A WORK OF ART IN BRICK

SIGNIFICANCE AND RESTORATION OF HET SCHIP, AMSTERDAM
AN ICON OF SOCIAL HOUSING AND ARCHITECTURE, 1919-1921

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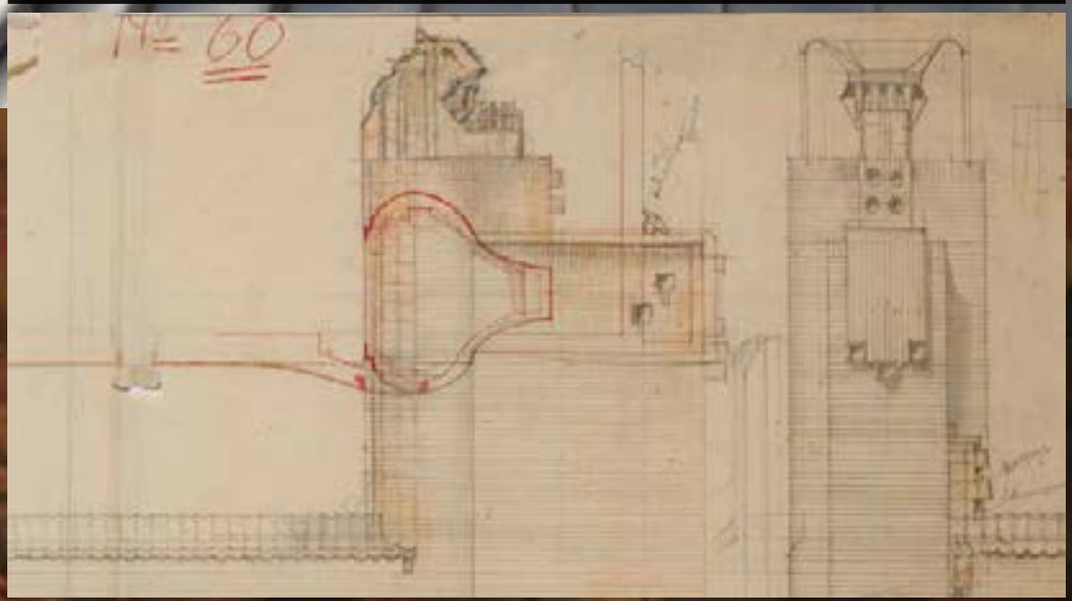

AMSTERDAMSE SCHOOL MUSEUM
HET SCHIP

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WEBSITE VERSION

This PDF is the website version of the book A WORK OF ART IN BRICK. This book is intended as the restoration management plan for the 2015-2018 restoration of urban block Het Schip in Amsterdam. It serves also as a documentation of the restoration project.

This book (English ISBN 978-90-814397-7-0 and Dutch ISBN 978-90-814397-6-3) can be ordered via info@hetschip.nl, www.hetschip.nl

Content

Foreword

Housing complex Het Schip evokes admiration all over the world. It is a workers' palace in all respects. Not only is it a beautiful building, but, above all, it is a building that has a fascinating story to tell as well.

The complex was a response to the dreadful housing conditions in nineteenth century Netherlands, when factories were built in the cities at a high rate. To achieve maximum output, they needed many workers. Many of them arrived from the rural countryside, where life was unpredictable - a bad summer called for no harvest. The factory seemed to preclude chance. Every day one went to work. Every day production occurred according to a fixed plan. The rural communities died. Windmills disappeared, as did farms with their barns and haystacks. The country was changing. It was time for a goodbye. Goodbye to rural life.

However, work in the factories was hard and there was a shortage of decent homes. Many had to live in slums, hovels, and sometimes in cellars, half underground, with prevalent diseases and sickness. The 1901 Housing Act attempted to address this and enabled housing associations to build good homes in great numbers. Government loans financed the efforts of these self-organizing cooperatives.

Art and architecture also reacted to mass production and migration to the cities. Influenced by the English Arts and Crafts movement, the vocations of skilled craftsmen were once again appreciated. A new respect grew for the old, rural culture and the decorative arts from other cultures. Full of ideals, people focused on a better future.

The architect Michel de Klerk was strongly influenced by these developments. He traveled to London, Germany, and Scandinavia and was bewildered by their building traditions. He recorded that in many drawings. Frequent are the references in his work to what he had experienced. In his architecture around Spaarndammerplantsoen, we find many quotations from rural art from the North of Holland, from Scandinavia, and from Asiatic countries. In Het Schip, we can see his search for new forms and materials. De Klerk, like no other, was able to link the past with the modern. He molded his buildings into total works of art seen in their overall composition, as well as in the tiniest of details.

Alice Roegholt
Director, Amsterdam School Museum Het Schip

Editor's note

This book provides a complete narrative on the restoration of an important international icon of architecture and social housing. All authors involved with this work through the past decade are architects, art historians, building historians, project leaders, building professionals, and museum staff members. Together, they represent the multitude of perspectives and disciplines indispensable for such a restoration.

The book is a reflection of the many layers of significance of the architecture of the urban block "Het Schip," by architect Michel de Klerk, in the "Spaarndammerbuurt" neighborhood in Amsterdam. De Klerk's buildings in this historic neighborhood acquired formal listed building status since 1974. This book highlights the Amsterdam School of design and its notorious search for "the modern," the biography of the architect, conceptions of restoration, functional transformation of parts of the complex, and the search for the best methods and recipes for the restoration of the architectural and structural components of Het Schip. Thus the book also accounts for the completed restoration.

The paradoxes inherent in the architecture of Michel de Klerk and the Amsterdam School can be re-discovered in this book. Readers will encounter the complexities found between individualism and communal art, modernity and craft, tradition and revolution, totality and detail, symbolism and decoration, art and politics, and artist and architect. The nickname of the complex, Het Schip, means "The Ship," and the symbolism of waves oscillating across the ocean are symbolic for the shifting popularity of the building throughout the decades. We want to honor the significance of the paradox during this period of architecture. We do not shy away from polemic positions, even amongst our own authors.

The restoration process itself has similar layers. Heritage inspectors, users - from residents to museum and social housing associations -, technicians, historians, contractors, installers, and budget officers, to name a few, are all involved. This architectural housing complex will always be in the public eye. Every architecture student will have "Het Schip" on her or his radar. By accepting this project into the "Keeping it Modern" conservation program, The Getty Foundation in Los Angeles has propelled this restoration into international dialogue on restoration.

For all Het Schip is, it is first and foremost an expression of exceptional human fantasy. While this fantasy cannot always be simply interpreted through word or sketch, it still relays a personal, internal feeling to all observers. It is delightful that this feeling, this fantasy, has persisted throughout time. By definition, Het Schip makes all statements of position subject to discussion, and that is the power of this monument.

Niko Koers

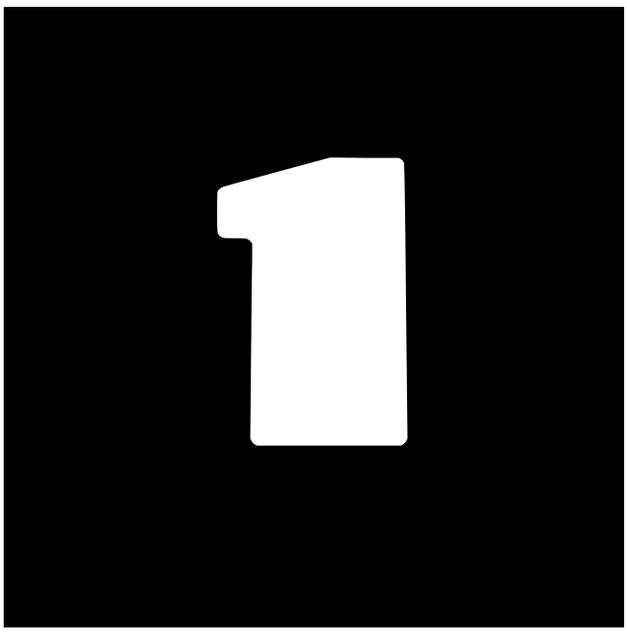
GERTUD LEISTIKOW — FAUN

HOUTSNEDEN VAN ANKA KRIZMANÝ — GOTTESANBETERIN AUS AIDA (VERDI)

kracht veroorzaakte, is verdwenen en wij wenden ons tot de machine en luisteren naar hare grootsche beloften. Maar naast die dreunende en stampende hamerslagen, voelen wij toch ook de zachttrillende beweging van den dans, en.. als herinnering aan pas verschenen glans, verschijnt Gertrud Leistikow uit het land van wonderbare wendingen. Als zij spreekt in de taal uit de wereld der beweging, is het ons als bij de aanschouwing eener vreemde schriftuur, wier hiëroglyphen reeds betooveren door haar onverwachte lijnzwenkingen en grillige vormen. Zij schildert vergankelijke beelden, met de uit bezielinggeboren beweging, in wierook-gelijn op een doek van trillende-luchtgolvingen. In de zachte rijzing der armen, in de trillende neerdaling der vingers ligt een zelf-besprenkeling met zegenend wij-water, of het dartelend vallen van bladeren, waarmede zij zich poogt te dekken. En met de groote-boging van haar lichaam en de wijdestrekking der uitgeworpen armen, zaait zij ontelbare bewegingen, die door zelfbevruchting in duizendtallen opgroeien op de fel-kleurige velden van het fond,.. tot er plots één, in een moment van rust, voor ons oog opbloeit tot een verrukkelijke bloem van vrouwenschoon. Zóó is de realiteit van een beeld uit Wonderland. Hier is het leven niet méér dan een verdichtsel en de kunst de schoonste werkelijkheid. Zooals een donzig sneeuwkleed, dat de aarde stil bedekt, de gestolde beweging is van de danzende en wirrelende vlokken, zoo is haar siddérend witte lijf in de rust van het stervend-neêrzinken, de gestolde vormgeving van haar wirrelende en deinende wendingen. Maar dan komt plotseling uit die kuischeteederheid van haar nymphen-lijf, met een satyrieken sprong, haar antipode, de burleske-Faun. Dan duiken op vreemde orgieën, bacchanalen in de open maanbelichte woudplekken, grüner-Teufel-phantasieën vol padden-bewegingen en grillig gedraai. Dan is zij in het kleurengamma en de decoratieve behandeling als de pseudoklassieke wouddemonen van Böcklin, Klinger of von Stuck. Hier is haar dans in aansluiting aan het modern streven naar individualisme, maar daarin ligt tevens het gevaar voor hen, die hare methode willen leeren. Dalcrose of Berlage zijn bestemd om als groote figuren de lijnen aan te geven, die allen mogen volgen. Leistikow is in haar dans als de Klerk in zijn architectuur, voor de omgeving eêr een gevaar dan een steun, maar.. in hun individualisme groeit de verrukking der schoonheid.. en dan zwijgen de overwegingen en mogen wij alleen bewonderen.

The Amsterdam School: individualism and society

Niko Koers



Shaping human existence as an art, for all classes of society, such could be the characterization of the expressive design movement in The Netherlands, which had its peak between 1915 and 1925. Everything requiring form, such as exterior and interior architecture, furniture, jewelry, glasswork, typography, or dance and music, was approached as art. These designer-artists found themselves in the midst of a society that underwent enormous modernization. In this chapter, we emphasize how their designs served society, while also exhibiting hyper-individualistic qualities.

UNDEFINABLE AMSTERDAM SCHOOL

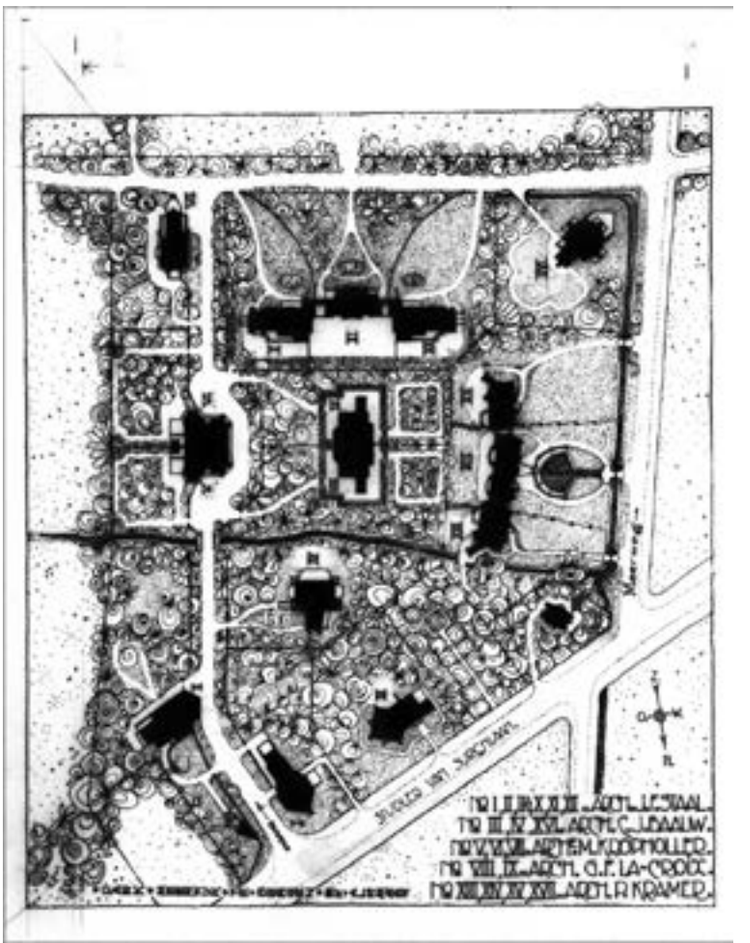
The term Amsterdam School was used for the first time in 1916 by Jan Gratama, "...the newest movement in building art: the modern Amsterdam School, with its expressionism, its modern romanticism, and its fantasy".[1] The architects of the Amsterdam School, of whom Michel de Klerk was the undisputed leader, never called themselves a "School" of any kind. On the contrary, in their periodical, *Wendingen*, published between 1918 and 1933 by the Amsterdam architectural society, Architectura et Amicitia, they tried to ignore the term school. They almost succeeded, and, in fact, would do so later on with the help of the rise and dominance of modernist architecture. The architects of the Amsterdam School would have much rather called themselves "Fantasyful." This is demonstrated through the following quote from the first article in the first issue of *Wendingen*. "Leistikow is to her dance what De Klerk is to his architecture, to their surroundings more a danger than a support, but (...) the delight of beauty grows in their individualism (...) and then scrutiny is silenced and we may only admire."[2] Moreover, they tried to internationalize their approach to architecture and art through their essays in *Wendingen*.

After the appeal of modernist architecture gradually decreased due to growing epigonism in the 1960s, the expressionism of the Amsterdam School regained appreciation. Beginning abroad in the 1970s, the term Amsterdam School had earned a positive reputation

1 Gratama 1916, p.50.

2 Wijdeveld 1918a, p.2. Gertrud Leistikow (1885-1948), dancer, was the founder of modern dance in the Netherlands; see: htpp://amsterdamse-school.nl/personen/kunstenaars/Gertrud-leistikow/

01.01



01.01 J.F. Staal, plan of Park Meerwijk, *Wendingen* 1, (1918).

Villas in Park Meerwijk:
01.02 De Bark (J.F. Staal).
01.03 De Ark (J.F. Staal).
01.04 Garden house De Ark (J.F. Staal).
01.05 De Boschkant, (C.J. Blaauw).
01.06 Meezennest/Meerlhuis (M. Kropholler-Staal).
01.07 Beek en Bosch (C.J. Blaauw).
01.08 Meerhoek (currently De Ster) (C.J. Blaauw).
01.09 Tyltyl / De Hut (P.L. Kramer).
01.10 Double Villa (G.F. La Croix).

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among professionals in the field, as well as the general public. The former may be considered unique for any architectural movement and, subsequently, the name, Amsterdam School, became a badge of honor.
The question, "What is the Amsterdam School," with regards to content, style, or program, remains a tricky one. In Chapter 3 Richelle Wansing probes deeper into this question. Even though there are similarities in form between architects and designers, one needs to strongly downplay the significance of the concepts of style, style history, succession of styles, and their definitions. For that, the architecture and design of the Amsterdam School are too inter-related with the struggle for a number of major social issues. For some, their work was more concerned with restructuring society through art - revolutionary or not. Generally, these artists and designers were sooner focussed on modernizing society. Social housing incorporated such ideas, as well as utilitarian buildings and churches. In this regard, the Amsterdam School distinguishes itself from almost all other styles of architecture. This social concern cannot be the first criterion for characterizing an art-historic style. It does, however, determine the "movement".

Fundamental to the Amsterdam School is a paradoxical relationship between the individual and communal art. This relationship was noted early on by J.L.M. Lauweriks in the third issue of *Wendingen*, "This general striving to achieve modern communal art reveals itself amidst individualistic art driven to its greatest height, which (...), as a result, actually strengthens the communal idea to which it seems opposed."[3] The Amsterdam School never presented a written manifesto, in a period when such writings were extremely popular. *Wendingen*, considered by many to be the most beautiful architectural magazine ever published in the Netherlands, was, foremost, a platform for the exchange of opinions and information on all aspects of art. However, individualism, simultaneous with a collective endeavor, is strikingly illustrated in *Park Meerwijk* in Bergen, which is often referred to as the built manifesto of the Amsterdam School. Here, architects J.F. Staal, C.J. Blaauw, M. Kropholler-Staal, G.F. La Croix, and P. Kramer built a villa park as a small settlement. The eighth issue of the first volume of *Wendingen*, written by Wijdeveld, was dedicated to Park Meerwijk.[4]

The duration of the Golden Age of the Amsterdam School was relatively short, taking place between 1915 and 1925. Its prelude and aftermath, however, covers several decades, from 1910 to 1940. This is related to the long completion times of city and village expansion plans in Amsterdam School spresent in almost all Dutch municipalities. A number of artistic and social tendencies converge during this period, leading to the end of the Golden Age. The early death of Michel de Klerk certainly was a factor considering the aspect of artistic individualism. The rigorous austerity measures imposed on the financing of Dutch social housing that occurred in the early 1920's and the economic crash and subsequent crisis that occurred after 1929 were contributing factors viewed from the aspect of social development. These events severely limited the influence of the Amsterdam School.

HET SCHIP AND THE DESIGN OF THE MODERN CITY

In 1997, thanks to the French authors, Panerai, Castex and Depaule, the urban design profession was alerted to the unique features of the experimental town building in the northern *Spaarndammerbuurt* neighborhood. The area was designed by J.M. van der Meij and includes three urban blocks by De Klerk. The awkward, triangular shaped block of Het Schip, occupies a central place. Castex et al. point at the particular cooperation of individualists as one aspect of this new urban design: "(...) the image of (De Klerk as) a solitary individualist, such as Gaudi, risks masking the reality, which is here of a profound modesty. It is the modesty of the architect facing an urban context (...) not a solitary and isolated intervention, but the exploration of the city and the insertion of architecture into a context. It is also the modesty of an architect vis-a-vis other architects. (...) It is sufficient to observe the connections between the parts designed by different architects in order to understand what the word 'school' might mean: a deep adhesion to the same principles and specific agreement in their implementation, which manifests itself in the impossibility to distinguish the exact point where the intervention of one architect ends and the work of another begins."[5] The latter applies especially to the architects who participated in the execution of Plan Zuid (1915), by Berlage, and Plan West (1922), by Gratama, Versteeg, and Hulshoff. Many Amsterdam School architects received commissions in these two city expansions. The uniqueness of the Amsterdam city expansions lie in their a priori urban character. This is in contrast to the suburban nature of many plans showcased in other countries.
The role of architects and designers in these years of large urban expansions was the strengthening of the tense relationship between individualism and public art, and, consequently, between architecture and urban design. "De Klerk creates urban space. Does this give validity to another development condition, namely the notion that

3 Lauweriks 1918, p.8.
4 Wijdeveld 1918b. For a current description see Van Leeuwen and Mattie 2005.
5 Castex et al., 2012, p. 66.

01.11
Urban plan for Northern part of Spaarndammerbuurt by J.M. van der Meij, 1912-1914.
Top right the three urban blocks by Michel de Klerk.

the task of all architecture is the creation of (urban) space? The architecture of Michel de Klerk would then simply have had the potential to create new urban spaces (...). Instead of restricting itself within the boundaries of the urban assignment advanced by urban designers, the Amsterdam School just seems to exceed these by far."[6]
In 2015 and 2016 a number of experts met within the framework of the Amsterdam School UNESCO World Heritage designation. They pointed at the unique conjecture of the many art and social movements, which together made the modern city of the Amsterdam School. From their conclusions we quote: "Socialists, progressive liberals, and emerging emancipation movements find each other in the desire for renewal of the society. In Amsterdam, but also beyond, this centers around a number of crystallisation points, such as municipal politics (*wethouderssocialisme* - councillor socialism), art and architecture ("Amsterdam School"), housing societies (such as "Eigen Haard") and the formation of a strongly managed civic organisation ("Housing Service/ Public Works"). The power of imagination that came about in the Amsterdam urban expansions at the beginning of the twentieth century is unique. This happened through cooperation between municipality, architects, housing corporations and private individuals, especially due to the direction given by the municipality over the townscape to be realized. The latter not only concerned itself with the organisation of property leases and preparation of a city design plan, but it also took care of the detailed management of planning, architecture and design of private and public space. The strength of managerial and civic direction in the area of public housing, civic space, architectural quality and public art resulted in the exceptional quality of urban development in the expansion areas of that period. The synthesis between the different managerial tendencies and disciplines thus culminated in the 'design of the modern city'".[7] Alongside social housing provided by corporations, examples of this can be found in the schools, bridges, and street furniture, consistently designed in Amsterdam School "style" by Public Works.

The rebirth of the Amsterdam School was lead by foreigners. They put the Amsterdam School back on the map in the Netherlands after the post-war period of austerity. These non-Dutch authors included Castex, Panerai, Depaule, Italians Maristella Casciato and Giovanni Fanelli, and Americans Helen Searing, Suzanne Frank, and Wim de Wit. Casciato described the manner in which De Klerk fulfilled his role in the movement: "De Klerk was concerned with transforming an utopia of enigmatic symbols into a lexicon of solid forms with a precise meaning. At the same time, he was certainly able to project an architecture that broke away from historical continuity, in favor of a movement embracing the 'new' (...). De Klerk resisted any impulse to manipulate the function. His imagination turned toward space, the permanency of the materials, and the introduction of figures, which, with his relish for the fragment, he disposed liberally on the wall surfaces of his architecture."[8] "De Klerk's friend and colleague Piet Kramer senses (...) a desire to create, to "heighten the aspect of things to unprecedented moments of joy, which in their reality represent the most important elements of the joy of living."[9] The trade of building was a *conditio sine qua non*, but the limits of building traditions were stretched and often far exceeded. Both the trade, as well as the exceedance of its limits, gave rise to sharp criticism.

AMSTERDAM SCHOOL VERSUS DE STIJL

The Amsterdam School is often considered the opposite of the art movement, De Stijl, as De Stijl is commonly seen as the emblem of "white cube" modernism in architecture. This supposed dichotomy was researched further and strongly disputed by Wim de Wit in 1983: "The roots of both the Amsterdam School and De Stijl can be found in the art movement of the period around the turn of the century. The then prevailing Nieuwe Kunst, as the Dutch version of Art Nouveau was called, contained the seeds of many principles from which both movements would eventually develop (...). This movement attempted to avoid imitation of traditional styles in architecture and art, favoring instead the expression of ideas (...). The Nieuwe Kunst thus consisted of two elements: on the one hand, there was a tendency to stress the artist's originality and spirituality, while, on the other, rationalist methods contributed to the universal validity of forms. The Amsterdam School and De Stijl each developed one of these components of the Nieuwe Kunst, and whatever differences existed between the two groups can in large part be ascribed to that fact. Whereas the 'De Stijl' artists emphasized the universal values revealed by art, the Amsterdam School stressed the notion of the artist as a prophet, an individual endowed with the gift of special insight and therefore someone capable of recognizing essential truths and transmitting them to society as a whole."[10]

Casciato formulates the international and lasting significance of the Amsterdam School in a later text as follows, "Now

6 Wansing 2015.
7 Niko Koers, Rens Smid, Ineke Tijmant and Richelle Wansing, "Verheffing in steen", the Amsterdam School and Dutch social housing: the design of the modern city, proposal to City of Amsterdam for designation as UNESCO world heritage (still in process) of the two iconic projects "Het Schip" and "De Dageraad" in their urban context. Summary of two expert-meetings in 2014 and 2015, Amsterdam, 2016-2017.
8 Casciato 1983, p. 95.
9 Ditto, p. 99, with citation of Piet Kramer.
10 De Wit 1983, pp. 33-35.

that the criticism that accompanied the surprisingly formal means of expression of the Amsterdam School has quieted, today's historians can confirm that this building art is part of the European architectural history in the full sense of the word (...). The calling to an architecture that is full of images and simultaneously honest in its forms, respecting the design rules in a synthesis of technical knowledge and good expertise, places the proposals of the Amsterdam School within a historical development which establishes the connection between the moralism of Ruskin and the sermons of Le Corbusier about an architecture as duty."[11]

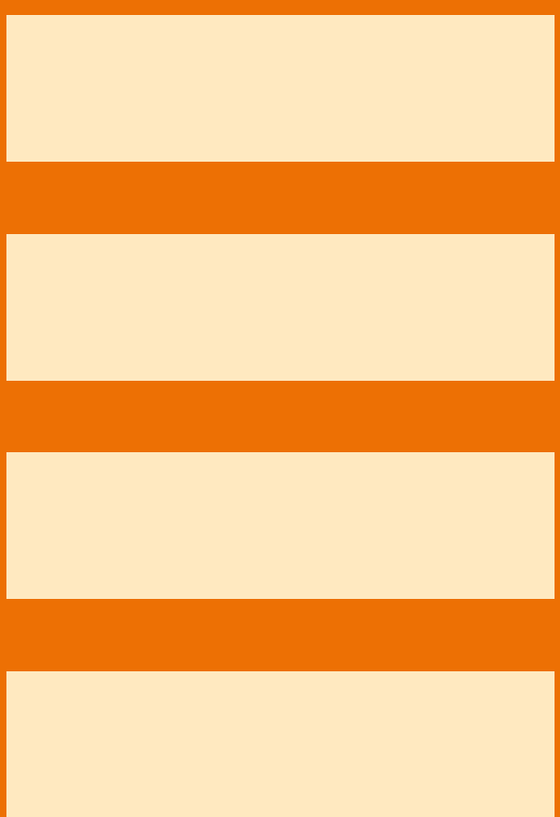
STYLISTICS AND THE INTERNATIONAL PERSPECTIVE

It is interesting to see how in the art and architectural discourse different trends in design may or may not be called style and how much effort is made to attach a separate name to mixtures of style. Examples include art nouveau, Jugendstil, Nieuwe Kunst, expressionism, cubism, kubo-expressionism, art deco, Amsterdam School, Nieuwe Haagse School, horizontalism, De Stijl, Nieuwe Zakelijkheid, modernism, Streamline, zig-zag style, post-impressionism, futurism, symbolism, romantic nationalism, rationalism, or esthetic subjectivism. These terminologies illustrate more how many transitions and intermediate forms exist than that they deliver a precise interpretation, let alone a definition, of style. Some movements fought each other in magazines. In the catalogue, Wonen in de Amsterdam School of the Amsterdam Stedelijk Museum, Marjan Groot writes the following about interior styles, "Although the Amsterdam School is considered internationally as the Dutch art deco, art deco has so many local and national variants as to make comparison difficult."[12] She goes on to state, "From its appearance in 1918 the promotor of the Amsterdam School, the magazine *Wendingen*, operated internationally in all respects. Foreign designers received full attention, among other things, in special theme issues. Among them were Finnish architect Eliel Saarinen in 1919, the Viennese architect Josef Hoffmann and the in Berlin working expressionist architect Erich Mendelsohn in 1920, and Eileen Gray in 1924, who in 1922 exhibited in Amsterdam."[13]

In the same catalogue, Hans Ibelings finally demolishes the last divisions between the above mentioned multitude of styles: "In conventional written history the fantasy-rich architecture of the Amsterdam School is generally considered an interlude. At best an original deviation from the straight path of modern architecture, at worst symptomatic for approximately everything modern designers opposed (...). But when the developments in the interwar period are viewed from more of a distance, much can be said for situating the Amsterdam School (just as Czech cubism) within the art deco movement (of which the name - in retrospect - derives from the 'Exposition internationale des arts décoratifs et industriels modernes' of 1925 in Paris). This happened in the major art deco exhibition of 2003 in the Victoria and Albert Museum in London. (...) In an art historical world which normally attaches more value to differences than to similarities, and where there is more taste for (national) specificity and less for generalizations, it is most unusual to place the Amsterdam School in this manner (...): the recognition that Dutch as well as international architecture is more multi-faceted and knows considerably more inter- relationships than can be assumed from a narrow chronology of alternating, contesting and excluding styles, trends and movements."[14]

The essence is that the concept of style must refer to a phenomenon that is wide spread in place and time. It is hard, or impossible, to put such a label on the endeavors of individual artists, how hard they may have tried to develop their "style".

11 Casciato 1991 (1987), p.1.
12 Groot 2016, p. 146.
13 Idem, p. 149.
14 Ibelings 2016, p. 166.



Michel de Klerk, architect and artist

Ton Heijdra

The manner in which the childhood and upbringing of Michel de Klerk has influenced his development as an architect and as a source of inspiration of the Amsterdam School can no longer be traced. The descriptions of his development usually start with the legend that a portrait of his teacher, drawn by him during detention, would give rise to Eduard Cuypers accepting young Michel as draftsman in his architectural firm. It is also not without significance that he grew up in a large, Jewish family on Zwanenburgwal in the Amsterdam Jewish quarter. He was born on November 24, 1884, as the fourth and youngest child of his parents. However, there were also twenty-one children from his father's earlier marriage, of which the senior was older than Michel's mother.[1] His father, a diamond finisher, died when Michel was two years old. Subsequently, his mother and the children lived at eight different addresses in Amsterdam. He would have intimately known the poverty in the Jewish quarter and the miserable living conditions in the slums. His upbringing was that of a traditional Jew - on his thirteenth birthday he celebrated his bar mitzvah. However, he was not very devoted to the faith. For his wife, Lea Jessurun, who was a Sephardic Jew and the granddaughter of a rabbi, he drew an ex libris with Hebrew text indicating that he had remained familiar with Jewish tradition.

Perhaps one can also find the source of his famous humor and precision in his surroundings. His humor, with its slight slant to the absurd, went from dwarfs in wooden shoes holding a coat of arms, to a billy club for a "no entry" sign, and from eavesdroppers in the stained glass window of a telephone booth to frogs with an umbrella on a fountain. "Always look for the humor in the architecture of De Klerk", says Alice Roegholt, director of Amsterdam School Museum Het Schip, appropriately. His total concentration and focus on his commissions and his meticulous direction in his work drawings, sometimes made onsite, are examples of his love for detail, combined with the perfection of a diamond finisher. He could drive construction workers crazy.

STUDIO EDUARD CUYPERS

It was not a foregone conclusion in his family that De Klerk would become an architect. However, he was not yet 14 years old when he was hired by Eduard Cuypers (1859-1927). His first tasks consisted of

1 Bock/Johannisse/Stissi 1987, p. 95.

02.01

02.01 Young Michel de Klerk in Eduard Cuypers' office 1906. De Klerk is in the last row. Third at left is Joan van der Meij. On the right standing is Piet Kramer. Sitting in the middle is Ed. Cuypers.
02.02 The Scheepvaarthuis on Prins Hendrikkade.
02.03 Sculpture on Michel de Klerk's first block, dwarf with wooden shoes.
02.04 Luistervink (listening finch - Dutch expression for eavesdropping) on the phone booth in the post office in Het Schip.

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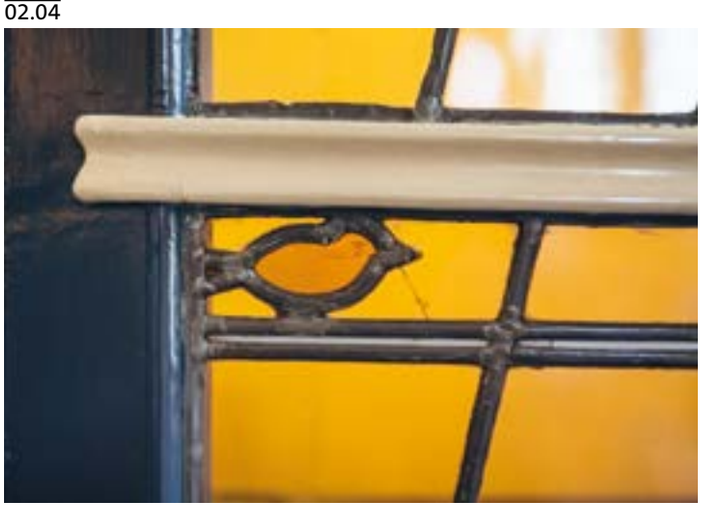


touching up design sketches of architects who worked there. Later he began to act as inspector on the firm's projects. As such, he supervised the construction of a sanatorium in Hoog-Laren in 1902 and 1903.
Eduard Cuypers had an important influence on De Klerk's development. He encouraged his staff members to improve themselves in several crafts and turned his architecture studio at the Jan Luykenstraat 2-4, opposite the Rijksmuseum into a work and teaching space. He also published his own monthly magazine, *Het Huis Oud en Nieuw*, in which the design of homes was discussed alongside thoughts on Dutch folk culture and building and decorating art in other countries.
The architect's studio is generally considered the cradle of the Amsterdam School. Here, De Klerk met other architects and artists, such as Piet Kramer (1881-1961), Joan van der Meij (1878-1949) and Guillaume Frédéric La Croix (1877-1923). The young architects formed a club of friends who regularly visited each other. After having worked at the studio for a number of years, employees would establish themselves as an independent architect or artist. However, they took their experience with them and maintained contact with each other.
Subsequently, De Klerk became skilled as an architect by taking night courses. The artist, Bernard Willem Wierink (1856-1939), head of the Industrial School of the Society for the Working Class, was important for him. Wierink was also the one who encouraged him to further develop his drafting skills.

In 1910, Michel de Klerk married Lea Jessurun, who worked at Cuypers' studio as a secretary. After their wedding, they traveled to Denmark and Sweden. This turned out to be an important journey because De Klerk came in contact with a whole new style of romantic architecture. During the trip, he made many sketches and studies of buildings, furniture, and industrial art. A highlight for him was the recently completed Palads Hotel by the architect Anton Rosen in Copenhagen. The sketches he made of the tower probably inspired him later in the design of the tower of Het Schip.
After his return to the Netherlands in early February 1911, De Klerk was offered a job as inspector-draftsman at the studio of the architects Herman (1876-1953) and Jan Baanders (1884-1964), but he soon started out on his own. His first own work was a residence in Uithoorn, the design of which was finished in 1911.[2] De Klerk's own style became apparent with his second commission, the "Hillehuis", a housing block at the Johannes Vermeerplein in Amsterdam. This building is also considered to be one of the first buildings in the style of the Amsterdam School. No longer does it involve individual homes, the façade becomes one unity. He played with forms and ornaments. Doors and chimneys were treated in great detail and various decorations appeared in brick.

In 1913, Michel de Klerk and his friend, Piet Kramer, were asked by Joan van der Meij to assist with the building of the *Scheepvaarthuis* at Prins Hendrikkade in Amsterdam. It was built for a number of large shipping companies and was meant to radiate the grandeur that passengers making long ocean voyages would expect. That is why artists were also asked to contribute to the design. Because the architects worked in close cooperation, it cannot be determined precisely who designed what. It is highly probable that De Klerk had a great influence in the design. The interior of the third floor boardroom of the *Koninklijke Paketvaart-Maatschappij* (KPM) was fully under his care, not only the wall paneling and the furniture, but also the carpet, the chandelier, and the doors.

SPAARNDAMMERPLANTSOEN

Michel de Klerk's great breakthrough was his design for social housing in the Amsterdam *Spaarndammerbuurt* neighborhood. Developer, Klaas Hille, for whom he had earlier designed the *Hillehuis*, asked De Klerk to design an urban housing block on a building lot. This was made available by the municipality to him and his colleague, G. Kamphuys, at Spaarndammerplantsoen, between Krommeniestraat and Oostzaanstraat. It appears from his sketches that De Klerk continued in the same vain as that of the Hillehuis. The façade was treated as a united front, the exterior of the stairwells were given particular attention in the façade, with voluptuous shapes, small windows, and parabolic peaks. Various types of brick were used, and red colored tiles appeared in the top edge. The entry doors were grouped. At both corners, De Klerk designed works of art, which he allowed to be finished by his good friend, sculptor Hildo Krop (1884-1970). The corner at Oostzaanstraat was outfitted with the coat of arms of the town of Oostzaan and the coat of arms of the town, Krommenie, emerged at the corner of Krommeniestraat.
The interior design of the apartments was very modern. There was a large kitchen functioning also as a kitchen-diner. One of the bedrooms was large enough to also be used for day use. The corner of the complex at Oostzaanstraat was designed to house a store. The store windows were outfitted with two wide, windowsills where residents could sit for a chat.
In a series of articles on architecture in the newspaper *De Telegraaf*, Huib Hoste wrote in 1916 that the housing block fascinated because of the unexpected, the colors, the suspense. It invited a second look. To him, this was especially due to the fact that De Klerk designed the building block as one mass with the various components forming a unified whole.[3]

Once the first block was realized in 1914, Klaas Hille permitted De Klerk to also design the other side of Spaarndammerplantsoen. In design and details, he went one

2 Bock/Johannisse/Stissi, p. 159.
3 Hoste 1916.

02.05

02.06

02.05 M. de Klerk, presentation aquarel for the first (purple) block at Spaarndammerplantsoen.
02.06 M. de Klerk, presentation aquarel for the second (yellow) block at Spaarndammerplantsoen.

step further. Not everyone within the Municipal Architectural Committee was enthusiastic. The president, Jos Cuypers, cousin of Ed Cuypers, was of the opinion that the construction needed to be rationally justified and not based on exterior appearance. He doubted the bearing capacity of the construction. However, the other members of the committee felt that the new direction of architecture deserved a chance and, after checking the structural strength, agreed on the design with a few small adjustments. Cuypers was so infuriated that he withdrew from the committee at the next meeting.

EIGEN HAARD

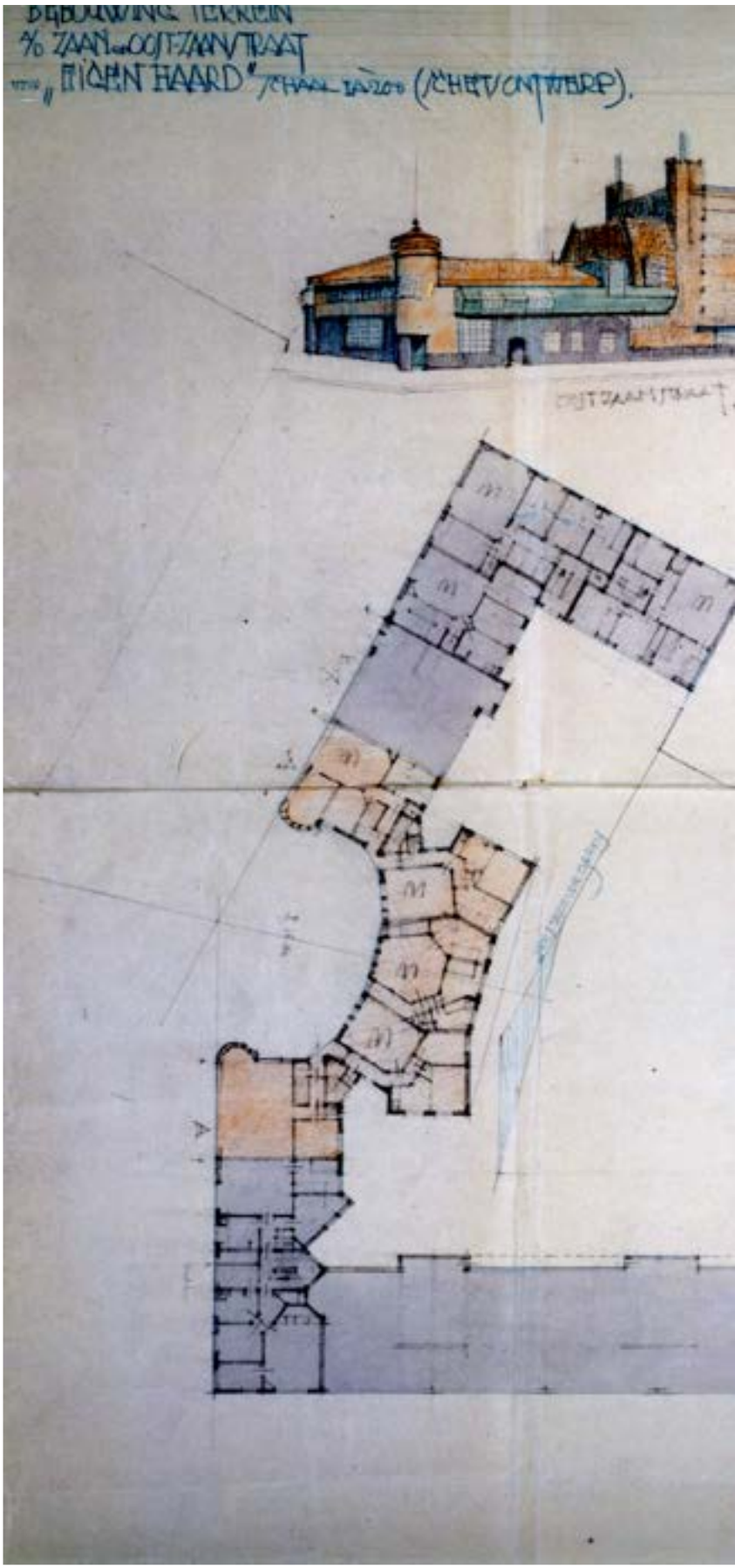
Still, the plan was not immediately developed. Although the Netherlands remained neutral during the First World War, the consequences were noticeable. Building materials were scarce and expensive, resulting in financial difficulties for Hille. In Amsterdam, however, businessman Floor Wibaut had become city councilor, and he was eager to continue building. He had grand plans to redevelop the slums in old neighborhoods. To achieve this, he made use of the Housing Act of 1901, which allowed cooperatives to build residential buildings for themselves with low interest government loans. The workers of the *Gemeentetram* (Amsterdam municipal streetcar company) were the first to see the potential of this opportunity. They founded the housing society, Rochdale. Very soon, every sociopolitical group, including socialists, Catholics, Jews, and Protestants, had their own housing society.
In 1909, the housing society, Eigen Haard, was founded by workers of the locomotive factory, Werkspoor. The municipality asked Eigen Haard in early 1916 to take over the Spaarndammerplantsoen project from Klaas Hille. For this, De Klerk had to adjust his design. But there was to be no limit on the exuberance of the design. The block was finished in 1918, and it inspired great amazement. It was colorful with yellow bricks and red roof tiles. The many details, with keystones and brick patterns showing elements from nature, such as a fishbone, a mushroom, and a snail shell, were all striking. Architect Frits Staal stated several years later that looking at the block gave "a liberating and exalted feeling of happiness."[4] Piet Kramer wrote about the housing blocks in the magazine, *Wendingen*, and about the "unbelievable audacity in the use of materials" and how "the surprising detailing" would humble other architects." According to him, the buildings were "naturally grown organisms."[5]
As noted in the newspaper, *De Telegraaf*, immediately after the completion, Hoste was impressed once again. He pointed out that the building was not only a unity, but also formed an integral component of the public garden. For him, it was an example for the building community in Amsterdam to show "how one establishes the relationship between buildings and open spaces" and "how one can achieve unity between different street facades."[6]

One triangular parcel was left bare at Spaarndammer-plantsoen. The director of the municipal housing service, Arie Keppler, doubted that the triangular shape would allow proper housing to be built. He knocked on Michel de Klerk's door for advice. He was taken by the ideas of De Klerk and asked Eigen Haard to develop the building project together with De Klerk. This complex would later be nicknamed *Het Schip* (The Ship) due to its likeness of a steamship and the various sea elements. It was completed in the first months of 1921 and provided 102 apartments, a post office, and a small meeting building. The complex is generally seen as the climax of Amsterdam School architecture.

PLAN ZUID

Michel de Klerk also designed residences in *Plan Zuid*, translated as Plan South. This plan for city expansion, designed by H.P. Berlage (1856-1934), was accepted by City Council in 1917. The workers cooperative De Dageraad, which operated several small shops, wanted to build residences for its members in this new neighborhood. De Klerk, the man of the new direction, was chosen as the architect for this.[7] He was very busy at the time, and therefore called in Piet Kramer to manage this large task together with him. The division of labor called for Kramer to design the blocks on P.L. Takstraat and Burgemeester Tellegenstraat, while De Klerk would design the homes on Henriëtte Ronnerplein and Thérèse Schwartzeplein, complete with the adjacent street section in P.L. Takstraat. The designs were signed by both men, which proves clearly that it was a joint project and that they have influenced each other in the design process.
The first blocks were completed in 1923. Just as Het Schip, they contained overhanging residences, and full use was made of bricks and roof tiles as decorative elements. The tower that was planned by the architects at the beginning of the P.L. Takstraat was likely skipped for financial reasons. In its place came an arched corner building supporting two masonry sculptures by sculptor, John Rädecker (1885-1956). This set of buildings is considered one of the most spectacular examples of organic building.
Building engineer, J.G. Wattjes, wrote in 1924 that the complex of De Dageraad had made an "overwhelming impression" on him. Although he felt that the rest of the buildings in *Plan Zuid* all left something to be desired, his criticisms subsided after seeing this complex. There was

4 Staal 1926, p. 182.
5 Wendingen 1924, p. 3.
6 Hoste 1918.
7 Minutes management meetings "Arbeiderscooperatie De Dageraad" 1917-1918, in City archives Amsterdam.



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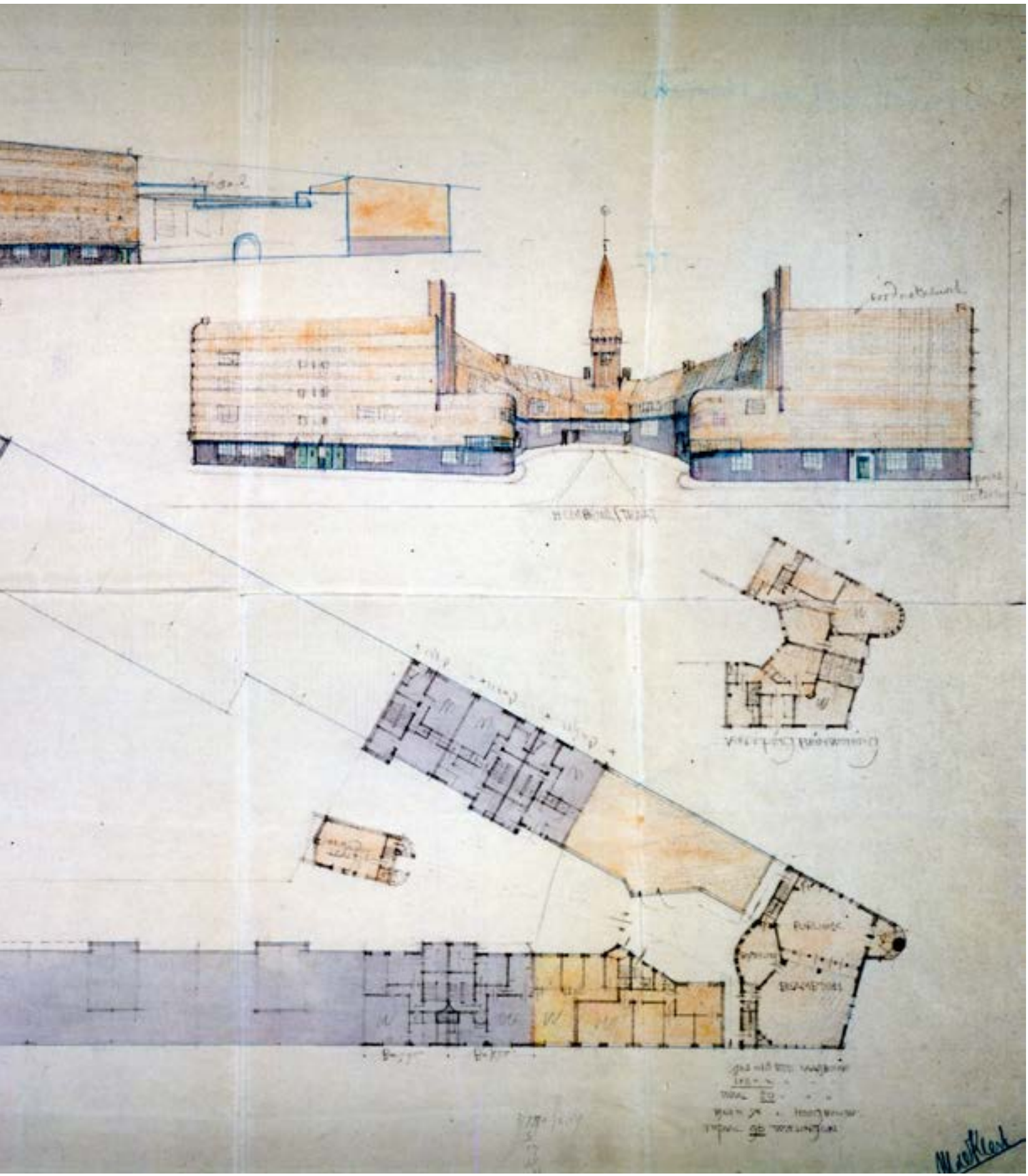
M. de Klerk, plan Het Schip, the third (orange or red) block at Spaarndammerplantsoen, with details.



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02.08 Presentation aquarel Het Schip.
02.09 Building specifications Het Schip, with Eigen Haard logo on the cover.
02.10 Michel de Klerk at work.

only room for admiring enjoyment of art, and he conveyed this by stating, “Such rich fantasy and such command of form! Such grand and monumental plan layout, and such careful and lovely detailing.”[8]
The architecture, just as that of Het Schip, contained something mysterious. J.P. Mieras wondered in 1923, “Is this Baroque, is it Expressionist, is this a piece of bravado, a confession, is it recklessness, or is this proof of master craftsmanship?”[9]

In *Plan Zuid*, De Klerk was also commissioned to design homes on Amstellaan (now Vrijheidslaan) and the Meerhuizenplein. These homes were built by private companies who had no need for expensive designs with lots of decoration. In order to save on costs, they wanted standard home plans. The City Council, however, feared that the quality standards would not be high enough and, therefore, they established an aesthetics committee to supervise quality. This resulted in many beautiful facades. De Klerk was able to deliver an impressive design, even under the limited conditions he was given. In particular, the wave-shaped balconies and the protruding bay windows are the most striking elements. On the Meerhuizenplein, he designed the round shapes of the buildings, comparable to the small circular plaza called, “the bowl”, beneath the tower of Het Schip. In his 1923 discussion in *Tijdschrift voor Volkshuisvesting en Stedebouw* (Magazine for Social Housing and Urban Design), Jan Boterenbrood praised how De Klerk created a cityscape on Amstellaan. Contrary to boulevards abroad that all look alike, he created a façade along the main traffic artery as it should be, “so perfectly distinct and so sensitive, but at the same time also so very simple.”[10]

BOATHOUSE DE HOOP

The housing blocks in Plan Zuid were the last large housing project of Michel de Klerk. In 1922, he designed a new club and boathouse on the river Amstel for the rowing and sailing club, De Hoop. The building was designed such that it seemed to be floating along with the river. The building, torn down during the Second World War under orders from the occupiers, and of which only the fence and wherry landing still remain, provoked the comment that it was too beautiful. Rowers would, therefore, be reluctant to embark. The building drew significant international attention, and Erich Mendelsohn, who had built the famous, *Einsteinturm*, in Potsdam one year earlier, labeled the building as a great masterpiece.
In the early 1920s, De Klerk designed many homes, including the residence of A. Barendsen in Aalsmeer. Barendsen was a board member of the Aalsmeer flower auction, for which De Klerk also designed a new building. Both buildings came to fruition, however, this was not the case for his designs for a country estate in Wassenaar and a new department store for De Bijenkorf in The Hague. He designed the restoration of the Reformed Church’s burnt-down tower in IJsselsteijn, and it was successfully constructed. However, this did not occur until after his death.

STAGE DESIGNS, PORTRAITS, AND FURNITURE

Like many architects of the Amsterdam School, Michel de Klerk was more artist than architect. He used his talent in illustration not only for architectural drawings, but for designs of literature covers, stamps, and posters. He also designed several covers for the magazine *Wendingen*. At the request of Willem Royaards, he designed stage sets for Shakespeare’s *The Winter’s Tale*, performed by Nederlandsch Tooneel Stage Company.
He drew many portraits as a hobby and sometimes as a means to earn extra income. An exceptional portrait is that of the revolutionary Dutch poet, Henriëtte Roland Holst. He drew her as stern and serious. Her husband, the artist Richard Roland Holst, a portraitist himself, described his amazement over De Klerk’s portrait art in an extensive article.[11] According to him, De Klerk did not start his work with a preconceived model of proportions, contrary to many draftsmen. He would first become familiar with the models, and then analyze their forms. Just as in his building designs, a play of forms arose in which he aimed for the highest degree of perfection.

Another occupation of De Klerk was designing furniture. This was not restricted to chairs and tables but light fixtures, clocks, and stoves as well. For *‘t Woonhuis,* he designed entire suites of furniture. Like his housing projects, his furniture designs were daring, refined, and detailed. Furniture was expensive to produce because it required much handwork and incorporated valuable woods. Only wealthy people could afford these. Jan Voskuil wrote, “It seems that De Klerk evokes his fantasies from the material itself, and his forms are the immaculate crystals of his original and tender thoughts. Only artists like De Klerk, who know how to impart on their work some of their own soul, that have value for mankind.”[12]

ADMIRATION

De Klerk was admired by many architects of the Amsterdam School. The design he submitted in 1917 for a competition

8 Wattjes 1924, p. 252.
9 Mieras 1923, p. 241.
10 Boterenbrood 1923, p. 151
11 Roland Holst 1924 (Wendingen), pp. 3-4.
12 Voskuil 1922.

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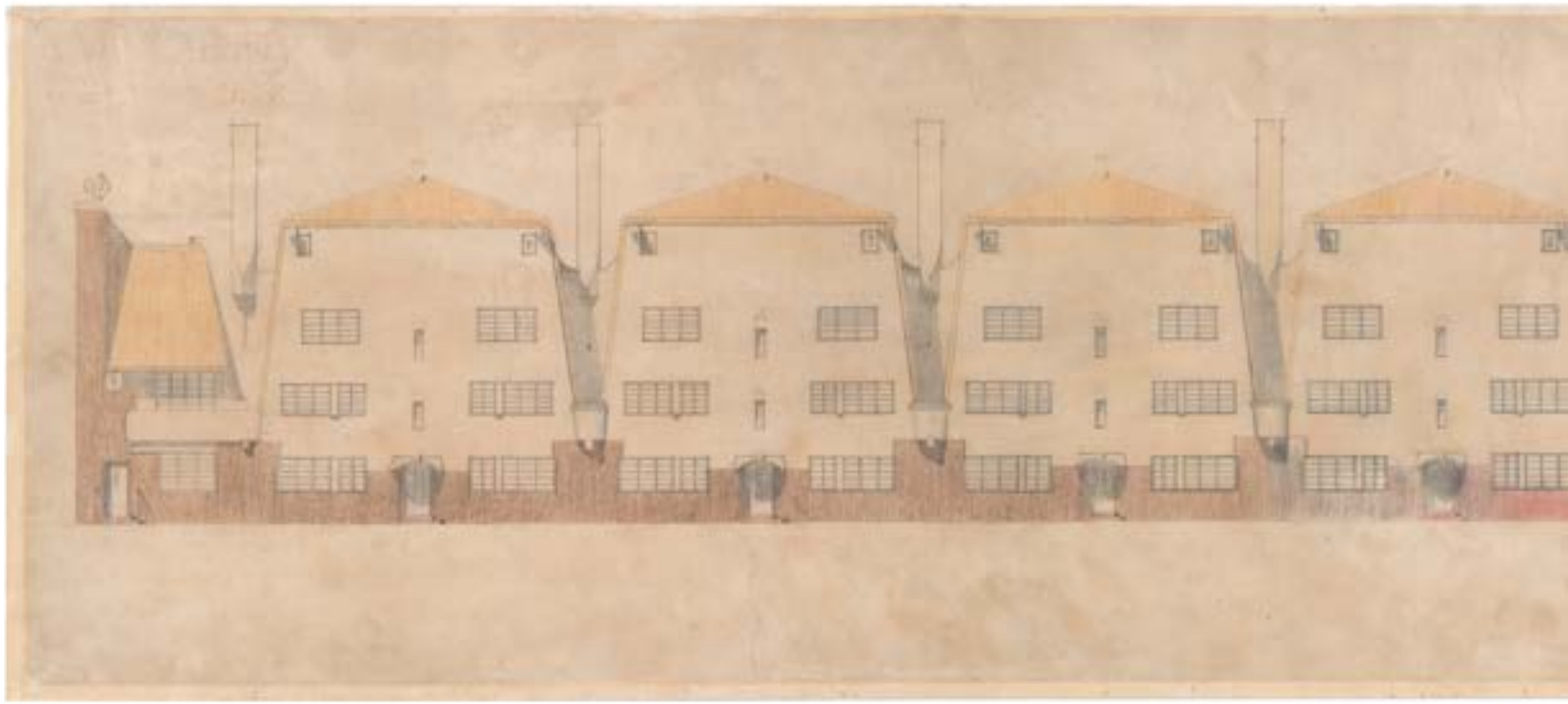

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02.11 M. de Klerk, design drawing for the squares at housing complex De Dageraad.
02.12 Portrait of poet Henriëtte Roland Holst by Michel de Klerk, 1921.
02.13 Design for a dining room for 't Woonhuys.
02.14 Postage stamp by Michel de Klerk, the Lion in the Dutch Garden.

to design a new Royal Academy of Visual Arts in Amsterdam made a particular impression. 110 architects had entered this competition, and De Klerk won second prize. Many of his colleagues did not agree with the jury's decision and thought that his design was, in actuality, the best. During an evening meeting at the society Architectura et Amicitia, he was spontaneously honored for his prize with a laurel wreath. His good friend, Piet Kramer, later wrote that this was the first time his master craftsmanship was publicly recognized.[13] In the 1918 issue of *Elsevier's Geïllustreerd Maandschrift*, ir. A. Boeken criticized the jury's judgment. He found De Klerk's design a majestic, coherent, and truly enchanting unity, more so than that of the first prizewinners Bernard Bijvoet (1889-1923) and Jan Duiker (1890-1935). He could not understand the reproach that the building was too decorative, "Then one could also blame the beautifully marked orchid for not having the natural regularity and color simplicity of a buttercup."[14]
The February 1919 issue of *Wendingen* was devoted almost entirely to De Klerk's buildings. Architect K.P.C. de Bazel (1869-1923) wrote a laudatory accompanying text, "De Klerk shows himself as one of the few with the talent to animate the stone and bring it to life."[15] The issue contained several illustrations and plans of his buildings, including many drawings of the not yet completed complex Het Schip. De Klerk also contributed to *Wendingen* himself. For a short period, he was part of the editorial staff, and he designed several covers, among which the housing issue of 1920. The front cover of this issue showed a nest with young swallows. The back cover displayed a beehive.

