

Essay - Bricks and auxiliary materials

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1. Introduction

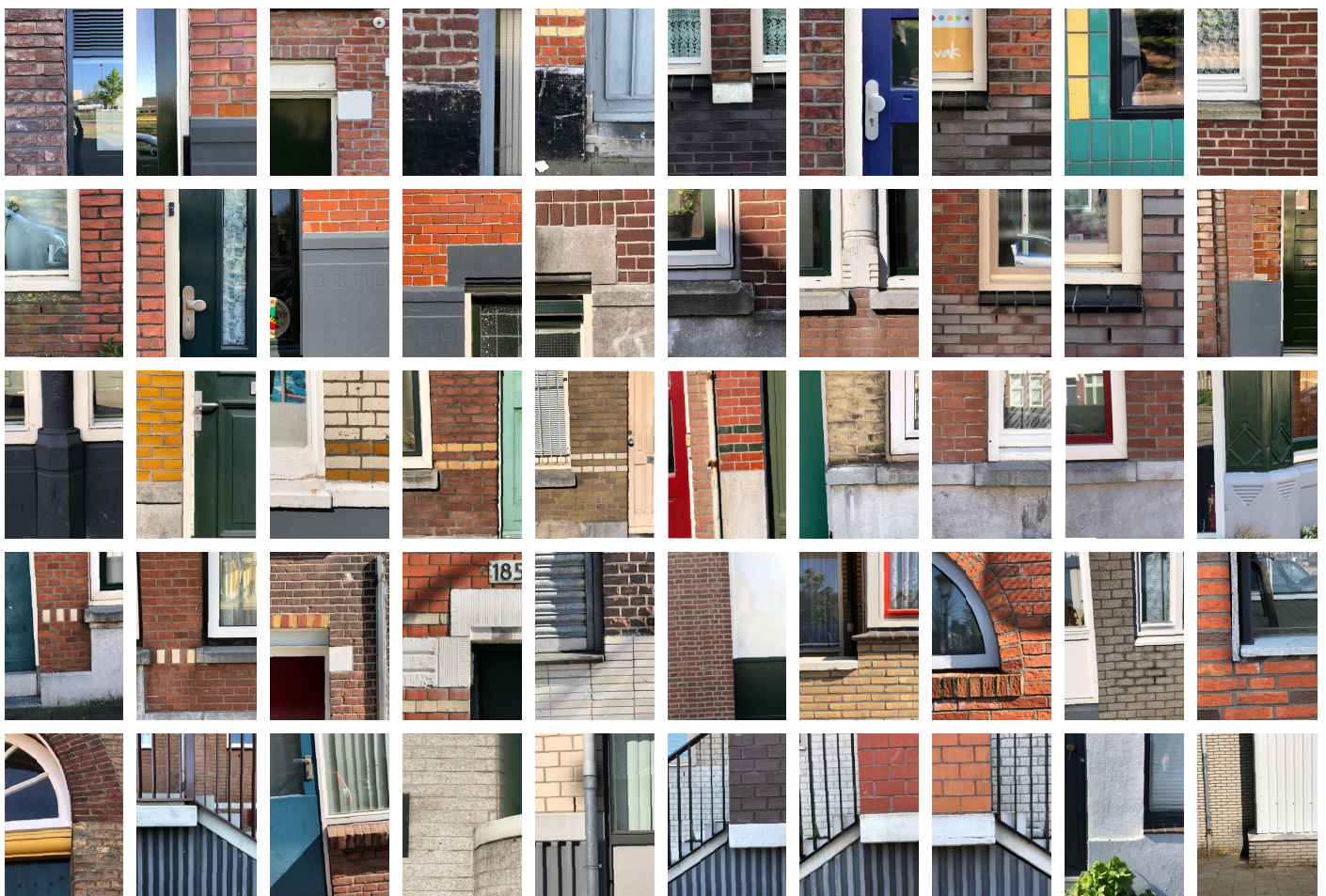
For the design of a new craft school in Delfshaven (The Netherlands) a study was conducted, starting with a series of photos in which all brick types and additional materials in the surrounding area were photographed. Research schedules were created to analyze the photos in a structured way. The factors that were included are year of construction, use of materials, colors and sizes of the bricks. The results show that corner buildings often have more detailed brickwork and outstanding colors. Newer buildings more often have eye-catching materials such as colorful tiles. The photos show a distinction between brickwork and all other added materials, which are for example: frames, balustrades, window frames, blinds, burglary protection, or decorations.

Since thermal insulation calls for a multilayer form of facade construction today, brickwork can no longer be equated with the powerful load-bearing walls we know from the past. However, the development towards a thin outer skin does not have to be of disadvantage (DETAIL, 2017). This document examines the reasons for architects to choose a particular type of material in addition to bricks. It is impossible to describe all different types of architectural ideas. As a result, a selection has

been made of architects with either an opinion that is clearly articulated or controversial. This selection consists of worldwide pioneer architects to ensure that the topic is being approached from different angles. The results can be used to improve the design of the craft school.

1.1 Reason for using bricks

For the craft school's main material, the relatively cheap and durable material brick is chosen. Brick is a common material in the area of Delfshaven, which will make it easier for a new building to blend in. Moreover, the material can also contribute to the creativity and activities within the building. The craft school will become a location for students of a silver- and goldsmith education. Some outbuildings will be used for student housing, a museum and public spaces to promote the gold and silverware. To inspire the students of this craft school, the brick could be an inspiring element for these students. This means that there will be a lot of detail in brickwork like motifs, colors and their stacking. By treating the brick as a jewel (such as the gold- and silversmith training in jewelry), it is possible to gain new facade insights.



50 pictures of brick and auxiliary materials in Delfshaven

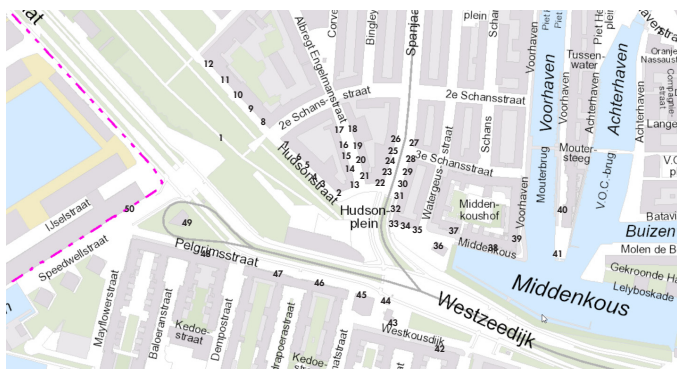
1.2 Design of the study

In this essay, some famous architects will be discussed, explaining their choice of a certain type of material next to the brick. To do this in a structured way, the following chapters with auxiliary materials have been highlighted: brick in combination with (1) wood, (2) metals, (3) natural stone, (4) concrete and (5) glass. These materials are highlighted, since they can be found in the surrounding area of the building ground.

Some architects have worked with various added materials throughout their oeuvre, sometimes even within one building. In these cases, a choice is made to only include the most inspiring material. This essay will mainly look at the materials that are visible in the facade, without taking into account the possible constructional consequences of these facade materials.



