subvertisers-international-anti-advertising-movement-goes-global-march-2017/

[70] Pallasmaa J.,"The Thinking Hand. Existential and Embodied Wisdom in Architecture", op. cit., p.164,

My project of the Public Baths would be a place of protection against excessive exposure to the hustle and media. That would be a place where time is emphasised with its agentship, and people are exposed to a variety of experiences in this space. The place, where his or her sense of subjectivity is strengthened. *Silence gives the opportunity to reflect and take a break from the hustle and bustle of the noise of modernity.* "Existential meanings of inhabiting space can be articulated by the art of architecture alone."[71] Architecture can be seen as a scenography in which the emotions one wants to convey are identified. *Space acts on the subject, and the subject interprets it with all his existential experience, memories and the world of imagination. That transition to the designing building from the modern world is already considered in its abstract meaning as liminality of space. The same is visible in the site scale. Designing swimming pool will be hidden inside the urban block, what gives the building a nice porch in the shape of the park. Thus, the park will come into the building, and the building into the park constituting a buffer between the building and the city.*

The quote of director, Andriej Tarkovsky, which I used at the beginning of the chapter, is very meaningful. His movies are rife with symbolism, but when he was asked about that, he answered: *"The image is not a certain meaning, expressed by the director; but an entire world reflected as in a drop of water."*[72]. The same can be said about my project; I don't want to create a certain image, but put all my existential experience, memories and world of imagination to create my own drop of water.

[71] Pallasmaa J.,"The Thinking Hand. Existential and Embodied Wisdom in Architecture", op. cit., p.165,
[72] Tarkovsky A., "Sculpting in Time - Reflection of the Cinema", London, The Bodley Head, 1986, p.110,

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