INFLUENCES

In his work, Michel de Klerk is influenced by the architecture of his time, including William Morris and John Ruskin's Arts and Crafts movement in England. In response to industrial monotonous mass production they proposed ideals of beauty and craftsmanship. In 1906, De Klerk traveled to London, but for him this was largely disappointing. He found himself in a dirty town and was unable to find work. However, he retained his interest in British ideas and came back with competition designs, which he submitted in 1907 and 1908.[16] He also made a number of trips to Germany where he was particularly impressed by the lattice houses, as is apparent from some of his drawings. Two of these are shown in the *Wendingen* issue containing his travel sketches, alongside many sketches from his trip to Scandinavia.[17]
In addition to his trips to England, Germany, and Scandinavia, Michel de Klerk was also influenced by eastern cultures. The steam ship had shortened the travel time to the Dutch Indies considerably, especially after the Suez canal was opened in 1869 and the North Sea canal in 1876. An exchange established itself, which resulted in increasing attention to Dutch Indies' crafts. Dutch architects, including Berlage and Eduard Cuypers, traveled to the Dutch Indies. Some of them built there in the style of the Amsterdam School. Exhibitions and lectures in the Netherlands about Dutch Indies' temples with their sculptures aroused great interest in the society of Architectura et Amicitia. *Wendingen* regularly paid attention to this topic; in 1921, De Klerk designed the cover for the East-Asiatic art issue.[18] The Dutch Indies' influence returns in his work in different ways, including in Het Schip. Hanneke Olyslager paid extensive attention to this in 1988 in the magazine *Jong Holland*, as did Frans van Burkom in 2016 in *Eigenbouwer*.[19]

DE KLERK'S DEATH

The total output of Michel de Klerk is limited due to his unexpected early death from pneumonia on November 24, 1923. He was 39-years-old. His death was a huge shock. J.P. Mieras put this into words in *Wendingen*, "It hits bitter and hard to have to miss all the beauty which the future will now keep hidden in its lap."[20]
Various architects and artists wrote an in memoriam in which they showed their respect for De Klerk. Berlage called him the great individual and cornerstone of the "Amsterdam movement" that stood for "liberated architecture", and for which strangers would visit and enjoy.[21] Arie Keppler wrote that Amsterdam had lost its best builder and artist, who had meant so much for social housing and who had built many monuments of great importance and civilization throughout the city.[22] Many pointed to the geniality of De Klerk and his great significance to Amsterdam. Architect Willem Kromhout spoke about a "demigod".[23] Erich Mendelsohn, who visited

13 Kramer 1923.
14 Boeken 1918.
15 De Bazel 1919, p. 12.
16 Bock/Johannisse/Stissi 1997, p. 97.
17 *Wendingen* 6 (1924), no. 2 about travel sketches and studies of Michel de Klerk.
18 *Wendingen* 4 (1921), no. 3.
19 Olyslager 1988; Van Burkom 2016.
20 Mieras 1924, p. 3.
21 Berlage 1923.
22 Keppler 1923a.
23 Kromhout 1923.

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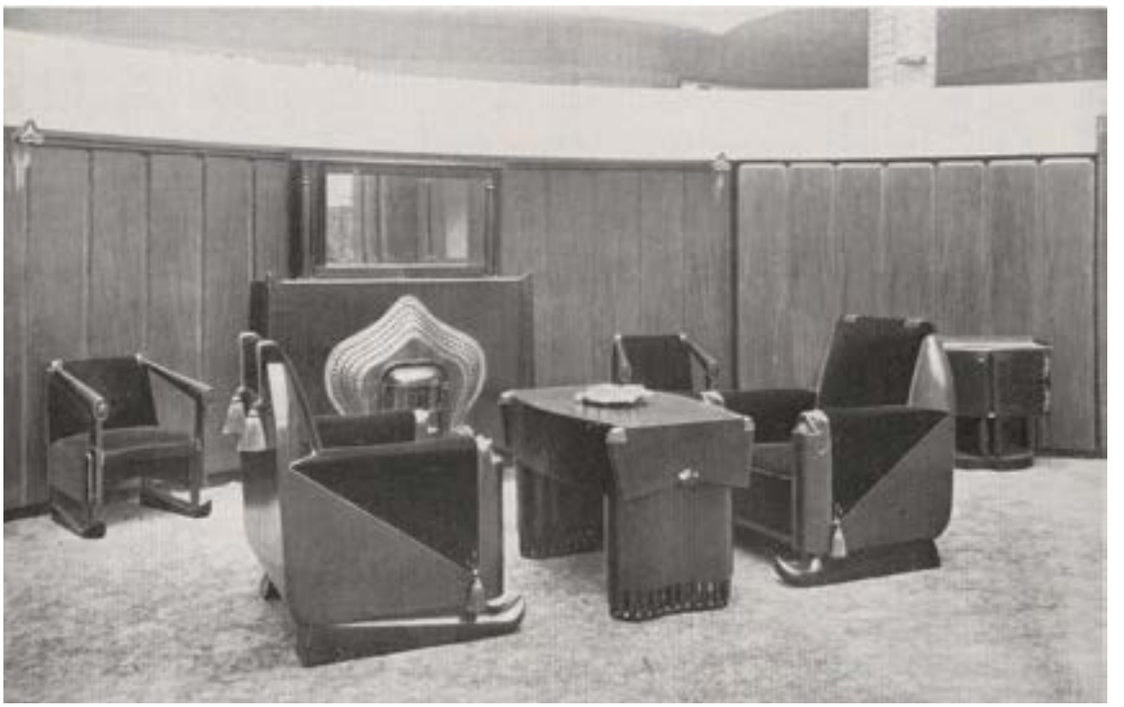

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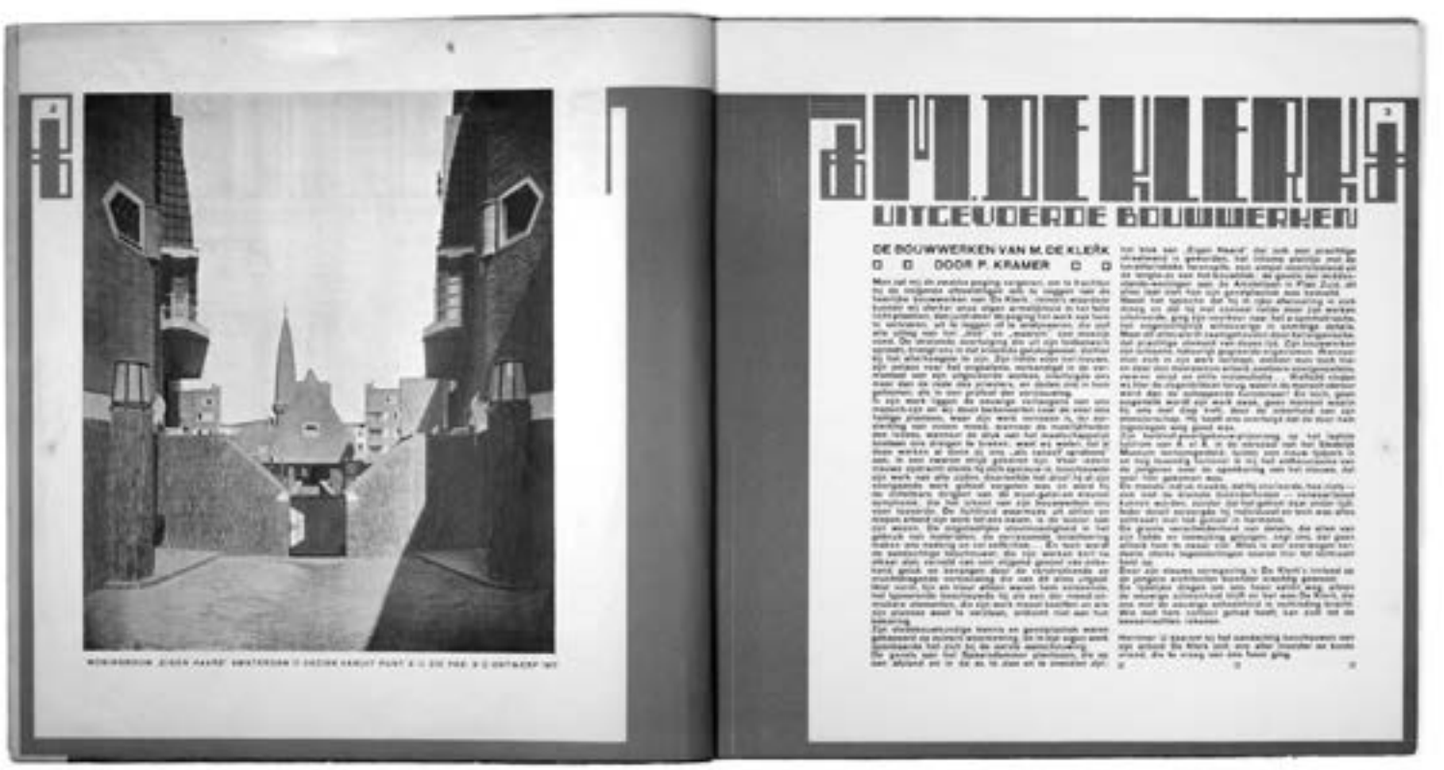


02.15 Furniture by Michel de Klerk at Paris 1925 exposition.
02.16 Wendingen magazine on the completed works by Michel de Klerk.
02.17 In memoriam Michel de Klerk, design by Chris Lebeau, 1923.

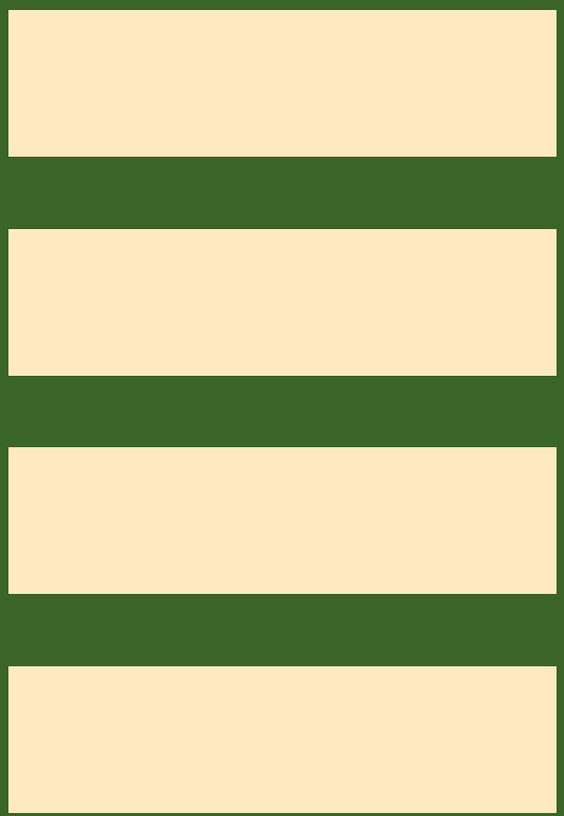

IN MEMORIAM
M DE KLERK

him only two weeks before his death and saw his furniture in *'t Woonhuys*, also paid his respect in the *Berliner Tageblatt*. According to him, the land "where in architecture the freest outlooks prevail", had lost its best young master builder. To which he added, "We, young people from all lands, mourn for him."[24]

After De Klerk's death, several issues of *Wendingen* were pubished covering his work. In one, his travel sketches were shown, and, in another, attention was paid to the portraits he had drawn. Yet another issue was on his furniture and interiors. Besides an issue on his completed building projects, there was even a special issue on the architectural projects that were never realized, such as his two competition entries.[25] It was clear that De Klerk was also an important example to many architects. Architect Hendrik Wijdeveld, chief editor of *Wendingen*, called him a "visionary" who was able to mould the city into one urban image and establish a new basis for architectural forms, "He drafted from impulse and desire, from duty and recreation. He was at the same time the most childlike and the most powerful among us and played with his forms in the unconditional domain of his fantasies. He seized when others saw nothing, he acted when others were thinking, and in his desire to give he was so passionate that, when he was held back from fully expressing his architectural mind, he resolved this urge in one street, having the potential of serving an entire city."[26]

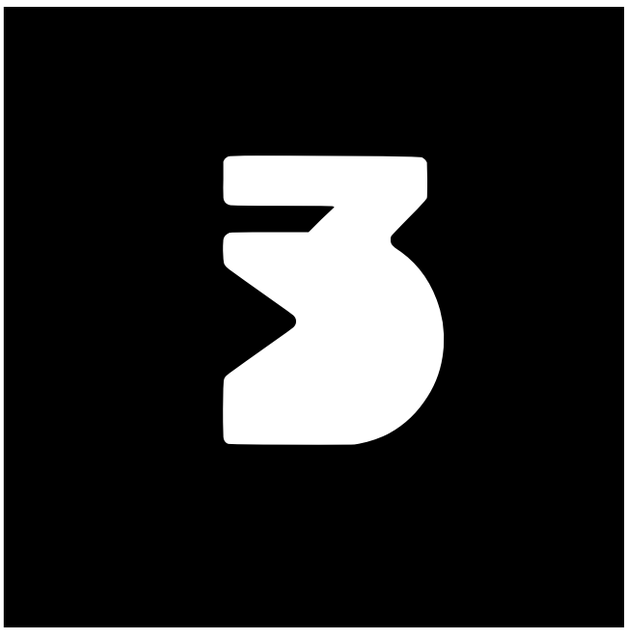
The death of De Klerk ushered in a new phase for architecture. The predominant style grew much more functional and businesslike. Eventually, the *Nieuwe Bouwen* movement entered the picture. Only at the end of the 1960's did renewed interest for the work of De Klerk arise. Suzanne Frank has been very important. She wrote in 1970 an extensive monograph on De Klerk's life and work for Columbia University in New York.[27] 1975 saw an extensive exhibsition in the Amsterdam Stedelijk Museum on the Amsterdam School.[28] This exhibition received great interest, and new publications followed. The Japanese magazine *Global Architecture (GA)* devoted its 56th (1980) annual volume entirely to the housing complexes De Klerk had built for Eigen Haard and De Dageraad. In 1983, Wim de Wit organized an exhibition on the Amsterdam School for the Cooper-Hewitt Museum in New York and published a book about the Amsterdam School on the occasion of this exhibition.[29] Together with Maristella Casciato, he also wrote a booklet in 1984 about the residential buildings of Eigen Haard on Spaarndammerplantsoen entitled, *Le case Eigen Haard di De Klerk*.[30] This was published in Italian only. Another book by Casciato completed in 1987, *La Scuola di Amsterdam*,[31] was translated in Dutch as well as in English, which was considered the standard book on the Amsterdam School for many years.
Michel de Klerk was back in the public eye. Even more so after the Netherlands Architecture Institute (NAI) in Rotterdam, currently the New Institute, organized a retrospective exhibition of his work for the first time in the summer of 1997. On the occasion of this exhibition, a comprehensive book was published about his work with many construction design drawings that are stored in the New Institute archives.[32]

24 Mendelsohn 1923.
25 Respectively: *Wendingen* 6 (1924), no. 2 and no. 7; *Wendingen* 7 (1925), no. 10; *Wendingen* 6 (1924), no. 9-10 and no. 4-5.
26 Wijdeveld 1923/1985.
27 Frank 1970/1984.
28 See Bergvelt et al. 1975.
29 De Wit et al. 1983.
30 Casciato/De Wit 1984.
31 Casciato 1991.
32 Bock/Johannisse/Stissi 1997.



The Amsterdam School and the quest for the true modern

Richelle Wansing



Whoever expects to find a clear-cut definition of the Amsterdam School in the literature from the past fifty years, probably found more confusion than help from all the divergent ideas. Still, there appears to be consensus around at least one point, the emphasis on craftsmanship. However, when the Amsterdam School is viewed from a historic frame of reference, where, what I would call the future-oriented expectation that characterized the period 1890-1925 is central, the question then arises whether the emphasis on crafts would just be the greatest misconception that exists regarding the Amsterdam School. The idea of a paradigm change provides room for an understanding of the special character of two very different periods: the future-oriented paradigm, in which the pursuit of the art to come was central as a *not yet* revealed vision of the future, and the modernist paradigm, which embraced the idea of the future is now.
Instead of traditional, handcraft values, the characteristic choice of materials and application rather bears witness to a search for a new style between modern shaping potential of the architectural materials (aspiring to a new play of forms) and the extreme consequences of the structurally possible (application of modern techniques). Based on this, the Amsterdam School can even be defined as a *style movement* searching for a revolutionary new play of forms. The rich design of Het Schip testifies not to an ideal of crafts, but to the quest for a new modern style.

A NEW FRAME OF REFERENCE: THE PROMISED LAND OF ARCHITECTURAL BEAUTY

It is often alleged that the architects of the Amsterdam School have never seen themselves as "school", let alone that they would have ever gathered under such denominator.[1] But the majority of the movements and schools that we distinguish have never labeled themselves as such. That this fact is suddenly seen as peculiar for the Amsterdam School, just goes to show how difficult it is to arrive at a satisfactory definition.
Sigrid Johannisse touches the essence of the definition controversy, "The Amsterdam School, contrary to De Stijl, has always been regarded as an exception in the handbooks of 20th century architectural history. The expressionist architecture was seemingly a dead end street and, because of that, not easy to be given a

1 Johannisse 1997, p. 29.

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03.01 J.M. van der Meij, model of Scheepvaarthuis, together with photographs shown in the exposition at A et A, 1915.

03.02 P.L. Kramer, Marine Bondsgebouw, Den Helder. Its design was shown in the exposition at A et A, 1915.

03.03 J.M. van der Meij, Scheepvaarthuis, 1911 – 1916.

place in a historical development timeline."[2] The difficulty in defining the Amsterdam School points at the difficulty in which it allows itself to be placed in the current historical frame of reference. Here lies the paradox that, as long as the Amsterdam School is regarded as an exception in the historical development timeline, its position as the exception can never be resolved. The definition issue can only be resolved by the introduction of an alternative historical frame of reference in which it no longer ranks as the exception.
The establishment of a new frame of reference may be found when the architect Jan Gratama (1877-1947), first introduced the term 'Amsterdam School'. In a discussion of the work of H.P. Berlage (1856-1934), published in the bundle which appeared in February 1916 on the occasion of Berlage's sixtieth birthday, he first referenced the Promised Land, "The best of this time, such as Berlage and De Bazel, are like Moses: they see the land of promise, but they will not enter." It is now up to the youth to take over the baton, but they "do not have the patience of Moses; already now they want to taste the purple wine of the Promised Land of architectural beauty."[3]
The metaphor of the Promised Land is herein of crucial importance. The concept of modernity was no longer understood in the sense of Baudelaire, who concluded in 1863 that, based on the idea of advancing development, the essence of modern art was embedded in the expression of the contemporary, and that the universal was hidden in the contemporary. Contemporary is the one thing that occurs at any moment.[4] Whereas Baudelaire points to the contemporary as the relative end point of the development timeline, Gratama concentrates on an end point in the future. Modern art is a work in progress that will be completed at a given moment. The frame of reference in which Gratama places the rise of the Amsterdam School is the future-oriented expectation in which Gratama anticipates the idea of advancing development. "The young ones passionately want to advance, taught by Berlage, they feel that the newer time is ripe in them; they try to hasten the advance of time and already now to indulge in their own art. Hence the newest movement in architecture, the modern Amsterdam School with its expressionism, its romance, its fantasy." Gratama continues his argument by pointing to two important aspects in which Berlage fell short, firstly in the domain of construction and secondly in his neglect in the treatment of decoration. He points to these two areas in which the new movement strives for renewal, "The young ones, such as Van der Meij, Kramer, de Klerk and others want more freedoms; they want to express construction and decoration each in its own power and character."[5]
Gratama not only believes that the striving for renewal by the Amsterdam School is to be aimed at construction and decoration, but also points to these two areas as issues where Berlage has shown himself insufficiently modern. Surprisingly enough, the essence of this critique is that Gratama does not let the master down. On the contrary even, the fact that Berlage fell short in a few areas is not considered a Baudelarian break between the old and the new - whereby the so-called elapsed contemporary is definitely abandoned - but underlines Berlage's position as founder of the future art to come. Berlage was preordained not to arrive in the Promised Land himself. As founder of the coming times, his shortcomings can in that sense be considered a necessity, as without that it would not be possible to build on his legacy.
Less than two-and-a-half weeks after Berlage's sixtieth birthday, a short article by Michel de Klerk appeared in the magazine *Bouwkundig Weekblad* (Building Weekly). He answered the request, probably made from Gratama, editor of the magazine, to give his opinion on Berlage's work.[6] As this article provides a rather polemic impression at first glance, it apparently remained unnoticed that De Klerk, to a certain extent, did not write anything new. He criticized Berlage for his conservative use of reinforced concrete, but Gratama also said the same in his eulogy when he wrote: "The great structures of reinforced concrete, with their strong and mysterious nervous systems that allow great spans, have not been applied by Berlage. Yet, they are typically modern."[7] Like Gratama, De Klerk recognized that Berlage had achieved a great deal, but he emphasized that Berlage's significance is restricted to the technical side of architecture. The most poignant and most polemic quote in his argument is, without a doubt, about how Berlage has done much for the building *trade*, "...however, the *art* of building he never mastered". De Klerk does not emphasize the, so-called, self-evidence of Berlage's shortcomings, as Gratama had done, but forces the issue instead. In doing so, he fully satisfies the image of the passionately impatient young architect who wants quick entry into the Promised Land of architectural beauty.
In fact, in his article, De Klerk did not express any original or deviating opinions from Berlage. The controversial element was, above all, in his tone. Contrary to today's custom, and perhaps since time immemorial, it was practically impossible in that era to break from the work of the previous generation. With a future-oriented perspective, young architects were indeed expected to strive to surpass their predecessors by

2 Ibid.
3 Gratama 1916, p.49.
4 "I understand modernity to be the fleeting, the superficial, the accidental, that half of art of which the other half is the eternally unchangeable." Baudelaire 1992, p. 57.
5 Gratama 1916, pp. 49-50.
6 De Klerk 1916.
7 Gratama 1916, p. 50.

03.04

03.05

03.04 M. de Klerk and P.L Kramer, housing complex De Dageraad, 1932. Corner Burgemeester Tellegenstraat/Pieter Lodewijk Takstraat.

03.05 J.F. Staal, Wolkenkrabber (Skyscraper) 1932, example of new functionality in housing.

building on their work. If anyone in the history of Dutch architecture can be identified as occupying an exclusive position, it would surely be Berlage. His reputed title of founder of the coming period renders the man untouchable. The necessity to strive to surpass him was evident. Berlage's shortcomings spoke in his favour; they were a necessary component of the future-oriented expectation - but in a respectful manner, with a bow and with a word of thanks. From the sharp tone of De Klerk, we cannot simply conclude that he wanted to break with the idea of Berlage as predecessor. That would, in fact, have been in conflict with the future-oriented paradigm to which De Klerk's thinking must have been bound. With his position on Berlage's work, he seems to have wanted to refute the criticism of his own architecture by offering a different perspective.[8] He, himself, could not be seen as the one deviating from the Berlagean principle. Instead, Berlage had to be seen as the one who had not completed the building of the pyramid of future art. At the most, he had laid the foundation.

The young architects wanted to go further and got that chance in December, 1916, when during the election for the board of the Amsterdam architecture society, Architectura et Amica (A et A), the decision was made for rejuvenation. Berlage remained on the board as honorary chairman, but for the daily management, a innovation minded and so-called youth administration was elected. Joan van der Meij and Michel de Klerk became board members, as well as C.J. Blaauw, J. Gratama, J.F. Staal, P. Vorkink, and H.Th. Wijdeveld. They formulated a new vision: A et A would dedicate itself to the aesthetic side of architecture.[9] One of the initiatives involved the founding of a new monthly magazine; the first issue appeared in January 1918, which could rightly be considered the mouthpiece of the new movement.[10]
The future-oriented commitment, to which the young architects felt bound, is perhaps most apparent from the title of the monthly magazine: *Wendingen*. In the second issue, Cornelius Blaauw (1885-1947) writes, "There is much wisdom in this name '*wendingen*' [turns], wisdom of varying kinds and also a defensive force against prospective attacks, being of great value these days! Never can we, the editors, be criticized for taking a turn, as this and similar attacks are already repulsed in advance in the bulwark of this name, chosen with wisdom and deliberation: the plural form even entitles us to pretend that, after turning ten times, make a face as if nothing has happened, and so be it (...). Turning becomes a habit too."[11] In other words, if you do not know where you are going, then you know it will be a path of turns, of searching and examining. Nowhere does the obligation for this searching and examining reveal itself as strongly as in the opening article of the very first issue of *Wendingen*, written by H.Th. Wijdeveld (1885-1987), which starts with the words, "As foreboding of a period in which we will again see with more clarity and agreement will be found, many tidings will come from the world in which those who search remain."[12] We can presume that, in line with the quest for the art to come formulated by Wijdeveld, and the special research areas pointed out by Gratama, that the search by the youth movement focussed on the two areas which Berlage would have ignored: construction and decoration.

THE FUTURE IS NOW

It is almost ironic that the only turn that was not envisioned with the name of the magazine, "turns" for *Wendingen*, was the paradigm change which wiped the future-oriented expectation off the table. Halfway through the 1920s, the belief in what was coming *without* having a clear vision, was replaced with the modernist paradigm: the future in sight. As a clearer vision of the future had been created, not only did the necessity of tentative searching come to an end, but another interpretation of art became fashionable as well. A turnaround of aesthetic plasticism took place, from the highest architectural and artistic purpose towards functionality. Architecture was no longer classified as fine art, but as applied art.[13]
In 1926, ten years after Gratama first wrote about the young architects and the Amsterdam School, architect J.F. Staal (1879-1940 in fact issued the kiss of death for the ideals of the Amsterdam School. A few years earlier he was still a prominent protagonist and architect of the Amsterdam School. He did so in a review of De Klerk's work, two and a half years after his death, in which he concludes, "His works of art

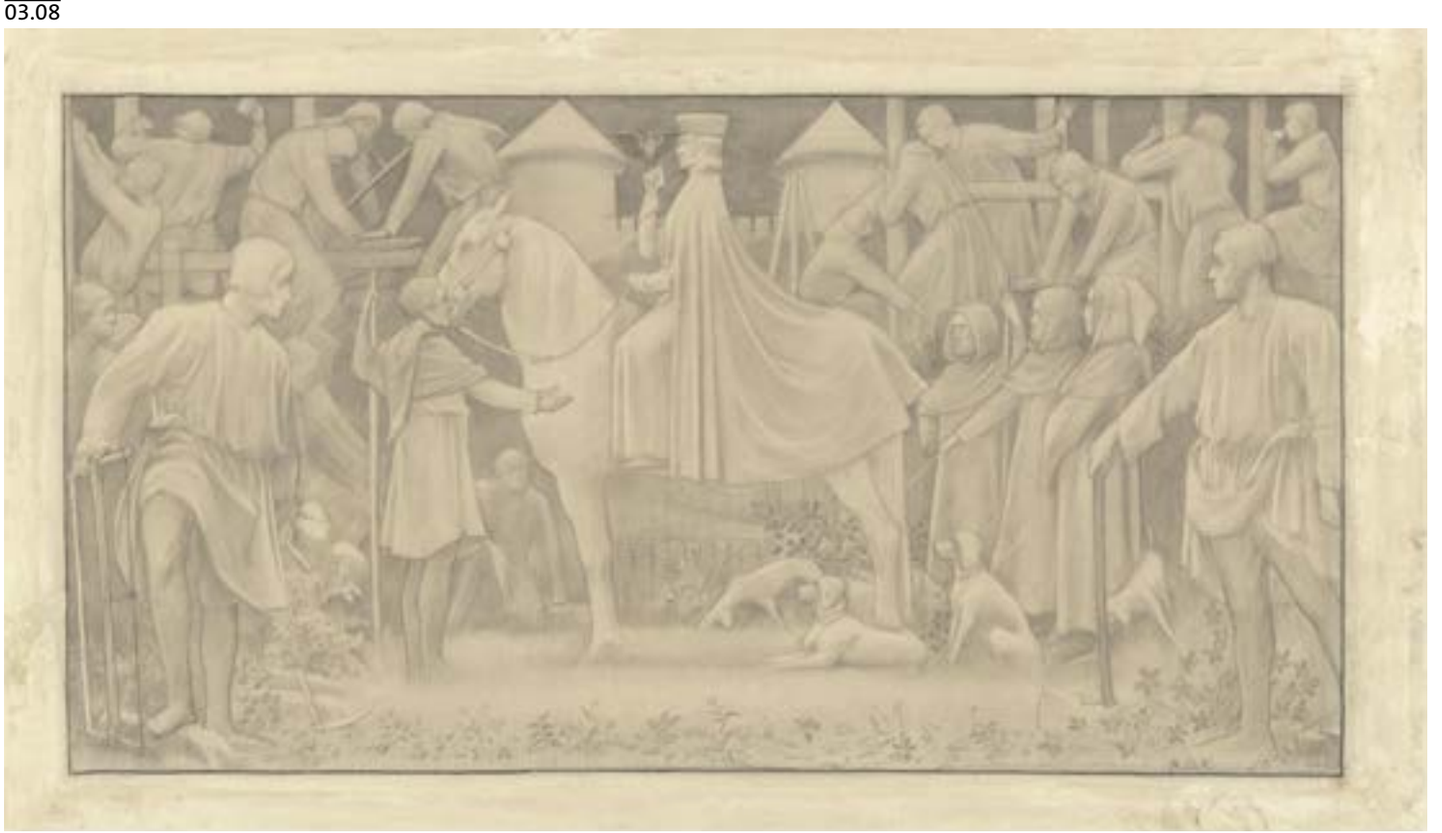
8 While Gratama praised the young architects in their attempt to surpass Berlage, he also expressed concern over the fact that they might not hold on to him sufficiently: "Seen from the Berlagean point of view with the dominance of the principle of the universal in architecture, the question arises if the individualism of the newest direction would not become too prominent and harm the architectural value. This is difficult to distinguish at this time. What the young architects give is too much a direct reaction, and therefore necessarily a bit of exaggeration." Gratama 1916, p. 50. For more review of De Klerk's architecture: Johannisse/Stissi 1997, p. 204.
9 Schilt/Van der Werf 1992, pp. 104-108.
10 Johannisse 1997, p. 27.
11 Blaauw 1918a, p. 5. It is not impossible that the name Wendingen should be construed as a reference to Berlage, who for example himself had chosen for his article "On the probable development of architecture" the motto: "I prefer to err elegantly over being right conventionally ... Van Deyssel". Berlage 1910, p. 79.
12 Wijdeveld 1918.
13 Eugen Gugel (1832-1905), professor of fine arts at the Polytechnical school in Delft, provides the following classification: "First we separate the fine arts in two main groups, namely that of the *visual arts* and of *music*, as they involve creation of art in the visual or audible sphere. (...) In the first place, *Architecture, Sculpture, and Painting art* are classified under visual arts, and in the second place *Horticulture* and *Mimic arts*." Gugel 1902, p. 3.

03.06

03.06 Greek summit, Acropolis of Athens. The future oriented paradigm aspired to a new cultural era able to compete with the two eras considered as the summits in cultural development. Classic Greek and medieval Gothic.
03.07 A. Derkinderen, design for the first mural in Den Bosch.
03.08 A. Derkinderen, design for the first mural in Den Bosch: the founding of 's Hertogenbosch by Henry Duke of Brabant.

03.07

03.08



stand like rocks in the stream of society, as beautiful but also as impractical, useless relative to the stream. Of course this does not mean less admiration for De Klerk's art. But it is no communal art, and it also is not apparent that architecture can again achieve that. Communal art for our time, which we can experience through hearing and seeing, is the jazz music and film."[14]

The most telling observation Staal makes here is that "in our time" architecture will not be able to fulfill the function of communal art anymore. He distinguishes between the purpose of communal art and its form. The shift caused by the modernist paradigm has no bearing on the purpose, but merely on the form in modern society, the need for communal art would not first be met by architecture, but, instead, by the culture industry. Within the modernist paradigm, there was certainly room for the idea of communal art as the impetus to a shared, communal art experience. Staal did not pose questions about which art form could ideally function as communal art, however, he did ask about which art could fulfill the need for shared art in the now. His answer: film and jazz. This interpretation would provide the impetus for what could perhaps be considered the most important art discourse within the modernist paradigm. After the culture industry was designated as the most important art form, questions grew about whether the character of the culture industry was at odds with the intrinsic quality of art. In 1936, ten years after Staal had pushed jazz to the forefront, the philosopher Theodor Adorno would publish his notorious essay, *Über Jazz* (On Jazz), in which he pointed to jazz as the acme of popular culture.[15] The ailment of the modern age was that the path to true art was cut off by mass culture and mass consumption.

The new theory about communal art and culture industry wiped out the special interest accredited to non-modern art history. The somewhat paradoxical frame of reference which delineated the future-oriented paradigm consisted namely of the expectation people had of the art to come, but it was based on the image formed of the old culture eras. The image of the art to come, which Berlage had abstractly formed for himself, was that this would rival the classic Greek and medieval gothic. These were considered the two greatest ever culture eras.[16] In 1896, in his inaugural address as professor in Aesthetics and Art History, art historian, Jan Six (1857-1926), wrote about the exceptional standing of Greek art within the history of art, "The foundations on which the visual arts rest, the entire world over, are Greek and found in Greece in the fifth century. I speak not of imitation of Greek works of art - in Buddhist art these are intolerably ugly and in European art no less boring - but of the simplest theoretical knowledge, the alphabetical script, as it were, of the art."[17]

The moment that jazz and film were designated the new communal art form and the present became the benchmark for the future, the past no longer functioned as a frame of reference. There is no longer a basis to look for the importance of architecture in terms of artistic figuration. On the contrary, the pursuit of art or its non-practical character, immediately became a target of criticism. Berlage was spared from this. His pursuit of art seemed to have been forgotten and his intellectual rationalism - the pursuit to provide modern architecture with a new purified *theoretical framework* - was equated with practicality of the design. Berlage was definitively entered into the history books as founder of the modern era, under the byword functionalism. Conveniently, this closed the gap between the so-called start of the modern era and the beginning of modernism (the 1920s). The Amsterdam School was written off. This was based on the point of view that, until then Amsterdam School was considered an ongoing development from Berlage, being the pursuit to push architecture in the direction of the art to come.

In the purged historical overviews of architecture that appeared during modernism, the *entartete Kunst* of the Amsterdam School was viewed mostly with contempt. Only after the 1950s, when in the aftermath of the Second World War the need arose for other viewpoints of modernism, would it be slowly re-discovered. It was of crucial importance that, only at that moment, the viewpoint emerged of the Amsterdam School as exception in the line of development. The history had already been written. Instead of a complete rewrite, the problem was solved with the dialectic methodology of the contradiction. Globally, two, new Amsterdam Schools were discovered. In international studies, the Amsterdam School was re-discovered as an urbanism movement that aspired an urban utopia. This was, in fact, defined as the opposite of modernist urban planning.[18] In Dutch studies, on the other hand, the Amsterdam School was re-discovered as an artistic movement.[19] In line with that,

14 Staal 1926, p. 185.
15 Rottweiler 1936.
16 Berlage on the approaching culture period: "That art will in principle not be superior to that of both great eras, the classical and the feudal, because the nature of the ideal is a relative matter and the absolute wholesome, i.e. the absolute morality, is just a phrase; but fundamentally it must surpass both, because the culture itself will be on a significantly higher level." Berlage 1910, p. 43.
17 Six 1896, p. 20.
18 Considered an aesthetic ideal for the city, see Casciato 1983; Frank 1970/1984. Considered socially ideal for the city (related to the labor movement), see Searing 1971a; Stieber 1998.
19 De Wit/Van Burkom 1975.

03.09
H.P. Berlage, Stock Exchange Building, great hall. Its walls were to be covered by Derkinderen's murals. These were never completed.

it was finally defined as the counterpart to De Stijl.[20] The spiritual, individual, and traditional were positioned opposite the rational, universal, and structural.

THE FUTURE-ORIENTED PARADIGM AND THE PURSUIT OF COMMUNAL ART

In the period between 1890-1925, the expectations that existed of communal art were based on the image of the greatest culture periods. This did not mean that there was a singular vision about the form in which communal art would manifest itself. There are at least three different art forms that can be considered to present the best *visual* form in fulfilling the pursuit of communal art. These include the applied art of painting (Jan Veth), the *Gesamtkunstwerk* (Berlage), and architecture (Michel de Klerk). The common denominator is all these opinions were rooted in the idea of the modern era, in the sense of futurism (future-oriented), and not in the meaning of the later modernism (focussed on the now).
The various opinions strongly remind us of the paragone, the debate that took place in the Renaissance over which art form was considered the greatest. 1892 was the first time that the Dutch term *gemeenschapkunst* (communal art) was used in literature. The term relates to the applied art of painting. The painter and art critic Jan Veth (1864-1925) voiced his admiration over the murals of Antoon Derkinderen (1859-1925) painted on the town hall of 's-Hertogenbosch. He recognized them as communal art.[21] For him, it did not matter at all that the painting was applied to the walls of a century-old building. The architectural quality was not important, only the communal function of the building as town hall, a symbol of the communal life. The communal building, a metaphor for communal life, functions as a canvas for the liberal arts. In fact, it was important that the applied art form be regarded as the only true liberal art form. In this way, capitalist forces were ignored and the expression of communal thought was the only greatest purpose of art.[22]
This is exactly what Walter Crane (1845-1915) meant with the title of his influential publication, *The Claims of Decorative Art* (1892). Only the applied arts could lay claim to the title, true art. In particular, the applied art of painting was considered the highest of all forms of art. It stood "at the head of the decorative arts."[23]

Nine years after the 's-Hertogenbosch' mural of Derkinderen was awarded the title, Communal Art, Berlage was about to start a court case against the same Derkinderen owing to the paintings he had delivered to the Beurs (Amsterdam stock exchange). The criticism against Derkinderen came to a head over the issue which, in Veth's use of the term, communal art had not played a role: namely the idea that the applied art of painting, without reference to architecture, could lay claim to the label, true art. The reporting in the newspapers ran as follows, "Mr. Derkinderen has delivered murals according to his own taste, without concerning himself with the harmonious unity, which Mr. Berlage rightly envisages in the building of the Beurs. Mr. Berlage desires cooperation of the artists, and while men such as Zijl, Toorop, and others gladly accept the insights of the master builder, Mr. Derkinderen imposes his religious themes."[24]
In the design for the Beurs, Berlage saw the harmony of the whole as the highest priority. The Beurs is thereby perhaps the only example in Dutch architecture which shows the pursuit to a Gesamtkunstwerk, a new total art form resulting from a synthesised blending of the various arts. The German term became particularly well known through Richard Wagner (1813-1883), who used it as a synonym for the tragedy. He considered this art form the ultimate synthesis between music and language. It is of special importance that he saw poetry as an intrinsically musical art form, and on that basis, was looking to blend the two.[25]
In Dutch contemporary publications dating back to 1900 and current publications of the present, insufficient differentiation is made between the Dutch term, communal art, meaning the abstract *purpose* of art, and the Wagnerian term, *Gesamtkunstwerk*, meaning the synthesis of art *form*. In extreme cases, they were even considered the same term.[26]
Berlage, on the other hand, belonged to those few who were quite aware of Wagner's specific concept of *Gesamtkunstwerk*, as is evident from his reference to this in 1910 when he wrote

20 De Wit 1983b, p. 33. The explicit distinction between the Amsterdam School and De Stijl later formed the keynote for the exhibition "Kramer vs Rietveld - contrasts in the furniture collection" in the "Stedelijk Museum", Amsterdam, 2004.
21 Veth 1892.
22 Crane 1892, pp. 15-16.
23 Crane 1892, p. 38.
24 Anon. 1901.
25 Lees 2007, pp. 71-77.
26 In 1893, so shortly after Jan Veth had introduced the term communal art, the composer Alphons Diepenbrock published the article Schemeringen (Twilights), in which he translates the Wagnerian term Gesamtkunstwerk to communal art and ignores the specific art form that Wagner envisaged: "(...) his concept of one people as humankind grown into a unity through mutual spiritual desires, as a condition, as recipient of the art work, - this is the origin of the work, for which the artist himself designated the name 'Communal Art'." See Staverman 1994, p. 12. A similarly striking, but more recent example follows from a comparison between a citation from Wagner's essay Die Kunst und die Revolution and the manner in which that citation is used in Bank/Van Buuren 2000, p. 155. Comparison with the original text of Wagner from 1849 shows that Bank and Van Buuren, leave out the keywords *der Tragödie*, from which it is apparent that Wagner specifically used the term in relation to the tragedy: "Wie sich der Gemeingeist in tausend egoistische Richtungen zersplitterte, löste sich auch das große Gesamtkunstwerk der Tragödie in die einzelnen, ihm inbegriffen Kunstbestandteile auf," Wagner 1975, p.14.

03.10

03.10 H.P. Berlage, Stock Exchange Building.
03.11 Het Schip, façade at Spaarndammerplantsoen and Zaanstraat.

03.11

about the emerging art period, "The drama, like before, will again become the synthesis of *all* arts."[27]
The fact that Berlage envisioned his Beurs design to be that form of synthesis is evident, not only from his pursuit of a harmonious whole through synthesis, but especially from his pursuit of the integration of poetry. "Albert Verwey, the poet of the Beurs," as it was printed in the newspaper on May 28, 1903, a day after the opening, was not only responsible for the writing of verses, but provided "also in general the subjects for sculptural and pictorial embellishments."[28]
Although it was generally known that Verwey was appointed by Berlage as artistic program director, the implications of that seem to have been ignored. The central positioning of the integration by poetry, the synthesis with language (thought), seems to indicate that Berlage strived for a Gesamtkunstwerk in the Wagnerian sense of the word.

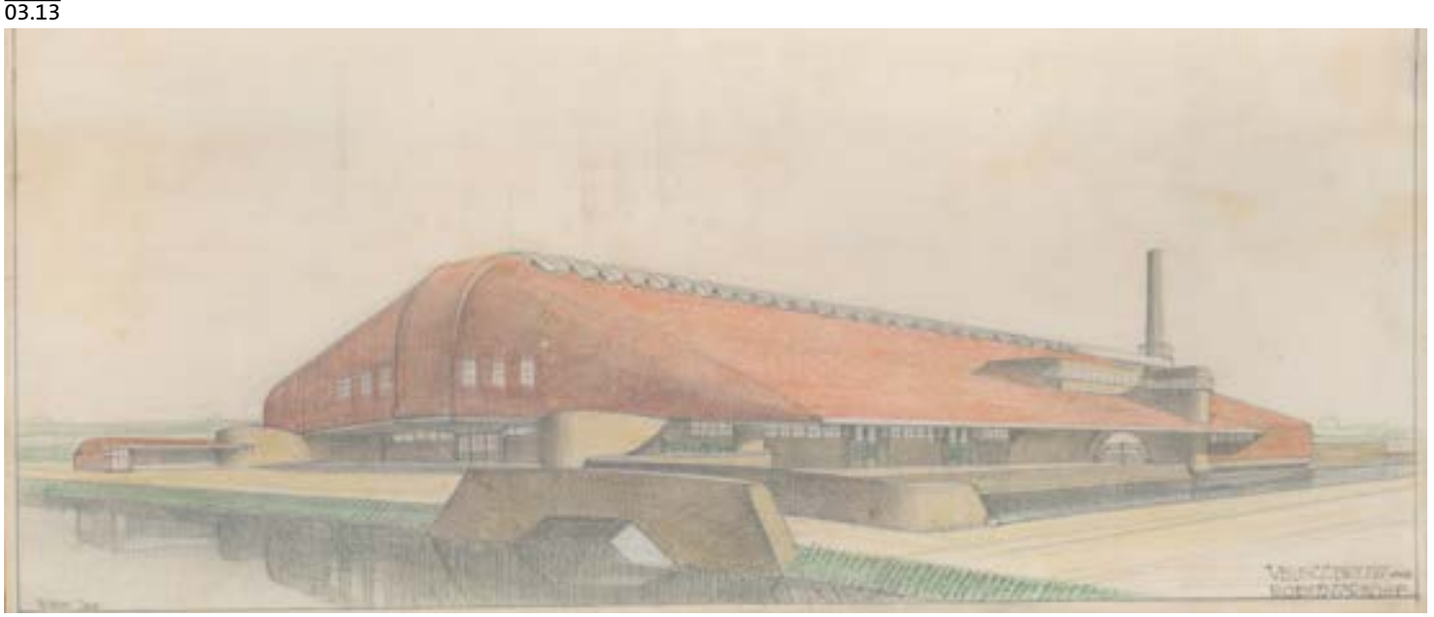
"But it is not communal art, and it also cannot be imagined that architecture can even become that," wrote Staal in 1926, by which he pointed at architecture as the art form in which Michel de Klerk had thought he could realize communal art.[29]
Totally in line with this focus on architecture, De Klerk ignores Berlage's pursuit to reach a "harmonious whole" in the Beurs art. In 1916, he gives his opinion on the work of Berlage, "His scope was too narrowly defined, too exclusively technical and utilitarian, to be in any way the bearer of culture." Not only does he call Berlage "a specifically technical reformer", he even points to the Beurs as "one of the most beautiful and pure examples expressing the pursuit of this specific technicality."[30]
De Klerk's vocabulary rests on the distinction between the craft of building and the art of building. Berlage, of all people, did exactly the same two decades earlier. In the flaming argument, "Architecture and impressionism," he spoke out against architecture that was too exclusively narrow, utilitarian, and pushing aside the art of building.[31] For a good understanding of Berlage's argument, it is important to realize that he is not yet focussed on the pursuit of communal art. The subsequent Beurs designer has not yet emerged. On the other hand, it is probable that the definition of architecture, which he formulates here, namely that this is a reflection of impressionist art, can be considered as paving the way for his later outlook on communal art. Because he ascribes the same aesthetic or visual effect to the art of building as to other arts, he lays the foundation for the idea of synthesis. With the communal basis, he creates a condition to bring the two together.

In his argument, Berlage speaks out solely on architecture. This makes the text a perfect insight into the opinions of De Klerk and Berlage on the nature of architecture. The bottom line seems to be that Berlage mirrored his idea of architecture to the impressionistic art. Thus, he propagated the idea that architecture must be about "the grand impression of the totality" and that it must "search only for characteristically large surfaces, outlines! The architect of the present becometh impressionist!"[32] In all higher arts, according to Berlage, impressionism began to reveal itself as *leitmotiv*, as in poetry. "Impressionism, which for many is already *the* form in modern poetry, obviously is, in that in art being non-visual, of a totally different nature." Because he classified architecture among the visual arts, the same visual-impressionistic guidelines apply as for the art of painting, namely the creation of "a representation which treats detail, being subjected to the totality, also as subjected to the grand overall suggestion, or rather impression."[33] It follows that his notorious austerity never was Berlage's conscious purpose - he never wanted to pursue a so-called rational *style* - but the result was a pursuit of impressionist plasticism. The pursuit of "the grand suggestion of the whole," resulted in the subjection of the detail.
Subjection of the detail, however, did not mean that Berlage considered the ornament superfluous, on the contrary. His essay, "About the probable development of architecture," (1910) indicated that he did not believe in a "totally ornament-less art" "for the perfectly simple reason that decoration is in human nature." Furthermore, he mentions, "a separate branch of the great modern movement," wherein there is "a whole army of ornamental artists at work, searching for a new ornament."[34] While he, therefore, agrees with the idea that the approaching culture will bring a new ornamentation, he is, at the same time, of the opinion that it is not up to architecture to solve the issue of the new decorative art. The fact that he positions decorative art outside the discourse of architecture is, undoubtedly, motivated by the argument that detail is of marginal importance in impressionist plasticism.
What, for Berlage, was evidence of the architectural pursuit of "the great impression", was pushed aside by De Klerk - almost with foresight - as being "functional". In the closing paragraph of his Berlage-review, he writes, "In summary: Berlage's appearance has certainly been of value to the integrity of the building *craft*, however, he has not been able to influence the *art* of building, as the emergence of style,"[35] What De Klerk

27 Berlage 1910, p. 43.
28 Anon. 1903.
29 Staal 1926, p. 185.
30 De Klerk 1916, p. 332.
31 Berlage 1894, p. 95.
32 Berlage 1894, p. 106
33 Ibid, p. 99.
34 Ibid, p. 100.
35 De Klerk 1916, p. 332.

03.12

03.13



03.12 Het Schip. Material use, color and decoration.
03.13 M. de Klerk, auction hall for Coöperatieve Bloemenveiling 'Bloemlust', Aalsmeer.

meant by this falling short in the area of style, he had already formulated in earlier paragraphs, "Berlage does not grasp the play and language of shapes, although these produced the real beauty, throughout all styles and however divergent these were." In fact, De Klerk gave the same definition of style as was endorsed by Berlage, "style is unity in the multitude."[36] The big difference between Berlage and De Klerk with respect to style is Berlage clearly differentiated between the issues concerning art and style, notwithstanding the fact that he has written much about it and wanted to add their importance to the agenda. With respect to architecture and other impressionist arts, Berlage isolated the issue of art. He proposed that architecture had nothing to do with style, but with impressionist plasticism. De Klerk, on the other hand, was of the opinion that the art to come had to be found within the issue of style, in the play and language of shapes, in the dialogue between architecture and decorative art, and in so-called style figuration.

We can state that Michel de Klerk considered architecture as the art form preordained as communal art. It was of importance that he not only identified a different art form in the communal art paragone than his predecessors (Jan Veth believed in the applied art of painting; Berlage in the *Gesamtkunstwerk*). His ideas about the art of building was to refer reciprocally to the idea of communal art. Instead of an idealistic perception of the communal art objective, namely wanting to give expression to the communal spirit, he shows a more materialistic perception. Opposite Berlage's belief in art, which will rise from a communal *spiritual foundation*, De Klerk proposed that the new art must be the *bearer of culture*.[37] By that, he likely meant that art must be an expression of modern material life.
"In my opinion Berlage, since a few decades, is no longer trend-setting. The tantalizing-new, the sensationally-shocking, the impressively imposing (with which the static technology surprises us time and time again), which characterizes the true *modern*, does not arouse him, or at least has never actively appeared to arouse him. It was expected for instance, that Berlage would excel in reinforced concrete buildings, however, he uncharacteristically used that brand-new product as hidden stand-by material, as every other Dutch architect would have done."[38] De Klerk undoubtedly would not have formulated this criticism in 1916 if he himself had not researched the possibilities of this "brand-new product". Twice, he chose to design in reinforced concrete for different architectural competitions in which he participated during the period 1906-1912. In 1907 it involved a café-restaurant intended to "be built totally in reinforced concrete". In 1912 it related to a water tower. In his first design he wanted to use the color purple for the façade, specifically purple plaster or colored concrete. For the water tower he thought of bare concrete. Johannisse observed, "This technique had only rarely been used in the Netherlands in a manner whereby the material was fully visible on the exterior and was uncovered."[39]
Instead of letting structure and covering materials coincide, De Klerk preferred, in the end, a different application for the developments in the structural field. In fact, this clarifies the term "reverse rationalism" used by Joan van der Meij (1878-1949) with regard to the *Scheepvaarthuis* (Office of the Shipping Companies), "In general, where the stability of the façade depends in large measure on the adhesive strength of the mortar, the search was for a language of forms in reverse rationalism, namely that, looking at the façade and detail (...), one would question how it is possible that in general some structures stand firm and therefore one would have to conclude that a core structure exists and that the adhesive strength of the mortar cannot be ignored."[40] In short, whoever looks at the façade of the Scheepvaarthuis, must agree "to the existence of a core structure".
The same idealized, mental leap, namely that ornamentation would force one to reflect on the structure, seems to have been carried to the extreme in the façade design of the second housing block of Michel de Klerk at the Spaarndammerplantsoen. As an example of the "adhesive strength of the mortar," the roof tiles were glued against the façade and show an "idiom of reverse rationalism". Contrary to the Scheepvaarthuis, this case does not involve a concrete core structure, let alone a fully supporting core. In a sense, De Klerk has gone one step further structurally than the Scheepvaarthuis. He has had to consciously search for a means to use structural opportunities in such a way that such language of forms were possible. In 1915, this, allegedly, far-fetched structural nature led to a sensational conflict within the Municipal Architects Commission. Chairman Jos Cuypers received no support for his rejection of De Klerk's design, upon which he left the commission.[41]

36 Berlage 1910, p. 63.
37 Berlage 1909, p. 262; De Klerk 1916
38 De Klerk 1916.
39 Johannisse/Stissi 1997, pp. 121 and 175. In a lecture for the society A et A in 1917, the Belgian architect and architecture critic Huib Hoste would even praise the young architects of the modern Amsterdam School on this point and would have, according to the report on the lecture, shown a picture of De Klerk's1912 water tower design. "These young architects have dared to incorporate exposed reinforced concrete, and they go much further in the treatment of the concrete wall." See Anon. 1917. The water tower design could be seen at the end of 1915 at the 5th anniversary exhibition of A et A in the "Stedelijk Museum" (see Amsterdam 1915); Hoste would have likely taken note of this.
40 Van der Meij 1915, p. 501.
41 Johannisse/Stissi 1997, pp. 203-204.

03.14

03.15

03.14 G. Rietveld, street façade of the Rietveld Schröder house, Utrecht, around 1924.
03.15 J.F. Staal, clay study for De Samenwerking at B. Ruloffsstraat and J.M. Coenenstraat, Amsterdam, around 1920.

Opposite the conservatism of Cuypers, however, others valued the search for renewal. It would have been with this conflict in mind that Gratama wrote in February, 1916 about the pursuit of that "modern Amsterdam School," "The young architects (...) want to express construction and ornamentation each to its own power and character."[42] This can hardly be interpreted any differently than praise of the far-fetched approach of construction. "Quest" was the motto of the futuristic paradigm, and that was exactly what De Klerk did. The yearning for the modern, about which he himself wrote so passionately, revealed itself in the extreme consequences of the structural possibilities. The appearance of style, the true architecture, expressed itself in the new idiom of forms now possible.

Not only Gratama, but also Belgian architect and critic Huib Hoste (1881-1957), opposed the idea that De Klerk would have wanted to break with tradition.[43] Playing to the hype surrounding De Klerk, he wrote in early 1916 a late art critique about his first housing block at the Spaarndammerplantsoen, which had already been completed by the end of 1914.

Hoste describes De Klerk's art as an evolution in the rational perception of the housing block, "De Klerk now has treated his block as a block, ie. as a mass, made as an entity with different components, while the other architects kept trying to achieve a unity by joining different units. Get the difference? It is fundamental - and I mean that this interpretation cannot be refuted on the grounds of healthy, rational architecture." Just like Gratama, Hoste considered the architecture of De Klerk a logical step in the pursuit of art. With respect to De Klerk's innovative idiom of forms, he thus posed the shrewd question, "Shouldn't visual art be visual then?"[44]

"DE STIJL" AND THE STYLE OF THE AMSTERDAM SCHOOL

As mentioned previously, it seemed that, for De Klerk, architecture had all been about the one keyword, style. The notion of style stands square to the pursuit of a *Gesamtkunstwerk*, given the fact that the pursuit of style did not contribute to the synthesis of all disciplines in a new totality. Unless this is interpreted as the extreme consequence of style, it cannot be denied that this has led to influence in other disciplines. As a consequence, the great success of the Amsterdam School as a style phenomenon could be measured against its influence on other disciplines, such as furniture art and the graphic arts.

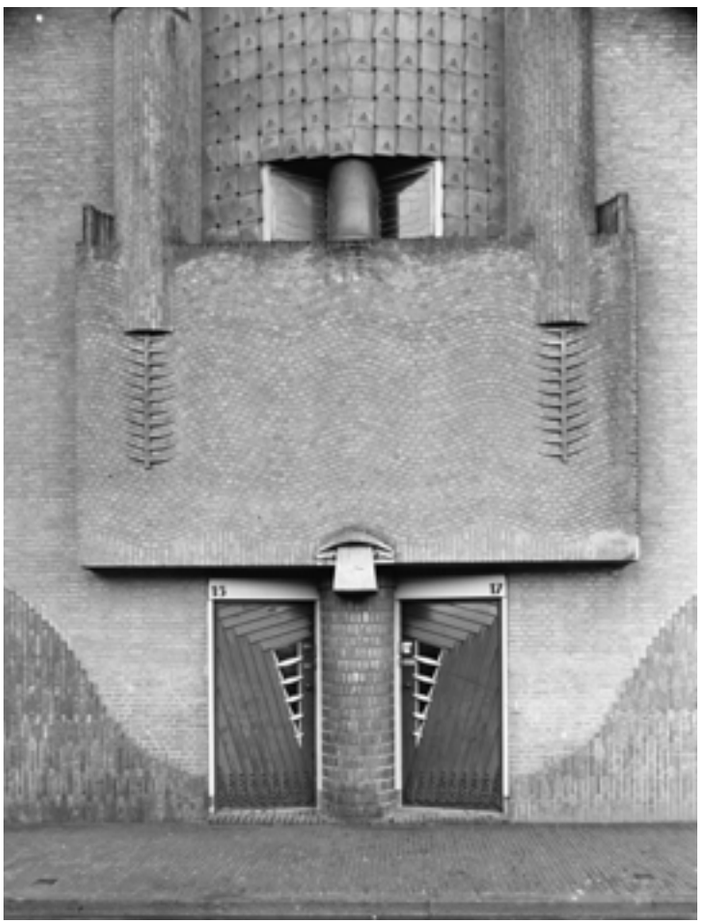
In terms of influence, the style of the Amsterdam School can be considered at least as successful as De Stijl, a movement that appears to have pursued the same objective. However, neo-plasticism was not credited to architecture, but to the art of painting, the surface and the line. De Stijl also found followers in other disciplines, as demonstrated by Gerrit Rietveld (1888-1964) in furniture art and architecture. This neo-plasticism was so successful that Rietveld-Schröderhuis is now awarded World Heritage status as "a manifesto of the ideals of De Stijl, a group of artists and architects in the Netherlands in the 1920s."[45] From that time, it is considered one of the icons of the Modern Movement in architecture.