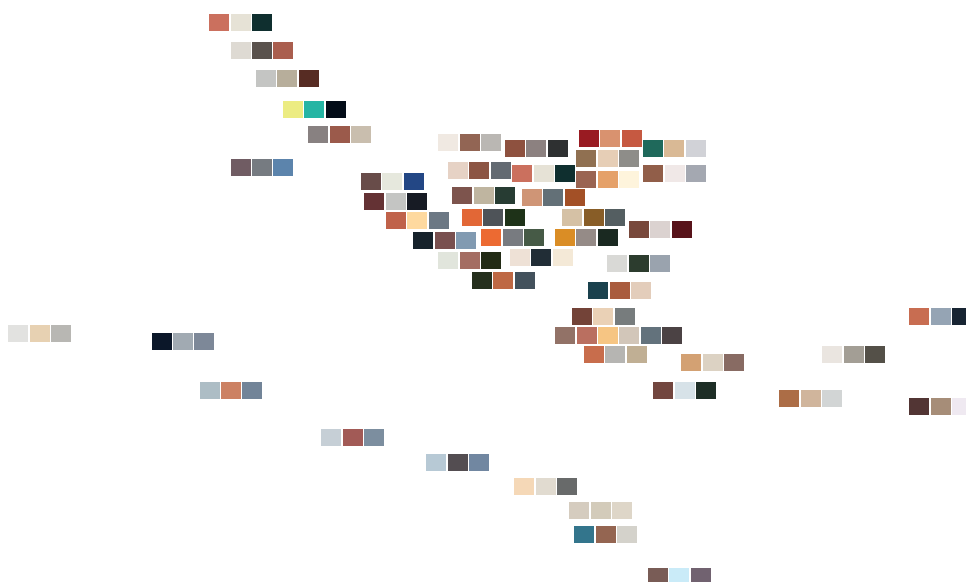
Example of picture with color analysis



Location of 50 photos



Age of the buildings



Used colors in area



Brick and wood in Delfshaven

2. Brick and wood

Brick in combination with wood is a common combination in the history of the Netherlands. Initially, the reason for using wood in buildings was often because of the processing possibilities in the application of wooden shutters (NBTF, 2005). Nowadays, alternative materials are also available for making facade openings. Yet there is a collection of architects who continue to appreciate the use of wood in the facade. Some of them have additional reasons for using wooden elements.

2.1 Brick and wood in Delfshaven

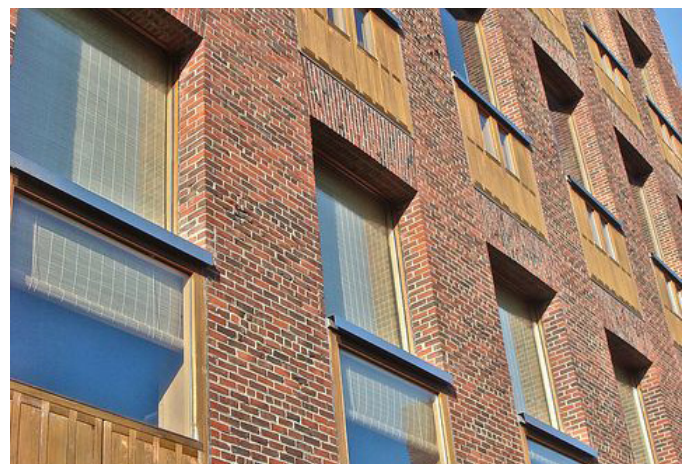
Wood can be found in 31 of the 50 photos taken in the vicinity of the construction site. Wood occurs in the form of frames, doors and facade panels. All wood parts used are painted in various colors, predominantly white and shades of green with a single red color. The wooden frames all seem to have the same wood size. The wooden-framed buildings were generally built in the period before 1985. The maintenance of these wooden frames can say a lot about the current structural condition of the buildings in this district.

2.2 Louis Kahn, a warm material in places where the building is touched

Louis Kahn is an architect who has frequently realized brick projects. In these projects he searched, among other things, for the design possibilities with brickwork. In his design for the "Class of 1945 Library" he has realized a nine-story brick building. The weight of the outer part of the building is carried by the stones themselves. Kahn brings this fact to the attention of the viewer by noticeably thickening the stone pillars at the bottom where they have to carry more weight. The windows are correspondingly wider to the top where the pillars are



Interior Library 1945



Facade Library 1945

thinner. Kahn said, "Because of the weight of the stone, he dances like a fairy above and moans below" (James W.P. Campbell, 2006). The building commission's document stated that the new library should be "unpretentious, but in a beautiful, inviting contemporary style." Kahn therefore made the exterior of the building relatively undramatic, suitable for a small New England town. The facade is mainly brick with teak panels at most windows marking the location of a few wooden workplaces on the

inside. (James W.P. Campbell, 2006)

He also used stone in the interior, and finished certain aspects of the library in natural wood. The wood contrasts the stone by giving the spaces a sense of warmth and a glow that welcomed readers when the natural light hits this natural material (Perez, 2010). Kahn's use of teak and white oak humanized the library environment at a personal scale. Along the perimeter, sliding wood panels in individual study carrels allow students to block distractions or, equally important, refresh their gaze on trees and figures in the distance. With an intuitively grasped organization, attention to the parts of the building you touch, and ways for users to control their environment, Kahn understood the subtle aesthetics of natural simplicity (Stephen R. Kellert, 2008).

The use of natural wood and its corresponding color contradicts the usage of wood Delfshaven. It may only be protected from the weather with an oil or lacquer, whereas the wood in the surrounding of the building ground typically has a non-natural color. The natural wood color used in the "Class of 1945 Library" is also preserved on the inside of



Amsterdamse School (Spaarndammer plantsoen, Amsterdam)



Beurs van Berlage

the building.



Berlage



Amsterdamse school architecture

2.3 H.P. Berlage, Balance, peace and clarity

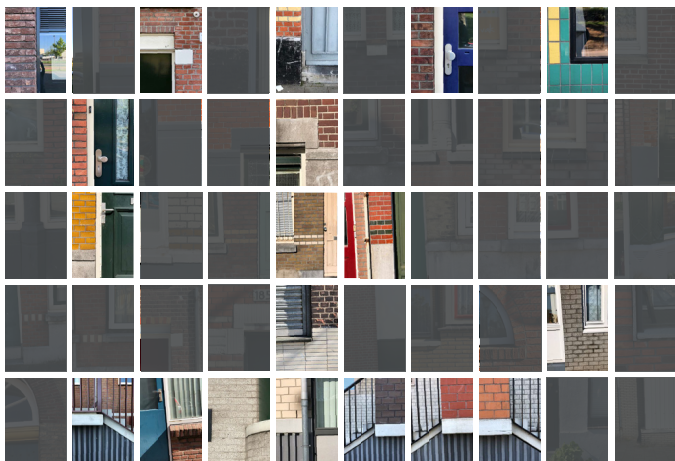
Architect H.P. Berlage has been of great significance for the development of modern architecture in the Netherlands. This is not only because of the size and strength of his oeuvre, but also because of his influence on colleagues. The 'Beurs van Berlage' in Amsterdam can be considered as the starting point of modern architecture in the Netherlands. According to Berlage, society was in a transition period and the issue of style had to be postponed until the near future. Until then, architecture should not have a distinct style, and the emphasis should be on broad lines, surfaces and contours. In order to renew the architecture, there was primarily a need for balance, peace and clarity. (NBTF, 2005)

