



Mies van der Rohe, Crown Hall, Chicago, USA, 1950–1956. Restoration by Krueck + Sexton Architects. © William Zbaren, 2005.

EDITORIAL

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***Baukunst and Zeitwille* between Europe and America**

As a tribute to Mies Van der Rohe (Aachen, 1886–Chicago, 1969) around the time of the celebrations of his 130th anniversary, this issue of the *docomomo* Journal focuses on his legacy. As Fritz Neumeyer stated in 1986, “the effort to establish a philosophical foundation for building in the age of technology makes Mies’s statements important witnesses to a period of historical transition, whose importance has been unimpaired by the passage of half a century”. Mies enjoyed great prominence in Europe and America. Starting in Europe, his first incursions resulted in the German Pavilion for the Barcelona International Exhibition (1929), the Tugendhat House (1930) and the Krefeld silk factory and houses. The Illinois Institute of Technology (1943–1957), the Lake Shore Drive (1951), the Farnsworth House (1951), the Seagram building (1958) and the Toronto–Dominion Centre (1969), bear witness to his work in North America. Back in Berlin, the *Neue Nationalgalerie* (1968) testifies to the sublime and perfect achievement of his path towards *Baukunst* and *Zeitwille*. These ideas, which one may translate, respectively, as the art of building and the will of the time, are anchored in Mies’s belief that architecture should be “metaphysically charged with creative life force” (Neumeyer, 1986). This led him to the modern achievement of developing a new kind of freedom of movement in space, following his sense of order (Blake, 1964) and his very unique conception of urban space (Lambert, 1994, 2013).

After more than half a century of use, the rehabilitation of these works forms part of the architectural contemporary agenda. Not only are these buildings still a magnificent source of inspiration, but their resilience has also underlined their capacity for remaining up-to-date, backed by the collaborative efforts of some of the most skilled architects and architectural offices. Many buildings could be featured in this issue, but a selection has had to be made; from Europe and the USA, **docomomo** International is pleased to present both recently completed and ongoing rehabilitation processes, from a cycle that started with Mark Sexton’s keynote lecture to the 13th *International docomomo Conference* (2014, Seoul), on the restoration works being undertaken on the Crown Hall. This lecture was developed in even greater depth and became an inspirational paper for this journal. Since then, in recognising the importance of the academic research conducted by the team of Christian Raabe, Daniel Lohmann and Norbert Hanenberg, at the *Rheinisch-Westfälische Technische Hochschule (RWTH) Aachen*

University, namely the studies developed within the restoration of the Krefeld *Verseidag* silk factory, it has become clear that this is now the time to analyse the question of the preservation of Mies architectural works. With the aim of providing a broad overview of recent and current activities relating to the legacy of Mies, this issue publishes new research undertaken into the early years in his hometown Aachen, as new actions linked to the Krefeld Golf Club and into the context surrounding the German Pavilion design. The reproduction of drawings kept in the archive of the New York Museum of Modern Art (MoMA) was crucial in providing fresh insights. The participation of several members of **docomomo** in THICOM reveals the discussion process within the Tugendhat House restoration. The contemporary challenges facing architecture and construction are also analysed in the context of the restoration of the God Box chapel and finally under the scope of the refurbishment of the *Neue Nationalgalerie* by David Chipperfield Architects, conducted by Martin Reichert at his Berlin office.

I wish to thank the guest editors for their generous work, the authors for sharing their knowledge, practice, reflections and research, and finally the Krefeld-based Interface Company and the Mies Society for their special support. A special word of thanks is also due to Fritz Neumeyer, who generously agreed to share his thoughts on the legacy of Mies through an enlightening interview. With permanently fresh insights, Neumeyer promotes intellectual links to both classical and contemporary discourses, bringing to the fore the works of Behrens, Shinkel and Gilly.

docomomo is proud to join in the 2016 celebrations on Mies van der Rohe, such as the exhibitions in Herleen or at the Ludwig Forum in Aachen, followed by the 30th anniversary of the reconstruction of the German Pavilion in Barcelona, and most recently the *Circling the Square* exhibition at the RIBA.

By embarking on this journey through Mies’s experiences of *Baukunst* and *Zeitwille*, this journal seeks to pay tribute to the timelessness of his legacy.

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The Heritage of Mies

BY NORBERT HANENBERG, DANIEL LOHMANN AND CHRISTIAN RAABE

Mies van der Rohe's built work covers a timeframe of over 60 years, including two world wars and several revolutionary events in the history of architecture. The extraordinary architect has influenced 20th century architecture worldwide like few others have. In the context of several restoration projects, the time has come to review the condition of his buildings: Is their materiality as timeless as their appearance? Did his constructions, which are of sometimes an experimental nature, prove to be sustainable, or did they fall into disrepair? How can Mies van der Rohe buildings be documented, repaired, restored, reconstructed, without losing the characteristic details of his work, and in order to preserve the architectural integrity and relevance of the Mies van der Rohe's oeuvre?

This journal is the result of a set of activities concerned with the documentation, restoration and artistic reception of the oeuvre of Mies van der Rohe. These endeavors go way beyond questions of an adequate conservation and restoration of his preserved buildings. They begin with an academic approach towards Mies van der Rohe's oeuvre in the context of several architecture schools, where his buildings are the focus of hand-in-hand teaching and research. The work with a current generation of architecture students and future protagonists may offer a relevant contribution to the actuality of Mies van der Rohe, especially in the discussion about Modern Movement and its allocation in a system of values that must be repeatedly reconsidered. In times of changing scientific objectives and methodology, research about this architect may offer new approaches and results, despite the large amount of literature that has shaped our image of Mies van der Rohe as an architect and a leading character of modernism. But beyond all theory, numerous projects from the practical world of conservation and restoration dealing with Mies van der Rohe's built work have been initiated or finished recently, after many of his buildings have reached the end of a chapter in their lifecycle. Finally, several quite diverse approaches to the curatorial dissemination of Mies van der Rohe's work through classical exhibitions and other ways of artistic reception and presentation have helped to show the role of modern architecture as a whole and its impact and relevance for our society.

The aim of this journal was to create a broad overview on the recent and current activities concerned with the heritage of Mies van der Rohe.

The exhibition *Mies and the Inheritance of Modernism*, which (Schunck* Glaspaleis Heerlen, Netherlands, April–August 2016) presented an overview of the built work of Mies van der Rohe with a detailed focus on five buildings and the

methods of their preservation and restoration. Through this exhibit, and its broad framework program of lectures, symposia and guided tours, awareness was successfully raised for the concerns of heritage conservation of modernism and especially the built work of Mies van der Rohe. The contribution of curator Andrea Croé in this issue gives a good insight into the general concept.

The essays present restoration projects and other activities from academia and dissemination, and follow the chronological order within the professional life of Mies van der Rohe. He was born in 1886 as the youngest son of a stonemason in the West German city of Aachen. Around the occasion of celebrating 130 years since Mies van der Rohe's birth, researchers Maike Scholz and Daniel Lohmann have gathered new information about Mies van der Rohe's professional and personal relations to his home town, in order to add a dimension to the understanding of his first years in practice and his later work.

Amongst the numerous assignments that Mies van der Rohe received from Krefeld, Germany, the silk factory *Verseidag* has been disproportionately neglected in research, although it was the only industrial building that he ever built. On the occasion of current reuse and restoration work, a group of researchers and students directed by Norbert Hanenberg and Daniel Lohmann joined the team of architects and restorers to provide a scientific consultancy. Their article shows the way in which restoration decisions are based on current investigations into the history and materiality of the building. A new tenant in the former gatehouse of the silk factory is the company Interface, who is contributing to revive the site. Interface has developed a strong interest in *Verseidag*'s history and restoration, and has been a supporter in the realisation of this issue of the **docomomo Journal**.

Also in Krefeld, in the summer of 2013, an initiative of Christiane Lange led to a widely perceived and respected exhibition of a temporary artistic reconstruction of Mies van der Rohe's unbuilt Golf Club as a 1:1 model. In her article, she describes the project's background and the way, in which the architects Paul Robbrecht and Hilde Daem created an adequate and intelligent enrichment of the current discussion about full reconstruction through deliberate artistic abstraction and interpretation.

Concerned with the Krefeld commissions of Mies van der Rohe, Norbert Hanenberg and Daniel Lohmann have gathered new material from the archives of the *Verseidag* company archives to clarify the architectural history of the urban layout of the plant, and the possible involvement of

Mies van der Rohe in this process. In this way, the correlation of this last of his pre-war European commissions to his first American project – the urban design of the Illinois Institute of Technology in Chicago – was investigated and offered new information about continuity in his oeuvre.

The paper about the restoration of the Tugendhat house in Brno, Czech Republic by Ana Tostões, Ivo Hammer and Zara Ferreira present the spectrum between historic significance, thorough research and careful restoration that led to the revitalization and restored accessibility of the public to one of Mies van der Rohe's masterpieces.

Two of the buildings on the IIT campus have been restored recently, and help to show the importance of thorough preparatory studies in order to execute a comprehensive refurbishment preserving the building's structural and visual integrity. In the first article, Mark Sexton and his team deliver insight into the intense forensic research that was carried out on the S. R. Crown Hall, the heart of the Chicago campus, and the complex path towards material choices for its repair, in order to closely maintain the originally intended appearance of the Mies van der Rohe masterpiece. Secondly, Gunny Harboe was facing quite similar challenges in his restoration project of Robert F. Carr Memorial Chapel of Saint Savior, whose minimalism is expressed in the nickname "God Box". His article shows how the small building on the IIT campus was restored over a long period of time with challenging financial means, in order to rehabilitate the important religious and social function of the building on the campus.

Back in Berlin, Germany, and after its opening in 1968, the *Neue Nationalgalerie* had been in continuous intense use since its construction and was in urgent need of restoration. Because of the immense significance of the building, a meticulous process is currently being carried out in the coordination of a team of architects in the office of David Chipperfield. As the article by Martijn Jaspers shows, the project may serve as a textbook example of conservation in the future, in the same way that Chipperfield's *Neues Museum* concept has already enriched the conservation discussion not only in Berlin and Germany, but internationally.

With this variety of essays, not only significant restoration solutions are documented through different projects of outstanding value and in varying dimensions, but also a range of diverse methodologies for research and conservation. Historic building research contributes to understand and preserve the work of Mies van der Rohe. The survey of the original substance gives indications of the time determination of individual components and provides evidence for the reconstruction of the architectural concept and the process of construction. As shown in the case of the survey of the Verseydag site and the restoration of the Crown Hall, new assignments to the oeuvre are possible and temporal developments become visible. Without an understanding of the building's idea, the structure and the substance, restoration work and thus the preservation of the buildings of Mies van der Rohe are unthinkable.

His architecture is essentially determined by the selection and fitting of materials and less by constructive inventions. If we understand the concept of Tectonics in architecture

as a narrative element that leads the spatial structure, the volumes of material and space as the appearance of the materiality to a concerted statement, then this is very similar to the work of his important model Karl Friedrich Schinkel. Both combine traditions of architecture with their own new ideas. In this sense Schinkel commented very carefully on his *Bauakademie*:

"Some will rarely notice the novelty, whose (...) merit will lie more in the consistent application of a quantity of inventions made over a long period, which could not be brought together before in architecture".

Notes

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01 Teaching on-site. RWTH Aachen teachers and students in Mies van der Rohe's Verseydag factory, Krefeld, Germany. © Daniel Lohmann, 2014.



“Zur Neuen Welt” — Towards the New World. Ludwig Mies and his Architectural Youth in Aachen.

BY MAIKE SCHOLZ AND DANIEL LOHMANN

Ludwig Mies van der Rohe's personal and professional connections to his hometown Aachen in Germany are mostly unknown today. Through the analysis of both old and new written and graphic sources, the authors give an insight into Mies van der Rohe's lifelong bond to his hometown. In the personal friendships, his friends Ferdinand Goebbels and Franz Dominick play a key role. Furthermore, the paper presents previously unknown buildings that young Mies was working on in the office of Albert Schneiders around 1905. One of the buildings, the house “Zur Neuen Welt” for client Joseph Oeben, is still standing and represents a lively example of the stylistic search in architecture after the turn of the millennium, and an early step towards Mies van der Rohe's architectural maturity.

Letters from the Past

In 1947, almost 10 years after Mies van der Rohe's emigration to the United States and shortly after WWII, the architect received two letters from one of his childhood friends from his hometown Aachen.

Little is known about the activities and personal connections in Aachen of the man, who later called himself Ludwig Mies van der Rohe and became one of the most important architects of the 20th century: who were his companions in the early years? Which of these connections lasted throughout his later life? Where did he get his first education in the field of architecture and construction? What projects did young Ludwig Mies work on?

Those almost forgotten letters from Germany give a rare insight into the first years of Mies's career, decades before he was well established in the United States as a teacher and an architect. The sender Franz Dominick (1888-1954) was also an architect, born in Aachen, and a companion of Ludwig Mies in the early years of his career in both Aachen and Berlin. Dominick had not been in contact with Mies for 25 years. In these more than two decades, he had worked in a successful architectural office in his home town together with Ferdinand Goebbels (1885-1955), another childhood comrade of the two. Their office, Goebbels & Dominick, had built numerous houses, settlements, churches and other buildings between the end of the war and 1939 that are still present in Aachen's cityscape and the surroundings today².

Dominick's letters from March and August of 1947 are seemingly written amidst the rubble of destroyed Aachen. While his main intention was to ask for work in his postwar hardship, both of his letters include melancholic accounts of their youth and early career. Dominick recalls joint activities like hikes in the nearby Eifel region. He even suggests to write a biography of the years of apprenticeship between 1908 and 1920 — what he calls the *Werdejahre* of his now-famous old friend and the common time in Aachen

and Berlin. His description gives an insight into the relatively unknown first steps of Mies's architectural career. “I would start with the first years at Albert Schneiders — Öben house with the Prometheus – Levy – then Behrens – Riehl – Perls – Kröller (...)”³. While Riehl and Perls are known as original works of Mies in Berlin, and Kröller is a project of Peter Behrens, the first two listed houses Öben and Levy have never been mentioned before. This short list can be considered as a rare account of the buildings that young Mies was working on in his first years of practise. Are the two unknown projects original ones, or did he work on them in his time of employment in the architecture office of Albert Schneiders between 1904 and 1905? Interestingly, Dominick does not mention the only project known through Mies's own memories of this time — the Leonhard Tietz department store at Aachen's market place.

Albert Schneiders

Three employers of young Ludwig Mies are known. After first experiences in his father's shop and as a mason on construction sites, he got a job in the studio of architect and stucco factory owner Max Fischer. After half a year in the office he was promoted to the drafting room. Mies spoke of this job as a time of intense learning to draw full-scale ornaments in all styles⁴. The next architect to hire him was a man with the widespread Rhineland name, Goebbels. He was certainly neither Ferdinand nor his father, as it has been suggested by previous research. Ferdinand was obviously a youngster himself, and Ferdinand's father Johann Wilhelm was a simple stoker⁵. Mies's employer was most likely a man with the illustrious name Josef Goebbels, architect and member of the Aachen town council. His family relation with Ferdinand is unknown.

Mies's last and most influential boss before his departure to Berlin was the architect and engineer Albert Schneiders (1871-1922) (figure 01). His office was an enterprise success-



01 Architect Albert Schneiders (1871-1922).
© Private collection of Gabriele Schneiders,
Aachen.



02 Albert Schneiders, Department Store
Leonhard Tietz, Aachen, Germany.
1910. © Private collection of
the authors.



03 Albert Schneiders (attributed,
in collaboration with Ludwig Mies),
Levy house, 163 Oppenhoffallee,
Aachen, Germany.
© Daniel Lohmann, 2017.

fully involved in the Wilhelminian Gründerzeit building boom at the turn of the century. The list of employees included not only young Mies and his friends Ferdinand Goebbels and Franz Dominick, but also a few years later Emil Fahrenkamp (1885-1966)⁶, another Aachen born architect who was to become famous later on.

There are numerous buildings by Albert Schneiders in Aachen. In the Frankenberger Quarter alone, which was mainly developed and built between 1874 and the WWI, at least 19 buildings were designed and built by his office⁷. He has been described as one of the “outstanding architects”, who was responsible for ambitious, original and bizarre façade designs. Schneiders’s opulent buildings are rich illustrations of the typical mixture of styles near the end of the 19th century. His eclectic combinations of historic styles, floral motives and mythical creatures are considered to be “climaxes” of the architecture in the quarter⁸.

Department Store Leonhard Tietz

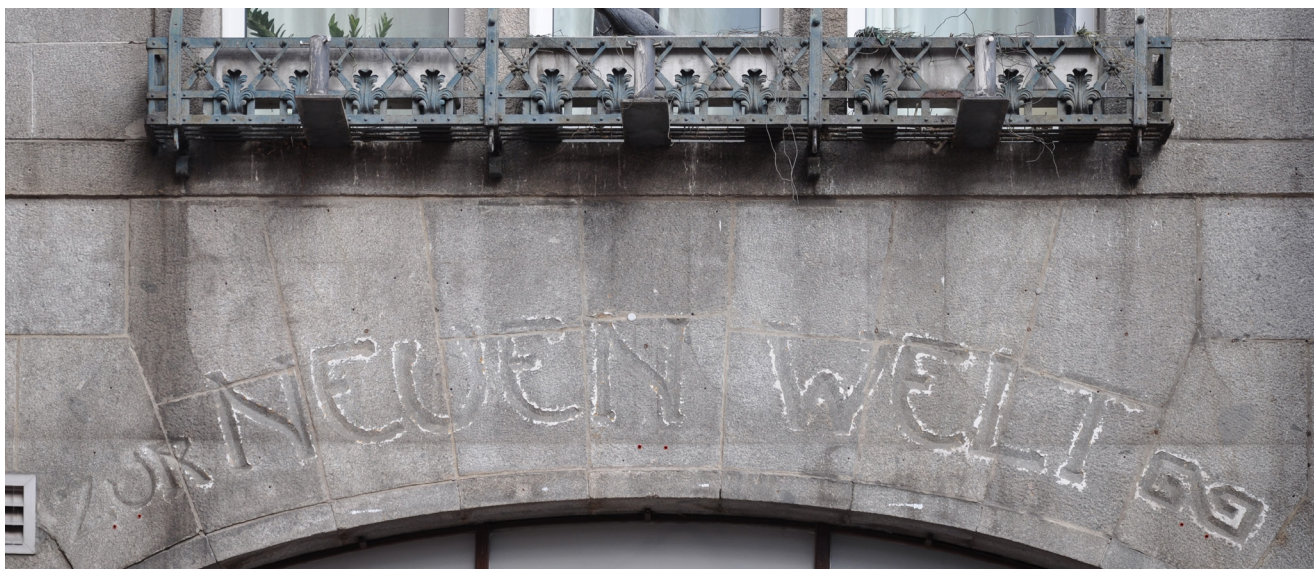
The participation of Mies in the studio of Schneiders is still only linked to the project for the Jewish department store company of Leonhard Tietz to design and construct their local branch opposite Aachen town hall. In an anecdote, Mies himself told the story of his hiring in the office: “He had conceived a highly ornamental façade for the building, but his reach was greater than his grasp; he couldn’t draw it. He asked me if I could. I said, ‘Yes’. He wanted to know how long it would take. I said ‘do you want it this evening? Or do I have a little more time?’ He looked at me as if I were a fraud for promising to do it so fast. ‘Give it to me tomorrow’, he said, and I did. Then he asked me to work for him”⁹.

Schneiders must have had a high opinion of his new employee, since he paid the tuition fees for his evening and Sunday classes at Aachen art school *Kunstgewerbeschule* for a period of time¹⁰. Apparently, they were too high for

Ludwig or his father Michael Mies, who had already asked for a municipal grant for Ludwig’s attendance at vocational school around 1900¹¹. In the *Kunstgewerbeschule* Mies took classes in structural theory, statics, mathematics, design and life drawing, as two of his classmate friends confirmed in a letter many years later¹².

The Tietz department store was certainly the biggest project for Schneiders’s office, and a good scope for Mies to perform his drafting-skills. The elevation of the building is a perfect example of the office’s pluralism of styles. It is composed of two symmetrical gabled façades in neo-renaissance shapes, joined by a tall tower and a central projection in Art Nouveau style above the monumental arched entrance (figure 02). The ornaments cannot be studied in situ anymore, since the building was demolished in the fall of 1965. However, all of Mies’s memories can be confirmed in the preserved building authority file¹³:

A first set of drawings with the signature of Schneiders was handed in for an application on 31 August 1904. The following half-year was filled with stylistic discussions, written requests, and changes of plans. Mies acknowledged receipt of a set of drawings by proxy of Albert Schneiders on an official form of the municipal authorities on 24 November 1904. The first building permit is dated 8 February 1905, but under the condition of plan revision by Schneiders. A final set of plans was handed in on 25 May 1905. Construction work started on 17 June 1905. The Berlin based construction company Boswau & Knauer announced their taking over of the responsibilities for the project in an official letter to the mayor’s office on 25 July 1905. This is the incident that appeared like a hostile takeover for young Mies, when an invasion of people from the Berlin head office came to Aachen¹⁴. In fact, it was quite common in the construction process of department stores. Often times, stores throughout Germany were designed by smaller local practises



04 Albert Schneiders and Ludwig Mies, *Haus Oeben*, Aachen, Germany. Façade detail. © Daniel Lohmann, 2017.

and built by Boswau & Knauer¹⁵. At least, one of the new colleagues inspired Mies to take a chance and go to Berlin for new professional challenges¹⁶.

Due to its scale and duration, the Tietz project was the one that Mies worked on throughout all of his months in Schneiders's office. The Levy and Oeben houses mentioned by Franz Dominick, were smaller assignments.

Levy

In a written record by Ilse, the youngest of Albert and Adele Schneiders's nine children, she writes of her mother having said "their father had designed and built noble family homes for many wealthy Jewish clients. They were his favorite"¹⁷. This statement may be linked to the typical Jewish name Levy given in the project list of Dominick's Letter. Quite possibly, the name refers to Ludwig Levy, a manager of the Königsberger cloth mill, who had a family home built on the grand main avenue of the Frankenberger Quarter, *Kaiserallee* (today 163 *Oppenhoffallee*)¹⁸. The house was built in 1905, with an ornamental façade that can be ascribed to Albert Schneiders by stylistic means¹⁹ (figure 03). The typical noble townhouse has an almost 8-meter-wide façade, four main stories, plus a fifth in the mansard. Neo-gothic and Art Nouveau floral ornaments articulate the façade. Combined with the relatively large amount of unornamented wall surfaces, the house is a good example for the tendency of façade designers slowly shifting away from overly rich historicist façades, but keeping some of their *horror vacui*.

If this building is the Levy house mentioned in Dominick's letter, it may serve as a good example of the ornamented façades that Schneiders had designed, but needed to hire the skilled 19-year old draftsman Ludwig Mies to make the necessary drawings of it. Secondly, it highlights the development of Schneiders's style in the early 1900s.

Towards the New World

The second building mentioned by Franz Dominick is the *Haus Oeben* and could be identified as a building located at 109 *Alexanderstrasse* in an old working-class neighborhood on the eastern edge of the old town limits. The name refers to the owner Joseph Oeben (b. 1853), who was a key figure in the early days of the Aachen social democratic party around the turn of the century²⁰. Oeben was a politician, a party delegate and managing editor of the local social democrat newspaper *Rheinische Zeitung*. Most importantly, Oeben was an innkeeper and intended to replace his existing small tavern with a new pub and venue on his site in *Alexanderstrasse* in 1903. The emerging socialist movement and trade unions urgently needed a meeting place. Furthermore, Oeben himself and other party members intended to live in the projected flats at the same address.

The planning application of 8 January 1904 includes plans drawn by the office of Albert Schneiders. The project was to build a mixed-use townhouse in the 5.36-meter-wide plot with a pub and venue in the tall ground floor and tenements on the three upper floors²¹. The ground floor was to be much higher than those of the neighboring houses, with a gallery inside and a large opening towards the street spanned by a single round arch, subdivided into three segments with smaller round arches above the two side bays. Schneiders's elevation (figure 05) shows a symmetrical façade richly ornamented in stucco on the lower two floors. Both of the upper floors had a projecting central bay window and were covered with shingles. The whole top floor was to be roofed by a steep gable with an ornamented pediment in its upper half, bargeboards and a globe at the ridge.

The iconography of the façade uses common socialist symbols²². On the left side of the figurative frieze above the ground floor arch, a blindfolded Lady Justice is holding scales and symbolizes freedom and justice. To the right,



05 Albert Schneiders, *Haus Oeben*, Aachen, Germany. Street elevation drawing of Oeben House from the building application of January 1904. © City Archives, Aachen. Signature *Baupolizei Alexanderstraße 109, Bl.42.*

Prometheus is shackled to a rock, with an eagle picking his liver, representing inner renewal and awakening. The handshake in the center above the arch is one of the most popular social democratic icons and symbolizes consensus and unity. The pediment at the top shows a landscape under a rising sun – a symbol for progress, and the dawn of a new era. Certainly, these attributes were designed by request of the leftist client Wilhelm Oeben.

The building was constructed between 1904 and May 1905. A euphoric newspaper article in Oeben's own *Rheinische Zeitung* on 22 April 1905 announces the opening and describes the building as "clean and beautiful like no other building in Aachen"²³. In great contrast to Schneiders's original plans, the building was given an entirely different appearance. Instead of stucco and wood, the whole façade was built of granite ashlar blocks. The ground floor opening was in the form of a basket arch, asymmetrically subdivided into two rectangular openings on the left and a shouldered arch on the right. Instead of a frieze above the arch, the characteristic curved lettering "*Zur Neuen Welt*" was carved into the granite. It can be translated into "towards the new world" (figure 04) and is a replacement for the rising sun icon in the original design. At the same time, it provided a distinctive name for the new socialist pub, and served as a literal accentuation of the threshold into the building's political world.

Above the arched ground floor, the façade is vertically divided into five equal bays. Triple windows in the three central bays lighten the rooms of the second story. The two



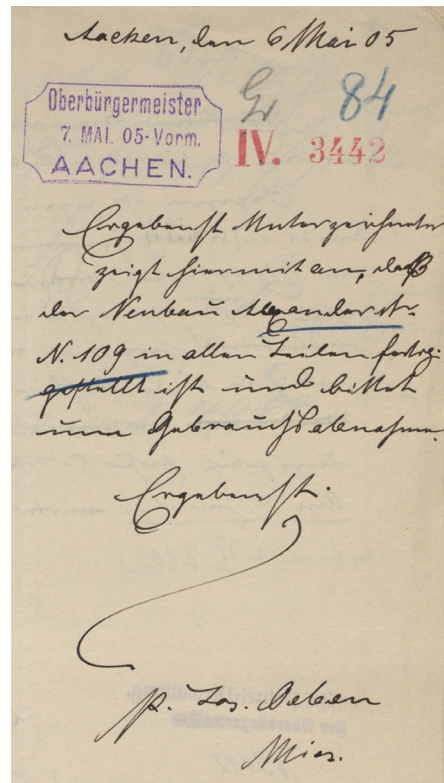
06 Albert Schneiders and Ludwig Mies, *Haus Oeben*, Aachen, Germany. Street photo of *Alexanderstrasse* in the early 1940s. The *Haus Oeben* (second building from the left) still has its pediment. © City Archives, Aachen. Signature *SLG Strassenfotos Alexanderstrasse I Bl.29.*

marginal bays are slightly recessed blind windows. From the newspaper article in *Rheinische Zeitung* we learn that these were supposed to carry galvanized, larger-than-life sculptures of Liberty, Fraternity and Justice, which were not yet in place at the time of the opening. Their realization is generally questionable, for in the only available photo of the building from before the war (figure 06), they are as absent as they are today²⁴. The three windows are tied together by a single suspended wrought iron window box, detailed with classical acanthus leaves and two lamps hanging from their ends, lighting the lettering below. Above the windows, a massive drip mould carries two rows of English bay windows, vertically drawing together the upper two stories of the building.

Much of the riddle of today's appearance of the building (figure 07) is caused by the fact that an important part of its shape and its main ornamental feature was lost in the WWII: a large and richly ornamented pediment displaying the Prometheus mentioned in Dominick's letter (figure 06). A relief representation of the Ancient Greek myth had become the central figurative feature of the building. Quite commonly in art and architecture, Prometheus served as a welcome symbol of renewal and the striving for a new world after a general awakening at the turn of the century, especially in social democratic and working class milieux²⁵. Ironically, this feature was lost when the upper floors of the house burned out in the WWII. Prometheus had literally fallen, and his supporting gable was dismantled in 1955 when the damaged parts of the house were reconstructed for a rental use. The pub and



07 Albert Schneiders and Ludwig Mies, Haus Oeben, Aachen, Germany. The façade today without the pediment. © Daniel Lohmann, 2016.



08 Ludwig Mies, Haus Oeben, Aachen. Page from the construction authority file. © City Archives, Aachen. Signature *Baupolizei Alexanderstraße 109, Bl.84-Bl.85.*

the remaining façade however were preserved, and partially renewed several times after the war. The building requires urgent care and monument protection today.

The overall style of the house is nothing like Albert Schneiders's other buildings, neither before nor after 1905. The noticeable formal immaturity of the building is uncommon in his perfectly composed façades. Furthermore, in its lack of ornament, the building design follows entirely different English and American contemporary trends in architecture than the historicism and eclecticism of Schneiders's other work. What was the reason for this striking difference between the first design and the realized façade?

There is strong evidence for Mies's involvement with the project in the building authority file: in a handwritten request Ludwig Mies asks the municipality for acceptance of completed construction work on 6 May 1905 (figure 08). In contrast to the acknowledgement of receipt for drawings in the Tietz file, the young employee does not sign by proxy of Schneiders anymore, but in fact "for the client" himself²⁶. Furthermore, a closer look at the letters on the Oeben building shows strong formal parallels with the typography that Mies and illustrator Gerhard Severain (1878-1959) designed for a poster competition two years later, in Autumn 1907. As Thomas Steigenberger and Dietrich Neumann found out, the two Aachen friends created a graphic design entry for Hohenzollern Kunstgewerbehaus Berlin²⁷. The poster was published in *Berliner Architekturwelt* in 1908²⁸. Mies had acquired lettering skills in his father's stone mason workshop, as he claimed several times in interviews with

his grandson, Dirk Lohan: "I was good at lettering, with all that work on the tombstones behind me"²⁹. The similarities in lettering and Mies's "tombstone expertise" suggest that he was the one designing the typography of "Zur Neuen Welt". These factors indicate that Albert Schneiders meanwhile had entrusted young Mies with much larger responsibilities than those of a simple draftsman. The Oeben building was designed and built just at the time when Mies became seriously interested in philosophy and culture through his regular reading of the magazine *Die Zukunft*, an issue of which he had come across on his first day at Schneiders's³⁰. This was the time of intellectual awakening for the young man, and the simultaneous work for leftist Wilhelm Oeben and his building with its socialist iconography must have served as a strong encouragement and a first encounter with intellectual depth in architecture.

Aachen and Berlin

However large Ludwig Mies's responsibilities for Haus Oeben were – its programmatic slogan became the motto for his following career. He took the first step of moving to the new world of Berlin shortly after the building was opened. When the 19-year old made the decision to seek his fortune in the metropolis of Berlin in the late summer of 1905, it was not without the support of his Aachen background. The courageous step seems to have been facilitated by the fact that several Aachen friends also had already moved to Berlin or were in the process of doing so. The following years in Berlin clearly illustrate the role of his friendships through collective projects with them.

It was the aforementioned Gerhard Severain who had already moved to Berlin in late 1904³¹ and smoothed the way for his eight years younger friend Ludwig Mies to follow a year later. Dietrich Neumann highlighted the relevance of the friendship of the two, who worked together on numerous projects from 1907 until at least 1947. The cooperation went much further than graphic work for the poster competition, as the Ryder house in Wiesbaden shows, that Mies and Severain worked on in closest collaboration in 1923. Furthermore, Severain was responsible for the lettering work for the German section of the Barcelona world fair in 1929.

After a short time in the municipality of Berlin Rixdorf, Mies was recorded as being back in Aachen for two months in the spring of 1907³². The reason for his stay at home is not known, but it is peculiar that several other Aachen friends followed him to Berlin afterwards.

The first to join him was his childhood friend and Aachen vocational school classmate, painter Peter Foerster (1887–1948)³³. Foerster attended painting classes in the same art school *Berliner Kunstgewerbemuseum* that Severain had joined in 1905. Mies inscribed in this school in June 1907 right after his return from Aachen³⁴. He quickly became one of the best students of the school's new director Bruno Paul, but was never employed in Paul's office, according to Thomas Steigenberger³⁵. The close friendship of Peter Foerster and Mies is largely unknown, but documented in memories of Foerster and his wife Ortrud³⁶, and in a written affirmation of Mies, given to her in June 1963³⁷. In this letter, Mies confirms their friendship with weekly visits from 1900 until Mies's emigration to the US, school companionships, their joint membership of *Novembergruppe*, and Mies's appointment of Peter Foerster as his personal assistant for the design of the German division in the Barcelona world fair in 1929. The certificate shows that two graphic artists and Aachen friends accompanied Mies on his famous Barcelona mission. Two further Aacheners already known, Ferdinand Goebbels and Franz Dominick, followed Mies to Berlin in 1907 or 1908³⁸. Although exact times are unknown, it is most likely that the three of them were hired together in the studio of Peter Behrens in Potsdam Babelsberg³⁹. A private photograph shows Mies, Goebbels and Dominick with six other colleagues in Behrens's *Erdmannshof* atelier (figure 09). Dominick probably also attended classes of Bruno Paul, calling himself *Kunststudierender* in the Berlin Address book just like Mies⁴⁰.

The following years until about 1913 are rather well documented regarding Mies, and were a time of intense collaboration on different levels between these three friends. In the first years, they seem to have lived in Babelsberg near Behrens atelier, as the letters of fellow employee Charles-Edouard Jeanneret — Le Corbusier — suggest⁴¹. Mies for example rented a room in *Villa Mehlhose, Teltower Strasse*⁴² just around the corner from *Erdmannshof*. The three friends worked for Behrens in the following months and years.

Mies's widely recognized debut as an independent architect was the house for philosopher Alois Riehl in Potsdam Neubabelsberg. When Sofie Riehl in 1906 asked the aspirant architect for her new house, what he had designed him-

09 Scene in the office of Peter Behrens, Potsdam Babelsberg with Ferdinand Goebbels, Franz Dominick, Ludwig Mies and Walter Gropius.
© Private collection of Mathilde Schillings, Aachen.



self, Mies answered “nothing. (...) But, I *can* build a house. I just haven't done it on my own”⁴³. Surely it was the newly revealed Aachen projects that gave the 20-year old the self-confidence to answer in this way, and the necessary architectural skills to work on his debut. Franz Dominick lists the Riehl house in his letter after naming Peter Behrens, obviously because he at least witnessed his friend working on it. This detail strengthens the position of Thomas Steigenberger and Dietrich Neumann, who proposed a new dating for the construction of the Riehl house between 1908 and 1909 and in the time when they already worked at Behrens atelier, instead of the commonly accepted year 1907. Steigenberger suggests that Mies started the Riehl project mid-May 1908 after leaving the *Kunstgewerbeschule* for “private projects”⁴⁴.

Mies spent almost one year in Aachen from July 1910 to May 1911 trying to establish himself as an independent architect from his family home at 84 *Vaalser Strasse*⁴⁵. Local projects that he worked on during this time could not be found yet, but it is the period when he prepared the well-known and widely published competition entry for the Bismarck monument with his brother Ewald Mies (1877–1962). Another project that he started working on from Aachen was the private house for Hugo Perls in Berlin Zehlendorf. It was one of the projects that he and Ferdinand Goebbels worked on in close collaboration, and it was built in 1911–1912⁴⁶.

Around January 1912, Mies got into a quarrel with Peter Behrens over the famous Villa for the Kröller-Müllers in Wassenaar (Netherlands), which caused a split and became a turning point in Mies's career⁴⁷. Mies worked in The Hague for eight months after this, working out his own project for the Kröllers. After the return to Berlin in the fall, the friendship of Mies, Goebbels and Dominick was apparently close enough to share an apartment at 14 *Südendstraße* in Berlin Steglitz. They had taken over the flat from fellow Aachener Gerhard Severain in 1912. Ferdinand Goebbels used the same address on his printed business letterhead that he and Mies used in their correspondence with their next client Ernst Werner in October 1912⁴⁸. The letter not only clearly documents their collaboration on Werner's house but it also shows that Goebbels and Mies had also worked together

on the Kröller-Müller project throughout most of 1912: the letter was written in Aachen after the end of the Kröller project, signed by Mies and Goebbels and apologizing for late replies to their future client, because both were “absent on business in Aachen and Holland” together. Quite possibly, Franz Dominick was also with them, for he mentioned Kröller in his list of joint projects in both of his letters.

Mies and Goebbels built Haus Werner during 1913. The authorship of the house caused a lively discussion in science, mostly because of the unsubtle similarities with Peter Behrens’s Wiegand House of 1911–1912. Wolf Tegethoff suggests the authorship of Ferdinand Goebbels rather than Mies, for Mies would have hardly copied Behrens so closely after their split, and because Goebbels still worked for Behrens and was apparently involved in the Wiegand project⁴⁹. In any case, a second letter by Mies to Ernst Werner about their fees after the end of the project suggests that the house was designed at least in close collaboration by the two⁵⁰.

The house may be regarded as the last step in the two men’s bachelorship. Both Mies and Goebbels got married after this project. Mies settled down to family life with Ada Bruhn in Berlin *Lichterfelde* in April 1913, and Goebbels was engaged to Berta Kinkartz in Aachen in July 1913⁵¹. Franz Dominick also moved back to Aachen in the same year. At the latest after WWI they started an architectural office together: *Goebbels & Dominick – Atelier für Hochbau und Raumkunst*.

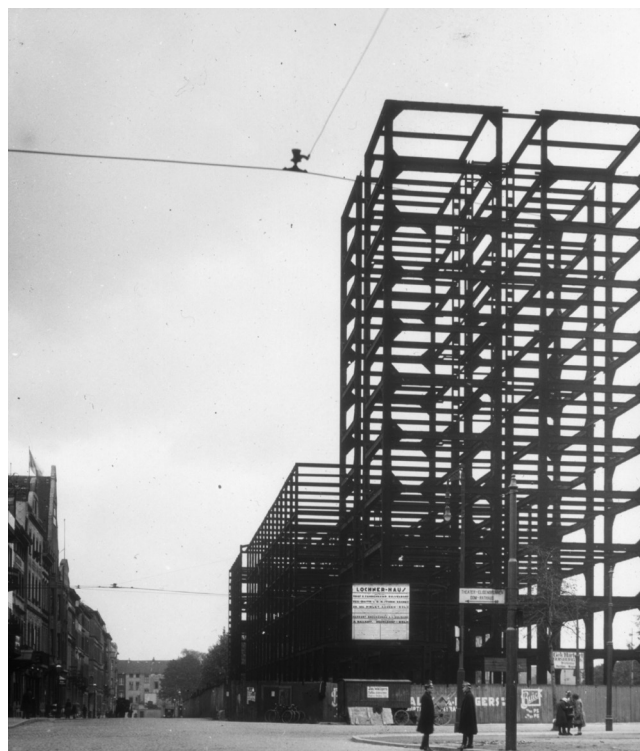
1920s

After his military service in the WWI, Ludwig Mies reached a “mental turning point”⁵², taking harsh personal and professional turns around 1921–1922. After separating from his wife Ada and family, he changed his surname into “Mies van der Rohe”. Several theories have evolved about this pseudonym. A previously unknown detail helps to support some of these rather than others: The name was invented together with the aforementioned friend Peter Foerster, as his wife recalls: “They chose an artist’s name for Mies, who was actually called Louis Mies, he became “Mies van der Rohe” now. Pitt was supposed to become “Pitt van Aken” according to Mies, but he didn’t want to”⁵³. It was Ludwig’s mother’s maiden name that served as a new name affix after the ennobling “van der”⁵⁴. Interestingly, Amalie’s maiden name was not Rohe, but in fact Rohé⁵⁵. The detail that Foerster and Mies did not choose “Mies de la Rohé”, but “Mies van der Rohe” and respectively “Pitt van Aken” stresses the nature of the pseudonyms to obviously underline their common hometown by using a distinct Dutch tone.