The most important ideal, which De Stijl and the Amsterdam School have in common, is perhaps the (in theory) fundamental, non-dogmatic, attitude, in which they show evidence of the relationship with the future-oriented paradigm. By putting oneself in the service of an art to come, of which it is not known what it will look like, one cannot define one's present position any other way than in relative terms. With regard to the Amsterdam School, it can even be observed that the fundamentally refuting attitude, in denying itself as a movement, can be seen as the practical repercussion of a non-dogmatic attitude.[46] In that respect, it also appears that the article by Ph. Endt from 1918 could be of particular importance. While he starts with the thesis that the existence of an Amsterdam School is "categorically denied" by, so-called, members, he ends with the conclusion that the divergent art expressions of the present time illustrate a singular modern movement. "They are all paving the way for a future monumental unity, of a "style" which shall be the hallmark of the future."[47]

Just as the title of the magazine, *Wendingen*, was chosen as a token of the obscurity of what was coming, so was the title of the magazine, *De Stijl*, chosen as a clearly defined contribution to the coming period. In 1927, ten years after the founding of the magazine, Theo van Doesburg (1883-1931) wrote, "the style idea as an idea of a new style, ie. adding to the many styles a new one; as a new development opportunity; as adding to the many development opportunities a new one, is *senseless* and old fashioned." Just as Staal settled a score with the Amsterdam School in 1926, Van Doesburg settled the accounts with the old days. He deletes, once and for all, the non-dogmatic, future-oriented pursuit of the old neo-plasticist style idea and, instead, proposes the dogmatic modernism, "The style idea of abolition of all styles into an

42 Gratama 1916, pp. 49-50.
43 In the report of Hoste's lecture (see note 39) there is mention of the "younger generation", who is now starting to work and who will continue the evolution." Anon. 1917.
44 Hoste 1916.
45 See website "Rietveld Schröderhuis"
46 Such non-dogmatic attitude shows for example in the interview of De Klerk by Hoste over his design of the first block at the Spaarndammerplantsoen, namely his treatment of the block as a unity: "He has told me that I must not overestimate his work, that he had never thought that this was the solution to *the* problem, but rather *one* solution, and that he only sought to break the boring monotony." Hoste 1916.
47 Endt 1918, p. 5.

03.16



03.16 M. de Klerk, entrance portico in second block at Spaarndammerplantsoen.
03.17 M. de Klerk, entrance portico in first block at Spaarndammerplantsoen.
03.18 M. De Klerk, entrance portico in third block at Spaarndammerplantsoen (Het Schip).

03.17

03.18

elementary plasticism, is *sensible*, spiritual and ahead of time."[48] The future is no longer open; there is now only room for one possibility.

The end of the matter is well known. The *Rietveld Schröder House*[49] is canonized as the icon of "the Modern Movement in architecture," while the Amsterdam School, which undoubtedly can be defined as a modern movement in *architecture* much more rightfully. It holds a unique position in the history of architecture, dialectically linked to De Stijl. Both movements, however, are done more justice when considered as exponents of the future-oriented paradigm. The art to come was envisoned in a new style, which now was not merely to be a new ornamentation, as was the case with the Jugendstil. But it concerns a modernity that is concealed in the extreme possibilities of modern life, in an essentially secular-modern manifestation of art: style. As the neo-plasticism of De Stijl presented the extreme consequences of a mono-disciplinary approach to the art of painting in the discovery of the plane and the line as its figurative media, the Amsterdam School founded itself on the figurative media of architectural art.

HET SCHIP: CULMINATION OF THE AMSTERDAM SCHOOL STYLE MANIFESTATION

The three housing blocks of Michel de Klerk at Spaarndammerplantsoen consist of the purple block (1914), the yellow block (1918) and the orange block (1921), Het Schip, These form an exceptional ensemble showing the development of the Amsterdam School as a style manifestation. The first block was praised by Hoste for the modernized and unifying design of the housing block, "This housing block is one bustle of form and color."[50] In the second block, the design seems not to have originated within the limits of the plane and façade, but within the process of creating a new organism. This occurred by creating a newly assembled and united form from loose components. Instead of using the plane of the façade as reference, it seems that windows, stairwells, and other architectural elements were conceived as building blocks resembling piano keys in a composition. One can, therefore, also suppose that De Klerk transformed the idea of the *Kunstformen der Natur* (1899-1904, Ernst Haeckel) into an idea of the construction of the organism. How do the components relate to the total? How do you create a new being?[51]

Restricting oneself to plane and line, i.e. the revolutionary artificial restriction of the neo-plasticism of De Stijl, is, simultaneously, the traditional natural restriction of its architecture. De Klerk showed the new figurative possibilities of architecture through his new organic compositional method, of which the building elements form the core, rather than the plane of the façade. An architect showing something totally new certainly did not remain unnoticed. The reactions show how this block was perceived as being beyond all limits. In a discussion about the second block in newspaper *De Telegraaf*, Hoste argued that De Klerk had crossed the boundary between architecture and urban design. More specifically, he suggested that the American notion of architecture as spatial art, popularized by Frank Lloyd Wright, would have been transformed by De Klerk into a notion of city space as spatial art. For the architectural spatial art, the internal space was used as the unit of mass for the building, thinking from inside out.[52] Hoste argued that De Klerk did not apply the locked-up, inner space as his point of reference, but, instead, applied the outer, public realm. In this way, he elevates urban design to the new form of communal art: the city as public space. "At last, the modern communal sense expresses itself in what we call urban design; no more can we build according to only our own wishes: we are restricted to follow alignments drawn by others, not to exceed heights determined by others, etc. But within these limits everyone can still build individually. De Klerk did not do this; his latest building rose not as a unity, but as a *component of the square*; in the first instance there was no consideration for what the artist meant or felt; instead the overall relationship needed to be established, in harmony with the square created by others. An architectural effect needed to be achieved which agreed with that of an already existing (...) gladly being called a *public space*."[53]

An entirely different reaction regarding the second block can be found by Cornelis Blaauw, who described the latest developments in the area of architecture in terms of tension between architecture and sculpture, "The architect will concentrate more and more on the conception of a principal form of great expression. And he will subconsciously try for (but never reach) the expression of life, to produce, for better or for worse, an appearance of an organism, of forms

48 Van Doesburg 1968, p. 530.
49 See website "The house in Neo-Plasticism Style: Rietveld Schröder House".
50 Hoste 1916.
51 The first time that De Klerk showed evidence of this organic understanding of design, in the animal sense of the word, is in a design for a ceiling lamp for the boardroom of the "Stoomvaart Maatschappij Nederland" in the Scheepvaarthuis. He seems to have very clearly visualized a type of sea creature. It is also interesting that in 1917 he expresses, in visual animal language, his relationship with furniture art: For an architect whose work consists of architectural designs and who busies himself continually with practical house building, furniture is a strange beast in the context of large measures and grand scale, as is the case with buildings." De Klerk 1917.
52 Hoste 1918: "Now it is slowly becoming acknowledged, (...) in Europe as well as America, that architecture is true spatial art, that the space which is enclosed by walls and roofs, needs to be articulated; more than ever, architecture becomes an operation of abstract forms, a play of surfaces, which, when they meet, grow into masses wherein the three-dimensional, which gives us the feeling of space, comes into prominence."
53 Hoste 1918, The sentence has been mutilated through a misprint.

03.19
M. de Klerk, design for the cover of the Housing issue of *Wendingen*, 1920, nr 3/4, depicting bird's nest and wasp's nest.

which look like organisms by strongly accentuating direction, pressure and relief. This results in a tense rest reminiscent of the restrained figuration of life in plastic art."[54] Blaauw argued that, in the latest developments in architecture, crossing of boundaries is out of the question, as suggested by Hoste. On the contrary, architecture "[will] never reach" the level of true revealing. It was of crucial importance that Blaauw related the visual potential of architecture to the structural side of the discipline. Because to reach the new plasticism, the architect will "attempt to scrutinize technique, to increase the compliance to pliability of the obviously rigorous building materials, that must serve him in his (...) building expressiveness."[55] That the Amsterdam School made use of a figurative idiom does not necessarily mean that architecture was considered a figurative art. At the same time, this does not rule out that the new plasticism could, to a certain extent, have had an abstract subject, namely the attempt to shape spatial order, such that, in the sense of Hoste, one can certainly speak of public spatial art. While De Klerk's architecture unquestionably showed a practical, interdisciplinary character emanating from the tension between the art of building and visual art, as well as urban design, it is crucial to realize how much his architecture also expressed a monodisciplinary character focussed on the art of building. De Klerk's pursuit was to raise architecture to the level of style manifestation.[56]

Within the terms of the architecture, the form language of the Amsterdam School can be described as the extreme consequence of what was structurally possible. According to De Klerk, it contained the "actual *modern*" style, "The tantalizing-new, the sensationally-shocking, the impressively imposing (with which the static technology surprises us time and time again).[57] This innovative, modern perception of architecture showed an intrinsically, non-traditional frame of mind, a design attitude which is contrary to the idea of traditional workmanship as the most important value. This supports the argument that the traditional ideal is out of the question for De Klerk. Instead, he strived for optimal input of the building materials, like the plasticity of brick, the color intensity of the different building materials, and the wide range of technical shaping materials. Such

54 Blaauw 1918b, p.9.
55 Ibid, p. 9.
56 Frans van Burkom is of the opinion that De Klerk did want to cross the line between architecture and sculpture. He argues that De Klerk was able to reach what Blaauw thought impossible: a synthesis between sculpture and architecture, such that the architecture could make use of the visual qualities of sculpture. Van Burkom 2009, pp. 44, 48-49, 54. Vladimir Stissi places the development of De Klerk's architecture in the expansion of the architectural discourse with urban design topics. Where Hoste used the term spatial art, to indicate that De Klerk tried to design the city as open space, Stissi, with respect to the yellow block, talks about "unity and spatial effect of the 'Blockfront' coincide." Stissi 1997, p. 74.
57 De Klerk 1916.

materials included lead, baked materials, brick, terracotta, cast iron, natural stone, synthetic stone, cement, wood, and roof tile.
The new architectural plasticism seemed to be simultaneously introduced to shape the urban design, which is so clearly visible on the third block at Spaarndammerplantsoen. This grew into "'a chameleon-like collage of façades and fragments oriented to the surroundings and the possible separate function, all of which have their own identity and work in a different way."[58]
Whereas the interdisciplinary perception of public space can be seen very clearly in the unusual mass segmentation of the block, the block is, at the same time, a showcase of the new plasticism or the manifestation of style of the Amsterdam School. Through the organic unity of multiple forms, the rich pallet of materials and colors used, and the many inventive and costly ornamental constructions, Het Schip, without a doubt, can be designated as the culmination of the Amsterdam School style. The most noticeable and ornamental constructions consist of the many protruding waves, which, without the use of consoles, defy gravity; the convex form, known as the cigar, at the corner of Hembrugstraat/Zaanstraat; and the cantilever section above the school building and above all the compound form, pentagonal floor plan, and parabolic aspect of the tower at Hembrugstraat. All this shaped the building as a semi-organism, so to speak. However, the architecture itself was not concerned with portraying such an object, but, instead, with the combined play of structure and ornamentation. Of crucial importance was that style not only include the play of forms, but also ornamentation. As Berlage had already underlined, ornamentation was considered an essential part of architecture. To conclude that De Klerk would have thought exclusively in interdisciplinary terms would be to sell his design for Het Schip short. This would give insufficient attention to the aspired renewal of ornamentation in the broadest sense of the word, including play of forms and decorative art.
Apart from the segmentation of the masses on the scale of the block, Het Schip was characterized by surprising details. The organic-iconographic decorations, which, in particular, could be found on the second block, forms which remind of sea creatures, jellyfish and shells, can to some extent also be found in Het Schip. The small jellyfish or mushroom-shaped sculpture installed below the corner balcony and beside the tower at the Spaarndammerplantsoen is an example of this. In a particular form of decoration, the ornamental ending of the strip of granite concrete takes the shape of an outside lantern in cement. This can be considered pure architectural-iconographic ornamentation.[59]
For the benefit of "the preservation of unity of color and structure,"[60] Van der Meij stipulated as the starting point of ornamentation of the brick building of the Scheepvaarthuis the use of much of the same material, a few years earlier, leading to novel brick sculpture. Other than, for example, with the Beurs, where the decorative program was put in place for the expression of a communal ideal, the ornamentation of the Scheepvaarthuis is limited to the function of the building. Except for the search for unity with the building material, we see a non-idealistic use of the figurative.

SPECIFIC ORNAMENTS

In the design of Het Schip, De Klerk seems to have gone one step further with this building-related use of the figurative. In the iconography of the integrated sculpture, he apparently not only searched for the expression of function, but also for a connection with the positioning of the sculpture relative to the building. It concerns four cases, where, first, it can be observed that they are created from building materials consisting of synthetic stone (a mix of natural stone with cement as binding agent), brick, roof tile, and cement respectively.

Two opossums, synthetic stone, painted

The middle stanchion of the large window in the rear façade of the post office is crowned with a sculpture of two little animals executed in synthetic stone.[61] As the sculpture is provided with the subscript, "postkantoor" (post office), the little animals have been interpreted as greyhounds or opossums, as reference to speed of mail delivery and pouches full of mail, respectively.[62] In both interpretations, the idea of the functional representation of the post office is central. However, there was no consideration for the possibility that De Klerk might have chosen an animal that was a good climber, able to reach to the top of peaks. The identification of climbers was, in the first place, based on the architectural connotation of buildings as animal habitat: two rodents who have found their way to the top. In combination with a functional representation, it could be about marsupials who are good climbers: opossums.

58 Stissi 1997, p.76
59 To the aforementioned outside lantern, house number 11 has been added. According to present house numbering this is now Oostzaanstraat 23-27.
60 Van der Meij 1915, p. 496.
61 From a working drawing on which a sculpture of a crown can be seen (Collection "Het Nieuwe Instituut", KLER 0556), it appears that De Klerk first conceived the idea of sculpture, before arriving at the definitive presentation.
62 Van Burkom has identified two animals as greyhounds, a reference to the speed of the mail delivery (Van Burkom 2001, pp. 39-40). As a marginal note hereby it can be mentioned that in those days mail delivery was the regular method of delivery, while the telegram functioned as the fast method. They could also be considered as opossums, with their pouch full of mail (Heijdra 2012, p.101). As a marginal note it can be mentioned that if the pouch was the only defining element in the iconography, this would have been brought into view.

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03.21

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03.20 C.J. Blaauw, villa Beek and Bosch in Park Meerwijk, Bergen.
03.21 Het Schip, corner Hembrugstraat/Zaanstraat. Construction, play of forms, decoration and spatial effect.
03.22 J.M. van der Meij, Scheepvaarthuis. Painting the decorations on the tower summit.
03.23 Entrance portico *Scheepvaarthuis*.

Birds, brick

At the corner of Spaarndammerplantsoen/Oostzaanstraat is a group of seven birds chiseled in the masonry. In the very first, rough design sketches for the façade at the square, one can see how De Klerk had the idea to accentuate this corner with a forward-protruding column.[63] In a later design phase, the idea arose to shorten the column and to crown it with a sculpture. One drawing shows how De Klerk experimented with the theme of a fireman, which could have been meant as a play on the name of the housing society, Eigen Haard (Own Hearth).[64] While searching for a motif with which to crown the protruding column, it should not be inconceivable that De Klerk finally saw this as an excellent spot for birds to roost. Also, in this case, the architectural connotation does not rule out the possibility of functional representation, perhaps concerning the functionality of housing. In 1920, coinciding with the building of Het Schip, De Klerk was asked to design the cover of the housing issue of *Wendingen*. The front cover shows a bird nest and the back cover a wasp nest (see pic. 03.19).[65] Given the fact that the bird sculpture does not just involve a single bird, but seven who are bill to bill, this could indicate he was using the original idea of a nest.[66]

Two lion heads, roof tile

The two chimneys which tower above the building could seemingly be identified as lion heads (see pp. 254-258). The lion is often referred to as king of the animal kingdom. According to his own account, Arie Keppler had a discussion with De Klerk, in which he mentioned the "lack of a tower in this part of the city," as one of the distinguishing urban elements, which could create a neighborhood identity.[67] Although De Klerk provided a tower at the Hembrugstraat, it is also noticeable that the lion heads enjoy better exposure. The lion pair in this case could be considered a neighborhood beacon analogous to the city's coat of arms, a symbol of community. An architectural parallel can be found in the twenty-two lion sculptures, which originally were placed on the railway viaducts of Amsterdam Central Station. All lions held a coat of arms shield, one half held the kingdom's and the other the Amsterdam coat of arms.[68]

Mirrored windmill landscape, cement

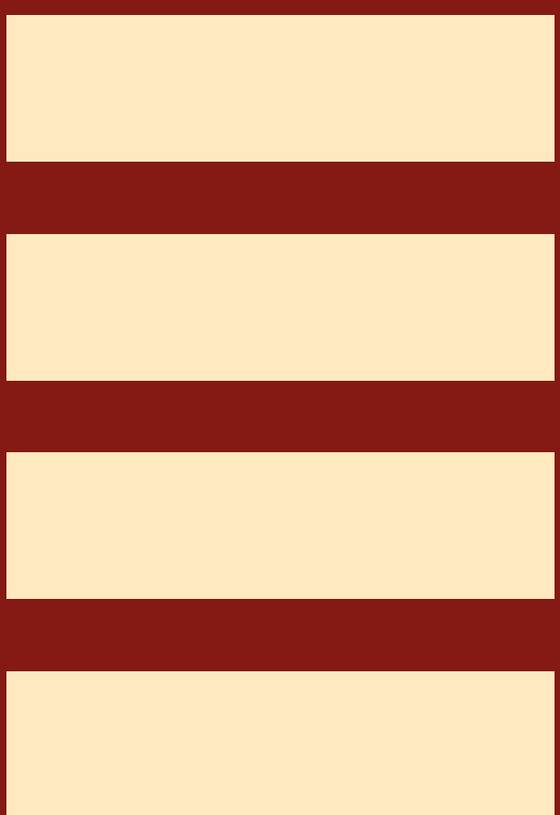
Het Schip connects to a school building constructed earlier at the Oostzaanstraat façade, thus creating a break on both sides of the school. Where the characteristic band of granite concrete of Het Schip is interrupted, the end is accentuated with a figurative depiction of a windmill landscape. Other than with the three aforementioned representations, whereby the architectural connotation was pursued in the form of a type of animal, to be determined according to relative positioning on the building, the connotation in this case seems to speak straight from the depiction itself. De Klerk appears to have wanted to accentuate the break line, the development boundary of his new building. The picture shows a windmill landscape (see p. 297 and pics. 10.07-10.08), depicting the landscape of the surroundings of the 1920s, looking from the development boundary of the city outward. Unlike the opossums, birds, and lion heads, this is not a matter of functional representation but probably the direct expression of architectural connotation.[69]

TO A NEW DEFINITION OF THE AMSTERDAM SCHOOL

Within the great paradox of *non*-modernist, architectural history, which, from the 1960s, became the leading idea concerned with exposing other concepts of modernism, the Amsterdam School, as a component of the other "modern", is considered, by definition, an exception to the historical development line. This is because the frame of reference of the modern canonized idea of the rational-modernistic development line was kept intact. This position of exception can be undone by applying a new historical frame of reference. Instead of searching for a causal relationship between Berlage and the modernism that developed later or the idea of linear development, I hope to have demonstrated that the proposal of a paradigm change makes the special character of two very different periods visible. The future-oriented paradigm, in which the pursuit of the art to come was central as a not yet revealed vision of the future, and the modernist paradigm, which embraced the idea of the future is now.

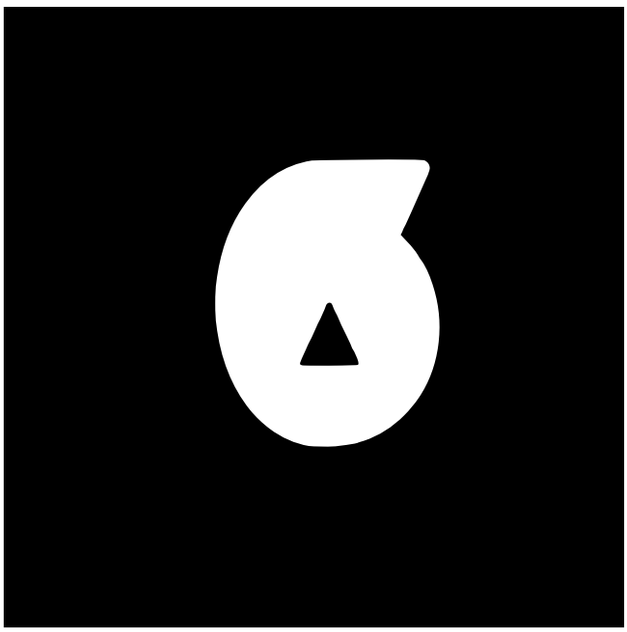
63 Collection "Het Nieuwe Instituut", KLER 0564.
64 Collection "Het Nieuwe Instituut", KLER 0582.
65 *Wendingen* 1920, no. 3/4
66 Van Burkom 2001, p. 39, interprets the bird sculpture as "mythological messengers", in the sense of a functional representation of one of the functions of the post office: the telephone service. At the level of the bird sculpture inside there is the telephone booth in the post office, that is why on the outside the waiting birds stand ready to convey messages. Heijdra 2012, p. 71, suggests that, purely on the basis of iconographic legibility, they could just as well be crows, pelicans or marabous.
67 Searing 1971a, p. 189 and p. 204 note 31; Stissi 1997, p. 79 note 39.
68 See website "Speurtocht naar verdwenen leeuwen Centraal Station."
69 In Heijdra 2012, p. 116, it is argued that the windmill is symbolic for the "Zaanstreek", the region from which the streets in Spaarndammerbuurt neighborhood borrow their names. Although this interpretation is not explained further, it is likely that it involves a repeat of the motif of the double sculpture in De Klerk's first block at Spaarndammerplantsoen, where a terracotta sculpture was added to both corners for accentuation and decoration. Both show a dwarf sitting on a coat of arms shield between two poplars, respectively the coats of arms of the towns of Oostzaan and Wormerveer.

The importance of the future-oriented paradigm as a historical frame of reference is embedded in the idea that the Amsterdam School does not occupy a unique position. On the contrary even, it shows how the young architects of the Amsterdam School, who initially were only meant to include Van der Meij, Kramer, and De Klerk, were perceived as disciples of the great art to come. As such, they were preordained to continue the evolution by surpassing Berlage. The repeated emphasis on the term, “young ones”, would not be without meaning. The most important point where they distinguish themselves from Berlage lies in a new belief of “the *art* of building”. Where Berlage considered the detail to be of secondary importance, and for that reason arrived at the pursuit of a new style outside the architectural discourse, De Klerk redefined the concept of the art of building as “style manifestation”. The new style was pursued with regard to the tension between structure and decoration. Expanding the structural possibilties, for the benefit of creating a new language of forms, is expressing the true modern.



A transformation: School to Museum

Ton Heijdra



When Michel de Klerk made his design for the housing complex, he had to build around the school. In order to prevent the building from becoming a distracting element in the overall complex, he looked for tools that would help integrate it into Het Schip. On either side of the school, he planned protruding apartments with flower boxes on the roof. He also made sketches to add an additional floor to the school. In 1925, four years after completion of Het Schip, this plan became a reality. De Klerk was already deceased by then, but the rebuilding, by Public Works, happened according to his drawings. The facade was also worked on substantially at that time and, sculptures by Hildo Krop, among others, were added. This rebuild also included replacement of the former cross bar windows with typical Amsterdam School windows containing ladder shaped glazing bars.

The school building was initially a kindergarten but was later broadened to a primary school. The Christian primary school, Hebron, occupied the building and, ultimately, the public school, De Catamaran. Over the years, different modifications to the building were carried out, but the main structure was not changed. The last user longed for a more modern facility to better accommodate changes in education methods. This was not possible, however, in the existing building because of the monument status. An opportunity arose to acquire a new building in the adjoining new quarter, *Houthavens*. This old, harbor area was redesignated as a residential development area by the municipality. The first plans for development of this area date back to the 1980s, but their execution was delayed longer than anticipated due to the economic crisis.

REALLOCATION

Planning possible reuse of the school building started at an early stage, as it was known that the school would eventually move. Under pressure from the squatting movement, many old buildings were transformed into residences. Housing corporation Ymere had already taken ownership of the first De Klerk block at Spaarndammerplantsoen and was involved in the development of the Houthavens. However, they also wanted to invest in the old Spaarndammerbuurt neighborhood. Accordingly, they asked architect bureau CASA of Hein de Haan to carry out a feasibility study for the establishment of apartment homes in the school building. This showed that it was clearly feasible. De Haan had

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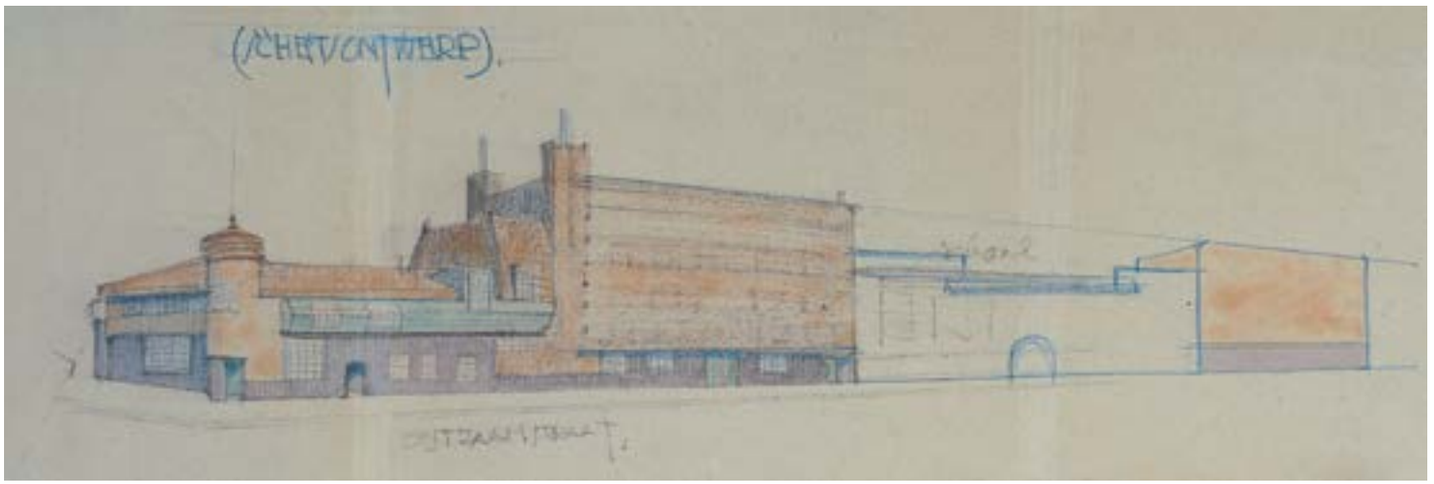

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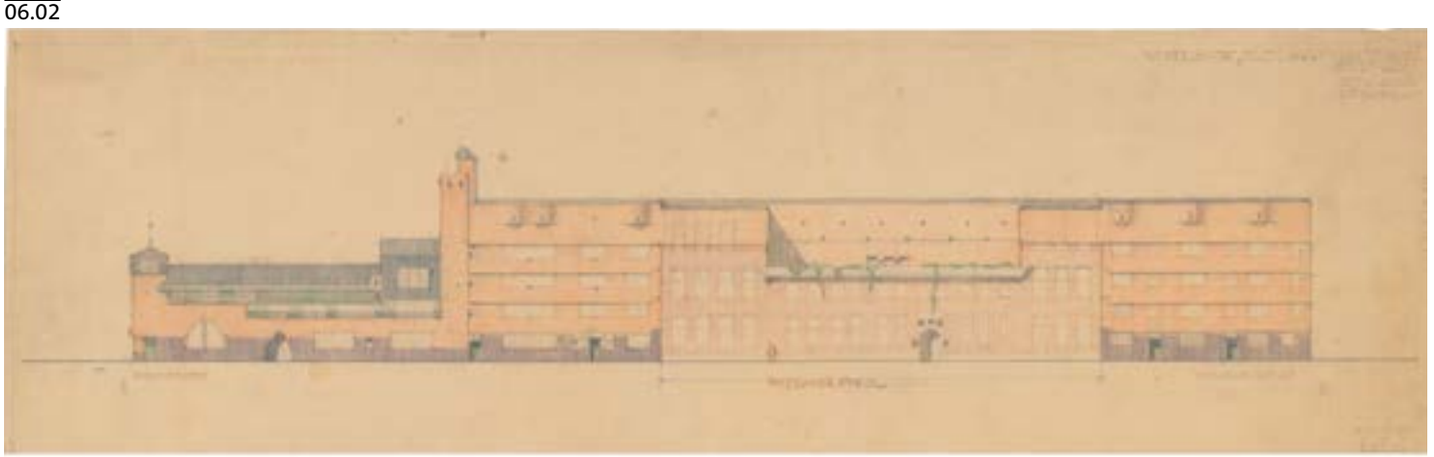

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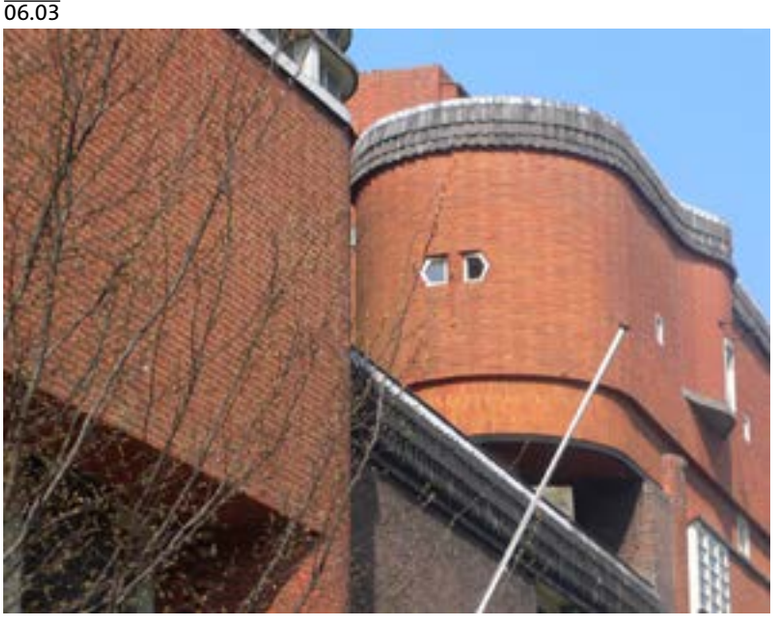

06.01 M. de Klerk, sketch for the façade of Het Schip, in the middle the existing school.
06.02 M. de Klerk, design for the façade with extra floor over the existing school.
06.03 Overhang over the existing school.

considerable experience in establishing homes in old buildings, but he was also an advocate for the use of old buildings for communal functions. He was an active board member of a society that developed "breeding-places" for artists in the city. In his words, "Public buildings have to be kept open to the public as much as possible."

MUSEUM

Plans for residences in the school never passed the exploratory stage. This was partly because Museum Het Schip - of which Hein de Haan was chairman - opted for the school. The museum started in 2001 as part of the Woningwet centennial celebration in the Netherlands (see pp. 75 and 83). The post office in Het Schip was fully restored for that purpose. Because many visitors were keenly interested to see how people lived a century ago, a museum apartment was added in 2004 by restoring the ground floor apartment underneath the tower at Hembrugstraat to De Klerk's original design. (see p. 83).
Right from the establishment of the museum, its purpose and desire was to showcase the Amsterdam School as an art and cultural movement. The pinnacle of the Amsterdam School, Michel de Klerk's Het Schip, was the ideal place. That is why the museum, from its start in 2001, made clear to the City of Amsterdam that it was interested in developing a large museum in that building dedicated to the Amsterdam School. The Initiative-Group Museum for the Amsterdam School (IMAS), in which the Amsterdam housing corporations and the City of Amsterdam were represented, supported that plan. At the request of IMAS, feasibility studies were conducted for the operational opportunities of a museum in the school building. These indicated the financial feasibility of such a project.[1]

TWO ARCHITECTURAL FIRMS

Based on these reports, it was decided to complete a pre-design for the rebuilding of the school. The bureau, SATIJNplus Architects, was experienced in redeveloping monument buildings and was brought on board. The bureau had to maneuver between the monument status of the building and its future use as a museum. SATIJNplus was responsible for the interior of the museum. The restoration of the structure was the in the hands of archivolt architects.
A school obviously has very different requirements than a museum, not the least of this is the bearing capacity of the building. The building was designed to support small children not large numbers of adult visitors. Therefore, foundation reinforcements had to be installed. Another difference was the interior climate. The old building in no way complied with the climate requirements of a museum. In order to display special collection pieces, the museum needed to comply with international standards. A radical restoration was necessary. SATIJNplus designed an internal shell in the museum to allow a proper museum-interior climate. The initial plan was to cut the support beams in the floors such that the inner structure would be separated from the outer structure. The advantage was the beams would not be subject to temperature and humidity variations, and, therefore, at less of a risk for deterioration. In discussion with the *Amsterdam Bureau Monumenten en Archeologie* and the *Rijksdienst voor het Cultureel Erfgoed* (National Cultural Heritage Agency), this plan was abandoned. It would constitute an "irreversible" violation of the building. A solution was then developed to permanently heat the beams in the outer shell.
To accommodate a new modern climate control system, it was necessary to locate the exhaust fans on the roof. From a monument conservationist point of view, this was considered a violation of the monument's appearance. The difference of opinion even challenged the need for a climate control system. The Stedelijk Museum Amsterdam had to be mobilized to convince the Bureau Monumenten en Archeologie of the necessity of climate control in the museum. In the end, a compromise was reached such that low profile fans, with a small fence around them, could barely be seen from the street.

A museum showcasing architecture and visual arts would need a suitable appearance. This was not a problem for the exterior because it would be fully restored. The interior of the school was hardly special, barring a few exceptions that included the staircase, the coat hanger tiles, and the terrazzo floors. Moreover, several renovations had taken place over the years, so the interior was far from original anymore. Museum Het Schip wanted to break away from the old ambience and create a more museum-like appearance. Such a respectable appearance could be created by combining classrooms. This was achieved with a footbridge over the stairwell on the second floor, among other additions. An elevator and emergency stairwell were also added.
The museum eagerly wanted some architectural statements inside the building, but the Bureau Monumenten en Archeologie objected. Permission was not granted to break part of the first floor over the entrance. Instead, it was agreed that a hole could be made in the wall near the staircase so that it was possible to observe the flow of visitors from the museum store. Another alteration was the installation of three doors from the terrace to the new lunchroom. This was allowed because similar doors were there in the past as well. Because of these conscious alterations, the school building was preserved. One room was even outfitted as a classroom. Courses are currently conducted there on the crafts of the Amsterdam School.
Eigen Haard, having taken over the property for €1.00, under the provision of making a museum, initiated significant

1 Bureau Lagroup Leisure & Arts Consult, report 2002. Cultural advisors Simonka de Jong and Esther Gottschalk, feasibility study 2008.

sustainability measures. Just as with the apartments, the ambition was to improve sustainability to the extent of which the structure could bear. The windows were provided with proper insulating monument glass. Gas, a fossil fuel commonly used in The Netherlands, was done away with while heating and cooling were changed to electricity only. Special heat pumps were installed, and the roof was outfitted with 63 solar panels.

OPENING OF THE MUSEUM

The new school in the Houthavens was finished in September 2014, and primary school, De Catamaran, moved out. The building was empty for a short while, and after all permits were issued, the renovations started on May 1, 2015. The work was carried out by the contractor Vastbouw Oost, who was also renovating the rest of Het Schip. It took more than a year, but on July 1, 2016, the renovations were sufficiently complete for mayor Eberhard van der Laan to officially declare the new museum open. The first floor contains a permanent exhibition about the decorative art of the Amsterdam School; the second floor is used for transient exhibitions. The first, temporary exhibition was about all aspects of the restoration of Het Schip, and the exhibition was curated by the partners involved in the renovations, Eigen Haard, archivolt architecten bv, Vastbouw Oost bv, Van Milt Restaurateurs, Evers Partners en LBP|Sight.

The schoolyard was not finished for the opening, and still had to be rearranged. In the past, there probably were street paving clinkers, but these have been replaced over the years with monotonous, square grey tiles. Museum Het Schip wanted to use the schoolyard as a terrace to exhibit Amsterdam School street furniture. For that purpose, the square had to be transformed. Architect Michael Daane Bolier carried out the design for this. He already had experience with designing a street furniture itinerary through the adjoining neighborhood, and the museum was keen to connect to this design. Daane Boliers' design used the orientation on the tower, which is visible from all over Het Schip, as the primary focus. In consultation with archivolt and his colleague, Dorus Meurs, he chose large, dark grey and yellow tiles laid alternatingly slanted in the direction of the tower. The street furniture was also placed in that direction. The iconic meeting house in the middle of the courtyard of Het Schip was incorporated in the plan. The surrounding space was kept open so that visitors could admire the little building.

06.04 Michel de Klerk room in the museum.

06.05 Room outfitted as a studio for architects.
06.06 A slum before the Housin Act, in the museum.
06.07 Doors with leaded glass windows.
06.08 Amsterdam School objects in the collection.

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06.09 Room about art and craftmanship.
06.10 Museumshop.
06.11 The lunchroom in the museum.

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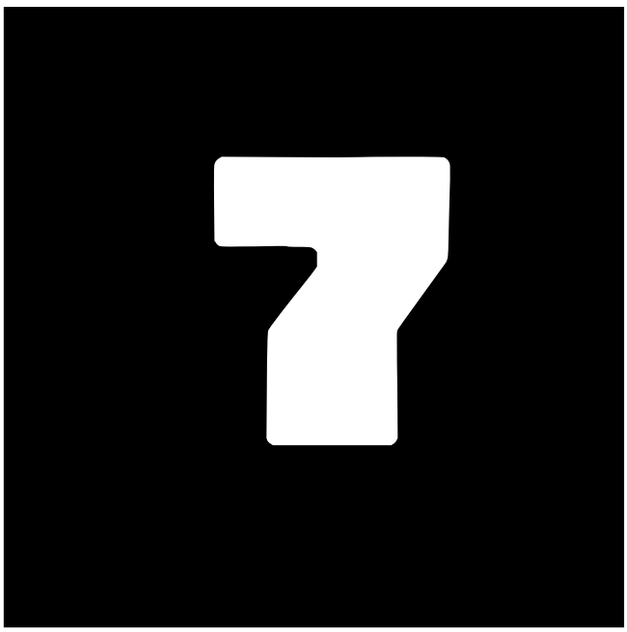
Visions of restoration provide a future to our past

Cisca van der Leeden



Why restore? Many have opinions about this and those opinions vary widely, depending on the point of view. Without restorations, however, there would not be an Acropolis in Athens, nor a Pantheon in Rome or a Capitol in Washington DC anymore. Neither would there be a Palace in Amsterdam, Mauritshuis in The Hague, Rietveldhuis in Utrecht anymore. Het Schip complex would not exist anymore either. Many primary resources, that are important for historical research in the broadest sense of the word, would have been lost. Moreover, buildings provide important emotional value for people, as a point of recognition of their birthplace and confirmation of their common past.

Het Schip was and is an expensive building style with expensive maintenance due to all its detailed and turbulent shapes, variations in building materials, and the need for an abundance of traditional labor. Every detail has its own significance. In addition, the complex has technical vulnerabilities, which relate closely to the aesthetic choices of the architect. In addition, current tenants experience older living spaces as uncomfortable and unsustainable, for which a social housing landlord would want to offer improvements. The complex has been patched up several times already, and showed serious defects, leading to consequential damages. These were partly normal, age-related defects and partly defects that resulted from non-judicious management and maintenance. This in turn resulted from unfamiliarity with the building style and the monument values of the complex. Restore the monument values, conform to modern requirements, keeping the property suitable for today's social housing, altogether these form a true challenge.

Restoration calls for scientific, as well as historical and technical insight and practical skills. The ethical approach is the same for every treatment, but the context, material, and strategy differ for each component. During a restoration, many decisions and choices must be made, doing justice to this broad perspective. Therefore, it is very important to formulate a general framework in which the guidelines for the restoration are outlined. A restoration vision should be tailored to the project.

RESTORATION VISIONS THROUGH THE AGES

Restoration visions answer questions, such as, "What does restoration aim at, for whom do we restore and what are the limits?" Questions like, "Why do what one does" and "Why apply the chosen vision" find their origin within varying insights through time, in

combination with value assessments from building historical research.[1]

Buildings demand maintenance. This fact is valid in today's world, but no less so in previous years. Restoration and maintenance are, therefore, not new concepts in the Netherlands. After a building is commissioned, the first maintenance cycle will be relatively long. The first maintenance of a building depends on its most vulnerable component. Deterioration over time requires necessary upkeep, and as a result of insufficient and/or overdue maintenance, restoration may need to be undertaken. The first maintenance of a building might also be the result of a shift in function or the need of a building to move with the times. Adjustments to the exterior and interior are, therefore, necessary sometimes and are often linked to the requirements of the time. An example of this is the 1979-1980 renovation. In essence, one can differentiate between the work that is done at the beginning of a building life cycle and what is done later. In the later phases of renovation, the building becomes more monumental. A restoration vision properly adapts to this by shifting from consolidating repair to more rigorous restoration and adaptations.

DEFINITIONS

To avoid confusion, it is important to clearly state the definitions of terms like maintenance, consolidation, conservation, restoration, reconstruction, and renovation.

• *Maintenance* refers to keeping matters in good condition. In the Besluit *Rijkssubsidiëring Instandhouding Monumenten* (BRIM; Government Subsidy for Maintenance of Monuments), normal maintenance means necessary, regular work focused on the preservation of monument values.[2]

• *Consolidating*, or *conserving*, is the preservation of the present components of a building without leaving clear traces of restoration. The development of a building through possibly different style periods is, thereby, respected. Maintenance and consolidation are closely related.

• *Restoring*, within general speech, is the repair of buildings and art works in the historical condition. In the BRIM, restoring is defined as those works which are in excess of normal maintenance and are necessary for the repair of the protected monument. Another, somewhat broader, definition defines restoration as responsible repair and conservation of cultural heritage. The preservation of historical material authenticity and reading and storing of information from the monument's heritage are key to this process. The latter requires knowledge, skill, and especially vision of the cultural and historical interests for the conservation of the heritage itself, as well as its spatial integration into the current living environment. Restoration, therefore, goes much further than maintenance. In general, restoration includes all work done on a monument, be it restoring or conserving. Both concepts are very closely related.

• *Reconstruction* involves the heavy-handed tackling of the vanished components of a building in order to return them to their original condition. Alternatively, reconstruction can be defined as the restoration and returning of authentic building parts to their original form alongside the correcting of stylistic errors. This needs careful consideration. This may, indeed, involve imitation, and, in fact, in almost all circumstances is an interpretation of what used to be instead of an exact replica.

• *Renovating* is a concept which, in popular speech and in the building trade, is often confused with restoring. Renovating, however, means the returning of a home (or city neighborhood) to habitable condition by radical refurbishment. Restoration involves returning a building to its old condition without improving quality or comfort level, while renovation requires higher building quality.

MONUMENT CONSERVATION AND RESTORATION VISIONS

Over the years, several visions have arisen over the concept of restoring. Restoration visions themselves have also changed over time. Already in classic antiquity, special value was attributed to old buildings.[3] But what is understood as monument conservation? One definition is the entirety of actions and interventions, which are undertaken on behalf of the preservation of historical buildings. This concept finds its origin in developments, which occurred centuries later. Only at the beginning of the fifteenth century was a historical dimension assigned to the built environment. Since then, the literate elite in particular, differentiated explicitly between the built surroundings as such, and the historically built surroundings. In varying degrees, monuments were reconstructed or consolidated over the years. This depended on the vision held at that moment.

Over time, profound discussions have been held over restoration visions. When discussing conservation, restoration, and reconstruction, the best-case scenario will result in a thorough dialogue between aesthetical, ethical, and philosophical views. Sadly, choices are often based on "harder" grounds, such as money, false knowledge, and dogmas like, "we have done it like this for years." Many major adjustments were made in the first decades after completion of buildings, which today would be called monuments. Public appreciation of those buildings was low, as is the case with our current, new buildings. Such buildings surely had no history in the

1 Van der Leeden/Van Diemen 2014.
2 Staatsblad 438, Decision of 19 September 2012, containing determination of rules regarding financial support.
3 The international history of monument conservation and the appearance and development of the various associated disciplines such as art- and architect history, are described extensively in Jokilehto 1986/2005.

beginning of their existence. The building also had to keep with the times, whereby sometimes historically incorrect adjustments were made. As the building became older, and, therefore, more monumental, the level of appreciation did increase. Yet, one can notice a clear difference between the past and present. Buildings less than one hundred years old are now designated as monuments after a relatively short time, which was not the case from the middle ages until the nineteenth century. A building had to be functional and was altered for such purpose. Monument conservation did not exist in those days, which is why some characteristic elements were removed. Thoughts about a common vision for the preservation of monuments also did not exist.

Before any organized concept of monument conservation developed in the Netherlands, heated debates and writings on monument measures were already occurring in surrounding countries. Englishman John Ruskin (1819-1900) was a fierce opponent to any form of restoration, which he called "the most total form of destruction that a building can undergo". In his book, *Seven Lamps of Architecture* (1849), he pleads for the beauty of decline, a romantic restoration vision.[4] His French counterpart was restoration architect Eugene Viollet-le-Duc (1814-1879).[5] He saw the task of the restoration architecture as returning the building to its original state, as the designer had intended it, even if it had never existed as such.[6] The Italian Camillo Boito (1836-1914), a professor of architecture and restorer of old buildings, had a more stylistic restoration vision. With success, he settled the contradictions between Ruskin and Viollet-le-Duc.[7] In 1883, during the Congress of Italian architects and engineers, he published the "Prima Carta del Restauro". This script included various important concerns, which need to be considered in modern restoration projects. It was characterized as philological repair.[8] His main principles included the differentiation between old and new, in terms of style and use of materials, and a meticulously scientific commitment to past decisions and events. Boito's principles were generally accepted in many countries.
In the Netherlands, a letter appeared in 1848 about vandalism with no regard to monument property, written by Joseph Alberdingk Thijm (1820-1889), professor of Aesthetics and Art History at the Rijksacademie (National Academy) of Visual Arts in Amsterdam. Among other things, he targeted the demolition of the Maria Church in Utrecht. His proposal to create a commission for preservation of monuments was not considered until a decade later. The Dutch government started to concern itself with monuments in 1857, with the establishment of the department of Arts and Sciences at the State Department. Victor de Stuers (1823-1916) was the first head of the department. In the following year, the college of *Rijksadviseurs voor de Monumenten van Geschiedenis en Kunst* (National Advisors for the Monuments of History and Arts) was established, to which Pierre Cuypers (1827-1921) was appointed. The real upheaval did not come until 1873 with the publication of the article *Holland op zijn smalst* (Holland at its narrowest) by De Stuers. He articulated the miserable condition of the Netherlands' heritage. He was convinced that the government had to interfere in the care of its cultural heritage.[9] With this successful argument, he stood at the cradle of Dutch monument conservation, which had now become a government responsibility. During their short existence from 1874 to 1879, the College of National Advisors focused mostly on the preservation and repair of valuable historical buildings and the creation of social and political support for monument conservation.

Until the Second World War, there were two mainstream theoretical directions, that of Pierre Cuypers and that of Jan Kalf.[10] Cuypers was a strong challenger of the vision that style purism plays a central role and that one could easily restore while also reconstructing. Thus, there was no mixing of different building styles, instead prioritizing style unity. He operated a very radical method inspired by a theory of Viollet-le-Duc, whereby every element added later to the monument did not have the right to exist. A building could be changed unrecognizably after restoration, but nevertheless show a unity in what was thought to be the most original style, with a profound preference for the gothic style. Building traces were mercilessly erased. Victor de Stuers and Cuypers together carried out a defining historicizing monument policy. Expectedly, this radical reconstructing restoration vision would encounter a backlash.
At the end of the nineteenth century, a new theoretical principle was developed. Jan Kalf (1873-1954), later the director of the *Rijksbureau voor Monumentenzorg* (National Bureau for Monument Preservation) from 1918 to 1939, was an important spokesman. Public involvement was demonstrated by the establishment of societies such as the *Nederlandsche Oudheidkundige Bond* in 1899, *Bond Heemschut* in 1911 and *Vereniging Hendrick de Keyser* in 1918. Choices for preservation and arguments for intervention needed to be better argued by monument

4 For this term see Morante pdf.
5 Pevsner 1969.
6 Viollet-le-Duc 1899. See also Tillema 1975.
7 See Morante pdf.
8 This term is used in Morante pdf.
9 De Stuers 1873.
10 Tillema 1975

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07.01 John Ruskin and his wife in 1894. Ruskin's essays on art and architecture were very influential in Victorian and Edwardian times.
07.02 Victor de Stuers (left) and Petrus (Pierre) Cuypers.
07.03 Josephus Alberdingk Thijm (1820– 1889), professor of aesthetics and art history at Rijksacademie voor Beeldende Kunsten in Amsterdam.
07.04 Etching of *De Haar* castle, before 1875, indication of its earliest stage.
07.05 Ruin of *De Haar* castle before its restoration in 1875-1892.
07.06 De Haar castle now, reconstructed and restored by Pierre Cuypers, 1875-1892.
07.07 Cité de Carcassone before restoration by Violet-le-Duc.
07.08 Cité de Carcassone after its restoration by Violet-le-Duc, 1844-1879. This restoration is disputed in the 20th century because of le-Duc's conceited attitude and is now viewed as an attempted reconstruction. This did not prevent UNESCO to grant it World Heritage status in 1997.

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preservation experts and architects. This theory presumed that each generation had the right to care for monuments in its own characteristic and modern way. This also includes the opinion that during restorations, the marks of each generation and the traces of all building styles have to be respected and protected. The restoration vision thus becomes consolidating in nature, and additions can take place only in a contemporary design and in harmony with what exists at the time. The credo, "preservation prevails over renewal," arose from this. This restoration vision was put to paper in 1917 in *Grondbeginselen en voorschriften voor het behoud, de herstelling en de uitbreiding van oude bouwwerken* (Principles and regulations for the preservation, the repair and the extension of old buildings), published by the Nederlandsche Oudheidkundige Bond.[11] In 1931, the Charter of Athens on restoration of historical monuments was launched, using the term, "International heritage," for the first time, and preaching a multi-disciplinary approach to monument preservation across borders. The charter states that modern techniques and materials may be applied and warns for errors and mistakes, which can mutilate the character and historical values of a monument through lack of an "enlightened critique or judgement". The emphasis on the social role of monuments, introduced after the Second World War, is expressed in the fact that from then on, the term, "heritage," was used increasingly. Following this, the UNESCO was founded on November 16, 1945, and a World Heritage List was developed in 1972.[12] The Italian philosopher and art historian Cesare Brandi (1906-1988) also made an important contribution to the current restoration ethics. He was founder and director of the *Istituto Centrale del Restauro*. His theory produces a strictly methodological framework on thoughts of restoration based on the respect for a strong consciousness of historical, as well as aesthetic, authenticity of cultural heritage. Today, his theory is still the starting principle for restorations.

RE-ORIENTATION

Gradually, a more flexible attitude developed towards the principles of Kalf, partly because of the aforementioned, foreign influences. Historicizing began to be tolerated. This resulted in the evaluation of Kalf's restoration principles by the KNOB in 1953. It was concluded that general principles really could not be given, but that each case needs to be judged on its own merits. Thus, after the Second World War, reconstructing, as well as consolidating restorations, were executed. These included all conceivable nuances. To this day, the approach to restoration is flexible. The government, however, generally prefers a consolidation as the starting principle in monument preservation. The general policy is conserving repair and consolidation, and only applying measures necessary for preservation, the halting of degradation, and for rehabilitation of the intended use.[13] The principles of Kalf do not appear in the Monument Act of 1961 and 1988.

Restoration guidelines have not only been given at the national level, but internationally as well. In 1964, a conference was organized by the International Council of Monuments and Sites (ICOMOS).[14] As a result, a document was drawn up entitled, the Venice Charter.[15] This contains several of Kalf's principles, such as "preservation prevails over renewal". Thus, the emphasis was on respect for authenticity.[16] Stratification in a building from different periods deserve equal respect, especially because unity of style is not aimed for anymore.[17] The Charter also underlined the importance of careful building-historical research for the restoration and safekeeping of our cultural heritage.[18] These guidelines provided an important stimulus to the worldwide protection of monuments, but they have no status in law.

In 1972, the Convention Concerning the Protection of the World Cultural and Natural Heritage drew attention to the worldwide importance of heritage preservation. This treaty emphasized the importance of the preservation of monuments in socially and economically changing times.

11 NOB 1917. The publication with an introduction by Jan Kalf was valuable to make the appreciation for a monument explicit and, based on that, to support choices with regard to the preservation of the monument. The German *Grundregeln und Grundsätze beim Restauriren (Herstellen) von Baudenkmälern* from 1902 was a source of inspiration for this publication.

12 United Nations, Educational, Scientific and Cultural Organization. UNESCO uses the working fields of education, science, culture and communication to realize the goals of the United Nations, namely: development of universal values and betterment of living conditions for all people in the world.

13 *Rijkscommissie voor de Monumentenzorg* (National Commission for Monument Preservation) produced a bill on the restoration principles in 1982, which was published in 1984 in the *Jaarboek Monumentenraad* 6. This bill was for the most part the work of Kees Peeters.

14 ICOMOS is a network of experts which benefits from the interdisciplinary exchange of its members, among which are architects, historians, archeologists, art historians, demographists, anthropologists, engineers and urban planners.

15 The international Charter for the Conservation and Restoration of Monuments and Sites, also called The Venice Charter, emphasized the importance of research into the conserving and restoring of monuments as artistic works *and* as historical (evidence) material.

16 Venice Charter, Article 9 states: "The process of restoration is a highly specialized operation. Its aim is to preserve and reveal the aesthetic and historic value of the monument and is based on respect for original material and authentic documents."

17 Article 11 states: "The valid contributions of all periods to the building of a monument must be respected, since unity of style is not the aim of a restoration. When a building includes the superimposed work of different periods, the revealing of the underlying state can only be justified in exceptional circumstances and when what is removed is of little interest and the material which is brought to light is of great historical, archaeological or aesthetic value, and its state of preservation good enough to justify the action. Evaluation of the importance of the elements involved and the decision as to what may be destroyed cannot rest solely on the individual in charge of the work."

18 Article 16 states: "In all works of preservation, restoration or excavation, there should always be precise documentation in the form of analytical and critical reports, illustrated with drawings and photographs."

The European Architectural Heritage Year followed in 1975, from which the Declaration of Amsterdam and the European Charter of the Architectural Heritage originated. These charters underlined the social importance of monuments, and that conservation and preservation must be focused on an integral approach and social sustainability.
In 1994, the Nara-document regarding authenticity was issued by UNESCO, ICCROM,[19] and ICOMOS in Nara, Japan.[20] It is based on the Charter of Venice, but offers more allowance for a broader interpretation of monument values. The evaluation of heritage values needs to be considered in the broadest of terms and is culture, as well as time period dependent. The concept of authenticity has become the most important quality factor in the evaluation of the monument, the building, and the physical and non-physical heritage element. The developmental process of value assessment originated here. Since then, various methodologies have been developed for value assessment research, and several handbooks and guidelines have been prepared to help focus on the conservation of monuments by art historical research and value assessment.

THEORY AND PRACTICE

This historical overview makes clear that, already in the early organizations of monument care, the values attributed to old buildings were central in the decision making process around their conservation. As all these principles were never established into law and always remained guidelines, it is questionable how, in practice, these principles are and must be conducted. Furthermore, not only have the theoretical concepts changed, but also the practical methods as well. From the 1930s, shortly after the completion of Het Schip, the restoration community went through a stormy development. The number of architects, who pursued restoration work, increased in those years, and this work became ever more of a specialization. The reconstruction of historical buildings became increasingly precise work. Old trades were copied and practiced in increasingly refined ways. Knowledge of old building methods also increased through more intensive historical research and publications on the subject. In general, it could be argued that as a building gets older, it demands more respect. It has become evident that a building with a rich history, both in building and occupancy, will be treated more carefully than a new building. The monument values are more self-evident and visible for more people. This is also the case for the restorations that were carried out in the past. This immediately shows the dilemmas of a complex such as Het Schip. It was built in a socially turbulent era, in an innovative, perhaps radical, building style, which certainly was not universally appreciated.

Fortunately for monuments like Het Schip, a shift in appreciation can definitely be observed. Recognition and acknowledgement of monumental values in buildings with significantly increasing age, has led to an inventory top 100 monuments of our reconstruction period 1945 -1965. The fact that monuments in today's world become, in fact, ever younger, often requires a different perspective. Must these characteristic elements be reconstructed, or must the building traces, developed over the years, be preserved to show its history and use? In this field of tension, different visions can exist or develop, especially for a young monument like Het Schip, its highest monument value being its overall image value.

AN ADEQUATE VISION FOR THE RESTORATION OF HET SCHIP

To reach the adequate restoration vision for Het Schip, reviewing the complex itself, its cultural and historical context, and charting its architectural, cultural and building-historical values, was the first approach.[21] In addition, to arrive at a contemporary approach to the restoration vision for Het Schip, it is important to review the different restoration visions of the past, the various restoration charters, and visions of more current restorations.

BUILDING STYLE, IDEOLOGY, CRAFT, AND TOTAL ARTWORK AS MONUMENT VALUES

The coincidence of favorable economical, socio-political, and cultural factors allowed the development and execution of such building style. There was the stimulus of the improved *woningwet* (housing act) legislation and municipal regulations, and there were financing possibilities. At the same time, the involvement and legislative powers of the municipal administration regarding urban development and social housing increased ever more. Rarely did a city administration display so much confidence in a group of artists, and rarely did artists, with such persuasion, have the ability to get a city administration to act on their insights. The architects practiced the ideal of communal art, in which the building, crafted treatment of material, integrated carvings, visual and decorative arts, and industrial arts, joined to create a better society. The end was determined by various factors, the serious crisis of 1930 which forced austerity, and the emergence of an artistic counter movement, functionalism. The housing requirements also developed further. They were analyzed more objectively, which showed in the designs. But that does not mean the Amsterdam School was finished with the image and life of the city. It continued to contribute to the differentiated character, the colorfulness, the plastic art, the livability of the urban organism, even though many homes

19 The International Center for the Study of the Preservation and Restoration of Cultural Property (ICCROM) was founded in 1959 in Rome.
20 Nara document 1994.
21 Van der Leeden 2013.