To make balance, peace and clarity, the windows are again simple. Small dark openings in tight facade surfaces make them relatively primitive windows. The filling of the frame opening and the further closure disappear into the shade. In addition to the rational side of Berlage, in which he wants to show how the construction works, his works also

always has expressive elements. In his residential building designs in particular, he regularly uses the frame as an important expressive element. In the early days, Berlage and later related architects used a window with an undivided lower window and a skylight with rods. (NBTF, 2005)

The Amsterdam School spans the openings with a network of brightly painted wooden glazing bars, which immediately catch the eye. The windows with glazing bars, unlike traditional windows, are completely attuned to the facade and not to the interior. This is the reason that the glazing bars have a light-guiding profile on the outside. The traditional window frame, which served as the fourth wall of the interior, has profiling on the inside. Another characteristic feature is the use of different jambs, even sometimes tapered, so that the frame is deeper on one side of the facade. (NBTF, 2005)

From the photos taken in Delfshaven it can be concluded that there are different window sizes, all of which are placed relatively close to the facade. The jambs are relatively similar in all wooden window frames. It is interesting that, just like in the Amsterdam school architecture, in many places a (shade of) white contrasting color was chosen for the frames. However, the turning elements are often another color.



Brick and metals in Delfshaven

3. Brick and metals

3.1 Brick and metals in Delfshaven

18 of the 50 photos taken in Delfshaven have visible metal elements. These elements vary from doorknobs to rainwater drainage, theft protection or railings. There is one steel window frame, which is very subtly made. The hand railings on the buildings are always in a dark color. More constructive metals in the facade (see for example image 3) usually have a white color. The only metal element which is a metal color is the roof strip in image 44. Although this essay does not specifically address hinges and locks, this is in all visible cases made of metal.

3.2 Sigurd Lewerentz, tribute to brick

St. Peter's Church in Klippan, Sweden, is one of Lewerentz's last buildings and was completed in 1966 when he was over eighty years old. It is seen as the crowning glory of his life's work. It is a difficult work that emerged from 'stubbornness' and a life of calm reflection. Despite his obsession with detail, the architectural design was clear and logical. Lewerentz largely shares the modernists' interest – architecture based on construction, glass, steel and reinforced concrete – in materials, but he preferred masonry over steel and glass. The St. Petrus Church in Sweden is his tribute to brickwork. (Wells, n.d.)

What Lewerentz saw in brick and what no one had been able to express before was to communicate the high importance of the module. His idea was that the brick is made with a certain size and chopping it is difficult and should be avoided. An architect like Lewerentz was needed to convert this observation into a building, stating that no brick should be cut during construction. He was also con-

vinced that brick should be laid in such a way that its integrity was evident. In order for such a system to work, he had to lay bricks with thick joints, which could be varied in size.

To show all the bricks incorporated into the building, Lewerentz had to find a solution to subtly attach the glass to the building. He used a steel frame for this, which is attached to the facade with four small attachment points. It is striking that the glass with the metal fastening is placed in front of the brick wall.

Firstly when you see the building, it seems to be a search for material and tectonic honesty, as the complete brick apertures appear frame-less and uninterrupted from within. However, a closer inspection suggests otherwise. The bricks over the head of the windows are seemingly unsupported, concealing their steel reinforcement in order to maintain the purity of the brick. This is characteristic of the playfulness embedded in St Peter's; an architecture that is full of surprises and contradictions that provoke questioning and mask the architect's intentions.

The emphasis on materiality is the main principle



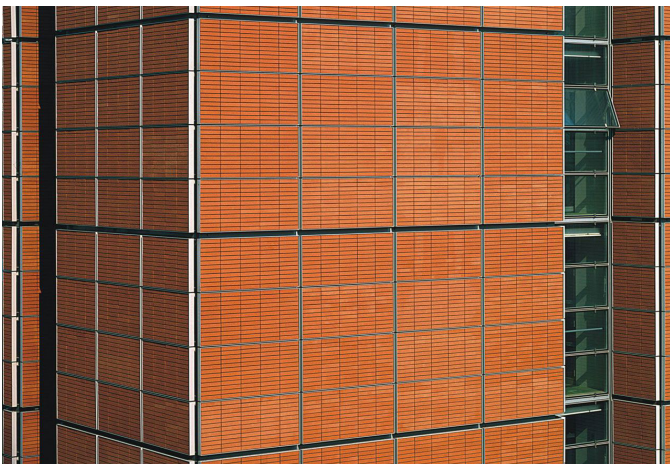
Sigurd Lewerentz, St. Peter Church in Klippan



Sigurd Lewerentz, St. Peter Church in Klippan



Renzo Piano



Renzo Piano

defining the church's spatial character. Lewerentz translates this concept by primarily using the same material. Brick is therefore used for walls, floors, ceilings, and furniture. The ensemble of buildings feel distinct in their formal and tectonic expression, each adopting its own style of brick bond and window arrangement, but all unified by the relentless use of dark brick. The abstraction of building elements such as the windows reinforces this sense of 'wholeness'.

There is no building in Delfshaven that can refer to the work of Lewerentz. Although bricks are often used, none of them have a corresponding identity

to St. Peter's Church in Klippan. The usage of the St. Peter's windows is not comprehensively described – how to open them, if it is easy to secure, etc. Moreover, this does not seem to be of first priority in this building, since it has an ecclesiastical function. In Delfshaven, security and usability by opening the windows will be of greater importance and therefore it is plausible that the windows will look different. Especially because of the new gold and silver smith function.

3.3 Renzo Piano's quest for lightness

In 1977, Richard Rogers and Renzo Piano designed and built the IRCAM (Institute for Musical and Acoustic Research) in Paris. This basically consisted of a box-shaped studio under the Place Igor Stravinsky next to the Center Pompidou. These were designed in such a way that the acoustics could be precisely controlled and changed, making the studios an instrument itself. The major shortcoming of the design was the lack of formal access and spaces for offices, libraries and other functions. These could have been better located above ground, where they would have had windows, light and air supply. Renzo Piano was approached and asked to design an extension that would contain these elements and which would be integrated into the existing surrounding buildings. (James W.P. Campbell, 2006)

Piano's solution was a lightweight construction of glass and steel, wrapped in terracotta to match the color of the existing masonry. Piano placed a block of masonry that only formed the covering of a part of the steel skeleton. The facade appears to be made of brick masonry in stacked bond. On closer inspection, the metal skeleton is seen, which divides the masonry into blocks. The bricks are kept apart by washers, which produces evenly filled joints. (James W.P. Campbell, 2006)

The photos in Delfshaven mainly consist of smaller buildings that seem to have no interest in lightweight constructions. Therefore, the idea of Piano may provide new insights for the new craft school to be built. Since the IRCAM project, terracotta screens have become increasingly popular and branded systems are now on the market. The terracotta systems are usually lightweight and vary in size. The maximum size is determined by the workability because larger elements are heavier and damage faster.