The strong bonds to Aachen, and his continued interest in local construction activity is documented in a previously unidentified attempt to convince an Aachen investor of his architectural talent and to win him as a client: Mies van der Rohe wrote a letter to the entrepreneur Rudolf Lochner on 12 December 1924, asking to become the architect for his latest development: the private completion of a stalled municipal office development just opposite the train station⁵⁶. Mies van der Rohe emphasizes the fact that he was born in Aachen, and claims that he had heard about the project from his “Aachen friends”. His interest is caused by the fact

that Lochner intended to find an “absolutely contemporary solution” for the intended high-rise building. To convince Lochner, Mies van der Rohe included images of some of his projects with his letter. Certainly, these were photographs of some of the famous imaginary “five projects” of 1921–1923⁵⁷, including the high-rise *Friedrichstraße* Office Building and the Glass Skyscraper that were extensively used for advertising by Mies van der Rohe in these years⁵⁸.

Mies van der Rohe proposes, that an “appropriate character from Aachen” could be committed to the construction supervision, for he himself intended to work on the project from Berlin⁵⁹. He could not have thought of Albert Schneiders, who had died of a cardiac insufficiency in 1922. More likely, Goebbels & Dominick were the Aachen friends that he had in mind, when he suggested local partners. The three friends kept contact and occasionally met in Aachen in the 1920s⁶⁰. At the same time, this proposal shows that Mies van der Rohe had finally ruled out the possibility of returning to Aachen — even for a prestigious project like this one. However, Mies van der Rohe’s barely buildable high-rise schemes apparently were too avant-garde for Rudolf Lochner, who instead chose an architect who had already built large scale projects. Emil Fahrenkamp was hired in early 1925⁶¹ instead of Mies van der Rohe, who had only built mainly family homes thus far. Although the two competitors had followed a very similar and partly simultaneous education, including *Gewerbe und Kunstgewerbeschule* Aachen, as well as employment at both Max Fischer and Albert Schneiders’s offices⁶², Fahrenkamp had become a busy architect for large industrial and office projects and a



10 Emil Fahrenkamp, Lochner building, Aachen, Germany. Under construction in the mid-1920s. © Private collection of the authors.

Professor in Düsseldorf in the meantime. Still, this acquisition attempt to find an opportunity for the realization of his ambitious skyscraper design projects of the early 1920s shines a new light on the realistic background of Mies van der Rohe's imaginary 1920s projects.

Lochner's subsequent project itself and its checkered history are well known. Construction work on the expressionist design started in mid-1925. The building promised to become Germany's first full steel frame high-rise tower⁶³. However, once the steel skeleton had been erected, Lochner withdrew from the project for economic reasons. The development stalled again for several years, and the characteristic silhouette of the steel frame became a famous symbol of failed investment (figure 10). Only between 1929 and 1930, when the responsibility for the building was taken back by the municipality, it was completed to an entirely different design by Jacob Koerfer and was renamed *Haus Grenzwacht*⁶⁴. It remains relatively unaltered today.

Towards another New World

The final step towards the new world was Mies van der Rohe's emigration to the US in 1938. He left Germany via Aachen, using the support and passport of his brother Ewald. Throughout and after WWII, he always kept in contact with the old world. On at least four visits to his home town, Mies met old friends from architecture and art, including the *Bauhaus* alumnus and painter Carl Schneiders (1905-1975), the youngest son of his first mentor Albert Schneiders. During another occasion in 1953, he dined with his brother and Ferdinand Goebbels in a local restaurant⁶⁵. Franz Dominick was most likely not a member of this party, for he and Goebbels had gone their separate ways after a lawsuit over the breakup of their office partnership in 1939. Mies van der Rohe had not answered the first of Dominick's letters and probably neither the second one. It is unknown whether they were ever in contact again before Dominick's death in 1954.

Notes

- 1 The literature covering the very first years of Mies career includes: Wolf Tegethoff, "Catching the Spirit: Mies's Early Work and the Impact of the 'Prussian Style'", in Terence Riley, Barry Bergdoll (ed.), *Mies in Berlin*, New York, The Museum of Modern Art, 2001, 135-151; Franz Schulze, Edward Windhorst, *Mies van der Rohe. A Critical Biography*, New and Revised Edition, Chicago, The University of Chicago Press, 2012, 3-55; Adam Oellers, *Ludwig Mies van der Rohe und Ewald Mies in Aachen*, Aachen, Museum Burg Frankenberg, 1986 and others. We would like to thank the following persons for access to archive material, fruitful discussions and information: Magdalena Droste (Berlin/Cottbus), Gabriele Schneiders, Mathilde Schillings (1919-2017), Marlis Nacken, Holger A. Dux (all Aachen), and Paul Galloway (MoMA New York).
- 2 In contrast to the extent of the built work of Goebbels & Dominick, literature about the office is rare. See Holger Dux, *Geschichte(n) aus Stein und Stuck. Ein baugeschichtlicher Rundgang durch das Aachen zwischen den beiden Weltkriegen*, Aachen, G. Mainz Verlag, 1997, 221; and unpublished lecture manuscripts kindly provided by Holger A. Dux. A separate publication about the Goebbels & Dominick office is currently in preparation by the authors of this essay.
- 3 Library of Congress, Washington, Mies van der Rohe papers, Private Correspondence, Box 25. Literally: "Ich würde beginnen mit den ersten Jahren bei Albert Schneiders – Haus Oben mit dem Prometheus – Levy – dann Behrens (...)"
- 4 Franz Schulze, Edward Windhorst, *op. cit.*, 11.

- 5 City Archives Aachen, Birth certificate of Ferdinand Goebbels.
- 6 The employment of F. Goebbels was confirmed by Gabriele Schneiders, granddaughter of Albert, pers. comm.; For F. Dominick see above, Fn. 3; For Fahrenkamp see Christoph Heuter, *Emil Fahrenkamp 1885-1966. Architekt im rheinisch-westfälischen Industriegebiet*, Petersberg, Michael Imhof Verlag, 2002, 582.
- 7 Peter Ruhnau, *Das Frankenberger Viertel in Aachen*, Arbeitshefte des Landes konservators Rheinland, Köln, Rheinland-Verlag, 1976, 46.
- 8 *Id.*, 46: "Fassaden, die sich in anspruchsvoller Weise vom Durchschnitt abheben"; *Ibid.*, 43: "Urheber der originellsten und bizarrsten Fassaden"; *Ibid.*, 180: "außerordentlich virtuose Beherrschung der barocken Formenwelt".
- 9 Museum of Modern Art, New York, Mies van der Rohe Archives, Interview with Dirk Lohan, 1968, in Franz Schulze, Edward Windhorst, *op. cit.*, 12-13.
- 10 Gabriele Schneiders, personal communication.
- 11 Museum of Modern Art, New York, Mies van der Rohe Archives, Mies personal Documents. Folder #3. Certificate of the City Archives Aachen to Ludwig Mies van der Rohe, 23 December 1955.
- 12 Museum of Modern Art, New York, Mies van der Rohe Archives, Mies personal Documents. Folder #3. Certificate of painter Franz Heffels and architect Alex Lürken to Ludwig Mies van der Rohe, 1 January 1956.
- 13 City archives Aachen, Building Authority File Markt 45-47.
- 14 Franz Schulze, Edward Windhorst, *op. cit.*, 13.
- 15 The practise of the construction company Boswau und Knauer (not "Bossler und Knorr", as it has been mistakenly transcribed from Mies's narrations) was recently investigated by Silke Haps, *Industriebetriebe der Baukunst – Generalunternehmer des frühen 20. Jahrhunderts: Die Firma Boswau & Knauer*, Dortmund, TU Dortmund Dissertation, 2014. The Aachen Tietz however was hardly included in her research, due to its demolition and heterogeneous sources.
- 16 Franz Schulze, Edward Windhorst, *op. cit.*, 13.
- 17 Letter of Ilse Caspers, née Schneiders (youngest daughter of Albert Schneiders) to her niece Gabriele Schneiders, 1997. Private collection: "(...) dass der Vater für viele reiche jüdische Bauberren großzügige Einfamilienhäuser entworfen und gebaut hat. Sie seien ihm die angenehmsten Auftraggeber gewesen".
- 18 Address book of Aachen 1908.
- 19 Peter Ruhnau, *op. cit.*, 246; Unfortunately, the building authority file of the house is not preserved.
- 20 The publication of the political history of Aachen Social Democrats "SPD", including the person Joseph Oeben and a short history of the *Haus Oeben* is the merit of Achim Grossmann. See Achim Grossmann, *Die roten Gesellen im schwarzen Westen. Die frühe Geschichte der sozialdemokratischen Bewegung in der Aachener Region. Ein Beitrag zur 150-jährigen Geschichte der SPD*, Düren, Hahn & Schloemer, 2014, 183-191. The architecture of the building and the connection with Albert Schneiders and Ludwig Mies had not been uncovered at that time.
- 21 City Archives Aachen, Building authority file *Alexanderstraße 109*.
- 22 <http://www.dasrotewien.at/symbole-sozialdemokratische.html>.
- 23 Rheinische Zeitung n. 95 of 22 April 1905, in Achim Grossmann, *op. cit.*, 188.
- 24 See another photo taken on the same day in Achim Grossmann, *op. cit.*, 190.
- 25 Bettina Vaupel, *Göttergleich – gottverlassen. Prometheus in der bildenden Kunst des 19. und 20. Jahrhunderts*, Weimar, VDG, 2005, 157-167.
- 26 City Archives Aachen, Building authority file *Alexanderstraße 109*. Literally: "Ergebenst Unterzeichnender zeigt hiermit an, daß der Neubau Alexanderstraße N. 109 in allen Teilen fertig gestellt ist und bittet um Gebrauchsabnahme. Ergebenst, f. Jos.(eph) Oeben, Mies".
- 27 Thomas Steigenberger, "Mies van der Rohe – ein Schüler Bruno Pauls?", in Johannes Cramer, Dorothee Sack (ed.), *Mies van der Rohe – Frühe Bauten, Probleme der Erhaltung – Probleme der Bewertung*, Petersberg, Michael Imhof Verlag, 2004, 151-162 and Dietrich Neumann, "Das Haus Ryder in Wiesbaden (1923) und die Zusammenarbeit zwischen Ludwig Mies van der Rohe und Gerhard Severain", *Architectura*, n. 2, 36/2006, Berlin, DKV, 199-220, 200.
- 28 *Berliner Architekturwelt* n. 10, 1908. Issue 11, 406. Reprint in Thomas Steigenberger, *op. cit.*, 155.
- 29 Museum of Modern Art, New York, Mies van der Rohe Archives, Interview with Dirk Lohan, 1968, in Franz Schulze, Edward Windhorst, *op. cit.*, 9, 11.
- 30 *Id.*, 13, Fn. 8; Fritz Neumeyer, *Das Kunstlose Wort, Gedanken zur Baukunst*,

- Berlin, Siedler, 1986, 59–61, Fn. 12.
- 31 Dietrich Neumann, *op. cit.*, 199.
- 32 Museum of Modern Art, New York, Mies van der Rohe Archives, Mies personal Documents. Folder #2.
- 33 Thomas Al. Greifeld (ed.), *Peter Foerster 1887–1948. Leben und Werk*, Aachen-Dessau, Suermondt-Ludwig-Museum, 1998, 80.
- 34 *Id.*, 199.
- 35 Thomas Steigenberger, *op. cit.*, 154, 160–161.
- 36 Thomas Al. Greifeld, *op. cit.*, 80–82.
- 37 *Id.*, 148–149.
- 38 Interview with Mathilde Schillings, daughter of Ferdinand Goebbels, on 12 April 2010. Unpublished Manuscript, Gisela Anger, Aachen.
- 39 Denazification file in the state archives of Nordrhein-Westfalen, Duisburg. In his denazification form, Ferdinand Goebbels claims to have been “Meisterschüler bei Professor Peter Behrens, Berlin”.
- 40 Berlin Address books of 1912 and 13.
- 41 Ulrike Eichhorn, *Le Corbusier in Berlin 1910/11 I*, Berlin, epubli, 2014, 36. “Im Falle einer Anstellung, würde ich in Neu-Babelsberg leben müssen, dass heißt auf dem Land. So machen es seine dreizehn Mitarbeiter” (Letter to his parents, 18 October 1910).
- 42 Thomas Steigenberger, *op. cit.*, 162.
- 43 Museum of Modern Art, New York, Mies van der Rohe Archives, Interview with Dirk Lohan, 1968, in Franz Schulze, Edward Windhorst, *op. cit.*, 17.
- 44 Thomas Steigenberger, *op. cit.*, 154 and Dietrich Neumann, *op. cit.*, 200.
- 45 Wolf Tegethoff, *op. cit.*, 138–140, Fn. 9; Franz Schulze, Edward Windhorst, *op. cit.*, 31–34. Mies was registered as an architect in his family home at 84 Vaalser Strasse until 1912. See Adam Oellers, *op. cit.*, 1. The house and some of the facilities are preserved at the address, 314 Vaalser Strasse, after the renumbering of the street.
- 46 For questions of authorship see Wolf Tegethoff, *op. cit.*, 140–141.
- 47 *Id.*, 142.
- 48 Berlin Address books of 1912 and 13: entries for Franz Dominick and Ludwig Mies at *Südendstraße* 14. Letter of Ferdinand Goebbels and Ludwig Mies to Ernst Werner, 2 October 1912, Bauhaus Archive Berlin. For Severain’s flat see Dietrich Neumann, *op. cit.*, 200 and Berlin Address book of 1911.
- 49 Wolf Tegethoff, *op. cit.*, 145–146; Franz Schulze, Edward Windhorst, *op. cit.*, 47.
- 50 Bauhaus Archive Berlin, Letter of L. Mies to E. Werner, 25 September 1913.
- 51 Engagement invitation of Ferdinand Goebbels and Berta Kinkartz, 4. July 1913, private collection Schillings.
- 52 Wolf Tegethoff, *op. cit.*, 150.
- 53 Thomas Al. Greifeld, *op. cit.*, 80: “Sie suchten einen Künstlernamen aus für Mies, der eigentlich Louis Mies hieß, er wurde nun “Mies van der Robe”. Pitt sollte nun nach Mies ‘Pitt van Aken’ heißen, was er aber nicht wollte”.
- 54 For the circumstances of the pseudonym ‘Mies van der Robe’ see Andreas Marx, Paul Weber, “Von Ludwig Mies zu Mies van der Robe”, in Helmut Reuter, Birgit Schulte (ed.), *Mies und das Neue Wohnen. Räume, Möbel, Fotografie*, Ostfildern, Hatje Cantz, 2008, 25–39.
- 55 City Archives Aachen, Birth certificate of Ludwig Mies. Her maiden name on the family gravestone in Aachen’s West Cemetery is also written with the acute accent.
- 56 Museum of Modern Art, New York, Mies van der Rohe Archives, Projects/General Correspondence 1920s, Folder #5.
- 57 Franz Schulze, Edward Windhorst, *op. cit.*, 75. Namely: *Friedrichstrasse Office Building* (1921), *Glass Skyscraper* (1922), *Brick Country House* (1922), *Concrete Country House* (1923), *Concrete office building* (1923).
- 58 Helmut Reuter, Wolf Tegethoff, Rolf Sachsse, “Mies und die Fotografien I. Verzeichnis der Fotografien, mit denen das Berliner Atelier Mies van der Robes bis 1938 Öffentlichkeitsarbeit betrieb”, in Helmut Reuter, Birgit Schulte (ed.), *op. cit.*, 230–251.
- 59 Museum of Modern Art, New York, Mies van der Rohe Archives, *op. cit.* Literally: “Der Umstand dass ich nicht in Aachen sondern von Berlin aus die Bearbeitung einer solchen Arbeit vornehme, dürfte Sie nicht hindern mich mit der Ausarbeitung eines solchen Projektes zu betrauen, da ohne Schwierigkeit in Aachen selbst eine geeignete Persönlichkeit zu finden wäre der man die Bauleitung anvertrauen kann”.
- 60 Interview with Mathilde Schillings, *op. cit.*
- 61 Helmut Reuter, *op. cit.*, 304–305, 578–579.
- 62 *Id.*, 19–20.
- 63 Eduard Teichmann, *Das erste deutsche Hochhaus mit vollständig eiserner Tragkonstruktion. Deutsche Bauzeitung*, 60. Jg., n. 23, 20, März 1926, 41–46; Helmut Reuter, *op. cit.*, 304.
- 64 Holger Dux, *op. cit.*, 42–45.
- 65 Interview with Mathilde Schillings, *op. cit.*

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The *Verseidag* Silk Factory in Krefeld. Architectural History and Restoration of a much-neglected Mies van der Rohe Project

BY NORBERT HANENBERG AND DANIEL LOHMANN

Although the buildings for the *Verseidag* silk factory, in Krefeld, Germany, are the only factory buildings that Mies van der Rohe ever planned and built (1931-38), many open questions remain about the history and development of the site. The paper presents new research results on the architectural history and materiality of the site that are derived from detailed documentation on site and analysis of newly available archive material. The scientific results and the acquired knowledge directly influence the current restoration of the buildings, in which the key characteristics designed by Mies van der Rohe are preserved and restored.

The Buildings for United Silk Weaving Mills Krefeld — Vereinigte Seidenwebereien AG

The buildings that belong to the so-called “Mies van der Rohe Business Park” today are directly connected with the industrial and economic history of the West German city of Krefeld. Originally, they were built for the *Vereinigte Seidenwebereien Aktiengesellschaft* – in short *VerSeidAG* – which translates to United Silk Weaving Mills Incorporated. Hermann Lange and Josef Esters founded the company in 1920 by joining several silk factories in the Rhineland and Thuringia regions of Germany. The aim was to reach a stronger market position against powerful national and international competitors. In the following years, *Verseidag* became the largest producer of necktie and silk fabrics.

The architect Mies van der Rohe was consulted several times for the design and planning of the company’s buildings. His most intense work started in 1930 and concentrated on the design of the office and storage building called *HE*-building (“*HE*” is an abbreviation for *Herrenfutterstoffe*, which is “lining fabric”). The functional cubic building with a flat roof and white stucco and dark rectangular windows dominates the overall image of the site (essay cover). Its evenly distributed window bays are ordered into symmetrical groups of 1-2-3-2-1 by the positions of the rainwater downpipes¹. The design of the main staircase received special attention by the architect. Its walls are constructed of exposed clinker brick, just like the base running around all exterior walls of the *Verseidag* buildings.

The *HE* building was built together with a dyeing plant, which was also designed by Mies van der Rohe. The unusually tall saw-tooth roofs of the plant with their north facing glazed surfaces ensure a maximum amount of daylight in the production areas. The two very differently shaped white buildings were connected with a recessed delivery ramp clad in dark brick, in order to clarify and underline their

formal coexistence. The dark ramp area also serves to hide the glazed double pitched roof of a low connecting hallway between the two buildings. It provides an open connection between the ground floor areas of the *HE*-building and the dyeing plant. In the back of the building, this connection is hidden behind a projecting secondary stairwell.

Mies van der Rohe developed a set of common formal characteristics and details for the two buildings. Both rest on a visible brick base of five courses. The stucco above this base was applied flush with the brick surface. Large dark window openings were cut into the bright surfaces, allowing for even more daylight in the production areas. By carefully detailing these features, Mies van der Rohe created a common language for the strongly differing building shapes.

The architect created fundamental principles for this building, which he regarded as essentials for an industrial building: the articulated shape, few spatial partitions, and the creation of light-flooded, clearly arranged, and ideally column-free spaces. The conditions and necessities of functions led to the essential appearance of the buildings, derived from the recognition of the problem, and its seemingly inevitable solution.

Several indications point to Mies van der Rohe’s involvement in the design of further *Verseidag* buildings, such as the power house and the film printing plant. Furthermore, his atelier worked on a design for the company’s administration building on a nearby empty plot between 1938 and 1939. The imminent outbreak of the WWII however stopped this project.

Research in *Verseidag*

The *Verseidag* silk plant remained the only industrial building that Mies van der Rohe ever designed. In spite of this unique feature, the historical development and the authorship of the individual buildings is surprisingly obscure.

buildings that were to be erected in the following years. The *HE*-building and dyeing plant that were built in the following months after plans had been drawn by the office of Mies van der Rohe can be identified as the northern quarter of a larger general plan. Correspondingly, this section was part of a considerably larger factory, which was never completed but only extended partly in the following years. In strict symmetry, the multi-storey *HE*-building and the attached saw-tooth roof dyeing plant are not only mirrored southwards once, but doubled again eastwards towards the *Girmesgath* street. The overall plan would have resulted in four tall buildings in the shape of the *HE*-building, with two rows of saw tooth roof halls between them, creating a long courtyard in their middle.

This symmetrical arrangement of buildings can be identified in Mies van der Rohe's first perspective sketches of the project, too. One sketch shows the second *HE*-building in the south⁸, while the silhouette of the third one in the northeast is visible on another sketch⁹. Clearly, the large-scale master plan with its remarkable double symmetry was not only an initial intention of the factory owners, but also absorbed by Mies van der Rohe into his schemes.

The first step in the realization of this scheme is the initial construction phase in the first half of the year 1931. The structures that were erected in this first phase include the two-storey *HE*-building and the annexed factory hall with its initial four bays of shed roofs. To satisfy the large need for water in a dyeing plant, *Verseidag* requested a voluminous water tank during the construction of the plant. After long, written discussions, it was placed in the fifth bay of the plant (figure 02). The intense design and planning consultancy of the Mies van der Rohe atelier in the first

construction phase is documented in numerous letters in the Archives in New York.

Research to date acted on the assumption that both the *HE*-building and the dyeing plant were erected in only two construction stages in 1931 and 1935. The analysis of the built evidence however raised doubts in this interpretation during documentation. In alignment with the historic plan material from Krefeld that was indexed in the meantime, a more detailed and complex picture of the evolution of the site may be drawn:

During the year 1933, the dyeing plant was extended twice during operation. First, four more bays of shed roofs were erected, together with a second frontal water tank. Finally, another three bays were added and resulted in 11 shed roofs. While the façade and roof construction details of the first phase were kept and used, the façade design including the position of windows and doors was realized with a noticeable decrease in discipline. Quality losses like these become apparent from the moment of continued construction and later on for example in the sporadically used element of the air ventilation shafts in the façade.

Two additional floors were added on the *HE*-building in 1935, adding up to the four stories that are preserved today (figure 03). A large amount of plan material, static calculations and building applications were found in the company's archives. They clearly show that even a fifth floor was planned, as it is also drawn in Mies van der Rohe's first sketches.

Questions of Preservation

After decades of adaptations, alterations and additions, the *Verseidag* buildings have been preserved with a large



02 Mies van der Rohe, *HE*-building and dyeing plant, Krefeld, Germany. Shortly after construction, ca. 1931. © Krefeld City Archives.

amount of original material. But the current and upcoming restorations are not the first ones on the buildings. About one decade before the shut-down of the factory, and approximately concurrent with the inscription of the complex in the monument list in 1999, the former owners of the factory applied for the modernization of the *HE*-building, including the insulation and resealing of the roofs, restoration of the stucco façades, and restoration work in the stairwells and the two upper floors. The works were carefully supervised by the monument departments, who praised the architects for being in line with accepted conservation practise and the owners for their willingness to compromise later on¹⁰.

With the new research insights regarding the architecture of *Verseidag*, the restoration of the first five bays of the dyeing plant façade has been scientifically supervised since 2013 (figure 08). Research results and material investigations about the stucco, the brick base and the windows had a direct impact on the restoration decisions. This process is still ongoing, and those results presented here only give a first impression of the hand-in-hand work of owner, architects, departments and the authors. After some activity, had already been carried out without scientific comment, the decisions are now overseen with increasing intensity today.

Windows

A long and detailed correspondence between Mies van der Rohe atelier and the *Verseidag* about the design and planning of the steel windows is preserved in the Mies van der Rohe Archives in New York. The manufacturer that was finally commissioned was *Fenestra Critall*, a company that was recommended by Mies van der Rohe and who had already delivered windows for numerous modernist masterpieces like Walter Gropius's Fagus factory, his Bauhaus Dessau and others. After war damage in the upper stories, some windows were replaced by reproductions of equal profile

after the war. Unfortunately, almost all the windows of the *HE*-building were then replaced in the 1970s by models with severely broader box section profiles¹¹. At least, five of the original filigree windows were intentionally kept on the north side of the building on the ground floor. They were restored in the course of the 1999 works and are preserved in their original position today.

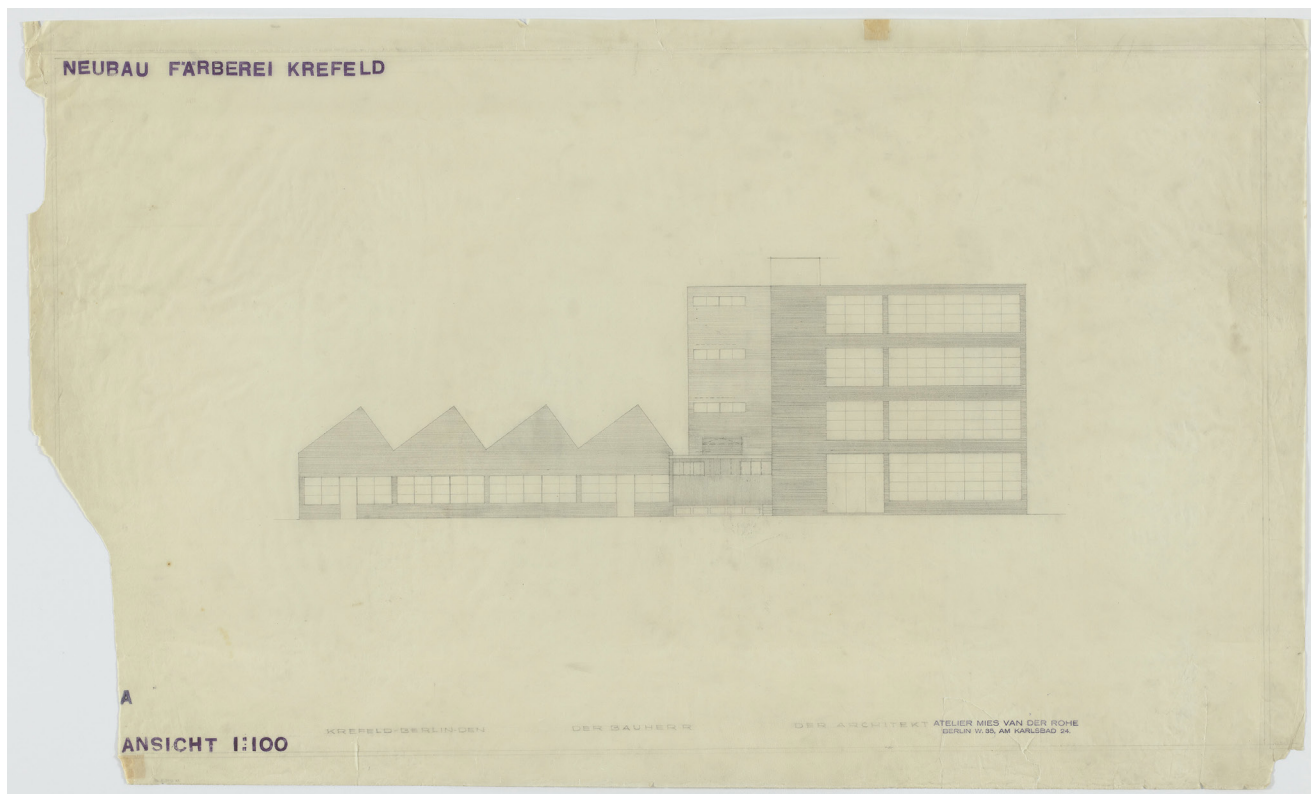
In the current research, new information could be retrieved about the original coloring of the window frames. On historic photos of the exterior, a dark paint color is clearly visible, and concurs with all restorations and today's tone. A recently uncovered photo showing the interior of the former worker's canteen around 1936, however, clearly shows that the window frames were painted white on the inside (figure 11). Such bi-colored window frames are not unusual, and can be found in the Lange and Esters villas for example. A restorer's expert assessment was ordered to investigate the original windows and to follow these hints.

On the five preserved original windows of the *HE*-building, no original stratigraphic sequence of paint could be investigated, because the windows had been sandblasted, re-primed and painted in the 1999 restoration. In the recent restoration of the front façade of the dyeing plant, large portions of the original window frames were kept and partially repaired and re-glazed. However, the treatment of the metal was similar, and left no traces of original color either. Luckily, through survey and research, one remaining original window on the dyeing plant rear façade, with full historic paint stratigraphy, could be found, which was hidden between silk factory machinery. This window was investigated and the hints from the historic photos were proven¹². The same results could be found on the basement windows, which have not been restored at all yet. The results show that the *Verseidag* windows were primed with iron oxide, and painted in a dark grey on the outside¹³ and off-white on the inside (figure 05).

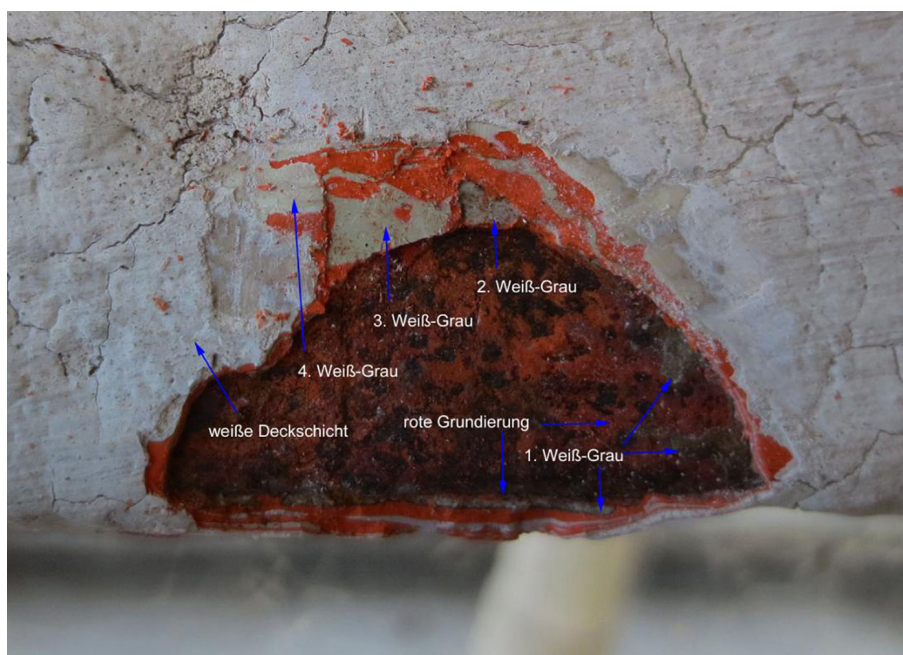


03 Mies van der Rohe, *Verseidag* buildings, Krefeld, Germany, 1930-1938. Seen from North, ca. 1936. © Krefeld City Archives, n. 28321.

- 04 Mies van der Rohe, Ludwig (1886-1969): United Silk-Weaving Mills Factory Building (Verseidag), Krefeld, Germany, East elevation, 1931-1935. New York, Museum of Modern Art (MoMA). Pencil on tracing paper, 22 3/4 × 37 1/2" (57.8 × 95.3 cm). Mies van der Rohe Archive, gift of the architect. Acc. no.: MR.89. © 2017. Digital image Mies van der Rohe/Gift of the Arch./MoMA/Scala.



- 05 Mies van der Rohe, *HE*-building, Krefeld, Germany, 1930-1938. Conservator's uncovering of original color strata on a preserved dyeing plant window with an illustration of the different paint layers. © S. Conrad, *LVR Amt für Denkmalpflege im Rheinland*, 2015.



- 06 Mies van der Rohe, *HE*-building, Krefeld, Germany, 1930-1938. Section of preserved original stucco surface on the north-western side of the *HE*-building. © Daniel Lohmann, 2015.



Stucco

The restoration strategy of the dyeing plant façade required material investigations not only on the windows, but also regarding the consistency of the original stucco. The assessments prior to the 1999 restoration could not give reliable results, due to the bad state of preservation and the fact that no original surface texture was preserved on the building¹⁴. Recently, obsolete additional buildings on the rear façade of the dyeing plant were demolished in order to recover the 1931 building shape. Along the points of contact of the supporting structure of a hall directly behind the building, almost unaffected surfaces of original stucco could be found and analyzed on both the surfaces of HE-building and dyeing plant (figure 06)¹⁵. The material properties, color and surface treatment of the stucco was investigated and documented by a professional restorer of the regional authorities¹⁶.

The “normal Terranova-stucco” that Mies van der Rohe proposed in the *Verseidag* correspondence¹⁷, turned out to be a coarse, two layered plaster for facing. The finishing coat consists of a highly hydraulic white cement mortar with white and grey quartz aggregates of up to 5 mm. The surface was not painted, but bush-hammered. Fresh fractures reveal the original off-white color of the stucco, with a slight glimmer of the quartz.

Brick Base

Before the 1999 HE-building restoration, the client wanted a thermal insulation composite system on the external walls, which would have severely altered the appearance of the building and its proportions. Luckily, the architects and restorers could find an appropriate alternative with internal insulation. In this way, one of the key characteristics of the *Verseidag* buildings was preserved: the external wall stucco was applied flush with the brick base, which consists of five layers of exposed dark bricks in cross bond with anthracite colored joints. The detail that was specifically drawn by the office of Mies van der Rohe¹⁸ shows that the hidden settlement joints within the wall were widened by an extra 2 cm, in order to jut out from the wall surface above. In the next working step the stucco was applied flush with the base surface.

Through the course of time, this characteristic detail was severely altered on the façade of the dyeing plant. On the one hand, large sections of the façade had turned into freely perforated and modified internal walls behind later additions (figure 08). On the other hand, a thin layer of facing bricks in a simple stretcher bond was applied to the wall surfaces up to the windowsills only about four years after the initial construction (figure 10). The reason for this action is unknown, but it may be assumed that it was to prevent stains on the white surfaces. Through analysis of historic photographs however, the measures can be dated to the time between 1934 and 1936 (figures 02 and 03). In the recent restoration, the partners were facing a complex decision: preservation and repair of the thin facing bricks, that had also been severely damaged over time? Or removal of this layer, and a restoration of the preserved brick base behind? The decision was taken in favor of the second op-

tion, due to the uncovering of the preserved base with flush stucco on the north-eastern end of the façade. The main argument that was put forward was the relevance of the creative will of Mies van der Rohe for the initial monument protection of the buildings¹⁹. The heterogeneous situation of the façade was thoroughly documented, and the thin facing bricks were carefully removed and stored. During this removal, however, the situation unveiled that the heads of almost all of the original base bricks had been chipped off, in order to reach a better adhesion of the mortar for the thin facing bricks (figure 10). The amount of retained thin bricks would not have been enough to restore the whole surface underneath the window sills, and no satisfactory replacement material could be found, despite intense efforts by the architects and construction supervisors involved. According to the decision to restore the original Mies van der Rohe appearance of the façade, the saved thin bricks were used to complete the heads of the chipped base bricks, and the original cross bond appearance was restored (figure 09). In this way, the appearance of the building as it was originally intended by Mies van der Rohe, and as it existed at least between 1931 and 1934, was restored using original material.

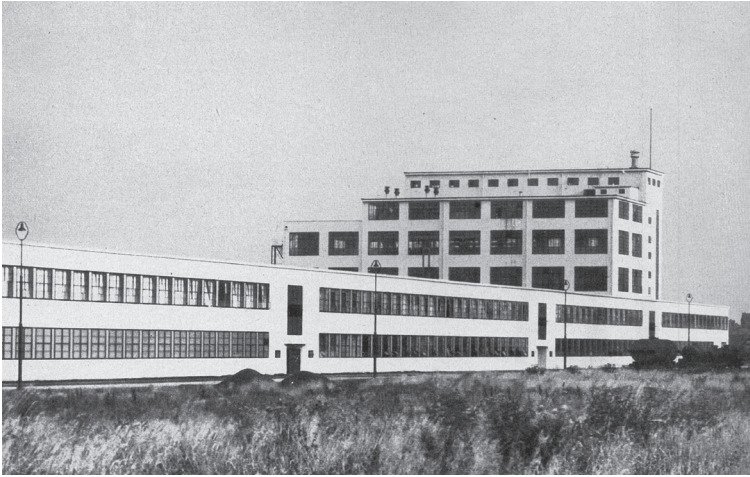
Architectural History

From the point of view of architectural history, it was an unusual and remarkable decision to clad a silk factory in white stucco instead of the dark lower Rhineland bricks that were usually chosen for industrial buildings. This choice was not clear from the project's start, as we can see from the correspondence with Mies van der Rohe's office: Shortly before the first preserved letter from January 1931, the decision was taken to use stucco instead of exposed bricks: “(...) now that the building will be plastered [*verputzt*], it is necessary to reach clarity about the way how the measurements in our plans to scale 1:100 must be understood”²⁰. Still, all the measurements in Mies van der Rohe's plans were not related to a plastered building, but to the German *Reichsformat*, a historic masonry measurement system not in use anymore today.

The new findings about the change of the façade cladding helps to analyze early elevation drawings preserved in the Mies van der Rohe Archives in New York. The HE-building, dyeing plant and a connecting hallway are drawn with a peculiar horizontal hatching²¹ – clearly a representation of the masonry's bed joints (figure 04). The reason for the plan change towards a plastered building – unhatched in plan – is unknown. The decision was facilitated however by the fact that the façade was largely exempt from its load bearing function by the steel skeleton construction of the building. Comparable changes in façade cladding are known on the one hand for the houses for *Verseidag*'s chairmen Hermann Lange and Josef Esters, which were intended to be plastered in early project stages, and on the other hand for the Tugendhat house in Brünn, which was originally planned in exposed brick, but clad in white stucco later on²².

Following Christiane Lange, the series of commissions to Mies van der Rohe, some of them jointly with Lilly Reich,

- 07** Ferdinand Flakowski, British Bemberg artificial silk factory, Doncaster, England, 1930. Seen from northwest, 1931. © *Baugilde*, n. 16, 1933, 775.



- 08** Mies van der Rohe, *HE*-building, Krefeld, Germany, 1930–1938. State of the dyeing plant façade before restoration. © Norbert Hanenberg, 2012.



- 09** Mies van der Rohe, *HE*-building, Krefeld, Germany, 1930–1938. Dyeing plant façade, preserved state next to restored part. © Daniel Lohmann, 2016.



- 10** Mies van der Rohe, *HE*-building, Krefeld, Germany, 1930–1938. Window parapet of the dyeing plant façade, detail showing the thin facing bricks on top of the chipped off brick base. © Daniel Lohmann, 2015.

can be regarded as a strategic decision by the German silk industry. They intended to free themselves from a bad image – especially in opposition to their French competitors²³. The electrical company AEG in Berlin had led the way: after the nomination of Peter Behrens as the artistic director of the company in 1907, epochal buildings and products emerged, which changed the public image of industrial products and architecture, and illustrated the impact of design on them. Architectural history has recognized the fact that clients and architects had strategically planned with the “advertising character of industrial architecture for companies” since the early 1920s at the latest²⁴. Quite possibly, the preference for a nobler façade material for the *Verseidag* factory can be understood in this context, too. Seemingly, the factory decided together with Mies van der Rohe to give up on the dirty image of a brick factory and instead for a glimmering white stucco façade as a representation of the noble cloth that was produced and refined behind these walls. Early photographs taken shortly after the completion distinctly show the alien appearance of the factory in the dirty lower Rhineland landscape. Furthermore, those buildings still housing “dirtier” processes such as the power plant opposite the *HE*-building, were still clad in exposed brick walls.

Almost simultaneously with the initial construction phase of the *Verseidag* buildings, the German artificial silk company J. P. Bemberg from Wuppertal built the British Bemberg silk factory in Doncaster, England²⁵. The man responsible for the architectural design was the company's chief architect Ferdinand Flakowski from Berlin. Just like in the Krefeld buildings, the two structures of a multi-storied main building and the low production plant were set in an architectural relation. Both volumes were plastered in white and perforated with dark window rectangles. But in contrast to the *Verseidag*, the saw tooth roof of the plant was hidden entirely behind a double storey building, whereas Mies van der Rohe literally staged the prominently raised gables in the façade design. The overall image of the Doncaster buildings may serve as a comparative example for the architectural means for creating a “clean image” of a silk factory²⁶. However, when comparing the details in the different buildings, the artistic discipline of Mies van der Rohe becomes apparent.