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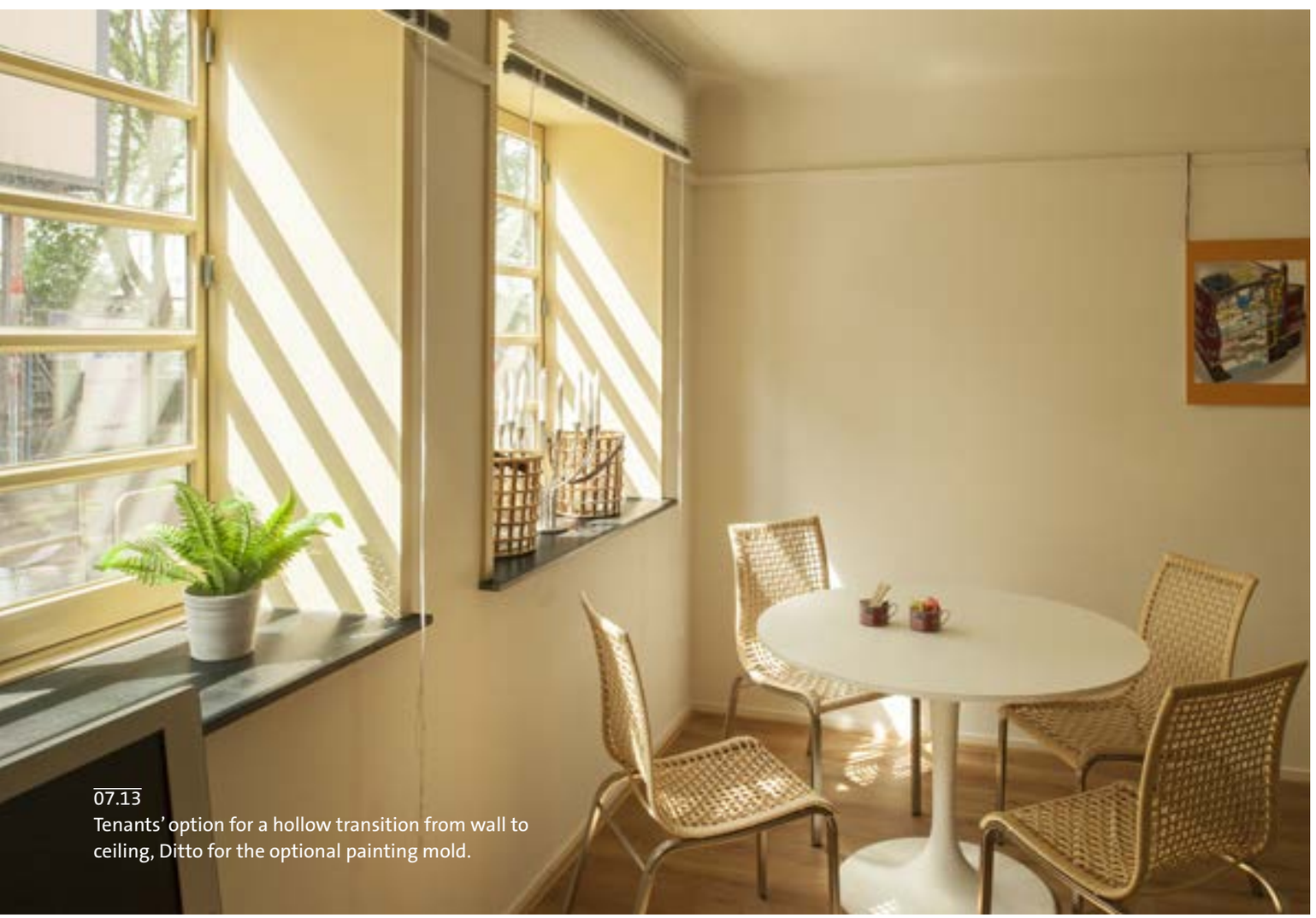
07.09 Provostry in Deventer, the oldest inhabited stone bourgeois house in The Netherlands (dating from 900 AD and inhabited since 1130 AD). A fine example of a layered historical monumentality.
07.10 Westereindflat, Amsterdam 1956-1957. In 2007 this building was listed in the top 100 1940-1958 monuments. A national listed building since 2010.
07.11 Het Schip in the 1920's.
07.12 Reconstruction of the façade curvature, image value of the whole prevails. If preservation would have been the priority, the existing brick insertion would be preserved.

from that period had to be restored and/or renovated. The Amsterdam School keeps reminding the public that without the contribution of artists, our built environment would be poor, inadequate, and inhuman.[22]

Michel de Klerk saw it as his task to revive the crafts and elevate them to art again. While the applied arts existed in the individual crafts, architecture unified them in one body. Total art was, therefore, an obvious concept for the architects of the Amsterdam School. Architecture, however, was not only host to the other crafts. The architects, in turn, also made designs for industrial arts and graphic arts. De Klerk was able to combine craftsmanship with state-of-the-art building methods. He could easily combine concrete structures with a façade decoration of typical, traditional Dutch materials, such as bricks and roof tiles. He understood that masonry requires craftsmanship and that masonry bonds decorate a building. He dedicated much attention to the composition of the mortar, and the type of brick and roof tile were carefully chosen. Color and structure were very important to him. In his buildings, one can find different brick bonds, sometimes laid vertically. Some quotes by K.P.C de Bazel (1869-1923) from 1919 illustrate this, "...He feels and searches from outside, observes so long, until a vision of an organic entity of space and form elements is revealed to him (...). De Klerk shows in his work that he possesses the structural power, although he does not always manage or want to use it in full force (...). De Klerk shows himself to be one of the few with the ability to inspire the stone and bring it to life (...). This is only possible by engaging himself, to give his work his own life force, to offer his soul and spirit."[23]
De Klerk also used other materials beside brick for his buildings, such as wood and forged metalwork. His total compositions were inseparably tied to the spatial context. It is noticeable that, after his death in 1923, and actually already during the completion of Het Schip, the enormous playfulness

22 Peeters 1973.
23 De Bazel 1919.



07.13
Tenants' option for a hollow transition from wall to ceiling, Ditto for the optional painting mold.

and whimsicality of the beginning period of the Amsterdam School was starting to make room for more straight and sober architecture. The cause of this was, in part, that the Amsterdam School had not been a movement with a clear ideology defined in manifestos. Its own recognizable identity developed from comparable insights and forms of expression of the architects. People let themselves be carried along by passion and an unique language of forms. The social aspect played a profound role with all architects of the Amsterdam School.

AUTHENTIC DESIGN OR IMAGE VALUE AS THE RESTORATION PRINCIPLE

De Klerk's works in their context gradually convinced the restoration team of the essence of Het Schip's restoration: respect Het Schip in its original authentic total experience, as conceived by the architect. Decisive were the study of the history and restoration concepts and the intensive research into the cultural and building-history of the complex. These were supported and concretized by the preliminary technical material investigation, the archival research, the research into the old images, and the gradual, ever better understanding of the intention of the building style.

From the building-historical research and the matching monument value assessment, it could be concluded that, for the restoration, the starting principle needed to be the situation of the block's structure from 1919-1921, except for the former school.[24] The image value of the total composition was paramount. The still remaining, internal structure and stairwells with front doors had to be retained. For the meetinghouse the starting point was also the building period 1919-1921 and the reconstruction of the interior in 2009. Point of departure for the former school was 1925, with its extension in the spirit of De Klerk's design. The internal structure of the school was to be respected. This extension was documented in the 1919-1921 drawings by De Klerk with proposals for adjustments to the original design of Public Works (1913-1914). The main staircase with De Klerk's modifications is considered to have high artistic value, and thus could not be altered. The tile row above the coat hangers was also retained, as it is an important reference to the school's past. However, it was possible to move it to another location if absolutely necessary. The interior of the post office, also designed by De Klerk, is totally unique and was already restored in 2001. The interior of the museum apartment, reconstructed in 2004, had to be retained as well.

IMAGE VALUE VERSUS RESTORATION VISIONS

Taking the total and original composition of the building as the prominent point of departure of restoration has led the team to a sometimes even *reconstructive* restoration vision. This was also the case in earlier restorations of the interiors of the post office and museum apartment. All disruptive elements, such as the masonry insertions, which might be appreciated as building traces in other restorations, are not incorporated in this vision. In the past, incorrectly reconstructed components, such as the lion heads (see pp. 254-258) and rotating parts in window frames, would have to be replaced by more historically correct copies. All disruptive masonry and mortars that were previously renewed had to be replaced with a more visually appealing product in order to restore the visual unity and compensate for serious technical flaws.

This restoration vision is in line with some characteristics of the vision of Viollet-le-Duc, who considered it his task to return the building to the original state as intended by the designer. It also, in a sense, tends towards Cuypers' purism of style, whereby each element that is added later has no right of existence and building traces are eliminated. Contrary to these visions, the team did not invent any element, but has based all interventions exclusively on verifiable, historical images and materials present in archives, conforming to the first part of Article 9 of the Charter of Venice. Image-reconstruction of the design as intended by De Klerk, based on his designs, is key, and not the team's imagination. The second part of Article 9, Article 11 and 12[25], and Boito's principles on distinguishing between old and new, are not served with this vision. The additions cannot be distinguished as being modern, but are reconstructively executed to the image of the original, with materials equal to the old. If the Charter of Venice were to be literally interpreted regarding these issues and relative to the team's chosen vision, the reconstruction components could be considered falsifications of history. Thanks to the carefully recorded and extensive report about the detailed building-historical research and the restoration, these interventions will be clearly demonstrable for future generations.

The almost dogmatic credo, "preservation prevails over renewal," that was promoted by Kalf and considered an almost inseparable component of the Charter of Venice had to be partly given up for the sake of overall image repair. Image repair, in this case, has priority over preservation of material. Brandi's philosophy, which is based on a strong awareness of the historical, as well as the aesthetic authenticity, of cultural heritage provides support for this. The chosen image restoration priority can be justified by considering the Nara document about authenticity and consciously allowing a broader interpretation of the qualifying factor of authenticity. De Klerk's design, as it was actually built in 1919, was intended as a total artwork on behalf of the worker's path

24 Van der Leeden 1919.

25 For Article 9 and Article 11, see notes 16 and 17. Article 12 states: "Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence."

to emancipation. The design was an important authenticity factor, tangible as well as non-tangible. Authentic, in this sense, refers to design, material, function, and especially visual and emotional perception as well. The overall image is more important than the physical materials. It is an experience, an almost spiritual event. The two theoretical approaches, "preservation prevails over renewal" and "image prevails over preservation," must be brought to exist side by side. The requirements for user functionality, to live comfortably and up to date are additional to this. It is important to realize that knowledge and taste are time-dependent, and, therefore, can change in the future. The National Cultural Heritage Agency, as well as the Municipal Bureau of Monuments and Archeology and the Committee for Architectural Aesthetics and Monuments, have been involved in the process from the very first research results and endorsed the established restoration vision.[26]
This illustrates, once again, that each restoration needs to be evaluated on its own merits depending on the building itself, its context, and the monument values. It is not sensible to establish a general guideline! This is an argument for a restoration charter for each building or building type.

AUTHENTICITY AND HISTORICITY, AND CHOICES MADE

Restoration involves the preservation of monuments, however, at the same time, it can be seen as a violation of authenticity. Every intervention, whether to replace entire elements or just a streak of paint, is, in fact, a modification of the original. The brickwork components replaced during the restoration of Het Schip are now both visual and physically undistinguishable from the almost hundred-year-old, original work. The total, repaired image can be considered authentic, but the material itself, in principle, cannot. It is, of course, new, connecting to an existing image of a somewhat weathered exterior.
The natural weathering, and wear from radical cleaning methods, such as discoloration and modification of the brickwork structure without technical consequences, is often seen as damage. In fact, it is an autonomous value which speaks to the history of the complex. However, the desire for the preservation of the monument to appear united does mean that some damages must be preserved and that some materials need to be replaced.
In analogy with the art world, considering Het Schip as a total artwork, a clear distinction can be made between its primary significance, authenticity, and its secondary significance, historicity. Both will be balanced during a restoration process. The authenticity is completely derived from the original appearance, as intended by Michel de Klerk, under assignment from Eigen Haard. The historicity displays the information derived from Het Schip's current condition and after a history of almost a hundred years. Time has impacted the physical appearance, but also the significance. The original and passionate ideals are fixated in the artwork of bricks, but are not visible anymore without explanation. As the work ages, the primary information is increasingly outstripped by the secondary. Time erases information, but also provides new data. The traces of time can never be totally erased. Materials change in properties, color, and texture, making it very difficult to approximate original contrasts and color.

Preservation of historicity and authenticity is one of the main principles of restoration. The former implies that age and decline remain visible in order to convey a historical process. However, this contradicts the latter, the authentic image, which the architect meant to create. They are contrasting elements. For Het Schip, the authentic image has considerably more importance than the historicity of the aging process and earlier repairs.
This is also the case for the reconstructed color scheme of the paintwork on the concrete, metal, and wood, based on color-historic research but carried out with modern paints. The chosen color scheme blends in much better with the authentic image than the color palette developed over time. The choice of modern paints, not based on the historical, is based on a "colder" principle, namely, it is more durable, easier to apply, and reduces maintenance costs.

Another component of authenticity is the intended use by the client, namely social housing for workers with low incomes. Here, changes can also be observed over time, such as with tenancy law. "The worker," as such, does not exist anymore. Currently, a number of apartments in the complex cannot be categorized as social housing anymore but are in the free rental market. In this context, the question arises, "How important is the authentic use of a monument?" From the historical building research, it can be concluded that the intent of the complex, with its anticipated use by the worker, should be included under the monument values, as well as be considered a high monument value. The objective, therefore, should be to preserve the complex as much as possible for the worker of today.
Another issue that arose was that of the interior and comfort. The current tenant, the owner, and sustainability considerations expect "a durable building of this time", however relative, multi-interpretable, and fashionable authenticity this notion may be. The authentic apartment was not thermally, nor acoustically insulated. It did not have double glazing or weather stripping, and it did not have contemporary amenities, such as central heating,

26 The Cultural Heritage Agency is part of the Ministry of Education, Culture and Science under the direct responsibility of the minister. The Agency implements laws, regulations and heritage policy developed by the ministry. The Committee for Architectural Aesthetics and Monuments is named the *Commissie Ruimtelijke Kwaliteit* (Spatial Quality Committee) since 2017.

warm water, and mechanical ventilation, all considered normal in our time. Even more to the point, in the original design of the apartments, there was not even a bathroom, as people would go to the bathhouse down the street. This was altered during the renovation of 1979-1980. At that time, adjustments were made to the interior layout, and the historical interior of the apartments was lost. In contrast with the revolutionary facades, the original 102 apartments had traditional floor plans. Architect Van Straalen in 1979, partly in consultation with the tenants at the time, merged these into 83 apartments, whereby each apartment gained their own bathroom and central heating. At that time, two main staircases were also eliminated. With the current restoration, the choice was made not to return to the original authentic and historical structure, as this did not fit the contemporary level of facilities needed for apartments. [27] Here, the team respects the "building traces," technical additions of the earlier renovation, and the progress of time. For the current restoration Archivolt Architects has carried out an extensive study on the difference between De Klerk's design for the original 102 apartments and the concept of Van Straalen's 83 apartments. In consultation with owner Eigen Haard and returning tenants, a more optimal model has been conceived. It has done justice to De Klerk's intent, compromising historicity, authenticity, practice, and intended future value. Consideration has been given to the partition of exterior spaces and to apartments in order to be better adjusted to the structural layout of the building. This has resulted in 82 apartments after restoration. The authentic interior of the apartments has not been reconstructed because images of all apartment types are missing and this would have involved high extra investments for their reconstruction. As an alternative to not reinstating historical detailing of the interior, a number of paid for alternative options were presented to the tenants of the renovated apartments, approximating, but not copying, the old interior image.

In 2004, Stichting De Golf developed a museum setting using two apartments underneath the tower at Hembrugstraat. The historical interior of the ground-floor apartment was reconstructed by architect Marloes van Haaren.[28] The front doors of the portico apartments are a reconstruction in accordance with the image of the original model, which has been adapted to modern fire protection regulations.
The interior of the former post office was restored in 2001 at the initiative of the Municipal Housing Department, Eigen Haard, and the Stichting De Golf (see p. 83-86). The authentic color scheme was returned, with its purple/blue grey and cream-colored woodwork next to the lavender blue of the wall tiles. The phone booth was restored as well. All this was possible mainly because the post office was never changed in any significant way. The owner's objective was to return the interior to the condition at the time of commissioning in 1921 with regards to form and color. The current stunning and refined interior is the result of consolidating and conserving restoration based on extensive color research and study of De Klerk's sketches of his interiors. As the foundation had to be renewed, the opportunity was seized to restore the wooden floor in the non-public area of the post office to an authentic condition true to De Klerk's imagery by adding a maple parquet floor on concrete.

SUSTAINABILITY AND AUTHENTICITY

To what extent does renovation, improvement, and sustainable measures of the complex affect the authenticity? Or should this be considered a new historical addition?
The durability and monument values must be balanced. It is a generally accepted principle that, with restoration or renovation of a monument, preservation of the original material is key, as the cultural and material values of the monument are best served that way. This principle is also very desirable from the point of view of sustainability. This way, repairs require a minimum of raw materials and energy for their extraction and processing. The upgrading of comfort by means of insulation, modern heating, and ventilation techniques, without damaging the monument, contributes to sustainability and preservation.

TENSION BETWEEN THEORY AND PRACTICE

A tension between theory and practice, as described above, has always existed and will continue to exist. The contrast lies in the practical-technical approach of the builder, as opposed to the more theoretical-historical approach of the building-historian. The ideal, if it even exists, cannot always be realized because, in reality, there are always other circumstances that need to be taken into account. In restoration, it is always important that a balance is achieved between the two approaches. Good monument conservation is better served by consultation between architects, builders, and building historians than by discord and polarization.
The restoration-technical core business remains a combination of technical intervention and high-end, technical innovation. The possibilities offered by the building in technical, physical, and aesthetic terms come first, and if a traditional solution is not possible, or will damage the building, innovative solutions will be explored.

27 Tenants had the right to return to their own apartment. In the agreements between municipality and housing associations for restoration projects (renovations as well as demolitions-new build) the relationship between renter and association is central. The principle is an equal position of renters of renovation projects in all of Amsterdam. With these agreements, the position of renters during the participation process with renewals and improvements, was strengthened.

28 Stichting De Golf is the legal entity of Museum Het Schip. In 2005, Architect bureau M. van Haaren B.V. was taken over by archivolt architects b.v., which carried out the current restoration.

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07.14 Technical space for the small collective installation.
07.15 De Woonwijzer with information, tips and manuals for the tenants.

During the whole process, this vision serves as a benchmark, and each intervention must be tested. This way, restoration can avoid becoming a chain of ad-hoc decisions, making the monument qualities insufficiently provided for.

MAINTENANCE

After this major restoration and renovation, maintenance will inevitably become a factor again after a certain time. Maintenance, of course, is cyclical, and every component has its own lifecycle. The first needs for maintenance are sensitive components, such as paintwork and masonry jointing work. That the complex is maintenance prone and, therefore, expensive, was never disputed. In one of the 1974 issues of the monthly magazine, *Eigen Haard*, it states, "This money-devouring housing block, however beautiful in appearance, will, because of its complicated structure and the resulting maintenance costs, always be difficult to manage for the association."[29] This statement was not unwarranted in the past. It needed to be understood that the regular maintenance policy of the housing association was not sufficient. This form of maintenance allows buildings to slowly lapse in quality, in a more or less controlled way, until the next renovation 25 to 40 years later. This is not acceptable for a rare monumental complex such as Het Schip, where the image value stands front and center. It would be better to monitor the quality by frequent inspection and to take direct action when anything threatens to decline in quality. It is better to make small reparations over time than one large restoration. This way, the overall quality level of the building is kept high, and additional restorations in the future won't be necessary. This will certainly have a positive impact on the total lifecycle costs.

The residents also play an important role in the maintenance of the complex, as they use the apartments and staircases on a daily basis. The residents' awareness of the value of the complex and its specific monument components are important. In order to bring this to the attention of the residents, a resident handbook was issued entitled, the *Woonwijzer* (Residents' Guidelines). This handbook contains a description of the complex and its values, a manual of components such as installations etc., and do's and don'ts according to the monumental values. When they move in, residents also receive a personal explanation and instructions. However, enforcement beyond the front door is a near impossible task. Although in itself, such involvement would have fit perfectly in the vision of the building period and in the De Klerk's ideas at that time.

29 Smit 1973, p. 24. The maintenance of the complex is indeed many times, even as much as five times, more expensive than the maintenance of more regular complexes. Het Schip has therefore in Eigen Haard internally the less flattering nickname "Het Schip van bijleg" (the ship of subsidies).


NOVEMBER 2015


SPAARNDAMMERPLANTSOEN
WESTERPARK


MAY 2016


12.


AUGUST 2016


MARCH 2017

AUGUST 2017

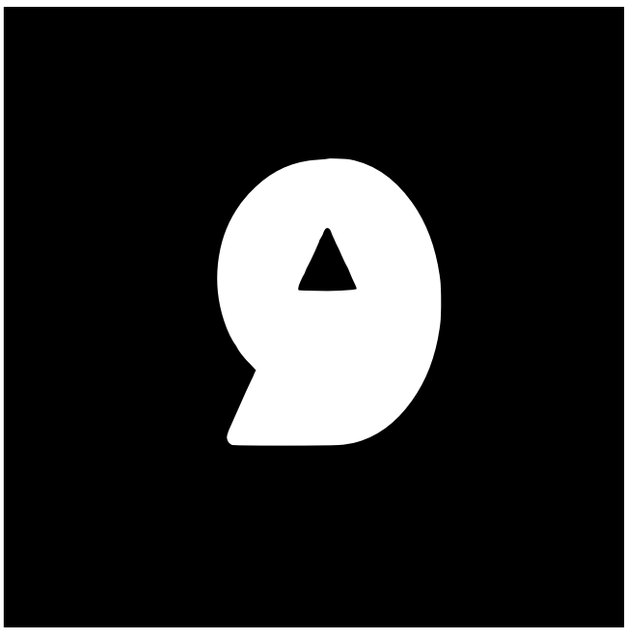

RECTICEL

SEPTEMBER 2017


DECEMBER 2017

Masonry

Ramon Pater



Het Schip follows the Dutch tradition of masonry façades without any finish, but what makes the façades of Michel de Klerk's design of Het Schip so special?

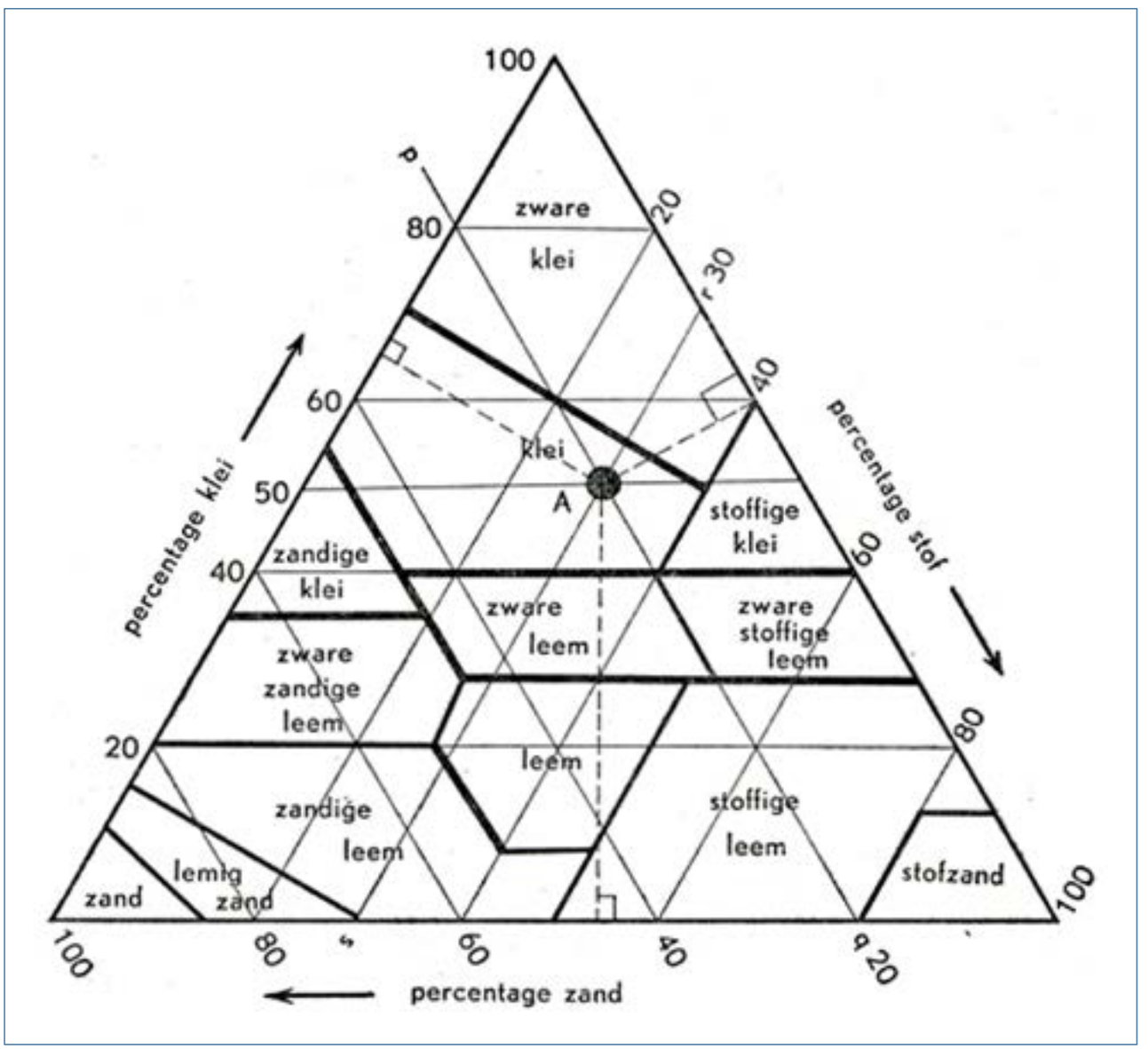
The use of bricks as a building material can be traced back to Mesopotamia, dating back to 3000 BC.[1] The Romans also made use of bricks and brought the technique with them to the Netherlands. This building tradition started in the Netherlands in the late middle-ages, where monks in the twelfth century are credited with the first use of brick. In a land formed by lowering sea levels and river deltas, the abundance of clay provided a ceramic material necessary for brick making in the region.

In the middle-ages, there was an ever-increasing need for less flammable building materials. As there are hardly any sources of natural stones in the Netherlands, the use of baked clay was a readily available alternative. Brick made its entrance as an expensive building material, primarily used for buildings such as castles and churches. In the following centuries, brick was gradually used more frequently for the houses of well-off citizens, as it began to be seen as a symbol of status and power.[2] During this time, the use of ornamental brick increased, and its use constituted the specialty of the bricklayer's guild. The status of the brick was diminished with the increase of international trade, when surrounding countries imported natural brick. Brick was still used as sturdy building material, but the wealth of the residents, as well as the function of the building, was now primarily displayed by the ornaments and natural stone facings.

It was not until the nineteenth century that a new period of appreciation for brick appeared. Industrialization would also bring new methods of brick manufacturing, which allowed new possibilities in form, color, and finish, as opposed to the traditional, oven-baked bricks. The use of brick as a decorative building material made a particular resurgence in the construction of catholic churches (after the open celebration of catholic faith had been forbidden in the Netherlands during the previous centuries): neo-gothic, *Jugendstil*, and traditional building styles utilized materials to express a certain status. For the common worker's home, brick was still considered a purely structural material, without any frills.

1 Bot 2009, pp. 56-57.
2 Stenvert 2012, p. 17.

09.01 Diagram of soil compositions by lutum content.
From: Hermans 1960.



From this historical perspective, it is not at all strange that Michel de Klerk wanted to use brick for his workers' palace, integrating ornamentation so it would express a certain status for the working class. At that time, such demonstrations of status through ornamentation was reserved for the wealthy in society.
De Klerk learned the architect trade at the office of Eduard Cuypers. At the end of the nineteenth century, the Cuypers family was very influential in church and public building architecture, where brick often had a decorative function. However, when using brick, they often employed traditional building methods developed in the late middle-ages.
With the Cuypers method in hand, De Klerk, just like the other architects of the Amsterdam School, added the new dimension of expressivity to his brick-centric, architectural style. In Het Schip, the expressive use of masonry shows in the incorporation of various types of brick, brick bonds, ornaments/artworks, and round, curved, and rounded organic forms. He merged traditional work together with "forgotten" brick crafts.

THE BRICK

For the masonry of the façade, De Klerk explicitly included the use of Groninger bricks in his building specifications.[3] This was a commonly produced brick made of clay from the province of Groningen and presumably also produced in that province. During the period from 1900 to 1930, Groningen was the most important brick supplier in the Netherlands, with more than eighty brick factories.[4] The city takes on the color of the the Groninger brick, derived from the specific composition of clay, that makes it special. The Groninger clay originates from the youngest geological period, the Holocene (ca.11,000 years ago).[5]
In the coarse ceramic industry, the following specifications apply for the raw material clay:[6]

- the clay has a lutum percentage of 17.5 to 35;
- a maximum of 20% of the particles in the clay can be coarser than 0.250 millimeters;
- the clay may contain a maximum of 3% organic material;
- the clay may contain a maximum of 25% lime.

The characteristic red-orange color of the Groninger brick is the result of the presence of iron in the Groninger clay, the lime content, and the baking temperatures used.[7] The composition of the Groninger clay also requires different processing than other Dutch clay, which strongly influences the appearance of the brick. Because of the fatty character of the clay derived from the high lutum content, the *vormeling* (formed but still unfired brick) must first dry thoroughly. With the emergence of industrialization, many vormelingen were mechanically dried elsewhere. However, this was not desirable with Groninger clay. For natural drying, the Groninger vormelingen were dried in drying sheds for as many as four weeks. First, they had to be dried on flat, wooden surfaces to avoid deformation. After one side dried, the bricks were rotated to allow another side to dry. This handling was often visible in the structure of the bricks, as the imperfections in the wooden drying boards showed on the bricks' surfaces.[8]

The baking of the brick also varied from the rest of the Netherlands. Although the ring oven[9] was introduced as industrialization emerged, it became apparent that it could not be heated sufficiently high and long enough for the Groninger brick. However, the high demand for the hard-baked clinkers, allowed the Groninger brick industry to continue using traditional ovens, which were able to heat longer and to a higher temperature. As these traditional ovens used a large amount of fuel, the flame oven was introduced.[10] Flame ovens allowed a stoke chamber to be heated longer and at a higher temperature by arranging the chambers. This way, more clay melted to a cindered substance, close to but not quite molten clay, which produced very high quality bricks. From the beginning of the twentieth century, many brick factories in Groningen converted to this type of oven, and a higher production of Groninger clinkers could be achieved.[11] Depending on the position in the oven, bricks from the flame oven showed variations in color and quality. Given this variation in color tones, it is probable that the bricks for Het Schip were baked this way. With the emergence of modern tunnel ovens, in which large quantities of bricks are driven through a tunnel of flames with great speed, the production method of the original Groninger clinker became too expensive, and their production ended.

With the knowledge about the Groninger bricks, the restoration team for Het Schip went searching for a method to produce suitable bricks with the correct clay content and production method. Technical quality, color variations, shape, and texture were of particular importance.
At first, contact was made with the only brick factory in Groningen still in existence, Steenindustrie Strating bv in Oude Pekela. This brick factory had survived the Second World War by adjusting brick production and implementing

3 De Klerk 1919a, p. 5.
4 Wiersma 2015.
5 See De Mulder et al. 2003, p. 51.
6 Ibid., pp. 51-53.
7 Janssen 1987, pp. 23-24.
8 Stenvert 2012, p. 31.
9 Bot 2009, p. 65.
10 Ibid., p. 67.
11 Wiersma 2015, p. 54.

09.02

09.02 Visit to brick factory Gilrath Ziegel- u. Klinkerwerk GmbH & Co. KG te Erkelenz.
09.03 - 09.06 Examining brick samples from brick factory Gilrath.

09.03

09.04

09.05

09.06

09.07 Clay from the brick extruder.
09.08 Cutting clay blocks into bricks with a special string cutter.
09.09 Vormelingen (formed but still unfired bricks) stacked on wooden boards.

09.07

09.08

09.09

the use of tunnel ovens. It became clear early on that this factory no longer produced authentic Groninger bricks. The demand for these bricks was rising. Because of the increase of earthquake problems from the extraction of natural gas, the demand for Groninger bricks had increased in this region. As a result, Strating went searching for a partner who was still baking bricks the traditional way. Through Strating, contact was made with Gilrath Ziegel- u. Klinkerwerk GmbH KG in Erkelenz, near Monchengladbach, Germany. This factory still made use of a coal-fired ring oven. At first, the team reviewed their various products to get a feeling for their capabilities. They would need to be able to produce a brick that would be used to further rebuild Het Schip. Although a large quantity of bricks were sampled on the basis of color variations, it was apparent that although the brick quality could, within a certain band width, suit Het Schip, the real nuance was missing. Regardless, it was agreed that Gilrath would bake test bricks using a clay supplied by Strating.

Prior to the beginning of the test bricks production, the entire team visited Gilrath to see for themselves if Gilrath Ziegel- u. Klinkerwerk GmbH KG could imitate the color, texture, and nuances of the Het Schip bricks. During this visit, some concern arose as to whether this was the right party with which to partner.
The bricks for Het Schip were produced according to the extrusion press method. This produces a specific surface structure that leaves all of the imperfection characteristics of the Groninger brick. With this method, clay is thoroughly mixed in a machine and prepared with a certain amount of water to a dense and workable mass. This mass is pushed forcefully through a nozzle with a spiral-shaped pump, forming a homogenous rectangle-shaped clay ribbon (also called "sausage") with the desired length and width. Lime particles in the clay can sometimes cause a certain amount of resistance at the mouth of the nozzle, resulting in streaks on the surface, called pull streaks, which are visible on the stretcher and header face of the brick. After leaving the nozzle, the clay ribbon is cut at the right brick height with a thin steel wire. Clay particles can also be left on this wire, resulting in streaks on the flat laying sides of the brick. These streak effects are typical for a brick texture originating from an extrusion press.
The method of handling before and after the drying process also creates a specific surface structure. To avoid cracking, the brick must be kept from drying too quickly. To accomplish this, the freshly cut vormelingen are first laid to dry on the flat side on wooden boards. Normally, a brick is laid to dry on its strectcher face; however, this was not possible with the Groninger clinker, as the vormeling would sag under its own weight. In the production at the time of building Het Schip, the bricks were still laid to dry on wooden boards, creating a texture from the imprints of the wood grain into the clay. The remaining sides of the brick stayed smooth and tight. The side which had laid on the board is, in popular speech, often called the "poor" side of the brick.
The Groninger clinker also had a poor side, but it was formed later in the drying process. The first drying took place when the vormeling lied on the flat laying side. The first large quantity of water from the vormeling was drawn into the wooden boards. When sufficient water had been drawn out of the vormeling, the brick is laid on its stretcher face for the second drying. The dampness of the boards and the tipping of the bricks caused two structures to appear. This process made the poor side of the Groninger brick particularly unique, as one side originated from the boards, and the other from the so-called fold edge.
The structure of the boards was reinforced at the poor side by the damp character of the board, upon which the brick had already been laid to dry, and the clay residue left stuck to the board. During the tilting of the brick, the side over which the brick was turned showed a folded edge of clay, which gave this edge a ragged appearance. In masonry where Groninger bricks are used, the poor side is almost never used as the view side. However, Michel de Klerk did make use of the poor side for Het Schip. That this would have been consciously done in reference to the workers who lived there is pure speculation. It is more likely that he found the naturally formed side more expressive and fitting for his architecture.

A discussion took place with Strating and Gilrath about the imitation of the brick's surface. The team's wish to achieve perfection for the poor side of the brick did not align with the thought process of either brick makers, who insisted on using the *wasserstrich* method to produce bricks. In this method, which originated in the second half of the nineteenth century at the same time as the extrusion press, the clay is pressed in a mould from which the vormeling is removed with water pressure along the edges of the mould. It provides the brick with a relatively uniform streak structure on all sides. The team was not happy with this expected result. To test what the color of the Groninger clay would look like after baking the brick in a coal fired ring oven, the team asked the brick makers to bake a sample. In an authentic ring oven, bricks are baked at various temperatures, depending on the distance from the fire, the stacking, and the way the fire blows through the stacked brick pack.
In a ring oven, the baking chamber consists of a ring-shaped tunnel, with fireproof doors in the tunnel that allow the bricks to be taken in and out of the oven. In this type of oven, the fire never goes out; instead, it slowly moves around the tunnel as the fuel (coals and/or gas) burns. The bricks are baked in a cycle of approximately one week. They are moved in and out of the oven when the fire is furthest from the bricks' location. The temperature rises evenly as the fire comes closer to the bricks, avoiding shrink damage. As the fire reaches the bricks, coals are lit between the brick stacks, providing the final phase of the baking process at a maximum temperature. Once the fire retreats, the baked bricks slowly cool.

09.10

09.10 Assessing bricks from brick factory Gilrath on site.
09.11 The first batch of bricks.

09.11

The shape of the oven and the rising of heat causes a temperature difference between the cooler under side and the warmer upper side of the oven. This difference determines the color and quality of the brick. Lighter bricks have been heated less than darker ones. Bricks in the upper part of the oven are so overheated that they become glazed. Stacking also causes dark brown-black and blue-purple spots on the bricks. The brown-black coloring are burn spots where coals were placed to enhance the fire flow through the brick stacks. The blue-purple spots occur on bricks that are stacked in such a way that a vacuum was created during baking: although these bricks reached the appropriate temperature, they did not come in direct contact with the flames. The absence of oxygen produces so-called reduction spots. Het Schip, in particular, has many bricks in the masonry with these reduction spots. The band-shaped spot on the brick shows clearly how another brick was stacked on top.
The restoration team and the brick makers could not come to an agreement on how best to reproduce the bricks. While the bricks of Het Schip were stacked at an angle to produce reduction spots, Gilrath did not want to deviate from their fixed stacking in the oven. The bricks that Gilrath produced in that manner for testing purposes were true Groninger clinkers, but they lacked the nuances that were necessary for the restoration. In reaction to this, Strating brought in bricks from Klinkerwerk Rusch & Co. KG, a company located in Drochteren, Germany. Although this factory works with clay considered identical to the Groninger clay, and produces bricks which, in terms of color, better suit Het Schip, they also refused to deviate from their standard products. Although the search seemed to have reached a dead end, it had delivered much information about what was and was not desired.

In the Netherlands, there are two brick factories who carry out special restoration assignments. The reason that these factories were not approached in the beginning was because both produced mainly the traditional *handvormstenen* (hand-shaped bricks) and *vormbakstenen* (molded bricks) for buildings before 1850. Some of the team members happened to notice, through other projects, that Steenfabriek Zilverschoon in Randwijk, on the river Rhine, west of Arnhem, had started to make smoother bricks. It was found that they had recently begun to use an extrusion press and a wasserstrich-line. As Zilverschoon was prepared to consider modifying the production process in order to obtain the right brick, a new search was started with this factory.
With all knowledge gained about technical quality, color variations, and texture, this process could begin quickly, with the objective to imitate the original brick of Het Schip with the look of almost one hundred years of weathering.
Using Groninger clay, Zilverschoon started to make samples, experimenting with how to obtain the color nuances and the associated clay composition and baking temperature. It soon became clear that at least six different orange-colored bricks would be necessary to imitate the existing blend.
Although there is an authentic zigzag oven at the Zilverschoon factory - a variant of the ring oven - it is not in use anymore. The factory uses a more modern flame oven, which gives the brick maker a better handle on stoke and temperature curves. This appeared to be the key to success. Zilverschoon brick makers agreed that the appearance and texture of the Het Schip bricks were a result of the original Groninger clinker production method. Finally, the team had found its partner to help reproduce the authentic production process.
Zilverschoon first went to work with the extrusion press machine. However, more modern extrusion presses no longer cut the brick with a wire. Instead, it uses a steel knife, which is continuously cleaned with water. This process did not produce the specific streaking caused by dirt left on the wire. As a solution, blocks were formed from which five bricks could be made. The blocks were laid to dry on a marginally cleaned board. This created the desired pattern from the board on the laying side of the block, which would later become the poor side of the brick.
To replicate the wire cut, Zilverschoon made a manual cutter, a kind of large egg slicer or harp, which could cut the block in five bricks with a single movement. To cut the brick properly, the stretcher face of the block was laid on a base plate strewn with ultra-fine forest sand. The same sand cover was used for several blocks, slowly decreasing with each use. This process resulted in a vormeling, replicating the imperfections and textures of a wire cut. The aging of the original brick was also imitated this way. As the last treatment, the brick cutter placed the bricks on its stretcher face on the board under an angle, giving the vormeling a side with the desired fold edge.
The oven used by Zilverschoon was relatively small, firing 2500 - 3500 bricks at a time. This modern oven gave the advantage of better control over the stoke curve (from stoking to cooling) and, in contrast to the ring oven, the ability to fire the bricks slower and longer. This more closely approach the earlier production of the Groninger brick. By heating the bricks slower and longer, the technical quality was improved without losing color. The disadvantage of this oven, however, was that in any batch, only limited color variation was achieved. This was solved by baking the bricks with three different stoke lines, which resulted in a breakdown of six shades. The bricklayer would need to process these shades in the correct proportion on site, matching the surrounding original work. The perfect imperfect brick for the restoration of Het Schip was born.

THE MORTAR

Mortar is needed to bond the bricks. Research concluded that Michel de Klerk, in designing Het Schip, deviated from the

standard structure and composition. Until halfway through the nineteenth century, the mortar consisted of lime[12] and sand. The drying took so long that after the brick laying, the outer joint had to be reworked (like a beaded joint, or grapevine joint). With the arrival of cement as a binding agent, the mortar dried so quickly that there was no chance of reworking it aesthetically on the outside. Besides the appearance, a cement joint can be waterproofed, as long as it is sufficiently densed while applying. Since then, mortars in masonry work are referred to as binding mortar and joint mortar. Because the joint mortar also acquired a technical function, this resulted in the difference in composition and application of the two mortars.
In the period 1910-1920, a reversal occurred in the Netherlands in the use of a lime-bonded joint to a cement-bonded joint. In De Klerk's original specifications for Het Schip,[13] a mortar composition is prescribed in which the bonding agent is a combination of lime and cement, a so-called bastard mortar. For the second complex at Spaarndammerplantsoen, built two years before Het Schip, he similarly specified the lime-bonded joint.
De Klerk chose a different finish for the structure of the joint. Het Schip is clearly built in brickwork without indistinguishable binding or joint mortar. Cores drilled during the research revealed that no separate joint was created. The finish of such joints look mostly like an extruded or squeezed joint, where the binding mortar is generously placed and slightly bulging. This allowed the aesthetic finish to take place directly in this mortar. A wet brush was used to achieve a somewhat rough structure. Mortar with cement as the bonding agent is grey in color. That is also the case with Het Schip. Still, the original joint work, as it can now be seen on the surface, has an ochre yellow layer, about 3 millimeters thick. Although the research did not find evidence for this, we suspect that De Klerk had this applied for aesthetic purposes. The yellow color presented a difficult task. Because the joint work had to be restored for large parts, this was only possible by removing part of the existing work (about 25 millimeters deep), which then had to be filled with new mortar. The team set itself a goal to make a joint mortar to match the existing work in terms of quality and color. A mortar that incorporated the ochre yellow color was preferred.

During the first phase of the restoration, when the school was transformed into the museum, the building-historic research discovered the building specifications for the extension of the school in 1925. At that time, the school was topped with the orange brickwork, connecting it to the rest of the complex. In this specification, drawn up by the engineers of the City of Amsterdam, an interesting joint mortar recipe was described. Where cement has a color palette that ranges from white to grey, and as lime is always white, the color could only be determined by the type of sand used. There is specific mention of Brussels sand, currently better known as sandy clay. Contrary to other sand types, sandy clay consists of a lower lutum content (8-12%; compare clay, lutum content > 25%). The ochre yellow color of lutum is determined by the organic minerals bonded to these soil particles. Thanks to the addition of sandy clay to the sand mixture, with lime and a bit of cement as binding agent, the perfect mortar was found for the joint restoration work of the façades.

BUILDING PATHOLOGY OF THE MASONRY

Lengthy and in-depth research was conducted into the quality of the existing brick and mortar and how it could best be reproduced. The research revealed the need for major interventions on the brickwork. The research began with a visual review of the brickwork with the objective of determining the existing damage, such as:
structural
- settling cracks

building-technical
- detailing

physical
- salt formation in façade
- possible presence of hydrophobic coatings
- mechanical damage
- moisture penetration
- moisture storage and/or moisture transport via the façade

thermal
- frost damage to joint and brick
- thermal cracking

biological
- algae and moss growth

Due to the varying nature of the possible damage, visual inspections were carried out as a team. Experts in the areas of architecture, material science, construction and building physics were present on site to analyze each sign of damage. The exterior observations were taken from an aerial work platform (AWP), with a platform capacity for seven people. At the same time, the AWP offered the possibility to carry out several in-situ investigations of the brickwork. The first exploratory investigations involved Karsten-tube

12 Lime is a collective name for air hardened or hydrated lime. In the case of air hardened lime or slaked lime, pure limestone with a high calcium carbonate ($CaCO_3$) content is heated to 900o, creating calcium oxide CaO and CO_2 (which disappears in the air). This calcium oxide is then quenched with water, creating calcium hydroxide $Ca(OH)_2$. When calcium hydroxide is dissolved in water and the water evaporates, using CO_2 from the air, a hard bound limestone is formed. With hydrated lime, clay and mineral containing limestone is used. These additions can lead to compounds which react with water to make $CaCO_3$. When free lime remains during this process this would eventually react again as air lime. Source: Van Balen et al. 2013, p. 8.
13 De Klerk 1919a, p. 5.

measurements to assess the moisture absorption of the brickwork. The humidity of the mortar and brick was measured using the Calcium-carbide method. The research revealed large differences in the visual damage between the original sections of the brickwork (brick and joint) and the parts where repair had taken place. Damage to the brickwork, which visually had led to brick or joint damage to the exterior or moisture penetration to the interior, could be clearly correlated with interventions in the past. The most important early conclusion was that interventions had led to undesirable changes in the moisture balance of the façade. The follow-up research to the causes of this imbalance were directed primarily to obtaining better insight in the moisture behaviour of the façades and the interventions that had taken place.

Massive brickwork, by definition, is not fully waterproof, regardless of which brick and mortar have been applied. The physical working of brick and mortar and the thickness of the structure determine the degree of moisture resistance. This is based partly on moisture retention from the outside, buffering and release by evaporation. The release by evaporation is much slower than the uptake during a rainstorm, making the buffering capacities particularly important. As long as the balance of uptake, buffering capacity and release is such that the moisture penetrating the façade during a rainstorm has sufficient time to evaporate, and that the buffering capacity is not exceeded, moisture will not cause damage. The moisture balance of brickwork, however, is very vulnerable and can easily be disturbed. Important factors for a healthy moisture balance in the brickwork are:

- moisture absorbtion of brick and mortar
- capillary behaviour of the brickwork
- buffering capacity of the façade
- vapour permeability of the façade
- weather resistance of the façade (i.e. frost)
- physical composition of the materials

The different technical values of the brickwork, and the extent to which they can reinforce or weaken each other, were further evaluated by means of materials testing in various laboratories.
In the visual record the following brickwork structures could be distinguished:

- the still present original brickwork (brick and mortar undisturbed);
- parts of the brickwork where the jointing has been replaced over time;
- repairs with a new brick and mortar from the renovation of 1979-1980.

The technical and physical properties of the brickwork and mortar for all three brickwork structures were determined through measurements. It did make a difference for all three structures whether or not they had been treated with a hydrophobic coating in the (near) past, and what the coating consisted of. The investigations were carried out by members of the research team, as well as the team from the appointed research laboratories of TNO/TU Delft, TCKI and Atelier Amati. Research Institute TNO/TU Delft had already been involved earlier, with the investigation into the moisture problems of the meeting house façade.[14] As this brickwork is not technically capable of providing a quality moisture barrier, due to the minor thickness of parts of the façade (half bat deep), research was started into the possibility of providing the façade with a hydrophobic coating. Hydrophobic treatment could disturb the façade, and for that reason, this should be considered a method of last resort for monumental brickwork. Therefore, Eigen Haard and archivolt commissioned an external investigation to provide guidance in managing the hydrophobic treatment of the façade. The meeting house is built in the same brickwork as all other parts of Het Schip, so this research would also benefit the other façades in the complex.
TCKI[15] carries out research to determine of the properties of ceramic products. The majority of the ceramic products for buildings that are on the market in the Netherlands are tested by them, using NEN-EN standards. They were therefore chosen to analyze and standardize the technical and physical qualities of the various brickwork structures of Het Schip. TCKI tested all brickwork structures for moisture resistance and provided analyses of the original bricks, as well as the bricks used in previous renovations. Important research values in these analyses were: porosity,[16] initial water absorption (IW),[17] voluntary water absorption (VW),[18] specific mass, compressive strength, and modulus of elasticity[19] of the brick.
Atelier Amati of Rob Crevecoeur already had a relationship with the team's façade restorer.[20] They primarily concerned

14 The research about hydrophobic possibilities for primarily the meeting house was carried out under the leadership of prof. R. van Hees and dr. B. Lubelli, both at the time employed by TNO as well as TU Delft.
15 *Technisch Centrum voor de Keramische Industrie* (Technical Center for the Ceramic Industry) in Velp, The Netherlands.
16 Porosity provides insight into the content and size of pores present in brick.
17 IW indicates how much water one of the surfaces of a stone absorbs within one minute, by setting a dry stone with one side in 5 millimeters deep water for 1 minute. The weight before and after gives an uptake in kg/m²/min. as per standard EN 771-1. When this test is done with a undried stone from the job according to EN 772-1, this value is called the Haller number in g/m2/min (the Karsten tube correlates to Haller).
18 VW is the extent to which the stone is able to absorb water. Hereby a stone is submerged in water for a long time until it is fully saturated. The weight before and after indicates, as a weight percentage, how much moisture a stone can absorb.
19 The extent to which a material can be deformed by changing the temperature.
20 Rob Crevecoeur, former researcher of the *Instituut Collectie Nederland*, carried out practical material research for that institute focused on repair solutions. Atelier Amati started a cooperative arrangement with *Van Milt Restaurateurs*, who restored the façade work of Het Schip.

09.12

09.13

09.12 Testing the joints in reconstructed masonry of the balcony baluster.
09.13 Damage to brick repair.
09.14 Damage by hydrophobic coating.
09.15 Damage to brick repair.

09.14

09.15

themselves with the composition of the mortar and the physical behaviour of the bricks.

On the basis of these investigations, the brickwork of the façade of Het Schip can be divided into the following appearances, each with its specific properties and associated technical quality:

- original brickwork with original joint
- original brickwork with new joint
- renewed brickwork from the period 1978-1979
- hydrophobic treated sections of the brickwork

These four types are discussed separately below, based on their appearance form and behaviour.

Original brickwork

From the various analyses, it was apparent that the parts that consisted of original brickwork were technically in excellent condition. The technical quality of the Groninger brick can be considered as good. Test results confirmed that this hard-fired clinker with a high material density has a very low initial water absorbtion. Test results also showed that the moisture absorbtion had not deteriorated with age or wear.
The binding mortar, consisting of a bastard mortar in proportional ratio of lime and cement, appeared to suit the brick well. The modulus of elasticity of brick and mortar were also well matched: the bricks and mortar had a similar expansion/contraction with warming and cooling, negating tensions at their interface. The mortar had a higher amount of smaller pores, than the brick; as a result, capillary moisture transportation headed towards the joint, where it can more easily evaporate.
The quality of the existing brickwork was in such good condition that preservation, supporting a restoration philosophy of saving as much as possible of the existing materials, will be possible. It is important to note that small deficiencies in this brickwork, by which extra moisture could penetrate, will need to be repaired.

Original brickwork with new joint

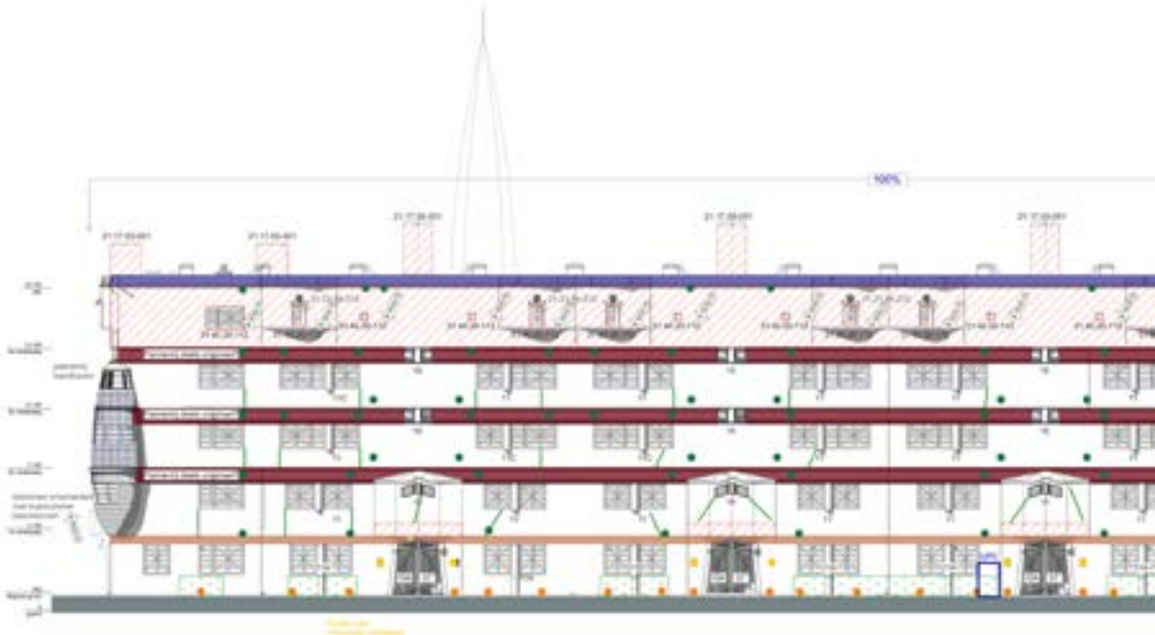
New jointing has been applied at many locations of the original brickwork. This happened primarily during the renovation of 1979-1980 and was applied in the many repairs of the façade brickwork since. As there is no color layer, the grey joint is noticeable in the overall appearance of the façade. The use of a cement-bonded joints matches the practice of the restorations from the period 1960-1990. The use of lime in mortars was used less often by that time, as better, moisture resistant properties were found in cement. This property cannot be denied, but the synergy of mortar and brick was ignored, especially with the historical bricks. The mortar used had much higher cement content than the original bastard mortar. This relationship was probably adjusted for the replacement bricks that were used, but these have a lower modulus of elasticity than the original brick.
Not only does the composition of the mortar determine the quality, but it also determines the manner in which it was installed. The originally smoothed layer of the binding mortar has to be removed. This was the layer with the highest density and the lowest moisture absorption. In its place, a joint has been applied with a (too) high hardness, which, as a result of thermal shrinkage, detach and crack.
The water absorption of this joint is therefore quite large, disturbing the moisture balance in the brickwork. This disturbance has several reasons:

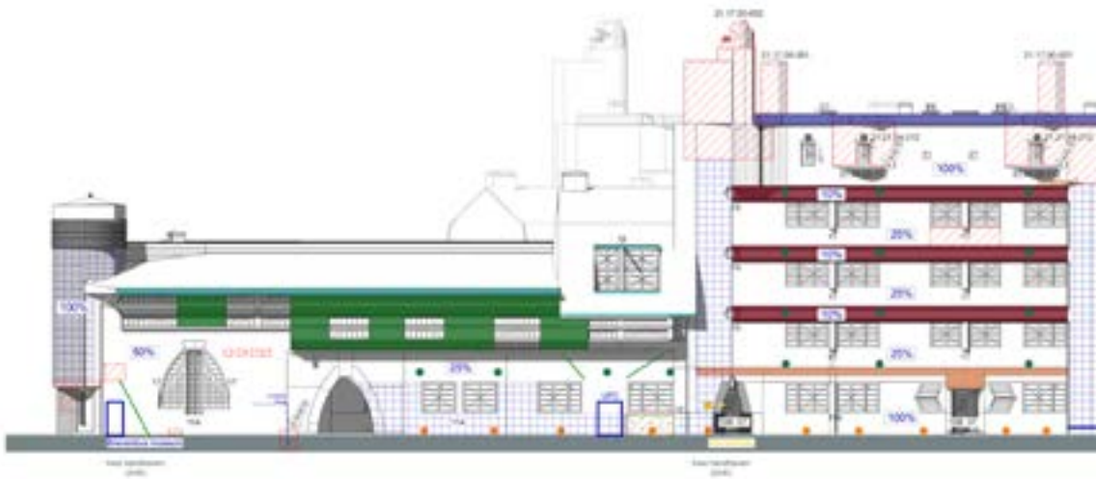
- Rain water can easily penetrate via the detached and cracked components;
- The moisture collects in many places in the space between the binding mortar and the joint. This indicates an unskilled technical installation of the joint;
- The originally dense and therefore moisture resisting zone of the binding mortar has disappeared. The original work behind is not *vol en zat* (thoroughly) mortared and exhibits more capillary penetration and absorption.

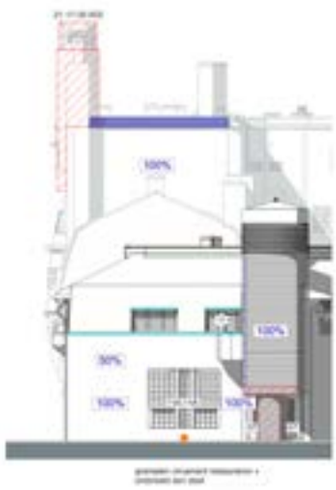
The increased penetration and absorption leads to moisture storage in the brickwork. Because the moisture penetrates deeper into the structure, it takes longer to dry.