Les Halles



Drawing Les Halles

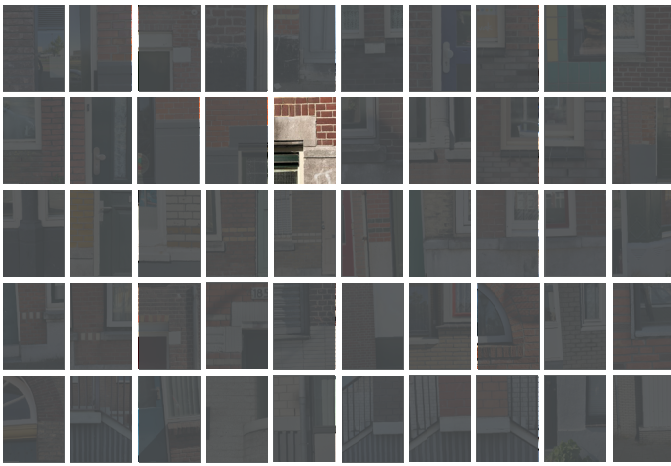
bilities of brick. (James W.P. Campbell, 2006)

The main markets of Paris, Les Halles, were designed by the architects Victor Baltard and Félix Callet and was built in two phases during 1860-1866 and during 1954-1857. The buildings consisted of iron columns supporting brick vaults. The emphasis was purely on functionality and not on ornaments. The underlying idea of brick use was fire safety, but the brick exterior walls were decorated with esthetical red brick block patterns on a yellow background. The combination of brick and steel had already proved effective, and more than 40 markets in the city and beyond were built in brick and steel after this. Les Halles itself was torn down in 1971 to make way for a huge underground shopping center, but a number of smaller markets have survived. (James W.P. Campbell, 2006)

In Delfshaven there is one building that has incorporated brick and steelwork. On this location it is also primarily used in a constructive way, but decorated with steel flowers. The steel construction of Les Halles was designed in a way that it was stable on itself. In Delfshaven the steel element is only placed in the top part of the window opening and therefore it is necessary to keep the brickwork as constructive element. For the design of the new craft school, a stable construction filled with esthetical brickwork could be of great value in relation to the use of the building. Especially because wider spans – such as the market halls – can be made and therefore relatively large rooms can be designed.

3.4 Les Halles, protection against fire

In most of France and especially Paris, brick had not been a popular building material for facades, although it was often used for the core of walls clad in natural stone. It only came back to the city in the mid-nineteenth century. One of the most important structures from that period is the large indoor market of “Les Halles” in the center of Paris and this has undoubtedly led to a renewed interest in the possi-



Brick and metals in Delfshaven

4. Brick and natural stone

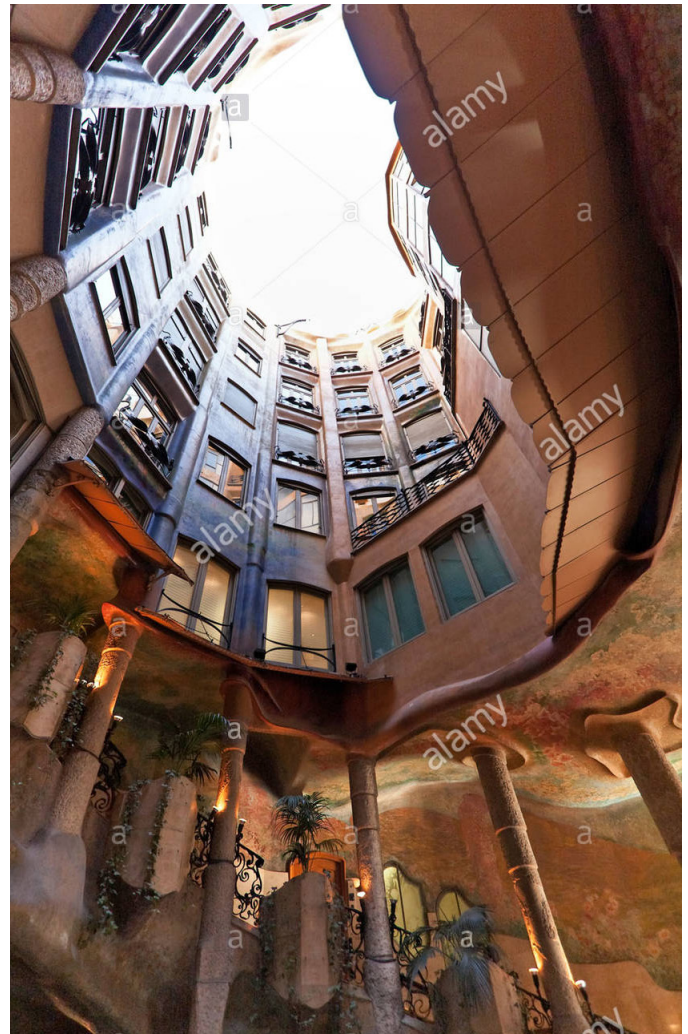
The Romans were the first in the Netherlands to start building with natural stone. Natural stone was used to make defensive buildings, bathhouses, churches, etc. Until 1870 the natural stone was transported to the Netherlands via the waterways (Rhine, Waal, Maas). After 1870, natural stone was also transported by (rail) roads. The different types of natural stone that are mentioned below also come from Germany, Belgium and France.

4.1 Brick and natural stone in Delfshaven

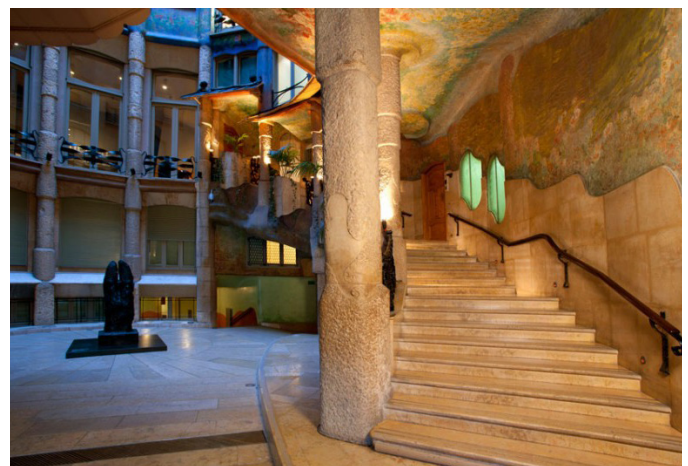
In Delfshaven there are multiple buildings with natural stone elements. The material is placed on the skirting of the building and on the side and top of doors and windows. The material has different reliefs to give depth to the facade. Normally, these natural stone elements were not placed as a decorative element, but mainly because of its functional and practical characteristic. The natural stone protects the brickwork from external damage such as rain- and ground water as well as the damage by human usage. Due to the possible expansion and contraction of brickwork, it was not possible to make very high brick buildings. Bricks tended to crack when this was applied. Therefore, natural stone was used as an interruption to prevent this unwanted effect. Nowadays a steel façade support can prevent this.