The large windows were placed into the white volumes like cleanly cut perforations, and allow for a maximum of natural daylight in the buildings. The white paint on the inner window frames strongly underlines this concept. Apparently, the architecture served to maximize the light in the factory environment, according to the ideal of healthy and humane working conditions in the interwar period. Whatever intentions stood behind these principles, they are indicators of Mies van der Rohe's strong creative will and discipline, and were implemented in the purest form in the first construction stage of 1931. He provided an artistic language for the appearance of the buildings that were erected later and partly without his consultancy, which show an increasing weakening of the principles and do not reach the initial clarity. In any case, Mies van der Rohe's “hand-

writing” still gives distinction to the site today, serves as an identity for the resident companies in a similar way that it was originally intended, and became an important basis for restoration decisions recently.

Notes

- 1 Wolf Tegethoff, “*Industriearchitektur und Neues Bauen*. Mies van der Rohe *Verseidag-Fabrik* in Krefeld”, *Archithese*, vol. 13, 1983, 37.
- 2 Karl Otto Lufkens, “Die *Verseidag*-Bauten von Mies van der Rohe (1933 bis 1937). Ein Dokument der Architektur des XX. Jahrhunderts”, *Die Heimat* 48/1977, Krefeld, 1977; Wolf Tegethoff, *op. cit.*; Christiane Lange, *Ludwig Mies van der Rohe. Architektur für die Seidenindustrie*, Nicolai Verlag, Berlin, 2011, 146–161; Carsten Krohn, *Mies van der Rohe. Das gebaute Werk*, Birkhäuser Verlag, Basel, 2014, 89–93. The Mies van der Rohe Archive in the Museum of Modern Art keeps 229 drawings of the *HE*-building and the dyeing plant, and further drawings of a planned administration building. See the commented catalogue at Arthur Drexler (ed.), *The Mies van der Rohe Archive. An Illustrated Catalogue of the Mies van der Rohe Drawings in The Museum of Modern Art*, vol. 1–6, Garland Publisher, New York/London, 1986–1990 (1986, vol. 4, 2–61, 498–512; Drexler 1990, vol. 6, 137–184, 201–208); List of protected monuments of the city of Krefeld, No. 840, 30. July 1999.
- 3 Grundstücksgesellschaft *Girmesgath*, Director: Reiner Leendertz. Architect: Georg von Houwald.
- 4 *Verseidag* Archive, Krefeld.
- 5 Winfried Nerdinger, “*Bauhaus-Architekten im Dritten Reich*”, in *Bauhaus-Moderne im Nationalsozialismus. Zwischen Anbiederung und Verfolgung*. München, Prestel, 1993, 169–175. Cf. esp. BLÜMM, Anke, “*Entartete Baukunst*”? Zum Umgang mit dem Neuen Bauen 1933–1945, München, Paderborn, 2013.
- 6 Mies van der Rohe Archive, Plan n. 9.157; Christiane Lange, *op. cit.*, 147.
- 7 *Verseidag* Archive, Plan n. LP.023.
- 8 Mies van der Rohe Archive, Plan n. 9.192.
- 9 Mies van der Rohe Archive, Plan n. 9.183.
- 10 Architect: Karl-Heinrich Eick; Helmut Köhren-Jansen, “*Die Instandsetzung der Bauten von Ludwig Mies van der Rohe*”, *Denkmalpflege im Rheinland* 18, n. 1, 2001, 22; GEUDER, Thomas, “*Sanierung der Verseidag-Gebäude in Krefeld*”, *[ark]*, n. 1, 2005, 21–33. For further assessment of the conservation work see Bleul/ Hesselmann, *Die VerseidAG in Krefeld, Seminararbeit RWTH Aachen*. Lehrgebiet Denkmalpflege, 2009. Edited version (W. Buschmann) at <http://www.rheinische-industriekultur.de/objekte/Krefeld/Verseidag/verseidag.html>.
- 11 Köhren-Jansen, *op. cit.*, 23.
- 12 Expert's report of 18 September 2015, Restorer Susanne Conrad, *LVR Amt für Denkmalpflege im Rheinland*.
- 13 A note about the chosen color tone by the Atelier Mies van der Rohe from the “*Baumann-Farbtonekarte*” is given in the correspondence: Mies van der Rohe Archives, correspondence, Folder 6, Letter 25, July 1931, Mies van der Rohe to *Verseidag*.
- 14 Expert's report of 26 June 2000, Restorer Horst Hahn, *LVR Amt für Denkmalpflege im Rheinland, Restaurierungswerkstatt II*, In Köhren-Jansen, *op. cit.*; for the chosen method see Geuder, *op. cit.*
- 15 Expert's report of 7 August 2016, architects Norbert Hanenberg and Daniel Lohmann; *Fakultät für Architektur der RWTH Aachen*.
- 16 Expert's report of 31 August 2016, Restorer Sigrun Heinen, *LVR Amt für Denkmalpflege im Rheinland*.
- 17 Mies van der Rohe Archive, Correspondence, Folder 4, Letter of 13 April 1931, *Verseidag* to Mies van der Rohe.
- 18 Arthur Drexler (ed.), *op. cit.*, vol. 6, 183. n. 9.62, 9.162.
- 19 List of protected monuments of the city of Krefeld, n. 840, 30. July 1999: “Für die Erhaltung und Nutzung liegen künstlerische und wissenschaftliche Gründe vor, da die Gebäude als Teil des Werkes eines bedeutenden Architekten für die Kunstgeschichte der klassischen Moderne einen beachtlichen Stellenwert haben”.
- 20 Mies van der Rohe Archive, correspondence, Folder 1, Letter of 10 January 1931, Mies van der Rohe to *Verseidag*. In the previous letter, the same issue was raised by *Verseidag*: “Wir bitten Sie, die Fassade, die jetzt in Putz ausgeführt werden soll, daraufhin nochmals durchzudenken”. Correspondence, Folder 1, Letter of 8 January 1931, *Verseidag* to Mies van der Rohe.
- 21 Those elevations numbered plain and with an additional “A” show the hatching. Starting with the set of plans numbered “B”, no more hatching was drawn. See Mies van der Rohe Archive, Plan n. 9.70



11 Mies van der Rohe, HE-building, Krefeld, Germany, 1930–1938. Workers canteen in the ground floor, ca. 1936. © Krefeld City Archives.

- (“22”), and 9.88 (“22 A”) for a hatching. In contrast: see n. 9.86 (“22 B”) without a hatching. Further with hatching: 9.89, 9.56, 9.58; Plan n. 9.93 apparently shows a study in plan of a plastered HE-building and a brick dyeing plant, underlining the theory of “clean” and “dirty” images of administration and production buildings.
- 22 Wolf Tegethoff, *op. cit.*, 104.
- 23 Christiane Lange, “Die deutsche Seidenindustrie als Auftraggeber der Moderne”, in Plüm, Kerstin (ed.), *Mies van der Rohe im Diskurs. Innovationen – Haltungen – Werke. Aktuelle Positionen*, Bielefeld, Transcript-Verl, 2013, 122–136.
- 24 Ingrid Ostermann, *Fabrikbau und Moderne: in Deutschland und den Niederlanden der 1920er und 30er Jahre*, Berlin, Gebr. Mann Verlag, 2010, 45–47.
- 25 Joan S. Skinner, *Form and Fancy: Factories and Factory Buildings by Wallis, Gilbert & Partners, 1916–1939*, Liverpool University Press, Liverpool, 1997, 232–236. First publication in English in: *The Architect & Building News*, n. 25, September 1931; in German: *Baugilde*, vol. 16, 1933, 775. For J.P. Bemberg in Wuppertal see Reiner Rhefus, “Die Wuppertaler Textilindustrie und ihre Baudenkmale”, in Walter Buschmann (ed.), *Industriekultur. Düsseldorf und das Bergische Land*, Essen, Klartext Verlag, 2016, 216, 234. The Doncaster buildings were demolished in 2000.
- 26 Initially, economic reasons were given for the choice of the white stucco. See *Baugilde*, vol. 16, 1933, 775. But the cleanliness and especially the client’s requests are given reasons for the appearance in “Germanic Modern”: Skinner 1997, 234.

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Master Plans and Deviations. Mies van der Rohe's involvement in urban development at *Verseidag* Krefeld and IIT Chicago

BY NORBERT HANENBERG AND DANIEL LOHMANN

In the few written sources about Mies van der Rohe's Krefeld silk factory, *Verseidag* (1930–1938), the urban layout and building design have been repeatedly compared with his Campus master plan for the Illinois Institute of Technology in Chicago (IIT) (1939–41). New research based on rediscovered plan material from Krefeld allow for a detailed description of the historic development of the *Verseidag* plant, including the identification of master plans, later deviations and their abandonment. With this knowledge, a substantial comparison of the two projects may be established that shows surprisingly strong parallels both in their urban form and their later transformations.

In the literature about Mies van der Rohe and his built work, the *Vereinigte Seidenwebereien AG* (*Verseidag*) silk factory in Krefeld has only been mentioned marginally. If so, the area was described as “unremarkable, strictly functionalist”, and “not especially relevant”¹. However, Alison and Peter Smithson claimed as early as 1968, that a typically Miesian “open-space-structured urban pattern” first became real in the *Verseidag* factory, “in which are displayed all the formal characteristics — in the buildings, in the layout, and in the planning (weeping willows, smooth lawns) — that we are so familiar with from the Illinois Institute of Technology in Chicago (IIT) campus. In some way it was all already there at Krefeld”². From this moment on, the *Verseidag* silk factory was regarded an inspiration for the urban masterplan of the IIT campus, that Mies van der Rohe designed shortly after his emigration to the US³. This intriguing theory is based on the overall final shape of the two ensembles as green urban areas with freely arranged low pavilions. The theory's attraction is derived from the rare possibility of bridging the gap between Mies van der Rohe's European and American work, due to the few buildings that he realized between 1931 and 1941. However, a real comparison of the two schemes can only be successfully proven or rejected when looking at the two projects in detail⁴. New plan material from Krefeld allows for a precise reconstruction of the urban development of the *Verseidag* silk factory and unveils surprising parallels with Mies van der Rohe's first design for the IIT campus of 1939.

In the following, the historic urban development of the industrial plant on *Girmesgath* will be displayed, based on an analysis of the site plans from 1925–39, preserved in the company's archives today. The dialogic process between strategic development of the company management and the building planning and realization with Mies van der

Rohe's participation will be investigated and, finally, the interplay between this last European project and the first American project of the Campus master plan for the IIT.

The Urban Development of the *Verseidag* plant in Krefeld

Verseidag was founded in 1920 by four cloth manufacturers from the area around Krefeld in Germany's Lower Rhineland. Together with Hermann Lange and Josef Esters, who had already joined forces with Carl Kniffler Jr. in a loose association, the founding fathers of *Verseidag* also included the brothers Paul and Rudolf Oetker. These founding members were directors of textile companies, some of whose traditions in the lower Rhineland industry went back into the early 19th century. By joining these silk factories based around Krefeld, the partners hoped to reach a better market position against national and international competitors in times of serious economic troubles. After the founding in 1920, a property on 52 *Gartenstrasse*, built by *Deuss & Oetker* before WWI became the administration building for the new company⁵. In the following decade, several other companies joined *Verseidag*, and broadened not only the product scope, but also increased the capacity. Furthermore, they brought new facilities in Thuringia and Saxony into the business. In the following years until 1925, *Verseidag* grew to become the world's largest producer of cravat and silk cloth. The individual producers remained at their traditional bases after their association in 1920. Only the management found a new and representative domicile in Krefeld. Another five years later, *Verseidag* decided to develop their own supply service on *Girmesgath* in Krefeld.

The reason why the plot of land on *Girmesgath* was chosen is unknown. Most likely, the principal motives for choosing this site were the fortunate infrastructural connections

with a direct link to the industrial railway and an area open for development, but with some established smaller clothing industries. In a first site plan from 24 November 1925⁷, the acquisitions of *Verseidag* are recognizable as a small area of land disconnected from the railway line. The plot is adjacent to a projected extension of *Industriestrasse*, which was to become a connection between *Girmesgath* and the parallel *Weyerhoffstrasse*. The largest properties on the site belonged to the *Johns. Girmes & Co. AG* cloth mill from Oedt, including a factory building still existing today and a direct connection to the railway. The plan to acquire this factory must have been a decisive criterion for choosing this area for *Verseidag*'s own plant. In a first application for construction of an extension of the *Girmes* factory as early as 30 January 1926⁸, *Verseidag*'s possessions include the majority of land between *Girmesgath* and *Weyerhoffstrasse*, now directly connected to the railway. In the same year, the company acquires the adjacent undeveloped land southwards along *Girmesgath*, which was to become the starting point for a later factory development master plan and a basis for the buildings designed and planned by Mies van der Rohe in the 1930s⁹.

The planning department of *Verseidag* immediately started drawing development plans for sites and factories once they had been acquired. In this way, the former plant of *Johns. Girmes* grew step by step in several phases of construction tiered along the railway line and formally heterogeneous. Until today, this area is limited by a ramp to the east of this finishing plant. This reactive and uncontrolled growth was following production requirements only, but no urban master plan. A first attempt to bring order was the planning department's scheme for the area between this factory, the railway, *Industriestrasse* and *Girmesgath*¹⁰. Following this plan, a first power transformer house was built at *Girmesgath* in 1929¹¹, which was turned into the first gatehouse after slight alterations later on. To the direct south of this, the first power plant with a boiler hall and

a turbine house was erected in 1930¹². The plan includes a sketch for the location of intended extensions of the power plant. Logically, the coal supply facilities were located between the power plant and the railway line, including a factory-owned connecting track. With these buildings, the initial area of *Verseidag* between the railway line and *Industriestrasse* was occupied entirely, and required a conceptual plan for the large area along *Girmesgath*, acquired in 1926.

Three site plans on tracing paper, preserved in the *Verseidag* archives, show the planning of streets and buildings of a dyeing plant on this area. The planning covers a stretch of land reaching further along *Girmesgath* until the back of a housing area at *Prinz-Friedrich-Karl-Strasse* and became the basis for the buildings realized after 1930. Northwards, the site was limited by the planned, but only partly realized *Heimendahlstrasse*, and covered about 3 hectares of land in the end, including the old *Girmes* factory, the site of the power and gatehouses and the open land along *Girmesgath* to be developed in the following years.

The earliest of the three plans dates 30 July 1930¹³ and was used by Mies van der Rohe for his design of a first construction phase. This phase included the *HE*-building, the adjacent 4 bays of shed roof halls for a dyeing plant and a water tank in the fifth bay and is well preserved today¹⁴. Furthermore, the plan shows an overall planning for all buildings to be erected after 1930, in the shape of a mirror image plant of low dyeing plant halls and four tall buildings with an inner courtyard in their center. By slightly extending the four tall buildings by about 7 meters in front of the dyeing plant facades towards the middle axis, the central courtyard received two spatially tightened entries towards the power plant in the north and a schematically drawn H-shaped building in the south. The latter proved to be a first sketch of a projected administration building for *Verseidag*, extending over the planned *Brockerhoffstrasse*¹⁵.

The only existing technical building drawn in thick lines on this development area is a pump station. This small edifice was connected to a row of filter wells along the property border at *Girmesgath* and in rows deep into the depth of the site¹⁶. With this installation of a free-flowing and rich water supply for the high water demands of the dyeing plant and the parallel enlargement of the power plant, the *Girmesgath* site gradually grew to being a nearly self-sustaining production site for *Verseidag*. The preserved letters of the planning department show the importance of these wells in connection to the high demand for clean water and an increasing complexity in their technical system¹⁷. In several construction phases, the pump house was extended and redesigned and resulted in the building shape preserved today after a last makeover by architect Erich Holthoff dated in June 1948.

The completion of the first construction phase of the *HE*-building with two stories and the first four bays of the dyeing plant was accomplished in 1931, and the company started production. During construction, a voluminous water tank was added in the fifth bay of the dyeing plants, plus a low connecting hallway joining the new factory with the *Girmes* buildings, labeled "Old dyeing plant" in the plans,



01 Mies van der Rohe and *Verseidag* planning department, *Verseidag* silk factory, Krefeld, Germany, 1930–1938. © Krefeld City Archives, around 1955.

where the finishing department was housed. The hallway was not planned from the start, but followed technical conditions in the production process. Surprisingly, the hallway was drawn later and in a schematic and imprecise way onto early site plans that were handed in with the building applications of the first phase¹⁸. Probably, the reason for this hesitation was the fact that the construction of the hallway implied a closing of *Industriestrasse* as a connection between *Girmesgath* and *Weyerhoffstrasse*.

The last of the three site plans shows the status quo of *Verseidag* on 20 March 1933 with the existing buildings shown in heavy outline¹⁹: The former *Girmes* factory and a connecting hallway, the power plant in its first shape, the *HE*-building with the adjacent dyeing plant and water tank, a small garage building opposite the *HE*-building and the pump house in its first state. All of the elements existing at this point are according to the master plan of 1930. The garage opposite the *HE*-building occupies exactly the place for a mirrored twin of the *HE*-building and was suitable to demonstrate and assess the width of the tightened courtyard entry that was to be created. The garage must be considered as an explicitly temporary structure like many other buildings on site. It was included in a building permit application of 10 October 1930 and torn down in the context of later development on site in the mid-1930s.

In the course of the year 1933, the dyeing plant was extended during operation in two construction phases by four extra bays of shed halls and a second water tank, and finally by three more to reach final shape of 11 bays. On an urbanistic level, this still followed the intended shape of the urban master plan of 1930. The addition of two more floors to the *HE*-building in 1935 was likewise executed according to the homogenous idea of extension in shape and execution.

On the other hand, some structures on site were built not in accordance with the master plan, but as a result of uncontrolled growth and only reacting to planning pressure and the continuous necessity to create space for the growing production. In this manner, a hall was built west of the

dyeing plant over the planned *Heimendahlstrasse* in order to install drying cabins for the cloth, as the building application of 12 July 1932 documents²⁰.

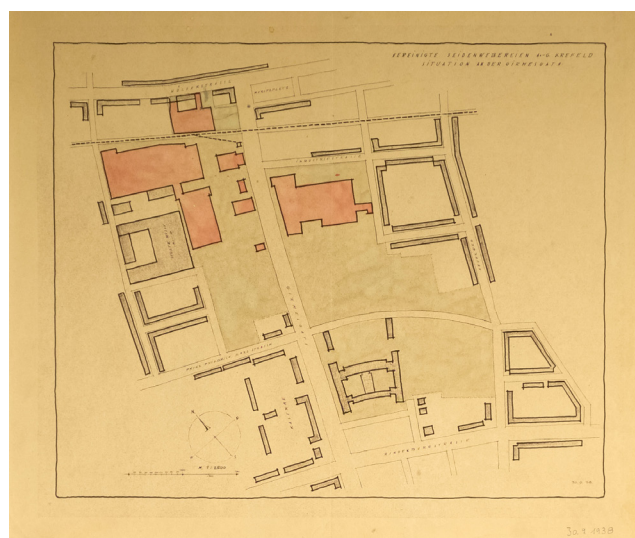
Development of an Office Building, Goods Inspection Department and a Clock Tower

The first fundamental break with the master plan of the area, and specifically with the design of Mies van der Rohe, came with a building application of 24 August 1933. The low connecting hallway was to be replaced by a two-storey office building with a cellar, along with the plan for a new connecting hallway behind the new edifice. Several complex steps of planning and application between October 1933 and April 1934²¹ finally led to a built solution of an L-shaped building with three stories replacing the old connecting hallway and covering the south façade of the old *Girmes* factory just opposite the north side of *HE*-building. In this longer flank of the L, the goods inspection department was placed, while the shorter flank contained offices. Together with the *HE*-building, the new structures created a courtyard surrounded by formally similar multi-storied buildings. At this time, the goods inspection department consisted of a basement, lit by windows and a broad embankment facing the *HE*-building, a ground floor with windows in the same direction, and an upper floor with windows towards the opposite side of the building, above the roof of the old *Girmes* factory halls.

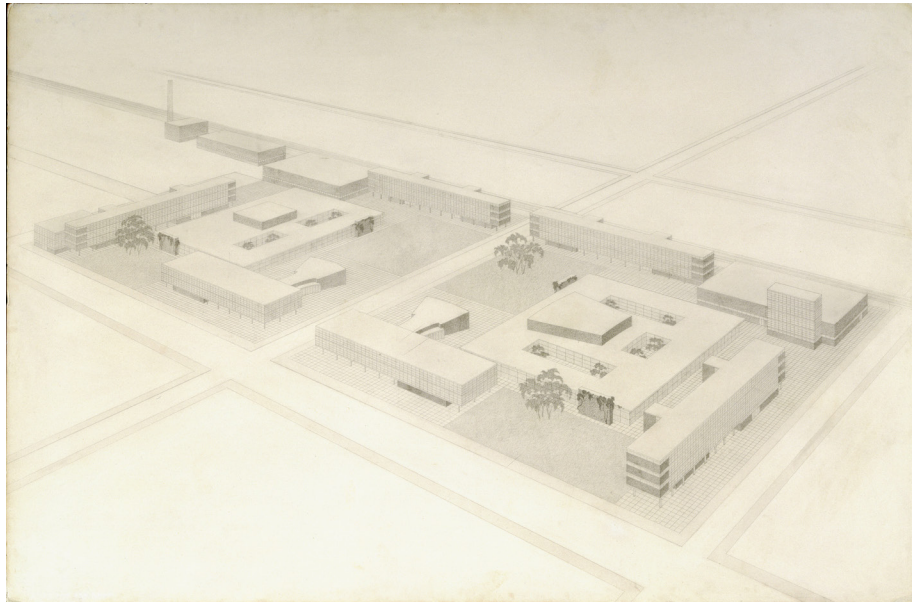
In all of the existing drawings of the goods inspection department, the east façade facing the main gate on *Girmesgath* was not designed to a satisfactory architectural appearance; let alone the decision to closely approach the *HE*-building which was fundamentally criticized by Mies van der Rohe²². In the side-by-side of the two front façades, the new goods inspection building was no appropriate counterpart for the tall, wide volume of the *HE*-building. The roofline ran around the building and exposed the single pitch roof. Among the preserved drawings of the *Verseidag* archives, one sketch on tracing paper shows the elevation of



02 Verseidag planning department, *Verseidag* silk factory, Krefeld, Germany, 16.10.1935, site plan of the property with projected new buildings: sizing plant and gate house. © Verseidag Archive, No. VA_LP.100. Reproduction: Daniel Lohmann, 2017.



03 Verseidag planning department, *Verseidag* silk factory, Krefeld, Germany, 30.09.1938, Site Plan of *Verseidag*'s properties and planning. © Verseidag Archive, No. VA_LP.030. Reproduction: RWTH Aachen, 2016.



04 Mies van der Rohe, Illinois Institute of Technology, Chicago, 1939-41. Master Plan, General Studies, Preliminary Studies. Campus. Aerial perspective. Preliminary version. New York, Museum of Modern Art (MoMA). Pencil, conté crayon on illustration board, 40 x 51" (101.5 x 129.5 cm). The Mies van der Rohe Archive, Gift of the architect. Acc. n.: 719.1963. © 2017. Digital image, The Museum of Modern Art, New York/Scala, Florence.

a raised tower with first circular lines exploring the position of a master clock. The building covers the head end of the goods inspection building until today. A blueprint copy of this drawing is dated 23 April 1934 and shows the elevation of the clock tower in its final shape for the first time and became a basis for any further planning. The drawing is signed at the bottom with an H in a circle. The architect Erich Holthoff joined *Verseidag's* planning department in April 1934, and may be linked to this characteristic signature "HO", suggesting his authorship for the final design of the clock tower.

Power Plant

The power plant is one of the central current research interests, allowing an identification of four larger expansions. After the initial construction of the plant in 1930, the first addition of a building for a new bent-tube boiler reacted to a growing capacity overload of the existing boiler and generator in 1933²³. A second additional boiler was added in 1937-38, with a renewal of the outer appearance of the building in this new part and the first addition from 1933. Furthermore, designs were prepared to unify the whole façade of all parts of the building. These plans were only executed in their entirety in 1959/60 in the largest renewal to date, leading to today's appearance of the building. The individual steps of development can be distinguished in the facades up until the present time²⁴.

Abandoning the Master Plan

The development of the offices and goods inspection department with a clock tower described above may have been a decisive step towards abandoning the 1930 master plan. Certainly, functional and pragmatic reasons led to the decision to leave its strict boundaries. *Verseidag* bought the property of the former velvet factory *vom Bruck Söhne* on the other side of *Girmesgath* at the intersection with *Industriestrasse*

in 1934. With this acquisition, the size of the site greatly increased and *Girmesgath* became an important, almost internal factory street. The new situation and first considerations about a plan for this area can be seen in a plan drawn by Erich Holthoff in 1934²⁵. On one hand, the plan shows the whole property of *Verseidag* on 7 June 1934. On the other hand, it shows Holthoff's idea for a first partitioning of the site in a concept still lacking artistic discipline.

This complex and new situation led to a new plan, unifying further expansion with the existing structures. In the next master plan from 17 December 1934²⁶, the old urban scheme was finally abandoned in favor of a new layout of solitary buildings along *Girmesgath*, outlining the planned new gatehouse and a sizing facility for the first time. This plan led to a joint building application for the construction of both of these functional buildings (figure 02), which were finalized in 1936.

In 1935, the *HE*-building was heightened by an extra two stories instead of the originally planned three, resulting in the shape of the building with four stories, as it is preserved today. Possibly, this reduction of space was related to the gain in space resulting from both the construction of offices and the goods inspection department next to the *HE*-building, and the property acquisitions on the other side of *Girmesgath* (figure 01).

Planning for the New Sites at *Industriestraße* and *Hindenburgplatz*

After purchasing the former *H. vom Bruck Söhne* velvet factory and abandoning the old urban master plan, a development pressure arose to convert and extend these places for *Verseidag's* own production, in a similar manner as it was done ten years previously with the *Girmes* factory. The first sketches can be found in the archives on a cadastral map of 14 August 1935²⁷. Unlike the beginning of building activity at *Girmesgath*, now a design canon had been developed,



05 Mies van der Rohe, Illinois Institute of Technology, Minerals and Metals Research Building, 1941–1943, Power Plant, 1948–1950, Chicago. © Norbert Hanenberg, 2015.

which served to create a unity in the factory buildings of *Verseidag*, at least at first sight. This tool was a minimal corrective against the uncontrolled architectural growth of the factory. The design of a new building at *Industriestrasse* with a two story main building and a connected shed roof plant can be understood in this context. Aside from the canon and its typologic parameters influencing the design, Mies van der Rohe commented personally and recommended changes in the new building's composition²⁸. In the *Verseidag* archives, a number of drawings concerning this building shows the development from a simple wall facing *Girmesgath* and covering the saw-tooth shed roofline, to a palimpsest of drawing corrections²⁹ now exposing the roofline, and finally a horizontal connection between the two story building and the plant, similar to the solution found for the *HE*-building 7 years earlier.

In the preserved plans in the company archives, a first design shows a tall covering wall in front of the characteristic shed silhouette, shaping a homogenous façade rectangle towards *Girmesgath* jointly with the side façade of the office building. A slightly later correction of this version is preserved, now exposing the shed-gables geometry again and creating a better reference to the *HE*-building silhouette on the opposite side. In the obvious similarity with the *HE*-building and the dyeing plant, a vis-à-vis of buildings was created with a wide intermediate range consisting of *Girmesgath* and individual buildings on a patch of green in-between, like the pump house, the gatehouse and the sizing facility. This layout strongly resembled the 1930 master plan scheme, but with the courtyard widely opened now to make space for these individual buildings (figure 07).

Administration Building

The last building Mies van der Rohe planned in 1937–38 before his emigration to the US was a new administration building for *Verseidag* including departments for the com-



06 Mies van der Rohe, Illinois Institute of Technology, Carr Memorial Chapel, 1949–1952 and Carman Hall, 1951–1955, Chicago. © Norbert Hanenberg, 2015.

pany's management, distribution, etc. The idea for such a building was already included in the first master plan of 30 July 1930³⁰, and was mentioned by *Verseidag*'s planning department in the project correspondence with Mies van der Rohe regarding the *HE*-building³¹. The planning and building authorization for an administration building on the *Girmesgath* site as it was originally intended seemed questionable as early as 1934, in the context of the factory's general need for space and a construction ban area adjacent to existing housing at *Prinz-Friedrich-Karl-Strasse* in the south. Even in the later scheme of 7 June 1934, *Verseidag* still intended to build the administration building on the *Girmesgath* site, together with the factory buildings. With the abandonment of the symmetric urban layout, Holthoff planned individual buildings now, and the administration building was not placed in alignment at the end of the central boulevard anymore. Instead, a three storey U-shaped building with a courtyard facing *Girmesgath* was planned, with connected additions in the back towards the factory. This formally unambitious plan did not take into account the newly acquired site of the *vom Bruck* factory and its available land.

The final decision to relocate the administration building to *Hindenburgplatz* (today's *Konrad-Adenauer-Platz*) just 400 meters down *Girmesgath* was certainly related to other circumstances. Within the limited supply of space on the property, it would have become an obstacle for the expected development of the plant with additions for the growing production. Furthermore, the mentioned construction ban area³² towards the *Prinz-Friedrich-Karl-Strasse* in the south was a further limitation of possibilities for planning and resulted in a loss of space for development. A representative administration building would have had very limited options for growth itself, let alone the growth of the plant.

Mies van der Rohe established the design of the new project at *Hindenburgplatz* in Berlin in cooperation with his assistant Herbert Hirche and Erich Holthoff of the *Verseidag*

planning department. Holthoff stayed in the Berlin atelier from May to July 1938 in the context of this project³³. The conical shape of the building and its connecting structures, which received arc shapes in correspondence, reacted directly to the outline of the property at *Hindenburgplatz*, and was not actually a design directive of Mies van der Rohe. It shows an essential character trait of his: the ability to find solutions in building under changing circumstances. The shape was the inevitable result of the design process in interaction of external requirement and inner attitude.

After the analysis of the archival material, the decision for the *Hindenburgplatz* location apparently was the result of an intense process with the Krefeld urban planning department. The town planning intended to extend a row of town houses towards the square, of which only two houses existed at this time. Until now, it is unclear what the process was. Documents indicate that properties were exchanged with *Verseidag* for plots at *Prinz-Friedrich-Karl-Strasse*, in negotiations with the city council and the owners at *Hindenburgplatz*. In a site plan of 1 March 1939 drawn by Holthoff³⁴, the corner property towards *Girmesgath* is still marked next to the administration building designed by Mies van der Rohe. However, a presentation drawing of 30 September 1938 (figure 03) indicates not only the administration building, but further acquired production plant properties north of the railway³⁵.

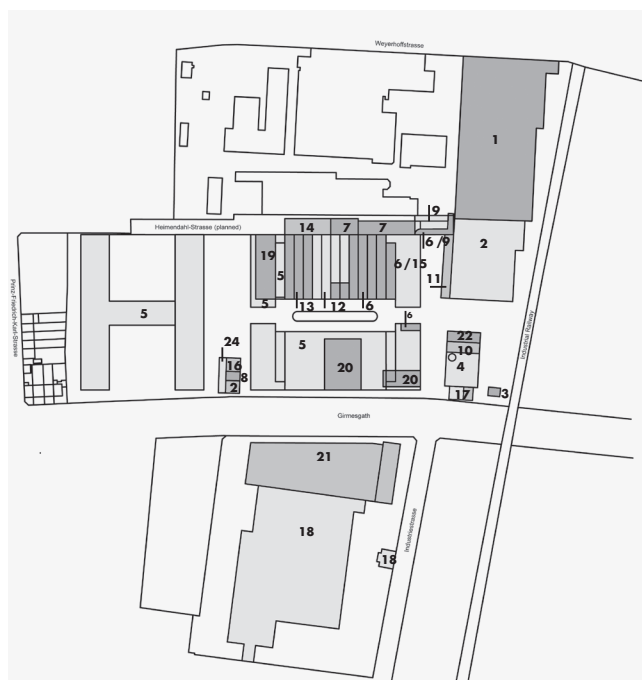
Verseidag and the IIT Campus

Mies van der Rohe immigrated to the US in August 1938 to take over the directorship of the architecture faculty at the Armour Institute of Technology in Chicago, Illinois. By joining this Institute with the Lewis Institute to create the new

Illinois Institute of Technology (IIT), Mies van der Rohe was facing the challenge to develop a master plan for the new campus of this school on an area of circa 47 hectares, after expanding the property of the Armour campus towards the south³⁶. The future development of this campus promised to become Mies van der Rohe's most extensive planning task by far for buildings in close proximity. The overall built volume was to be close to the sum of what he had realized in all his years as an architect in Europe before his emigration. Specifically the 1930s were a time of very few commissions, apart from the Krefeld projects. Mies van der Rohe's engagement and experience with the requirements of a growing production- and administration plant for *Verseidag*, which lasted until 1938 and ended in the design for the large administration building, led directly into the project work for the new IIT campus only a year later. A master plan was to be developed on flat ground and embedded into the urban grid of Chicago, taking into account the numerous buildings of the different institutes, and the expected long development time under changing circumstances.

Urbanistic Comparison

In a first design of 1939 (figure 04), Mies van der Rohe worked with a symmetrical layout of buildings, mirrored along 33rd Boulevard and closing Dearborn Street. Two identical buildings were placed on both entries into the campus from Dearborn Street, which were extended towards the street far enough to create a spatial tightening, shielding the wider courtyard behind them. The edges of the space created were mirrored along 33rd Boulevard, but the buildings behind already showed the first possibilities of variation in shape and size. This outline strongly resem-



- | | | |
|----|-----------|--|
| 1 | 1925 | Cloth Mill Johs. Girmes & Co. AG from Oedt |
| 2 | 1926-30 | Verseidag Silk Factory I Pump Station |
| 3 | 1929 | Gatehouse I Power Transformer House |
| 4 | 1929-1930 | Power Plant I Turbine House |
| 5 | 1930 | Urban Masterplan Verseidag |
| 6 | 1930-31 | HE-Building I Dyeing Plant I Garage |
| 7 | 1932 | Cloth Drying Cabin Hall |
| 8 | 1930-33 | First Addition Pump Station |
| 9 | 1933-34 | Office Building I Connection Hallway |
| 10 | 1933 | First Addition Power Plant |
| 11 | 1933-34 | Office Building I Clock Tower |
| 12 | 1933a | First Addition Dyeing Plant |
| 13 | 1933b | Second Addition Dyeing Plant |
| 14 | 1933-35 | Addition Cloth Drying Cabin Hall |
| 15 | 1934-35 | Addition HE-Building |
| 16 | 1934-37 | Second Addition Pump Station |
| 17 | 1934 | Addition Turbine House |
| 18 | 1934 | Velvet Factory vom Bruck Söhne |
| 19 | 1935 | Woodshed Factory Building Addition |
| 20 | 1935-36 | Gatehouse I Sizing Facility |
| 21 | 1937-38 | Printing Plant |
| 22 | 1937-38 | Second Addition Power Plant |
| 23 | 1948 | Third Addition Pump Station |

07 Mies van der Rohe and *Verseidag* planning department, *Verseidag* silk factory, Krefeld, Germany, 1930-1938. Construction history schedule.
© Norbert Hanenberg, Daniel Lohmann, 2017.

bles the 1930 master plan of the *Verseidag* plant, which was used by Mies van der Rohe as a basis for planning the *HE*-building and dyeing plant as a first step of a longer development. The spatial sequence in its idea of a functional differentiation of space was used in both projects in relation to their overall function. The goods delivery section with a ramp and driveways at *Verseidag* resemble the large open spaces to the left and right of 33rd Boulevard at the IIT Campus. Additional buildings, which were assigned to the Campus in their secondary function, were placed outside of this symmetrical layout along the local infrastructure, such as the power plant (figure 05). Possibly, the pragmatic insight into the process of abandonment of an overall master plan towards adjustments related to functional and temporal aspects was decisive after years of cooperation with the *Verseidag*'s planning department.

The question whether Mies van der Rohe was involved in the 1930 *Verseidag* master plan cannot be answered with certainty at this time. However, his work for Hermann Lange and Josef Esters for their private homes between 1927 and 1930 including his intense engagement with architectural quality, as well as the apparent end of a process of uncontrolled growth of the *Verseidag* plant in 1930 with the assignment of the architect, call for a reconsideration of his involvement. In this sense, Mies van der Rohe's former Berlin assistant Sergius Ruegenberg reported about the dissatisfaction of Hermann Lange with the plans of the *Verseidag* planning department and the giving over of this task to Mies van der Rohe³⁷. No later construction activity in the plant reached the initial architectural and urbanistic quality that was originally intended in 1930, but instead reacted to unchangeable functional decisions within loose boundaries of the master plan. But even under the changing circumstances, an involvement of Mies van der Rohe in the sense of a structuring and at least consulting activity cannot be ruled out either, and is proven in some cases. Quite possibly, the decision to abandon the original master plan of 1930 and the development of a middle zone with low pavilion-like solitary buildings may have been developed with Mies van der Rohe's participation. His general involvement in the *Verseidag* planning must be reconsidered during the course of the 1930s. The design for a private home for Ulrich Lange and the addition of two floors to the *HE*-building occurred just in the time between 1934 and 1935 when additional property and existing buildings were acquired and the master plan was exchanged for a new, more comprehensive plan in a more fundamental consequence. The participation of Mies van der Rohe is probable, in a situation of generally few commissions and economic consequences for him.

Whether he was involved in these steps or not, he will at least have followed the development at *Girmesgath*, and known of the solitary buildings at *Verseidag* from 1934 to 1936. With this knowledge, Mies van der Rohe had an urbanistic and spatial instrument at his disposal, that he used in the later design for IIT. It led to today's appearance of the campus in the context of a still symmetric building placement in the center along 33rd Boulevard.

In this sense, the comparability of the two designs is not only given in the free distribution of individual buildings in a green pattern, as was suggested by the Smithsons, but primarily in the first symmetrical conception of both urban designs: mirror-image buildings around central axes and oblong squares, that were changed later in favor of a looser arrangement, which can be strikingly observed in both developments.

Architectural Expression

When starting the design concept for IIT, Mies van der Rohe had 11 years of Krefeld collaborations and 8 years of experiences with typified industrial architecture at *Verseidag* behind him. The output parameters of both projects are rather similar when analyzed in detail, and the time-related reference is immediate, as shown above. In both projects, *Verseidag* and the IIT Campus, a whole set of circumstances influenced the design decisions down to the level of materiality and detail. The general and crucial intention to give an architectural sense of unity to a whole plant of substantial size and its individual buildings, led to the determination of design parameters for their architectural expression. They became the decisive argument to accompany the expected long time of realization under changing circumstances including altering technical and functional aspects and even changing architects with an effective corrective. In both projects, Mies van der Rohe developed an architectural expression that gave a design directive with an austere and contemporary appearance for the factors mentioned above.

The design directive in Krefeld was a rectangular system of buildings in plan and elevation, with sharp incisions of dark steel frame windows in white stucco facades cladding steel frame constructions, and an ever-present base of five exposed red brick layers in ordering and unifying austerity. This appearance was still the directive used for the late design of the administration building at *Hindenburgplatz*, in order to keep the unity in expression of all *Verseidag* buildings. For the comparably shaped buildings at the IIT in Chicago, Mies van der Rohe envisaged a dark exposed steel frame structure with windows according in shape, and clay colored brick for the closed wall sections (figure 06).

The decision for exposed brick construction as a modular system providing order may be seen in the context of Mies van der Rohe's general preference for this material on one hand, but also in relation to the new research results showing that the *Verseidag* buildings were originally intended to be clad in brick, on the other hand³⁸. The reason for the change in favor of a stucco façade is unknown today, but the preserved correspondence suggests a changing specification by the client. Furthermore, the use of exposed brick in the base, the main staircase and the delivery ramp show that the material brick played a crucial role in the design of certain functional sections of the plant. Additionally, not only the same *Bockborner* brick was applied both in a block bond for walls and a cross bond for technical areas in the private houses for Hermann Lange and Josef Esters, but also the same steel windows as in the factory, both manufactured by the company *Fenestra Crittall AG* and painted

dark on the outside and white on the inside. In this way, a continuity of leitmotifs in design can be observed from the private homes of the managing directors to the silk factory plant for *Verseidag* and up to the project for the central administration building in 1938.