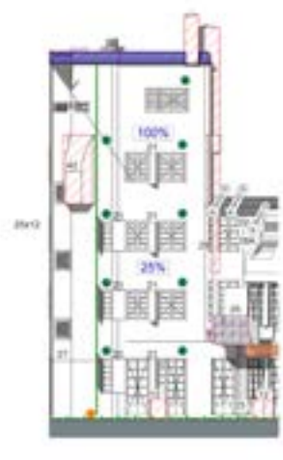
Earlier renovations produced unskilled constructed joints. During removal, bricks were damaged, the mortar was not adjusted to the properties of the brick. Aesthetically, the joints became thicker. The joints were not sufficiently *thoroughly mortared*, insufficiently joined to the binding mortar, and not made sufficiently dense.[21] As the space formed between the joint and binding mortar occurs at limited depth relative to the outside edge (ca. 15-20 millimeters deep), the area is sensitive to frost. In the Netherlands, frost penetrates to 40-60 millimeters depth during the most severe winters. As a result of the expansion due to crystallization during freezing, the joint can break the brick.
The result of this low-standard of work is that the jointing currently shows large-scale spalling. Because of the spalling of the joint, the underlying binding mortar is no longer protected and leads to accelerated further decay, effecting the bricks as well. The need to remove and renew this joint work with

21 When joint mortar is applied separately from the laying mortar, after the laying of the bricks or after their removal for repair, it must be very closely joined to the laying mortar, to avoid air entrapment. Therefore, the added joint mortar is pressed in solidly with a thin jointing nail, such that pores in the mortar and spaces between the joint mortar and laying mortar are avoided. The joint is *vol en zat* (thoroughly mortared) when the mortar fills the space entirely, without air entrapment.

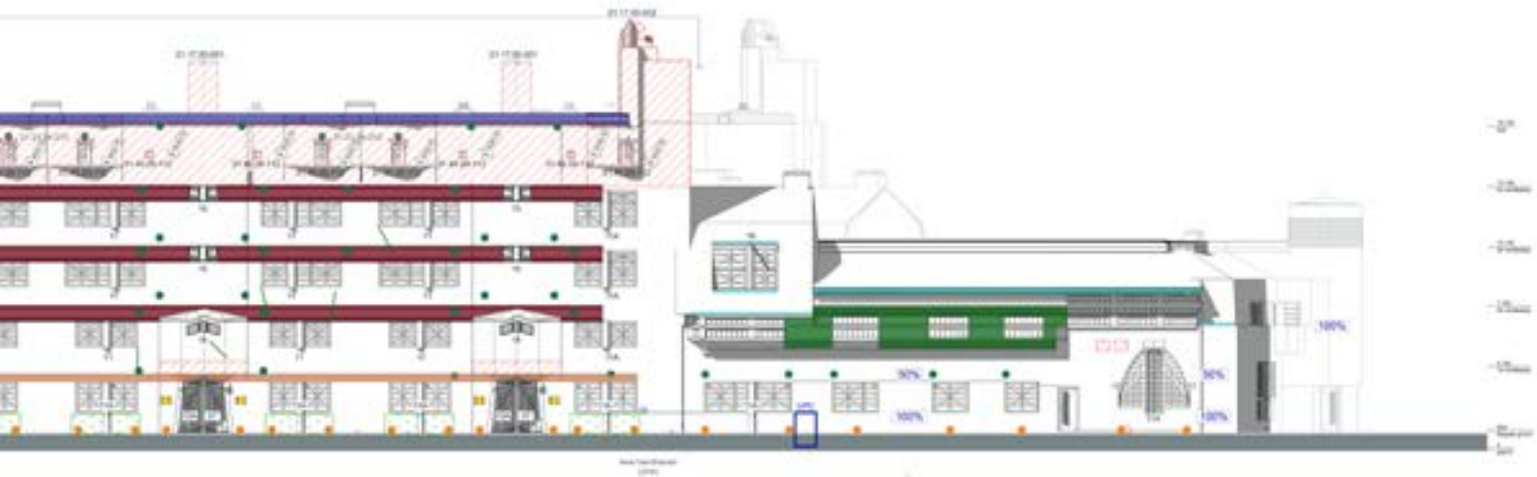


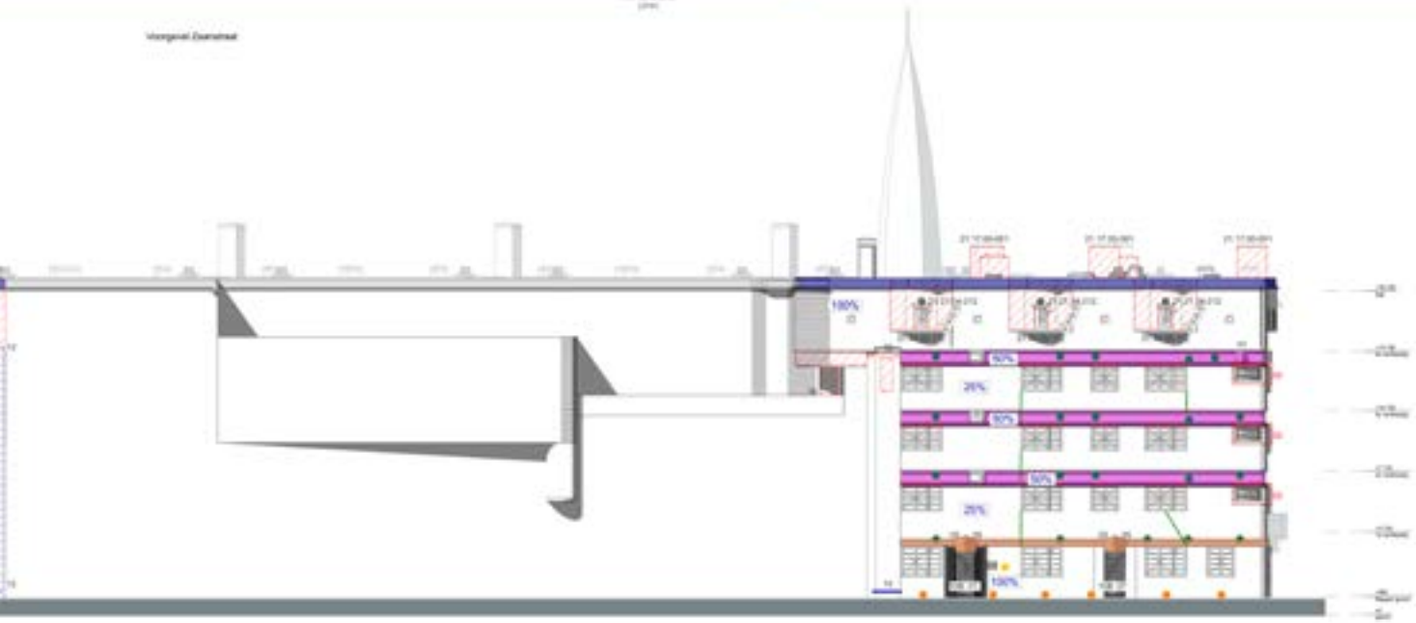






09.16
Archivolt architecten, assessment drawing.





achtergevel muiderhuisring

Achtergevel Herengracht C

Achtergevel Herengracht D

01 Uitstekend ornament met stalen jaartal.
- staal conserveren en bovenzijde voorzien van afdekking overeenkomstig schoorsteen, voegwerk vervangen » 41.17.20-007

02 Tonvormige hoekpenanten tussen vensters impregneren » 41.17.20-008
- voegwerk vervangen
- pannen herzeggen op bovenzijde
- keramische tegels boven en onder kozijn vervangen

05 Bovenzijde uitstekende penant, schoonmetselwerk, hydrofoberen » 21.21.19-011

06 Balkon van museumwoning, stenen repareren voegen vervangen » 34.15.00-003

07 Gemetselde vloeren en plafonds van portiek opnieuw voegen » 41.17.20-009

08 Bloemenbak museumwoning herstellen » 41.17.20-010
- plaatselijk stenen vervangen of repareren
- voegen vervangen
- keramische tegels herstellen
- impregneren

09 Bestrating t.p.v. tuindeuren opnieuw voegen » 21.10.14-113

10A Portieken
- Herstel van houten balken/lateien/kolommen
  - plaatselijk repareren met epoxy reparatie
  - loden bovenafdekkingen vernieuwen
  - houten/multiplex plafond delen vervangen in WPD multiplex
  - houtwerk schilderen
- Deuren en kozijnen
  - houtwerk deuren herstellen middels epoxy reparaties
  - H&S: originele delen opknappen
    * sloten vervangen » politiekeurmerk
    * nieuwe cilinders
    * in deuren van de begane grond woningen glas vervangen door inbraakwerend glas (gelaagd)
  - houtwerk schilderen
  - beldrukkers vervangen door intercom
- Natuursteen
  - granieten kolommen
    * reiningen
    * plaatselijk herstel
  - hardstenenn dorpels/neuten
    * plaatselijk herstel met reparatiemortel

10B Portieken
- Herstel van houten balken/lateien/kolommen
  - plaatselijk repareren met epoxy reparatie
  - houtwerk schilderen
- Deuren en kozijnen
  - houtwerk deuren herstellen middels epoxy reparaties
  - H&S: originele delen opknappen
    * sloten vervangen » politiekeurmerk
    * nieuwe cilinders
    * in deuren van de begane grond woningen glas vervangen door inbraakwerend glas (gelaagd)
  - houtwerk schilderen
  - beldrukkers vervangen door intercom
- Natuursteen
  - hardstenenn dorpels/neuten
    * plaatselijk herstel met reparatiemortel

10E
- voegwerk gemetselde vloer + trap vervangen
- stalen trapleuning in situ conserveren

11 Ronde gemetselde en afgestucte penanten » 41.17.20-110
- reinigen
- verflagen verwijderen met DECAM/JR
- toplaag stucwerk opnieuw aanbrengen 2-3 mm
- schilderen met minerale verf

11A Als 11 plus » 41.17.20-111:
- vervangen van de keramische deksel op de potbuis, in en dubbel hard gebakken en vorstbestendige tegel

11B Als 11 plus » 41.17.20-114:
- herstel smeedstalen kroon

11C Als 11 plus » 41.17.20-113:
- ophakken scheur in stuclaag, breedte min. 100 mm
- scheur herstellen in stuc

11D Als 11A plus 11C » 41.17.20-114

12 Bovenzijde uitkragend metselwerk voorzien van afwateringslaag in mortel, afgewerkt met remmers multidicht » 21.21.20-300

14 Uitkraging trappenhuis portiek » 21.21.14-214 + 31.40.20-160
- vervangen stalen ramen (uit 1979) door geïsoleerde stalen

20 Keramische potbuizen herstellen en impregneren, keramische deksel vervangen in vorstbestendig terracotta » 41.17.20-115

20A Als 20 maar dam vierkante potbuis » 41.17.20-116

21 Keramische deksel vervangen in vorstbestendig terracotta » 41.17.20-117

22 Loden dakbedekking + loketten vervangen » 47.11.19-001

23 Stucwerk penant vervangen + schilderen met minerale verf » 41.17.20-110 (zie 11)

24 Gemetseld ornament, voegwerk vervangen op liggende vlakken een afschotmortel leggen en ornament impregneren » 41.17.20-118

25 Privacyschot vervangen » 21.10.00-100

26 Keramische vergaardak vernieuwen en voorzien van een zinken binnenvoering » 52.12.20-520

27 HWA (zink) handhaven (incl. stalen ondereinden)

28 Loden dakbekleding + gevellood vervangen » 47.11.19-002

28A Houten geornamenteerde onderconstructie » 47.11.19-003

29 Betonnen console controleren en herstellen + conserveren stalen draagconstructie in gevel » 28.11.20-331 + 28.11.25-601

30 Houten console hangende erker herstellen ► afwerking geschilderd » 21.11.90-001

31 Granieten kolommen herstellen, vervangen granieten deksel » 41.17.20-201

32 Houten ornament/goothlos herstellen » 28.11.90-002

33 Aangetaste houten balken restaureren of vervangen

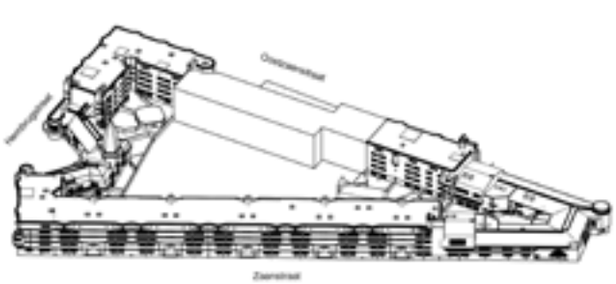
34 Afvoer mv keuken verwijderen (n.v.t)

40 Vervangen keramische buis

41 Bloembak museum » 41.17.20-119:
- voegwerk vervangen
- spuwers vervangen

42 Metselwerk vervangen, halfronde bovenzijde impregneren

AA Vervangen dakkapel incl. zinken dakbedekking en loden aansluitingen » 37.26.13-010



Hijsankers uitnemen, herstellen, herplaatsen en in situ aflakken » 21.21.14-212

Bestaande brievenbussen handhaven

Ventilatie opening (deels op bestaande plek, deels later toegevoegd) i.v.m. nieuwe vloer alle roosters uitnemen en gaten inboeten » 21.21.14-212

Bestaand ventilatie openingen bestaande uit 2x3 strengpersstenen met gaten handhaven. Waar nodig ontdoen van specievullingen » 21.11.16-007

100% Percentage voegherstel over desbetreffend muurvlak, zie bestekspost 21.10.14-111

Scheuren, zie bestekposten

opnieuw voegen van steensverband langs gevel, zowel horizontale als verticale voegen

Begroeing verwijderen en gevel ontdoen van hechtingssporen

Dakrand + noodoverstorten

Muurafdekking met pannen

Zinken goot vervangen

Zinken goot vervangen (incl. gootbodem + boeidelen) » 52.12.20-100

Volledig vervangen van pannenrij in gevel » 21.21.14-220 + detail

Rand boven hoge borstwering, let op deels nog bestaande stenen. DETAIL

Gedeeltelijk vervangen van niet originele pannen » 21.21.14-221

Betonnen gevelband plaatselijk herstellen met betonreparatie mortel. Gerepareerde delen voorzien van frijnslag als bestaand

Keramische pannen herstellen, zie bestekspost...
- alle tegels afnemen
- kit verwijderen
- achterhout vervangen
- stalen hulpconstructie herstellen

Specifieke plekken waar 100% voegherstel nodig is, zie bestekpost 21.10.14-110

Vervangen van dakrand met kamprofiel in keramische tegels

Inboeten metselwerk, zie bestekspost 21.21.14

Daken
- Alg. alle pannenbedekkingen vervangen:
  - pannen afnemen en inwisselen voor nieuwe pannen in formaat als origineel
  - panlatten en tengels verwijderen
  - dakbeschot plaatselijke vernieuwen (10%)
  - waterkerende, dampopen en UV bestendige folie aanbrengen
  - nieuwe panlatten en tengels
  - herdekken met nieuwe pannen
  - in lood gedekte nok- en hoekkepers vervangen door originele detaillering met vorsten of verholen goten
- Alle bitumineuze dakbedekking vervangen
  - bestaande bitumineuze dakbedekking verwijderen
  - dak voorzien van isolatie RC: 5,0 m²K/W
  - dak voorzien van nieuwe dakbedekking
  - dakrand herstellen of vernieuwen » zie ook detail 7001

Goten
- Alg. alle goten vervangen in zink, 1,1 mm, detaillering als bestaand

Metselwerk
- Alg. ten behoeve van beschadigde stenen op te nemen » zie bestekspost

Verwijderen van roestend staalwerk in gevel. Te rekenen op: 4000 st.

09.17
Archivolt architecten, assessment drawing.

the newly composed mortar was, given the aforementioned considerations, the only correct option.

Repaired brickwork during previous renovations

During the renovation of 1979-1980, large sections of brickwork were replaced. It cannot be determined from the archival materials what the reasons were for this replacement. Given the location of the repaired sections, it can be assumed that a combination of moisture and cracking made it necessary. The most noticeable parts of the replaced brickwork are in the curved protrusions of the upper story. They reinforce the position of the hoist hatches and hoist beams in the façade. The concrete plate in these protrusions, which supports the bricks, has been replaced, it seems obvious that this was the most important reason for the brickwork replacement. Also, at the protrusions of the portico entrances and the balconies, deteriorations in the structure below or behind would have led to interventions in the brickwork.
At the top story, moisture penetration could have contributed to the need of replacement. It is notable that these high sections of the façade, having extra exposure to rain, not only have had many repairs, but also were generally provided with a hydrophobic coating. At the chimneys, which had become largely obsolete due to changes in the heating system, moisture would have played a role. Where the warm air from the furnaces took care of extra drying of the chimney brickwork over the past decades, this beneficial effect had disappeared with the advent of gas heating. This was likely the reason in for replacing the chimneys in 1979-1980.

All replacements are carried out in a uniform purple-red brick, which deviates from the original in terms of color, variability (no differences in shading) and texture (smoothness). The replacements are jointed with a mortar, and it appears as described above. Their presence is, therefore, very noticeable in the appearance of the façade, which actually suits the restoration philosophy at the time.
At the location of the replacements, the worst technical damage is visible inside as well as outside. This is visible in various ways:

- spalled joint work
- dented bricks
- salt marks, inside as well as outside
- loose plaster
- damp plaster
- settling cracks at the transition to remaining brickwork

The research on quality of applied materials showed irrefutably that all these damage events were caused by execution and choice of materials. The bricks and mortar used, insufficient care, and perhaps too little supervision during construction, resulted in poor conditions. Therefore, the decision was made to carry out the restoration.

In these façade sections, the quality of the joint work was the weakest link. All measurements indicated that the joints underwent capillary absorption. This was primarily because of the abundant presence of (hairline) cracks in the joint work and in the adhesion surface with the brick. During the testing, large amounts of absorption were measured, so it is probable that moisture is transported to the binding mortar.
The type of bricks used also plays a role in the quality of the brickwork. The brick, although red in color, is an extrusion press clinker originating from a standard batch and, in terms of technical characteristics, cannot be compared with the original Groninger brick. The biggest difference was in the manner of production of the brick. Modern extrusion pressed bricks are mechanically and automatically produced. Cost reduction and minimizing the use of material results in the perforations on the inside of the brick. The perforations provide an enlarged drying surface, allowing drying to occur faster. Following drying, the bricks are sent through a tunnel oven for an accelerated final baking. A brick of this quality suffices in the modern building with cavity wall structures and a fully balanced binding and joint mortar based on cement. In a massive wall, however, a brick with these properties is not adequate.
With the shorter baking period, the brick is provided on the visible side with a well baked, and therefore rain repellent, top layer. On the other hand, the inside of the brick is much more porous. Because the joint absorbs moisture, particularly via hairline cracks, it is possible that the brick can absorb moisture from the joint. In the worst-case scenario, the perforations are not fully filled with mortar, and the moisture can collect in those voids. This puts the brick at risk of frost damage, which has already happened to a large extent in the brickwork of Het Schip.

To a lesser extent, the replacement sections of the façade show damage from salt. The brick and/or mortar contain minerals which can react with water and polluted air born. In a humid environment, they can dissolve in water and react to form salts. Through evaporation, a large part of the moisture will eventually tend to migrate to the exterior surface. The salts crystallize at or immediately below the surface of the brick or joint. Crystallization of salts is accompanied by a substantial increase in volume, whereby joints and bricks can be damaged.
At the inside of the façades, salts appeared as a result of a different chemical reaction. The walls had been covered over the years with a gypsum based plaster. A large amount of salt damage is visible on the plastered walls of the unheated attics, showing a specific cloud-like pattern. Both penetrated moisture and condensation on the inner surface cause this. Penetrated moisture causes aluminum in the cement (mortar and base coat of the plaster) of the brickwork to react with the sulphate in the gypsum based finishing layer. This

compounded salt is called ettringite. Similar to table salt, this salt's hygroscopic character allows it to independently pull moisture from the air. This way, ettringite-formation can sustain itself and expand into specific concentric moisture and salt spots, as can be seen in the attic floor at Zaanstraat.
The research thus indicates that with the installation of these façade surfaces in 1979-1980, improper materials were installed with insufficient care. The question remains why the choice was made to replace this brickwork, while a number of components could have been adjusted by removal of the interior plaster work and, perhaps, by replacement of the mortar.

Hydrophobic coatings

The answer to the question above is given by the presence of hydrophobic coatings. The intended objective of the installation of a hydrophobic coating is the reduction of water penetration into the brickwork. It was applied almost as a standard, especially in the period between 1970-1990, as a treatment of cleaned façades or at massive façades, and is still being widely recommended by producers and applicators of these products. Unfortunately, little or no attention is given to the underlying cause of moisture problems in massive brickwork, and the results of this treatment are now visible on many monumental buildings.
No archival material was found that indicated where and when possible hydrophobic coatings were installed on the façades of Het Schip. Given the practices of the time, it is likely that hydrophobic coatings were installed at the location of the repairs of 1979-1980, including the upper façade layer at Zaanstraat and Hembrugstraat. Two residents reported that, after complaints of moisture penetration, something was sprayed on the façade of their apartment. These reports came from an apartment near the Cigar and an apartment on the upper floor of Oostzaanstraat. In both cases there was damage to the plaster inside. It was thought that this was a case of penetrated moisture, and the joint work was replaced first.

A hydrophobic coating does not only obstruct the rain to penetrate, it also seals the façade against evaporation of moisture that is contained in the brickwork of the façade. The decreased permeability occurs especially with materials containing sodiumsilicate and, to a lesser extent, with modern materials with a silane/siloxane base. With the more modern products, permeability decreases relative to an untreated façade section. A hydrophobic treatment, therefore, causes a strong disturbance of the fragile moisture balance of a façade. A hydrophobic coating has a positive influence on the brickwork during the first years after application. However, problems begin to occur after a few years. In the case of a hydrophobic material with a water glass base, water can start to penetrate when cracks appear in the mortar and/or brick. Moisture can then collect behind the hydrophobic coating, which also slows evaporation. This moisture storage takes place in the outer 30 millimeters of the mortar and the brick (depending of the degree of penetration of the hydrophobic material), which is still within the freezing zone of the brick. Once cracks appear in the joint work, it is not possible anymore to stop this process, because the hydrophobic material does not close cracks. Replacement of the joint is the only possible remedy; however, replacement does not remove the layer bonded to the brick.[22]
Sections of the original brickwork also appear to have been treated hydrophobically (with or without the lime-bonded joint). The restoration vision prefers preserving the original sections of brickwork, which was thought to be possible regardless of the presence of the hydrophobic coating. This preservation method improves the evaporation surface. About 25% of the brickwork surface consist of joints. In a number of recent restoration projects, successful tests were done with the targeted replacement of the joints in order to breach the hydrophobic coating and to bring the moisture balance in the brickwork to equilibrium. A joint mortar is used with a pore distribution that boosts the capillary capacity, pulling moisture into the joints and providing for evaporation from the mortar. Given the type of brick in the original brickwork, a joint with a lime base is desirable, and the higher lutum content provides an extra benefit by creating small capillary pores. By replacing the joint to a sufficient depth, this mortar also provides adequate buffering capacity.
By this method, the original section of the façade could be preserved with a simple intervention. This intervention is only possible when the newly produced brick and the lime-bonded joint mortar have the correct pore ratio. This is precisely where the replacement work in 1979-1980 fell short and why it was necessary to now replace these sections of brickwork.

RESTORATION OF THE BRICKWORK

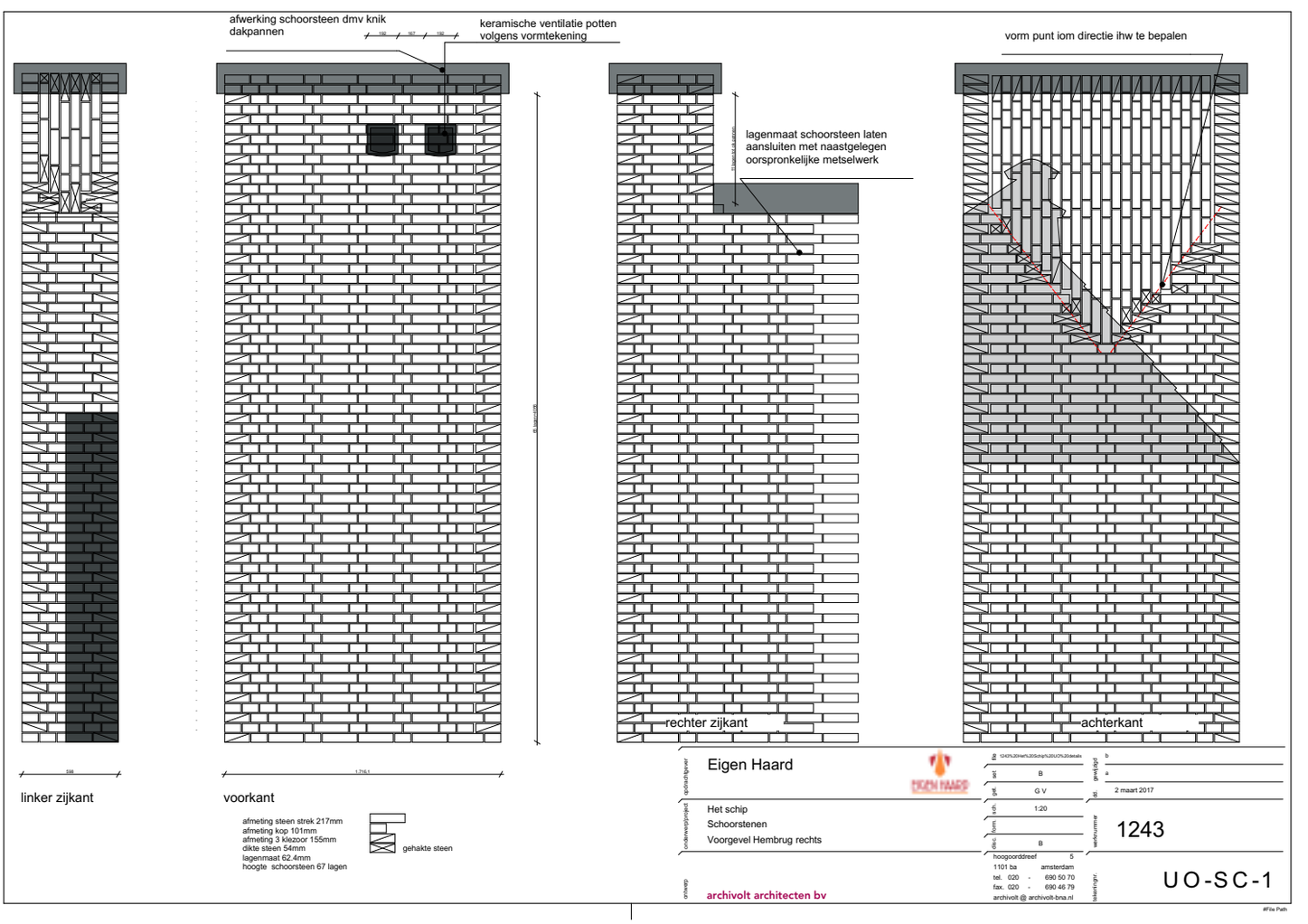
Once it was determined which sections needed to be replaced and the right brick and mortar found to carry out this work, the restoration could begin. Because large sections of the façade of this extraordinary complex had been lost, the correct, exact image repair was of the highest priority to all directly or indirectly involved in this project. How to bring back what was lost in earlier renovations?
The restoration of the brickwork and the repair of the façade appearance was a large responsibility for the contractor hired to carry out the project.[23] As this part of the restoration would

22 Modern hydrophobic materials make use of silane/siloxane as adhesive. The disadvantage of these products is that the bond can be broken from UV exposure, whereby the effect will decrease with time. Replacement or doing nothing would be options, but the material does not disappear, which means that evaporation will remain slow.
23 Van Milt Restaurateurs bv, Lunteren, The Netherlands.

09.18

09.18 Transitioning to brickwork with various types of weathering.
09.19 Design based on archival material.
09.20 Image restoration (during).
09.21 Image restoration (after).

09.19



09.20

09.21

be intensive, the contractor needed to be a part of the design team from the start. The contractor would be needed not only to assist the team technically but also to properly develop knowledge and feeling for the complexity of the project.
This complexity meant that not just any bricklayer could be employed on this project. As in the restoration of paintings, a bricklayer needed to be an accomplished tradesman that could match the shade and color variations on the façade. This was a very difficult task: after almost one hundred years, the existing brickwork showed all kinds of nuances in color and shade as a result of weathering.
The bricklayers had newly baked bricks of six different shades in the orange spectrum, varying from light to dark. In order to properly imitate the nuances in the original façade, the brickwork had to be built using a proper mixture of these shades. Using the correct proportion of lighter and darker bricks in the composition, it was possible to seamlessly transition from the existing brickwork into the restored sections. The choice of composition was not a process for the bricklayer alone. Instead, quality control personnel appointed by the owner, the architect, the façade restorer and government inspectors continuously reviewed the process. During the first review, it was determined how many bricks needed to be produced in each color nuance by the brick factory. With a limited capacity of around 2,500 bricks produced per week, and as the project would require at least 150,000 bricks, the process of choosing the number of brick to produce in which part of the color scheme was of great importance. The stoking in the factory and the progress of the work depended on good planning.

Experiencing the brickwork resides in the working of the human eye and brain, which blends adjacent colors into a cohesive image. It is not so much a case of not distinguishing color differences, but the color experience of the brick being influenced by the color of the joint work and vice versa.
As indicated earlier, the new joint consists of a composition of lime, cement, and sand (in this case, sandy clay), in proportion by volume of 3:1:10. Lime, the dominant binding agent, has a naturally white color. With the addition of cement, the joint can be made a lighter or darker grey. In order to produce an ochre-yellow joint, ochre colored sandy clay is added to the mixture as a tint. Using color tests at the work site, it became evident that adding the tints of the binding agent alone did not achieve a close enough match with the original color. In a final attempt, various proportions of sand were added to the sandy clay, in various tints. Moreover, the correct type of sand had to be found to maintain the quality and color requirements.
The original joint work contains small black dots. These originated from the sand used at the time, which often was less pure than the present sand sources. These black dots have become more visible over the years as the wear on the binding agent in the joints, which normally surrounds the sand grain, had disappeared. Sand with this type of “contamination” is no longer available. To imitate this, a small amount of grit was added to the mortar. These are actually basalt particles ground to such an extent that the particle size is the same as the largest sand particles. Thus, gradual wear of the new joint is expected to result in revealing the black particles as time goes on.

Subsequently, it was the task of the jointer to copy the appearance of the joint, and that was not a simple task. The original brickwork has a different structure than the new joint. The original joint consisted of a squeezed binding mortar, over which a color layer was applied for aesthetic purposes. Because of the necessity for the new joint to penetrate the hydrophobic coating, it had to have a uniform composition, which had to be applied at depth. Thus, in contrast to the original work, the new joint had to be a very close match to De Klerk’s yellow ochre top layer.
The later addition of the top layer also determined the appearance of the original joint. Where the joint work was laid approximately even or slightly sunken, (about 1 - 2 millimeters) relative to the front of the brick, the yellow top layer stuck out slightly. Moreover, this top layer was not straight and smooth but had a rough appearance with ragged edges. This made the joint work look like the historic beaded joint, which, before 1850, was often used in simple brickwork. This joint style went through a revival in the period 1900-1930, especially in traditionalism.
A real beaded joint was made by letting the slightly protruding binding mortar stiffen, then after hardening for 2 - 3 days (lime mortar hardens slowly), reworking the joint by tapping with a soft brush. As a result, the mortar folded somewhat raggedly over the edges of the brick. Because in the historic beaded joint, the binding mortar extends over the entire depth of the brickwork, and with the current joint mortar over only 25 millimeters, the latter dries quicker. Thereby, the desired stiffening period when the joint can be properly reworked is missed. With the new joint work, the joint is reworked and tapped immediately after installation. This happened purely as a result of the judgement and ability of the tradesmen jointers who worked on the restoration of Het Schip.

IMAGE RESTORATION BRICKWORK

The repair of lost detailing of the various brickwork components also played an important role. To bring these elements back to the appearance of the year 1919 was a difficult task for the entire team. Unfortunately, it had already been determined at the beginning of the research that parts of the façade had been replaced in earlier restorations/ renovations. Not only were technically inferior materials used then, but with the use of different sized bricks, original brick structures and brick bonds were rudely removed or disturbed, resulting in the loss of detail. It was necessary to replace the

earlier repairs due to their undesirable technical quality. It befitted an architectural icon such as Het Schip to repair these components to their old glory.
The building-historical research determined where the façade appearance had been impaired and how it would have looked originally according to archival information. Fortunately, for a building from 1919, photographic material exists, and the various lost details in the brickwork could be recovered. These involved deviating offsets and compositions the brickwork and brickwork bonds. Photos that were available for the reconstruction were translated into brickwork schemes, contributing to both dimensions and technical solutions.
For the façade sections that did not have historical photos available, De Klerk's drawings were used as a reference. Although the archives were full of sketches made by him, especially of details, not all work was carried out as shown on the drawings. Translating these to Het Schip was a task for a building-historian and a restoration-designer, who offered a fitting solution corresponding to the existing structures of the complex. Specifically, they produced three-dimensional models.

REPAIRED COMPONENTS

The most important and most visible repaired components in the appearance of the brickwork façade can be divided as follows:

- Incidental repairs of bricks
- Replacement of parts of the façade surfaces
- Renewal of the balconies
- Renewal of the chimneys

Repairs

The incidental replacements involved busted or frost damaged bricks in otherwise retained brickwork surfaces. Depending on the damage, the architect had indicated which brick needed replacement or possible repair. The latter option was preferred, as the original brick would be retained. In repairing the brick, the broken part was removed to a depth of 5-10 millimeters, and the hole filled with a special brick repair mortar, brought to the right color by means of coloring compound and ground brick parts. This mortar consists of a hydrated cement (Portland stone cement), with the white color pigment titanium oxide as a base pigment. With a *Grout scumble*[24] based on a combination of potassium silicate and sodium silicate, the mortar can be assembled in every color, by which the color compounds are bonded to the bonding agent. This chemical compound of the mortar minerals is practically the same as the compound formed when a brick is baked. They are both based on the bonding of silicate. In total, some 15,000 bricks have been treated this way (about 1% of all bricks in the façade).

Replacement

In particular, the southwesterly oriented sections of the façade, and mainly the higher positioned surfaces, have already been replaced in the past. Given the prevailing wind direction in the Netherlands, these façades experience the most wind and rain stress. The reason for the earlier replacements cannot be uncovered. It is unknown whether they were the result of moisture penetration or not. Given the strong improvement of knowledge about brickwork over the past thirty years, it is quite possible that the damage found in those days was the result of a moisture problem from the outside. Either way, these façade sections had to be replaced again, as the brick and mortar used at the time are certainly responsible for the current moisture problems in the façade.
In the previous renovation, parts of the façade were removed due to problems in the underlying structure, such as the cantilevered roundings over the portico entrances at Zaanstraat. The issue with the repair of these parts, with return to the original appearance, lies primarily in the restoring of the correct brickwork bond. Michel de Klerk's brickwork consists of what he called *Noors Verband* (as referring to Norway), but actually derived from *Noords Verband* (literally, northern bond), a bond often used in the north of the Netherlands. In English this is known as monk bond. Herein, a pattern is laid in each brick layer of two stretchers and one header. In the next layer the header lays precisely in the middle of the two stretchers below. A reasonably straight line results from top to bottom of the headers located above and below (with a layer of stretchers in between). With the Groninger bricks, the headers are finished smoother than the poor side of the stretchers. This causes even more distinctly visible lines of the headers, which also need to be reflected in the newly installed work. Deviations in these lines would present a disturbed appearance. Thus, in order to seamlessly transition from the existing work to the replacement of these parts of the brickwork, the horizontal as well as the vertical layout of the bond is of the greatest importance.
The expressiveness of the façade with the outward curved components presented extra difficulties. In these curvatures, the dimensioning was critical, particularly where transitioning to windows and hatches. Because the original brick was reproduced in all gradations to near perfection, there was certainty that the bonds found in the old archival photos could also be reproduced, retaining all aspects of the existing brickwork bonds.
Expressive use of brickwork is demonstrated by the curvatures that are so small that they cannot be formed by the standard laying of bricks. By reducing the joint from the outside to the inside of the curved form, the bricks can be laid at an angle relative to each other, forming a curved segment. The smallest curvature made this way is determined by this angle

24 *KEIM Historic Grout Scumble.*

09.22

09.23

09.24

09.22 The cigar.
09.23 Curves in brickwork with half bats.
09.24 Sanding bricks, example of the cigar.
09.25 Ravens.


SPAARNDAMMERPLANTSO
WESTER

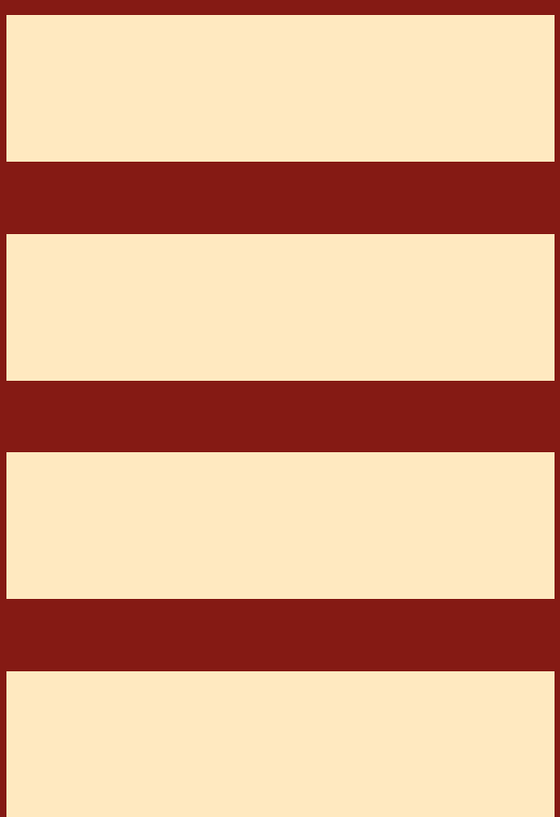
deflection. Because De Klerk applied a relatively narrow joint at the outside, the maximum angle between two bricks was 1.5 degrees and the minimum radius was 4 meters. The simplest way to lay bricks curved in a smaller diameter is to taper the bricks.
With Het Schip, the smaller curvatures made use of a half bat structure. Thus, the radius could be made less than half. However, for components such as the Cigar (see pp. 251-253), with a radius of less than 1 meter, this was not sufficient. Here, use was made of radial or *facon* bricks (tapered chimney bricks). With the Cigar, De Klerk went a step further. The bricks were not only laid in horizontal curvature, but also in vertical curvature. Moreover, his intention was that the surface should not be segment shaped, or curvature made up from straight surfaces. Instead, the surface had to be smoothly curved.
In order to give the surface this perfectly curved shape, a traditional treatment was used whereby the brick is chiselled and sanded. In the sixteenth and seventeenth century, these were techniques that a bricklayer could manage. In De Klerk's days, a stonemason or sculptor would be required. Unfortunately, it is not known whether or not a sculptor or a specialist bricklayer was employed in building Het Schip.
It is known that at the corner of the post office at Zaanstraat, city sculptor Hildo Krop built his brickwork art piece *The Ravens*, (see p. 87 and 171) using a similar method of chiseling and sanding. Through experimentation and command of the craft, a specialist sculptor/bricklayer and the restoration contractor made a test surface during one of the open houses of the construction company. It was clear that although it is possible to rework a piece of brickwork, it is a very difficult task. In contrast to the homogenous natural stone the sculptor uses, bricks have their own directions in their material structure. This is a result of the structure of clay used to bake the brick, characterized by a disc structure. The direction of the structure is different in each brick. During chiseling, there is a chance of breaking the brick when the direction of chiseling is perpendicular to the structure or slivering when the chisel is worked in the direction of the structure. Although sanding the surface avoids vulnerability, it is very time consuming. To make shapes like the Cigar and the Ravens, would have required abundant skill, knowledge and patience.

Balconies

The reason why the parapets of all balconies were replaced during the renovation of 1979-1980, is unknown. Likely, the structural condition of the concrete floors played a role, as they too were all repaired and partly renewed. The parapets installed during the present restoration are a good example of the complexity of the brickwork bond devised by De Klerk. They were also completed as vertical bonds, as opposed to the normal horizontal bonds of the rest of the façade. Because the bricks used in that renovation varied slightly in measurement from the original (about 2-5%), the layout of the different balconies did not match. This created variations in the patterning. As with the façade sections, the newly made bricks made it possible to bring back the detailed pattern found in the archival photos.

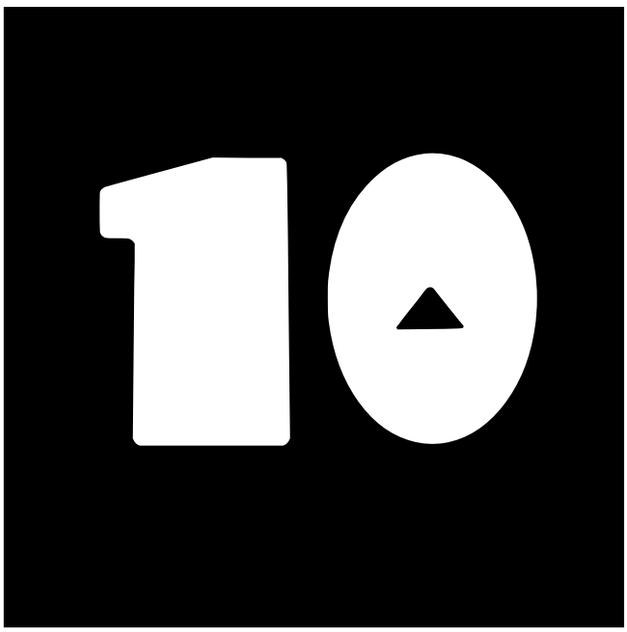
Chimneys

The renewal of the various chimneys demonstrates the need for a high level of knowledge of the brickwork bonds. The combination of patterns with horizontal and vertical bonds, various indentations, curved shapes and the use of ceramic tiles and roof tiles made these the most difficult tasks of the restoration. Although almost each chimney at the complex had its own problems, the restoration of the lion heads was singled out for illustration. Apart from restoring the head (see pp. 254-258), the restoration of the base was as large a challenge. The curved base uninterruptedly transitions into the curved façade below. Especially this seamless connecting of curves and bending of the masonry required much research. And for the execution an experienced mason was asked for, with much knowledge, above all of mapping the measurements.
The complication in this transition from façade to chimney base are the many angular displacements in the brickwork. The impression is that the brickwork is in one plane and in straight lines from bottom to top. However, nothing is further from the truth. The façades of Zaanstraat and Oostzaanstraat begin on top of the dark clinker plinth with a slightly receding bend, of a half bat (110 millimeters) maximally. But they end on top as one façade plane with the adjacent façades. This implicates that this slight bend must be adjusted from bottom to top of the façade in each and every brick layer. This must have been a major task for the mason when mapping his measurements.
Ending in one plane was dictated by the symmetrical base of the lion heads. An extra complication is in the fact that the base, from the roof edge upward, shows entasis. The exact reason for this entasis of the chimney is unknown, apparently this is aimed at providing an optical illusion. As was already known to the ancient Greeks, if the chimney would not have entasis, it would appear that it would be broader at the top. Because of our brains being perspectively conditioned, it will interpret two identical lines differently according to their distance from us. The line farther away from is considered longer than the same line close to us. By applying this principle to the chimney, and making the top smaller, we will consider it straight and even.
Given the rectangular shape of bricks it was complicated to accomplish this subtle turns and entasis. The gradual change complicated the mapping of measurement, as well as the shape of the edges of the bricks. For this purpose he had to sand the edges of the bricks to the appropriate measure, in order to accomplish the smooth course of planes and lines. Only knowledge and experience of the tradesmen involved made this reconstruction possible.



Windows

Cisca van der Leeden



Windows play a prominent role in the appearance of buildings.[1] In the early past, they served only pragmatic purposes, such as opening and closing. Over time, windows changed to enhance indoor living and health with daylight and views, as well as architectural elements, facilitated by the increase in technical possibilities and production processes. In buildings of the Amsterdam School however, windows are no longer minor to the whole, but used to shape the overall appearance of the façades. Interestingly, after the loss of necessity for glazing bars in windows, due to the possibilities for application of large glass surfaces, the glazing bars actually made its re-appearance. This was not done out of technical necessity, but purely for aesthetics purposes.

DEVELOPMENT OF WINDOWS OVER TIME

The development of windows is a direct result of people's need to light their home while providing protection against weather and external hazards. In addition, windows developed to provide ventilation that cleared out indoor smoke and provided fresh air. The techniques have been gradually perfected from the simple, light slit, which could hardly keep out rain or draft for lack of glass in early times, to openings in the façade, which could be closed off in ever ingenious manners. The size and number of window openings in a building has subsequently been determined by new technical developments, the changing requirements of the inhabitants, the desire for views, and building regulations on lighting.
According to the technical prospects, the development of the window frame has been strongly connected to the development of glass. The shape of façade openings similarly continued to change in accordance with the prevailing architectural trends. In the twelfth century, larger openings were attempted in order to let in more daylight and to improve the view. The window openings were vaulted with a natural stone lintel, supported in the center by a small post. From this, the cross frame developed in the fourteenth century. These were built in the natural stone, brick, or wood and dominated Dutch architecture for more than four centuries. However, these built-in-place cross frames failed to protect buildings

1 Windows are understood to include all components, such as the frame, the glass, the shutters, the blinds and the Venetian blinds, with all associated carpentry, such as water sills, architrave frames, crownings and window ledges.

from cold and wind. Finally, separate wooden frames made their appearance at the end of the fifteenth century.
In the last quarter of the seventeenth century, the sash window was invented. These were an improvement from the primitive, French systems with sashing lower windows and a fixed window above. These sash windows, with their improved joint closures, generally had wooden frames and provided more comfort. The glass panels were now held in wooden glazing bars, instead of in lead strips (see also Chapter 15). The building method in which the window frames were first put in place - walled-in frames - and the façade erected afterwards, are traditionally Dutch and probably originated from Dutch timber construction. In 1942, Eelke van Houten stated: "Nothing is simpler in a compartment of the timber structure, than to leave out the wooden wainscot, the paneling, and to replace it with something that lets in light. By filling the compartment in the Dutch timber house with glass, the window frame was invented. Window frames in the Netherlands existed exclusively north of the river Maas. (...) Window frames are still put in place before the bricklayer starts.[2]"
A different type of window came to the Netherlands from France. In this form, two adjoining "wings", or double casement windows, were increasingly applied in the Netherlands over the course of the eighteenth century. At the beginning of the nineteenth century, the windows developed into wide, vertical empire-windows with two panes across and two or three panes high. It had a wide, vertical, profiled glazing bars in the center. Swing windows, as well as sliding ones, were designed in empire style, with the accent on the middle axis. At the end of that century, they made room for T-windows. T-windows consist of three large glass panes, because of the disappearance of the glazing bars in the fanlight. Only a single vertical division in the lower glass pane remained. Eventually, a window developed consisting of two large glass panes without a single glazing bars. Around 1840, cast iron glazing bars came into fashion. From the end of the nineteenth century and into the twentieth century, new materials, such as rolled steel, aluminum, and, eventually, synthetic material, made their entry. The quality of window and door arrangements improved even more in the nineteenth century as a result of the first woodworking machines.

DEVELOPMENT OF GLASS OVER TIME

The most appreciated but in fact the least noticeable property of glass is its transparency (Latin *glesum* means transparent). Glass is molten sand, which is cooled to a solid, transparent material without crystallization. Larger glass surfaces became feasible with improvements in the glass fabrication process. The different fabrication processes over time resulted in different appearances of glass, from a substantially distorted, to a somewhat puckered, to a mirror-smooth surface. The type of window glass used for the restoration was important, especially for the image restoration of Het Schip. Window glass is a defining characteristic of the monument, and it is an important component of the building's history.
Window glass came into use in Europe around the year 1200,[3] making inclement weather less disruptive. At that time, glass was made in large discs, formed by the fast spinning of a shaft with a lump of molten glass attached. From the discs, equal sided parallelograms, or small diamond shaped, glass panes were cut or otherwise this glass was used with the thicker part in the middle of the window. The panes were joined with lead strips, after which the unit was placed in a small rabbet in the brickwork. This type of glass was characterized by circular streaks. This was still made until the beginning of the twentieth century. In 1330, Philippe de Casquerrai invented a blowing method to make larger glass discs.[4] This type of glass, also called moon or crown glass, is thinner than broad sheet glass. Because of the smooth and straight surface, this was a directly useable product.
Already in the twelfth century, the German monk, Theophilus, describes the making of flat glass. It consisted of long, hollow cylinders blown from a blowpipe, which were then split after cooling and subsequently flattened in a stretching oven. In the Netherlands, this blow procedure came fully in style during the sixteenth century and was still practiced until shortly after the First World War. The size of the glass panes to be cut increased. Cylinder glass is not totally flat; instead, the surface shows parallel "striation", and the glass can contain elongated blisters. In the nineteenth century, during the industrial revolution, glass began to be produced on an industrial scale. To make unpolished window glass, the molten glass was extruded into plates of flat glass, also known as drawn cylinder sheet glass. At the start of the twentieth century, this industrial procedure was improved to such an extent that large quantities of relatively cheap window glass could be produced.[5] This system attracted several objections, such as pull waves and tension in the glass.
The above mentioned types of glass have a surface that is never totally flat, causing a somewhat distorted view when looking through it. The Pittsburgh system, developed in 1921, was a large improvement, as it obviated the problem of pull streaks.[6] This mechanical method produced such high-quality

2 Van Houten 1942. Eelke van Houten (1872-1970) was former head inspector of the *Gemeentelijk Bouw- en Woningtoezicht* (Municipal Building Inspection Service).
3 In Syria, glass shards were found dating from the seventh century.
4 It is possible that this method was already in use in Syria in the seventh century.
5 By the Belgians Emile Gobbe and Emile Fourcault. In the Fourcault system, the glass band is pushed upward from below, at the same time as it is pulled out of the oven.
6 First used in 1921 by the Pittsburgh Plate Glass Company in the United States, whereby the glass is pulled upwards along a beam attached

glass that it was called “imitation polished glass”. The glass was melted and poured onto a steel table covered with scattered sand and rolled flat with a steel roll. After cooling in a cooling oven, the plates had a rough and opaque surface. They were then grinded on both sides. This formed what was known as cast mirror glass,[7] from which mirrors and shop windows were made. It is a very labor-intensive, and therefore expensive, glass type.

The most recent and most revolutionary phase of glass fabrication is the float process, a method developed in the 1950s. Liquid glass is poured over a bath of liquid tin, where it floats, hence the name float glass.[8] The liquid tin produces a perfectly smooth underside, and the high heat over the glass plate ensures a perfectly smooth upper surface. This produces a glass quality comparable to polished glass without the need for finishing by grinding and polishing.

The production of all glass types mentioned above is called primary glass fabrication. To transform this basic glass into products with other properties, it needs to be mechanically reworked. Reworked glass is called secondary glass fabrication, which includes hardened glass, layered glass, silver plated glass, insulating double glass, and coated glass. Hardened glass is heated to extreme temperatures. Just before it is ready to burst, it is rapidly cooled, causing tensile stress in the glass plate. Hardened glass is five times more impact-resistant than single or double glass.

GLAZING BARS PARTITIONING: FROM FRENCH FRY CUTTER TO NO GLAZING BARS

Glass in wooden glazing bars began to replace leaded glass around 1640, as lead was too weak to provide the support needed for the ever increasing glass window panes. The oldest glazing bars windows had almost square panes, with the height being just a bit greater than the width. These many small panes in a window led to the nickname “French fry cutter”. In the nineteenth century, with the windows divided into three sections, the height was increased to about 1.6 times the width, which approximates the golden ratio. Around the year 1750, the width of windows required at least four panes; after 1790, this number reduced to three or two. As the glass panes became larger, the glazing bars became heavier. By the end of the century, this resulted in the T-window, after a variety of intermediate developments. Eventually, all glazing bars were left out of, or removed from, the sliding windows. From the eighteenth century onwards, there has been a constant effort to enlarge the window openings.

The trend to make bigger windows, with as few divisions as possible, continued into the twentieth century. Not everyone warmed to the idea of larger windows, however. A quotation from Engelbert Hendrik ter Kuile in 1934 is telling: “The few wooden bars that remain have the greatest difficulty to provide any impression of enclosure. The improvements of glass fabrication have removed all appeal, all architectural meaning from the sliding window. The closing function, which the 18th century had attributed to the network of glass glazing bars, has now been taken over by curtains, lace curtains, roller blinds, and, not to forget, green insect screens with white tacks. One just could not sit in the large open mirror window for all to see!”[9] Van Houten put forward other reservations: “The window panes became ever bigger and bigger. That continued into the middle of the 19th century. The window panes in one façade always stayed the same size, one pane size applied to the entire façade, which brought order and rest. Then came the breakdown. Every pane became different. So many window panes, and so many sizes in one façade, resulting in disorder. Don’t think that these ugly windows can be made to look good by quickly slipping in glass glazing bars, to make smaller panes. Then the window panes will be either too large or too small.”[10] Now-a-days, whoever passes by the houses can see that, in many cases, the curtains and net curtains have disappeared in favor of the modern interior exhibitionism.

BREAK WITH THE PAST AND THE TYPICAL AMSTERDAM SCHOOL WINDOWS

Shortly after the turn of the previous century, the need arose for an authentic twentieth century style. The possibilities for contemporary architecture in the historical styles of gothic, renaissance, and classicism had been exhausted. An authentic style can only occur by reviewing all concepts. This led to searching other historical sources of inspiration, from eastern architecture, Dutch farm-building to contemporary Scandinavian and United States architecture. This inspiration pointed the way to simpler architectural design than that of the nineteenth century. Styles making an important contribution to modern Dutch architecture include Berlage, the Amsterdam School, De Stijl, functionalism, and traditionalism. These often existed side by side, demonstrating the great diversity of Dutch architecture of that time.

WINDOW FRAME AS EXPRESSIVE MANIFESTATION AND REVIVAL OF THE GLAZING BARS

Hendrik Petrus Berlage (1856-1934) has been of great significance for the development of modern architecture in the Netherlands, not only through the scale and power of

one hundred millimeters under the glass surface.

7 The invention of cast glass is in the name of the Frenchman Bernard Perrot, in 1685. This procedure evolved from totally hand work to more or less automated (1921).

8 The float glass procedure was developed in 1952 by the British glass factory Pilkington.

9 Ter Kuile 1934.

10 Van Houten 1942.

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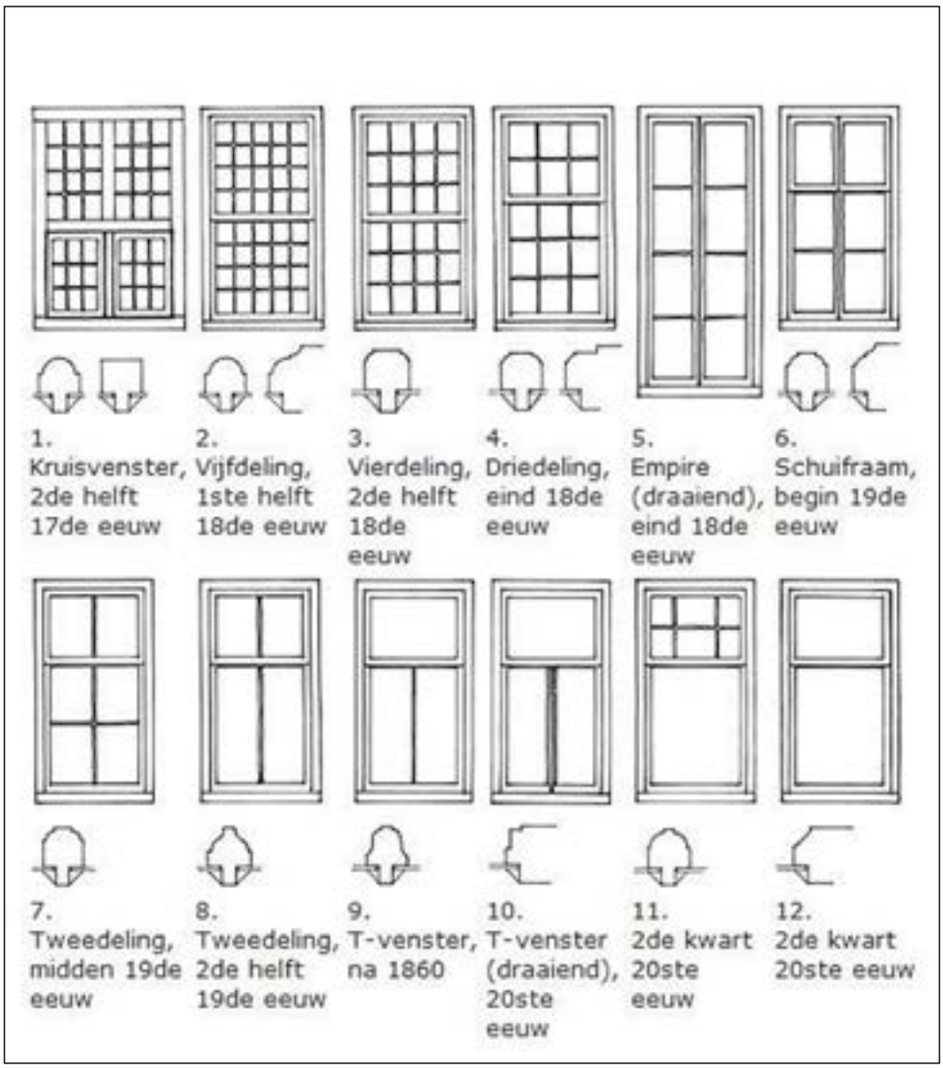

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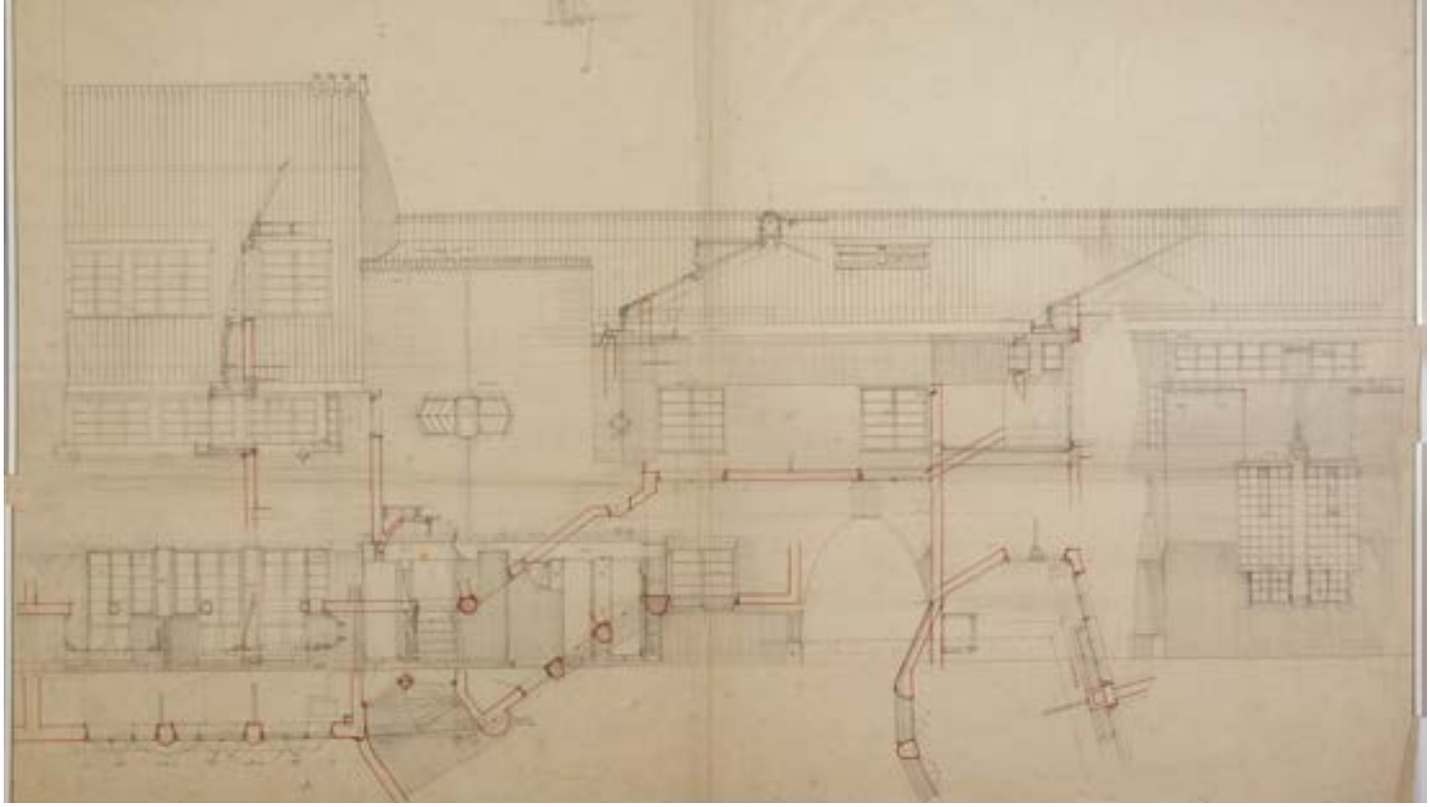

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10.01 Appearance of (left) historic and (right) modern float glass.
10.02 Development of window frames from cross bar to “French fry cutter”, to rod-less. (Source Rijksdienst Monumentenzorg, 1985-1998).
10.03 Typical Amsterdam School “ladder” windows.
10.04 The point frame. Clearly visible is the high quality polished glass set in lead.
10.05 M. de Klerk, design drawing.
10.06 Parabolic frame on the fourth floor.
10.07 The slat for draft protection added in the 1979 renovation is clearly visible.
10.08 Combining the selected wooden frame dimension, double glazing and (modern) putty very well approximates the original image.