4.2 Antonio Gaudi, search for the natural form

Antonio Gaudi was born as the son of a blacksmith. In his youth he was strongly influenced by nature, which he observed during long walks. He decided not to follow the family tradition in metalworking, but went to study architecture. (Molema, 2005)



Casa Milà, Gaudi



Casa Milà, Gaudi

In the beginning of his career he used a lot of bricks, which often were tailor made to create the natural effect Gaudi was fond of. Later in his work he added natural stone to his buildings, creating a collection of materials. He chose the natural stones himself and was present at the worksite to supervise the bricklaying. Due to the fact that his architectural forms became increasingly more organic, he did not like using bricks in his later

works. Brick, with its rectangular and unnatural form, forced an order on the construction that ultimately conflicted with Gaudi's approach. He increasingly turned to materials such as natural stone and concrete, which were more suitable for the creation of his revolving, winding, crooked and distorted constructions and his quest within his individual interpretation of organic architecture. (Molema, 2005)

In Gaudi's famous 'Casa Mila', the organic façade in the patio shows which floor is important. From the ground floor till the second floor, the facade columns are made of natural stone. The following floors above are made with plastered brick and steel columns. The natural stone on the base of the building is more expensive and the heaviest. Visitors will be surrounded with this material when visiting the patio while the brick and steel façade is not as visible. The latter is also a lighter solution as well as cost saving. The columns are arranged in a very regular pattern, which is only broken at the ground floor and cellar passages. (Molema, 2005)

In Delfshaven, the natural stone is only used



Natural stone in France



Natural stone in France

as a practical material, and in no case has an organic shape. The rooftop park could be seen as an organic building. The sloping roof park is reminiscent of the organic shapes of Gaudi. The new craft school building could be inspired by this organic form, by incorporating these natural forms. It would be a good combination of materials because Gold and Silver are also naturally occurring materials.

4.3 Natural stone in France, the ideal of lighting

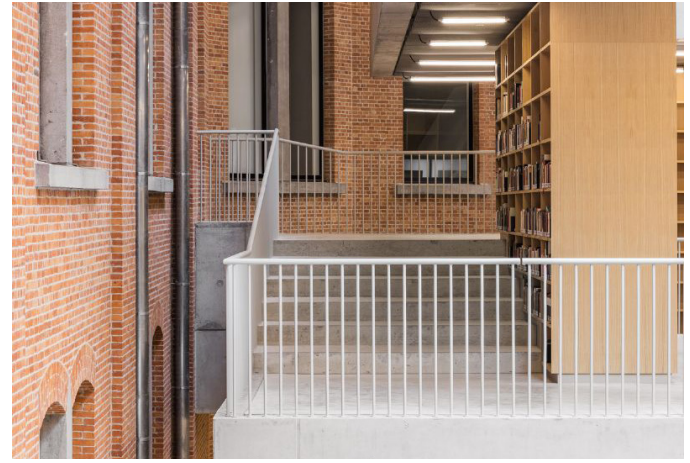
In the sixteenth century, the typical application technique of using brick and stone became popular. This was an architectural composition in which the corners of buildings had to be made of a stronger material than the wall surface they connect. For example, flint walls are joined by bricks, soft stone walls are surrounded by natural stone, and the corners of broken stone walls are joined by hard stone masonry.

The hard materials made it possible for the builders to make a sharp angle, which was not possible in softer facade material. Moreover, the edge of the wall protects against erosion, weathering and accidental damage. When the stone has a different color than the natural stone or the masonry that connects it, the typical frame effect is created.

The combination of natural stone and brickwork can be seen as a decorative element in the façade. The design of the gold- and silversmithing school will be inspired by decorative elements such as the decorative nature of the jewelry branch. The combination in these buildings where practical elements became decorative elements can be inspiring for the new building in Delfshaven.



Brick and concrete in Delfshaven



Utopia, Kaan architecten interior detail

5. Brick and Concrete

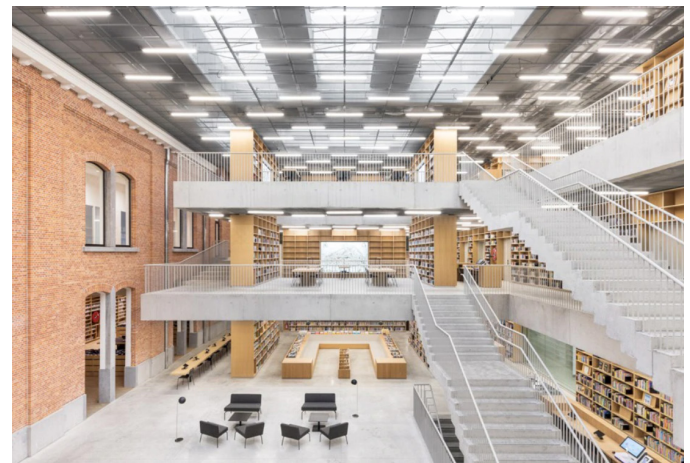
Concrete is an artificial stone-like material, which is used as a building material. Modern concrete is composed of the cement binder and one or more aggregates such as sand, gravel or crushed stone. Cement has the property of hardening when adding water. Good concrete is a mixture in which the grain sizes of the different types of sand and gravel, in the right quantities, complement each other in such a way that the mixture hardens into a stone-like and durable material. Unlike plaster, for example, cured concrete no longer dissolves in water.

5.1 Brick and concrete in Delfshaven

In Delfshaven, two of the fifty photos show concrete elements. These elements are placed under the frames as window sills. There are also examples of concrete in the plinth of the building. By making a skirting board of concrete, more fragile brick can be placed above the skirting board, so that it is less damaged.

5.2 KAAAN Architects, Utopia Aalst. Masonry in dialogue with light gray concrete

Kaan Architecten made a design for the Library and Academy for Performing Arts. This building was built in the Flemish city of Aalst (Belgium). The 8.000 square meter brick complex encloses a striking historical building from the second half of the nineteenth century. Utopia, as the project is called, has been inserted into the existing urban fabric, which also included a monumental building. The project also made a new pathway to enhance and interact with the distinctive irregular street pattern of the city center. This also created intimate spaces in the urban tissue.



Utopia, Kaan architecten interior

Both inside and outside, the historic facades and the masonry enter into a dialogue with the light gray concrete elements. The entrance to the building is located between the reading café and the auditorium on an intimate square. Straight ahead, through the wide hall, the open interior landscape unfolds from floor to ceiling, with several thick concrete floors appearing to float. The floors with bookcases and reading tables hang at different heights and offer a view of the atrium and the brick facade of the existing building. The bookcases run up against concrete discs that make the floor cantilevered without extra support.