In addition to these distinct formal determinations, both projects show variations related to the structure and introducing new materials into the visible palettes. The result was a further increase in complexity beyond the apparent simplicity in regard to the design quality of the planning architect. The loss of quality in both cases started, when formal criteria were adopted on a level of superficial citation, but structural questions and possibilities of material were neither recognized nor implemented in construction.

Finally, it must be noted that Mies van der Rohe repeated the structural figure of the *HE*-building not only in the first design for the IIT campus, but also in the realized four-storey buildings that surround the campus on three sides. In addition to the formal similarity of the buildings, their inner organization of functions including the protruding stairwells was adopted from Krefeld in these early campus plans for Chicago. This repeated, self-referential and successive work method, that was based on the experiences in Europe and especially in the Krefeld projects, became not only a sphere of activity for the IIT campus but the crucial development method for projects and buildings created throughout the whole American phase of Mies van der Rohe's work.

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Notes

- 1 Franz Schulze, Edward Windhorst, *Mies van der Rohe. A Critical Biography*, New and Revised Edition, Chicago, The University of Chicago Press, 2012, 175.
- 2 *Id.*, 198.
- 3 Alison Smithson, Peter Smithson, *Mies van der Rohe. Veröffentlichungen zur Architektur*, vol. 20, TU Berlin, 1968, unnumbered, page 8 of the body.
- 4 Franz Schulze, Edward Windhorst, *op. cit.*, 198: "He borrowed from the last decade of his European experience – especially for building elevations – though the examples he could draw from, chiefly the unbuilt Reichsbank and the *Verseidag* factory, were not especially relevant".
- 5 The development of the *Verseidag* factory presented in this article is based on a current research project under the guidance of the author Norbert Hanenberg (THM Giessen) and Daniel Lohmann (TH Köln). The project involves a detailed documentation of all the buildings on the *Verseidag* site and the analysis of the preserved plan material in the *Verseidag* archives. Furthermore, the project provides scientific advice

for the current reuse and restoration. For this topic, please see the other article by Norbert Hanenberg and Daniel Lohmann in this issue of *docomomo Journal*.

- 6 <http://www.mies-van-der-rohe.com/historie/die-geschichte-der-verseidag/>
- 7 *Verseidag* Archive, No. VA_LP037
- 8 *Verseidag* Archive, No. VA_LP026
- 9 *Verseidag* Archive, No. VA_LP013, Site plan, 12.05.1926
- 10 *Verseidag* Archive, No. VA_KW139, site plan.
- 11 *Verseidag* Archive, No. VA_KW150
- 12 *Verseidag* Archive, No. VA_KW169
- 13 *Verseidag* Archive, No. VA_LP023; see the figure in the other article by Hanenberg/ Lohmann.
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- 15 See the other article by Norbert Hanenberg and Daniel Lohmann in this issue.
- 16 *Verseidag* Archive, No. VA_LP022
- 17 *Verseidag* Archive, correspondence between the planning department and the well construction company
- 18 *Verseidag* Archive, No. VA_LP028
- 19 *Verseidag* Archive, No. VA_LP024
- 20 *Verseidag* Archive, No. VA_SH001
- 21 *Verseidag* Archive, Construction applications of 23.10.1933, 27.10.1933, 26.04.1934, 7.03.1934.
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- 25 *Verseidag* Archive, No. VA_LP008
- 26 *Verseidag* Archive, No. VA_LP010
- 27 *Verseidag* Archive, No. VA_LP027
- 28 Mies Archive, *Verseidag* Dye Works Building, Letter of Mies van der Rohe to the planning department of *Verseidag*, 06.03.1937.
- 29 *Verseidag* Archive, Plan: *Abteilung Filmdruck Industriestrasse*, 26.09.1937.
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- 31 Christiane Lange, *op. cit.*, 173; Mies Archive, Correspondence, Folder 1, Letter of 3.1.1931, *Verseidag* to Mies: "In order to find out the construction method better suitable for the subsequent administration building, one could make one half of the floor entirely in pumice concrete, and the other half with a sand fill". Literally: "Um für das spätere Verwaltungsgebäude festzustellen, welche Ausführung besser ist, könnte man vielleicht die eine Hälfte der Decke (...) ganz in Bimsbeton und die andere Hälfte mit Sandaufschüttung machen".
- 32 *Verseidag* Archive, No. VA_LP034
- 33 Mies Archive, Research File, Interview Erich Holthoff with Wolf Tegethoff, 30.11.1985; See also Andreas Marx, Paul Weber, "Von Ludwig Mies zu Mies van der Rohe", in Helmut Reuter, Birgit Schulte (ed.), *Mies und das Neue Wohnen. Räume, Möbel, Fotografie, Ostfildern*, Hatje Cantz, 2008, 33–35, 37.
- 34 *Verseidag* Archive, No. VA_LP031
- 35 *Verseidag* Archive, No. VA_LP030
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- 38 See the other article by Norbert Hanenberg and Daniel Lohmann in this issue, page 26.



Mies van der Rohe meets Robbrecht en Daem *architecten*. History of a 1:1 Model based on the Design of Mies van der Rohe

BY CHRISTIANE LANGE

Mies 1:1 The Golf Club Project (Krefeld, Germany, May-October 2013) was an exhibition consisting of an architectural model on a 1:1 scale which could be viewed and accessed physically. Christiane Lange and the initiative *Projekt MIK e.V.* built the model together with Ghent-based architects Robbrecht en Daem according to the plans for the clubhouse at Krefeld Golf Club. These were drawn up by Mies van der Rohe in 1930, but never implemented. This article depicts the development and the course of the project as well as the conceptual involvement of the participants within the context of Mies van der Rohe's oeuvre, the debate regarding reconstruction and the goals of the exhibition.

Summer 2013: a long, flat formation of wood and steel lies nestling in swaying cornfields at the top of a hill on the outskirts of Krefeld. *Mies 1:1 The Golf Club Project* is an architectural model on a 1:1 scale which can be viewed and accessed physically. The initiative *Projekt MIK e.V.* built the model together with Ghent-based architects Robbrecht en Daem¹ according to the plans for the clubhouse at Krefeld Golf Club. These were drawn up by Mies van der Rohe in 1930, but never implemented. For a period of 6 months, it provides a report of Mies van der Rohe's architecture at the height of his European career. The attitude of a memorial was inherent to the design as it refers to the context of his origins².

After its opening in May 2013, news of the 1:1 model circulates slowly through the professional and public media and it attracts more and more visitors. The model is accessible at any time, including at night. It stands free within the landscape for which Mies van der Rohe had planned it. There was a golf course here until 1938, but then the area was turned into a practice area for troops. After the closure of the British bases following German reunification, the area was restored and listed for environmental protection.

During the day, tour guides are available at the 1:1 model and offer descriptions and background information. There are no signs with information. The 1:1 model is an exhibit, not an exhibition space. The cash desk and bookshop are set up on a makeshift table - a wooden board on trestles.

Many visitors book tours. Many universities come with large groups of students. Whether joggers or cyclists, or simply out for a walk, people constantly pass through the building: once there was even someone on a horse! Occasionally, the 1:1 model becomes a venue for academic or cultural events. In the open building, they are exposed to the changeable Rhineland weather.

Some visitors told us that they feel overwhelmed by the spatial effect of the 1:1 model. The place exudes an atmosphere of great peace and triggers a feeling of longing. The

rhythm of the columns, the wide-framed views, the hall, reminiscent of a prostyle: all of this radiates an atmosphere that was conveyed to the visitors. Is it the "consistency", which Alexander Schwarz uses when talking about the 1:1 model to refer to Heidegger – an experience of "truth" – that arouses these observations?³

Many were saddened that the building was only temporary. The comments in the guestbook and on social media bear witness to such unusual reactions to an architectural exhibition.

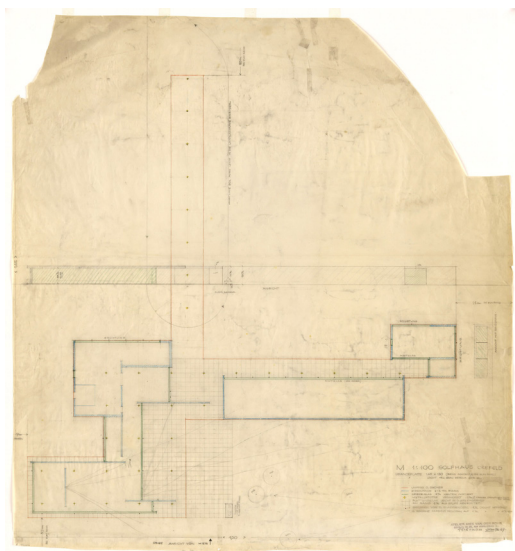
Some, however, thought it was simply a waste of money because the model was to be taken down again after six months⁴.

The 1:1 model achieved something that a presentation with plans, sketches, photographs and spare models could hardly have achieved. It was completely self-explanatory and direct. The physical presence of the architecture leads foremost to knowledge through experience, not through description. This ability of the object to mediate by spatial experience was underpinned by the specific quality of the building. The 1:1 model did not try to suggest a functional building. It always revealed enough to allow Mies van der Rohe's spatial idea to become tangible and visible, but where no clear decision was recognizable in Mies van der Rohe's plans, or where it was not necessary to include it in order to make plain his architectural concept, it retained the nature of a sketch. It hung in the space between physical architecture and architectural concept. That it was made possible to conceptualize and implement this intermediate space as an architectural form is the achievement of the architects Robbrecht en Daem. They transposed Mies van der Rohe's design from 1930 to a temporary contemporary model.

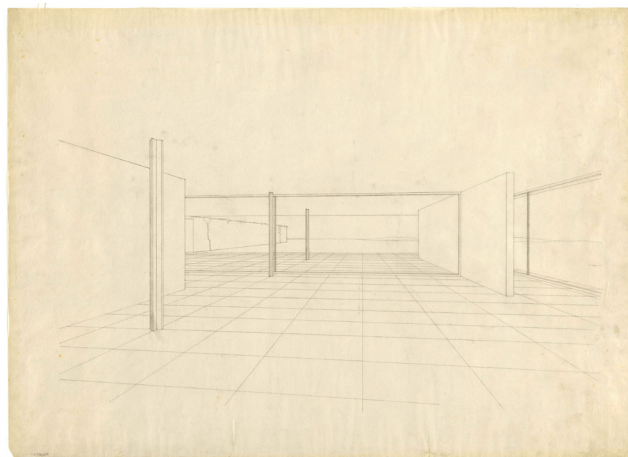
Background History: 1927–1937

Mies van der Rohe received nine commissions from a group of influential silk factory owners from Krefeld, their companies and their association between 1927 and 1937. The

- 01 Mies van der Rohe, Ludwig (1886-1969): Golf Club Project, Krefeld, Germany. Plan, 1930. New York, Museum of Modern Art (MoMA). Pencil and colored pencil on tracing paper, 44 1/2 x 41 3/4 (113 x 106 cm). Mies van der Rohe Archive, gift of the architect. Acc. n.: MR19.40. © 2017. Digital image, The Museum of Modern Art, New York/Scala, Florence.



- 02 Mies van der Rohe, Ludwig (1886-1969): Golf Club Project, Krefeld, Germany, 1930. New York, Museum of Modern Art (MoMA). Pencil on tracing paper, 28 1/4 x 39 1/2" (71.8 x 100.4 cm). Mies van der Rohe Archive, gift of the architect. Acc. n.: MR19.47. © 2017. Digital image, The Museum of Modern Art, New York/Scala, Florence.



private houses for the silk entrepreneurs Hermann Lange and Josef Esters (1927-1930), which today form part of the Kunstmuseen Krefeld, along with Mies van der Rohe's only factory building, the *Verseidag* dyeworks and *HE*-building (1930-1931), remain shining examples of this cooperation today. These are in addition to the groundbreaking exhibitions *Café Samt & Seide* (Silk & Velvet Café) and *Deutsche Seide* (German Silk), which Mies van der Rohe implemented together with Lilly Reich, to represent the silk industry association in 1927 at the Berlin trade fair *Mode der Dame* and in 1929 at the *Barcelona International Exposition*. In this context, the interior design for Herman Langes's daughter (Crous apartment 1930) is one of the few remaining furniture ensembles from Mies van der Rohe and Lilly Reich. The house for Ulrich Lange (1935), the *Verseidag* headquarters (1937-1939), and Mies van der Rohe's 1930 competition entry for the clubhouse of the newly-founded Krefeld Golf Club remained unbuilt.

But it was not only the private passion of those involved that played a role in this series of commissions in Krefeld which remained unique for Mies van der Rohe. There were also economic factors to be considered. The demands of the avant-garde had the goal of raising the image and artistic quality of German silk fabrics⁵. Apart from Mies van der Rohe and Lilly Reich, other representatives of the Bauhaus movement were called to Krefeld to influence the training of textile designers. In the wake of the aforementioned trade fairs, the establishment of the *Flächenkunstschule* (school for textile design) followed in 1931, led by former Bauhaus teachers, Johannes Itten and Georg Muche, followed by several Bauhaus graduates⁶.

Mies van der Rohe and Model

The model did not set out in any way to be eventually realized as an actual clubhouse for a golf course. On the contrary, it was to

present itself in every respect as a prototype, a model, an exercise, or a three-dimensional structure, the aim of which was to explore and, if possible, to reveal Ludwig Mies van der Rohe's architectural thinking⁷.

It is known that in 1912 Mies van der Rohe had the opportunity to apply for the commission to design a residence for the Dutch art-collector couple Kröller-Müller. Like Peter Behrens before him, he was requested to build the design as a model on a scale of 1:1 at the desired building site. The story of this "canvas cathedral" as Rem Koolhaas calls it, has always given rise to fantasies but remains an unconfirmed myth⁸. The photographs taken of it were regarded as photo collages and, thus, represent a medium that Mies van der Rohe would later use in various ways. Today we know from the letters of Hellene Kröller-Müller, that around the turn of 1912/13, Mies van der Rohe worked with great zeal and personal energy on the building of this model of wood and canvas, painted it white and, finally – which will disappoint many – personally even painted brickwork on to it⁹. Mies van der Rohe's first model on a scale of 1:1 was a backdrop architecture.

It is the interplay of Helene Kröller-Müller's capricious artistic sense, the couple's apparently unlimited financial resources, and Mies van der Rohe's will to land the commission that allow this story to oscillate between perfection and complete exaggeration. It also shows, however, that the customer did not trust small-scale models, plans, perspectives, or descriptions to form an opinion, but wanted to see the planned architecture in its true size at the original location. Both aspects were inspiring for the "invention" of Mies 1:1.

A presentation model on 1:1 scale – the model for Kröller-Müller can be seen as such – remained a one-off event in Mies van der Rohe's career, though he did work with models. Numerous stories from his co-workers and trainees



make plain the central role that simple volume models of cardboard, detail models on 1:1 scale, and town-planning models played in Mies van der Rohe's own design process and in his teaching methods at the Bauhaus, not to mention later at the Illinois Institute of Technology. Mies van der Rohe is said to have told his students, "never think, always try!". "The work with the model was always the first step in the design process, not sketching", says Werner Buch¹⁰. It is no coincidence that Mies van der Rohe is often to be seen together with architectural models in photographs.

Mies van der Rohe and Reconstruction

The story of the 1:1 model for Kröller-Müller remains as prominent in our minds during the implementation phase of Mies van der Rohe's 1:1 as the regularly brewing debate about architectural reconstruction projects, which, even after in-depth expert differentiation of the topic, is never settled¹¹. "Jetzt ist Früher heute" [now the past is today] claimed Hanno Rauterberg in 2012¹². With the successful reconstruction of the Barcelona Pavilion in the 1980s alongside Peter Palumbo's initiative to posthumously implement one of the architect's skyscraper designs for London, and the 2010 reconstruction of the interior design of Haus Tugendhat in Brno, the architecture of Mies van der Rohe, at the time of our first deliberations with regard to the 1:1 model, had already been represented 3 times in very prominent reconstruction works. Even my first cooperation with Robbrecht en Daem *architecten* in 2007 can also, in part, be attributed to this field: within the scope of the exhibition *Mies & Reich. Möbel und Räume* [furniture and interiors] in the Museum Haus Lange, the former private residence could be seen once again with its original interior design, created by Mies van der Rohe and Lilly Reich¹³.

In recent years, the Drinking Hall in Dessau (2012), which Mies van der Rohe designed during his time at the Bauhaus, has also been rebuilt. There is currently an initiative to

rebuild the destroyed Haus Wolf in Guben at its original location. Mies van der Rohe should therefore be top of the table when it comes to reconstructions of his work¹⁴.

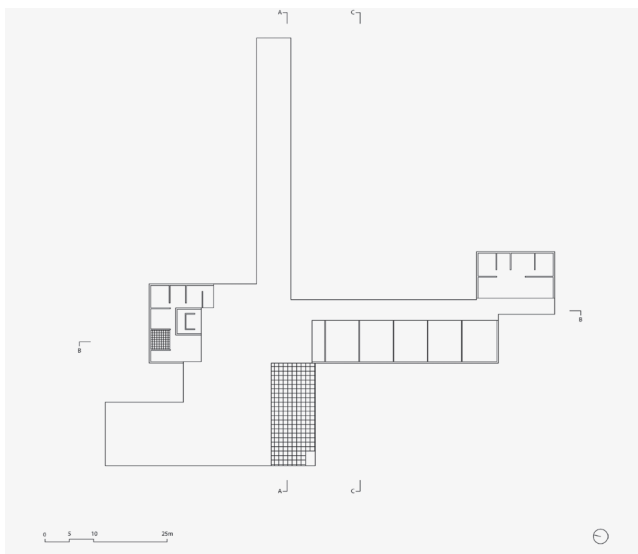
This debate did not interest us at first. However, it was unavoidable and only right that our project is perceived in this context. On the one hand, Mies van der Rohe's 1:1 can be interpreted as a reconstruction of an architectural concept. The idea was to use plans and drawings as "fixed ideas, to create the authentic spirit of planning"¹⁵. Apart from that, as a real object, it makes a very direct reference to a time in the past. It combines past and present, not only, however, because it was born out of a time in the past, but because of our current interest in this past. "The memory interest of the present has caused the building to be re-constructed. (...) It is a storehouse of memory, it is ready to be filled"¹⁶.

An Exhibition with only One Exhibit

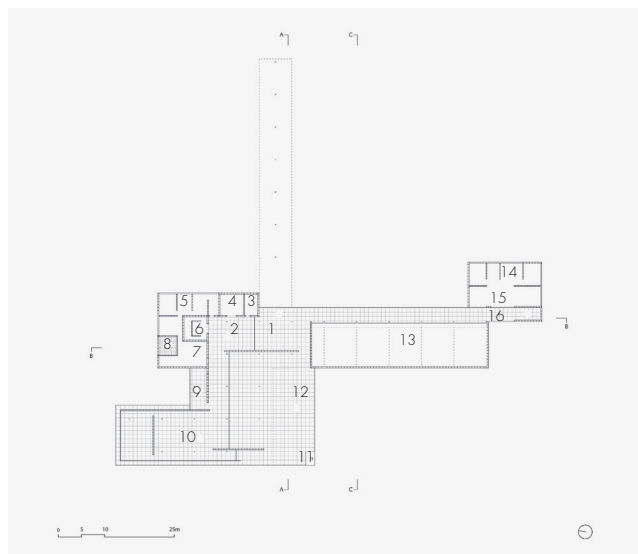
During the preparations for a publication and a documentary film on the extensive cooperation between Mies van der Rohe and his "Krefeld friends", the desire arose to present this topic to a larger audience with an exhibition¹⁷. Although Mies van der Rohe's model from 1912, with its painted brickwork, did not seem something to aspire to, the story of its creation was inspiring. Instead of using plans, photographs, perhaps little models and drawings to tell the story of Mies van der Rohe in Krefeld, we decided on an exhibition with a single exhibit: A walk-around architectural model of what would have been, without a doubt, the best work that Mies van der Rohe created for Krefeld, a "missing masterpiece"¹⁸.

Created at the high point of Mies van der Rohe's European career, it bears witness to the mature language of his architecture, which he handles with aplomb. It belongs to a series of just a few designs which were carried out between 1928 and 1931 and rendered Mies van der Rohe's reputation no less than iconic: the Barcelona Pavilion of 1929; Haus

04 Robbrecht en Daem *architecten*, Mies 1:1 The Golf Club Project, Krefeld, Germany, 2013. Level 1.



05 Robbrecht en Daem *architecten*, Mies 1:1 The Golfclub Project, Krefeld, Germany, 2013. Level 0. [1. entrance 2. lobby 3. telephone 4. bar 5. manager's dwelling 6. wardrobe/ wc 7. kitchen 8. patio 9. bridge room 10. hall 11. sculpture 12. terrace 13. changing rooms 14. trainer's unit 15. shop and workshop 16. caddies 17. canopy]



Tugendhat in Brno, 1928–31; and the show house at the 1931 Berlin Building Exhibition.

From an Impossible Replica to an *Objet d'Architecture*

*There were, after all, two aspects: the approach taken by the curator, architects, engineers, and builders, comprising an in-depth study of how to do justice to this unbuilt Mies van der Rohe masterpiece; and the question of how this architectural experience could in itself achieve an identity and a degree of autonomy*¹⁹.

Despite the comprehensive research on Mies van der Rohe's oeuvre and my own well-developed knowledge of his European work, it was clear from the beginning that the implementation of this project was not to be achieved by means of architectural-historical analysis alone. First of all, a project of this scale (approx. an area of 2300 m²) requires professional architectural knowledge. The technical view, however, also had to be expanded upon with an artistic aspect. It would not be enough to simply render the data from the sources, to the millimeter, to a detailed technical design. In fact, profound research and exact knowledge of the material offered in the plans were the only prerequisites for moving beyond what was measurable and visible to the actual core of the concept. It was not our intention to create a “likeness”, but to distill the core of Mies van der Rohe's architectural concept and transpose it to a form valid for the present – the year 2013.

Robbrecht en Daem *architecten*

*If the full scale model was not a building, it was definitely architecture: an objet d'architecture, an architectonic construction with its own raison d'être*²⁰.

The Ghent architectural firm Robbrecht en Daem *architecten* took on the task of realizing the 80-year-old design as a temporary model. Their architectural work is distinguished by its closeness to contemporary artists for whom, or with whom, they work, for example with Franz West on the design of the Rubensplan in Knokke²¹. At the same time, they can look back on numerous projects in which they have had to negotiate the constraints of traditional architecture or listed buildings, such as the restoration and extension of the university library of Henry van de Velde in Ghent. In 2012, the Market Hall in Ghent city center was one of the finalists for the Mies van der Rohe Award; the archives of *Bordeaux Métropole* from 2015 were nominated for the same prize in 2017²².

The Sources

*This body of drawings of the Krefeld Golf Clubhouse formed the basis for a series of ideas and final choices of how the scale model could be built. It is extremely satisfying to read the plans in the manner of a conductor working through a musical score, setting out emphases, rhythm, and flow. As you read, the musical architecture takes shape in your mind*²³.

Mies van der Rohe's design for the Krefeld Golf Clubhouse was the result of a small competition. In the summer of 1930, the chairman of the newly-founded club invited two architects to participate in a competition to build the clubhouse: they were the local, well-respected architect August Biebricher and Mies van der Rohe, who was also well-placed due to several successful commissions for the Krefeld silk industry.

The location of the clubhouse on top of a hill on the outskirts of the city was, at this time, already established and the creation of the golf course was underway. Both architects delivered their designs on time. No decision was ever



made because the competition was canceled at the beginning of 1931. The club had realized that the financing of the clubhouse was no longer certain due to the economic crisis.

Mies van der Rohe's entry, sent by post, consisted of a floor plan titled "final state"; at least 4 perspectives, one of which was colored; a bird's eye view as well as a descriptive text including a rough calculation. No more information on this "final state" is available. After the cancellation of the competition, Mies van der Rohe had no reason to continue to detail the design or begin planning its implementation.

In addition to this bundle of documents, the Mies van der Rohe archive in New York has around 70 drawings, plans and sketches from his estate, of which around two thirds pertain to the design finally selected for the competition. Also among these is the only remaining section through the planned building. They offer a certain insight into the reflections and considerations during the design process²⁴.

Mies van der Rohe, the Golf Club Project, 1930

The wide cone of land needs a flat, expansive building that will blend in with the landscape. The view demands that the building should be open to the South, the West and the North²⁵.

A solution verging on the utopian, with parts of the building underground in the hill, was rejected instead for an expansive flat building, parts of which jut out eccentrically into the landscape. In accordance with the points of the compass, it lay cross-shaped on the summit of the hill.

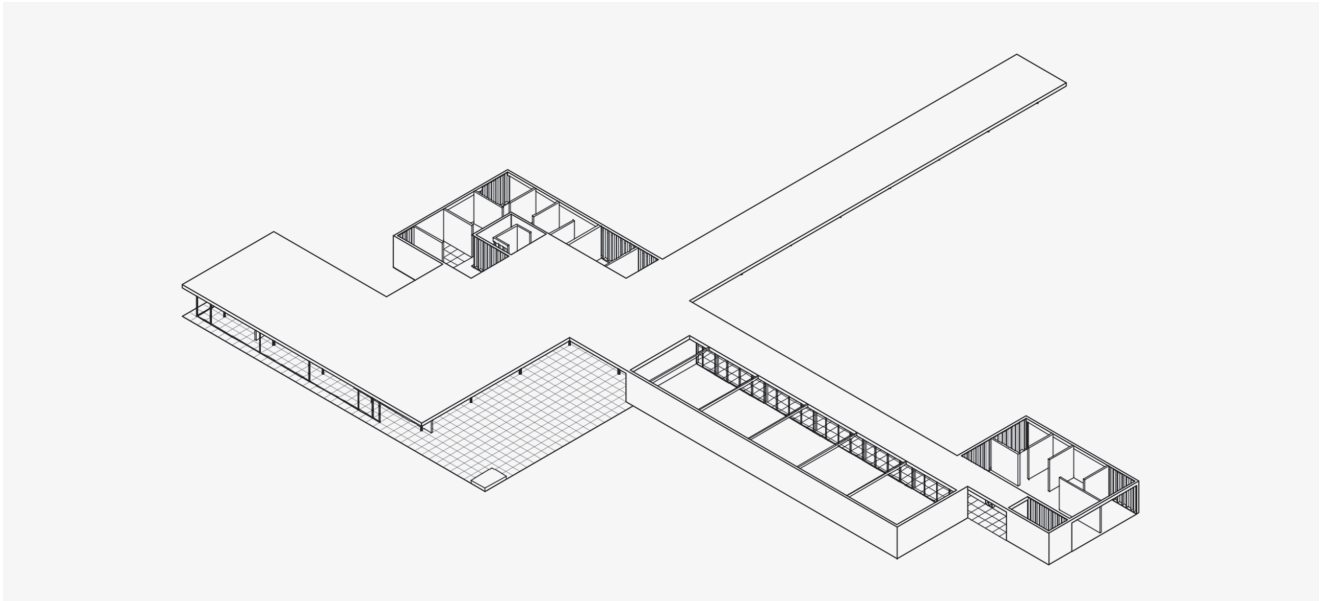
A section through the building and a layout plan offer detailed information on the entire design, as well as on how Mies van der Rohe had intended to allocate the functional areas. The rooms are clearly labeled "hall", "lobby", "changing rooms", "terrace", "bridge room" etc. Views of the individual façades and illustrated drawings were not available and it is difficult to know whether they ever exist-

ed. Several perspectives show the access road with the entrance area and the terrace, as well as several views of the "hall" and the "lobby" in the social and events area. Mies van der Rohe's attention was, however, not on the details of the design. The question of the materials that would be used, as well as other details, had not yet been addressed. His interest was far more focused on the views through the building and on the building within the landscape. With these perspectives, Mies van der Rohe illustrates using just a few fine lines – which was typical for him – his idea of space and of the interweaving of architecture with the surrounding nature.

Mies van der Rohe has developed the functional areas demanded in the competition documents as separate structures brought together under a single roof. The arrangement of the building structures has been carefully developed in small sketches. The grid of the supporting structure, which he drew in at the beginning with light strokes on the sheet, serves as a starting point and as the basis of the composition. In the sketch, it has the function of the baseline, the bars of which can be said to be the visible meter, while freestanding walls and window elements are set in a syncopated relationship with these elements. Mies van der Rohe's deep conviction that the "construction" provides the basis of architecture is clearly visible here: "The structure is the backbone of the whole and makes the variable floor plan possible. Without this backbone, the floor plan could not be free but would be blocked chaotically"²⁶.

The grounds of the club were to be accessible via an access road in the East. A 50-meter-long canopy, supported by seven centrally positioned pillars, leads the visitor to the entrance while offering protection from the sun and rain.

The visitor can still see nothing of the expansive hilly landscape on the other side of the building as the clubhouse blocks the view. Towards the south, the wing containing the locker room extends as a horizontal cube, opened exclu-



sively when approaching. In the north and the west lie the rooms of the club.

The expansive openness is only hinted at in the passage to the terrace. It is only after the car is parked, the bag stored, and clothes changed that the golfer enters the terrace and sees the expansiveness of the landscape. Also, guests who did not come to play golf would have to pass by the cloakroom, reception, telephone room and bar before reaching the hall. Mies van der Rohe sets in scene the surrounding nature as landscape images. Freestanding walls on the north and on the west side arrange the panorama into framed views. Three carefully measured views to the south, west and north transform the unspectacular landscape into paintings. Mies van der Rohe depicted the view of the surrounding landscape in several perspectives, employing the grid of the floor tiles as perspective construction lines. They attract the eye to the vanishing point where the “undulating horizon approaches the perfect horizontal”²⁷. The fact that this portrayal contradicts the floor plan, which does not include such a grid on the floor in the inside area, does not seem to bother Mies van der Rohe. The important thing for him is not to illustrate his design, but to unfold his notion of space.

Robbrecht en Daem – The 1:1 Model, 2013

*Anything that was not clear in the plans and drawings, we did not build. A building without facades. We left out certain elements of the construction, either because they would not have contributed any significance to the architectural experience, or for economic reasons. A building without a roof*²⁸.

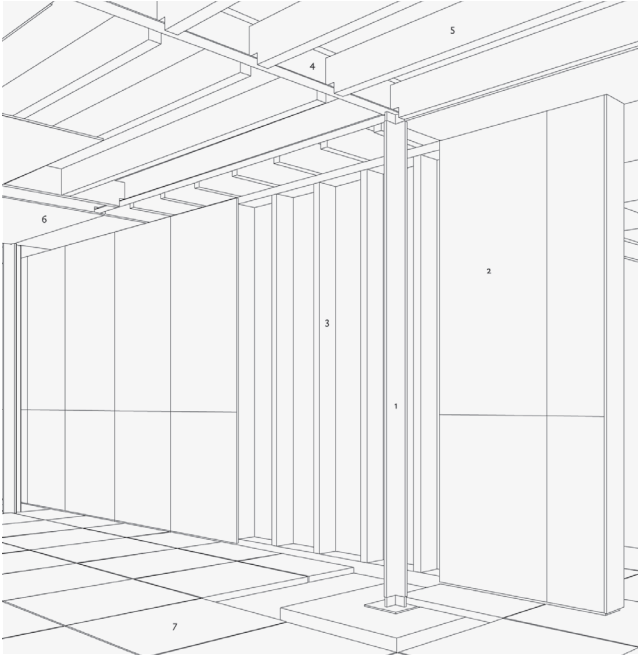
For the arriving visitor, the 1:1 model is perceived as a flat building of around 5 meters in height. The eccentric parts of the building stretch from north to south and from east to west over a length of 90 meters.

The load-bearing structure of the model accords with the steel-skeleton structure which Mies van der Rohe hinted at in his sketches. The walls and roof are built as wooden constructions and are paneled with white, scoured maritime pine slabs. Only 3 freestanding wall elements, in the hall and between the entrance area and the terrace, are treated with a surface of clear varnish to emphasize their grain. The various types of treatment are carried out in reference to Mies van der Rohe's preference for valuable wall materials, such as those used at the Barcelona Pavilion and at Haus Tugendhat. The flooring is carried out in gray concrete slabs with dimensions of 1 x 1 meter. Thin glassless frames hint at the window and door elements; the freestanding wall elements serve to arrange the space.

Mies van der Rohe often only gave outlines of the ancillary areas of the complex, providing just a few references to the room division. Information on the window openings and the sill heights either varied or were not available. The design was still at a stage in which the design of these areas played no role. For this reason, in the 1:1 model, these parts of the building are fragmentary: the locker rooms and the trainer area in the south, as well as the inn tract in the northern part of the complex have been carried out without a roof; the flooring slabs have been implemented as gravel and the framework stands have been left open in some places. In the context of the model, they develop their own, almost sculptural effect: this offers an important counterbalance to the suggestive effect of the space of the lobby and the hall.

The rich grace of the 32 visible steel columns of the supporting construction creates an obvious contrast to this minimalism. Representing “false spolia” they break up the reduced material language of the model. Paneled with polished high-grade steel, the surfaces reflect the incoming light in all directions, so that the load-bearing function of the supports is dissolved in reflections and light²⁹. It is these

08 Robbrecht en Daem *architecten*, Mies 1:1 The Golf Club Project, Krefeld, Germany, 2013. Perspective



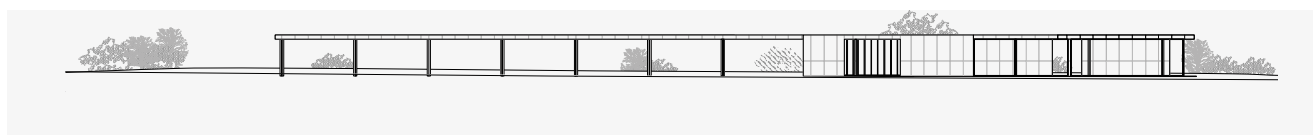
09 Robbrecht en Daem *architecten*, Mies 1:1 The Golf Club Project, Krefeld, Germany, 2013. © Maarten Vanden Abeele, 2013.



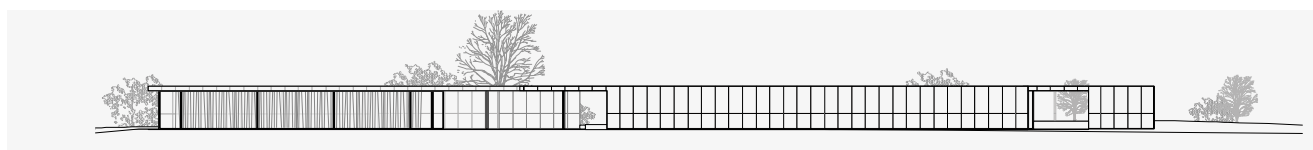
1. Steel column clad in polished stainless steel.
2. Maritime pine plywood panels.
3. Timber stud wall.
4. Steel IPE beam.
5. Wood joists.
6. Maritime plywood panels (whitewashed)
7. 1 x 1 m concrete tiles.



10 Robbrecht en Daem *architecten*, Mies 1:1 The Golf Club Project, Krefeld, Germany. © Thomas Hick, 2013.



11 Robbrecht en Daem *architecten*, Mies 1:1 The Golf Club Project, Krefeld, Germany, 2013. North elevation.



12 Robbrecht en Daem *architecten*, Mies 1:1 The Golf Club Project, Krefeld, Germany, 2013. West elevation.



13 Robbrecht en Daem *architecten*, Mies 1:1 The Golf Club Project, Krefeld, Germany, 2013. Section BB.



which allow the final completion of the atmosphere of lightness that Mies van der Rohe hints at in his drawings; they act as a signet, referring to their originator. So it can be said that the general impression of the construction, despite the simplicity of the materials, is one of elegance, radiating a compelling air of tranquility.

Robbrecht en Daem meet Mies van der Rohe

Just as Mies van der Rohe clearly formulated his idea of space with a few well-placed lines, Robbrecht en Daem *architecten* translated this idea with the same degree of precision in minimalist forms and material language to an ephemeral *objet d'architecture* of the present. Similarly to Mies van der Rohe, the central consideration for them is not the exterior appearance of his planned architecture, but his architectural concept. They describe the process of approaching and implementing it as a development “from the impossible replica to the possible model of Mies’s design”³⁰. It is not empathy and speculation that mark their method of dealing with the available sources, but constructive distance. Mies van der Rohe would probably have referred to such an attitude as “service” rather than “self-revelation”³¹. The point of departure for the architects was not the prospect of completing Mies van der Rohe’s design, but extrapolating “in his spirit” the missing information from other projects in order to provide a more detailed picture. The point of orientation for the decisions involving the transposition of Mies van der Rohe’s design to a 1:1 model was rather the architectural idea: whether and how to use which materials, and to which extent Mies van der Rohe’s instructions should be formulated in the sense of an architectural model, not that of a functioning building.

The implementation of Mies van der Rohe’s design to a 1:1 model opened a space between architectural idea and architectural construction; a space in which the freedom of the drawing could fuse with the strength of the physical

presence. Only within this space was it possible to achieve a state of suspension between the abstract and the physical as possible experiences. The 1:1 model suspends a moment of transition on the way to completion – as in the raw shell or the disintegration to a ruin – in which “architectural beauty lies exposed before us”³². “It depends on how long you remain suspended”, said Thomas Schütte, referring to the fragile process of the transition from a conceptualized piece of architecture to a constructed one. With this, he was referring in practical terms quite simply to the confrontation of an architectural concept with control of the implementation³³.

It was not necessary “to land” in order to elaborate on the image provided by Schütte. The form of the model made it possible to exhibit Mies van der Rohe’s architecture in distilled form, rather than to let it perform as a kind of costume. “Only skyscrapers which are still being built reveal bold, constructive thoughts”, said Mies van der Rohe in 1922, referring to the design of his glass skyscraper in Berlin³⁴.