10.07

10.08

his oeuvre but also through his influence on his colleagues. According to Berlage, society was in a transition period, so the style issue had to be postponed to the near future. Until that time, architecture would not have an obvious style, and the emphasis was placed on large lines, surfaces, and contours. According to him, in order to achieve renewal of architecture, above all, balance, quiet, and clarity was needed.
For the first time in many centuries, windows became simple holes again, with small dark openings in straight, façade surfaces. The windows were primitive, the window sashes remained in the shade. This is a clear relationship with the romanesque style. In addition to the rational side of Berlage, which shows the constructional aspects of buildings, his works always possess expressive elements. Especially in his housing designs, he used the window frame as an important means of expression. In the prelude to the break with the past, Berlage and related architects applied a window with one undivided, lower window pane and a companion fanlight with glazing bars.

IMPOSITION OF FORM AND AMSTERDAM SCHOOL WINDOWS

The designers of the Amsterdam School stimulated changes in the window frame. The imposition of form, the consciously searching for a specific decorative form, led to three-dimensional decorations in the façade surfaces. The desired plasticity was often obtained with details in the brickwork and in and around windows. Although these details are not functional for the building, they define the overall appearance. The window closure is often brought entirely to the front and is inserted in, or just in front of, the plane of the façade to form an uninterrupted unit. The window frame and the brick outer wall molted into a structural blend. This is comparable with late gothic design, where the wooden cross frame is part of the façade itself and the façade continues across the window. The Amsterdam School spans the openings with a network of brightly painted wooden glass glazing bars, which immediately hit the eye. These windows, with the characteristic glazing bars partitioning, tuned in to the façade and not to the interior, contrary to the traditional window. This is the reason that the Amsterdam School glazing bars have an outside profiling accompanying the light. The traditional window frame, as the fourth wall of the interior, has the profiling on the inside. In addition to placing the frame flat with the plane of the façade, it was also common to apply different dimensions of reveals. The effects of the shadows were part of the design. Sometimes, even a tapered reveal was applied, with the frame deeper in the façade on one side than on the other. The substantial timber dimensions used for the window frames were also characteristic of this style. In the stairwells, one can often find applications of leaded glass. In addition to the traditional wood, metal was used in windows as well.

Ladder window

After the complete disappearance of the glazing bars distribution on the windows as a result of the larger dimensions of glass, Berlage was responsible for a revival of the use of glazing bars. The Amsterdam School developed a style of its own. It broke with the tradition of the glazing bars distribution based on upright panes, preferably with a golden section proportion. Befitting this extra-ordinary, expressive architecture, one of the most well-known style characteristics of this movement entered the picture: the ladder window. With this glazing bars grille, the measurements of the individual window panes are considerably larger horizontally than they are vertically. This corresponds with other horizontal accents that are present, such as long strips of low windows, carpentry, or deepened horizontal joints. This feature's name is simply derived from the image of a ladder through stacking of the horizontal window panes.

Point frame

Another striking characteristic is the point frame.[11] This is a normal, rectangular window, in which the sides of the frames run to a point. This point is often emphasized by a protruding accent. Sometimes, they are built in combination with a ladder window. It is not clear who is the original inventor of this style, but it looks like Het Schip and Piet Kramers' *Huize Windroos* in Okeghemstraat in Amsterdam, both completed in 1921, are competing for the honour.

Parabolic and trapezoidal shapes

Besides rectangular windows, parabolic and trapezoidal shapes were also used for window and door openings and sometimes for entire façade surfaces. Everything seems permissible in the ambition for space-architecture, plastic effects, and the three-dimensional sensation.

WINDOWS IN HET SCHIP

One cannot be surprized that the interplay of the window designs with the sculptural potentials of brick façades were extremely important for De Klerk. This applied not only to the shape of the window, but also to the placement of the windows in relation to the façade surface, the choice of materials, the glazing bars partitioning, and the type of glass. The subtlety and virtuosity of De Klerk is almost palpable in such design components. Het Schip's windows exhibit the typical Amsterdam School style: ladder windows, point windows, curved windows with leaded glass and a number

11 The term point frame is not generally used, but describes the subject well. It is taken from a contribution by Marcel Westhof on the *Wendingen* platform for the Amsterdam School, www.amsterdamse-school.nl

of unique versions in leaded glass. Also, most windows are accompanied by special forms of brickwork around the openings, such as flat-laid, upright course of bricks in front of the lintels and little brick ornaments protruding in different directions to mark the beginning or end of the window opening. De Klerk also alluded to natural shapes in the design of his windows. All this contributes to the masterful design, in its complexity verging on the incredible.
Het Schip contains many different types of windows. Some are made of wood, as well as steel, with or without rotating parts. There are no less than 64 types in the front façades, and 35 types in the rear façades. The most frequent type is rectangular, wooden, mounted even with the façade, and generally with a 5-part ladder window. These are also to be found in the rear façade, with balcony doors and side windows. At the fourth floor, there is even a parabola-shaped window with ditto balcony door and side window. In this versatile design, other variations can obviously be found.

Then, 100 years later, and how to restore

De Klerk's building specifications dictated that all exterior, wooden door frames, window frames, and windows should be made of pinewood. The frame dimensions were mostly specified as 100 x 100 millimeters and 100 x 120 millimeters. A number of components were specified heavier, among others, for the front door frames and post office frame posts. The original window stile is 43 millimeters with heavier window sills, oak glazing bars, and 10 mm thick plywood panels.[12] Mentioned is of galvanized iron and zinc rabbets and flashings. The reveals of the façade door and window frames were clad with 8 mm thick plywood on clamps, except in kitchens, stairwells, the official's office in the post office, and in the meeting house. These were closed off with a end grain batten, a profiled strip under the window ledges, and profiled slats to cover seams along all door and window frames. This was a carefully designed ensemble.
For the renovation of 1979-1980, architect Van Straalen's specifies the renewal of 102 units of window frames and all fixed and moving wooden windows, hatches, and exterior doors, except the main entrance doors.[13] All laths also had to be renewed or newly installed. Both the specifications and the budget directed the use of artificially dried and degreased Oregon Pine Clear & Better. Fortunately our the feasibility study showed that most window frames were not replaced but repaired where needed. This could be simply deduced from the fact that the frames tie into the original brickwork with a very narrow seam. This is the result of the aforementioned construction method, whereby the frames are set first, and the façade brickwork built to the frames. All rotating parts were indeed replaced.
During the current restoration, questions arose, such as why all original parts from 1919 lasted more than 80 years, and why the moving parts replaced in 1979 already needed replacement after 38 years? There are multiple reasons. First, the quality of the original lumber was high. De Klerk chose pine wood, at that time a conventional material. The quality of pine was much better compared to today. Van Straalen selected materials that had theoretically similar qualities as the old pine, in terms of sustainability and strength. The regulations for this import quality, however, were rather general and not very strict. Enormous variations were possible without exceeding the regulations; as a result, the wood could be of inferior quality. Second, the glazing bars were not made from a durable type of wood, as De Klerk did by using oak glazing bars. The combination of the unavoidable condensation on the inside of the single-glazed panes, and the fact that the owner had no control over the interior paint work,[14] led to dry rot and weakened carpenters' joints. Third, the detailing was changed relative to the original. The windows, which originally stood a bit proud from the window frames, were brought in tighter and framed with a wooden slat by Van Straalen to reduce drafts. This tight fitting provides another opportunity for moisture to be trapped. Fourth, the type of sealant and paint played a large role in maintenance. The glass panes were set in weak putty, according to De Klerk's specifications. With Van Straalen, the glass is set in "Saba" butylene sealant[15] and the glass rabbets sealed off with putty. Putty is hardly capable of absorbing the expansion and contraction in the woodwork. It has the tendency to harden and lose its already minimal flexibility. In the beginning, putty sticks perfectly to the glass, but as it ages, it can lose contact. When this occurs, water can penetrate between the glass and the putty, increasing the chance of wood rot. To prevent this, it is important to extend the paint to cover the seam between putty and glass. Also, the life of the sealant is limited: butylene sealant hardens completely after 5 - 10 years, tearing and detaching from the glass. There was little attention paid to this during standard maintenance procedures. The paint types used by De Klerk, such as Japanol, were thicker, "fatter," and protected the wood very well. After the renovation, all factors were in place that could lead to deterioration of the woodwork, once more requiring replacement of the moving parts.

12 Industrially made plywood was a novelty in De Klerk's time, although the multi-layer gluing of thin wooden sheets was already practiced by the Egyptians.
13 Specification Van Straalen May 1976, paragraph 26.
14 Interior paint work legally belongs to household maintenance and is outside the control of the owner. Not every resident takes good care of this work.
15 Saba is a company specializing in glues and sealants. Butylene sealant is a plastic sealant, which deforms under pressure, but does not spring back on its own.

Detailing of the new windows

The original windows, with all their detailing, are inherently part of the overall appearance. The necessary replacement of the wooden rotating parts from 1979-1980 provided an opportunity to improve the comfort level, as well as the image's value. With the priority on appearance in the original construction, the technically best solutions were not always chosen. For example, no lead was used above the window frames. In the 1979-1980 renovation, attempts were made to find technical solutions. This was not always successful and it came at a cost to the image's value, like the deviating rabbet profiles and wooden slats next to the rotating windows. This remained the biggest dilemma of the current restoration. The water and wind resisting function of the window frames could not be jeopardized and needed improvements, but the image's value was of great importance. All these factors needed to be weighed in the development of the window detailing. The development of the window detailing has been an intensive cooperation between the architect, the prime contractor, the window frame supplier, and this author on behalf of Eigen Haard.[16] Again, Oregon pine is the choice of lumber because of its compatibility with the existing pine wood. To make new, better fitting windows in Het Schip would require the measurement and production of more than 1300 separate windows. Each of these windows is unique because of the differences in existing frames. The original detailing is derived from De Klerk's designs, historical photo material, and drawings by Van Straalen.[17] Because of the decision to apply thermal glazing, requiring a deeper rebate, it is not possible to obtain the original image on both sides. The choice was made to satisfy the exterior authenticity as much as possible (see also glass choice, p. 189). Van Straalen had slats attached to the window frames, serving as a connection with his new windows. This framework remains in order to achieve better draft protection and closing. The existing window frames are not always rectangular or dimensionally stable. The front of the window is kept as flush as possible with the front of the slat beside the window style. This was a compromise between the expressive value and the technical necessity. The glazing bars characteristically protrude and continue on both sides, past the window styles. A straight glazing bar, sticking 22 millimeters in front of the wooden window, without slant, was authentic. Van Straalen chose to reduce this protrusion somewhat, for technical reasons. A glazing bars that is flat at the top is technically not desirable, as it does not shed water and will eventually lead to problems. The choice was made this time to bring the glazing bars in a bit and give it a light slant, which, together with the sloping putty, will take care of sufficient shedding of water.

Through the combination of the chosen wood dimensions, double glazing and modern putty, the original appearance is very well approximated. The new aluminum lower profile[18] is detailed to create a framework, securing the draft prevention. The hardware for the windows was also replaced during the 1979-1980 renovation. There are no images of the original hardware. The inward turning of the outward placed rotating windows and doors could not be resolved with standard hinges. Van Straalen's solution was the use of paumelle hinges screwed into wood. These were not sufficient for the much heavier window, due to the double glazing. The choice has been made to use off-set hinges.

Principles for the repair of wooden windows

Most of the wooden window and door frames are still original, but over the years several repairs have been performed on the thresholds and the posts. These have been repaired in many different ways, varying from partial replacement to repairs with different types of compound. The guiding principles for the current restoration has been to repair wood rot where possible, restore original work where possible, and use replacements only when there is no other way. The principle "preservation prevails above renewal" is the motto. All window and door frames are painstakingly surveyed for defects and repairs. Faulty repairs are removed. In the case of degradations greater than 50 millimeters in a post, and greater than 150 millimeters in thresholds or sills, partial replacement must be carried out. Smaller degradations need to be repaired by means of lamination. To avoid later markings from the epoxy seam, components need to be replaced in such a way as to cover the repaired seams with other window elements or have them correspond with the profiling in the woodwork. Laminations are not allowed in visible sides, and seams running the length of the sill are to be avoided. Partial replacements are made with new pieces of wood of equal quality as the original, or high-grade Oregon Pine, fitting a space between tie-ins of at least 8 millimeters. The choice is for a total solution, whereby the products for the repair work, paint work for the exterior and interior frames[19] are compatible.[20]

16 archivolt architects bv, Vastbouw Oost bv, Verwey Houttechniek.

17 The drawings from Van Straalen show the dimensioned image from before the renovation, so very likely that of the original from 1919.

18 Tilt and turn lower profile by BUVA.

19 This is unusual for rental homes (see note 14). For the sake of preservation, there was a deviation from this, which must be secured in the rental agreement.

20 Sigma S2U Allure and Sigma Flexidur: Wood renovation system, based on two-component epoxies, which give a permanent elastic result, such that working of the wood will be absorbed for many years. This is a total reparation system for all wood repair work. Repair of small damage, to considerable damage, such as partial replacement, the lasting repair of the open wood joints and tears. Repair of small defects, such as mechanically damaged wood, knots and pitch channels. And the repair of superficial defects in horizontal wooden elements, such as shrinkage tears, wind tears, separated finger joints and/or separated laminations.

UNIQUE WOODEN WINDOWS[21]

Hoist or coal hatches

At the upper floor of Zaanstraat, Hembrugstraat and Oostzaanstraat, windows were designed that follow the wave-like brickwork, known as the hoist or coal hatches. Each apartment had a storage room in the attic, and during the first years of use, these probably also served for storage of coals used to heat the stoves. Steel hoisting beams are mounted above the hatches.

The design of the hoist hatch, as recovered from the archives, has an inward and outward turning variant. The latter shows great likeness with the hatches executed by De Klerk at Zaanstraat and Oostzaanstraat. The design shows clearly that the intention was for partial glass. Strap hinges were used, to the open the hatch entirely. In the end, the hatch was built in a horizontal, three-part unit by means of glazing bars, the typical ladder window. The flowing lines of the windows, following the curvature of the brickwork, represented a continuing motion of the façades. The horizontal glazing bars and the protrusion of the hatch from the frame at the top and bottom provided a prominent relief and shadow effect. On photos from the beginning period and from 1940, it is clearly visible that the entire hatch could be opened to the outside by means of dark (black) strap hinges. These photos also reveal that it had a glass pane. It was beautiful to see the hatches following along the shape of the façade surface. Sometime between the beginning period and 1952, the hatches at Hembrugstraat were replaced by the same as the original hatches at Zaanstraat, which turned to the outside.

Photos show that in 1957 the hoist hatches at Zaanstraat were replaced by units, as they originally were conceived by De Klerk at Hembrugstraat. Coal hatches were recessed in the frame, and only the middle section could be opened to the inside. The frames still follow the curvature of the brickwork nicely. The hatches, however, were built opening to the inside, and they appear straighter. It can be assumed that it was decided during the renovation in 1952-1956 to replace all hoist hatches on the long sides of the complex as they would have appeared originally at Hembrugstraat. However, there is no historical substantiation for this assumption. In any case, De Klerk never designed it that way. In his design, he made a clear distinction between the long façades and the special, almost free-standing part at Hembrugstraat. It is possible that the building regulations at the time had to be satisfied. Above a certain building height, all moving elements had to be built to turn inward. In 1971, a specimen of the original hoist hatch at Hembrugstraat was found to have been saved. The glass had been replaced by a thin plate material, and the reflection had disappeared. This appearance was maintained in the situation following the renovation of 1952-1956. From post-renovation images, it is also shockingly evident that the image, together with the new brickwork of the curvatures, was totally out of tune with the subtleties of De Klerk's intended design. The hatches, with all their shadow effects and reflections, had degenerated to flat, non-expressive "normal" windows, which no longer suited the flowing composition.

In the current restoration, the curvatures in the brickwork of the upper floor have been totally replaced for technical reasons (see chapter 9). To secure the future quality, the window frames are replaced in Oregon Pine with the dimensions noted in De Klerk's specifications. The hoist hatches are reconstructed to their old glory with the aid of design drawings, construction drawings and historical photo material. The turning movements of De Klerk's designs have been reinstated, and the hatches curve with the brickwork curvatures once more. Finally, the glass is restored, and the wavy character of the upper floor is again complete. The power of De Klerk's design talent can again be experienced.

Shell window frame

On each side of the portico at Oostzaanstraat 29-43 is a "shell window frame". It is a special variant of the point window frame, which has two parallelogram-shaped, three-part ladder windows on both sides of a substantial transom. The transom protrudes and overlaps the post in the corner. On the slanted side, a type of oblique standing upright course has been inserted into the brickwork as a decorative bond. On the right side, bordering the columns of granite concrete, the frame post transitions into a three-dimensional, triangular widening with an undulating edge. It resembles the inside edge of a shell. De Klerk's drawings show an interesting use of leaded glass, but this had never been installed (see p. 233). In the renovation of 1979-1980, the window frame, with the exception of the overhead lead strip, has remained unchanged. However, the window panes were replaced with flatter looking copies, and a hard-glass, top hung window was placed in the upper segment.

During the current restoration, the frame is maintained and treated, as described earlier. The utmost care is given to the removal of paint on the shell element in order to avoid flattening the profiling gouged into the woodwork. The fixed windows and the hard-glass, top hung window are replaced with the more authentic windows.

Three dimensional windows at Hembrugstraat

At the side façades, which book-end the long blocks at Zaanstraat and Oostzaanstraat, De Klerk's design created two slanted, protruding triangular point frames, one on either side, with a prominent horizontal middle style that overlaps the frame. In the original situation, the windows were made of leaded glass. (see p. 231-233) The middle style, together with the window panes, formed a three-dimensional pyramid shape. This produced an interesting depth and shadow effect. Old images show that the middle style and the leaded

21 The windows of the school are different in terms of design and are described extensively in chapter 5.

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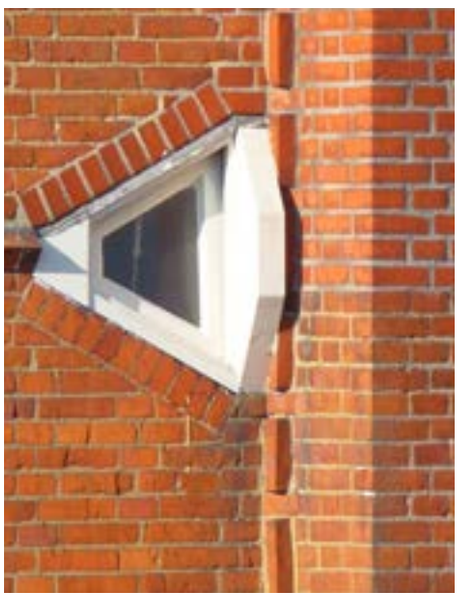

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10.09 Woodcuts in the supporting beam. These resemble waves contributing to the nickname Het Schip (The Ship).
10.10 This 1940 photograph shows the hoist or coal hatches as envisioned by De Klerk. The application of glass and the rounded design are clearly visible.
10.11 The situation of the hatches since 1979.
10.12 Reconstructed hatch according to the design of M. de Klerk.
10.13 The 1979 renovation omitted one rod, to be replaced by a flat window.
10.14 The three dimensional window frame after this restoration shows the image intended by De Klerk.
10.15 The intricately designed horizontal bay window with its many overlapping planes covered by tiles from bay window to roof. Also visible the many visible lead slabs inserted over the years.
10.16 A Zeppelin interior. This novelty may have inspired De Klerk to design the horizontal bay windows.
10.17 Wood repair.

10.18

glass disappeared already in the first renovation of 1952.
The window frame was maintained, and the glass sat evenly with the façade. This was not changed during the 1979-1980 renovation.
The window has now been completely replaced. Photos provided the only evidence for reconstructing the units.
A working drawing has been made for the wooden frame based on its current state situation found and relating it to the existing surrounding brickwork. The glass will no longer sit straight in the frame. Instead, it will again slope up from the upper and lower sills to the middle style. Here also the appearance, as meant by De Klerk, is made visible again.

Cigar-shaped bay window

This has been described extensively on pp. 251-254.

Stretched bay windows at the front

The stretched, horizontally oriented, outward protruding bay windows in the lower part of the front facades at Zaanstraat and Oostzaanstraat are very special elements. These belong to the apartments with courtyard entrances. The bay window under the gutter overhang of the parabola-shaped roof has a “fold”, a triangular wooden structure protruding from the façade, covered with black ceramic tiles. Under this fold, the windows are shaped like a half hexagon. The support beam underneath, which bears on the brickwork, shows splendid wood carvings in the shape of stylized waves. The windows form horizontal frames and have a vertical glazing bars distribution with vertical panes. Between the window units, the bay window is cladded with black ceramic tiles. In the designer sketches by De Klerk, these parts are larger than actually executed, perhaps because of need of natural light or desired effects from the interior. The bay window runs from the beginning of the low block to the entrance doors of the street accessible apartments. From there, the “fold” continues but then it forms a window. The first part of the bay window does not have the sharp fold and transitions above the gutter to the parabola-shaped, black tiled roof.
From the outside, the beautiful horizontal lines and the interplay with the black tiled roof provide an impressive image. However, from the inside, the effect is more than overwhelming and spatially spectacular. Why did De Klerk design it this way? Possibly, he found inspiration from a photo of the interior of a zeppelin. That image conforms closely with the effect achieved here. At each kink there is an outward protruding, light-color painted, horizontal wooden stile. Together with the black ceramic, this emphasizes the horizontal character of the façade. The end of the “folding” windows has a trapezoid shape. The part resting on the decorated beam has triangular windows pivoting from the beam. The ending of the brickwork on both sides is in a decorative bond. Below the decorated beam there is a dog tooth course. In the renovation of 1979-1980, tiles were re-covered and partially replaced. Windows were replaced

and a covering glazing was applied over the almost horizontal windows of the bay window. This was probably done because the original construction was no longer water tight. The tiles are no longer on top of the frame because of the rods placed to hold the covering glazing.
All framing wood and structural wood in view is treated according to the principles described in this chapter. The moving parts are replaced, conforming to the detailing for windows. The cover panes from 1979-1980 are removed.
The slats have been maintained, and the tiles tie into them. The zinc lining in the gutters is renewed. The tiles have been removed, since all fastening materials had rusted through. They were sorted and, where possible, reused. Missing tiles are newly baked similar to the old model. The tiles are reinserted in conformance with the 1919 standards, screwed with black screws and with a black colored lime mortar for the joints. Below the tiles, a vapor permeable, water repellent foil is used to obtain better moisture control. The sealant and putty work of the slanted, almost horizontal windows require great care to avoid vulnerability to water penetration between glass and glazing bars. The paint system is newly applied outside and in. In particular, the removal of paint from the support beam is done very carefully, as the profile of the wood carvings was absolutely not allowed to flatten.

Stretched bay windows at the rear

At the rear, there are also long stretches of outward protruding bay-window type window frames, below a parabola-shaped façade that is clad with roof tiles. The bay window floor structure consists of wooden parts that overlap horizontally. These rest on two cantilevered, beautifully profiled, wooden beams. The ladder windows are divided in four and are finished on top with two sloping chamfers and a window with more or less square panes, standing square to the façade. The frame styles extend the edge of the roof. This part looks like the bow of a small boat. Between the windows, narrow vertical and recessed closed strips are placed. This provides a beautiful segmentation and depth effect. The windows parallel to the façade are recessed relative to the edge of the floor structure. There is a gutter-like container, which was meant by De Klerk to be a planter tray. During the renovation of 1979-1980, the windows were replaced, but the new ones largely appear to conform to the original design. Drain pipes were added. Originally, only an overflow was visible here. According to photos, this was still the case in 1981. During the restoration, all frame wood and structural wood has been treated as described above. The rotating parts have been replaced in conformance with the prescribed detailing for new windows. The zinc lining of the gutters has been renewed.

Corner window Hembrugstraat/Oostzaanstraat

At the second, third and fourth floor at the corner of Hembrugstraat and Oostzaanstraat, there is a window on both sides of the corner with a rectangular exterior frame and a very modest point shape recessed on the interior of the frame posts furthest from the corner. The inward turning window sits behind the frame. The two windows approach the corner and do not run parallel with the façade. This causes a pretty shadow, giving the illusion of depth. The windows dive inward at the corner and blend with a more or less barrel-shaped, brick element. There is a heavy intermediate stile, which adversely widens to the opposite side. This gives the impression of the window falling inward even more. Seen from the corner, the entire element looks like a small moth. The construction drawing does not show a heavy intermediate post. Instead, it shows leaded glass in a fishbone pattern. It was not possible from old image material to determine if this window was ever built that way. The restoration of the window frames is executed as described earlier (see p. 182), and the side casement window is replaced in conformance with the agreed detailing.

Steel windows post office

From the beginning of the twentieth century, steel windows were used on a greater scale, after the invention of steel made in slender rolled profiles. Besides the many wooden windows in Het Schip, also a number of steel windows, either or not in a wooden frame, were used for particular shapes. These can be found in the stairwells, in the cigar-shaped bay window, in the courtyard and at the post office. This section will describe the windows in the post office (for the other types see chapter 15).
The post office has four large steel windows. The two windows at the side façades at Zaanstraat and Oostzaanstraat are contained in a wooden frame and have the shape of parabola divided in two, with a sharply forward protruding middle section in the shape of a triangle. Inside the half parabolas is an abstract geometric pattern created by means of glazing bars. In the triangular part, square panes have been used. These windows look like a large moth.
The front window at Spaarndammerplantsoen is divided into five separate windows. Enclosed by two columns, there is a vertical triangular strip. The outer points of the triangle sit even with the brickwork. To the left and right of that strip, there are two windows of five panes wide and eight panes tall. Their entire height and, at a width of four panes, stand flush with the brickwork. The two columns of single panes bordering the triangular strip stand at an inward angle. These windows are directly connected to the brickwork at the top. They stand on a wide, horizontal edge, running from the columns to the brickwork. This forms the “ceiling” of the recessed lower two windows with a four by four grille, tightly placed against the brickwork. These have a very dynamic design and together look like a stylized large butterfly.
The window on the side of the courtyard looks similar but has no middle piece. The two halves stand in an obtuse angle in relation to each other, separated by a round column. The

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10.19 The “large moth window” on both Zaanstraat and Oostzaanstraat.
10.20 The stylized “large butterfly window” at the rear side of the courtyard behind the post office.

upper windows, ten panes tall and five panes wide, tie to the brickwork at the sides. Above the window, the brickwork retreats and there is a cover with lead. On the column sits a sculpture, which may depict two possums (see p. 53). The bottom two windows, four by four panes, are recessed in the brickwork. This window also looks like a stylized butterfly: with some imagination, the sculpture can be seen as a head. The inspiration from nature is detectable, as it is with other details in the block.
De Klerk specifies the application of window irons types L, T and Z. All iron glazing bars are flat on the outside. According to the specifications, polished glass was used. Van Straalen's specifications show that in the renovation, all steel windows were replaced with windows of brass (cigar) and steel, except those of the post office. These were maintained and are, therefore, still authentic. During the current restoration, there some evidence of corrosion between the profile and the glass has been detected. Although the corrosion is still in an early stage, doing nothing risked glass cracking from the expansion of the rusted iron/steel, which could occur within the foreseeable future. All paint layers, cracks and blisters, have been surveyed and removed. Rust has been removed by hand or mechanically, and the steel has been treated with a rust resistant base coat[22] compatible with the chosen paint system. The polished glass has been reused.

GLASS IN HET SCHIP

Which glass was used originally?

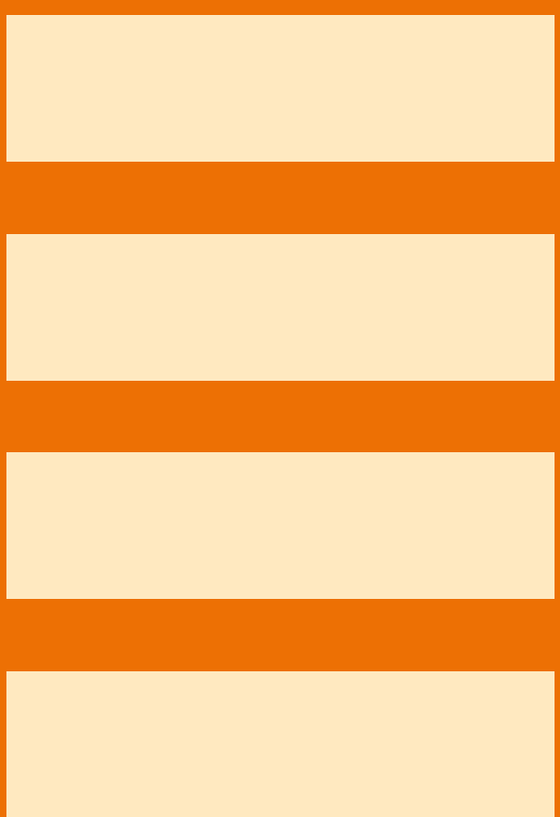
Which type of window glass is appropriate in a monument such as Het Schip? The earlier described overview of the development of glass has already answered that question to a large extent. After 1915, cylinder and polished glass did still exist, but the use of extruded glass increased quickly. The design of Het Schip dates from 1916-1917, the specifications were written in 1919, and the construction lasted into 1921. This fact and De Klerk's inclination to modernity, excluded the use of crown or broad sheet glass. From 1914 manufactured extruded glass, with the characteristic pull streaks, was produced in Belgium on a large scale. The extruded "imitation polished glass", made in accordance with the Pittsburgh system, was not produced until after 1921. Cast polished glass was available, but because of the more intensive handling (and transport), it was many times more expensive than extruded glass.
In De Klerk's 1919 budget, there is an entry for 550 m^2 of window glass, named with a m2 price of 4.50 Dutch guilders (fl.) and an additional estimate for leaded glass & polished glass of fl.400: "1st grade single thickness glass in all façade windows and doors and hoist hatches, (...) All panes to be put in weak putty. (...) For leaded glass and polished glass an estimate of fl.400.- (...)"[23] The specifications for the modifications for the school describe clear, polished wire-glass in the new front doors and clear glass double thickness in all other new and existing windows and doors. Sealing and pointing is described as well. It is quite certain, therefore, that the builder used the most economically available extruded clear glass in the windows of Het Schip in the apartments, as well as later in the school. The polished glass mentioned was likely used for the leaded glass and for the steel windows of the post office. All glass was set in putty, except the leaded glass. This chamfered putty, painted in the colors of the window, also contributed to the overall appearance.
Glass ages very slowly and, with normal use, would hardly wear. Breakage resulting from accidents, vandalism, or thermal stress necessitates replacement. All rotating parts were replaced in the 1979-1980 renovation. The monument status obtained in 1974 caused any plans for eliminating all glazing bars and the use of thermal glazing to be abandoned. There could have been several reasons for replacing all single glass at some time. In those days, there was no appreciation for old glass. With its somewhat distorted view, it was considered to be of inferior quality. Reuse of glass is labor intensive. The loss due to breakage makes reuse expensive. The renovation specification requires glazing of all new wooden windows, frames, and doors including modified frames with clear extruded window glass, quality B.[24] Here also, the use of hardened glass is mentioned for the little ventilation windows. The assessment made before the current restoration raises doubt about whether the specified glass was indeed installed. The appearance, the degree of reflection, and the fact that there was almost no deformation visible provided support for the assumption that float glass was used instead of extruded window glass. Float glass was the most widely produced and most economical choice at the time.

Which type of glass has been used in the current restoration?

The difference in reflection characterizes extruded glass, with its characteristic streaks, from smooth float glass. The type of glass makes a big difference in the appearance of the façade and is therefore an important component of the final, overall image once the complex is complete.
In the current restoration, the moving parts from 1979-1980 have again been replaced. Here was the chance to consider further requirements for comfort, thermal insulation, and sustainability by adapting the detailing towards the original appearance. Because of the image restoration, it was desirable to choose a type of glass that matches the original as closely as possible. Therefore, extruded single glass, with its minor deformations, was preferred. Thermal insulation can be

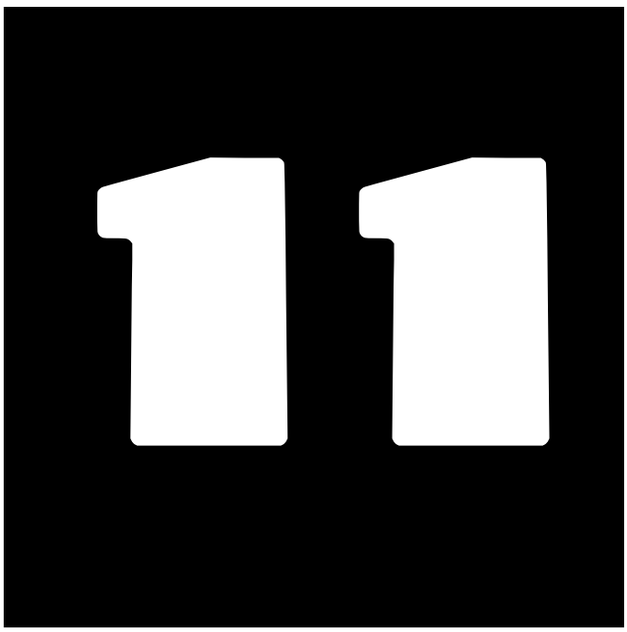
22 Sigmetal Zinccoat.
23 De Klerk 1919a, p. 25.
24 Specification Van Straalen, May 1976, paragraph 40.

achieved in various ways. The preference of Monumentenzorg was to find a solution in additional and reversible actions, with as little impairment as possible of the original materials. Secondary windows were suggested. Exterior secondary windows of course were not an option for Het Schip. Nor were interior secondary windows feasible. The reveals have been thickened, caused by extra thermal walls on the interior of the façades, even when minimal dimensions have been applied. This way, interior secondary windows would be visible from the outside. The opportunities with the new windows have been key in solving this problem. The wood dimensions of the windows and glazing bars are almost equal to De Klerk's substantial specifications. These provide just enough room for the application of thicker glass. The ambition of Eigen Haard is to achieve the highest level of thermal insulation the building allows. Interior condensation of windows had to be avoided as well. Variants with coated or laminated glass have been rejected. Additional weight will impair construction and rotation of the windows. Coatings risk discoloration, and the risk of condensation remains. The wood dimensions restrict the glass dimensions to 11 millimeters. Double thermal glazing of minimal thickness suits all conditions best, provided that double reflections in the glass can be avoided and the authentic image respected. In the present world of monument glass, there is a wide array of external features for thermal glazing. Because double glazing is composed of two separate panes, exterior extruded glass, or even cylinder glass, can still be used. Combined with double draft-proofing all around, this provides for a very high level of comfort and sustainability, as far as monument buildings go. The selected exterior pane gives a slightly distorted reflection, much closer to the reflection of the authentic glass than that of the former float glass. Because an invisible light gray coating has been applied on the interior pane, combined with black, instead of aluminum colored pane separation, double reflection has been avoided. On balance, these have been choices that do justice to the aspects of comfort, sustainability, and image value.



Doors

Cisca van der Leeden



The front door is the first part of a building any visitor will see up close. Many people consider the appearance to be important, it being the owner or tenant's calling card. Doors, too, have developed over time, their appearance changing along with architectural styles. Typical apartment buildings in Amsterdam, at the beginning of the twentieth century, had four stories and generally two entrance doors. One door was used for the ground floor and the other for the stairwell, with front doors to each individual home. Often, two such entrances were combined in mirror image, resulting in doorway entrances with four doors at street level. Amsterdam School architects designed some splendid doorway arrangements, sometimes even parabola-shaped, and doors with vertical accents and ladderramen.[1] Some doors were treated with clear varnish with some with dark accents. Others were painted, often in two contrasting colors.

STREET ENTRANCE DOORS OF HET SCHIP

Entrance Portico's

Michel de Klerk designed gorgeous, painted, wooden entrance doors placed in equally artistic entrance portico's for Het Schip. His designer sketches, however, showed a different door than the one that was eventually effectuated. The fanlights over the doors were made as designed. The doors are made of massive, double wooden planks. The inside is flat, while the outside partly has a corrugated appearance and the planks are placed in an overlapping vertical pattern. At the bottom, round, steel nails are placed in a tight pattern of 6x2 per board, together forming a type of kickboard. Each door has four, small, square panes with wired glass on the closing side, each finished with upper and lower sills. The hinges and doorknobs are largely original. Several doors have a triangular fanlight made in oversized measures, formed by a sloping sill and topside. This window is divided in six panes using tapered rods. A number of doors have kinked, steel, diamond-shaped wire-glazed fanlights in the protruding concrete edging. Several front doors now have a vertical mail slot, but these are not original. Originally, there were no mailboxes in the complex, as the mailman called three times a day.

1 http://amsterdamse-school.nl/themas/vormen-en-toepassingen/portieken-van-de-amsterdamse-school/

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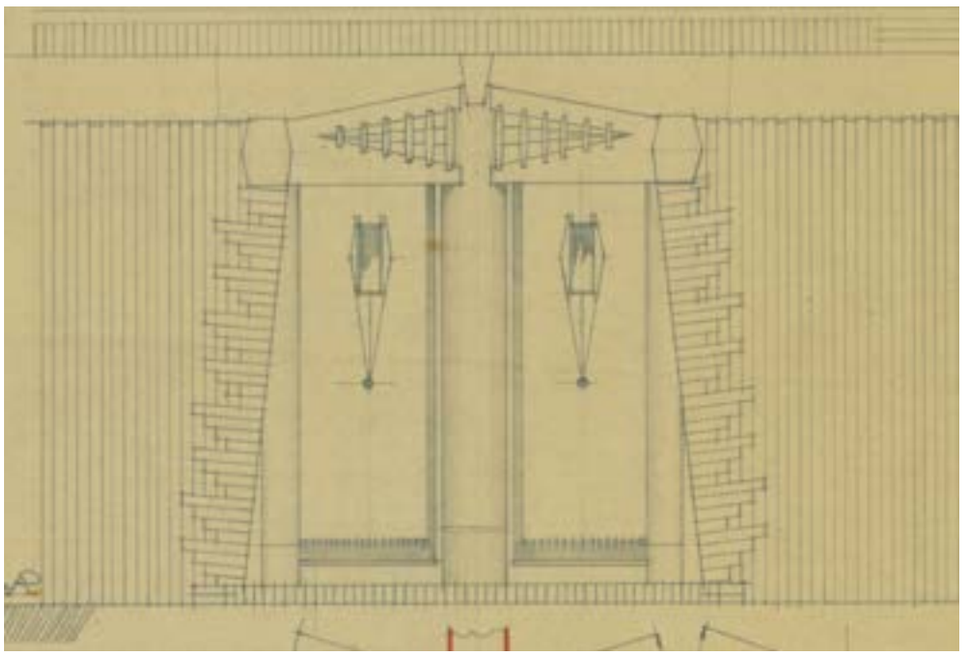

11.01 Sketch for entrance doors. Not executed according to this sketch, except for the fanlights.
11.02 Entrance doors with fanlight, photographed soon after construction.
11.03 The same doors in 2012. Striking is the different color scheme and the re-numbering.
11.04 The same doors after the 2018 restoration.
11.05 The drawing of the existing situation in 1979 supported the assessment and appreciation of the original entrance doors.

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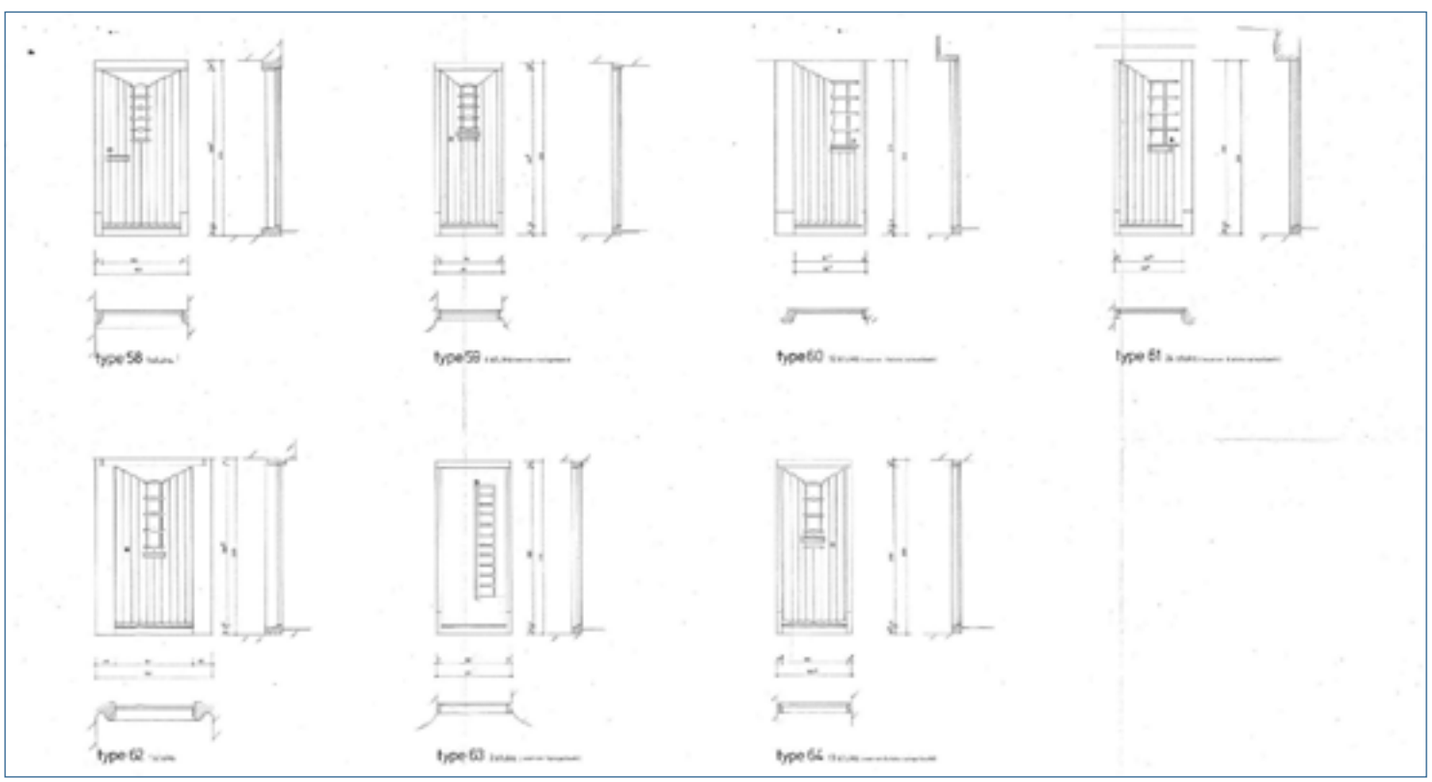

Single door

The door at Zaanstraat, providing access to the apartment above the post office, was designed by De Klerk more exuberantly than it was built. While the adjacent window is made to a great extent according to the drawing, the front door appears to be simplified. The nail pattern, described above, is absent in the current view. The color scheme is altered as well. The window frame in the middle of the door originally had a lighter color. The mailbox was added later. In other doors of this type, the nail pattern is still present. This would point to the possibility that this door was renewed according to the original design, but without the kickboard.

Courtyard

A number of front doors face the courtyard, which is accessible through the parabola- shaped arch on Oostzaanstraat. De Klerk made a sketch and a working drawing of the façade of house number 13. The completed appearance was simplified here as well. The overlapping planks and resulting wave-like shape is retained, but the vertical glass strip has become more rectangular and larger with horizontal rods. In the parabola-shaped entrance way, there are two doors. One provides access to the apartment above the post office; the other is the rear entrance to the post office.

Entrance doors to the post office

The design of the post office entrance door is different from all others. Made of massive wood, it is flat on both sides. On the closing side, the door has a ladderwindow with eleven panes in wire glass. The bottom originally had a kickboard with a diamond-shaped, serrated appearance. In the first years of the complex, the windows, wooden rods, and frames were painted in a light color. This made for a lively image, showing off the ladderwindow. In 1971, the ladderwindow was painted the same color as the door, making it less expressive. During the restoration of 1999, the bright-dark contrast was reinstated in the door. The kickboard was replaced by a stainless steel plate for maintenance reasons and is not in accordance with the historical image.

OTHER MISCELLANEOUS DOORS

Apartment doors inside the stairwells

The original apartment entrance doors disappeared due to the 1979-1980 renovation. They were replaced by simple, smooth doors donning three horizontal panes with rods and polished wire glass. There is no known documentation of the original doors, no photographs, and no design drawings. The building license application only shows a sketch-like indication. The door used in the last renovation is too sober to be a true representation, especially considering the exuberance of the outside doors and windows. Even the bathroom window in the stairwell is richer in detail. The door frame shows more detailing, but its authenticity is questionable, especially the top lintel. In the historic building research for De Klerk's "Yellow Block" on Spaarndammerplantsoen, apartment doors were found to be smooth as well, but designed to be more exuberant and with considerably more subtle detailing. This would be a significantly better fit for Het Schip, but there were still no indications about the interior doors of Het Schip. The decision was made to reproduce the existing, simple door in a fireproof version. But sometimes luck prevails over research. One specimen of the original door was saved because a private person had retrieved it from the demolition container in 1979. For years, this door served as the entrance to his shed. The door was kindly made available to be copied. The apartment doors are a reconstruction of this original one, modified to conform to current fire safety requirements.

Rear façades

Most rear façade doors are double doors with a side window, that provide access to a garden or balcony. On the top floor, these are parabola-shaped windows with a single door and a side window. Originally, De Klerk had made a different design for the bottom of the door, a tapered panel. Whether or not this was built at the time cannot be confirmed from historic images. These doors were replaced in the 1979-1980 renovation and simplified once more. For this restoration, however, De Klerk's design drawings were followed, as sufficient documentation was available to allow restoration true to the image he had in mind.

Interior doors

During the 1979-1980 renovation, all of the apartment interiors were demolished and the interior doors replaced with rebated doors in steel frames. A reconstruction of the historic interior was made in the museum apartment, including the doors and their beautifully detailed wooden frames. In the current restoration, the apartments must comply with requirements for sound insulation, thermal insulation, and fire safety, and thus the interior doors and frames were removed again. For budgetary reasons, it was decided to, again, install steel frames and rebated doors. As an alternative, the tenants were offered a number of complementary options to restore the appearance of the original interior, including wooden doors, approaching but not achieving true reconstruction.

School

In 1925, the original school doors were replaced by more standard school doors in typical Amsterdam School style, as designed by De Klerk. This was part of the modification of the school by Public Works. The present entrance has two casement doors, treated with oil and clear varnish. Above the door is the fanlight by Hildo Krop, ajour cut in mahogany (see pp. 258-263). Each door has nine, polished, wire-glass panes, separated by a rod that is widened at the lock side of the door, resembling a small flag.

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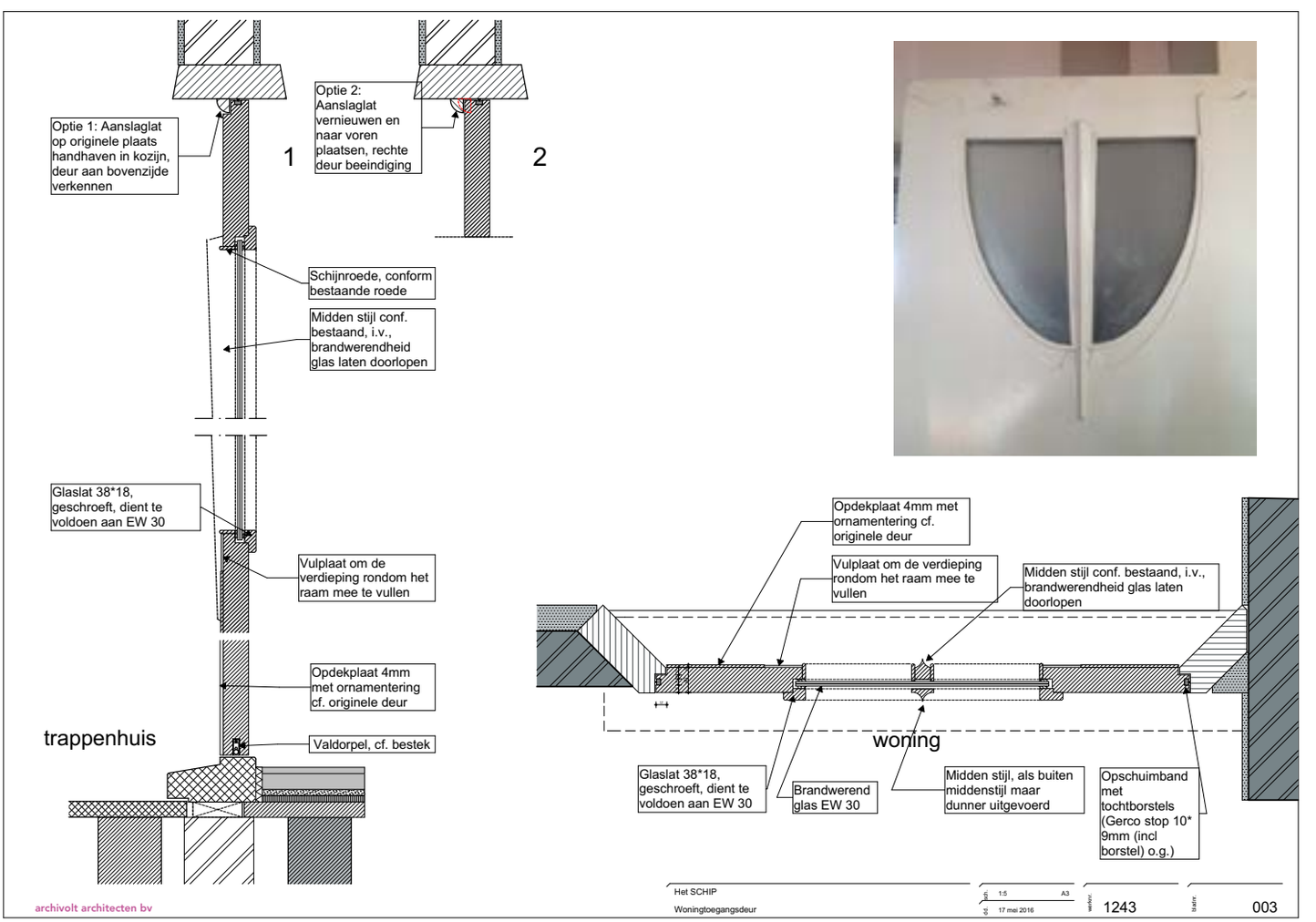


RESTORATION APPROACH

The method by which doors and door frames have been repaired primarily emphasizes preservation, excluding the new balcony doors and apartment entrance doors. Wood repairs and paint work is described in Chapter 10. For the choice of color schemes, refer to Chapter 8.

11.11

11.06 The simplified apartment door from 1979.
11.07 Apartment doors in the first Spaarndam block, also simplified in a renovation of 1973.
11.08 Original apartment door, saved from the demolition container by Mr. Ab Vos. This door served as the model for the reconstruction of all apartment doors.
11.09 archivolt architects, design for the reconstructed apartment door.
11.10 The newly reconstructed apartment door, in conformance with current fire safety requirements.
11.11 Tapering panels show the color differences.

The aesthetic use of roof tiles

Ramon Pater en Petra van Diemen

The way Michel de Klerk has employed different roof tiles for Het Schip suggests that structural properties were not always his primary consideration. Sometimes they were applied as conventional roofing, occasionally as roof edging, at other times in a manner that can only be described as purely aesthetic. While his recovered sketches show that he certainly thought carefully about good detailing, leaks nonetheless developed as a result of his delicate application. In several locations, lead coverings and bituminous repairs were necessary. However, there was little to no consideration for how these later repairs would affect the appearance De Klerk had in mind. For the current restoration, it has been necessary to ascertain what de Klerk's original vision was, as well as what modifications were made later. Ultimately, restoring the original appearance was a matter of finding an acceptable engineering solution.

The segment-like construction of a tile roof makes a variety of shapes possible, such as a curved or rounded roof. This allowed de Klerk to create different organic forms in Het Schip. He not only used traditional roof tiles, but had special models made for his designs. The standard, however, was *Oude Holle pan* (Old Hollow tile, or OH-tile), a curved tile used in various dimensions and models.

De Klerk also employed flat tiles, which were mostly used in so-called double slate covering.

Het Schip was roofed with orange and dark grey baked tiles. Orange tiles were used on the roofs and the façade lining the lower block at Hembrugstraat. The tower is also clad with flat orange ceramic tiles in a slate covering, while black tiles can be mostly found on the lower block at the corner of Zaanstraat and Oostzaanstraat. Here, a combination of curved and flat tiles was used as well. On the remaining façades, black tiles are often used as decorative material, most visibly on façade strips and roof edges.

During the renovation of 1979-1980, the roof tiles by Hembrugstraat and near the corner of Spaarndammerplantsoen were replaced. The red and black OH-tiles in various sizes were replaced by tiles of the same color and size, and thus in a deviating larger size. This resulted in a modification in corner and end solutions, and an historically-incorrect connection with the window frames. The appearance was subtly changed. Photo and archival materials needed to be consulted to determine the original appearance.

ROOF TILE HISTORY

As the Het Schip meeting house underwent restoration in 2009, attempts were made to identify suitable roof tile replacements. Fortunately, the original tiles had a factory stamp on the inward-facing surface. They were produced by Van Oordt in Alphen aan den Rijn, one of the larger manufacturers. Between 1881-1926, they specialized in the production of OH-tiles, which did not have closures at the top or sides.[1] However, because the effective shedding of water depends on tight overlap, in 1926 Van Oordt developed the *Opnieuw Verbeterde Holle pan* (Newly Improved Hollow tile, or OVH-tile), which now include top and side closures. Unfortunately, the factory never applied for a patent - the new design, which is still in use today, was soon copied by competitors. They profited more than Van Oordt, especially during the reconstruction period following World War II, ultimately leading to the closure of the factory in 1981.
In regard to the manufacturing process, Van Oordt's OH-tiles used on Het Schip were formed by an clay extruder. It was also possible to create them in a mold, which allowed several shapes of tiles to be produced as well as a denser clay product simultaneously. However, it was easier to change the length with a clay extruder. A clay ribbon is produced, curved lengthwise, and then cut to the desired size with a steel wire. This method could best accommodate the unique shapes specified in De Klerk's designs. It was also understood that these shapes would be most successful when the tile segments were built as small as possible - smaller than the standard size. To date, no other project has been identified in which these tiles were also used.

TILE PRODUCTION

During the search for replacement tiles, the architect of the current restoration proposed cooperation with Dakpannenhandel Bogers in Sprang-Capelle, who specializes in the purchase and sale of second-hand historical roof tiles. From previous correspondences, it was known that Bogers collected molds from tile factories that had closed - including from Van Oordt. After an extensive search, the extrusion nozzle for the tiles used on the meeting house had been found, but Bogers did not yet have a method to employ it. Given the limited number of tiles needed for the meeting house, and the uniformity required in type and size, the tiles for this building were made in a stationary press. For the roof tiles needed for Het Schip, Bogers would be consulted once more.
Since 2009, Bogers had focused on the production of special tiles. With its extensive collection of molds, it was now highly motivated in supplying tiles for Het Schip. Due to the variety of lengths and shapes required, it was necessary to use an extrusion press, which Bogers had acquired in the meantime. Thus, the first step was taken.

Because of the multitude of special tiles of unique dimensions, shapes, and types, production had to be done manually. For the majority of the special types, the tile maker uses the clay ribbon produced by the extrusion press. To shape the clay ribbon, he uses a cast of the desired profile - such as curb tile or apex tile. Partly due to its own weight, the clay ribbon settles into the mold. The clay is then carefully pressed further into the mold. With some tiles, the pressure points from the tile maker's fingers are visible. They are more evident in the apex tiles which have to be made without a mold, as well as in the hand-formed lip of the verge tile.
In order to avoid cracks, some tiles are shaped in steps around an increasingly curved mold until the desired shape is achieved. It is difficult to predict how shaped clay will behave during firing - results can only be done by trial and error. Shrinkage and thermal compensation during the final baking steps can also lead to malformation. However, with considerable manual effort and a willingness from the tile maker, roof tiles have been made that closely resemble the original elements. With little, not visible modifications the fit of some types of tiles could even be improved.