Acoustics was a fundamental design tool for KAAAN Architects: reading in the library should not be interrupted by music lessons or the rehearsal of a play. The wooden attic floors have been replaced by floating concrete that does not transmit sounds. Heavy studio doors keep out the noise and the acoustic windows have double glazing, so that every piano tone is reduced.

Concrete is a very suitable material for making large



Frank Lloyd Wright, Robie House interior



Frank Lloyd Wright, Robie House exterior

(straight) structures. As slats, concrete belts are very effective because they can make a straight span. In the example of KAAN architects, the material is also used to create an acoustic pleasant environment. In the facades in Delfshaven, concrete can have an ornamental function in, for example, the choice of window beacon or lintels.

5.3 Frank Lloyd Wright, Robie house. Horizontal lines

The Robie house is designed and built between 1908-1910. It is influenced by the flat, expansive prairie landscape of the American Midwest where F.L. Wright grew up. The Robie House creates an arrangement of public and private spaces, slowly distancing itself from the street in a series of horizontal planes made out of concrete. By creating overlaps of the planes with this gesture, it allowed for interior space expansion towards the outdoors while still giving the space a level of enclosure.

The house is made of Roman brick with yellow mortar and only the concrete elements have steel beams for structural support. Using the horizontality

of the brick, Wright added the concrete horizontal lines as finishing touches to the Robie House to create the ideal modern Prairie style home. The sweeping horizontal lines, extensive overhangs, warm interiors with furniture designed by Wright himself and the balance of public and private spaces made the Robie House in the words of client Frederick C. Robie, "...the most ideal place in the world." (Perez, Robie-house-frank-lloyd-wright, 2010)

By adding the concrete to a brick building as a structural but also an architectural way, this gives an extra dimension to the building. The window frames that have been photographed in Delfshaven have not given the facade such a strong horizontal effect as Frank Lloyd Wright has done. For the new craft school, such a horizontal effect could also affect a separation of functions. In addition, as in the Robie House, the interior can provide a highlighted view to a certain place outside the building which could be the already existing monumental tower.



Glass in Delfshaven



Vogelensang glass facade

6. Brick and glass

6.1 Brick and glass in Delfshaven

Glass can be discovered in 33 of the 50 photographs taken in Delfshaven. Among other things, this glass is used to get daylight into the buildings. In doors, the glass is used to provide a view of street life. The glass shown in the pictures is all manufactured in a clear transparent color. In photo 15, a different type of wire glass is used. This glass is extra strong against breaking. The images contain single and double glass. As an example, the glass of the mill in figure 41 is made of single glass while the glass in the plastic frame in figure 38 is double glass.

6.2 Bedaux de Brouwer Architecten (Vogelensang), view of the ring oven

'Ontvangstpaviljoen Vogelensang' serves as a reception and office space. It is an addition to the adjacent factory dating from 1919 and is still functioning. The functional and simple design of this building is based on the production of the stone. The pavilion is characterized as an elongated volume, with a closed brick entrance side placed on a plinth elevated above ground level. The brick produced on site by the client was deliberately processed in a simple wild bond, referring to the rational stacking of the stone during the production process.

The building reveals itself to the surroundings through a glass facade applied across the width, where a clear panorama of the monumental factory, the bustling forecourt and the rural landscape offers an impressive view. The interior is characterized by vaulted masonry ceilings. According to the design of the office this is inspired by the traditional ring oven with space-separating cupboard walls that integrate air treatment, acoustic facilities and lighting. Like the ring oven, the pavilion consists



Vogelensang brick facade (entrance area)

of a rational sequence of spaces with their own unique function. Utility rooms are placed on the closed side whereas living areas are located on the visible side. In total, a pavilion connected to the location but also materialized with- and inspired by the client is the end result.

The combination of spreading brick in combination with a large glass walls to admire the ring oven is special. Because the building on the entrance side seems completely closed, and even the toilet windows are covered with bricks, the opening on the oven side is interesting on an architectural level. Such an idea that there is a clearly closed wall and on the other side a very open and light glass facade, can be used for the new craft school in Delfshaven. Especially because the new craft school with gold- and silversmithing must be secured in a good way, to ensure theft protection of these valuable metals.

6.3 MVRDV, brickwork made out of glass

An original 19th century facade of a building in the P.C. Hooftstraat has been rebuilt with a combination of bricks and glass bricks. The facade is made of



ordinary bricks. (dearchitect.nl, 2016)

The gradual transition from the glass facade upwards into a brick facade posed a new challenge for the constructors. The difference in expansion coefficient would lead to unwanted stresses in the construction. The solution was found in bricks formed around a glass core.

The glass stones are glued with very thin glue. The facade has glass frames, glass door handles, transparent cement and of course glass stones. All these glass elements are made in Venice which are cast and tested there. The stones had to be as strong as bricks. The arch above the door alone weighs a hundred kilos.

This way of applying glass in a facade is relatively expensive. This would be a special way for Delfshaven to combine glass and brick. The original character of this building would suit a new craft school in Delfshaven, because it can be seen as a jewel for the building.

Glass stones in crystal house interior, MVRDV



Glass stones in crystal house, MVRDV

glass bricks up to 9 meters high, above which an overlapping part is created that eventually becomes a brick facade. The architectural firm MVRDV actually wanted to make the entire building from glass, but that was too much for the municipality of Amsterdam, which does not want to jeopardize the historic character of the city center. Therefore, the top twenty percent of the building is made of

8. Final Result

8.1 Research into brick and auxiliary materials

We explored the possibilities of brick in combination with other materials. It is impossible to make a complete but compact overview of all available options. For this reason, an overview has been made with extremes of well-known or award-winning architects to gain knowledge.