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- Notes**
- 1 Translated from the German by Joseph Given. *Robbrecht en Daem architecten* is an architectural firm based in Ghent, Belgium, and founded by Paul Robbrecht and Hilde Daem. The firm work has been published internationally, was subject of several monographic publications and in 2013, received the *European Union Prize for Contemporary Architecture/Mies van der Rohe Award* for the City Pavilion project in Ghent (2012), together with Marie-José Van Hee *architecten*. Paul Robbrecht has been lecturer at the HSLU Ghent (since 1992) and at the AA School London (1997–1998) and guest professor in the Department of Architecture and Urban Planning at the University of Ghent (since 2009). Since 2005, he is member of the Royal Flemish Academy of Belgium for Science and the Arts and, since 2010, International Fellow of Royal Academy of British Architecture (RIBA, London). Hilde Daem was chairman of the *Welstandscommissie* City of Antwerp (2000–2007). Since 2000, she is member of the *MuHKA* Antwerp board of directors, and since 2010, member of the Concert Hall Bruges board of directors and International Fellow of Royal Academy of British Architecture (RIBA, London). In 2012, she was invited jury member of the RIBA Stirling Award 2012 and jury member of the *Biennale d'Architecture de Wallonie*.
 - 2 *Mies 1:1. Ludwig Mies van der Rohe. The Golf Club Project*, Krefeld, Egelsberg, Germany, May–November 2013. Curator: Christiane Lange, operator: *Projekt MIK*. e.V. (www.projektMIK.com), artistic director: Robbrecht en Daem *architecten* (www.robbrechtendaem.com), project management: DGM Architekten (www.dgmarchitekten.de), construction management: Andreas Ruhnau (www.ruhnau-architekt.de).
 - 3 Alexander Schwarz, "It's About the Place", in Christiane Lange, Robbrecht En Daem, *Mies 1:1 Das Golfclub Projekt*, Cologne, Verlag der Buchhandlung König, 2014, 195.
 - 4 *Projekt MIK* e.V., Press review *Mies 1:1*, 2014.
 - 5 See Christiane Lange, *Ludwig Mies van der Rohe. Architektur für die Seidenindustrie*, Berlin, Nicolai Verlag, 2011.
 - 6 Apart from Mies van der Rohe, Lilly Reich, Georg Muche und Johannes Itten, Krefeld could account for the presence of over 20 members of the Bauhaus movement since 1923. There they were active in training, industry and as architects. Their work will be the subject of the next exhibition project from *Projekt MIK* e.V., on the occasion of the centenary anniversary of the founding of the Bauhaus in 2019: map 2019 Bauhaus-Network-Industry.
 - 7 Christiane Lange, Robbrecht en Daem, *Mies 1:1 Das Golfclub Projekt*, Cologne, Verlag der Buchhandlung König, 2014, 102–115.
 - 8 Rem Koolhaas, "The House that Made Mies", in O.M.A., KOOLHAAS, Rem, MAUREN, Bruce S,M,L,XL, Rotterdam, 010 Publishers, 1995, 63.
 - 9 Eva Rovers, *Sammeln für die Ewigkeit. Helene Kröller-Müller: die Bedeutendste van Gogh-Sammlerin der Welt*, Oberhausen, Athena-Verlag, 2016, 177–184.
 - 10 Werner Buch, *A Conversation with Ines Dresel*, Chicago Oral History Project, 1990, 7.
 - 11 See Ute Hassler, Winfried Nerdinger, *Das Prinzip Rekonstruktion. Tagungsband*, Zürich, vdf Hochschulverlag, 2010.
 - 12 Hanno Rauterberg, *Jetzt ist Früher heute*, *Die Zeit* n. 4/2012 from 19.01.2012, accessed on 20.03.2017.
 - 13 Christiane Lange, *Mies & Reich. Furniture and Interiors*, Osterfildern, Hatje Cantz, 2007.
 - 14 See Dietrich Neumann, *Coming to Terms with the Past. Mies and Reconstruction*, Heerlen, Schunk*, 2016, 30–40.
 - 15 Ute Hassler, Winfried Nerdinger, *op. cit.*, 26.
 - 16 Winfried Speitkamp, *Architectural Monument, Cultural Heritage, and the Construction of Memory*, in Christiane Lange, Robbrecht En Daem, *Mies 1:1 Das Golfclub Projekt*, Cologne, Verlag der Buchhandlung König, 2014, 180.
 - 17 See Christiane Lange, *Ludwig Mies van der Rohe. Architektur für die Seidenindustrie*, *op. cit.*, and Christiane Lange, Helge Drafz, *Mies in Krefeld*, 2011 [documentary film].
 - 18 Paul Robbrecht, interview, in Helge Drafz, *Die Geschichte eines begehbaren Architekturmodells*, 2014 [documentary film].
 - 19 Christiane Lange, Robbrecht En Daem, *Mies 1:1 Das Golfclub Projekt*, Cologne, Verlag der Buchhandlung König, 2014.
 - 20 *Id.*
 - 21 Leopold De Wael Square, Antwerp, Belgium, 1997–2001 with Cristina Iglesias and Ann Demeulemeester; Rubens Square Knokke, Belgium, 2004, with Franz West; Exhibition-Pavillion Dokumenta, Kassel, Germany, 1992; Het Huis, Middelheim Museum, Antwerp, Belgium, 2012.
 - 22 Boijmans van Beuningen, Rotterdam, The Netherlands, 2003; Whitechapel Gallery, London, UK, 2009; De Boekentoren, Henry van de Velde, University Library, Ghent, Belgium, since 2007; Market Hall & Central Squares, Ghent, Belgium, 2012; Archives de Bordeaux Métropole, France 2015.
 - 23 Christiane Lange, Robbrecht En Daem, *op. cit.*
 - 24 Mies van der Rohe, *Late German Projects*, New York, The Museum of Modern Art, The Ludwig Mies van der Rohe Archive.
 - 25 Ludwig Mies van der Rohe, commentary on "Projekt einer Klubhausanlage für den Krefelder Golf-Klub e.V.", in The Ludwig Mies van der Rohe Archive; *Late German Projects*, Museum of Modern Art, New York.
 - 26 Christian Norberg-Schulze, "Ein Gespräch mit Mies van der Rohe", *Baukunst und Werkform*, year 11, mag. 11, 1958, 615.
 - 27 *Id.*, 194.
 - 28 Christiane Lange, Robbrecht En Daem, *op. cit.*
 - 29 The only element of the model which is made of textile is a white curtain on the west side of the building. This was a technically necessary addition, in order to provide protection to some areas from wind and sunlight during events.
 - 30 "Impossible to a possible model of Mies's design", press release on *Mies 1:1* by Robbrecht en Daem *architecten*, June 2013.
 - 31 "Not only self-revelation, but also service!" This was what Mies van der Rohe demanded of architects. Mies van der Rohe. Entry in notebook, undated, New York, The Museum of Modern Art, The Ludwig Mies van der Rohe Archive, Folder I, quoted from Fritz Neumeyer, *Mies van der Rohe. Das kunstlose Wort. Gedanken zur Baukunst*, München, Siedler, 1986, 88.
 - 32 Alexander Schwarz, *op. cit.*, 196.
 - 33 Thomas Schütte, Conversation with Julian Heynen, 15 October 2013, Krefeld.
 - 34 MIES VAN DER ROHE, "Hochhäuser", *Frühlicht*, vol. 1, mag. 4, 1922, 122.
- Christiane Lange**
- Art historian, member of the research group *Catalogue Raisonné of Furniture by Ludwig Mies van der Rohe*, and chairwoman of *Projekt MIK* e.V.. Since 2007, she is involved in research, exhibitions, publications and movies on the European oeuvre of Mies van der Rohe, Lilly Reich and Bernhard Pfau. In 2013, she initiated and hosted the exhibition *MIES 1:1 The Golf Club Project* in Krefeld, Germany, together with the Ghent-based architects Robbrecht en Daem *architecten*. At the moment, she is making preparations for the exhibition *Map 2019 Bauhaus-Network-Industry (Bauhaus Network Industry)* (Krefeld, 2019).



Mies van der Rohe and Lilly Reich; Tugendhat House, Brno, Czech Republic, 1929-30. Entrance hall, staircase, detail showing the travertine, the chromed and polished brass cladding of the cruciform pillar and the reconstructed stucco lustro; in the background, the reconstructed semi-translucent curved glass wall and the original metal framing painted with cream-white oil paint. © Ana Testões, 2012.

The Re-birth of the Tugendhat House

BY ANA TOSTÓES, IVO HAMMER AND ZARA FERREIRA

Following a thorough and pioneering conservation-science study, the Tugendhat House was restored between 2010 and 2012. The house of Greta and Fritz Tugendhat, in Brno, designed by Mies van der Rohe and Lilly Reich (1928-1929), is the single example of modern architecture in the Czech Republic inscribed in the list of UNESCO World Cultural Heritage sites.

After an intense and dramatic life with different uses, the house received an outstanding restoration which brought back its original form, space and materiality, and was opened to the public as a House-Museum. This paper aims to bring light to this fascinating story based on the book *Tugendhat House. Ludwig Mies van der Rohe* by Daniela Hammer-Tugendhat, Ivo Hammer and Wolf Tegethoff (Basel, Birkhäuser Verlag GmbH, 2015), namely on Daniela Hammer-Tugendhat statements and on the experience of the members of the International Expert Advisory Commission THICOM¹.

Every reconstruction remains hypothetical. Even the most industrious attempts can only approximate the fine details of the original techniques and aesthetic. Neither the replacement of non-existent parts nor the restoration or repair of damage create conditions of which one can say more than “it might have looked like that”.

A Modern House for Cultivated Owners

Greta Tugendhat, born Löw-Beer (1903, Brno-1970, St. Gallen) and Fritz Tugendhat (1895, Brno-1958, St. Gallen) came from Jewish German speaking families of industrialists and traders who had lived in Brno for several generations, expressively contributing to the industrialization of the area of Czechoslovakia since the 19th century, owning and operating a number of textile, sugar and cement factories³.

Mainly motivated by Grete, in 1928 the couple commissioned Mies van der Rohe to design their family house: “I had always wanted a spacious modern house of clear and simple forms, and my husband had been almost horrified by the interiors of his youth, stuffed with trinkets and lace”⁴.

The exclusive building plot was given to Grete by her parents in March 1929, in anticipation of her inheritance, being part of a lot behind the Alfred and Marianne Löw-Beer villa, with beautiful views of the historic skyline of Brno. Mies van der Rohe, fascinated with the plot, immediately started working on the design, exploring his will to realize “the concept of opening up the interior space of the house to its natural surroundings”⁵. Impressed by the high level of Brno architecture and construction, Mies van der Rohe entrusted the construction works to a local construction company of the brothers Artur and Mořic Eisler, who finished the work in 14 months. The local company *Standard bytová společnost* of Jan Vaněk created the built-in furniture. In December 1930, the couple moved into the house, where

they lived with their children for seven happy years. In fact, they left the house in March 1938, the *Anschluss* day, when, in order to survive the Holocaust, they decided to abandon Czechoslovakia⁶.

Through a combination of a precise design, good construction, advanced technologies and outstanding materials, Mies van der Rohe, together with Lilly Reich, satisfied the Tugendhat family's wish for innovation, originality and truth⁷, creating an exceptional way of modern life based on an open plan.

It consists of a unique global work of art – *Gesamtkunstwerk* – in terms of its placement into its natural setting, its spatial organization, construction, technical equipment and interior furnishings.

In terms of its spatial arrangement, the 2000m² house was designed on 3 levels, with each level's plan related to the variation of the slope of the terrain, providing an innovative distribution of space. The entrance is situated at the top level, together with the rooms family area on the one side and the garage and driver's apartment on the other, separated by a perspective view through to Spilberk castle on the mountain opposite. The main living and social areas of the house are disposed on the floor below along with the kitchen and servants' area. The basement below this main level integrated Fritz' photo laboratory, the “moth room”⁸ and facility rooms for technical equipment such as central heating water and central air-conditioning.

Regarding construction, a steel support structure in the form of cross-shaped columns was used for the first time in the history of single residential houses. It allowed thinner walls, open spaces and larger openings in connection with the garden. The works were closely monitored and followed the highest possible requirements of the time.



01 Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Mies van der Rohe (smoking) and Grete Tugendhat, sitting in the living room on the emerald green Barcelona chairs. © Fritz Tugendhat, February, 1931.



02 Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Ernst and Herbert Tugendhat sitting in front of the glass wall of the living room during a heavy rain. © Fritz Tugendhat, 1935.

The technical equipment was outstanding: two of the glass walls could be retracted down into the floor while the heating system along the bottom of the glazed walls prevented the glass misting; a sophisticated air-conditioning system provided a combination of heating, ventilation and humidifier, providing filtered and thermally treated air in the main living room.

Valuable and rare materials have been used in the interiors: Italian travertine, polished chromed brass cladding to the columns in the living room contributing to its crystalline atmosphere; the semi-circular wall of ebony from Macassar (Indonesia), defining the dining space; the wall made of massive onyx marble from Morocco separating the library from the living room. The textiles were chosen in collaboration with Alen Müller-Hellwing, a textile artist from Lübeck. "Lily Reich was mainly responsible for choosing the textiles, whereas Mies initially showed little interest in such details. I would even suggest that Lilly Reich was the main force behind the colors and textiles, which shaped the impression of the Tugendhat House to such a high degree"⁹. The interior furnishings were also designed by Mies van der Rohe, together with Lilly Reich, primarily made from tubular and strip steel and noble woods (rosewood, zebra wood and Macassar ebony). Every piece of furniture was designed specifically for each place of the house.

The interior space was designed as a free-flowing space, accentuated by the continuous use of cream white linoleum in the floor, allowing a fluid discovery of the space while moving through it – "My mother told me that this experience of space was an essential quality of life in the house: while providing seclusion and privacy, there was a feeling of belonging to a larger totality at the same time"¹⁰.

The dialogue between architecture and nature is present in all scales: besides the natural surroundings having defined the structure of the house, we can find the dialogue present in the large windows that could be lowered, allowing the

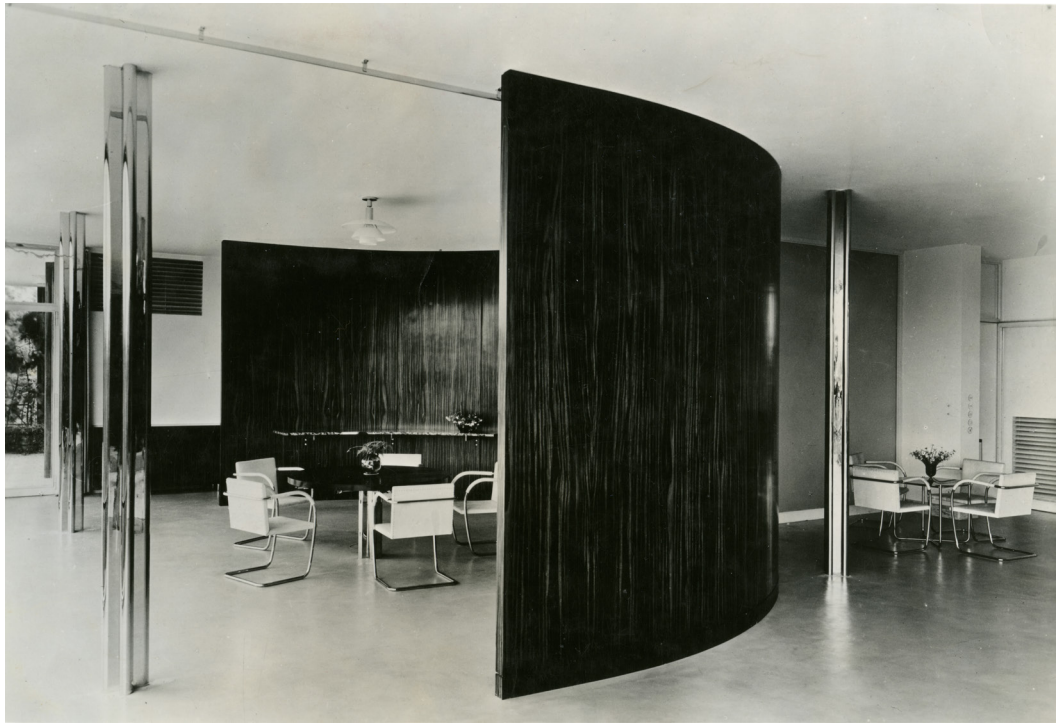
entry of nature into the living room, even in the winter; in the onyx wall as part of the interior structure; or even in the water-filled lamp on the desk¹¹.

The garden, made in collaboration with the landscape architect Grete Roder, "was a small paradise to the children, who made use of this playground all year round. The notion of freedom, which was so important to Mies, was successfully realized for this small and prosperous family"¹².

The Tugendhat House as a Symbol of the European Outbreaks: the Nazi Period, the Cold War and the Fall of the Wall

Shortly after the Tugendhat family's flight from Czechoslovakia, the house was confiscated by the Gestapo in 1939 while invading Czechoslovakia, and in 1942 became illegal property of the German Reich. Radical construction changes took place in the house during the war: the bombardments smashed all but one of the windows, furniture was stolen or used as firewood, and several modifications were undertaken – inner walls were inserted, the chimney increased height, the boiler was broken, the half cylinder from Macassar ebony went missing; "everything (was) in a desolate state, devastated, broken, fragments, rubbish, dirt, rags, various garbage, glass, etc. all over the floor"¹³.

During the liberation of Czechoslovakia in 1945, the house was used for military purposes, contributing to the increase of the house's devastation with the destruction of the linoleum floors. From 1945 to 1950, a private dancing school was established in the house, by Karla Hladka, an instructor at the Brno conservatory. In 1950, the house was registered as property of the Czechoslovak Socialist state and a rehabilitation center for children with spinal defects was established there until 1979. One year after being transferred as a property of the South Moravian Health Authority, in 1963, it was classified as a National Monument as a first step leading to its preservation, as a result of main



03 Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Living room, semi-circular wall consisting of Macassar ebony veneer of the dining area. © Rudolf de Sandalo, 1931.



04 Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Main living room, view to the library, the onyx marble wall and the suite. © Rudolf de Sandalo, 1931.

efforts by František Kalivoda (1913-1971), an architect who was committed to promoting several initiatives dedicated to cultural monuments in Brno.

In 1980, still under “socialist” conditions, the Tugendhat House moved from the property of the state to the property of the City of Brno and, between 1981 and 1985, the first renovation attempts were undertaken, with the goal of advertising the city and hosting the accommodation of guests¹⁴, which happened between 1986 and 1994.

During this renovation work some removal of later additions was undertaken, but also many of the original elements were damaged rather than preserved, and partly destroyed. The lack of conservation-science study and the use of unsuitable materials led to a result differing from the original condition¹⁵.

In 1992, the Tugendhat House gave place to the agreement for the separation of the Czechoslovak Republic into two independent states. Together with her family, Daniela Hammer-Tugendhat campaigned, for years, for the full restoration of her parents’ house, so that it could be opened to the public according to the wish of her mother Grete. In the following year, the Fond Vily Tugendhat (FVT) was established by Czech architects with the aim of strengthening efforts towards the reconstruction and the use of the house as an architectural center. In 1993, Brno City Council voted to open the house to the public, for cultural purposes, and continue the efforts to restore it.

Soon another association was established, “Friends of Tugendhat” (FRIENDS), with the goal of raising funds for the restoration of the house. FVT, FRIENDS and members of the Tugendhat family tried to obtain a lease over the house but it was rejected by the Brno City Council.

Nonetheless, in 1994 it was finally agreed that the Tugendhat House would be administered by the Museum of the City of Brno and would be opened to the public and further restored. The house opened as a museum finally on July 1, 1994. Since then, efforts began towards the restoration of the building envisaging the preservation of the historic fabric regarded as significant but also its adaptation to the requirements of a museum. Following these efforts in 2001, the Tugendhat House was recognized by UNESCO as World Heritage as “an outstanding example of the international style in the Modern Movement of architecture as it developed in Europe in the 1920s”¹⁶, under the condition of conducting extensive restoration.

The Pioneering Conservation-science Study

The aim of the restoration project, in accordance with the requirements of monument conservation, was the lifetime prolongation of the monument in an original state and the reconstruction of missing original parts.

To that end, a long and careful conservation-science study was developed:

An important precondition to preserving the cultural values of a historic object is the investigation and documentation of materials and surfaces by conservators/restorers. (...) The entire process of conservation studies and the associated interdisciplinary

*historical, technical and scientific investigations is known today as conservation-science investigation*¹⁷.

Between 2003 and 2010, the HAWK University of Applied Sciences and Arts, Hildesheim / Germany, conducted complete, careful and interdisciplinary conservation-science studies under the guidance of Ivo Hammer¹⁸. These studies were called the Conservation Investigation Campaign (CIC), and were a joint undertaking from different universities and scientific institutions¹⁹. The goal was to discover all the details about the real appearance of the Tugendhat House at the time of its construction and the various changes and repairs undertaken until the moment. To that end, all categories of materials (plasters, stone, wood, wall, metal) on its different time layers were examined, in connection with the associated techniques and the respective states of conservation. In the frame of those studies, proposals for the conservation and restoration have been developed.

The decisive criterion in restoring the building was its place in the history of architecture, understood as a work of art of universal importance. The importance of the restoration was the preservation of its value as a source of history. Therefore, the interdisciplinary cooperation between architects, structural engineers, art historians, conservator-restorers²⁰, material scientists, chemists, physicists, building climate control engineers, was fundamental. The building was fully studied through a transdisciplinary process including all appropriate historical, scientific, technological and empirical methods. The materials, techniques, surface materials and colors covering all the historical phases were documented and researched. The damaged and the well-preserved components were registered and analyzed. Damaging factors were identified. Methods for conservation and restoration, as well as the skills required for repair and maintenance, were developed. It was understood that the importance of heritage was also to be a source of knowledge of technical solutions²¹.

The project for the rehabilitation and restoration occurred between 2005 and 2006²².

To advise the City of Brno regarding the implementation of the restoration of the Tugendhat House according to the principles of the preservation of a monument, an International Expert Advisory Commission (THICOM)²³ was established that actively accompanied the process.

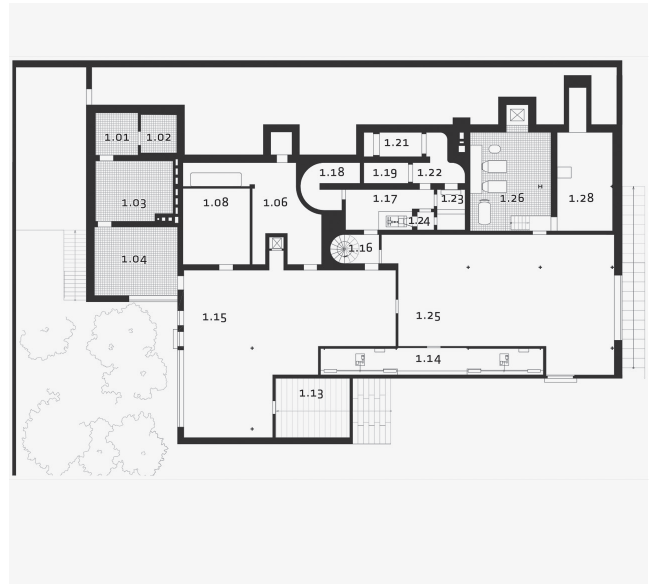
The restoration process was based on the belief that “heritage conservation as a societal practice only makes sense (...) if the material authenticity is preserved”²⁴.

The Restoration and the Re-open as a Museum of Modern Living following Greta's Wish

As Ivo Hammer states, *monuments are not only sources of historical testimony, commonly referred to as cultural heritage, but also a resource of technical solutions whose materiality incorporates the historical, artistic and cultural characteristics assigned to the monument. (...) Heritage conservation is the social practice of concrete, materially anchored memories. It can only maintain its socially binding and scientific character if the material source is preserved in its entire materiality*²⁵.

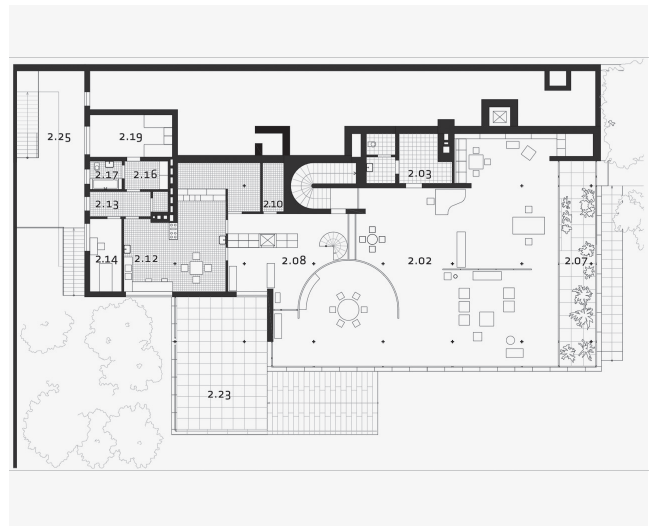
- 05** Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Revised publication plan basement. © Atelier RAW (Tomáš Rusín and Ivan Wähla).

1:01 anteroom
1:02 moth chamber (fur safe)
1:03 darkroom
1:04 washroom
1:06 rainwater storage room
1:08 vegetables storage
1:13 room under the garden stairs
1:14 engine room of the windows
1:15 room for drying laundry and ironing
1:16 basement stairs
1:17 control of the air conditioning and motor
1:18 space under the stairs
1:19 exhaust
1:21 cooling and humidifying the air
1:22 mixing chamber
1:23 air filter
1:24 air heating
1:25 storage for garden tools and furniture
1:26 heating and ash elevator
1:28 carbon chamber



- 06** Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Revised publication plan first floor. © Atelier RAW (Tomáš Rusín and Ivan Wähla).

2:02 main living room
2:03 screening room with toilet
2:07 conservatory
2:08 pantry
2:10 stockroom
2:12 kitchen
2:13 entrance hall of the service wing
2:14 room the lady cook
2:16 anteroom
2:17 bath and toilet
2:19 room of the chambermaids
2:23 garden terrace with staircase
2:25 gallery of drivers apartment



- 07** Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Revised publication plan second floor. © Atelier RAW (Tomáš Rusín and Ivan Wähla).

3:01 entrance hall with stairs to the main living room
3:02 anteroom
3:03 Fritz Tugendhat
3:04 bedroom Grete Tugendhat
3:05 parents bathroom
3:06 Toilet, Dumbwait-er
3:10 room of Ernst and Herbert
3:11 room of Hanna Weiss
3:12 room of Irene Kalkofen
3:13 utility room
3:14 bathroom of the children and of Irene
3:15 hallway
3:16 anteroom to the garage and driver apartment
3:17 garage
3:18 sleeping room of the drivers apartment
3:19 vestibule of the drivers apartment
3:20 cuisine of the drivers apartment
3:21 bath and toilet of the drivers apartment
3:22 play terrace
3:23 front porch (3.24 technical terrace)
3:25 gallery drivers apartment





08 Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Garden stair case, before restoration: stability problems and rests of original façade plaster and later coatings, garden walls reconstructed in 1970 using carved stones. © Ana Tostões, 2009.



09 Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Main living room, view towards west, before restoration: pvc-flooring, semicircular wall not matching the original one, distemper paint on the ceiling, plastic curtains, commercial copies of the furniture. © Ana Tostões, 2009.

In the face of this conceptual context and the importance of ensuring the original materiality, this recovery has been made as close to the original as possible, and when necessary, by replacing the material for the original ones, with the intent of preserving the authenticity of the original structural materials.

Beyond the physical aspects of the restoration, some structural problems have been resolved while the spaces and the lighting quality have been carefully restored. The house has been discreetly adapted to a museum, to accommodate many visitors, involving the house's temperature, security and fire detection control. The toilets were installed in the basement, which also houses an exhibition of original photographs and a book shop.

Legislation was applied with good common sense regarding the security and comfort regulations without putting in danger the spatial and constructional detailing value of the building.

The fundamental structural issues that the Tugendhat House was facing before the renovation and restoration process referred to the drainage system, the deformation of the garden terrace, the waterproofing of the coverages and the corrosion of steel structures.

The original plaster of the exterior terrace walls was detached by a conservator-restorer and re-attached to the brick wall rebuilt on the correct original place, and the pavement of the floor and stairs, made of Slovakian travertine introduced in the 1980s' renovation, was replaced with the original Italian Tivoli travertine. Both, the garden terrace and the upper terrace received a new waterproofing system. After the removal of insulation layers introduced in the 1980s and the lowering of the parapet to its original height, a new roof covering was developed using contemporary materials and technology: cellular glass roof insulation, modified-bitumen sheet, POCEB membrane; the roof parapet was covered by an adhesive bitumen on the

underside and the rainwater gutter outlets and downpipes were covered with pre-weathered titanium zinc²⁶. Within the renovation of the drainage system, the original pipelines were respected to the maximum. When the renovation of the drainage pipes would imply the damage of authentic finishes, a method of relining the historical piping was chosen. The water supply of the whole building – made of stainless steel – was renewed.

The restoration of all the structural steel components and metal fittings was of crucial importance. The original technology of oil-based paints was applied to all metal coatings, following the original technology.

Also, almost all the technical artifacts and building services engineering components were restored and made fully-working again: the whole ventilation system, including humidifier, cooling, fan, filter for oil and wood shavings with mechanical controls, has been preserved in its original state and is fully functional; the heating unit was reconstructed as a technical monument; the engine room for the retractable windows and the boiler room was restored with great attention to detail, as were the tubular heating elements, the rainwater tank and the ventilation equipment. The equipment substitutions made during the 1980s' renovation or the equipment that hadn't survived, were replaced by the most similar equipment to the original ones: the historical equipment of the boiler room was rebuilt using overhauled historical Strebel boilers taken from other buildings, the cast-iron radiators were replaced by fully working replicas, the 1980s' central heating pipes were replaced with stainless steel tubing. The lights and sanitation facilities were reconstructed in detail based on historical photos.

All the plasters were preserved in their entirety after removal of secondary coatings from the surfaces. The original exterior plaster was smoothed traditionally with a wooden board and correspondingly having some roughness caused by the sand grains. The original thin layer of whitewash



10 Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Ivo Hammer cleaning of the original façade plaster using pneumatic micro chisel. © Dieter Reifarth, 2011.



11 Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Garden façade, after restoration. © Alex Dill, 2012.

of slaked lime pigmented with fine grains of Bratčice sand hardly covered the roughness of the surface thus producing a somewhat impressionistic polychrome effect of its original yellowish exterior tone. The conservators treated the wall surface to reconvert the gypsum caused by pollution. The actual final coating of the façade follows the traditional way of maintenance using the original coating material: a wash of slaked lime pigmented with sand. Crumbly layers were injected and reinforced. Because of its poor state of conservation, the original stucco lustro of the interior wall was newly coated with a thin layer using nearly identical material: limestone and marble dust, some linseed oil and cellulose-ether as the binding medium. Again, as with the façade coating, it was pigmented with fine silt size grains of Bratčice sand and was finely sanded creating the illusion of a polished marble surface.

Good luck played its role in the restoration process too: the original bathtub, missing since the 1940s, was found in a nearby house; a part of the original Macassar panels was found in the former headquarters of the Gestapo at the University of Law in Brno in 2011. Through the analysis of old photographs, the restorers were able to align the authentic material to its original position and restored the inner face to the original state. Partial missing parts were covered with new Macassar veneer. Original white and black RAKO Czechoslovakia ceramic floor tiles were discovered during the construction works, under later-added layers. Also, while removing the PVC flooring that, during the 1980s' renovation, had replaced the original DLW (*Deutsche Linoleum Werke*) linoleum, an authentic floor screed, made with Sorel cement, was discovered. This cement was made from a mixture of magnesium oxide (burnt magnesia) with magnesium chloride and wooden filler materials. After this discover, the experts decided to produce this material, to be used as the substrate of the linoleum, in accordance with the original formula. Also, the same manufacturer DLW

linoleum who had supplied the original one for the house in 1930 produced the linoleum.

The garden was also renovated and its land drains were provided with a new irrigation system.

In the interiors, the curtains and the carpets were selected on the basis of historical black and white photo-documentation²⁷. The restoration of the wooden furniture required restoring original and preserved elements and replacing all the missing furniture pieces with exact replicas recreated through research on surviving original pieces and archive photographs²⁸. (The sliding doors and drawers of the original wooden furniture were, however, still perfectly fitting, after all the multiple relocations and climate changes, proving the high quality of the furniture originally produced for the house).

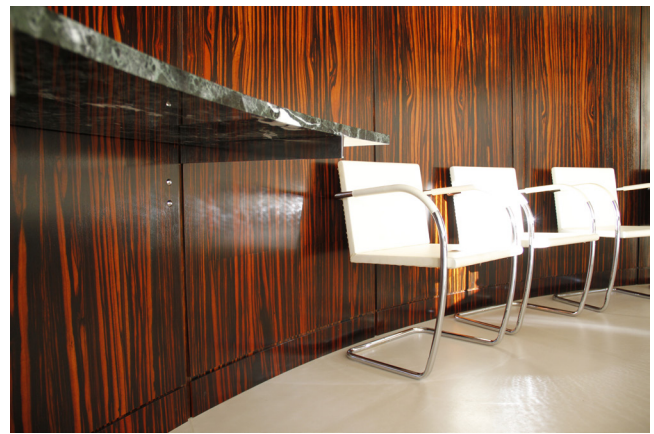
Within the new functional requirements of the building, inaugurated as a monument of modern architecture, the house's security had to also be an important component of the restoration project: fire protection and security was achieved through modern technical equipment and the minimum of visible changes. Furthermore, new spaces had to be introduced: the director's office, the documentation center, guides' facilities, cash desk, bookshop and toilet facilities. These new spaces were designed to be legible and work as removable structures.

The search for maintaining the character and the materiality was decisive in achieving the outstanding results. As Mies had explained to his clients "how it is important, especially in a modern building which is almost free of decoration and ornament, to use precious materials"²⁹ that's why "materials are not merely carriers of meaning; they also produce meaning. (...) Materiality incorporates the historical, artistic and cultural characteristics assigned to the (architectural) monument"³⁰.

After two years of restoration works, the Tugendhat House opened its doors to the public on February 29, 2012 – "the house that was planned as a private residence for a



12 Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Main living room, suite in front of the onyx marble wall and dining area, view towards north-west; after restoration. © Ana Tosties, 2012.



13 Mies van der Rohe and Lilly Reich, Tugendhat House, Brno, Czech Republic, 1929-30. Main living room, dining area, the curved inner wall made of Macassar ebony, after restoration. © Ana Tosties, 2012.

family with children has become a work of art that is now given to a global community”³¹. In addition to guided tours through the house, presented as a living museum exhibition, a formal exhibition about the house is located on the technical floor, followed by a shop selling publications and souvenirs. The exhibition includes a 1:100 model of the house and is centered on the time the Tugendhat family lived there, between 1930 and 1938.

Thanks to the exceptional renovation works conducted and the symbiosis that has been achieved between its uses as a museum and as a fully functional living organism, the Tugendhat House is nowadays an authentic Modern Movement monument.

*The quality of the materiality of the Tugendhat House can be used as an international guideline for future restoration and adaptation projects involving architects of the Modern Movement. The conservation-science studies conducted prior to the works and the dedicated effort of the THICOM members have certainly contributed to a considerable degree. The work of the experts may serve as a model for international cooperation in the context of heritage preservation*³².

This unique restoration confirmed the awareness of the necessity of such conservation-science studies, accompanied by an active international advisory board.

Notes

- 1 THICOM - acronym of Tugendhat House International Expert Commission.
- 2 Ivo Hammer, “Surface is Interface. History of the Tugendhat House 1938-1997. Criteria for the Preservation”, in Daniela Hammer-Tugendhat, Ivo Hammer and Wolf Tegethoff, *Tugendhat House. Ludwig Mies van der Rohe*, Basel, Birkhäuser Verlag, 2015, 161.
- 3 Hanák, Jaromír (ed.), *Rodinné domy Löw-Beerů. Brněnec – Brno – Půlpečen – Svitávka*, Brno, Muzeum Brněnska, 2016. See also: <http://www.vilalowbeer.cz/en/villa2/the-l-w-beers>.
- 4 Grete Tugendhat, lecture held in the Brno House of Arts in the Czech

language on 17th January 1969, in Daniela Hammer-Tugendhat, *et al.*, *op. cit.*, 21.

- 5 Daniela Hammer-Tugendhat *et al.*, *op. cit.*, 30.
- 6 “In 1938, my family emigrated to Switzerland and in January 1941, to Venezuela. Many members of our family only recognized the danger they were in when it was too late, like my father’s mother and sister with her husband Richard Schwarz and their two children who were sent to Theresienstadt and later to an extermination camp, where they died. My mother’s father died under unknown circumstances when he tried to escape”, Daniela Hammer-Tugendhat *et al.*, *op. cit.*, 52.
- 7 Fritz Tugendhat, in *Die Form*, 6. Jahr, Heft 11, 15. Nov. 1931, 438. “...whenever I let these rooms and all they contain take their effect, I am overcome by the feeling that this is beauty, this is truth”. See Daniela Hammer-Tugendhat *et al.*, *op. cit.*, 77.
- 8 Preserved entirely in its original state: mat greyish white floor tiles, glazed cream white tiles on walls and ceiling, and the brass bars to hang the clothes and furs (Grete Tugendhat had only one fur coat and one fur jacket, she did not show her richness in an ostentatious way).
- 9 Daniela Hammer-Tugendhat *et al.*, *op. cit.*, 43.
- 10 *Id.*, 41.
- 11 Most probably an arrangement of Grete or Fritz Tugendhat, see Daniela Hammer-Tugendhat *et al.*, *op. cit.*, 39–41, 195.
- 12 *Id.*, 30.
- 13 <http://www.tugendhat.eu/en/after-the-departure-of-the-family.html>.
- 14 The investor was the department of internal affairs of the National Committee of the City of Brno; the project was developed by the State Institute for Reconstruction of Historical Towns and Buildings in Brno and the designing team consisted of Ing. arch. Jarmila Kutějová, Ing. Josef Janeček, Ing. arch. Adéla Jeřábková and was directed by Ing. arch. Kamil Fuchs, CSc., see Ivo Hammer, “Surface is Interface. History of the Tugendhat House 1938–1997. Criteria for the Preservation”, in Daniela Hammer-Tugendhat *et al.*, *op. cit.*, 149–154.
- 15 The procedures involved to adapt electricity and plumbing systems to the ones required by a hotel were not gentle: the introduction of new electrical lines and new water and heating pipes promoted the destruction and replacement of the original tiles in the kitchen, in the basement and in the bathroom. The original floor linoleum was replaced by PVC; the curved inner wall made of Macassar ebony received an inappropriate longitudinal veneer work; the broken large window was substituted with two glass pieces connected with a silicon joint; the only preserved window ended up being destroyed because its color and absence of a joint was not “in line” with the new glazing; some of the windows and doors steel frames showing back then evidence of corrosion caused by thermal bridges and condensation, were only cleaned and coated with a readily available paint; the plastering was repaired and treated with

- new layers of paint containing cement mortar and synthetic resin. Even if these materials were consistent with international practice back then, even for historical buildings, they had a destructive effect on the historic substance, damaging the materials, *idem*.
- 16 <http://whc.unesco.org/en/list/1052>.
- 17 Ivo Hammer, "Materiality. History of the Tugendhat House 1997–2012. Conservation-science Study and Restoration", in Daniela Hammer-Tugendhat *et al.*, *op. cit.*, 164.
- 18 Being a conservator/restorer and dean of the Faculty of Conservation of HAWK, he coordinated from 2003 the international conservation investigation campaign (CIC). In 2010, he was appointed as the chairman of the Tugendhat House International Advisory Commission for the restoration of the Tugendhat House (THICOM).
- 19 Hildesheim (Ivo Hammer, Gerdi Maierbacher-Legl); Vienna (Martina Griesser-Stermscheg, Tanja Bayerová); Pardubice and Litomysl (Karol Bayer); Bratislava (Peter Szalay); Brno (Josef Chybík); Dresden (Thomas Danzl) and Cologne (Friederike Waentig); with the support of the Brno City Museum (Iveta Černá) and the National Heritage Institute (Karel Ksandr).
- 20 We use that double term "conservation-restoration" according to the decision of the Copenhagen conference of ICOM CC in 1984 to keep clear the specific professional image of "conservators-restorers" and the difference to the more general use of the term "conservation" e.g. "architecture conservation" which includes the work of architects also. See Ivo Hammer, *op. cit.*, 248.
- 21 *Id.*, 165.
- 22 For that an association was formed combining three architectural offices from Brno: Omnia projekt, Archteam and RAW. However, the proposals originating from the conservation-science study had not been fully integrated in that project by the architects, justified by the argument that the architects would not be able to take responsibility for the conservation methods applied and this information was not necessary for obtaining a building permit. See Ivo Hammer, *op. cit.*, 178.
- 23 Members: Daniela Hammer-Tugendhat (Vienna), honorary chairperson; Ivo Hammer (Vienna), chairman; Wessel de Jonge (Rotterdam), deputy chairman; Iveta Černá (Brno), secretary; Alex Dill (Karlsruhe), Ana Tostões (Lisbon), Arthur Rüegg (Zurich), Helmut Reichwald (Stuttgart), Ruggero Tropeano (Zurich), Thomas Danzl (Dresden), Vladimír Šlapeta (Brno), Karel Ksandr (Prague), Petr Kroupa (Brno), Milos Solář (Prague), Josef Štulec (Prague), Martin Zednicek (Brno).
- 24 Ivo Hammer, *op. cit.*, 165.
- 25 *Id.*, 166. A Technical-Economic Brief (TEB) regarding the preservation of the building and its interior and furnishings as well as the restoration of the garden, issued by the Cultural Department of the City of Brno in October 2002 remarkably states that "the restoration of the villa will be awarded, based on the results of the tender, to a restoration company with the construction work being subcontracted, and not vice versa." Due to problems of legal battles finally the works were awarded to the Brno-based construction company UNISTAV, *id.*, 170–172, 178.
- 26 The insulation of the upper terrace executed in 2011 is too thick and thereby the levels are partly incorrect: the travertine thresholds of the parents and childrens rooms appear lowered nearly to the level of the terrazzo slabs and the slabs are partly inclined to the house walls. Consequently, water has infiltrated into the ceiling of the living room since 2012. In late 2016, following an expert opinion of Thomas Danzl, Ivo Hammer and Arthur Rüegg, the cause of the infiltration was analyzed and repair measures planned to be executed in April 2017.
- 27 The actual oriental carpets are selected from the market according to a general resemblance of their design to the original ones in black and white photos, whereas the carpet in front of the onyx marble wall has apparently nothing to do with the original carpet woven by Alen Müller-Hellwig. The actual black and cream white velvet is in comparison with the historic photographs not matching the original material quality. The critique has been formulated in the frame of THICOM (2012), see Ivo Hammer, *op. cit.*, 219.
- 28 The authorities in 2011 refrained from acquiring the available original furniture although they would have been hardly more expensive than the copies. The astonishing argument was mainly that the damage to the old furniture would blur the "aesthetic integrity" of the newly restored building. With the same argument, all original refined wood surfaces have been sanded down in a craft manner. The conservation argument regarding the climate refers also to the original fixtures, e.g. of the library, see Ivo Hammer, *op. cit.*, 216.
- 29 Grete Tugendhat, lecture held in the Brno House of Arts in the Czech language on 17th January 1969, in Daniela Hammer-Tugendhat *et al.*, *op. cit.*, 20.
- 30 Ivo Hammer, *op. cit.*, 164–65.
- 31 Daniela Hammer-Tugendhat, "Speech on the Occasion of the Opening of the Tugendhat House in Brno on February 29, 2012, in Daniela Hammer-Tugendhat *et al.*, *op. cit.*, 226.
- 32 Ivo Hammer, *op. cit.*, 222.