ROOF TILE COLOR

Having determined the appropriate production method, the research team could focus on the appearance of the roof tiles, especially the two necessary colors. It might seem obvious to use the same clay for the orange roof tiles as was used for the bricks, but marine clay is unsuitable for the production of tiles. Given the limited thickness of a roof tile, clay with less drying shrinkage is called for, to avoid cracks during production. Only river clay is suitable for this application, given its composition of finer particles. This is one of the reasons why most roof tile factories in the Netherlands are located along rivers (Van Oordt was located on the Oude Rijn).[2] Rijn-clay, with its presence of iron, results in red/orange baked tiles. It is the dominant color of roof tiles in the Netherlands. An experimental clay composition was made in cooperation with Bogers, based on Rijn-clay, which provided the desired color. Dark grey tiles obtain their color from the clay composition, as well as from a particular baking process called *smoren* (choking), in which the supply of air is reduced. Such tiles are also called blue or grey choked tiles. The color is the result of the clay composition and the degree of air reduction. For a darker color iron oxide is the main ingredient. Tiles were originally baked in open fire ovens, just as was done with bricks. When the oven reached its maximum temperature, and the air supply is reduced (or nitrogen is added), oxygen is chemically extracted from the iron oxide (most notably iron oxide; Fe_2O_3) to keep the fire going. The incomplete

1 See http://www.dakpannen-handel.nl/dakpan-fabrikanten/van-oord-co/.
2 Maas clay is not suited for roof tiles, but the clay on the banks between Maas and Rijn and the German hinterland is.

combustion leads to reduced iron oxide, Fe_3O_4, resulting in a black discoloration.[3] This process gives a through and through dark discoloration of the tile.
A serious disadvantage of a choked tile is that carbonization occurs during the last phase of the baking process, instead of sintering. The presence of carbon causes the tile to be quite brittle and thus weaker. The degree to which this happens is directly proportional to the deepness of the color: the darker the tile, the weaker it is. Despite this, a dark tile was still desired for Het Schip. In order to improve the strength of the choked tile, an additional process of glazing, or engobing, can be undertaken.

During the testing phase, it became apparent that choking alone would not result in the desired color. Engobing was the most obvious method to remedy the lustreless appearance. In this process, the baked tile is given a surface layer of a clay suspension and then baked again to achieve the desired color. When applied to a choked tile, this immediately gives the desired dark tone. However, this method has both advantages as disadvantages.
The major advantage of engobing a choked tile is that the entire tile is darkened and will thus remain dark even if damaged. However, the tile needs to be fired twice, and a choked tile is weaker. For technical as well as financial reasons, the effect of engobe on orange tiles was also tested. From a production and technical point of view, engobing offered the advantage of being able to be applied to the dried clay tile prior to baking. The differences in color were practically the same as in choked tile tests, however, in case of damage, the orange base could show. This tile was technically superior and, one less process cycle, substantially cheaper. In addition, the aesthetic value was not impaired. Therefore, the choice of the latter production method was justified.

ROOF FORMS

The lower blocks of Het Schip have tile roofs of a special shape. The Dutch building tradition includes many roof forms, but those of Het Schip cannot be categorized under a traditional form. Most of the roofs show similarity with a mansard roof, especially because of the kink between the two slopes of the roof that creates a steep lower slope and a flatter upper slope.
While traditionally the roof form can be traced in the roof construction, this correlation is missing in Het Schip. Many of the lower slopes are only façade cladding, with the tiles often attached to the underlying façade on curved wooden structures. The tiles here do not serve as a water barrier, so the curved form can be created in a simple manner. On these surfaces, flat tiles are used, sometimes varying in length.

IMAGE RESTORATION WITH ROOF TILES HEMBRUGSTRAAT

The apartment block at Hembrugstraat is formed by two largely identical facades with a tower in between. The façades are covered with a vertical row of roof tiles. De Klerk used a curb tile to make the upper part of the row watertight. During the renovation of 1979, this row of tiles was completely replaced. The curb tile was not brought back, however, and the row was instead covered with visible lead strip. The middle section of the façade is encased on both sides by semicircular brickwork protrusions. As in other parts of the building, these were originally rimmed off by a vertical row of tiles and a curb tile. Here too the curb tile was replaced with a lead strip, the semicircular façade being rimmed off by a lead strip.
The tile covered roof is intersected in the middle by a gutter, which is not visible from street level. Before the current restoration, the intersecting edge was finished with lead, resulting in another kink in the roof. Originally, the roof tiles visually transitioned into each other, and the underlying gutter only had a horizontal emphasis due to a longer tile being employed.
The connection of the tower to the tile roof originally did not have a lead covering, but lead was present before the current restoration. From photos of the original structure, it seems that a lead covering was originally present at the upper side of the middle crown. In addition, the lower side of the middle section had a full lead covering, which originally might have been less visible. Unlike the current restoration efforts, it is clear that the previous renovation did not do justice to De Klerk's design.
The upper and lower roof slopes have two different radiuses. This must mean that the tile dimensions differ. From the photo records it appears that several tile sizes were used in the bottom section. By now using a curb tile, the lead installed under the window frame during maintenance could be removed. And thanks to the various tile sizes, the flowing lower rounding has been restored, while the tile line is properly linked to the window openings installed in the roof. At the bottom, the tiles have been positioned somewhat higher, again exposing the brick ornamentation below. Originally, roof tiles were present in the corners overlapping the protruding granite concrete strip. These had disappeared over time but have been brought back in the current restoration.
Especially challenging was the connection of the lower slope to the gutter. De Klerk had envisioned using tall tiles for closure. As the gutter was not supposed to be visible, he employed a mono ridge tile. A straight roof ending, such as a straight edge covering board or at a vertical façade, could be finished with such a tile to avoid water ingress. In Het Schip, this tile was used in a different way. Due to the almost vertical ending of the upper side of the bottom slope, the

3 Bot 2009, p. 68.

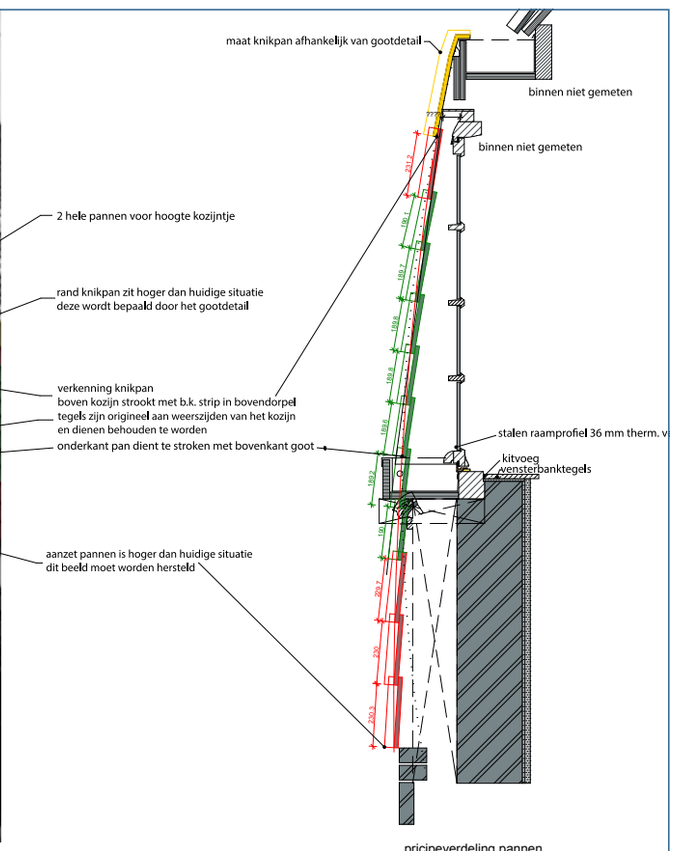
12.01

12.01 Renewing the tower's roof in an earlier renovation.
12.02 Various models of roof tiles used in Het Schip.
12.03 Ditto.
12.04 Working drawing showing different dimensions of roof tiles based on building historic research.

12.02

12.03

12.04



kleuren zijn ter verduidelijking aangegeven en stroken met de verschillende aangegeven zichtmaten in het detail

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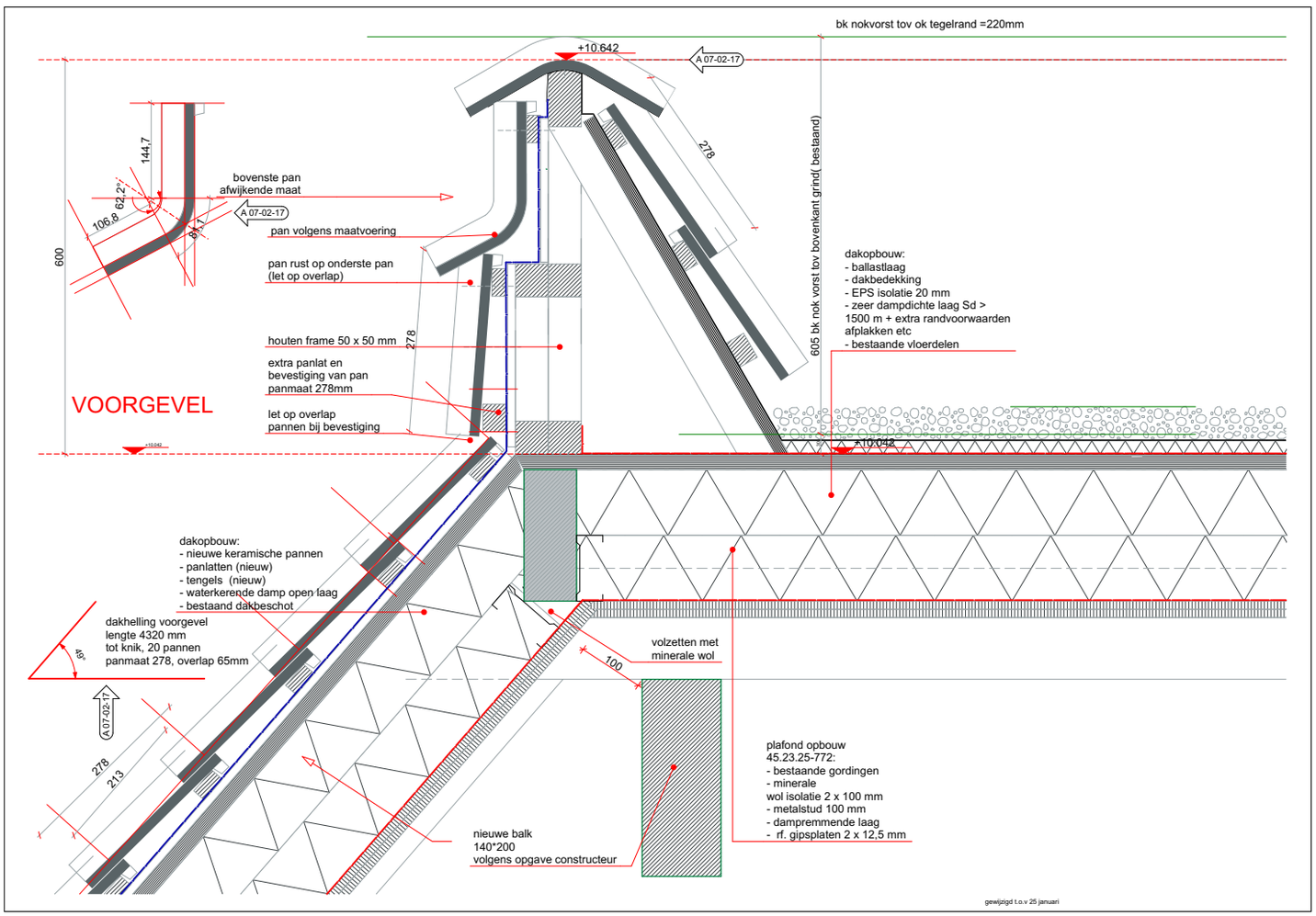


12.06

12.07

12.08

12.05 Detail of the upper roof slope and ridge on Hembrugstraat.
12.06 Ridge on Hembrugstraat.
12.07 Corner ridge tile set in colored mortar rear side Hembrugstraat.
12.08 Specially curved tiles underneath a gutter.

lip of the mono ridge tile was used to cover the front edge of the zinc lined gutter. This application was only possible because of the aesthetic function of the bottom slope, as the seams of the tile lips hardly cover, and the tiles hardly had any water retaining structure. The special mono ridge tile could not be easily produced, due to its large size. During the baking process, the tiles often crack or distort. After some experimentation, the verge tile was able to be stretched to a large enough size and could be used to restore the original appearance.
The upper slopes are covered by flat tiles, although the transition to the ridge structure features a special curb tile. Traditionally, a curb tile is convex and is applied at the bend of a mansard roof, for example. De Klerk, however, used the much lesser-known hollow, or concave curb tile. This tile originates in buildings that were widened or at the transition to tile-covered dormers and is more frequently used in modern buildings with various roof forms. In Het Schip, this hollow curb tile introduces a structure that forms the ridgeline. Where traditionally the ridge is used as transition from the front to the rear roof, here it forms a tile-clad upright roof edge, behind which there is a flat roof with a bituminous roof covering (originally tar mastic). This hollow curb tile is also used as the protruding lower tile for the roof edge cladding of the taller blocks.
At the level of the horizontal connection of the roof surfaces, valley gutters were originally planned to be not visible, because of the continuation of the tiles. The tiles in these corners were cut to accommodate the desired angle. In time, lead covering was applied here as well. In every location where lead was originally hidden and was later added, it has been removed again during the current restoration. This could be realized by going back to the use of roof valleys, in conjunction with designs of various types of roof tiles.
The rear roof surface at Hembrugstraat has a comparable structure to that of the front. The bend from the upper to the lower slopes is formed by making a larger curve, which is covered by small, flat tiles. No other roof tile types are used on this surface.

SPAARNDAMMERPLANTSOEN

On Spaarndammerplantsoen the apartment block, with the entrance to the former post office and the courtyard, has two wings covered with black *Oude Holle* tiles. The structure of these roofs is even more varied than those on the side of Hembrugstraat. At the ends of this low building, against the rising façades, a hipped roof crosses with a mansard roof. There is a curb tile at the transition, but with curved lower slopes and a hip end. Where the various roof surfaces meet, dimension tiles, specifically apex tiles, had to be used to ensure full coverage over the transitions.
The rising apex does not have a flat section in the middle of the long sides, in contrast with those at Hembrugstraat, and is covered at the upper side by an arrangement of ridge tiles with flat tiles on either side. The ridge tile here is specially produced, due to the unique slope angle on the ridge. The part of the roof over the post office, with deviations in slope angle, looks like the rear roof at Hembrugstraat - it features a curved transition between the lower and upper slopes and the rising ridge, which blocks the view of a hidden flat roof. The original OH-tiles were small, deep black, and probably tarred. They were replaced during the 1979 renovation with anthracite-colored, unglazed tiles of a larger size.
In the current restoration, the objective has been to restore the image to what De Klerk had imagined, using archived photos and sketches. Various sizes and types of roof tiles have been used here as well. In addition, the architectural detailing must conform to contemporary requirements. In order to approximate the deep black of the original tiles, a dark engobing has been applied to the tiles in order to produce a deeper color than with choking.
The residences in the two low wings on either side of the post office, at Zaanstraat and Oostzaanstraat, have wooden, horizontally stretched bay windows. The closed parts between the windows feature a unique tile covering. Not only the type of tile makes this structure striking, but the method of covering as well. The tiles lie in an upward rising plane, fully vertical, and even hang downward under the protruding elements. A flat tile has been used for these elements, which on top was provided with an upright flap (in fact a type of verge tile) to anchor it to the wooden tile slats. The tile can be fastened more securely via a screw hole in the flap. However, as this option also presents a new structural vulnerability - the screw hole is close to the edge, due to limited length of the flap - the restoration of this component has included a screw attachment through the front of the tile. This is not visible, as that part of the tile is covered by the tile above. Thus, the chance of a break in the flap has been reduced; this position is also more logical for the tiles that have been mounted in a “hanging” position.
In the vertical direction, the tiles cover each other with an overlap at the top and a side seam off set for each row. They do not overlap in the horizontal direction, but rather are laid side by side. In this case, the seam, about 5 mm wide, requires a filling. This was done by a sealant, but now a joint mortar is used to ensure water tightness.

SCHOOL

The school building from 1914 originally had flat roofs, and thus no roof tiles were needed. The roof edges were finished at the front with wooden gutter boards, although this changed with the renovations in 1925. To accommodate the additional floor, the building was raised to the same height as the adjacent residential structure, allowing the roof tile rim to be continued. The roof edge appears to run uninterruptedly, however, a closer examination reveals slight differences. The bottom two tiles do correspond, a curb tile with a straight standing roof tile above.

12.09
Corner detail of the roof edge with cut and glued corner tiles.

While De Klerk had finished the top side of the roof edge with a flat roof tile, providing a straight, horizontal alignment, the Public Works Department probably did not think this was sound engineering. A detailed 1925 drawing shows that, instead of flat tiles, the top side was finished with tiles with a round top. This way, the tiles could cover the roof edge in its entirety, creating a tighter water seal. The mortar layer used in the residential complex would eventually crack and require maintenance - this was avoided with the modified roof tile. Except for the edge, an entire roof surface covered with tiles was added. The wooden gutter elements on the original roof were replaced with roof tiles, which were installed on a slightly curved surface and function more as roof edging than as a real roof. A flat roof lies behind this edge.

FAÇADE CLOSURE

A horizontal row of black roof tiles serves as closure to the wave-like brickwork of the building façade. De Klerk clearly indicated on his sketches how he envisioned this detail, specifying that the upper side of the flat roof tiles were to be finished with a mortar layer. However, this mortar cracked and weathered, allowing water to penetrate. It is therefore not surprising that lead was installed during maintenance to make these eaves watertight.

During the historical research, it became clear that the front and rear façade closures of the residential complex were different. The rear side consisted of a vertically upright tile, with a lower curb tile. The latter tile ensured that the top of the brickwork was covered, and also created a shadow edge. On the other hand, the front was formed by three roof tiles: one vertically upright at the top, a curb tile at the bottom, and a shorter tile in between. At both the front and back façade closures, the upper row of roof tiles was in time replaced. The mortar layer at the top would have allowed water ingress to the underlying brickwork, causing frost damage.

The decision has been made to reconstruct the appearance envisioned by De Klerk, but without a mortar layer on top. All tiles have been removed to examine how the underlying structure was constructed. To ensure that the appearance conformed to the historical one, and at the same time create an architecturally sound solution without using lead, a special curb tile was designed. As the objective was to restore the straight line of the upright tiles at the top, the newly designed curb tile had to form a 90o angle (a normal curb tile forms a larger angle of about 135o, which would have created a different effect at the top of the roof edge). The brickwork curvatures in the front façade presented an additional complication. Tiles can be covered in straight lines but cannot follow the required curvature. That is why an adjustment space was designed at the top side. The manufacture of the desired curb tile required several test installations, in order to accommodate the curvature of the adjustment space. The eventual result was architecturally as well as aesthetically enticing.

At the connection with the school by the rear of Oostzaanstraat, De Klerk had devised a rainwater discharge at the corner, carrying on under the roof edge and clad with surrounding roof tiles. Because of the addition of a new floor to the school in 1925, this discharge was no longer free hanging, but had to be partly demolished and rerouted to the new roof edge of the school. This made attaching roof tiles more difficult, as there was less surface available. During the 1979 renovation a kind of blob of new roof tiles was made, with no reference to the original discharge. The underlying upright course of bricks was fully covered and no longer visible. The rainwater discharge now no longer functions in the current situation, so it has been possible to close it off. This enabled to firmly attach the curb tiles, making the upright course of bricks visible again.

The roof edge by the rear of the residential complex was also continued across the school during the renovations in 1925. Here too, the Public Works Department used the modified roof tile instead of the straight tile.

In 2015, however, while the bottom two tiles were still present at the front, the special round covering tile was missing. In addition, the upper part of the front side roof edge was finished with lead. It is possible that tiles with the round tops would have been susceptible to damage, and so it has been decided to remove them. Using a detailed drawing from the archives as a reference, a mold was made to reconstruct the round tiles. The corners were difficult due to the rounding. However, by cutting the tiles both an elegant and structurally sound solution has been created.

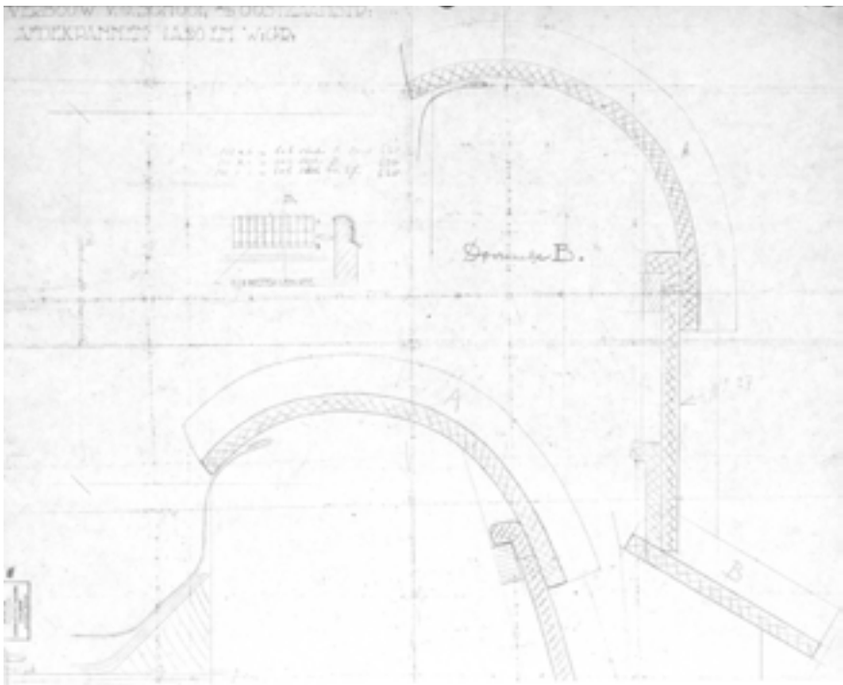
At the rear, at some point in time, the roof edge was clad with zinc - it is not clear why this choice was made. While extra roof insulation was added, the roof edge structure was not raised. It may have just been easier to finish the roof edge with zinc. During the current restoration, the roof edge has been given the same modifications as was done at the front: a curb tile, an upright tile, and finished with the specially produced half round roof tile. This configuration most closely matched the archival photos.

AESTHETIC ADDITIONS

In addition to their structural function, De Klerk selected the *Oude Holle* tile for their decorative effect. The façade bands separating the building floors are a beautiful example of this. Above the windows runs a horizontal band of roof tiles, creating an undulating rhythm. At Zaanstraat, these waves cross over the smaller butterfly windows (see p. 230), accentuating the stairwell entries. Structurally, the tiles provide cover to the underlying brickwork.

While many of these tiles were replaced with different sizes and colors during the 1979 renovation, it has been decided to conserve these in the current restoration, to avoid impairing the brickwork. Damaged tiles were touched up with paint, and only replaced if the damage was extensive or if tiles were missing altogether.

12.10



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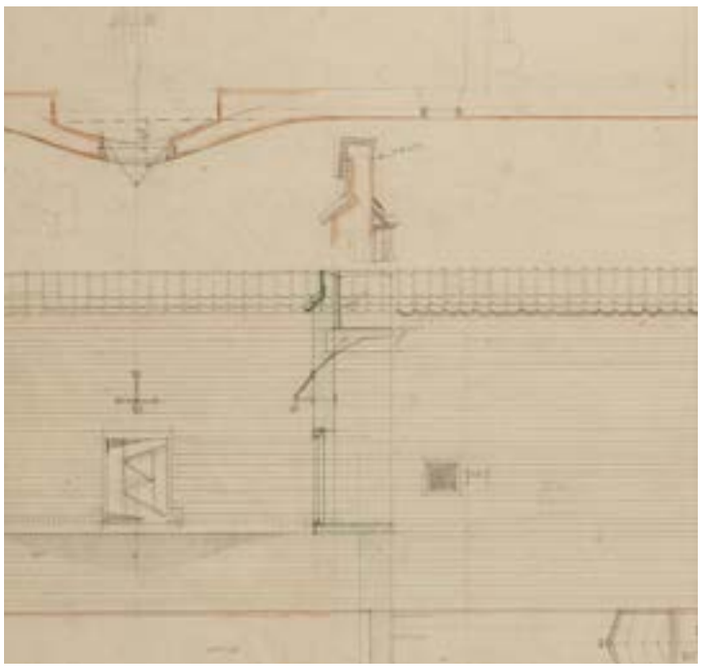
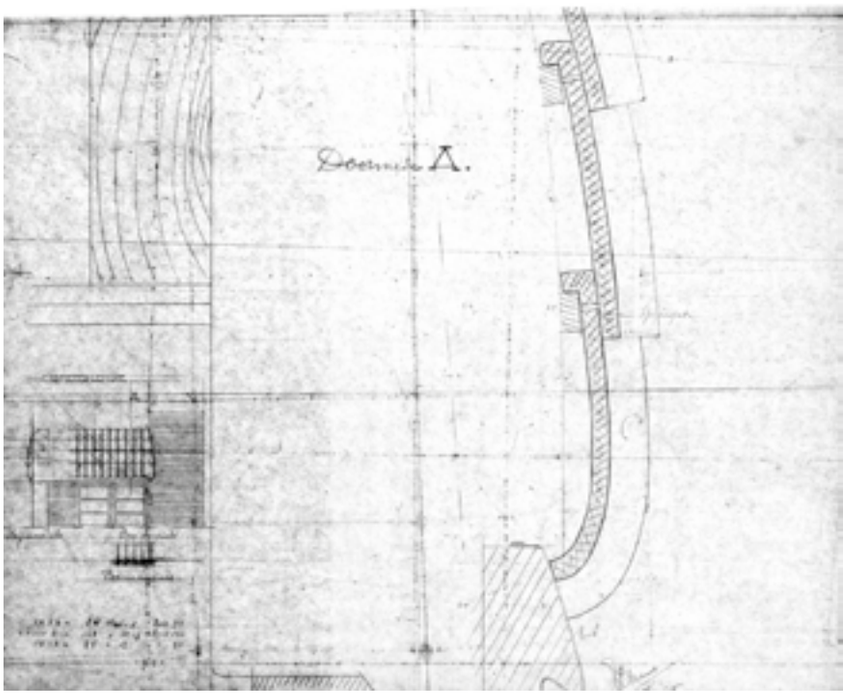




12.12

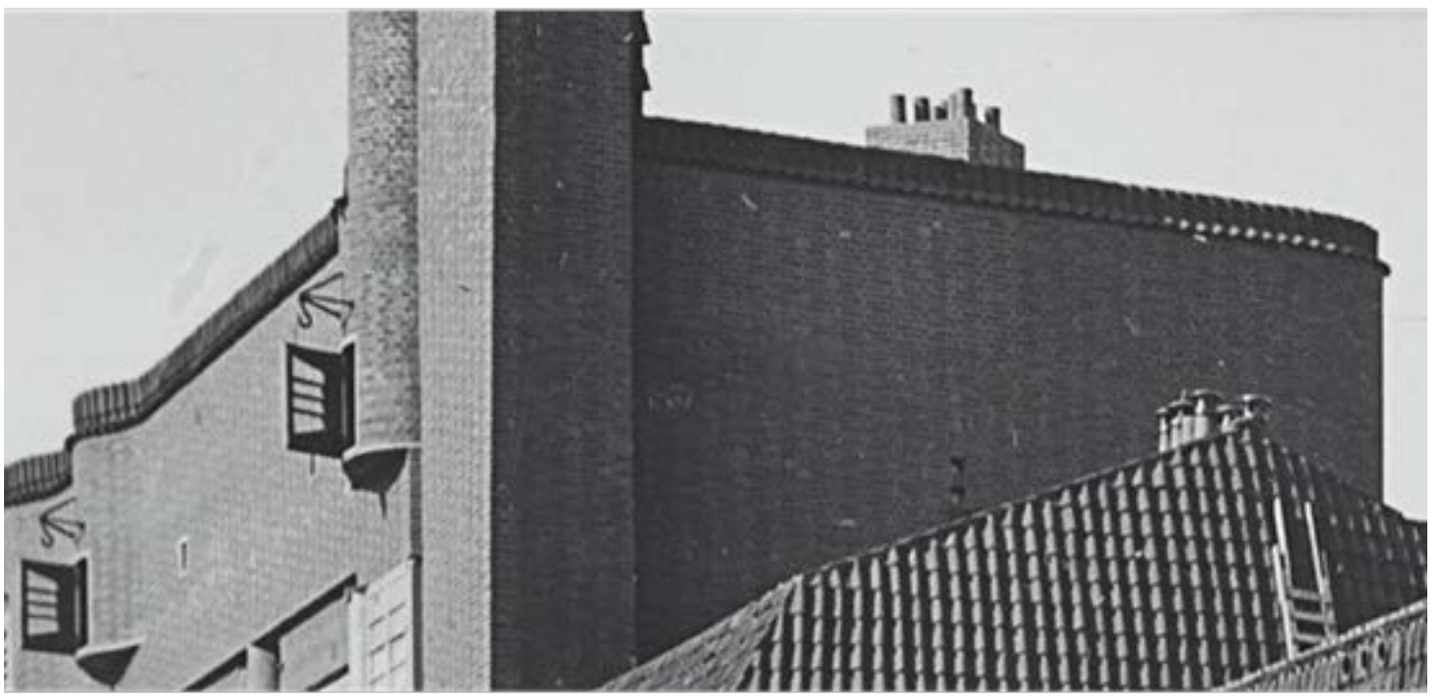
12.10 Roof edge details for the school building.
12.11 M. de Klerk, sketch detail of roof edges for the apartment building.
12.12 Roof edge at rear of the school building after restoration 2017.

The chimneys at the rear façade of the apartments at Zaanstraat form a unique arrangement. The sides were originally covered with roof tiles. At the external corner, three tiles were cut and joined together, probably with a joint mortar. However, this did not protect against the elements, and the underlying brickwork had to be replaced. During the 1979 renovation, the brickwork of the upper layers of the chimney sides was replaced, and new roof tiles were added. On each side, lead was used to connect with the brickwork. These modifications varied from the original design, but the configuration was watertight.
The current restoration has attempted to reconstruct the historical design, while ensuring that the modifications are watertight. Special corner tiles have been developed, using a mold to combine the three individually-cut tiles into one piece. The resulting tile was named "(sting) ray pantile" due to its unique shape. The lead at the top of the chimney is now hidden under the roof tiles.
The chimneys at Hembrugstraat are also covered with tiles and have been restored to the original design based on the available archive materials.
A very special aesthetic detail are the so-called *klokkenspel* chimes. This is a sculpture at the pedestal of the lion head chimneys, built from flower pots as well as from ceramic and roof tiles. A photo from 1964 reveals that the roof tiles were weathered or had broken off. The tiles and flower pots, however, appeared to be in good condition. During the 1979 renovation, the entire pedestal was demolished and its brickwork was replaced. Because the chimes were part of the pedestal, these too were demolished. The reconstruction did not entirely match the original design, as the roof tiles were too big and the flower pots differed from the original. The tiles appeared to have been were reused and had badly deteriorated. For the current restoration, a detailed drawing was made to reconstruct the chimes. The tiles have been specially baked and the roof tiles that were used for the façade closure at the rear were also used for the chimes. The roof tiles at the side of the chimes transition seamlessly into the roof edge, linking the chimney and the chimes.

12.13

12.13 Special corner roof tile, clay model.
12.14 Roof edge of front façade and side wall at Zaanstraat, 1940.
12.15 Rainwater discharge at top of rear façade at the connection of the school building to the apartments, 2017.
12.16 Rainwater discharge at top of rear façade at the connection of the school building to the apartments, 2015.

12.14



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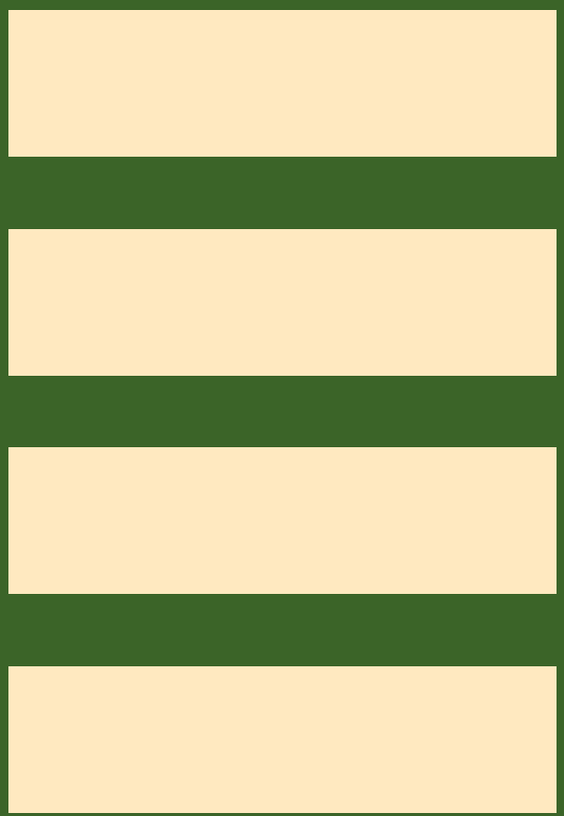


Leaded Glass

Petra van Diemen

15

Glass was used to protect spaces from the exterior climate and to provide natural lighting. The first glass could only be produced in small panes and then assembled into a larger unit with lead strips. The oldest known piece of leaded glass from Western Europe dates from the second half of the ninth century. It comes from the abbey church of Wissembourg located in the Alsace region in east France. It is a small piece with an image of Christ. Much of the technique used then has not changed over the years. The oldest preserved stained glass church windows can be seen in the Dom church of Augsburg. They date back to the end of the eleventh, beginning of the twelfth century.
In the gothic era, stained glass windows were often utilized. Churches were frequently provided with splendid, stained glass arrangements. Leaded glass guilds were established in the fifteenth and sixteenth centuries. This significantly elevated the skill to an actual art form. The use of heavy lead lines and stained glass grew in popularity. Gradually, glass became available in a wider array of surfaces and in better quality. Leaded glass, therefore, was no longer necessary in terms of glass construction. Instead, its use often became an aesthetic choice.
Since the Late Middle Ages, the Netherlands has predominantly applied rectangular or diamond-shaped window grilles in religious and public buildings.[1] The leaded glass was often unpainted. In the beginning of the sixteenth century, it became possible to produce larger sheets of glass, whereby the patterns could become more complicated. When, after the second half of the seventeenth century, glass sheets became ever bigger, they were often placed in wooden frames, with a variety of grilles.[2]

GLASS AND DESIGN, SYMBIOSIS AND EXTREMES

There were two reasons for Michel de Klerk to apply leaded glass in his masterpiece. One was to be able to suit the undulating shapes of his design seamlessly. The other was to create a specific image. To realize his three-dimensional organic forms extreme building solutions had to be found to create these waves and special features. For windows this meant that window panes could not be made from one piece. For instance, the “cigar” bay window is not just curved

1 Janse 1987, p. 1; Stokroos 1994, pp. 16-22.
2 Glass dimensions were about 200 x 250 mm in those days, too large for leaded glass panels. Janse 1987, p. 1; Stokroos 1994, pp. 16-22.

15.01 Leaded glass in the crypt of Colónia Güell, expressive use of color and form by Antoni Gaudi.

horizontally, but vertically as well. It is impossible to apply pane glass in such a shape. His so called *kachelruitjes* (stove windows) were able to follow these specific curvatures. Their use was not just a matter of imposition of form, but above all the result of a practical consideration.[3]

In special elements, such as the smaller butterfly and moth-shaped windows in the stairwells at Zaanstraat, leaded glass was applied to create a certain image. The lead could be seen as the arteries in the wings of the butterfly and moth. In the rectangular windows at Hembrugstraat, a staggered pattern is applied with leaded glass, creating a type of lacework. Leaded glass provides an extra dimension to glass design. Leaded glass was not just used in the residential blocks, but also in the school at Oostzaanstraat as well. During the expansion of 1924, an wave shaped story and façade was added to the school building, which ensured that the school design was contiguous with the form language of the residential complex. With normal glass, the contours of this design could not have been followed, and an angular appearance would have resulted. The use of stove window panes, connected by lead strips made this possible, and resulted in a smooth flowing entity. As these were part of the maintenance cycle of the school, some stove window panes were still locally present. A large number, however, had disappeared and have been infilled and repaired in the 2016 restoration.

Before the 1979-1980 renovation, there was an ample amount of leaded glass still in place. In a number of locations, the leaded glass was broken through vandalism or everyday use and replaced with normal glass. Although the life span of leaded glass averages 75 years, these image-defining elements were replaced with normal glass or Plexiglas during this renovation. The appreciation of leaded glass had lessened, and the need for more lighting and less maintenance would have certainly had an influence. Following the curvatures was, therefore, not possible anymore. The angular appearance of the windows at Hembrugstraat was noticeable. The straight glass panels interrupted the rounded shape. The effect was immediately perceptible for everyone, although they may not have known what caused the disturbance. De Klerk's goal, the flowing curvatures, was lost entirely. The stove windows disappeared, and the leaded glass in the butterfly, the moths, and remaining elements had been removed, resulting in an impoverished appearance.

During the current image restoration, the leaded glass has been restored in the likeness of the original image as much as possible. There was not much information available. Old drawings and photos provided indications where leaded glass windows were installed and what they looked like.

De Klerk's subtlety is palpable precisely in such elements and, therefore, vital for the present restoration vision of Eigen Haard, as well as for the project team. However, the team did not lose sight of the modern requirements for comfort. In a number of locations, the choice was made to install secondary interior glazing. In the curves on both sides of the tower at Hembrugstraat, the choice has been made to apply insulating

3 **Compare the quote by De Bazel on page 28.**

glass in the leaded glass. The residents not only had the original image restored, but have also obtained an apartment with improved insulation.

BUTTERFLIES AND MOTHS

A beautiful example of De Klerk's expressive use of leaded glass is seen at Zaanstraat. For the stairwells, he developed steel windows, which came to life, through the effect of the lead strips. The bottom windows were placed in a bulging portion of the brickwork, accentuating the entrance. They have an wave shape, which allows the outline of a smaller butterfly or moth to be imagined. The barrel shaped pipe with granite concrete above forms the body and the head, while the steel windows on both sides, with the leaded glass, seem to portray the arteries in the wings. Whether or not De Klerk had this meaning in mind is speculative.

De Klerk produced gorgeous sketches showing how he imagined the pattern in the windows. The stove panes can only be installed vertically, causing the wave shape to come to rest. In the corners, he gave the steel-framed window an tilted form. In the end, the panes appeared to be placed obliquely, which led to a more dynamic unit. The vertical stove panes interrupt the wave shape, which causes the appearance of a wing pattern. Photos dating back to around 1920 clearly show how the window frame follows the brickwork along its curve. The oblique corners bordering the tube have a different color than the other panes. The latter were obviously placed obliquely, following the tilted corner in the frame. The result was a playful and lively façade. The row of roof tiles undulates over the brickwork and the underlying windows.

Presumably, however, the window was vulnerable, and was replaced during the 1952-1956 renovation. The difference is clearly visible on a 1957 photo. The window frame no longer followed the opening in the brickwork. Instead, a panel was added above and below. This allowed for the straightening of the vertical frame components. The leaded glass had disappeared, and uniform glass was applied everywhere. The shape no longer followed the bulging brickwork and the curving roof tiles and, instead, become a static, isolated element. The undulating play of the butterfly could no longer be recognized, and it was reduced to a regular window.

The vision of the current restoration has been to restore the building to its original image.[4] With the original steel windows having been removed, the way was clear to investigate all possibilities.[5] The entrance arrangement was well photographed shortly after completion, as it was a popular subject for photographers. Because of its photographical fame, reconstruction of the original steel windows was made possible. The correct dimensions, of course, were determined by the openings in the brickwork, which had remained largely unchanged over the years. The dimensions of the steel profiles were lost, however. The brick and joint dimensions were known, and using historical photos, the profile dimensions were extrapolated. Producing the windows was not simple. An insulated profile was required to make the structure sustainable. The slenderness of the steel window frame profile and the necessity of following the curve of the brickwork required a specialist. Molds were made of the windows in order to specifically situate the leaded glass. Once the frames had been positioned in the brickwork, the leaded glass could follow. The historical photos show that the corner panes, beside the tubes, must have had a deviant tint, however, the exact tint could not be determined, as the photos were taken in black and white. Leaded glass is still present in the post office, with a warm yellow color, which ties in beautifully with the orange-red brickwork. In this manner, a historical element has been restored with modern, sustainable materials.

Obliquely placed windows were installed on the floors above the butterflies, also on both sides of a tube. The windows end in a truncated, point shape. The play of lines on De Klerk's design drawing also seems to depict the arteries of wings, but the wave shape is absent. With the tilted placement of the windows, the vertical line of the façade is interrupted, and a shadow effect is created. The drawing of De Klerk was executed precisely, both in the division of the leaded glass and in the main form. The maintenance cycle of these windows appear to be the same as that of the school, as described above. The windows were probably replaced in 1957, and the leaded glass disappeared. The photos from that time also show the bad condition of the tubes.[6]

During the current restoration, insulated profiles have been applied, and the leaded glass has been reconstructed. The total image of the entrance arrangement at Zaanstraat has been brought back to its original state. This also includes the identical windows in the rear façade near the courtyard, behind the former post office. Here, the same steel windows, with leaded glass divisions, have also been restored.

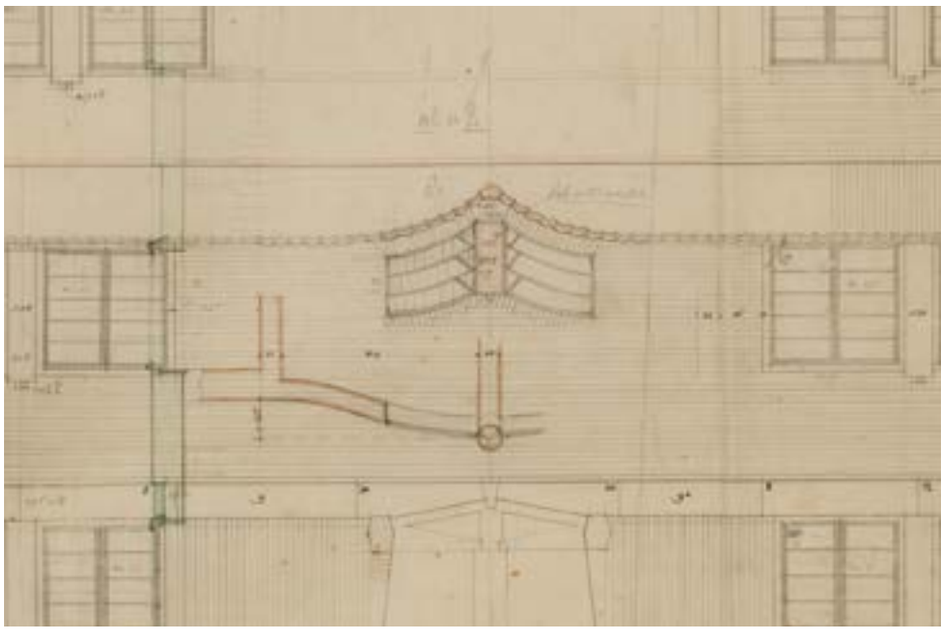
WAVES AND STOVE WINDOW PANES

Hembrugstraat forms almost a separate element in the housing complex. The use of materials, however, incorporates it into a homogenous image with the whole complex. The varying play of forms, including the undulating roofs and brickwork and the central tower with a small courtyard in front, present a calming image, while providing an expedition of discovery for the eyes. The separate design is strongly supported by the use of leaded glass, and the stove window panes are used frequently.

The apartments, located at the two curved balconies on both

4 See Chapter 7.
5 Brochure 48 *Techniek* (2008) of *Rijksdienst voor Archeologie, Cultuurlandschap en Monumenten*.
6 See Chapter 13.

15.02



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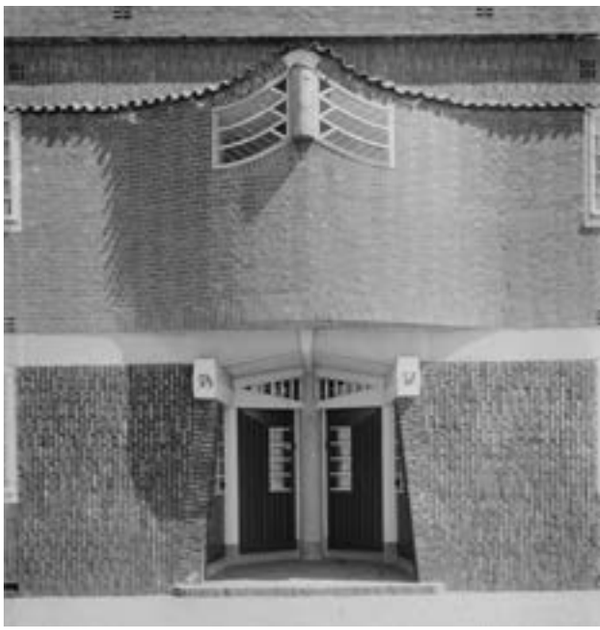


15.04

15.05

15.02 M. de Klerk, design drawing façade on Zaanstraat (detail).
15.03 Entrance Zaanstraat, 1921.
15.04 Smaller butterfly window over entrance Zaanstraat, 2018.
15.05 New window frame in the cigar, 2018.
15.06 Hembrugstraat, 1921.
15.07 Hembrugstraat, 2015, before restoration.
15.08 Hembrugstraat, 2018, after restoration.

15.06

15.07

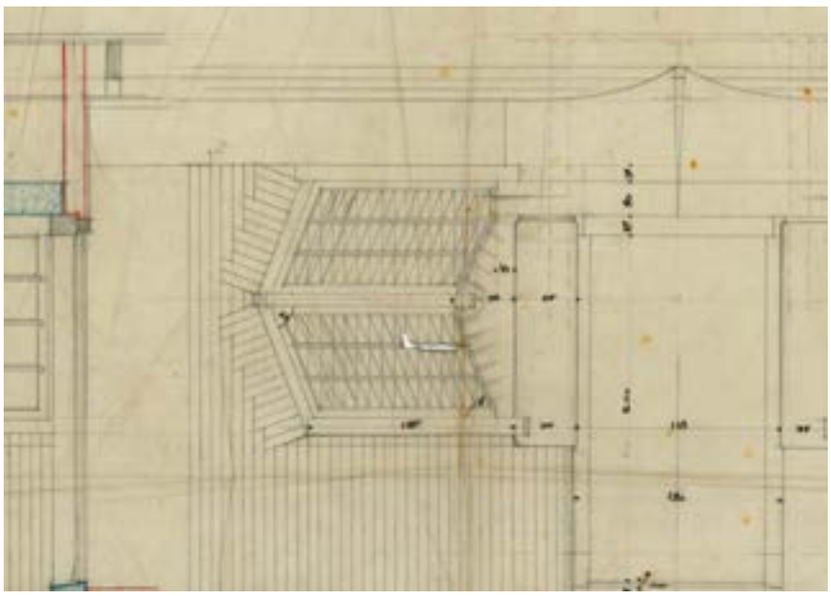
15.08

15.09 Courtyard, 1921.
15.10 Courtyard, 2015.
15.11 Design sketch of the “shell window frame” at Oostzaanstraat, date unknown.
15.12 Design sketch of the window at the courtyard, date unknown.
15.13 Design sketch of the window in the rear façade, date unknown.

15.09

15.10

15.11



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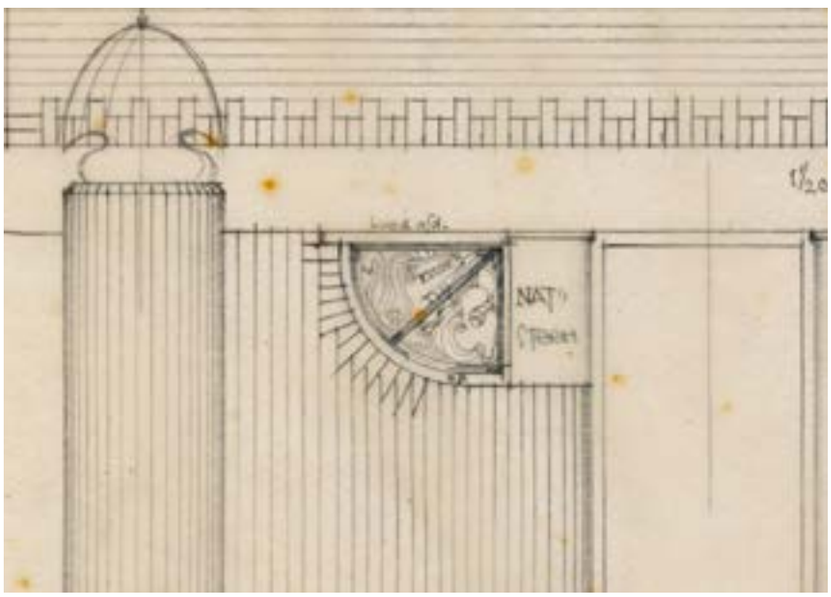

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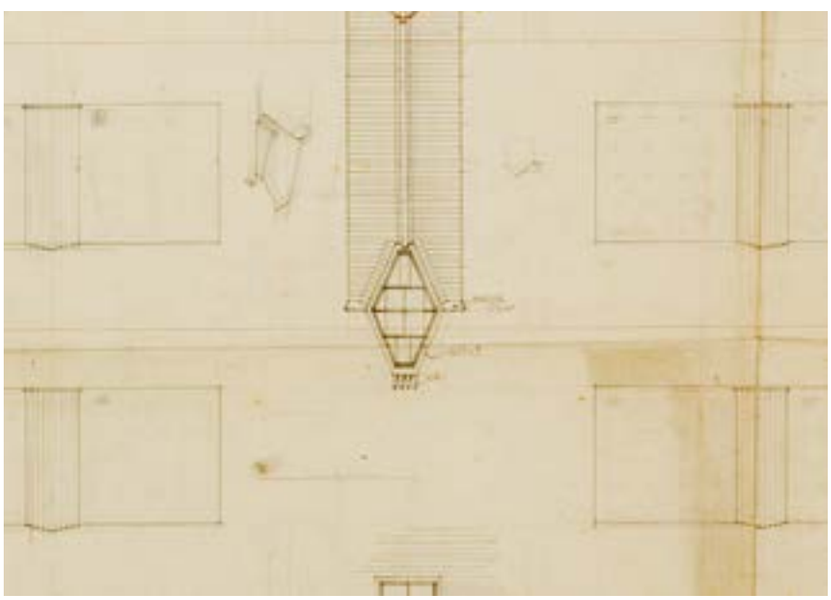
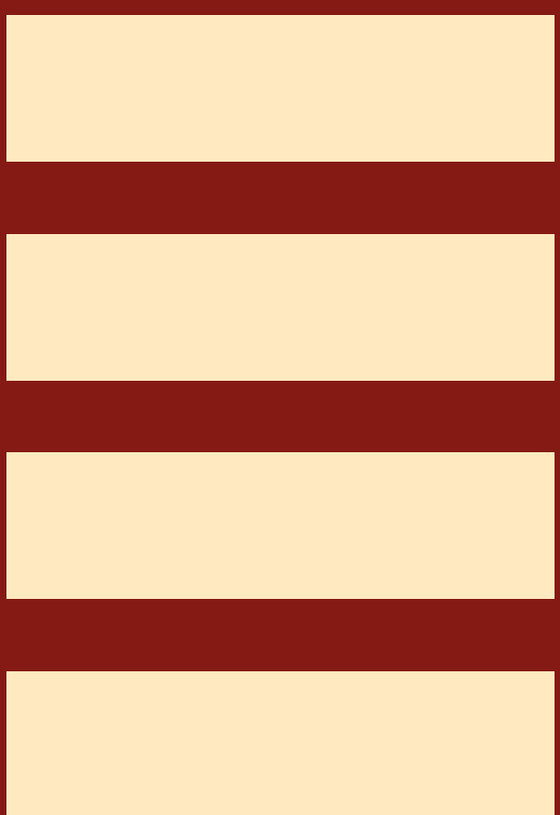


sides of the courtyard, have window arrangements, which follow the curvature. The wood of the window frames and windows can easily be adapted, and the windows and glazing bars are flowingly executed. The transparent components were realized through stove panes. The window was divided in five sections by style, while the panes were split in fours. This image was maintained until the 1979-1980 renovation. For whatever reason, after the renovation, the stove panes disappeared and the glass was no longer curved.
Just as with the stairwells at Zaanstraat, the flowing shape and the stove panes have now been returned. These windows bordered a living area, so, consequently, the glass had to be insulated. The use of interior, secondary windows was considered but was not possible due to the extreme curvature. A technique that could have been applied was to enclose the leaded glass in a double glass construction. *Monumentenzorg*, however, did not allow this method. The ventilation of the leaded glass would be constricted, which could cause a large rise in temperature. In turn, this could lead to glass breakage, as well as running of the sealant.[7] For Het Schip, a compromise was found. The stove panes formed the outer surface, behind which a small, ventilated cavity was created. Normally, such space is filled with argon gas to provide high heat insulation. However, this was not desirable for leaded glass, for reasons mentioned previously. Instead, on the inside, a single sheet of insulating glass was placed. This unit did not have the same heat insulation as modern, double-glazed windows, but it did provide a considerable improvement, compared to the original, single pane glass.
The sculptural windows in the side façades at Hembrugstraat are beautifully detailed. A triangular shape is visible on the historical photos. This shape is emphasized when the window is positioned obliquely forward. The stove panes and the horizontal, middle style did not show up in the 1952 photos. The window frame was maintained, but the glass lied flat in the façade surface. This situation existed until the current restoration, with the window frames still in their original condition. Photos were the only way to reconstruct. A drawing was made of the wooden frame, based on the existing situation and surrounding brickwork. The glass no longer sits flat in the frame, but runs up to the middle style from the upper and lower styles. The stove panes have given the element an extra play of lines.
On the left of the building block at Hembrugstraat, three stacked, nearly square windows are located at the corner. These were steel windows set in a wooden frame. The leaded glass was executed in an ornamental pattern, creating a staggered block pattern. It is not clear exactly when these windows were replaced with normal, single glass, set in wooden frames. This would have happened either during the 1952-1956 renovation or the 1979-1980 renovation. After modifications, the windows lied deeper in the façade surface. They were no longer top hung windows but, instead, inward rotating windows. The subtle play of lines of the thin steel profiles, with the lace-like appearance of the leaded glass, was lost. In the current restoration, the historically top hung windows have been returned, and the leaded glass has been restored to its original condition.
Stove window panes have also been applied in the Cigar bay window. This element is described separately in Chapter 17.

DESIGN AND REALITY

Two more interesting examples of the use of leaded glass are shown on De Klerk's design drawings. No photo material is available for either, so it is impossible to know whether or not these designs were actually built. These examples have not been brought back, in light of this uncertainty.
The first example is the window with the shell-like shape at the side, designed for Oostzaanstraat. The drawing is very detailed, with dimensioning and the surrounding brickwork bond. The glass had a pattern of equilateral triangles fitting inside one other. According to a photo from 1924, taken before the school had been expanded, this pattern cannot be readily identified, despite the fact that the appearance of the rest clearly matches the sketch.
The other example was a window that existed in the rear façade at Zaanstraat. De Klerk also detailed this entire element through a sketch. The brickwork was drawn in the dimension of the masonry courses, as well as in the upright course of bricks. The natural stone corner stones, executed in granite concrete, are shown, and the protruding ornamental stones are designed. These details, the brickwork and the shape of the window arrangement, can still be seen exactly as such. The window was indicated as steel, with three horizontal glazing bars. In between, leaded glass was installed in a block pattern. Very limited photo material is available of the rear façade, so unfortunately, it is not certain if the leaded glass itself was ever applied in this form.
An entirely separate element is the half round window, beside the entrance doors at the courtyard and behind the former post office. On the sketch, this was executed in steel, set in a wooden frame. The glass was provided with a floral pattern, with many curved lines. It looked like a highly developed design, with indications of the brickwork bond and lead covering. However, on a photo taken between 1919 and 1924, the lead cames were shown in a fan formation, looking more like sunrays. The configuration was, therefore, never executed as De Klerk had envisioned it, but modified and simplified. The window was renewed over time, whereby the cames no longer showed the fan pattern.

7 Brochure 41 *Bescherming van glas-in-lood* (2004) by the *Rijksdienst voor de Monumentenzorg*.



Iron and wrought steelwork

Petra van Diemen

16

Iron is a collective name for several iron compounds in which pure iron (ferrum - Fe) is the main component. Five thousand years ago, iron objects were made in the Middle East. Of this age-old material, wrought iron is the oldest type of iron used in building construction.[1] In Western Europe, only wrought iron was available up to the year 1400. After that, cast iron was discovered. wrought iron has a layered and characteristic structure. When it is worked with hammers, slight textures occur. Weld iron has a characteristic, rough surface and shows cast seams.[2] There has always been an interaction between the development of forged and cast iron and the types of furnaces and fuel used.
In the oldest method of producing wrought iron, rough iron - a mixture of iron ore, charcoal, and additives - was made into a malleable material in furnaces with the help of bellows. Charcoal not only contributes to reaching the right temperature, but it also improves the structure of the wrought iron. At a maximum temperature of 1100-1250 degrees Celsius, earthy elements melt and the iron particles, which need a higher temperature to melt, settle to the bottom and clot together into a dough-like lump. The residuals, called slag, remain on top. The lump is then shaped into a useful product with a forge hammer.[3] The furnaces originally consisted of nothing more than a heap of charcoal mixed with some iron ore and the melting fire. The later developed batch or shaft

1 The following information is mainly based on: Fopma/Van Hemert/ Rouwhorst 2011; www.brascamp.com/hpl_geschiedenis.htm; Lintsen 1993, pp. 272-300; *Uitvoeringsrichtlijn Historisch metaal (ferro) (URL 4012)*; Karsemeijer 1985; Meijer 2002; De Vries 1985; brochure *Restauratie en Beheer, instandhouding van smeedwerk in het exterieur*, no. 32 (2003).

2 Another important characteristic to differentiate between forged and cast iron is the way rust is formed. Cast iron acquires a smooth rust layer, whereas on wrought iron rust is in layers causing it to expand significantly. Next, cast iron breaks at construction joints, while wrought iron bends. At the end of the nineteenth century, wrought iron was imitated in cast iron.