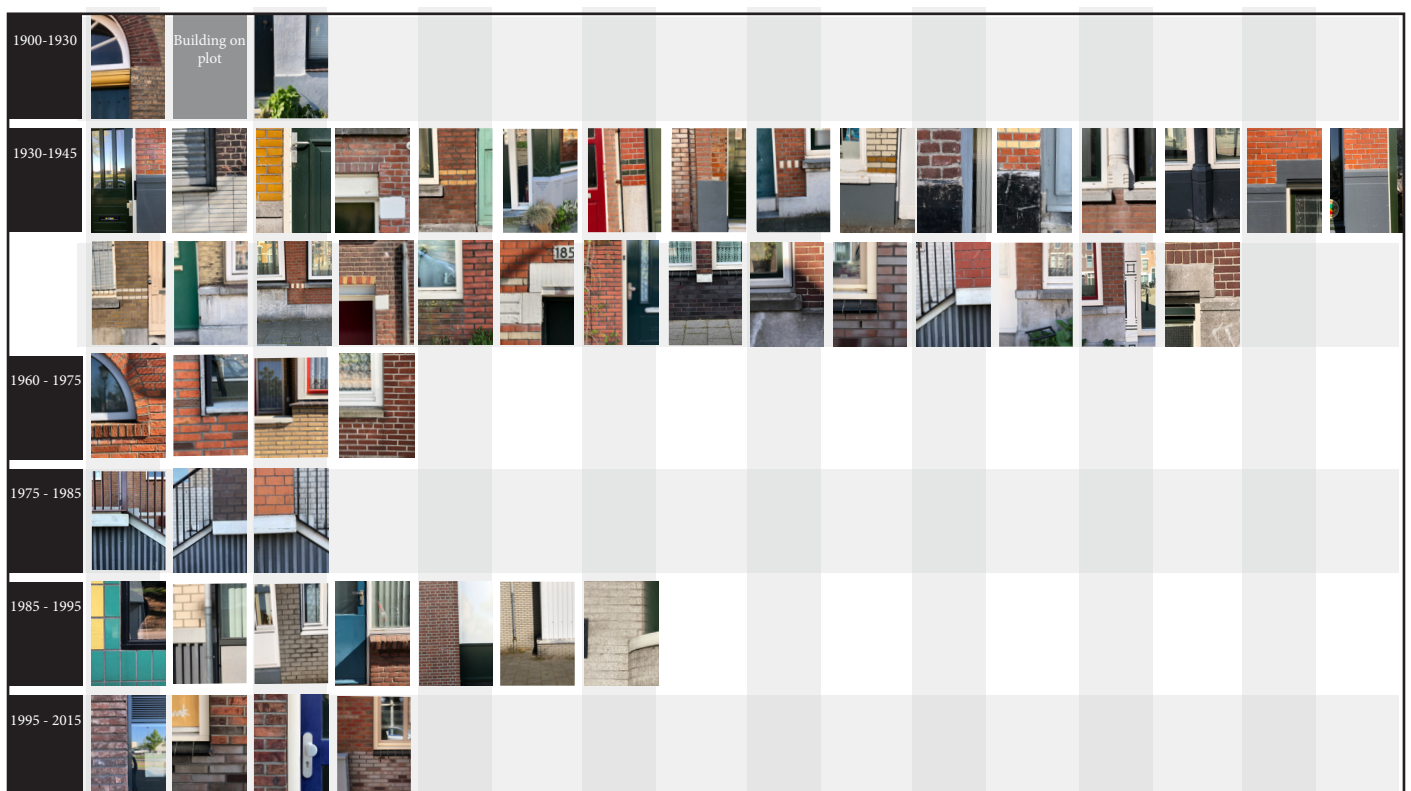
Starting with the combination of brick and wood, the usage of the latter was interpreted in a different way by Kahn and Berlage. The most obvious differences between these two architects is their interpretation of the material and its processing. It seems that Kahn interprets the material as a feeling for the users of the building, which places a large emphasis on tactility. He found it important that the places where the user can touch the building are experienced as a warm place. On the other side, Berlage places the emphasize on tectonics. The wood in Berlage's design is used to establish an idea of balance, peace and clarity by creating clear frames. For the processing, Berlage used white paint on the wood while Kahn kept the wood its natural color. This reinforces their ideas.

The second subject concerned brick and metals. S. Lewerentz used thin steel frames in his ideas for the St. Peter's Church in Klippan, which were not allowed to compete with the masonry. This was

very different from 'Les Halles' in France where the metal was applied as a decoration in the facade. Therefore, we can conclude that metal can both serve as a constructive element as well as a decorative element. In a more general way, the usage of two materials can decrease an architecture's wish for unity in an architectural design. It could be a reason to place less or no emphasize on the metal and therefore the tectonics of a building.

The architects who work with brick and stone also deal very differently with this. Gaudi used the natural stone to create natural shapes in his building. The brick was too 'square' in some places, so the tailored made bricks were replaced by natural stone. His architectural ideas create harmony between humans and the natural world surrounding it. In France, they were not concerned with the natural shape, and saw to it that the natural stone was cut into squares as much as possible. Placing the blocks at the corners made the buildings firmer and gave the buildings its typical design. This points out the materials being used as well as the construction.

Concrete and brick is a combination that is used more often today. Concrete is a good solution for achieving low-noise floor constructions as was seen in KAAN's Utopia project. This also showed a new approach towards the flow of the buildings' construction and the practical use. By adding



Pictures arranged in ages of the buildings

bookshelves on the concrete construction, the concrete floors appear to be floating. This provides a contrast with the concrete that is often perceived as hard and cold perceived material – it places less emphasize on the tectonics of the building. In addition, concrete can be applied in such a way that the brick will be accentuated. Frank Lloyd Wright used the concrete to give his building a horizontal character. This way, extra attention can be paid to the exterior from the interior.

The part in which glass in combination with brick is discussed contains a strong contradiction in architecture. The examples showed the possibilities with the material. Through the building of the Vogelensang company, the combination of brick with a large glass wall is visible. In the MVRDV building, with glass bricks, the glass material is mainly used to elegantly keep the characteristic Amsterdam facade building intact. In this way, the dimensions and appearance of the facade are comparable. In both projects there is a large amount of natural daylight on the inside of the building.

As can be seen from the architectural ideas discussed, the emphasize of a project can lie on different architectural concepts. An architects view on architecture and his/hers signature impacts the design profoundly. For the design of a new craft school in Delfshaven it would be nice to maintain such an architectural concept and to use it in the

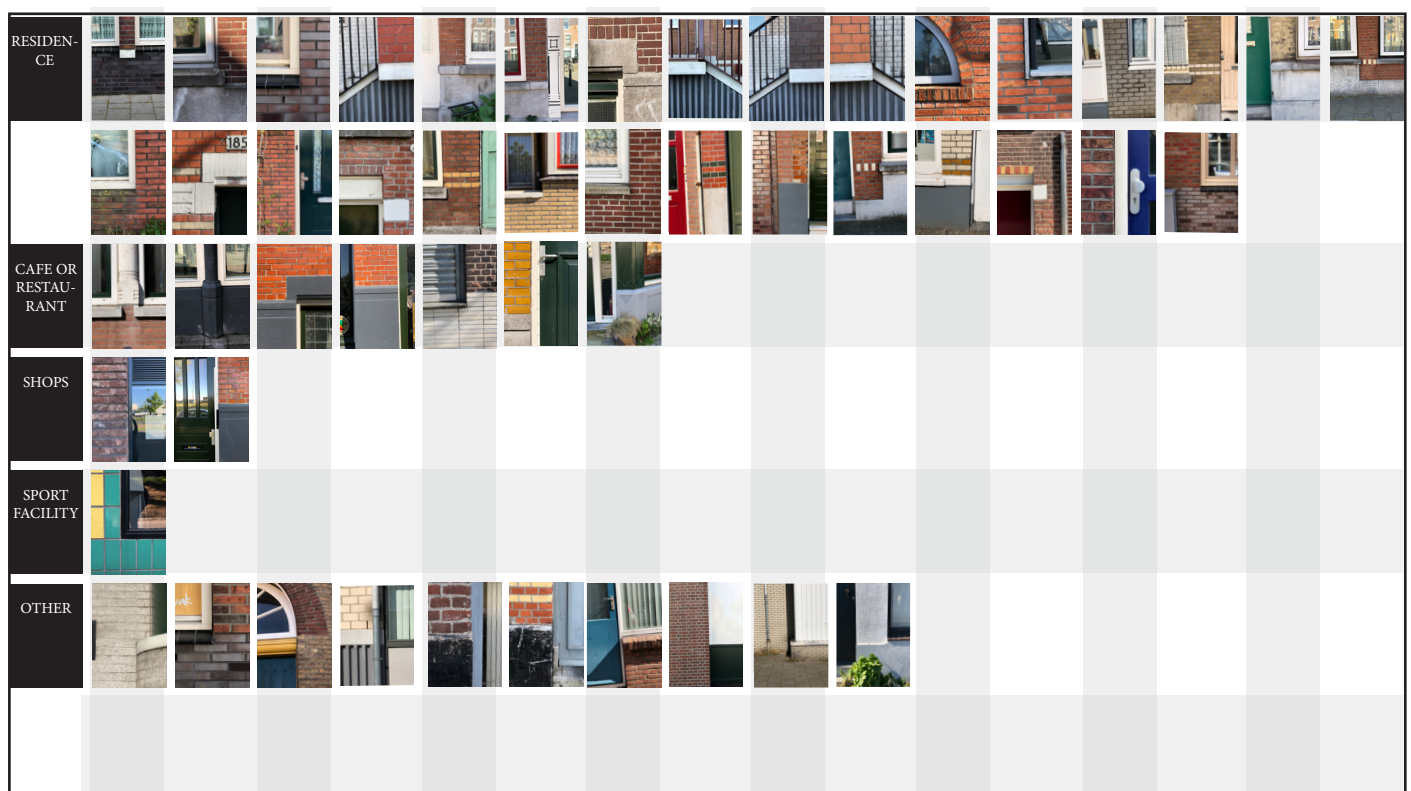
building.