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Ana Tostões

(b. Portugal, 1959). PhD, architect, architectural critic and historian, Chair of *docomomo International* and editor of *docomomo Journal*. Full Professor at Técnico – University of Lisbon, where she is in charge of the architectural PhD program. Her research field is the theory and history of architecture and construction of the 20th century, focusing on the worldwide cultural transfers. She was awarded with the title of Commander of the Order of Infante Dom Henrique (2006), with the Gulbenkian Prize (2014) and with the BIAU Prize (2016). She was a member of THICOM (2010–2012).

Ivo Hammer

(b. Ulm/Germany, 18.5.1944). Trained as a conservator/restorer. Studied art history and archaeology in Freiburg/Br and Vienna. Doctoral dissertation on early bourgeois realism. Chief conservator/restorer of the Austrian Heritage Authorities (1976–1997). Full Professor at HAWK, Hildesheim (1997–2008). He established the first international university course for the conservation/restoration of architectural surfaces. He was the chairman of THICOM (2010–2012).

Zara Ferreira

(b. Portugal, 1988). MSc in Architecture (2012, Técnico – University of Lisbon, thesis: *The Modern and the Climate in the Lusophone Africa. School Buildings in Mozambique: The Fernando Mesquita Concept (1955–1975)*). She is the secretary general of *docomomo International* and co-editor of *docomomo Journal* editor. She is currently doing a PhD on the preservation of post-WWII European housing estates (Técnico – University of Lisbon/École Polytechnique Fédérale de Lausanne).



Tugendhat House International Expert Commission (THICOM)

Some Testimonies

THICOM Members: Daniela Hammer-Tugendhat (Vienna), honorary chairperson; Ivo Hammer (Vienna), chairman; Wessel de Jonge (Rotterdam), deputy chairman; Iveta Černá (Brno), secretary; Alex Dill (Karlsruhe), Ana Tostões (Lisbon), Arthur Rüegg (Zurich), Helmut Reichwald (Stuttgart), Ruggero Tropeano (Zurich), Thomas Danzl (Dresden), Vladimír Šlapeta (Brno), Karel Ksandr (Prague), Petr Kroupa (Brno), Milos Salař (Prague), Josef Štůlc (Prague), Martin Zedníček (Brno).

Since the significant international symposium held in Brno in April 2006, “materiality” had become the motto for the restoration of the Tugendhat House. But what to do when important original parts had disappeared? If they need to be reconstructed, the eye wants to compare the new shine with traces of historical evidence. Unfortunately, all the bathroom tiles and appliances as well as all the moveable furniture (!) had to be redone from scratch. But when it came to the re-building of the outstanding half-round dining-room screen, an incredible miracle happened and art historian Miroslav Ambrosz presented us with part of the extra-long original Macassar veneers that had been reused for the paneling of an underground SS bar in the Gestapo Headquarters, now a canteen of Masaryk University. 10 of the former 22 panels could be restituted and carefully integrated into the inner surface of the new screen. The result is stunning and adds decisively to the credibility of the iconic furnishings.

Arthur Rüegg

Arch. ETH SIA BSA; Prof. Em. ETH Zurich;
Arthur Rüegg Architektur (Zurich)
THICOM Member

The Villa Tugendhat was inscribed on the World Heritage List on 16 December 2001. Almost 8 years of preparations have been filled by above-standard multi-professional surveys and project documentation. The establishment of THICOM by the Council of the City of Brno then turned out to be an enlightened and unique opportunity to capitalize on the experience of an international team of specialists and docomomo members. The limit of the legislative framework of monument care in the Czech Republic or the financing conditions attached to EU funds introduced a regulated spectrum of changes; however, enthusiasm, expert erudition and argumentation was reflected in a total of 27 changes to the project. THICOM has created an exemplary model situation. In addition to the primary assistance in the most significant intervention in the building's history, there is also the highly appreciated foreign reflection and popularization of the restoration process. I personally appreciate the dedication and commitment of all members who have been able to respond flexibly to the progress of the building and conservation. For me personally, the involvement in THICOM has become an unforgettable professional experience.

Iveta Černá

Director of Villa Tugendhat
THICOM Secretary

“There is still little awareness concerning the restoration of architecture, especially of modern architecture. Architects and art historians believe themselves to be competent enough on their own. For the restoration of modern architecture, it is absolutely necessary to develop awareness of the very specific problems regarding the restoration process, which means conservators/restorers need to be consulted as well”.

“My parents identified with Mies van der Rohe's architecture. It was one of those rare occasions of a happy co-operation between an architect and his client and their individual ideas”.

“From my perspective, the Tugendhat House is an ideal architectural expression of my parents, at least how I see and experienced them, also in their ambivalence: on the one hand, there was the admirable striving towards ‘spirituality’ and ‘truth’, which on the other hand implied an attitude of excessive strictness and demands. The question of Justus Bier concerning whether or not the Tugendhat House was habitable might thus perhaps be answered this way: for my parents, it was”.

Quotes from the book Daniela Hammer-Tugendhat, Ivo Hammer and Wolf Tegethoff, *Tugendhat House. Ludwig Mies van der Rohe*, Basel, Birkhäuser Verlag, 2015, 39, 72, 73

Daniela Hammer-Tugendhat

Hon. Prof. Dr. Phil. University of Applied Arts in Vienna
THICOM Honorary Chairperson

When reflecting on docomomo's wish for a statement about THICOM I realized that I had an incredible chance to follow the destiny and the development of the renovation of the Tugendhat House in the years between 1983 and 2012. As a young architect visiting the building site of the first renovation campaign directed by Kamil Fuchs I met Jan Otava, Jan Sapak, Vladimír Šlapeta and, later on at the beginning of Docomomo, Iveta Černá, then the opportunity to be invited by Pavel Liska on occasion of the inscription of the house on the World Heritage List. The “materiality” meeting presented the groundwork done by Ivo Hammer and the researchers setting the basis for the renovations to come and a signal for THICOM. The commission had the task to evaluate the renovation in the planning and in the realization process. Out of the enormous number of discussions and surprises came a due consideration: The first renovation period of the 1980s presented, in some cases, a surprising reversibility, for example the Xylolite underflooring was preserved under the layer of the synthetic floor, the same resulted by the original stuccos inside and outside under the acrylic coating. While in the final full reconstructive minded renovation there are some informative references, the renovation history of the first period lacks of the presence of material testimonies.

Ruggero Tropeano

Dipl. Architect ETH SIA; Professor at Accademia di Architettura di Mendrisio - USI Università della Svizzera Italiana;
Ruggero Tropeano Architekten (Zurich)
THICOM Member

The appointment of the THICOM was an important prerequisite for the successful outcome of the "surgical intervention" made to the body and spirit of the Villa Tugendhat.

This international commission of experienced experts soon gained confidence, authority and respect of the City administration, the monument management and the professional public. Various conceptual, technical and economic problems arose during the process of reconstruction and these were discussed very openly and critically with the authors of the project and the companies involved. 27 recommendations of THICOM were converted into reality, such as decisions relating to the use of glass, oil paints and floor coverings, as well as the installation of a small exhibition in the basement. Without the active participation of THICOM, the quality of the restoration work would not have attained such high level.

Vladimír Šlapeta

Prof. Ing. Arch. DrSc. Faculty of Architecture - Brno University of Technology
THICOM Member

In 2004, I joined CIC directed by Ivo Hammer before I became a THICOM member.

I traveled several times to Brno and I could very closely assist the crucial decision-making processes and the politics of cultural heritage in the Czech Republic and in the City of Brno.

Our optimism ruled then, since it would have been the first time that conservation sciences were given plenty of time for necessary preparatory research work.

In 2010, before conservation works started, I spent 3 days and nights in the half empty house sleeping on a cot in Grete Tugendhat's room. The daydream I had was a dream of the return of all the remaining original furniture to their original places, but in their current state of conservation – as for instance the Grete Tugendhat's bed still in possession of the Tugendhat-Hammer family in Vienna in which I slept days before. Nothing else in the house but these authentic pieces of furniture! A dream?

For sure it could have served as a symbol of the family's history after emigration and for reconciliation today.

A unique chance to realize this idea was given by the sensational return of the semicircular wall in 2011. The THICOM experts discussed the concept seriously on this occasion.

Much to my surprise at the reopening of the house, in February 29, 2012, I met a nightmare: not only that the partly original varnishes of the "restored" Macassar wall and of the bookshelves were cleaned and gone, but the house was completely filled instead with "reconstructed" replica furniture as in a 1:1 model. The so-called museum's concept, established in 2002, has been realized as if all the discussions about history and patina since then hadn't taken place – and no one could have prevented it!

A bluff?

Thomas Danzl

Prof. Dr. phil. Dott., Hochschule für Bildende Künste Dresden
THICOM Member

Materiality is essential to Mies van de Rohe's architecture. The composition, texture, color and finish of the surface materials are crucial to the perception of his masterfully designed forms and spaces. This applies to glass just as it does to other materials: although transparent, glass is never "invisible".

Mies van der Rohe was fortunate to be acquainted with the top-quality window glass production in the Czech Republic when designing the Tugendhat House. The 3x4.8m clear glass panels for the legendary living room windows were almost certainly produced in the Chudeřice Glass Works, one of the very few factories worldwide where plate glass in these sizes could be polished to perfection – as required by Mies van der Rohe. But the glass panels had all been lost and are no longer produced.

Our concern that the typical green hue of today's standard glass would compromise the original architecture, particularly in case of the etched panels at the entrance, was finally responded by restoring the glazing with "extra clear" low-iron glass from Saint Gobain.

Wessel de Jonge

Prof. Ir. Delft University of Technology; Wessel de Jonge Architecten BNA BV (Rotterdam)
THICOM Deputy Chairman

"Every famous house has its secret..." (Iveta Černá, 2012)

Having been listed as World Cultural Heritage in 2001, it was evident that all the material and immaterial values of the Tugendhat House should be treated with the greatest possible care.

A sequence of breathtaking events started with the passionate and adventurous renovation work undertaken in 2010-2012. At regular meetings involving a constant exchange of ideas, THICOM members discussed and meticulously decided upon every detail. The process involved a lot of adrenalin, passion and personal commitment, with great tension and a propelling strength always perceptible. Political and cultural differences marked the whole process of this special collaboration, with different interests being displayed by local and international actors – the Brno council, companies, craftsmen, curators, the general public, the press and the family.

Visitors will never know which judicial discussions walked ahead of the renovation work, nor the violent discussions and personal insults originated in the course of time. However, professionalism prevailed, enabling the work to be done with the highest possible quality, and the house was opened on time and within the budget.

Secrets will remain, but the Tugendhat house, outstanding architectural piece of art, has fortunately withstood the tests of time and will carry it in itself, maybe as a secret to be experienced now and in the future.

Alex Dill

Akad. Oberberr. Dipl.-Ing., Faculty of Architecture - University Karlsruhe - KIT
THICOM Member





Mies van der Rohe and Lilly Reich, German Pavilion of the 1929 Barcelona International Exhibition, Barcelona, Spain, 1929, Reconstruction, 1986. © Pepo Segura, courtesy Fundació Mies van der Rohe.

The Sequence of Mies van der Rohe in Barcelona: the German Pavilion as Part of a much Larger Industrial Presence

BY LAURA MARTÍNEZ DE GUEREÑU

The German Pavilion for the *1929 Barcelona International Exhibition* was part of a much larger exhibiting sequence, which Mies van der Rohe and Lilly Reich constructed following their main undertaking in the Barcelona industrial exhibits: to design the entire German section. By the time Mies van der Rohe started the project of the German Pavilion, he had already been working for more than 4 months on the construction of the identity and representation of the strength of the German industrial fabric, which he would architecturally express in the interior design of 8 neoclassical palaces. Hence, the two most innovative architectural elements of the German Pavilion – the milky color double-glazed wall and the chrome-plated cross-shaped posts – can be traced back to the interiors of these palaces. The 16,000 m² of industrial exhibits, not reconstructed in 1986, form today the immaterial heritage that underpins the historical relevance of the Barcelona Pavilion. 3 documents, including a sequence from the official exhibition film, preserve the order linking the range of Mies van der Rohe's work in Barcelona and broaden the historical meaning of one of the most important works of architectural modernism.

The recent celebration of the 30th anniversary of the German Pavilion's reconstruction (1986-2016) has offered an opportunity to reassess the range of the work that Mies van der Rohe (1886-1969) and Lilly Reich (1885-1947) carried out for the *1929 Barcelona International Exhibition*. The goal of this article is to trace the origin, interpret the work developed from May 1928 to May 1929, and reveal the project of the German Pavilion as part of a much broader exhibiting sequence, which Mies van der Rohe and Lilly Reich constructed in line with their main task of designing the entire German section of the Barcelona industrial exhibits¹.

The Commission

In September 26, 1928, after a long process of diplomatic affairs between the two countries, Germany would finally accept the challenge proposed by Spain to build a small national representative pavilion. As the agreement signed between Santiago Triás (chair of the executive committee of the exhibition in Barcelona) and baron George von Schnitzler (general commissar of Germany) states, the executive committee of the exhibition would put a total of 16,000 m² distributed in different palaces – and free of charge – at the disposal of the German general commissar, while the latter would be willing to “build a representative pavilion of their country... of a surface between 200 and 300 m²”². Hence, the contract Mies van der Rohe signed with von Schnitzler in November 12, 1928, included – besides the architectural development of the German Pavilion –, what had originally been commissioned to Mies van der Rohe at the end of May:

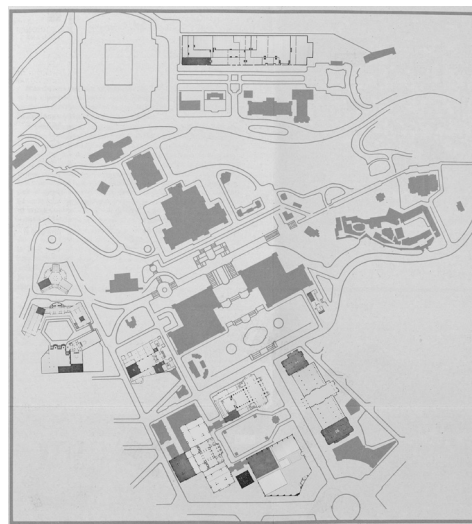
the architectural design of the area the German industries would occupy in various palaces and the furniture and complete formation of the exhibition stands³.

As the contract, agreement, and exchange of correspondence reveals, Mies van der Rohe was appointed to be in charge of the entire German industrial section 4 months before the commission to build the German Pavilion. In June 1, 1928, 3 days after the official notification of Germany's commitment to participate in the world fair (and the appointment of von Schnitzler, general manager of the IG Farben, as the general commissar), Enrique D. Rodiño (attaché of the Spanish Embassy in Berlin), announced to Triás that “Germany had already selected the architect to be in charge of the entire German section”⁴. From June to September, before any decision about the construction of a national pavilion was made, Mies van der Rohe undertook two trips from Berlin to Barcelona.

The goal of the first trip, which Mies van der Rohe did alone in June 7, was to choose the spaces that Germany would occupy inside each of the given palaces, and to find the most visually privileged positions for several companies, including Deutsche Seide and IG Farben⁵. As Rodiño insisted, this first visit of Mies van der Rohe was of a “pure technical character”⁶. During his site exploration, Mies van der Rohe would find that, regardless of his project, the experience of the German industrial exhibits would inexorably be fragmented throughout the exhibition grounds of *Montjuïc*. The number of palaces in which the German industries would be on display (eleven in the beginning, eight at



01 Manuel Casas and Manuel Puig, Decorative and Industrial Arts Palace, Barcelona, Spain, 1929. Interior view. Under construction. © AFB, *Arxiu Fotogràfic de Barcelona*, February 14, 1929.



02 1929 *Barcelona International Exhibition*, Spain. Plan of the German section with the addition of the interior plans of the different palaces. © Collage by Laura Martínez de Guereñu, from the official catalog.

the end) was distributed over more than 118 hectares along the hill. The stylistic diversity of the still-unfinished neoclassical palaces was also apparent: Ionian columns supporting entablatures and skylights alternated with barrel vaults standing on slender steel pillars; articulated metallic portals were mixed with concrete structures of cross-shaped and fluted posts (figure 01). Additionally, the fact that the German industries would occupy only part of the area of these palaces (since they would be mixed with the sections of other nations) still augmented the potential for a disintegrated appreciation. Thus, for Mies van der Rohe, trying to find the best position for the German industries inside each of these given structures – and in relation to an overall contribution in the entire exhibition ground – was paramount.

Mies van der Rohe made his second trip to Barcelona in September 20, in the company of Lilly Reich, von Schnitzler and Luis Mathies (general commissar of exhibitions and fairs). This trip was the official German visit “to finalize certain details related to their contribution”⁷. By that time, the German commissars already had an approximate idea of the diverse companies that were going to participate – August 27 had been the deadline for all the national companies interested in sending products to Barcelona⁸ – and they could anticipate the amount of square meters they would need for each discrete industry⁹. Therefore, the aforementioned agreement (from September 26 between Trias and von Schnitzler) listed the anticipated square meters that Spain would make available to Germany in each of the palaces¹⁰, and in return, stated the final acceptance of Germany to build a representative pavilion of their country, suggesting however an alternative site for it¹¹.

It could be argued that the reason Germany was able to propose another location for the pavilion was that Mies van der Rohe had already been working on the general project of the industrial exhibits for at least four months¹², and consequently, knew the site of the *Montjuïc* exhibition

grounds quite well. When the decision to build a pavilion was made, Mies van der Rohe had already been to Barcelona twice and had been involved in the decision of the placement of the German sections inside each of the palaces. This background endowed Mies van der Rohe with the ability to anticipate the best position for the pavilion in relation to the wide-ranging experience of the German presence in the exhibition grounds. Thus, the change of site (from the main axis of the exhibition grounds to one of the sides on the way to the *Pueblo Español*) reinforces the hypothesis that Mies van der Rohe considered the pavilion as part of a much broader – and consistent – German presence.

Consistency across Pavilions and Palaces

Germany could not waste this big opportunity. It was their first invitation to be part of an international exhibition after the defeat of WWI. On one hand, Germany saw Spain as an export bridge to Latin America and thought that many of the visitors of the Ibero-American Exposition of Seville (which would take place at the same time) would probably extend their trip to Barcelona¹³. On the other hand, their presence in the 1929 *Barcelona International Exhibition* was critical to be able to represent the recovered strength of their industrial fabric and economy ten years after the end of WWI. The display of more than 16,000 m² of German industries¹⁴ – spatially organizing thousands of industrial products – implied the search for the identity of the German industrial fabric. Hence, Mies van der Rohe would need to find a way to architecturally express what made that identity distinctive, both in the areas of the palaces to be occupied by particular national industries and in an empty and singular national pavilion.

In order to reveal an identity in contrast to other countries, it was necessary to link the dispersed industrial areas in a consistent sequence across palaces and to make the

national pavilion part of that sequence. Hence, Mies van der Rohe did not envision the pavilion only as a representative space for the opening ceremonial reception. Mies van der Rohe conceived the German Pavilion as the starting point of a sequence that would go across the interiors of the eight neoclassical palaces (figure 02), where the German industries would be on display, in addition to the trade pavilion of electrical supply that several electric companies would build¹⁵. In fact, the two most innovative architectural elements of the German Pavilion – the milky color double-glazed wall and the chrome-plated cross-shaped posts – can be traced back to the interiors of these palaces. One of the elements had been thoroughly and consistently designed across the separate exhibits; the other one was part of the structure of the given buildings and had been left bare.

The vitrines (both in the form of mobile pieces of furniture and portions of equipment thickening the existing walls) are the architectural elements that Mies van der Rohe and Lilly Reich developed most, to camouflage the stylistic features of the heterogeneous interiors of the neoclassical palaces and to set up a mark of distinction from the sections of other countries. In some of these palaces, Mies van der Rohe and Lilly Reich concealed the original walls and absorbed the columns (of varying classical orders) in white-painted wood paneling; such is the case of the Chemical Industries section of the Electricity and Motive Force Palace, the Textile Industries Palace, and the Decorative and Industrial Arts Palace. In other interior spaces, Mies van der Rohe and Lilly Reich left the original walls bare and placed the emphasis on the design of horizontal and vertical vitrines of glass and chrome-plated profiles; such is the case of the Machine section of the Electricity and Motive Force Palace, the Communications and Transport Palace and the Graphic Arts Palace. As opposed to Germany, most of the countries used highly ornamented prefabricated vitrines and stands, which, rather than transforming the given spaces, added an additional layer of confusion into the already varied styles. The many drawings (plans, sections, elevations, details) and photographs of the German sections preserved today in different archives reveal the modern and distinctive quality of the vitrines designed by Mies van der Rohe and Lilly Reich.

The highly-detailed sections of these vitrines designed for the display of dissimilar industrial products, reveal a striking formal similarity with the only surviving horizontal section of the double-glazed white-milk skylight (the single vertical vitrine of chrome-plated mullions) of the German Pavilion. As there were no industrial products to be exhibited, Mies van der Rohe conceived it as a vitrine of light dividing two worlds: an interior, with the Barcelona chairs, where the Spanish Royal family would be able to sit during the opening ceremony, and the exterior, with a long travertine bench running perpendicularly at the bottom of the enclosing wall, where visitors could sit in order to look towards the exhibition grounds. The vitrine of light acquired the width of the module of the pavement (110 cm), and a total length of almost 9 meters, with a single central mullion (figure 06). 3 other contrasting kinds of transparent glass intensified the

complexity and the optical effects of the interior. A grey glass divided into 10 elements filtered the view towards the garden; another glass in green, divided into 8 elements, separated the interior space from the pool; and an uncolored one, divided into 3 elements, shaped the entrance.

The fluted cross-shaped columns of the Electricity and Motive Force Palace, both in the Chemical and the Machine section, were some of the few structural elements that Mies van der Rohe and Lilly Reich left bare, without any kind of covering. In September 1928, Mies van der Rohe had already shown an interest in the structure of this precise palace¹⁶, in which the intense continuity of concavities and convexities and the accumulation of lines of the vertical supports, envisioned the way the structural weight was transported vertically. Two years earlier, in 1926, Mies van der Rohe had revealed – both in these writings and underlinings of Romano Guardini's text – his tireless search for a vehicle of expression of man's dominion over the forces of nature, and his confidence in technology to offer a formal abstraction that could hold the spirit of the building art¹⁷. Already in 1922, with the skin of his skyscrapers, Mies van der Rohe had multiplied the vertical lines that stress the representation of gravity. In his work in the interiors of the Electricity and Motive Force palace in Barcelona, the uncovered structure of stiffened beams and roof openings of the Machine section contrasted with the wall paneling and the hanging roof of fabric bands of the Chemical section. However, in both cases the fluted cross-shaped columns were left freestanding among the stands of the different industries (figure 04).

In the German Pavilion, Mies van der Rohe decided to form the steel posts out of four equivalent dihedrals (with 4 L- and 4 T- profiles) that converged in a central point and were able to create a two-directional, isotropic structure¹⁸. By this means, Mies van der Rohe managed to address the relationship of the Pavilion with the palace of Victoria Eugenia and the stairs that came from the *Pueblo Español*, as well as to reduce the columns to dimensionless points. Mies van der Rohe's innovation consisted in the covering of a supporting element with chrome-plated steel, something he had already done in his mullions, vitrines and furniture¹⁹. In the posts of the German Pavilion, Mies van der Rohe folded the chrome-plated steel in a continuous sequence of concave and convex sides, which multiplied the accumulation of vertical lines, while amplifying the scope of their perception, from creating an emphasis on their load-bearing function up to their total disappearance in space.

The Opening Sequence

The consistency and distinctive identity of the entire German presence, pursued and constructed by Mies van der Rohe and Lilly Reich during the development of the project, is clearly revealed in the sequence of spaces visited by the Royal retinue on May 27, 1929 (figure 05). The fact that the cortege of Spanish and German authorities continued their stroll across the industrial sections after the opening reception, along with the formal consistency revealed by the sequence of spaces comprising that promenade, underpins the idea that Mies van der Rohe himself constructed the

sequence in which to integrate the German Pavilion. Today, 3 specific documents of restricted access preserve the order of this sequence and situate the origin of the German Pavilion in the design of the industrial exhibits inside the neoclassical palaces.

One of the documents registering the opening sequence is the entry of May 28 at the daily report of the *International Exhibition*²⁰, today kept at the contemporary archive of the city of Barcelona. According to this document, after the reception at the German Pavilion, the visit continued through the Chemical section and the Machine section (the northern and southern sides of the Electricity and Motive Force Palace), the Communications and Transport Palace, the trade pavilion of electric supply, the Textile Industries Palace and the Decorative and Industrial Arts Palace. Another, is the article “Inauguración del pabellón y sección de Alemania. El acto oficial”²¹ [Opening of the Pavilion and German Section. Official Act] published in the *Diario Oficial de la Exposición Internacional de Barcelona* [Official Diary of the Barcelona International Exhibition] on June 2, 1929, today kept at the *Biblioteca Nacional de España*. And the third and most revealing one is the film-sequence devoted to the German presence at the *International Exhibition* in the official motion picture directed by Ramón de Baños²², today part of the collection of the *Filmoteca de Catalunya*. This 2-minute-46-second-sequence reveals the German Pavilion as the starting point of an attentive promenade across the unequal industrial exhibition spaces, beginning at

the two sections of the Electricity and Motive Force Palace and continuing toward the Communications and Transport Palace. A recent old film recovery work includes other scenes of the same spaces and an additional one showing a current of people leaving the *Deutsche Seide* section of the Textile Industries Palace²³.

Several archives preserve images of the inauguration day in which Mies van der Rohe is seen at the German Pavilion (waiting for the Royal retinue, approaching the office building with them or enjoying a relaxed talk with King Alfonso XIII in front of the double-glazed wall), as well as the Royal retinue itself indulging the flow of space at the German Pavilion, lingering on some of the products of the German industry in varied palaces, or going across the exhibition grounds from one palace to the next. However, compared to individual photographs, the importance of these two films as well as these two documents relies on their ability to register the sequence of spaces carefully constructed by Mies van der Rohe and Lilly Reich. The sequence reveals an aesthetic continuity (the consistency and the distinctive identity that Mies van der Rohe searched for) across the refurbished spaces of the neoclassical palaces, having the German Pavilion at the final point of the development of the project, and at the starting point of the visitor's experience at the same time.

The itinerary followed by the Royal retinue – and the unfolding of diverse spaces in sequence – reveals an equivalent treatment of the architectural elements of the German

- 03** Mies van der Rohe and Lilly Reich, German Pavillion of the 1929 *Barcelona International Exhibition*, Barcelona, Spain, 1929. Reconstruction, 1986.
© Rafael Vargas, courtesy *Fundació Mies van der Rohe*.



- 04** Mies van der Rohe and Lilly Reich, German Pavillion of the *1929 Barcelona International Exhibition*, 1929, Barcelona, Spain. View of the concrete structure of the Machine section of the Electricity and Motive Force Palace during the opening ceremony.
© Arxiu Fotogràfic de Barcelona, AFB.



- 05** Mies van der Rohe and Lilly Reich, German Pavillion of the *1929 Barcelona International Exhibition*, 1929, Barcelona, Spain. Mies van der Rohe following the sequence of spaces as part of the Royal retinue. Above, Mies van der Rohe going through the pool courtyard of the pavilion. © Film shot from *Las exposiciones de 1929, I. Sevilla y la Exposición Iberoamericana*, Sevilla, Consejería de Cultura. Junta de Andalucía, 2009. Below, Mies van der Rohe entering the Chemical section of the Electricity and Motive Force Palace. © Film shot from *Exposició Internacional de Barcelona*. CINAES- Ramón de Baños 1929-1930, Filmoteca de Catalunya.



- 06** Mies van der Rohe and Lilly Reich, German Pavillion of the *1929 Barcelona International Exhibition*, 1929, Barcelona, Spain. Mies van der Rohe and King Alfonso XIII during the opening ceremony. © Arxiu Nacional de Catalunya, ANC, Josep Sagarra i Plana.



Pavilion and the refurbished palaces, whether they were the glazed vitrines and walls of chrome-plated mullions or the cross-shaped columns in concrete or chromed-plated steel. Linear meters of freestanding or built-in vitrines tested in the palaces, shaped the vertical planes of the German Pavilion. Uncovered cross-shaped (and fluted) concrete columns found at the palaces were at the origin of the chrome-plated cross-shaped steel posts.

Coda

The square meters of *Barcelona International Exhibition* that were not reconstructed in 1986, form today the immaterial heritage that holds the relevance and significance of the German Pavilion. In 1929, the *Barcelona International Exhibition* contributed to the representation of Germany's industrial strength and distinctive character on the international scene. Today, the understanding of the full range of the task that Mies van der Rohe received in Barcelona, and the re-construction – by means of documents – of the sequence that Mies van der Rohe and Lilly Reich curated across the entire German section, reveals the German Pavilion as part of a much bigger fabric.

The documents that register the opening sequence, the dozens of photographs and more than 40 drawings deposited in particular archives²⁴, not yet available to the general public, grant the integrity of the preservation of an important work in the history of architectural modernism, which was even considered by some the “most beautiful building” of the 20th century²⁵. Today, it would not make sense, as it did not in 1986, to materially re-construct the 16,000 m² of interior spaces that lay at the origin of the Barcelona Pavilion. However, to study and to bring to light the many other documents (papers, drawings, photographs, films), which preserve the spatial qualities of these interior spaces, is crucial so that the work that stands today – and forms part of our contemporary built environment – can fully communicate its historical meaning.

Notes

- 1 Many studies have already shown that the German Pavilion was not conceived as an isolated abstract object without attention to site. See Wolf Tegetthof, “Barcelona Pavilion”, in *Mies van der Rohe: The Villas and Country Houses*, New York, The Museum of Modern Art, 1985, 69–86; Cristina Gastón, “El Pabellón de Alemania en la Exposición Internacional de Barcelona 1928–1929”, in *Mies: el Proyecto como Revelación del Lugar*, Barcelona, Fundación Caja de Arquitectos, 2005, 31–80. The goal of this paper however is to demonstrate that Mies van der Rohe “constructed” an exhibiting sequence that linked the German Pavilion with the palaces distributed in the exhibiting grounds.
- 2 AAPAB C1. Contract between George von Schnitzler and Santiago Trias, September 26, 1928. Albeitung II, R90140028, 130–132 (Auswärtiges Amt, Politisches Archiv, Berlin).
- 3 AAPAB C2. Contract between George von Schnitzler and Mies van der Rohe, November 12, 1928. Albeitung II, R240030, 101–103 (Auswärtiges Amt, Politisches Archiv, Berlin).
- 4 MoMA A&D C1. Letter from Enrique Domínguez Rodiño, Berlin, to Santiago Trias, Barcelona, June 1 1928 (Museum of Modern Art, Architecture & Design Department, Mies van der Rohe Archive, New York).
- 5 Mies van der Rohe and Lilly Reich had been planning the international staging of Deutsche Seide for months, for whom they had designed the Café Samt & Seide in Berlin. IG Farben was one of the six most important companies of the entire Germany, devoted to the artificial production of color for every kind of applications and industries and that had yielded their general manager, baron George von Schnitzler,

to take the role of the general commissar.

- 6 MoMA A&D C2. Letter from Enrique Domínguez Riaño, Berlin, to Santiago Trias, Barcelona. June 4, 1928 (Museum of Modern Art, Architecture & Design Department, Mies van der Rohe Archive, New York).
- 7 The first paragraph of the contract between von Schnitzler and Mies van der Rohe (November 12, 1928) clearly states that Mies van der Rohe would “carry out the work described in [that] contract together with Lilly Reich”. Lilly Reich traveled to Barcelona on the official visit of Germany in September 20, 1928, and her name and her credit as an architect (and not as an artistic director of the exhibitions) was registered in the *Daily Report of the International Exhibition*: “A few days ago (...) the architects Mr. Mies van der Rohe and Mrs. Lilly Reich (...) had an interview with the directors of the contest, in order to ultimate certain details related to the German contribution to Barcelona”. See ACB C1, *Daily Report of the International Exhibition*, October 10, 1928, “The main German industrial companies will be part of the contest” (Arxiu Contemporani de Barcelona, Fons Institucional Exposició Internacional del 1929). Although the nomination of the German Government of the architect in charge of the entire German section of the 1929 *Barcelona International Exhibition* was individually placed to Mies van der Rohe at the end of May 1928, both Mies van der Rohe and Lilly Reich attended the meeting celebrated in Berlin in June 2, 1928, with the committee of the *Deutsche Seide*, to evaluate the estimate of the individual exhibition they were going to design for them in Barcelona. Thus, it is very probable that once the German Government decided to build a national pavilion as part of their contribution in Barcelona and Mies van der Rohe's commission increased in complexity, the responsibility of the industrial exhibits was geared towards Reich. In fact, a conversation of 1976 between Ludwig Glaeser, curator of the Museum of Modern Art at the time, and Graffin Reichstag, secretary of Mies van der Rohe's office in Barcelona 1929, reveals that in the overall work of Barcelona, it was very difficult to distinguish “the ratio of Mies to Reich”. See CCA 1. Ludwig Glaeser in conversation with Graffin Reichstag. Stuttgart, June 1, 1976. Transcribed tapes (Canadian Center for Architecture, CCA, Montreal).
- 8 BA DAM 1. *Internationale Ausstellung, Barcelona, 1929. Deutsche Abteilung, Ausstellungs-Bestimmungen*, 1928 (BundesArchiv, Deutsches Ausstellungs und Messeamt). As this document reads, the General commissar announced that they would be in charge of the expenses of the artistic direction assigned to the architect, the local office, the pavement, the uniformity of signage and the seats of the stands. The exhibiting industries would only need to be in charge of the assembly – and eventually the special equipment – of their company.
- 9 The official guide distinguishes between 24 different sections divided in 8 palaces. See vv. AA, *Exposición Internacional de Barcelona 1929: Catálogo Oficial de la Sección Alemana*, Berlin, Reichsdr, 1929. German version: *Internationale Ausstellung Barcelona 1929. Die Deutsche Abteilung*, Berlin, Reichsdr, 1929.
- 10 750 m2 in the Work Palace, 1800 m2 in the Electricity and Motive Force Palace, 800 m2 in the Projections Palace, 4000 m2 in the Communications and Transport Palace, an option of 3000 m2 in the Textiles Palace, 1500 m2 in the Decorative Arts Palace; 1500 m2 in the Agriculture palace; 680 m2 in the Graphic Arts Palace, 120 m2 in the Constructions Palace; 375 m2 in the Sports Material Palace, and 400 m2 in the Palace of Victoria Eugenia.
- 11 The general commissar stated that he “would see with satisfaction if they would assign them the site of the ‘Plaza de Bellas Artes’”. AAPAB C1. Contract between George von Schnitzler and Santiago Trias, September 26, 1928. Albeitung II, R90140028, 130–132 (Auswärtiges Amt, Politisches Archiv, Berlin).
- 12 It is possible that Mies van der Rohe had been working for the *Deutsche Seide* even from an earlier time. This is how it can be explained that on June 1928, the day after the official announcement of Mies van der Rohe appointment as an architect in charge of the German section in Barcelona, Mies van der Rohe and Lilly Reich celebrated a meeting in Berlin with one of the directors of the consortium of the *Deutsche Seide*, in order to estimate the costs of the individual exhibition that they were going to design for them in Barcelona. MoMA A&D C3. Minutes of the meeting of June 2, 1928, between Mr. Rosenbaum, Mies van der Rohe and Lilly Reich (Museum of Modern Art, Architecture & Design Department, Mies van der Rohe Archive, New York).
- 13 AAPAB C3. Letter of the Spanish Consulate in Barcelona to the German Foreign Affairs Ministry, February 15, 1927 (entry stamp from February 21), R240027, 0028–31 (Auswärtiges Amt, Politisches Archiv, Berlin).

- 14 Although Germany spent months making the decision to participate in the 1929 *Barcelona International Exhibition*, which led to an intense diplomatic relationship between the two countries, in the end Germany became the country with the most extensive industrial presence in Barcelona. See in this regard Valentín Trillo, *Mies en Barcelona: Arquitectura, Representación y Memoria*. Sevilla, Universidad de Sevilla (PhD dissertation), 2016: <https://idus.us.es/xmlui/handle/11441/45763>.
- 15 The Electric Supplies Pavilion was a trade pavilion that the Germans built in Barcelona, between the Communications and Transport Palace and the Textile Palace, which was fully financed by the exhibiting electrical companies, as opposed to the national Pavilion, that was fully financed by the general commissar. See AAPAB C4. Final costs of the exhibitions by Palaces and Pavilions. October 3, 1929, R240030, 110 (*Auswärtiges Amt, Politisches Archiv*, Berlin).
- 16 MoMA A&D C4. Letter of the chair of the executive committee of the exhibition in Barcelona, Santiago Trias, to Enrique D. Rodiño. Barcelona, October 3 1928 (Museum of Modern Art, Architecture & Design Department, Mies van der Rohe Archive, New York).
- 17 Fritz Neumeyer, "Architecture for the Search for Knowledge: The Double Way to Order", in *The Artless Word. Mies van der Rohe on the Building Art*. The MIT Press, Cambridge, Massachusetts/ London, England, 1991, 195-236.
- 18 Dietrich Neumann, "An Accidental Masterpiece. The Barcelona Pavilion in Context", in Mies van der Rohe – Barcelona, 1929. Symposium (October 14, 2016). According to Neuman, Mies van der Rohe's chrome-plated cross-shaped columns made their first appearance in another ephemeral exhibition he was designing at the same time as Barcelona: the Linoleum Information Stand of the Leipzig Building Fair, which took place in March 1929.
- 19 The cross-shaped sections themselves could be found in any manual of steel construction of the end of the 19th century. One example is C Kersten's book from 1917, which was translated into Spanish by B. Bassegoda Musté in 1929. C Kersten, *Empleo del Hierro en la Construcción*, Ediciones Canosa, Barcelona, 1929.
- 20 ACB C2. *Daily Report of the International Exhibition*, May 28, 1929. Register of the Opening Sequence (*Arxiu Contemporani de Barcelona, Fons Institucional Exposició Internacional del 1929*). Box 47103.
- 21 "Inauguración del Pabellón y sección de Alemania. El acto oficial", *Diario Oficial*, n. 12, June 2 1929, 14-15.
- 22 "Sequence 14. Opening of the German section of the Barcelona International Exhibition", in *Exposición Internacional de Barcelona. CINAES- Ramón de Baños 1929-1930*, Filmoteca de Catalunya, Index number: 17175. v/01.
- 23 Begoña Soto Vázquez, *Las Exposiciones de 1929, 1. Sevilla y la Exposición Iberoamericana*, Sevilla, Consejería de Cultura, Junta de Andalucía, 2009.
- 24 The Mies van der Rohe Archive at the Architecture and Design Department of the Museum of Modern Art New York holds 28 plans of the Barcelona Pavilion and 41 plans of the Industrial Exhibits. A low-resolution scan can be found at *The Mies van der Rohe Archive: [an illustrated catalogue of the Mies van der Rohe drawings in the Museum of Modern Art]*, Garland Publishing, 1986.
- 25 Philip Johnson stated in his lecture "Schinkel and Mies" (1961) how Peter Behrens had said in 1929 that "the Pavilion [would] someday be called the most beautiful building of the century". See "Schinkel and Mies" (1961) in Philip Johnson, *Writings*, Oxford University Press, New York, 1979, 177.