3 The properties of iron are determined to a large extent by the element carbon. Iron becomes harder and stronger with increasing carbon content, but also more brittle and thus less ductile. The role of carbon was not known until the eighteenth century, the blacksmith controlled the product from experience, whereby the natural quality of the ore and fuel were also important for the properties of the end product. De Vries 1985, p. 2: “Currently, all iron with a low carbon content is called steel, also if it is not hardened. In the Middle-ages, steel was about six times more expensive than normal wrought iron, which contained almost no carbon.”

furnace consisted of a loam shaft, which was alternatingly filled with charcoal and ore.
In the fourteenth century, with the use of water power, the shaft furnace developed into the so-called blast furnace. In contrast to the loam shaft furnaces, blast furnaces were brick buildings, which could be used for a longer time, sometimes even years. As the bellows were connected to water power, the furnaces became taller. In addition, the temperature could be raised to 1540 degrees Celsius, where iron reaches its melting point and becomes thin and fluid. This iron is no longer forgeable, but it can be cast: cast iron. Cast iron can still be made suitable for forging with a second production sequence, namely re-melting and de-carbonizing. This de-carbonation, the forging of rough or cast iron, is called *frissen* (refreshing) or *louteren* (purging). Besides the blast furnaces, various other types of furnaces existed, including the dome or cupola furnace, which is still in use today.
An important component in the production of forging, besides stoking, is the type of fuel used. Until the eighteenth century, charcoal was used, especially oak. As this became scarce, an alternate fuel needed to be found. Coal was not suitable for use in shaft furnaces or blast furnaces. The high concentration of Sulphur prevents the conversion from rough iron to wrought iron, the reduction. As the carbon content of the iron increases, the melting point reduces. In 1775, Henry Cort of Portsmouth developed a horizontal flame furnace, in which the iron is heated by a flame that strikes across it. This results in a dough-like mass, which can be forged. With this furnace, it is possible to use coal for fuel. In 1784, Cort obtained a patent on this invention of the puddling or stirring process. It was now possible to convert rough iron to wrought iron, without an extra production run, as with the blast furnaces, and without it becoming fluid first. The product from the puddling furnace is called wrought iron or bar iron. Attempts were made to find out how coal could be made suitable for use in other types of furnaces. The coal needed to be charred. The use of coke was an important development.[4] In 1709, Abraham Darby built the first coke-stoked furnace, suitable for the production of cast iron. By using coking coals, the blast furnaces could become larger, holding a greater capacity. At the end of the eighteenth century, John Smeaton developed a steam engine for the production of cast iron. This meant that cast iron was no longer dependent on running water. Around 1830, the use of cast iron increased, partly because of the arrival of the railway.

In the Netherlands, a special metal oxide compound called *ijzeroer* (bog iron) was used instead of iron ore. This was mined mainly in the eastern part of the country. Bog ore was heated in an furnace using charcoal and forced air. The iron industry developed along the river Oude IJssel. Its location advantages were the local bog ore deposits combined with the presence of water power. Finds in the province of Gelderland indicate that cast iron was made in these parts until the twelfth century. Later, this technique disappeared, mainly because of competition from foreign countries.[5] Furnaces were again built after about the year 1300 A.D.
In the seventeenth century, the first cast iron factories were built in the western part of the Netherlands.[6] The production of cast iron grew strongly from the end of that century, and increasing numbers of products were made of that material: hangers, locks, fencing and also anchors and spires. The first known Dutch patent dates from 1689, when Josias Olmius received approval "to discover, search for, and reduce certain iron minerals and all other minerals, that he can find, in order to produce cast iron."[7] None of the factories that resulted from this in the Netherlands had wrought ironworks as their most important product. Their principal product was cast iron in the form of gratings, plates and windows.
The processing by hand of rough iron to wrought iron is no longer practiced. It is a trade that has very limited application.

In the 1919 building specifications for Het Schip, a number of "ironworks" are named, such as wall ties, hoist hooks, ventilation grates, installation components, and iron windows.[8] For the costing post of decorative forgings, an amount of fl. 1,500.- was estimated.[9] De Klerk envisioned exuberant decorative forgings in various locations of Het Schip. In the eventual building, the majority were either simplified or removed. A number of examples of the iron-work carried out is described below.

INTERIOR IRONWORK

Until the seventeenth century, the open hearth was the most important way to heat a room, after that, the stove came into use. The development of central heating took place mainly in office buildings and factories. William Cook invented steam heating in 1745, and in 1784, James Watt built a variant of this in his own home. His system was further developed for British factories. Heating using cast iron radiators was often applied in the Netherlands, until the First World War, but mostly in public buildings and in villas and in mansions.

4 Coking coal is coal, from which impurities have been removed with heat treatment. This results in a purer fuel. It was first applied in China in the ninth century, but it took several decades for Europe to come up with a suitable procedure. Coking coal was first used around 1642 at a brewery in Derbyshire.
5 De Vries 1985, p. 267. In the eastern part of the country, discoveries were made of furnace slags dating back to ca. 3000 BC. On the Veluwe and in Monferland (Gelderland) traces of settlements were found dating back to 800 AC, where large amounts of cast iron were made.
6 De Vries 1985, p. 285.
7 www.brascamp.com/hpl_geschiedenis.htm.
8 For iron windows, see Chapters 10 and 15.
9 De Klerk 1919a, p. 18.

In Het Schip, mantlepieces were used, and stoves could be installed by the residents. A number of wrought iron components, such as dust hatches, hearth lintels, exhaust valves, and niche pipes, are described in the specifications.[10] With the renovation of 1979-1980, when floor plans as well as installations were modified, these components largely disappeared.

DECORATIVE WROUGHT STEEL IN THE POST OFFICE

The entrance to the post office is situated in a tower with egg-shaped floor plan, at the corner of Spaarndammer-plantsoen. The upper part of the tower has a band of roof tiles made in seven rows, the top is covered with lead. This can be seen in De Klerk's first sketches. On top of the tower, a decorative forging was designed, more or less in the shape of a flame. This corresponds with the first sketches he made for the tower at the Hembrugstraat. At that time, De Klerk seems to have still been searching for the correct number of wrought ornaments.

Under the post decorative wrought steel, the specifications describe the ornament on the tower as "smoke cap with peak, office tower."[11] It was therefore not only a decoration, but it also functioned for smoke discharge from the underlying spaces. The actual smoke cap built is simpler in shape and never had the pinnacle that was shown on the drawings for the building permit. Nevertheless, the cap was of a subtle design, which formed a nice crowning of the egg-shaped tower.

Sometime between 1940 and 1970, the ornament disappeared, and a standard roof transit was installed. Before the current restoration, a round lead pipe was made here as an ornament, as it had lost its function as roof transit. For the current restoration, it was decided to bring back the original smoke cap. As there were only sketches and no design specifications from De Klerk, historical photos were referenced for the relative dimensions and what it would have looked like. The new decorative element is made of stainless steel and has been painted.

HOIST BEAMS AND LIFTING ANCHORS

A wooden (later also steel) hoist beam to hoist materials to the upper floors, was a standard component of warehouses. As a typical Amsterdam feature from the end of the sixteenth century, also residences were built with a hoist beam. Presumably because the attics of the mostly narrow houses were used for storage of commodities as well as household goods.[12] For smaller step-gables, wrought iron hoist anchors, also called hoist or moving hook, were installed. These hoist anchors were less suitable for heavy loads.

Installations of wooden beams with a hook at the end existed as well. These hooks were sometimes covered with wooden protective shields. A block and tackle would be hung from the hook, like a pulley that is used on sail boats. The hoist beam was not part of the house design, the first known example is from Philip Vingboons at Herengracht 366-368 in 1662.

Only during the eighteenth century (Louis XIV and XV-style), did the hoist beam become an individual component of the general design that was included in the *kroonlijst* (crown moulding) or as *gootklos* (gutter bearer). The shapes became ever more detailed and decorative, which did not affect the functionality. After 1850, hoist anchors were applied more often than hoist beams, resulting in decorative forgings that can be seen in the city to this day.[13] With the development of iron and steel beams, the application of hoist beams increased steadily. At the time of the Amsterdam School, the hoist anchor formed an inseparable part of façade design. The hoist beams designed by Kramer in 1916-1920, at Van der Helstplein, are beautiful examples of artworks of wood and forging. Although the elevator eliminated the necessity for hoist beams, they continue to be included in contemporary designs as a functioning element.[14]

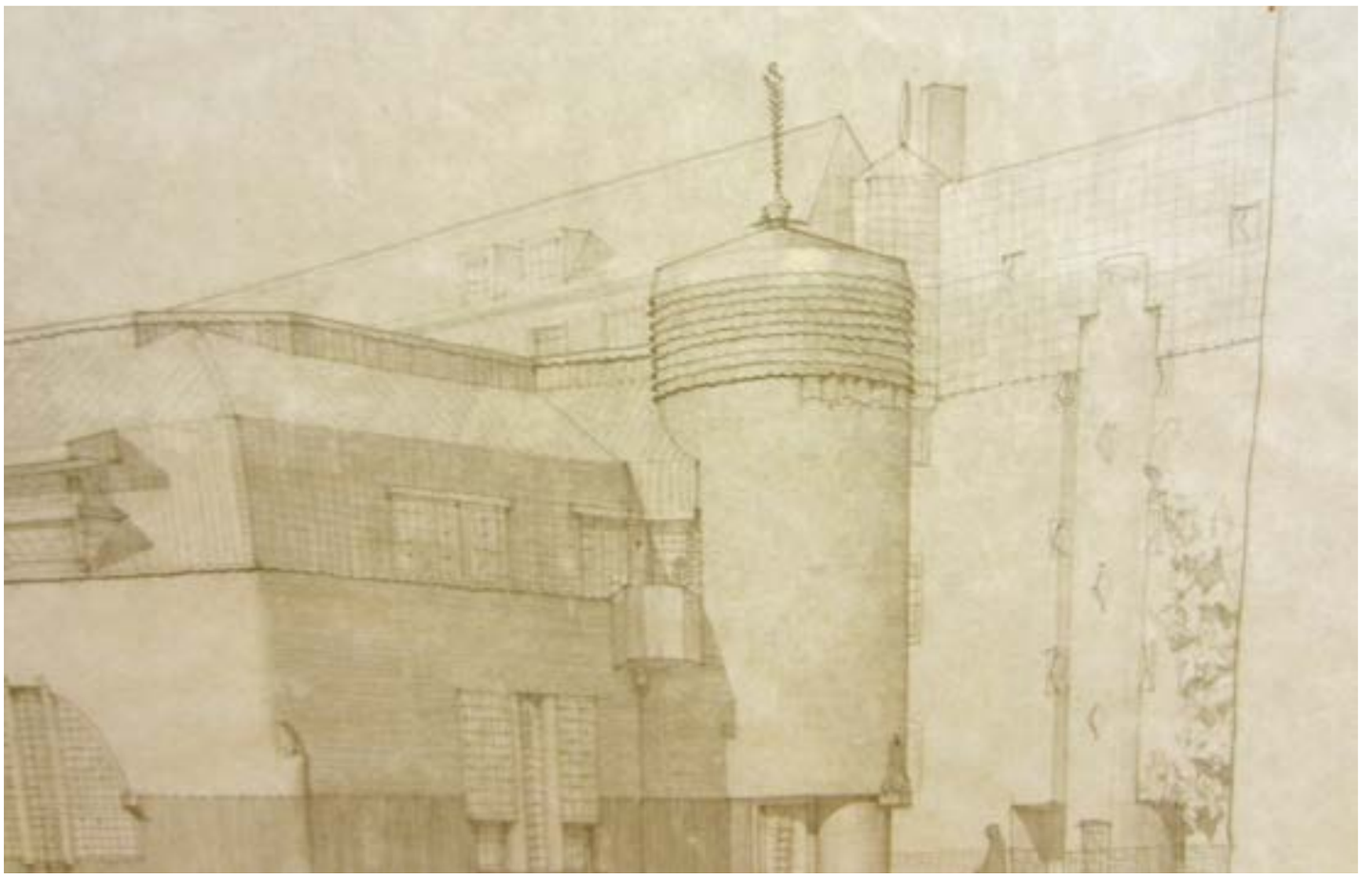
In Het Schip, both forged hoist anchors and hoist beams are used. At the front façades, hoist anchors have been installed at various locations in the curving parts above the hoist hatches. In the specifications, these are described as rough forging.[15] The original hoist anchors have been replaced during the renovation of 1979-1980 by wider specimens in thermally galvanized steel. This happened at the same time as the renewal of the brickwork curvatures in which they were installed. Archival material shows that the hoist anchors were narrower and related to the width of the underlying hoist hatches. The reason why during this renovation the original form and format wasn't restored is not entirely clear, it should have been theoretically possible to reproduce these.

As described on pp. 164-165, the current restoration has removed and replaced all brickwork installed during the last renovation. This included the brick curvatures where the hoist anchors were installed. Therefore, the hoist anchors installed in the 1979-1980 renovation have been removed. As they were still in good condition, it was decided to re-install them in the new brickwork and re-paint them. Thus the historical appearance in this case has not entirely been brought back.

Hoist beams were installed above the dormers windows at

10 Ibid, pp. 18-19.
11 Ibid.
12 Rouwhorst 2008.
13 For example Weesperzijde 24-28 (1880-1890), and Spui 15 (1896).
14 Until 2013, it was a requirement of the building permit of the City of Amsterdam.
15 "For coarse forging for anchors, hoist hooks, ladder hooks, cap brackets, thief irons, etc. to enter a post of 12000 K.G. for payment." De Klerk 1919a, p. 18.

16.01



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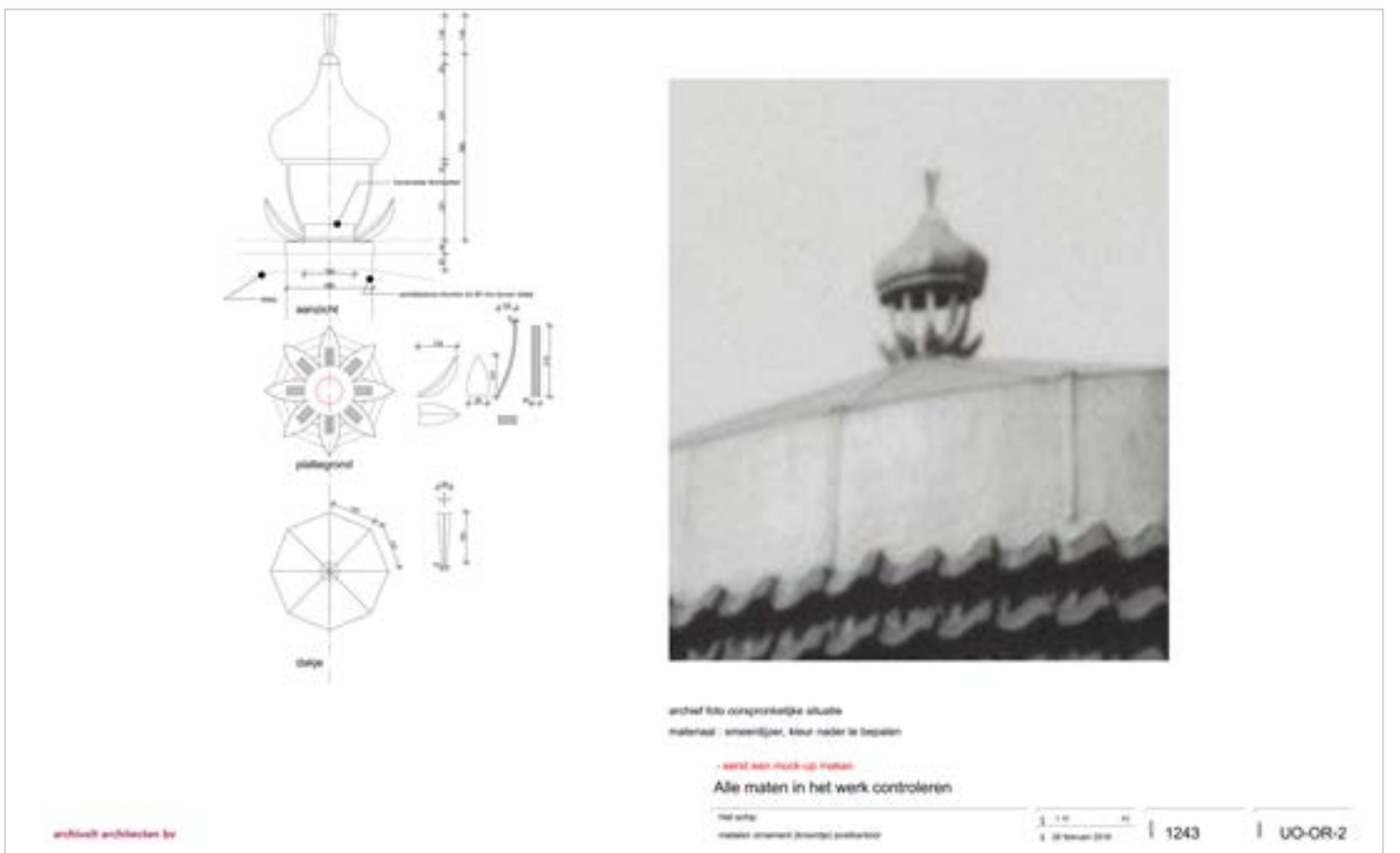
aanzicht
plattegrond
Alle maten in het werk controleren
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16.01 De Klerk, presentation sketch of Spaarndammerplantsoen (detail).
16.02 Working drawing of ornament at post office.
16.03 Ph. Vingboons, Herengracht 366-368, 1662: hoist beams.
16.04 P.L. Kramer, Van der Helstplein, 1916-1920, hoist beam.
16.05 Detail façade Hembrugstraat, September 1924.
16.06 Hoist anchor in the newly masoned façade curvature, December 2017.

16.03

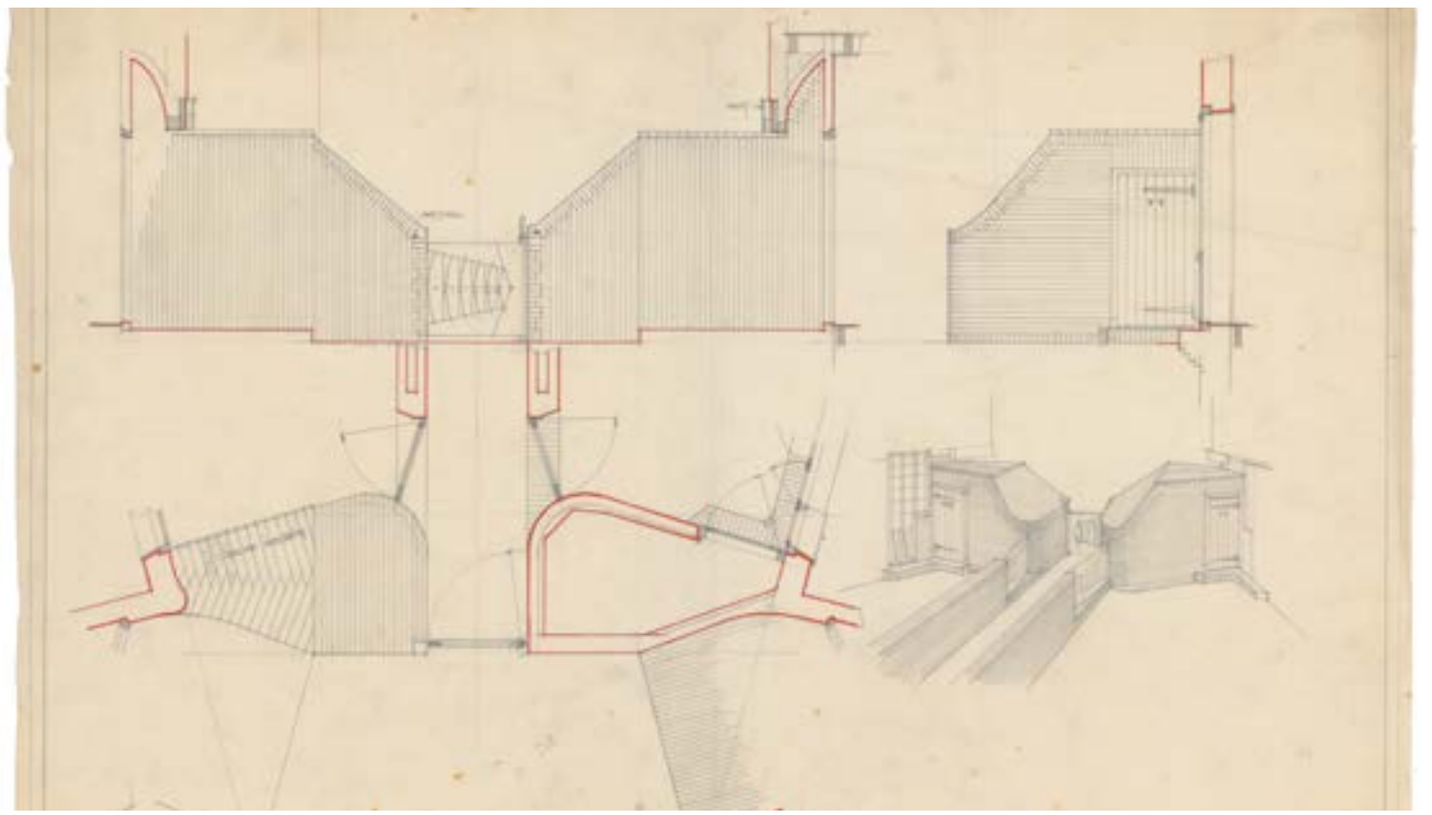
16.04

16.05

16.06

16.07 Design sketch for the fencing in the courtyard, date unknown.
16.08 Courtyard, 1921.
16.09 Fence courtyard, between 1955 and 1975.
16.10 Courtyard, 2011.
16.11 M. de Klerk, design sketch of the façades and ornamentation in the courtyard.
16.12 Detail lantern.
16.13 The lantern after restoration.
16.14 Archivolt architecten, working drawing ornament balcony at post office.

16.07



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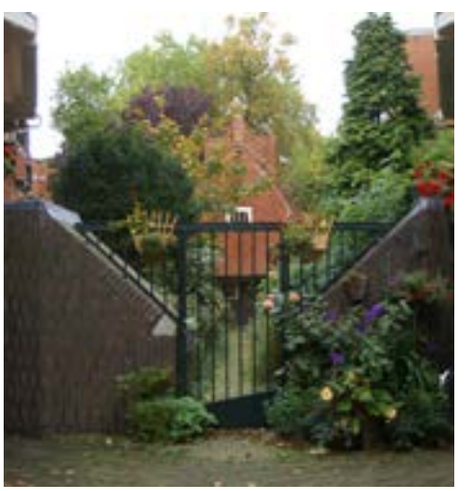

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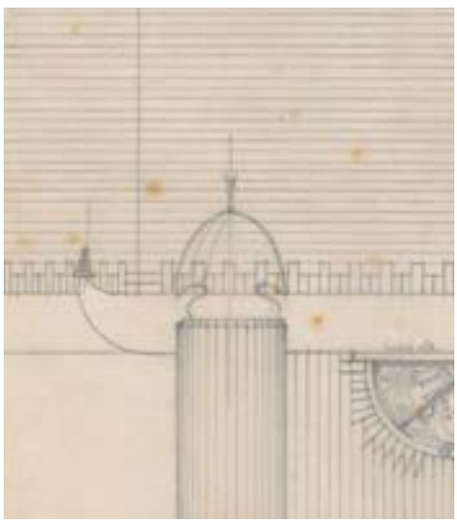

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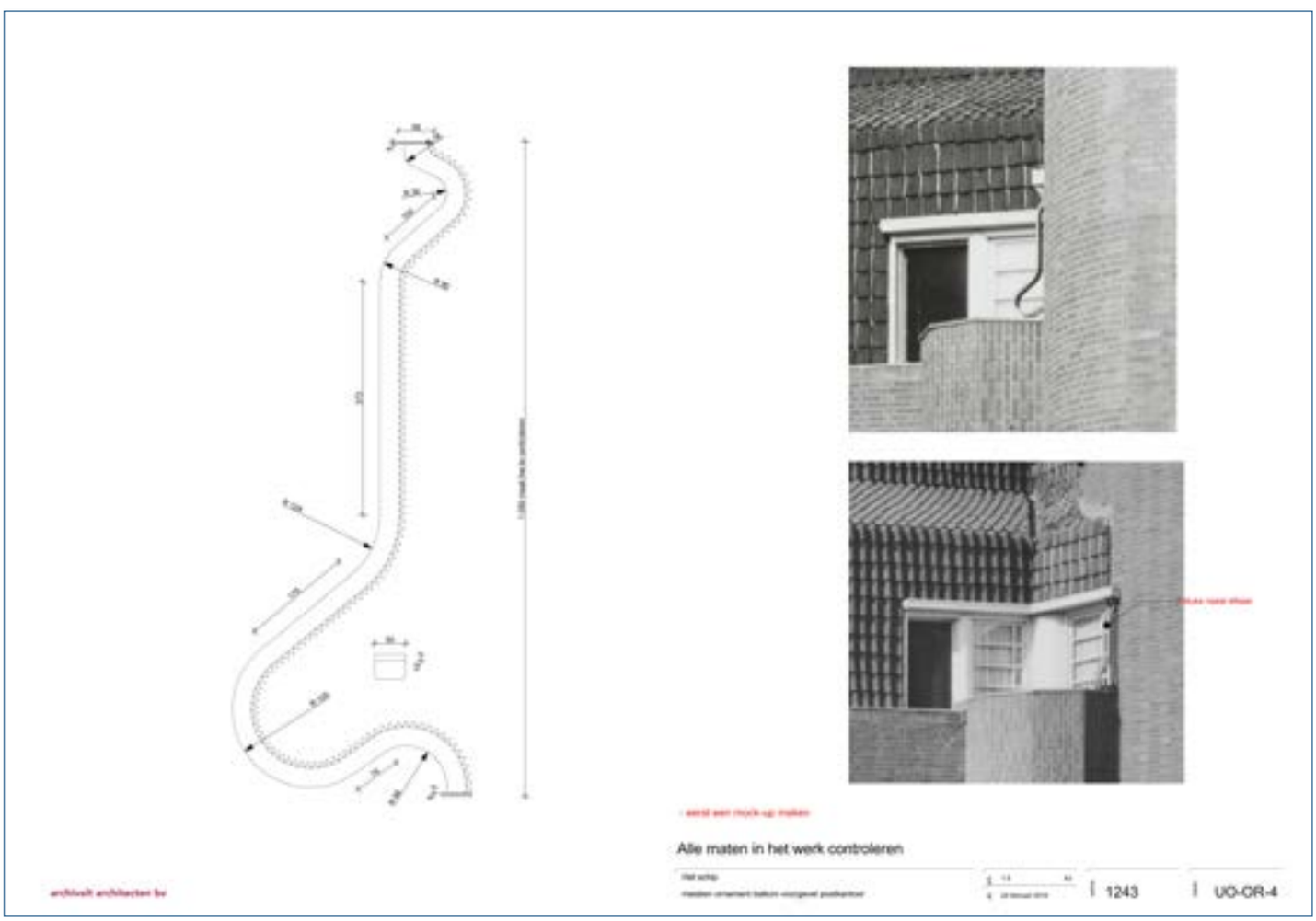

16.15 M. de Klerk, building permit drawing.
16.16 Corner Hembrugstraat/Oostzaanstraat, the ornamental year numbers 19 and 21, high on the façade, 1971.
16.17 Ornament, number 19, 2013.

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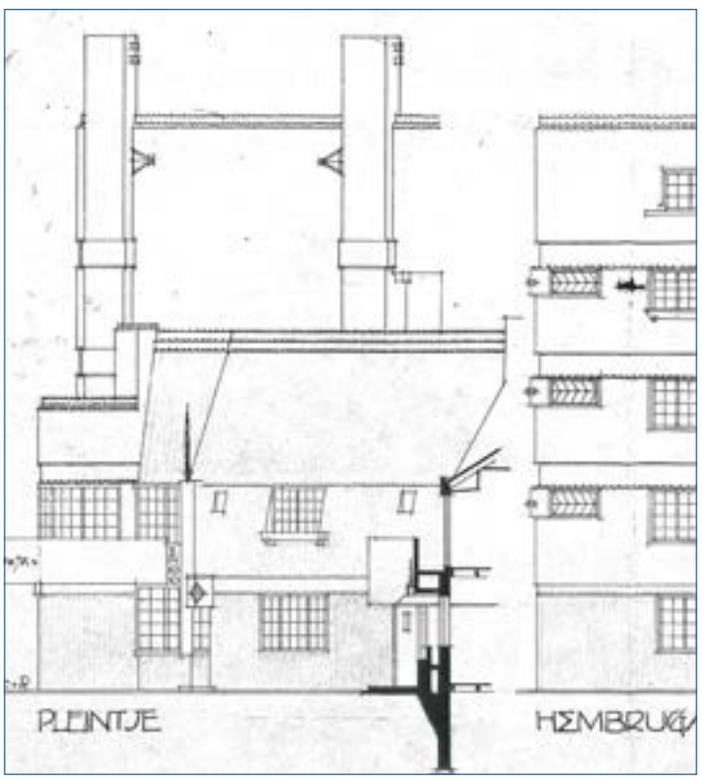

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Oostzaanstraat and Zaanstraat, with a forged hook at the end. These elements were fully developed and detailed by De Klerk. Although they look like wooden hoist beams, they consist of iron beams clad with wood. During the 1979-1980 renovations, the cladding of the beams was modified, whereby the hook was placed further towards the back.

FENCE COURTYARD

In the courtyard, the path to the entrance of the meeting house runs between the rear gardens of the residents. The cantilevered garden walls on either side of the path, which approach each other in an curved shape, match the appearance of the overhanging walls of the court entrance and the meeting house. Between these walls, the entrance is closed off by means of a wrought iron gate. In the specifications, this gate is not specifically mentioned, but it is probably included in the post of decorative forging.[16]
De Klerk's design sketches clearly show an ornate fence of straight and curved corners. From the 1930 photos of the courtyard, it cannot be determined how the fence had actually been built. The fence work showed a plate cladding, which seemed like a temporary provision. On the left side, the dark plates have a trapezoid-shaped, slightly oblique cladding, with a serrated decorative edge inside. The decorative edge seems provisional, as if it were installed later. The gate has wall mounted hinges and a simple door ring for closing of the gate. Below the ring a latch bolt can be seen. At the top, a serrated edge is installed in the form of star-shaped fence tips. While this was perhaps designed to discourage climbing of the fence, it also forms an elegant finish. The strap hinges, as well as the serrated edge, are considerably darker than the plate cladding. It is unclear how the fencing was originally built and whether or not it conformed to the design drawings. Unfortunately, no photo material was found to confirm this. Photos from between 1955 and 1975 show an iron bar fence, but the plate cladding is no longer present. The lower side is a closed element which lies slightly oblique towards the corner, like an unequal-sided trapezoid. The upper side consists of bars, with more star-shaped fence tips on top. It looks like the same fence as the one on the 1930 photo, but the plate cladding has been removed. Indeed, this must have been a temporary situation.
During the renovation of 1979-1980, a new, taller fence was installed, matching the height of the walls. The oblique closed lower side was maintained, and the bar distribution continued to the top of the brickwork side wings. The star-shaped fence tips were replaced by a simple shark tooth pattern. The most probable reason for the modification is that the low fence could be easily climbed, so the raising was desirable for security reasons. The fence is still in good condition. It was not brought back to the original situation, among other things because it is not clear what exactly De Klerk had in mind.

COURTYARD LAMP

A number of residences are accessible from the courtyard. At the rearmost residences on both sides of the courtyard, there are two brickwork columns at the façade, topped by two lanterns. In the design sketch these have a curved shape, like a small cap. The lanterns are made from a wrought iron frame and are closed in by glass. The variant that was built is somewhat simpler: a half round forged shape, closed in by opaque reinforced glass.[17] The lantern is made from various components, which are individually riveted and the clinches are clearly visible on the historical photos. The opaque glass is divided into two sections by the wrought iron frame. The small glass surfaces in each section are connected by means of lead strips, such that the curvature can be closely followed. From the photos, it can be seen that the wired glass is not reinforced with gauze, as there is no pattern visible. The glass was likely hardened by thermal or chemical treatment.
The lanterns were fully renewed at an unknown date, most likely during the 1979-1980 renovation. This is indicated by the fact that forging now shows weld seams instead of rivet connections. Also, the method of connection was changed, and the original lead finishing edge is not present anymore in the current lamp.
At the time of the restoration of the meeting house in 2009, a number of elements in the courtyard were also restored, including the lanterns. It was apparent that the glass had disappeared, and a light fixture was attached to the brickwork instead of the light source in the lantern. The glass of both lanterns was brought back, using opal glass. However, for financial reasons, only a single glass sheet has been installed per segment. Thus, the curvature is not being followed as nicely, but the general appearance has been returned. During the current restoration, the lanterns have been maintained, as they had been repaired in 2009 and were still in good condition.

BALCONY RAILING SPAARNDAMMERPLANTSOEN

At Spaarndammerplantsoen, an piece of decorative forging was installed at the corner of the balcony near the transition to the egg-shaped tower of the post office. This is not described in De Klerk's specifications. The positioning of the piece is apparent from the presentation drawings, although it is not clear what shape or form De Klerk had in mind. From archival photos, it appears that it consists of two curved parts running from the roof edge to the upper side of the balcony.

16

16 "Decorative forging: For forgings at fences for doors and porches, iron exterior stair handrails, pinnacles, lanterns, tower peaks, smoke cap with peak office tower, etc. to post an estimate of fl.1,500.- purchase for payment". De Klerk 1919a, p. 18.
17 De Klerk 1919a, p. 18 and p. 23.

The decoration seems to have a serration at the side of the wall, which gives a shadow effect to the brickwork.
It is not known when the decorative forging disappeared. In a photo that dates back to 1971 it is no longer present. It was not restored after that. In the current restoration it has been reconstructed this element according to the historical photo material.

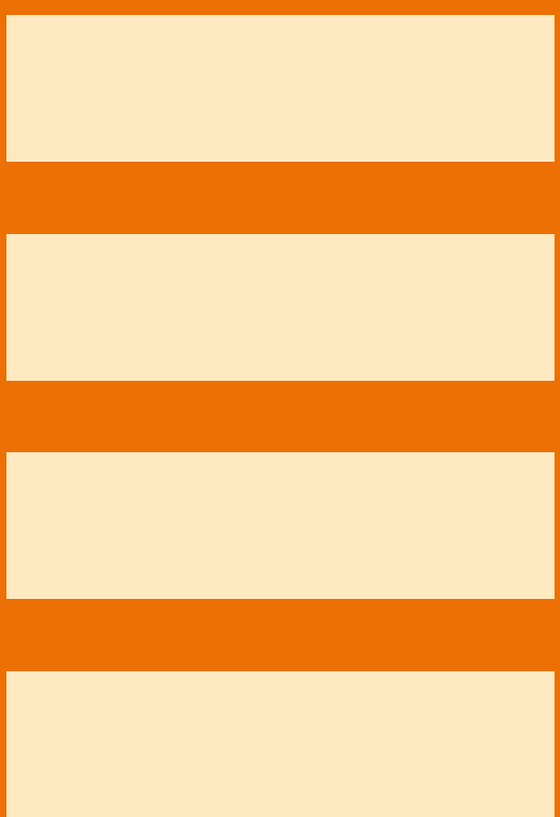
CORNER ORNAMENTATION AT HEMBRUGSTRAAT

On each side of the square at Hembrugstraat, there is a plastered column in the angle space between the residences. A forged decoration of bars, forming a crown shape, finishing in a small sphere, adorns the top of the column. It seems non-figurative, pure decoration. In the building contract it is apparent that De Klerk had a decoration in mind at this location. At that time, it still had an exuberant form and was much higher than the executed design. How De Klerk came to this simplification is not known, no drawings or sketches were found. In 1924, the simplified form is visible. On photo material dating back to 1976, before the renovation, the decorative shape on the right hand side seems to have disappeared. In the 1979-1980 renovation, the decorative forms were again brought back. Whether use could be made of one of the decorations still present, or whether this involved an interpretation, is not clear. In the current restoration, the choice has been made to maintain the ornaments from 1980 and paint them black.

CORNEROOSTZAANSTRAAT/HEMBRUGSTRAAT

On the corner of Oostzaanstraat and Hembrugstraat, De Klerk first accentuated the corner solution with uniquely designed, leaded glass windows. On the construction drawing, he indicated this solution. In the execution of the work, apparently that the choice was made for an obliquely disappearing window within a more sculptural frame. In addition, there is a brickwork ornamentation beside the upper windows, with a forging of the number “19” inside. There are only a limited number of photos of this corner. On one such photo, dated September 1924, fairly soon after the completion, the decoration is visible. This decoration is not described in the specifications. It is not known if this is a design idea of De Klerk, or a wish from the commissioner, to display the commissioning date not only at the Cigar, but also at the other corner at Hembrugstraat. In 1971 the wrought iron number at the Hembrugstraat had broken off, the piece at the corner of Oostzaanstraat is still present. The May 1976 specifications show that the year numbers were repaired rather than renewed: “For repairs, renewals of decorative forgings, such as the tower peak and the year numbers, the contractor posts an estimate of fl. 5,000.- in his bid. This estimate includes a 10% contractor provision.”[18] Given that this is the only reference, it is not clear if both year numbers were renewed, if one specimen was renewed and the other repaired, or if the missing year number was still present somewhere and was installed again. During the current restoration, the paint on the year numbers has not been not removed so that it could not be determined if they had been repaired. The appearance of the year numbers seems to correspond with the photos, but these are not sufficiently clear enough to be sure. The color scheme has been brought back from dark green to black.

18 Van Straalen 1976, p. 24.



Prominent decorative components

Ton Heijdra

17

STONE SCULPTURES BY HILDO KROP

Sculptor Hildo Krop (1884-1970) was of great importance to the realization of Het Schip. He produced many of the sculptures on the building, post office, and school. As far as the housing complex and the post office are concerned, one may assume that Michel de Klerk's influence on these decorations was significant. Some sketches of Hilo Krop's sculptures for the buildings at Spaarndammerplantsoen are from his hand. At the time of the refurbishment of the school, De Klerk had already passed away. Krop seems to have had more freedom. Although, here too, the sculptures fit into the building's design seamlessly. The plan submitted for the construction permit was signed by city architect and director of Public Works, Allard Hulshoff.[1] As Krop worked for this department since 1916, it was logical that he also became involved in the sculptural decorations of the school.

Foals

Besides the small horse crowning the stair pole in the hallway (see p. 263), sculptures of foals can be found on the front, as well as the rear façade of the school. Three foals are situated between the windows on the first floor. One foal sits above the back door to the schoolyard. This sculpture shows only the head and front legs, so it seems to jump out of the wall. The foals are made from dark colored, French limestone. The foals symbolize the youthful frivolity of school kids. On both sides is a terracotta decoration. Accordingly, Maristella Casciato talks about winged horses.[2] Maybe this is far-fetched, but not impossible, as Krop produced many sculptures based on Greek mythology, and he also sculpted the winged horse Pegasus elsewhere.[3]

Ajour relief

Above the entrance door in the school portico there is another foal (see also pp. 260-261). It frolics between flowers and leaves and three men appear to try and catch it. The relief is in the form of an arch, a carving in mahogany, fixed to a plywood board. Hildo Krop made several of these ajour reliefs on schools and public buildings.

1 *Bouwarchief* 2126, 8 July 1925.
2 Casciato 1996, p. 168.
3 Hildo Krop Collection B 178, MA 051 en 052, Hildo Krop Museum, Steenwijk.

Every building had a theme of its own. In this case, the theme is clearly the playfulness of the children.

Archer

Above the portico of the central entrance is a sculpted syenite corbel (see pic. 17.41).[4] In the middle of it stands an archer in full concentration, ready to shoot with his bow and arrow. At the top, four does are jumping. On the right, two menacing wolves approach, and on the left is a writhing snake. The scene is clearly inspired by the Apollo story in Greek mythology. Apollo was often depicted as a young archer. He was the god of the herds and patron of shepherds, and therefore, also the enemy of the wolves. He patronized arching, medicine and music as well. It is possible that Krop chose him because Apollo could protect the school classes from danger with his bow and arrow.
Krop's inspiration for Greek mythology at schools was sometimes criticized. In a letter to the editor, a reader of *Algemeen Handelsblad* newspaper expressed how this symbolism at a school in Amsterdam-North would be much too complicated for small children.[5] The municipality responded that the reader underestimated the teacher. If the children would ask about the meaning of these images, the teachers would have a great story to tell.

Shepherd or boatman

On the left, in a hidden corner over the entrance, there is another terracotta sculpture (see pic. 17.42 and p. 276). It depicts a man with a staff. It looks like he is standing on a boat, and, for that reason, the schoolchildren sometimes called him the boatman.
The man could also be standing on a console and look more like a shepherd with his staff. This sculpture likely joins with the corbel on which the archer is standing. Because Apollo killed the Cyclops, he was expelled by his own father, Zeus, to serve King Admetus as a shepherd. The story goes that Apollo was not watchful enough to prevent Mercury, the god of trade and profit, from stealing a herd. Nobody had witnessed this except for old Battus. Is the depicted shepherd Apollo or Battus? Or does he just symbolize the teacher watching over his children? Whatever the case, this sculpture has always intrigued the schoolchildren. So much so that the author of children's literature, Jacques Vriens, and cartoonist, Paul Bodoni, used this statue as their inspiration for the book *Als een stenen reus* (Like a Stone Giant; 2016), a suspense story about children in Het Schip.

Coat rack tiles

At present, original coat rack tiles can only be found next to one ground floor classroom (see pic. 17.43). These tiles used to be next to all classrooms, and beneath each tile a hook for the child's coat. The tiles are colored relief tiles measuring 120 x 120 mm. All have different images of animals, their purpose to help the kids remember where to hang their coats. The tiles were educational as well, as they familiarized the children with nature. One would expect Krop to have designed these, as he had designed similar tiles for ESKAF pottery in Steenwijk - Krop's birth town. Yet, this is not the case. The tiles were designed by Rudolph Wallfried.[6] This sculptor had been employed by potter Richard Mutz, who collaborated with Roterschen Kunstziegelei between 1907 and 1913. This factory provided enough furnace capacity to produce Mutz's artistic ceramic vases and bowls, and, above all, his ceramics for buildings.[7] Wallfried's designs for the coat rack tiles date from this period, and they appear in a catalogue of the Roterschen Kunstziegelei. Later, Mutz founded a pottery in an artist's colony near Neuruppin in eastern Germany, where he probably produced coat rack tiles once again.[8] The City of Amsterdam was a big client and, therefore, these tiles can be found in many school buildings of the 1920s. Almost one hundred different animal figures are known. Presumably, these tiles would have all been in the school. Now, only 41 tiles are left.

It is unclear how and why the City of Amsterdam selected these tiles. Possibly this was a proposal by Hildo Krop, as he was largely responsible for the decorative art on and in public buildings. He was regularly in Berlin. Chances are that he acquainted Wallfried or Mutz there.
| *Ton Heijdra*

4 AFK 2000, p. 69.
5 *Algemeen Handelsblad,* 7 November 1925.
6 Boonstra 2015, p. 48.
7 The ceramics of Mutz are famous for their glazing technique with much color. His work can be found in various museums. In 2002, the Museum fur Künst und Gewerbe in Hamburg had a large exhibition of work by Richard Mutz and his father Hermann.
8 Boonstra 2015, p. 50.

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17.31 Hildo Krop in his studio.
17.32 Hildo Krop (left) and Michel de Klerk.
17.33 Studio at the Scheepvaarthuis, sculptors sitting are H.A. van den Eijnde, Hildo Krop, Toon Rädecker, and Joop van Lunteren at right. Michel de Klerk in black.

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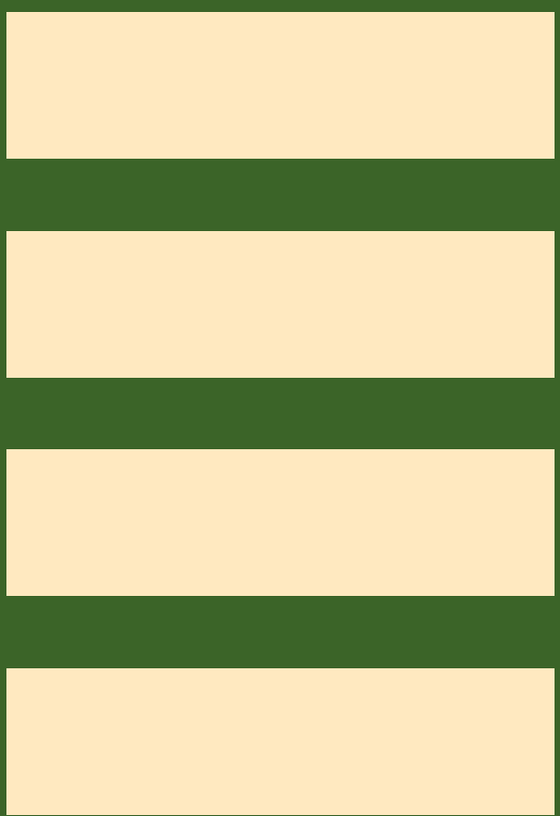
17.34 Foal.
17.35 Archer.
17.36 Herdsman or boatswain.
17.37 Coat hook tiles.



Post scriptum

It is to the housing society, Eigen Haard's, great merit to have commissioned the urban block, Het Schip, for its members in the pioneering phase of Dutch social housing. Even more special is the now one century old stability in managing and maintaining of this extraordinary complex. The history of alterations and restorations partaken during this period, and subsequently described in this book, are witness to this feat. The restoration process, completed this year, can proudly be understood as the culmination of this enduring effort. Eigen Haard invested more than twenty-five million euros in the new life of this icon of modern architecture and social housing.

The meticulous description of processes of preservation, detailed in this book, include the preparation, context, and execution of this project over many years. It marks a significant moment in the history of architecture and social housing. The authors are convinced that its significance reaches well beyond the limits of our own city. Het Schip, together with De Dageraad housing complex, has been proposed as a candidate for Unesco World Heritage designation by a large group of experts. Both complexes are embedded in a meaningful urban context, characterized, by these experts, as exemplary for "the design of the modern city". The authors consider such candidature as the crown on the world-wide re-appreciation of the Amsterdam School. For this reason, the conscientious restoration of Het Schip complex greatly surpasses the significance of the single building.

In the first decades of the twentieth century, a number of movements - socialists, progressive liberals, and emerging emancipatory movements - came together in their urge to renew society, breaking away from the past and from evolutionary development. For the first time, the 1901 Housing Act provided municipalities in the Netherlands with tools for urban planning and design and for social housing. Although this legislation in and of itself was not unique to the world, the energetic application of the Act realized in Amsterdam was exceptional and internationally influential. These innovations in Amsterdam crystallized around a number of key points, including urban politics with, so-called, alderman's socialism, art and architecture referencing the Amsterdam School, housing policy impacting housing associations like Eigen Haard, and the development of powerfully operated municipal organizations like the Housing Agency and Public Works.

Two icons have been selected to exemplify the Amsterdam School. These are urban block Het Schip and housing complex De Dageraad. A central element in the candidature for Unesco World Heritage is the formulation of its Outstanding Universal Value and can be defined as follows. The imaginative powers are brought to bear in the Amsterdam city expansions at the beginning of the twentieth century. They are the result of a unique co-operation between municipality, architects, housing associations, and private individuals. They succeed, in part, because of the leading role the municipality took in promoting a new city image. Not only was the municipality concerned with land, land lease policies, and urban planning, but it managed, in detail, the planning, execution, architecture, and design of public and private space. The intensity of supervision by politicians and civil servants involved in social housing, urban space, architectural quality, and public art resulted in the exceptionally high standard of urban design within these city expansions. The synthesis of these guiding principles and disciplines culminated in the design of the modern city. The leading idea behind the restoration of Michel de Klerk's Het Schip, more specifically the emphasis on its total composition value, adds to the Outstanding Universal Value.

The coinciding of these cultural, political, and artistic tendencies, occurring between 1915 and 1925, jointly created images of architecture and urbanism that were international examples for the modernization of society in the first half of the twentieth century. Icons, like Het Schip, are still a source of inspiration for countries that are now facing challenges of modernizations. The obligation to care for our heritage materialized in the restoration we have described in this book. The fact that a museum centered on all aspects of the Amsterdam School is now also a substantial part of the complex, is a bonus, worthy of world heritage designation.

This book shows, above all, that large, collective challenges cannot be achieved at such a high level of quality without the imaginative sparks of genius and brilliant individuals such as Michel de Klerk.

The authors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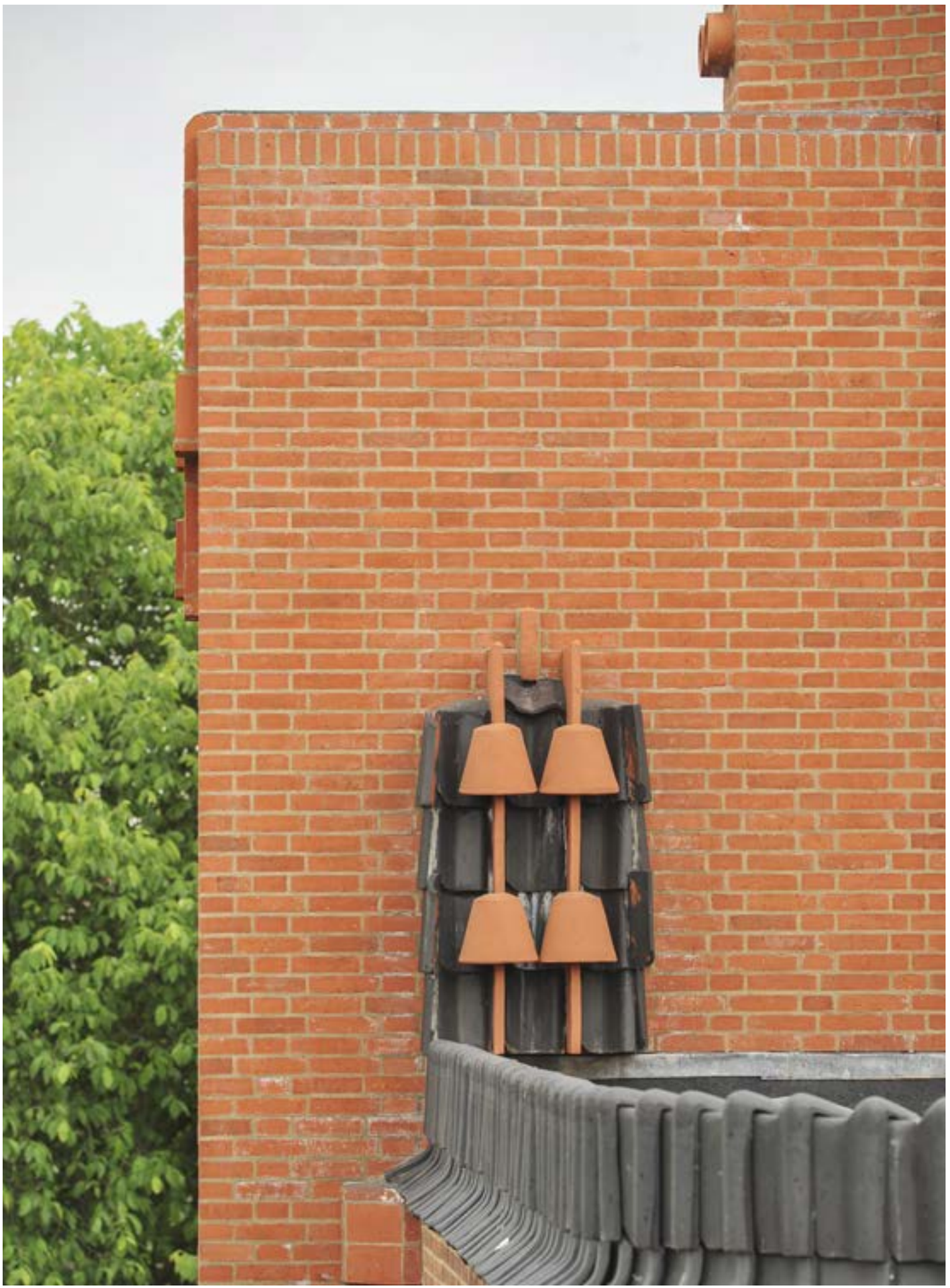

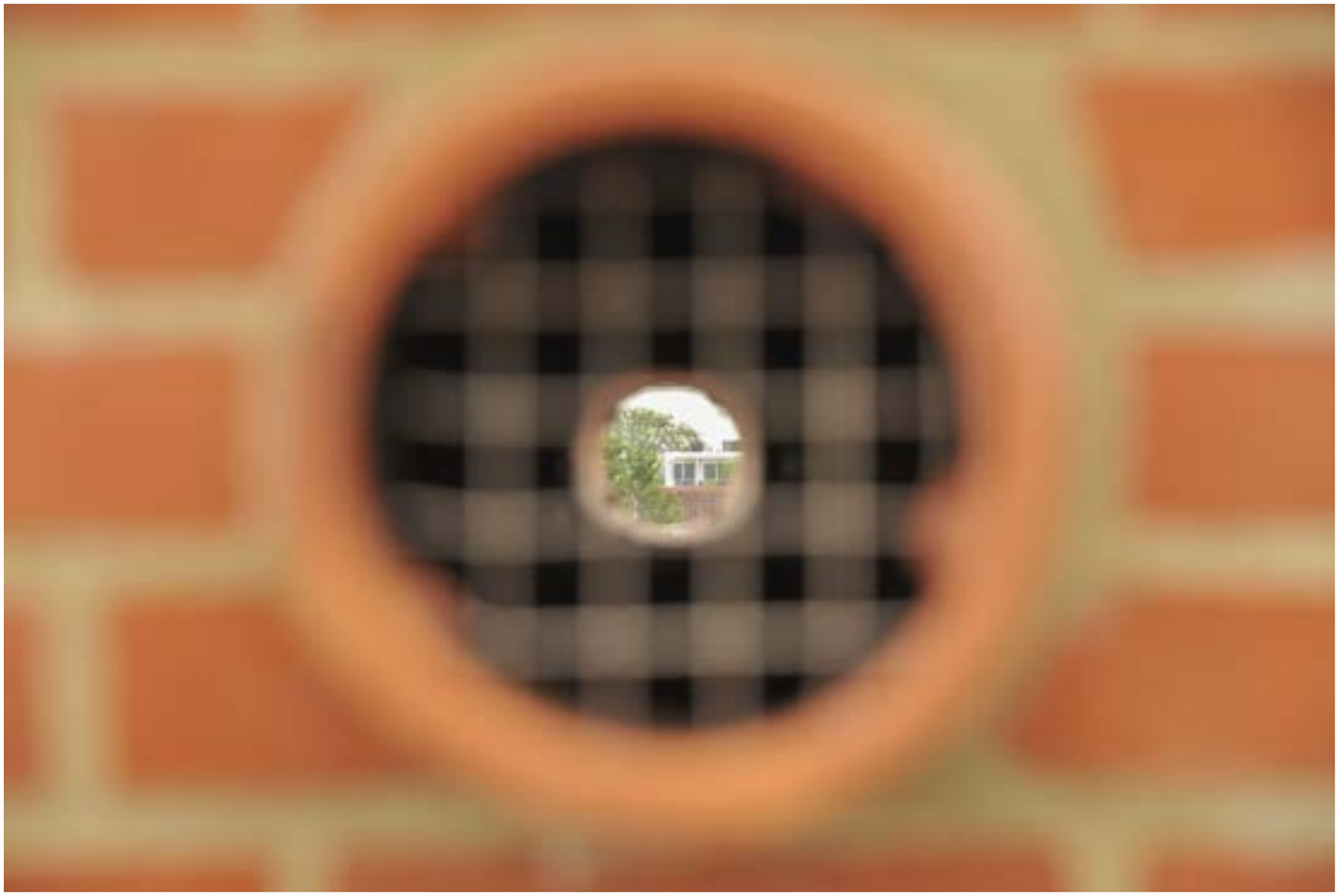


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Niko Koers is an architect and project manager with primary experience in urban renewal. The first project he led was the restoration of housing complex De Dageraad by Michel de Klerk and Piet Kramer. Since 2008, he has been involved as a volunteer with Museum Het Schip and its website, "*Wendingen*," a platform for the Amsterdam School. Since 2012, he has been active as A.A. Hoogteiling, publisher.

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Colophon

This publication provides an account of the restoration of the urban housing block Het Schip, designed by architect Michel de Klerk, built between 1919 and 1921, and restored between 2015 and 2018.

ACKNOWLEDGEMENT
The publication of this book was made possible by the Getty Foundation - Keeping It Modern grant initiative. The publication would not have been possible without the commitment of the authors and their employers, including archivolt architecten bv, Eigen Haard housing association and the Amsterdam School Museum Het Schip in Amsterdam.

The Getty Foundation

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PRODUCTION & ORGANIZATION
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RESTORATION PHOTOGRAPHER
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ENGLISH TRANSLATION
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US BUILDING TERMS
Pieter de Bruyn Kops

BOOK DESIGN
Edwin Boering | MRSDP Design & Producties | www.ebovervloed.nl

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Mokum Karbouw, *seed capital chapter*
Mokum Stad, *captions photo section*
Mokum fonts thanks to Richard Keijzer,
www.fontenwerkplaats.blogspot.nl/

PRINTING & BINDING
Tim Beijer Producties

PAPER
Paper inside work: 130 g/m² Arctic volume white
Paper dust jacket: 150 g/m² wood-free coated mc
Paper inside covers: 120 g/m² Wibalin

Edition NL: 2.000
Edition EN: 1.000

PUBLISHER
Amsterdam School Museum Het Schip

Oostzaanstraat 45
1013 WG AMSTERDAM
THE NETHERLANDS
www.hetschip.nl en www.amsterdamse-school.nl

ISBN 978-90-814397-7-0

This publication is a translation of the original Dutch edition
EEN KUNSTWERK VAN BAKSTEEN
ISBN 978-90-814397-6-3

This book (English or Dutch) can be ordered from:
Amsterdam School Museum Het Schip
Oostzaanstraat 45
1013 WG AMSTERDAM
Telephone +31 20 686 8595
info@hetschip.nl

THANKING
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Het Schip Amsterdam 1919-1921

Up-and-coming architect Michel de Klerk designed an urban block of 102 apartments and one post office, enveloping an existing primary school. The patron of this prominent project was the visionary housing society, Eigen Haard. This “workers’ palace” is now the acknowledged culmination of the design movement known today as the Amsterdam School. One hundred years later, the restoration of this complex has again come to the fore.

The histories and controversies concerning the Amsterdam School are uncovered and reinterpreted, and the genesis and life cycle of the building are brought into focus. The book describes the choices that were made for materials and working methods during the restoration of 2015-2018. Recipes used are described in meticulous detail, from brick to leaded glass and from “lion head” to “cigar”. Few compromises have been made in restoring the integrity of the original image of this complete work of art, an icon of social housing and architecture. This book is abundantly illustrated and written by the very specialists who were leading in this restoration.

AMSTERDAMSE SCHOOL MUSEUM
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Oostzaanstraat 45
1013 WG Amsterdam
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ISBN 978-90-814397-7-0