8.2 Pictures of Delfshaven

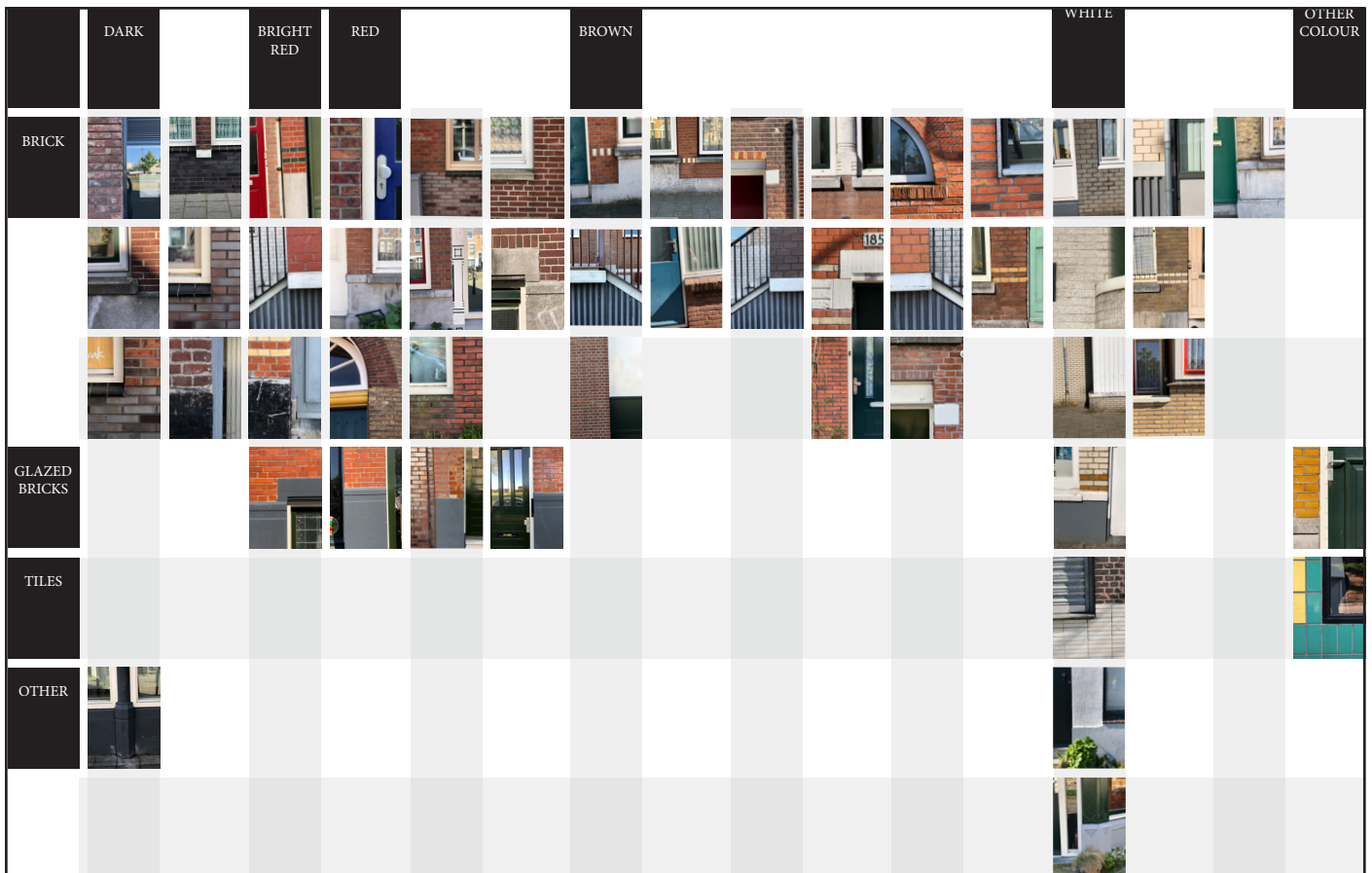
To further analyze the images made, three overview schemes have been made.

First, it was examined whether the year of manufacture affects the materials used. When we look at the schedule, it certainly has an impact. Glazed bricks were mainly used in the period 1930-1945. In the period 1960-1975, mainly plastic window frames were used. In the period 1975-1985, large residential blocks were placed in the area with comparable photos in different color compositions. From 1985 to 1995 we see larger bricks and more muted color schemes (with one exception). During 1995-2015 the major shopping street was realized, in which more massive bricks in a larger size were used.

Second, a diagram has been made of the functions of the buildings. The most common function in the area is the residential function. Different material types were used for this. A relatively large amount of cafes and restaurants can also be found in the area. Two of the fifty photos at this location are from shops. The large shopping street is very large in the area, but can be characterized by one type of brick and one type of window frame. There is a sports club nearby that has a very pronounced facade made of tiles in the colors cyan and yellow.



Pictures arranged in function of the buildings



Pictures arranged in colors and facadematerial of the buildings

Third, an overview has been made of the colors and materials in the photo series. The most common facade material is brick. In addition, there are four buildings in which glazed brick prevails over the facade. The colors vary from black to red, brown and black shades. It is notable that there are many photos in the category of white tones, in which many different materials have been used.

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