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Mies van der Rohe, Crown Hall, Chicago, USA, 1950–1956. Restoration by Krueck + Sexton Architects. © William Zbaren, 2005.

Restoration of Crown Hall

BY MARK SEXTON

WITH THE COLLABORATION OF KATHERINE BAJOR,
BILL KISSINGER AND HEIDI LEE

This essay documents the research of restoration and modifications to Mies van der Rohe's masterwork, Crown Hall, the heart of the Chicago campus of the Illinois Institute of Technology. Restoration was necessitated by 5 decades of use during which the building had fallen into major disrepair. During the restoration, practical and philosophical issues arose from the building's landmark designation by regional and national authorities.

The essay describes the forensic research that preceded design, investigation and selection of alternate materials modifications to the building envelope. This includes a detailed description of modifications balancing original materials and systems with current codes.

The essay concludes by placing the restoration of Crown Hall in the larger context of preservation of modern buildings and the threat to these works which, unlike Crown Hall, are rarely protected by landmark designation.

Introduction

S. R. Crown Hall is widely recognized as one of the supreme achievements of 20th century architect Mies van der Rohe. Housing the College of Architecture on the campus of the Illinois Institute of Technology (IIT), the building was designated a City of Chicago Landmark in 1997 and a National Historic Landmark in 2001. National landmark recognition is very rare for a building fewer than 50 years old. At its dedication in 1956, Mies van der Rohe characterized Crown Hall as "the clearest structure we have done, the best to express our philosophy"¹. The exposed structural system is central to its design. Whether observed from the interior or exterior, the glass curtain wall reveals a straightforward understanding of the clear-span universal-space structure. As a physical manifestation of Mies van der Rohe philosophy of "almost nothing", it imparts the De Stijl principles of rationalization and universality combined with Frank Lloyd Wright's open plan². After 50 years of continuous use, Crown Hall remained a fully functional school of architecture. Although the structure remained sound, specific components of the building were in a condition of significant deterioration including the south terrace and entry, wood partitions, glazing stops, glazing, and coating³. Past renovations intended to address code issues and patchwork/emergency repairs undermined the space's original character. The damaged envelope obscured the aesthetic clarity of the structure and threatened its longevity. This essay focuses on the most substantial structural phase: the curtain wall.

Mies van der Rohe: Germany to USA

Mies van der Rohe was born into a family of stone carvers in Aachen, Germany, in March of 1886⁴. Ambitious to shed his artisanal heritage, he worked at several architecture offices throughout Germany. His work with various leading archi-

itects imparted certain influences on form, proportion and detail influencing his architectural perspective. Eventually, his innovative structures on the drawing board and in built form were held in high regard throughout Europe⁵. In 1930, he was chosen to succeed Walter Gropius as director of the Bauhaus, the German school of experimental art and design. Under pressure from the Nazis, Mies van der Rohe closed the school in 1932, after a short two-year tenure⁶. Lacking work, he departed Europe for Chicago in 1938, accepting an offer to head the Department of Architecture the Armour Institute (now IIT)⁷.

Mies van der Rohe: IIT, Curriculum, Campus Plan

Upon his arrival, Mies van der Rohe set out to "rationalize" the architecture curriculum. The Institute's Beaux Arts curriculum gave way to Bauhaus principles developed in 1922 by Walter Gropius. Students received a 3-step education⁸. The first stage focused on drawing. Next came mastering the uses and qualities of materials. Finally, students trained in the fundamental principles of design and construction. Building practices were covered in courses while the studio was dedicated to problem solving⁹. Like his buildings, Mies van der Rohe's curriculum was an update on contemporary craft and materials, combining art, craft and technology with an emphasis on aesthetics¹⁰. As architectural historian, Kevin Harrington explains, "Mies wanted to create a curriculum which would always yield excellent craftsmen and occasionally produce or encourage those with gifts to make expression of technique an act of high art"¹¹.

Early in his tenure, Mies van der Rohe taught in rooms provided by the Art Institute of Chicago¹². In 1940, Armour Institute and Lewis Institute merged, forming the Illinois Institute of Technology. This development required a new campus plan which Mies van der Rohe was commissioned

to design. A 4-block area laid out on a 24 foot by 24-foot (7.3 m x 7.3 m) grid straddled the 33rd street axis on the south side of Chicago. All buildings were rectangular with variable heights based on 12 foot (3.7 m) modules. The grid imparted a strict order of organization and a fluid sense of flexibility by overlapping placement of buildings. The campus plan reached its peak when Crown Hall opened in 1956, just two years prior to Mies van der Rohe's resignation as Director of the School of Architecture¹³.

The Building

Crown Hall has been home to the School of Architecture at IIT since its opening (figure 01). Like its curriculum, it reflected Mies van der Rohe's concept of an open cooperative education. The college classroom building, without the traditional classrooms, alludes to "a modern incarnation of the historic one-room schoolhouse". Mies van der Rohe sought to create an open space, flexible enough to accommodate changing needs over time. For example, at the time of its opening the building housed approximately 120 students. By 2003, it accommodated more than 400 students, meaning the drafting tables with ample space around each in the late 1950s, were now stacked like eggs in a crate. Students were no longer just drafting but also working on computers. The natural light flooding into the building was no longer an asset. While the plan lent itself to rearrangement to economize on space, high performing replacement blinds were required to block the glare.

As much as the Chicago School architects and Mies van der Rohe had in common, they had differing perspectives on function and its relationship to form: "What Sullivan said, 'Form follows function', I think that has changed in our time. The function is very short-lived today, and our constructions last much longer. So, it only makes sense to make the plan very flexible". He referred to this design concept as "universal space"¹⁷. To create a large clear span structure with 120 x 220 x 18 foot (36.5 m x 67 m x 5.5 m) of unobstructed interior space he moved all structural supports to the building's exterior wall¹⁸.

The exterior structural components allow Crown Hall to be "almost nothing". Often referred to as "skin and bones" architecture, the exterior skin is comprised of welded steel components, steel glazing stops fastened with countersunk steel screws and glazing divided into three horizontal layers²⁰. The main hall has an east-west axis, divided cross-wise into 3 60-foot (18 m) bays. Comprised of two floors, the main floor is elevated so that light come into the lower level through clerestory windows. All joints are held together with field welds ground down to provide a seamless appearance. A steel framed roof is suspended from four externally exposed steel girders. The roof cantilevers longitudinally 20 foot (6.4 m) beyond the last supporting girders. Columns run the full height of the building, supporting each girder. All exposed steel is painted black. As the façade is minimalist, the only exterior features are a steel and travertine terrace that provides access to the raised main floor. Through its "purity of form, perfection of proportions, elegance of detail and dignity of expression",

the technologically advanced glass and steel structural system defines the building²¹.

The interior of the building features a completely unobstructed main hall. This expansive, open workspace encourages a collaborative exchange of ideas through cooperative learning (figure 02). Free-standing oak partitions barely separate spaces, retaining the expansive feeling of the hall. Two vertical chases placed 80 foot (24 m) apart are the only features that rise from floor to ceiling. Two internal staircases punch through the main floor, descending to the lower level. At the south entry, two partitions frame an exhibition space. The ceiling is set back approximately 1 foot (0.3 m) from the exterior walls and appears as a suspended continuous plane. 1 foot square (0.3 m x 0.3 m) acoustical tiles make up the ceiling finish. To retain the purity of the space in the main hall, Mies van der Rohe created a lower level with standard divisions allowing for building services, restrooms, lecture halls and other operational necessities²². 50 years after Mies van der Rohe last taught at IIT, this "temple of architecture" embodies his architectural philosophies more effectively than any textbook. "Form and function unite in Crown Hall - the clear-span, universal-space structure carries out Mies's belief in the value of a collaborative architectural education" to this day²³.

Discovery Process

Analysis and design work began in 2003 and restoration was completed in 2005. Due to the important nature of this project, an interdisciplinary design team led by Krueck + Sexton Architects, was formed, representing architectural, preservation, glazing, sustainability, engineering and construction disciplines. A comprehensive 1998 report by Fujikawa Johnson and Associates and the Secretary of the Interior's Standards for the Treatment of Historic Properties guided the planning process. Joseph Fujikawa had worked on the construction of Crown Hall as one of Mies van der Rohe colleagues²⁴.

A design review committee of College of Architecture faculty, some of whom occupied the building in its early years, assisted the team's research and decisions while serving as liaison with the University community. A rigorous review process including discussion and presentations to city and state preservation officials provided critical input.

The review process focused on the steel and glass stop details of the façade where all of the building's elements – steel, glass and paint – come together at a critical point. An exemplar of Mies van der Rohe's meticulous approach to construction, this detail required modification to capture and hold the replacement glass. Adherence to the highest level of historic preservation initially seemed to be at odds with the current code and safety requirements. The detail needed to change; but how to most appropriately choose the modification that would have no adverse impact on the historic building? Replacement of the glass presented a similar challenge. Glass and modified aluminum stops installed in 1975 were to be removed because they were not in keeping with the highest standards of historic restoration. The new glass needed to meet the current code requirement. More importantly, it needed to restore the building's

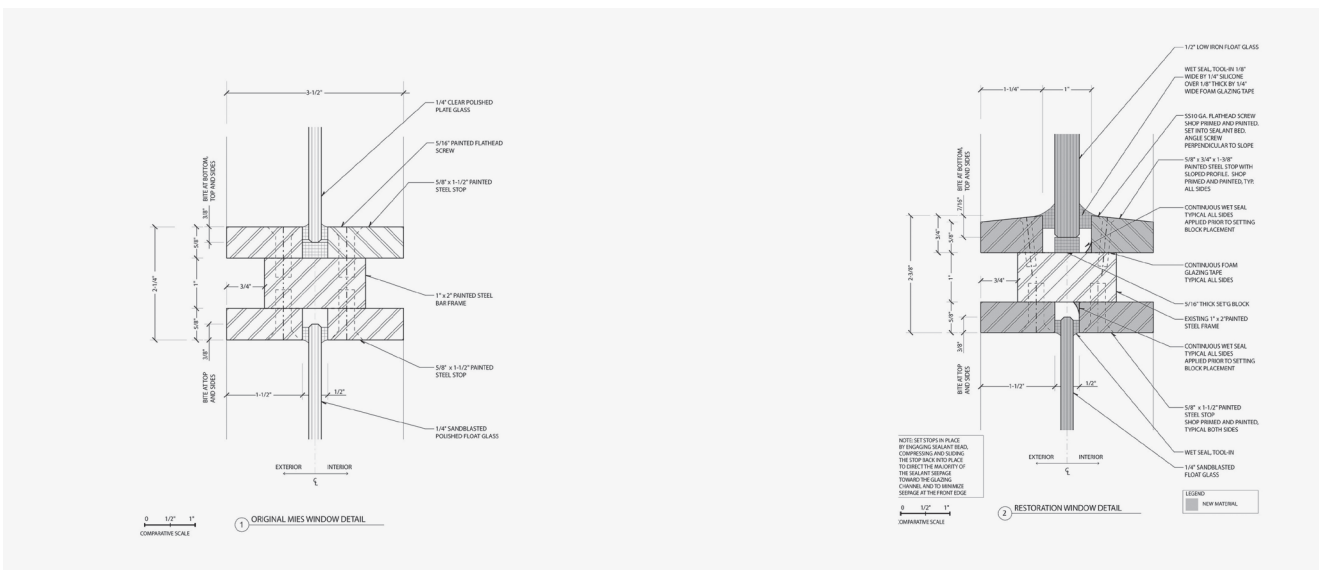


01 Mies van der Rohe, Crown Hall, Chicago, USA, 1950–1956.
© Hedrich Blessing, 1956.



02 Mies van der Rohe, Crown Hall, Chicago, USA, 1950–1956. Interior studio.
© Hedrich Blessing, 1956.

03 Mies van der Rohe, Crown Hall, Chicago, USA, 1950–1956. Detail drawing of original (left) and restored (right) glazing stop condition. © Krueck + Sexton, 2005.



04 Mies van der Rohe, Crown Hall, Chicago, USA, 1950–1956. Restoration works.
© Krueck + Sexton Architects, 2005.



05 Mies van der Rohe, Crown Hall, Chicago, USA, 1950–1956. Restoration works.
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06 Mark Sexton.
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Architects.



07 Mies van der Rohe, Crown Hall, Chicago, USA, 1950-1956. Detail view of sill with glazing stop removed.
© Krueck + Sexton, 2005.



08 Mies van der Rohe, Crown Hall, Chicago, USA, 1950-1956. Mock-up sample of various materials on glass to test seal. © Krueck + Sexton, 2004.

original subtle play of transparency and translucency. The design team extensively studied potential glass formulation, thickness and finishes, eventually arriving at six strategies. Full size mock ups of the building curtain wall were reviewed by the team and university and city and state preservation authorities. A consensus emerged on the best direction forward, which deployed a thicker float glass in the clear upper lights matching the transparency and color of the original 1/4 inches (6 mm) polished plate glass. The team sampled a wide selection of glass for the lower glazing that was more suitable than the laminated glass installed in the 1970s.

The restoration of the exterior steel consisted of removing and replacing steel that had corroded beyond repair, sandblasting the remaining steel frame and a three-coat paint system. The building's entry doors were removed and sent to the original manufacturer, Ellison Bronze Inc., for refurbishment then reinstalled with modern hardware and integrated security devices. Italian travertine for the entry porches was selected to match the texture, color and grain of the original stone.

Metal Stop Design

A predominantly glazed building, Crown Hall consists of a primary steel structure of plate girders and main columns and a secondary steel structure of intermediate columns, mullions and frames. By 2003, years of inadequate maintenance and piecemeal renovation projects left the steel frame and glazing system in a state of severe disrepair. Glass panels on the main floor and lower level were cracked, the steel stops showed signs of advanced corrosion and, due to oxide jacking, window frames were bent out of alignment, exerting pressure on the glass and stops.

Most of the corrosion found on the existing painted steel structure and glazing stops was surface corrosion. The two primary causes of this corrosion were failure of the aged paint coating system and a glazing system unable to repel or weep water. Advanced corrosion due to excess moisture accumulation was found at areas of dense ivy growth and

at glazing channels, due to excess condensation and at door sills due to the use of de-icing salt.

The glazing stops on the lower lights appeared to be the original steel bar stock. However, the exterior glazing stops on the upper lights were replacement aluminum pieces installed during the 1975 renovation. The original steel bar stock remained on the interior side and appeared not to have ever been removed. A new stop profile and detailing were investigated to prevent trapped water within the glazing channel and to keep moisture off the glazing assembly.

A careful review of chemical, moisture, galvanic, electrochemical thermal expansion and historic preservation issues led to implementation of steel replacement stops and for the entire glazing system. While higher-performance metals offered apparent advantages, the designers determined that use of these metals may have unintended consequences, such as complicating the glazing system and compromising the future performance of the building.

The question remained as to the cause of the great amount of base glass cracking. Certainly, there was visible oxidation but could the cause of the glass failure be due to water infiltrating the glazing channel and freezing? Removal of the existing steel window stops revealed that in many places the original red iron oxide primer was visible through the top coat. In other locations, the steel stops were found to have only a light coating of primer on concealed surfaces.

Sealant joints around the lower level windows were failing and in disrepair. The sealant, presumably replaced along with all the glass during the 1975 renovation was nearly 30 years old. Large areas of sealant showed signs of material breakdown and adhesion loss, leading to water infiltration of a vulnerable point of the wall system.

The original drawings called for use of a mastic tape product at various locations, which in all likelihood was intended to provide separation and a layer of protection between components of the steel frame. However, this material was not found between the steel stops and frames. This steel-to-steel condition permitted water to infiltrate the glazing

assembly where it had access to the open glazing channel and no way to escape.

It was only after removing a dozen steel stops that severe oxide jacking was conclusively identified as the singular cause of the glass breakage. The most significant corrosion was found at the bottom horizontal bar of the window frame (figure 07) and approximately 12-18 inches (300-450 mm) along the vertical jamb members. This caused moderate amounts of pitting of the top surface of the steel frame that was readily apparent after sandblasting. Corrosion build-up and oxide jacking at the glazing setting blocks exerted an upward pressure on the glass. This corrosion build-up, combined with the increased thickness of the glass installed during the 1975 renovation, caused a significant number of the lower level translucent panels to break.

The original 5/8 x 1 1/2 inches (16 mm x 38 mm) profile of the steel stops was maintained using all new materials at the lower level lights. This afforded a high degree of shop fabrication and finishing quality control while eliminating the need for costly specialized efforts to repair material or areas of material that had deteriorated through the years.

At the upper stops, current codes required increased thickness of the stop at the glazing channel from the original 5/8 inches (16 mm) bar to 3/4 inches (19 mm) to allow sufficient support of the large upper glass lights. The important design question was whether this could be accomplished within the spirit and letter of preservation. A detailed study determined that a sloped profile at the upper stop would maintain the appearance and proportion of the original 5/8 inches (16 mm) front face of the stops while addressing the increased support requirement at the glass (figure 03). This profile also improved window wall performance by establishing positive drainage away from the glazing channel.

Incorporating a slope into the rectilinear building was considered detrimental to Mies van der Rohe's adherence to right angle relationships. Another objection was that the sloped stop would require custom fabrication. Despite his fondness for artisanal craftsmanship, Mies van der Rohe was committed to utilizing mostly off-the-shelf building materials as an expression of universality and industrial era aesthetics. Both tenets were influenced by the De Stijl principles of "transcending the individual in order to evolve towards the universal"²⁵. As debate raged among the design review committee members, the design team's response was simple: "you don't see it". Mies van der Rohe was a visual purist above all but he was also practical. For example, at 860 and 880 Lake Shore Drive, another Mies van der Rohe design, the vertical beams at the columns of the apartment towers serve no functional purpose. They are purely aesthetic. According to Mies van der Rohe, the building "just didn't look right" without them²⁶. Aesthetics and "spirit" were ahead in the agenda compared to honestly expressed structure.

In the summer of 2004 a full-size mock-up confirmed that the height of the upper window bay completely concealed the bar stop slope. It was almost impossible to perceive, even knowing it was there. The mock-up also proved that thickening the entire face of the stop or replacing the slope

with a right angle "just didn't look right". A lengthwise view of a right angled (instead of sloped) lip showed that this stop design would read as another line from a side perspective, disrupting the clean lines. Having proven to be cost effective in pricing exercises, the sloped profile offered a compromise between the original detail and current code while addressing historic, aesthetic, performance and pragmatic concerns.

The original sized fasteners, 5/16 x 1 inches (8 mm x 25 mm) flat head slotted machine screws, were maintained at all of the glazing stops. Thus, existing locations and spacing were maintained on all lower level windows. The spacing was modified slightly at the upper stops to accommodate an angled fastener following the sloped profile of the stop. The original glazing stop fasteners were steel but during forensic exploration, stainless steel screws were discovered in several stops. The team specified stainless screws to resist corrosion. The fasteners were then set in a bed of sealant further isolating materials and protecting against water infiltration.

With the newly fabricated stops sandblasted, and steel frames and new glass components defined, a full-size mock-up was built consisting of one full window bay. This bay served as the benchmark for quality control as well as an in-situ laboratory to test the glazing system for air and water infiltration. Water testing demonstrated that construction methods and techniques would need to be as tight as the architecture itself to achieve system integrity.

Glazing Design

All of the exterior glazing was replaced during alterations made in 1975. The original 1/4 inches (6 mm) polished plate glass in all upper lights was replaced with 3/8 inches (9.5mm) clear float glass. The upper light exterior stops were replaced with a two-component extruded aluminum stop with a 3/4 inches (19 mm) leg for the added bite needed to support the thicker replacement glass. This redesigned stop resulted in a subtle outward shift of the glass. The original 1/4 inches (6 mm) sandblasted plate glass in the lower lights was replaced with translucent laminated glass.

From the day the building opened the sandblasted surface could be stained with simple fingerprints as well as such ubiquitous products as masking tape, spray paint and markers. While the laminated glass provided both safety and an interior surface that could be easily maintained, it also created two new problems.

Atelier Ten, a London based environmental engineer, discovered that the mylar interlayer absorbed 30% of solar energy compared to less than 5% with sandblasted glass. Having nearly a third of the façade of the building retain solar energy affected user comfort. While easy to maintain, the laminated glass added to the building's summer cooling load. The second problem was that the reflectivity of the laminated glass compromised the quality of light in the interior space. Instead of the soft, almost shoji screen quality of Mies van der Rohe's sandblasted glass, the laminated glass was reflective. The effect was even more dramatic at night when light levels dropped on the exterior and increased on the interior.

In 1975, the original lower light steel bar stops were re-used with the thicker replacement laminated glass. By 2003, glass



09 Mies van der Rohe, Crown Hall, Chicago, USA, 1950-1956. Restoration by Krueck + Sexton Architects. © William Zbaren, 2005.

breakage was primarily in the lower translucent lights. Although oxide jacking was the primary source of glass failure, the modified proportion of the glazing channel was another. Thicker glass combined with the original stops compromised the ability of the system to accommodate thermal movement. Expansion of the original steel stops due to corrosion also contributed to the glass breakage. The combination of stress from thermal expansion of the steel and corrosion expansion were the primary cause of glass breakage.

Upper Clear Glass

Due to more stringent wind load requirements, ½ inches (13 mm) float glass was used for the upper clear lights. Glass of a lesser dimension would require heat strengthening. This tempering process causes roller wave distortion, adversely affecting the visual flatness of the glass. Center-of-glass deflection also increases as the dimension of glass is reduced. Deflection of as much as 1.8 inches (46 mm) is possible with glass less than a ½ inches (13 mm) thick, requiring an increase in the dimension of the glazing stops to prevent pop-out of the glass units. Clear annealed and low iron glass were both considered for the upper lights, with the goal being to closely match the color of the original polished plate glass. The low iron option proved to be the closest match. Using low iron glass offered the chance to double the thickness of the upper glass panels without increasing the amount of iron or color. Because of the large size and color of the upper glass panels, low E coatings were not considered.

Lower Clear Glass

For the lower glass panels adjacent to the entry doors of the north and south elevations, ¼ inches (6 mm) clear tempered glass was used. Tempered glass met the safety

requirements for the lower units allowing the use of original thickness and type of glass.

Lower Translucent Glass

For the lower translucent glass, ¼ inches (6 mm) clear tempered glass that was sandblasted, as originally designed by Mies van der Rohe was selected, however, it was coated with a three-part epoxy clear sealer. The sealed sandblasted glass was selected after full-size mock-ups were compared for color, surface texture, translucency and interior reflectance to an adjacent untreated sandblasted panel. No one on the design team, the University committee or city and state preservation officers could detect a difference. When the University requested another mock-up to test the sealer, a sealed panel was divided into sections (figure 08) and a variety of materials from markers, spray paint, spray glue and masking tape were applied and aged for 3 months. With design team direction, University maintenance was able to remove all the markings without affecting the visual character of the sandblasted glass. The quality of the sandblasted glass was retained and completely maintainable.

Coating System

In 1998, Fujikawa Johnson, in collaboration with Krueck + Sexton Architects completed a report that revealed that the original iron oxide lead paint system had remained intact beneath several layers of finish coat material. Various members of the Architectural Committee recounted that subsequent recoating “always faded from dark black to charcoal gray after several years”. The report called for abatement of the original lead paint as a prerequisite for future renovations. During the early design stages, a forensic consultant was engaged to determine a color match for the original paint used by Mies van der Rohe: Pre-War Superi-

or Graphite #30 (natural black) manufactured by Detroit Graphite Company²⁷.

The coating system recommended by the design team was a high-performance system by manufactured by Tnemec Systems. For proper adhesion, prior to application of this product the existing steel frame and structure had to be sandblasted to a minimum surface preparation of SSP-SPC6 Commercial Blast Cleaning. Removing the red iron-oxide lead primer required an extensive environmental control program that included wrapping the building inside and out with a protective plastic layer for proper abatement and control of lead dissipation into the atmosphere.

The first coat of the Tnemec System applied was the Series 90-97 Primer. This coat was spray applied in the field within 4 hours after sandblasting to prevent flash rusting of the newly prepared steel surfaces. The 90-97 Primer is an organic zinc-rich primer that provides maximum protection against surface corrosion of the steel surfaces. The second coat, also field applied in this application, was the Series 66 Hi-Build Epoxyline intermediate coating. The final topcoat product was the Series 175 Endura-Shield Polyurethane Product.

The original steel glazing stops were primed, fastened to the support structure and top coated. The only protection against corrosion at the glazing stops was a thinly applied primer. In the process of renovation, all the steel stops were shop painted with the full three coat paint system and then set into a bed of silicone. The full coating of all the glazing stops provided a superior level of corrosion protection as compared to the original paint system.

The result of the new coating system was an impressive display of the building's clarity and simplicity (figure 09). By removing layers of deteriorated coatings and applying a high-performance coating, the pristine lines of the building's structure were restored to their original elegance.

Conclusion

The significance of this restoration extends far beyond the preservation of one of the world's most important modern buildings. It affirms the cultural legacy of mid-20th century modernism, which left a large and influential footprint on the landscape of North America and the world. Without the landmark status enjoyed by Crown Hall, many of these rapidly aging buildings are at risk. The vast majority of our mid-century buildings face an uncertain future. The strategies employed by Krueck + Sexton Architects and the restoration team at Crown Hall are applicable to buildings of similar vintage. This project demonstrates that structures of the modern era can be successfully restored without loss of historical, design or functional integrity.

Notes

- 1 McClier, *S.R. Crown Hall Historic Structure Report*, Chicago, McClier, 2000.
- 2 *Id.*
- 3 Fujikawa Johnson and Associates, Inc.; Krueck + Sexton; TT-CBM Engineers; Environmental Systems Design; Pacific Construction Services, *S.R. Crown Hall Restoration Study - 1997*, Chicago, Fujikawa Johnson and Associates, 1997.
- 4 McClier, *op. cit.*

- 5 *Id.*
- 6 *Ibid.*
- 7 Ginny Pearson, "Historical Significance of the Mies Campus at Illinois Institute of Technology (IIT)", Chicago, IIT Media Relations, 2003; McClier, *op. cit.*
- 8 Eric Thompson, "National Historic Landmark Nomination: S.R. Crown Hall", Washington, DC, National Park Service, 2001.
- 9 Catherine Wetzel, "An Integrated and Collaborative Approach: Integrating Technology in Beginning Design", Proc. of 2008 National Conference on Beginning Design Student, Atlanta, Georgia Institute of Technology, 2008.
- 10 *Id.*
- 11 McClier, *op. cit.*
- 12 Eric Thompson, *op. cit.*
- 13 McClier, *op. cit.*
- 14 Eric Thompson, *op. cit.*
- 15 Atelier Ten; Trans Solar, "Illinois Institute of Technology Crown Hall Renovation Environmental Study-Stage I Report", New York, Atelier Ten, 2003.
- 16 McClier, *op. cit.*
- 17 *Id.*
- 18 *Ibid.*
- 19 *Ibid.*
- 20 Eric Thompson, *op. cit.*
- 21 *Id.*
- 22 *Ibid.*
- 23 Eric Thompson, *op. cit.*
- 24 *Id.*
- 25 Richard Padovan, *Towards Universality: Le Corbusier, Mies, and De Stijl*, Routledge, London, 2002, 4.
- 26 McClier, *op. cit.*
- 27 *Id.*

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- Atelier Ten; Trans Solar, "Illinois Institute of Technology Crown Hall Renovation Environmental Study-Stage I Report", New York, Atelier Ten, 2003.
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Mark Sexton

Founding partner of Krueck + Sexton Architects. Along with Ronald Krueck, he designs and manages all of the firm's work. He is a member of the GSA Design Excellence Program National Registry of Peer Professionals, serves on the Board of Overseers for the IIT College of Architecture, the School of the Art Institute of Chicago Advisory Design Council and is currently on the faculty of Northwestern University teaching an architectural design studio in the School of Engineering. The firm has been recognized with numerous awards including AIA National and Chicago Honor Awards, Divine Detail and Interior Awards, Business Week/Architectural Record - Good Design is Good Business Award, Chicago Athenaeum Architecture Award, AIA COTE Top Ten Green Building, Landmarks Preservation Council of Illinois and Design Build Institute Project of the Year. In 1997, Montacelli Press published the firm's first monograph, *Krueck + Sexton Work in Progress*.



Mies van der Rohe, Carr Memorial Chapel, Chicago, Illinois, 1952. Restored chapel sanctuary with brick wall washed with western light. © Harboe Architects, 2012.

Restoring the “God Box”: Mies van der Rohe's Carr Chapel at IIT

BY GUNNY HARBOE

Perhaps no building designed by Mies van der Rohe better exemplifies his dictum, “less is more”, than Carr Chapel. Its rectangular prismatic form and unadorned architecture led to its being called “the God Box” by the students it served at the Illinois Institute of Technology (IIT). When a building is so simple and direct, every little detail needs to be understood and attended to with great care in its conservation treatment. Combined with a chronic lack of funding, a seemingly simple project can become quite challenging and take over a decade to complete.

As with many heritage conservation projects the restoration of Mies van der Rohe's Robert F. Carr Memorial Chapel of Saint Savior (Carr Chapel) was many years in the making. Funded by the Chicago Episcopal Diocese in honor of Robert Franklin Carr, Carr Chapel was intended to serve the broader student community at the Illinois Institute of Technology (IIT). Though the building was quite simple in its conception of design and the execution of its construction, its restoration was challenging. With something as simple and direct as Mies van der Rohe's architecture, any intervention is difficult. While there was nothing particularly extraordinary or innovative required from a technical point of view, the execution had to be completed with great skill and extra care. The project was made even more difficult by the lack of funding available. The rich legacy of buildings that remain on the campus of the IIT is a treasure greatly valued by the University, however money is always hard to come by, especially for major renovation projects such as what was needed for the restoration of Carr Chapel. To that end, the Mies van der Rohe Society was formed to raise funds specifically for the restoration and preservation of the many Mies van der Rohe buildings on campus. The first project was the exterior restoration of S. R. Crown Hall followed by the restoration and renovation of Wishnick Hall. Carr Chapel was identified as the third project needing the Mies Society's attention.

Originally completed in 1952, Carr Chapel had long suffered from deferred maintenance and by the year 2000 was in need of major repairs. Unfortunately, IIT had no money to fund a restoration project at that time. In order to gain a better understanding of the true condition of the building and to begin to plan for its eventual restoration IIT commissioned the author to prepare a condition assessment for the building in 2001. This included some preliminary research and a full condition assessment of the existing conditions as well as recommendations for its future conservation treatments. This document served as the basis for the eventual restoration but was supplemented with further research for the development of full construction documents a number of years later.

The restoration itself had to be conducted in several phases as funding became available. It began with the roof, exterior masonry, and steel and glass curtain walls. Several years passed before enough money was raised to begin on the interior. All in all, it took about 15 years from the time it was recognized that Carr Chapel needed conservation until the time it was completely restored.

The Original Design – “Less is More”

Carr Chapel was Mies van der Rohe's only built ecclesiastical building (figure 01). It is said he had always wanted to design a cathedral, but this modest chapel was his only opportunity to create a worship space. At the dedication ceremony, he said: *Too often we think about architecture in terms of the spectacular. There is nothing spectacular about this chapel; it was not meant to be spectacular. It was meant to be simple; and, in fact, it is simple. But in its simplicity it is not primitive, but noble, and in its smallness it is great, in fact, monumental. I would not have built the chapel differently if I had had a million dollars to do it.* Its simple design and rather small size led to Carr Chapel becoming affectionately known by the students of IIT as “the God Box”.

Having sufficient funding to carry out any project was an underlying condition at IIT even at the time Carr Chapel was originally built. Although Mies van der Rohe claims he wouldn't have done it any differently even if money had not been limited may have been a rationalization after the fact. Mies van der Rohe's original design for the chapel had been a bit grander than what was eventually built. It appears he began on the design in 1949 and there was to be both a chapel and a parish house. The original chapel scheme was a bit larger, 72 x 52 foot (22 m x 16 m), and had exposed interior steel columns enclosed by solid walls of brick with openings of glass at either end². The ceiling was to be plaster hung from the steel framing and there was to be a small mezzanine over the entrance. It is not known why this scheme was not the one built, but it is assumed the lack of funding played an important role. In any event, it was a much more modest scheme

that was constructed. The chapel was reduced to 60 x 37 x 19 foot (18 m x 11 m x 6 m) and the mezzanine, plaster ceiling and entire parish house were eliminated.

Structurally the building was also simplified resulting in exposed precast roof planks supported on a grid of steel girders and secondary beams painted with black Detroit graphite paint. The steel grid rests directly on solid masonry bearing walls three withes³ thick in an English bond pattern. The brick is the same yellow iron spot brick Mies van der Rohe had used on all the other buildings at IIT, but in this case it was used as a true bearing wall, not as infill as he had done on the other buildings. The floor is a simple concrete slab on grade with embedded radiant heat and a black terrazzo topping. It steps up 5 inches (13 cm) to the altar and the rooms beyond. As with many of Mies van der Rohe's IIT projects, symmetry plays an important role at Carr Chapel. It was designed to be perfectly symmetrical along the east/west axis. The resulting architectural volume reads as a simple, single open space with a solid block of travertine serving as the altar. Its directness and simplicity makes it feel both primitive and refined at the same time: a clear manifestation of the Miesian adage "less is more".

There was minimal woodwork that consisted of simple oak veneered plywood panels and similar oak veneered slab doors. A simple oak bench was cantilevered off of the masonry wall on either side of the altar. It was a simple and practical element but was beautiful in what it did to the wall. Mies van der Rohe had also designed additional woodwork for the sanctuary that included screen walls that were to be located immediately when you entered the space and a series of wooden pews for seating. These features were both eliminated during the original construction phase.

The window walls were also designed to be quite simple. They were made from a light steel frame painted black, with a single pair of aluminum doors in the center. The glass of the entry wall was clear polished plate glass and that of the rear was all sandblasted glass, presumably to provide a more diffuse and even illumination from the western exposure. There was no clear line of sight of the west window wall from inside the sanctuary. Rather, the light would pour in and bathe the plain yellow brick walls with a glow of light. At night, a similar effect would be created by illuminating the walls with a wash of light from a series of spotlights concealed up above the lower flanges of the ceiling girders.

There was a late change to the fenestration of both the east and west elevation that must have occurred during construction as the windows shown on the construction drawings were not what was actually built. There were to be two sets of hopper windows on the west elevation; one set at the floor level and one set that ran above the doors which would have been just above the ceiling of the sacristy. Their locations were changed so that one set was located just below the sacristy ceiling and the other all the way at the top of the wall. The upper sashes were operated via a hand crank that opened all the windows in unison and still functions that way today. The front façade was originally designed with no operable windows but was built with a row of operable sash just above the level of the doors. It is not known why this change

was made, but it was certainly a better technical solution for allowing good cross ventilation in the warmer weather.

The wall behind the altar was made of simple unpainted concrete masonry units (CMU) and was covered with a full height curtain of natural shantung silk. Evidently, there was some discussion about what color the silk curtains should be and Mies van der Rohe asked Gene Summers (the project architect and one of Mies van der Rohe's most important employees) to make a number of watercolor studies using different colors. He also ordered physical samples of four different colors, light brown, light green, purple madder and natural. They met with the Bishop in the chapel space to discuss it. As Gene Summers relates, "The Bishop favored the purple and Mies the natural color. The reasoning of Mies was as elegant as the silk. 'The people must be the color, the building and its parts must only provide a subtle background for the services and those words of the service'"⁴. This again reinforced Mies van der Rohe's belief that "less is more".

The area to the west of the curtain covered wall was dedicated to two small spaces intended to function as a sacristy and a choir room each with its own set of storage closets. There were also two small toilet rooms and a janitor's closet. Ceiling heights in all these spaces were very low at 7 foot-4 inches (2.22 m) with a loft space above. Originally this loft space was left open and unfinished but at some point, in the 1960s, it was filled almost entirely with a large box like construction to house the pipes of the organ. This giant box extended almost all the way to the steel and glass curtain wall which blocked nearly all the sunlight coming in from the west. This greatly diminished the original beautiful effect of light washing on the brick side walls.

The Restoration

The restoration project began in earnest in the summer of 2008. The roof had long been the cause of many leaks. This was largely due to the fact that there was an extremely low roof slope and only a single roof drain located in the center of the roof just west of the wall that separates the sanctuary from the back of house spaces. There was also no access to the roof from inside the building, which meant that to get up there to conduct routine maintenance such seasonal cleaning of the roof drain or inspecting the roof for potential leaks was seldom, if ever, done. As a result, leaves from the adjacent trees would block up the drain and water would pool on the roof. Left to sit there for too long, the water would eventually find its way into the building. This resulted in long term problems in some locations such as staining and deterioration the precast concrete planks. There was even the buildup of calcium deposits on the terrazzo floor created from the slow but steady drip, drip, drip of the water.

Additional water infiltration occurred at the perimeter of the roof where there was virtually no flashing detail at the roof's edge. The roofing material simply terminated at the top flange of a large steel "C" channel that was welded together to create a continuous steel ring at the top of the masonry walls. Not only did water infiltrate along the inside edge of the top flange, but it also penetrated at the caulk joint between the steel channel and the top of the masonry

01 Mies van der Rohe, Carr Memorial Chapel, Chicago, Illinois, 1952. Historic view of east façade. © Hedrich Blessing, 1952.



wall (figure 03). This resulted in water infiltrating into the solid masonry wall from the top down and the blooming of efflorescence on the inside walls, particularly in the corners. Although this detail was simple in concept and aesthetically elegant, thus holding true to Mies van der Rohe's design philosophy of "less is more", in this case, "less" was not enough.

At some point previously, there had been an attempt to address the lack of flashing by the addition of a simple aluminum sheet flashing that lapped over the roof edge and came down over the face of the steel channel about five inches (13 cm). This was a cheap and inelegant solution that also resulted in some surface deterioration of the steel channel likely due to galvanic reaction of the aluminum with the steel. To restore the original design intent of a simple clean line of the "C" channel and to try and provide some additional slope to the roof, a steel angle was added to the top of the flange of the channel. While this did add an extra line to the top of the roof, it is set back as far as possible and is only visible when some distance back from the building. The original clean line of the top of the "C" channel has thus been restored, and several additional inches of insulation were added that not only provides a higher R value to the roof, but gives more slope away from the roof edge and reduces the risk of standing water on the roof (figure 04). A new PVC roofing membrane was then installed which has been performing well.

There was additional efflorescence present in other areas of the interior surfaces of the walls that could not be explained by water penetrating at the top perimeter of the walls. It appeared that water was somehow coming in directly through the wall. Testing of the original mortar showed that it was extremely hard with a large amount of Portland cement. A simple RILEM water test revealed that the wall was highly porous at the mortar joints with many routes for water to get in. It is believed this may have been a result of the manner in which the masonry was laid up originally with a cold joint having been created where the original masons would stop and restart the work each day.

Other masonry problems consisted of numerous cracked or broken bricks. There were a couple of particular problem areas at the upper corners of the east façade. It was evidently a long-standing problem as the bricks in this area had been replaced at least once before. The newer brick was a poor

02 Mies van der Rohe, Carr Memorial Chapel, Chicago, Illinois, 1952. Looking west at the restored chapel. © Harboe Architects, 2011.



match and the repairs clearly stood out. There was also a very peculiar vertical crack in the south wall at roughly the two-thirds point. The crack was present on both the outside and the inside of the wall. The crack ran quite vertically and had broken right through many of the bricks of the English bond pattern. The exterior crack had been ground out and repointed at least once before which had resulted in a rather ugly vertical line that disrupted the otherwise monolithic pattern of the wall. Several bricks were extracted to try and determine the underlying cause of the cracking. It was discovered that there was a large 4 inches (10 cm) diameter galvanized steel pipe buried in the wall. It is not known why this pipe was in that location in the wall as it did not appear to serve any function. It was in fact empty. Therefore, the pipe was removed and the wall repaired. The entire building was repointed with a softer mortar in an attempt to remedy the general water penetration through the cracks in the original hard mortar.

Finding a good match for the brick proved to be very difficult. Although all the buildings at IIT were originally built with a very similar yellow iron spot brick, each building is a little different. This has proven true even when the brick was made by the same manufacturer but the buildings were constructed a number of years apart. Fortunately, there had been some work done on one of the Mies van der Rohe student apartment buildings nearby that had required the replacement of the brick infill under the windows. That brick had been removed and totally replaced with new brick. Some of the original brick had been salvaged, and proved to be almost an exact match to the brick of Carr Chapel. It was certainly closer than anything else that could be found on campus or that was offered by current brick manufacturers. Luckily, although there was a very limited quantity available, it proved to be just enough for the replacement brick needed for the job.

The last major component of the exterior restoration dealt with the steel and glass curtain walls at the east and west elevations. They are identical in size of the overall openings, but are different in their articulation and glazing materials. The front (east) elevation used clear ¼ inch (6 mm) polished plate glass and the rear (west) elevation used ¼ inch (6 mm) polished plate glass that was sandblasted to provide diffuse

light. Both glazed elevations are divided into thirds, with the central bay containing a pair of aluminum doors.

On the east facing entry façade there are also three large gray granite slabs that form the entry plinth. This is the same detail Mies van der Rohe had used some years earlier at the entries to Alumni Hall. The granite was installed about 6 inches (15 cm) above the sidewalk and butted directly against the bottom of the curtain wall. Years of using de-icing salts at the entrance had taken a toll, and the steel along the bottom of the curtain wall was severely deteriorated. The drawing detail of this location showed that the steel framing went even further down and was embedded in the concrete slab. In order to get access to the steel elements, the three large granite slabs had to be removed fully exposing the extent of the deterioration. Although replacement is always a conservation treatment of last resort, it was clear that the existing steel at that location was beyond repair and had to be replaced.

Fortunately although all the other steel of the curtain wall did exhibit some corrosion, it was fully restorable. Steel is amazingly repairable and while something might look beyond repair, it can often be simply cleaned up and prepared for painting provided the section loss of the member is not too great.

In order to satisfy the modern building codes, the original ¼ inch (6 mm) polished plate glass had to be replaced with 3/8 inch (9 mm) tempered glass in the lower lights and heat strengthened glass in the operable sash and large upper lights. Although there is always concern about the distortion tempered glass can present, the appearance of the glass provided is quite good. The original operable steel sashes were removed, restored and reinstalled. All original hardware was retained, restored and reused. An attempt was made to restore the original aluminum doors, but the long term corrosion had caused deterioration to the operational aspects of the door. The cost for full restoration was deemed to be too much and the doors were replaced with new ones that closely matched the originals.

The large granite pavers that were removed to gain access to the bottom of the curtain wall were reinstalled in their original location. The 6 inches step up was deemed to be an unacceptable barrier to people with disabilities. Therefore, the sidewalk leading to the chapel was gently sloped up to the level of the granite. Although the visual effect of having a slight plinth in front of the building was lost, it was felt to be a less invasive intervention than introducing a new ramp parallel to the sidewalk which would have been more intrusive.

Interior Restoration

As previously mentioned, funding for this project was difficult and after the exterior was restored there was a hiatus of two years while additional fundraising was pursued. The goal was to bring the interior back to its original condition and update the bathroom to make it accessible for someone in a wheelchair. While basically fully intact, the interior had also suffered from years of poor maintenance and all surfaces were dirty and in some cases deteriorated. In particular, the lower part of the oak veneered plywood

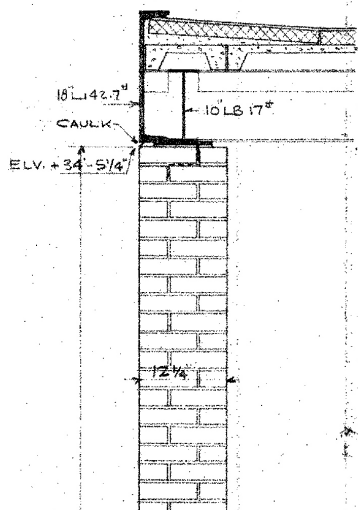
paneling that flanked either side of the altar and the doors in the choir room and sacristy areas had been abused by repeated poor cleaning methods that had ruined the bottom of the panels. Additionally all the woodwork located just inside at the west curtain wall had suffered greatly from UV degradation.

The approach to conserving all the woodwork was to retain as much original historic material as possible. All the wood paneling along the flanking walls to either side of the altar was carefully removed and taken off site to a furniture conservation studio. The remaining solid oak framing members that were left in situ were cleaned and refinished in place. The oak veneer plywood had suffered significant damage along the bottom edges due to poor cleaning techniques. In many cases there were losses of veneer (figure 05). For these areas carefully selected new veneer was spliced in with patch called a “Dutchmen”⁵. In the case of the doors at the rear vestibule, the UV degradation was so severe that they were deemed to be beyond restoring at an affordable cost and they had to be replaced. All the solid oak sticking that made up the door frames were also removed, restored in the shop and reinstalled, as were the two cantilevered oak benches.

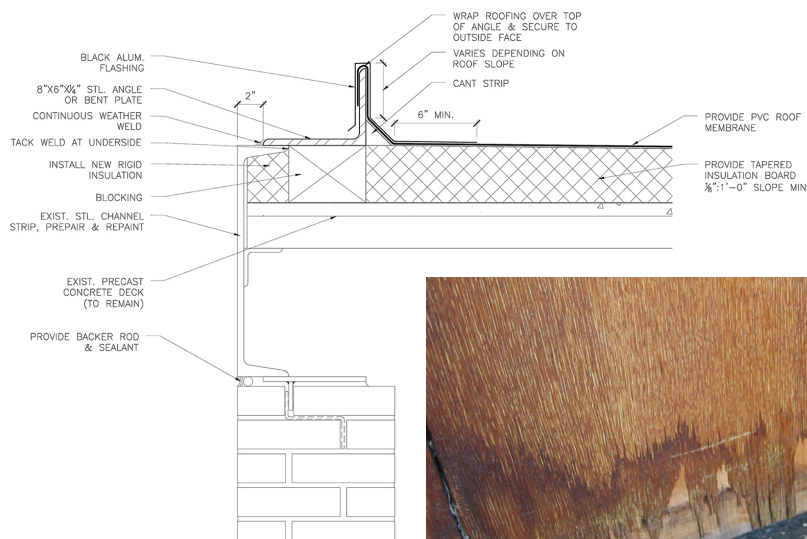
All of the brick masonry walls and concrete roof planks that make up the ceiling were chemically cleaned using mild detergent cleaners. Several of the ceiling panels had been exposed to long term water infiltration and had suffered spalling or cracking due to corrosion of the embedded steel reinforcing. These areas were repaired using a cementitious patching material that was then then inpainted using a compatible masonry coating tinted to match the surrounding concrete.

As mentioned previously, sometime in the 1960s there had been a large box like enclosure created in the loft over the sacristy area to accommodate the pipes for the organ. This was not part of Mies van der Rohe’s original design and, in fact, detracted greatly from the lighting effect of the western light washing the yellow brick walls. With advances in technology related to musical instruments and amplification, the pipe organ was no longer needed and had been out of use for some time. As part of phase 2 of the restoration, the pipe organ enclosure was removed allowing the light to once again cascade along walls (essay cover).

Lighting of the walls at night was also an important aspect of the original design (figure 01) The original concept was actually very simple. There were a series of standard inexpensive spot light fixtures mounted in the recess of the beams of the ceiling that would wash the brick walls with light. For the restoration there was a request by the users of the chapel to have more lighting for the people sitting in the space, so several new fixtures were added to each side that allowed for a more even distribution of light throughout the space while still being able to wash the walls. Although it was not possible to get the same original fixtures, a close match was found. There was also a requirement to install emergency lighting which was also located in the recess of the beams so it would not be visible under normal conditions.



03 Mies van der Rohe, Carr Memorial Chapel, Chicago, Illinois, 1952. Historic detail drawing of roof edge.
© Illinois Institute of Technology Archives, 1951.



04 Mies van der Rohe, Carr Memorial Chapel, Chicago, Illinois, 1952. Detail drawing of redesigned roof edge.
© Harboe Architects, 2008.



05 Mies van der Rohe, Carr Memorial Chapel, Chicago, Illinois, 1952. Damage at the bottom of wood veneer panel due to improper cleaning methods and UV degradation.
© Harboe Architects, 2011.

After the completion of phase 2 there was another hiatus in the project while funds were raised to complete the work. The focus for the last phase of the project was to restore the choir and sacristy areas and to create an accessible toilet room.

Phase 3

During the third and final phase of the restoration, an accessible toilet room was created out of the space originally allocated to two small toilet rooms. Many years previously, the toilet was removed from the room to the south when it was converted to a mechanical space associated with the blower for the pipe organ in the loft above. The other toilet had been out of service for many years. To accommodate the larger space needed for access by a person in a wheelchair the CMU partition between the two small toilet rooms was removed thus creating one larger toilet room. This also required the removal of some additional original CMU wall in order to accommodate a larger door wide enough for a wheel chair in a location that had previously been a solid wall.

In the rear vestibule area, the original doors to the two toilet rooms were extremely narrow. At only 21 inches (54 cm) wide, they were not really usable in a practical sense. They were also highly deteriorated due to UV exposure. However it was felt that the door arrangement in the vestibule space was an important design element. Therefore, two new replacement doors were reinstalled in the original frames and fixed in place. This allowed the retention of the design integrity of the rear vestibule space with a more functional accessible toilet room.

A new black terrazzo floor was installed in the toilet room. Although it is a close match to the adjacent original terrazzo of the sacristy, upon close examination it is possible to differentiate old from new.

In order to accommodate much needed additional storage space in the chapel, the two original closets were enlarged by simply moving the closet doors out 2 feet (0.6 m). This resulted in the doubling of the amount of storage space available with virtually no visual impact on the space.

Conclusion

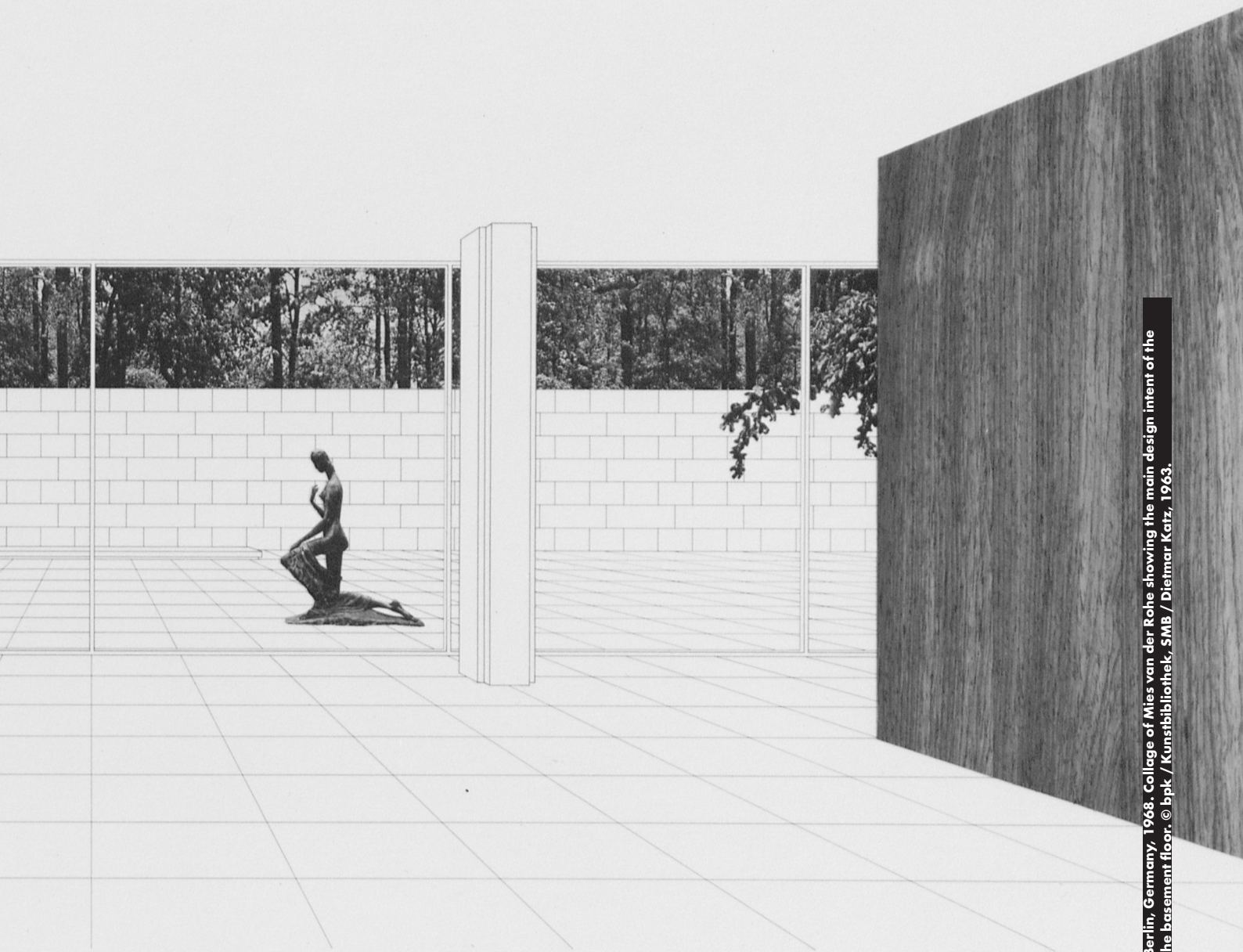
The restoration of Carr Chapel was truly a labor of love for all involved (figure 02). Because it was completed over several phases, it included many different contractors and subcontractors who were all called upon to provide a high level of skilled work at very competitive costs. Although it took over a decade to complete, the results are stunning and the chapel has never been busier with many different student religious groups as well as dancing and music recitals. It is through this continued use that its greatest value has been returned; guaranteeing that the God Box will continue to be enjoyed by IIT students for generations to come.

Notes

- 1 Fritz Neumeyer, *The Artless Word: Mies van der Rohe on the Building Art*, Cambridge, The MIT Press, 1991, 328.
- 2 Original Mies van der Rohe drawings located in the Illinois Institute of Technology Archives.
- 3 "Withe" is a uniquely American term for a skin, leaf or layer of a masonry wall (e.g. a cavity brick wall has 2 withes).
- 4 Werner Blaser, *Gene Summers Art/Architecture*, Basel, Birkhäuser, 2003, 18.
- 5 This is a common term used in the USA for a wood or stone patch repair where the same material is spliced in.

Gunny Harboe

FAIA, Fellow US/ICOMOS, President of Harboe Architects. He received his M. Arch. from MIT, (including study in Copenhagen, Denmark), a MSc in Historic Preservation from Columbia University and an AB in History from Brown University. He also completed the ARC98 course at ICCROM. He has been working in the renovation of works by Mies van der Rohe, Frank Lloyd Wright and Louis Sullivan. He was a founding member of **docomomo** US, and a founding member and current vice president of the ICOMOS ISC20C. He is also an Adjunct Professor at IIT.



Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Collage of Mies van der Rohe showing the main design intent of the floor covering for the exhibition room in the basement floor. © bpk / Kunstbibliothek, SMB / Dietmar Katz, 1963.

The *Neue Nationalgalerie*: the Refurbishment of a Modern Monument

BY MARTIJN JASPERS

After 46 years of continuous use, Mies van der Rohe's *Neue Nationalgalerie* in Berlin closed its doors to start works on its refurbishment. Being a masterpiece of the second half of the 20th century, conventional standards in terms of dealing with high-level heritage must be adhered to. The quality of this refurbishment can be found in the project's holistic approach. Not only by taking into account the visual integrity but also by paying attention to its physical substance, time-bound and classical elements, the added value of the project is created.

In times of a divided city and country, the appointment of Mies van der Rohe for the design of a “gallery of the 20th century” reflected the desire for a cultural rebirth in West Berlin. Following the ground-breaking ceremony in 1965, the *Neue Nationalgalerie* opened on the 15th September 1968 and provided a house for the outstanding collection of both 19th and 20th century art. The gallery, widely hailed as a major work in the oeuvre of Mies van der Rohe and as an icon of late modernism, was the last development in the typological series of large column-free universal spaces. With this museum, Mies van der Rohe finalized the second and final museum of his career, moreover his only German post-war building, thus returning to the roots of his architectural practice.

After 46 years of continuous use, the building closed its doors on the 31st of December 2014. Paintings were stored, sculptures left the sculpture garden and furniture was packed, announcing the end of the gallery's first lifecycle.

Approaching the Project

Due to its continuous use as well as the users' respect for the building, no significant structural changes were made up until its point of closure. Preventative measures and maintenance did not result in overly designed interventions, but merely served the building to keep it functioning. The necessity for its refurbishment lies in the subtle damage, the outdated building services and fire safety issues.

Being one of the first high-tech museums in Germany at its time of construction, the *Neue Nationalgalerie* was provided with an in-depth designed technical infrastructure, following the needs of that time. Now, 50 years later, the demands for the technical performance of the museum hadn't changed much, but rather the technical requirements for its use.

Therefore, at the center of our planning, stands the moderation of the conflict between the requirements for the use of the building and those of the physical monument. The

conflict was therefore not between monument values and external requirements or expectations, but in the internal conflict between different monument values.

The conviction that a careful anamnesis and diagnosis sets the basis for every therapy, made us strive for a detailed and extensive basic evaluation, running parallel to the concept and the design development phases. Aspects of building history, historic preservation and conservation, restoration, visual integrity and materiality were all taken into account.

Clarification of Tasks

A clear and coherent impression of the planning and construction history of the *Neue Nationalgalerie* was obtained by going through the office archives of Mies van der Rohe at the Museum of Modern Art in New York and the private archives at the Library of Congress in Washington. Having scanned, saved in high resolution and gathered in a database the relevant drawings for the refurbishment, they were ready to be used during the planning process. In addition to the American archives, the viewing of archives in Berlin² revealed not only unique planning documentation, including floor plans, sections and details, but primarily unpublished photos and slides revealing insights into the construction stages of the building.

Visiting the American works of Mies van der Rohe provided an opportunity to get a sense of the way his buildings have been dealt with in USA. The Dominion Center in Toronto, visits to Chicago and Houston and the Seagram building in New York revealed, despite the different building types, consistent tendencies: repetitive damage such as imperfect waterproofing on the terraces and roofs and corrosion and leakage of the curtain wall façades. The treatment of these building-physical and energy-related deficits is in general limited to a structural maintenance and repairs without trying to upgrade the building and in that way accepting its limitations. The American interest in the conservation of the Mies van der Rohe monuments

focuses on the visual integrity of the outer appearance and the appearance of the lobby, while all other rooms and large parts of the original building substance are treated in a more pragmatic way. As an example, all travertine flooring was completely renewed on the plaza of the 860-880 Lake Shore Drive Apartments.

Mies van der Rohe's buildings in the USA are being regarded as an outstanding contribution to the national heritage. They enjoy a great and broad appreciation.

Concept and Design Development

Only a limited set of preliminary requirements formed the basis for the preliminary planning of the refurbishment. Therefore, a thorough examination of the current situation of the building was executed.

In the recording of the status quo of the building, a full sense of the misused areas and the areas where multiple uses occurred was obtained (figures 01-02). The under-dimensioned visitor services such as the cloakroom, ticket counter and museum shop; the lack of space for the preparation of exhibitions, the shortcomings in the transport routes for the art and the too restricted back-of-house areas, such as the workshop and storage areas.

The restructuring of the use starts with the re-establishment of Mies van der Rohe's original layout for the public areas of the basement floor. By removing the interim cloakroom from the northern museum corridor and the book/museum shop from the foyer, Mies van der Rohe's ideal plan is reinstated. New positions for both functions were found in the existing sculpture and painting storage areas. This conversion of the storage areas and the need for additional technical back-of-house spaces led to the insertion of a new underground construction underneath the front podium of the building (figure 03).

Extending the building was initially not part of the original planning assignment, but developed as a result of the clarification of tasks in combination with the documentation of the status quo.

This intervention is justified by the invisibility of this extension from the external and internal public areas. Furthermore, the heritage value stemming from the autonomy and pure existence of all functional areas of the museum within the outline of the building itself is not diminished by removing the storage areas outside of the built area (figure 09). Any further structural alterations or interventions were abstained from to the greatest extent possible.

Age-value

As the result of the shortage of materials, construction technologies being in rapid development as well as the zeal for optimization and minimization, the refurbishment of the modern monument faces many challenges. Besides rapid aging, susceptibility to damage and the lack of a robust construction, a classic patina, traces of use and wear, repairs, additions and structural alterations add to the complexity of the refurbishment of Mies van der Rohe's *Neue Nationalgalerie*.

The mission statement for its refurbishment is the principal acceptance of aging, traces of use and old repairs, as

long as the overall visual appearance is not significantly affected and the usability is not limited. Together with ProDenkmal as restoration specialist planners, a strategy to deal with aging was developed. All solutions can be found within the field of repairs.

Significance of the Physical Substance

Being a masterpiece of the second half of the 20th century, conventional standards in terms of dealing with high-level heritage must be adhered to, regardless of the relative youth of the building and the seemingly light reproducibility of its components.

In the original *Thesenpapier zur Denkmalpflege*³, the goal was set to keep as much as possible of the original substance, referring to the monument as a whole. Drawing up this thesis paper at the start of the planning, it did become clear during the planning process that it is only possible to fulfill this precondition with certain limitations. Despite the respect towards the original substance, the demands set for the continuation of the use of the building as a museum result in loss of material. The measures that need to be taken are more specifically: the spatial change of the back-of-house area, structural fire protection measures, the repair of concrete, the protection against corrosion, the full replacement of the insulation and waterproofing as well as the full renewal of the transient building services of which only the visible components such as the light fittings, ventilation grilles et cetera can be kept (figure 08).

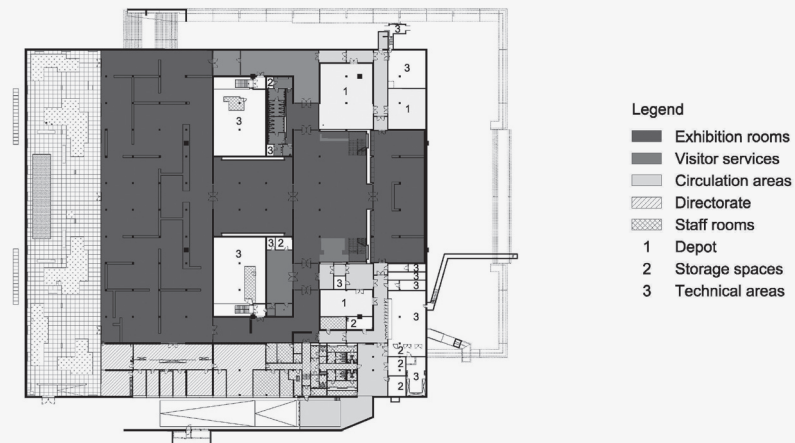
The complexity of these measures is not to be found in the measure itself, but in the domino effect the measures cause for the refurbishment. As an example, situations such as the renewal of the malfunctioning floor heating in the upper hall result in the dismantling of the granite flooring and the demolition of the screed.

This depth of intervention makes it inevitable that almost the full interior of the *Neue Nationalgalerie* is dismantled, resulting in the possibility to repair the hidden building parts and renew the hidden technical infrastructure. The inability to deal with certain repairs and modifications on site results in the dismantling and storage of over 30,000 elements and construction parts. These have been provided with identification labels, recorded in a database and marked on repositioning plans (figure 07).

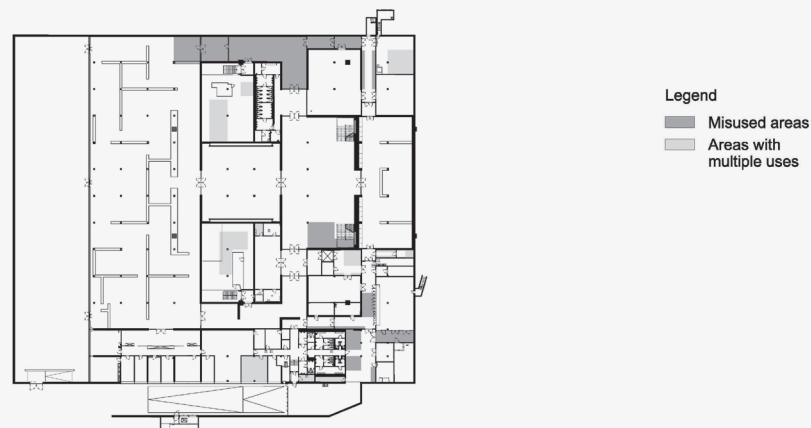
Acceptance of the Time-bound Elements

The *Neue Nationalgalerie* appears timelessly modern, due to its classical basic motif of the temple hall placed on a podium, the high degree of abstraction of the visual appearance of the building, its modular design principles and the use of granite, marble, steel, bronze and precious woods. Immediately time-bound, on the other hand, are the modular ceiling, the downlights in the exhibition rooms, the wall-to-wall carpeting and the ingrain wallpaper in the exhibition rooms of the basement floor, the use of curtains and the floor-flex tiles in the back-of-house areas.

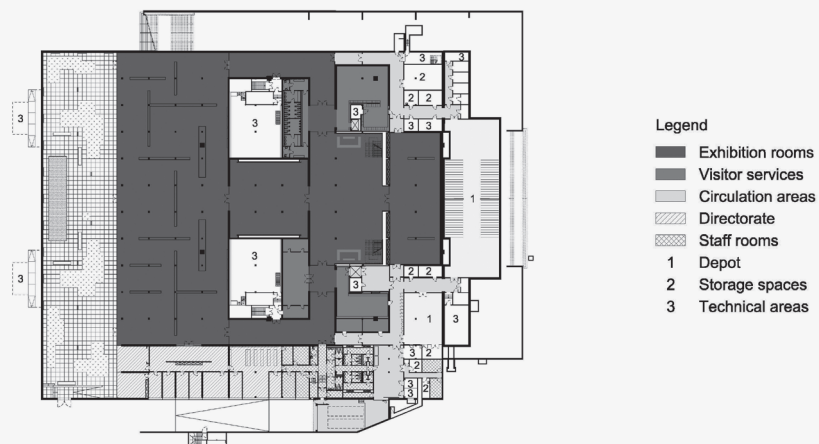
Although both characteristics should be preserved equally in terms of the authenticity of the monument, the time-bound aspects were brought into question during the



01 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Basement floor with the status quo of the building, status 2014.
© David Chipperfield Architects for the *Bundesamt für Bauwesen und Raumordnung*.



02 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Basement floor with the identified misused areas and the areas with multiple uses, status 2014.
© David Chipperfield Architects for the *Bundesamt für Bauwesen und Raumordnung*.



03 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Refurbishment by David Chipperfield Architects, 2017. Basement floor after the restructuring of the use, planning status 2014. © David Chipperfield Architects for the *Bundesamt für Bauwesen und Raumordnung*.

planning process. These situate the gallery in its time of construction and give the 1960s in that way a strong presence.

Curtain upper Hall

Part of Mies van der Rohe's planning for the upper hall was a semi-transparent curtain. It was arranged on three sides of the glazed hall, could be freely opened and closed with the help of an electric motor and could be parked as packages in fixed positions. Hard, functional reasons formed the basis for the necessity of this curtain: in particular, the requirement of a glare and sun protection layer, the reduction of UV radiation, the formation of an air buffer for the curtain wall façades and the reflection of the artificial light to guarantee the spatial luminance of the hall at night. Mies van der Rohe complemented these requirements with aesthetic intentions: the curtain should "enrich the architectural appearance of the great hall in an agreeable way"⁴.

The original curtain from 1968 was materially renewed in the 1990s, and finally removed without replacement in 2002. This measure was widely hailed as a liberation for the building. The hall became a permanently transparent display case in the urban space.

The refurbishment requirements for the upper hall in terms of building physics and lighting comply with those at the time of construction. Because of the connotations of coziness, homeliness and the limitations associated with the curtain during special exhibitions, the user argued against it. Besides being part of the construction of the 1960s, the curtain determined to a great extent the appearance and impact of the hall. As a soft element, it formed a direct counterpart for the modularity of the building and its hard building materials such as steel, glass and natural stone.

The compromise achieved is to reconstruct the curtain by means of the samples from the manufacturer, while also providing the possibility of removing the curtain temporarily and storing it in the building. In addition, there is a second system on which, with little effort, exhibition-related hangings for darkening the space can be hung.

Carpet

The early collages of Mies van der Rohe and the plans in the presentation folder of 1963⁵ already show the main design intent for the flooring of the exhibition rooms: a fluid transition between inside and outside, the exhibition rooms and the sculpture garden. The documents show the flooring as a hard covering, structured by a grid. A covering that stands in contrast with the smooth ceiling (figure 06). Following this design intent, a terrazzo floor was provided in the preliminary design phase, but was never realized as such. As decided during a planning meeting in 1965 in Chicago, a neutral, light grey carpet in *Woll-bouclé*, in contrast with a modular ceiling was used for the exhibition rooms in the basement floor, with the exception of the main stair hall and the *Graphischen Kabinett*. By adapting the color and pattern of the carpet to the chromaticity and structure of the granite flooring, the impression of a fluid transition between inside and outside had to be created. Although this decision was implemented, no original substance is present today in

situ since the original carpet was renewed several times in the past decades.

During the refurbishment planning meetings, the user put multiple arguments forward against the use of carpet as floor covering for the exhibition rooms: functional reasons, such as maintenance requirements and durability, but also curatorial issues, such as the difficulty of presenting contemporary sculptures, which are designed without base and thus need to stand on hard surfaces, the cozy and unmuseum-like character that is associated with carpet and the time-dependency of the material which projects all exhibited art back to the 1960s.

All these arguments cannot be neglected. On the other hand, it is equally undeniable that the carpet is an important time-bound element whose visual, auditory and tactile quality characterizes, in a crucial way, the exhibition rooms and therefore belongs unquestionably to the fundamental nature of the *Neue Nationalgalerie*. The final decision of reintroducing the carpet in the exhibition rooms became the only topic in this project which did not fall in full agreement of all concerned.

When aesthetically adapting the rooms for the presentation of modern and contemporary art to current viewing habits and visual expectations, all interventions will be recognizable as being time-bound. The interventions in the major refurbishment projects of the past decades, which appeared fresh and contemporary at their opening, are now outdated themselves and prove to be poorly sustainable in terms of aesthetics after 10 or 20 years of use. Therefore, the acceptance of the *Neue Nationalgalerie's* aesthetic roots in the 1960s as a specific quality and to preserve them as such is a logical consequence.

Treatment of the Original Defects and Deficiencies

From the beginning, the curtain wall façade of the *Neue Nationalgalerie* had to deal with two main issues: the breakage of glass and condensation, both resulting in a significant visual impact for the building. The façade designed by Mies van der Rohe consists of large-sized single glass sheets and a post and beam construction made of sharp-edged, thermally non-separated solid profiles. Despite the fact that this system of construction did not correspond with to the state of art at the time, Mies van der Rohe wanted this solution from an aesthetic motive. His buildings in the USA, built in the same period, were already provided with insulating glass panes and insulated profiles.

The heavy condensation problems were caused by the climate control of the upper exhibition hall. As a result, small gutters for the collection of the condensation water were installed in front of the windows in 1969. All other measures taken, such as the impregnation of the curtains, tried to find solutions for the problems but never eliminated the sources of the problems themselves. The same applies for the approach to the problem of glass breakage. Since 1970, broken sheets were repeatedly replaced.

As a consequence of the glass industry's abandonment of the production of these approx. 360 cm wide upper panes, all sheets embedded after 1972 consisted of two single sheets

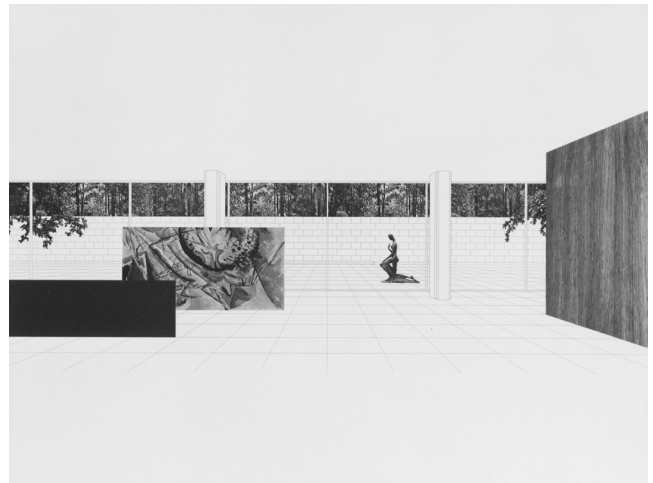
04 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. © Ute Zscharnt for David Chipperfield Architects, 2012.



05 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. © Ute Zscharnt for David Chipperfield Architects, 2012.



06 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Collage of Mies van der Rohe showing the main design intent of the floor covering for the exhibition room in the basement floor. © bpk / Kunstbibliothek, SMB / Dietmar Katz, 1963.



07 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Refurbishment by David Chipperfield Architects, 2017. The original cloakrooms in the upper hall are fully dismantled. The repair of the wooden paneling will be executed in a workshop environment. © Ute Zscharnt for David Chipperfield Architects, 2016.



08 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Refurbishment by David Chipperfield Architects, 2017. A new central ventilation and air-conditioning plant will be installed in the former heating plant room. © Ute Zscharnt for David Chipperfield Architects, 2013.

that were connected through a silicone joint in the middle. These new panes stand in contrast with the few existing original sheets due to their difference in color shade and their middle joint. The effect changes the appearance of the upper hall by diverging from the intended composition of the undivided upper panel and the divided lower part of the façade.

A first analysis of the causes revealed a complex web of contributing factors, comprising the static undersized upper sheets, the corrosion in the area of the glazing beads and considerable deformation caused by thermal expansions and wind loads. The movement of the façade construction is obstructed in the area of its upper fixture through the specific execution of its brace construction. The horizontal movement was discussed to a large extent during the planning process, but ultimately ignored in the final detailing of the façade.

Several months of measurements with the aid of a 3D scanner and a local weather station provided an objective image of the actual considerable deformations related to outside temperature and wind. The results of this measurement were transferred into a deformation diagram, illustrating the fixed point, the directions of movement and the longitudinal extensions (figure 10).

The package of measures for the façade consists of several components: 3 new vertical expansion posts are introduced on each side of the façade, a structural bonding of the glass sheets created by the shear-resistant design of the corner areas and a segmentation of the brace construction to ensure a restraint-free vertical expansion of the façade (figure 11).

However, these structural improvements of the façade do not include any thermal improvements. In the concept design phase, detailed studies were made on the consequences of a thermal upgrade of the façade and what effect this upgrade would have on the appearance of the façade itself.

In a first version, the original glazing is replaced by appropriately dimensioned laminated safety glass, consisting of two annealed mono-panes, joined using a film. Window posts, profiles and window beading are preserved. The façade construction is not thermally insulated.

The second variation shows a preservation of the façade posts and the corner posts. The original glazing is replaced by double-glazing. In this version, the window profiles and window beading cannot be preserved in the original geometry.

A third option foresees a fully thermally insulated façade. This would obviously lead to the loss of the complete original geometry of the façade construction (figure 12).

It is easy to understand that the last two options would not only lead to a very significant or complete loss of original substance, but that they would also dramatically change the appearance of the building. Furthermore, financially, the careful repair with only the absolutely necessary modifications is superior to the alternatives.

As a result of the discussions among all parties involved in the project, a clear decision was made to pursue the first alternative. As a result, there will still be condensation on the windows even after the refurbishment of the building, however in contrast to the past, this will be with controlled and reasonable consequences.

We do not consider the non-insulated façade with condensation as a deficit, but as a time-bound characteristic of the building of which the negative impact must be reduced.

Interventions – Facilities for the Visitors

A common goal of the planning was to refrain, as far as possible, from visible, designed interventions. This premise was based on the following three motivations. First and foremost is the utmost respect for the work of Mies van der Rohe. Secondly, our attitude as an invisible architect speaks against a clearly visible intervention. Thirdly, there is not enough critical mass of necessary interventions or additions, to justify our own handwriting.

The only exception of this goal is the conversion of the storage areas for paintings and sculptures into facilities for the visitors, more precisely: the visitors' cloakroom and the book/museum shop.

For both rooms, the initial concept was developed to recognizably convert them, without designing them anew. This would allow the new use to find its temporary place whilst the old use as a depot can still be read. The visitor would clearly perceive that he is entering a space that was not originally part of the public area of the building. This concept stands in contrast with a one-to-one continuation of Mies van der Rohe's design, including a continuity in the materials of the granite floor covering, the modular ceiling, the white walls, and the red oak furniture, as well as the incorporation of Mies van der Rohe's modular principles and his language of detailing.

A hybrid version was chosen in the end. As a consequence of its use up until now, the space lacks the level of finishing of the public area. By accepting this lack of finishing, and therefore renouncing a suspended ceiling and wall covering, the otherwise invisible concrete elements such as the coffered ceiling, the columns and walls are given presence. Decisive for the visibility of our actions is not the omission, but the pointing out of the rough material and the not ideal architectural elements that are part of the space.

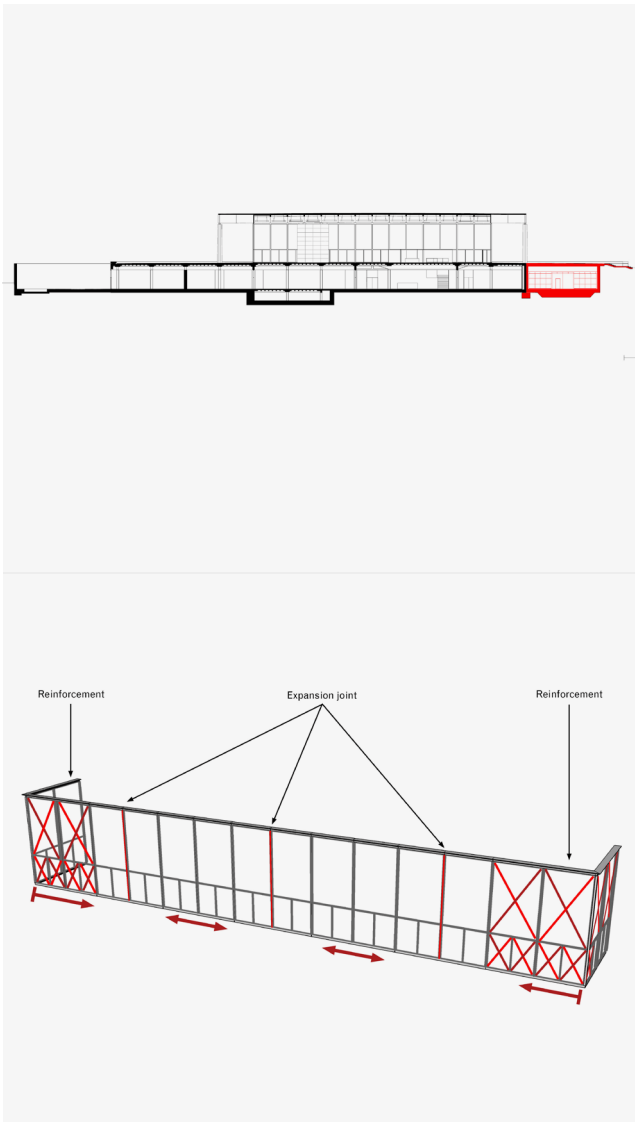
Conclusion

When talking about a modern monument, one could easily argue that its intrinsic heritage value lays in being a modern construction. Whereas numerous refurbishment projects focus only on the visual appearance of the monument, the quality of the refurbishment of the *Neue Nationalgalerie* lies in the project's holistic approach. The added value is created not only by taking the visual integrity into account but also by paying attention to its physical substance, time-bound and classical elements. The refurbishment refuses to aesthetically adapt the museum to current viewing habits and visual expectations and in that way, abstains from "refreshing" the image of the building. Instead, it was the careful moderation between the various monument values of the building that guided each decision. It is not the image, but the substance of the construction that is to be put first.

Notes

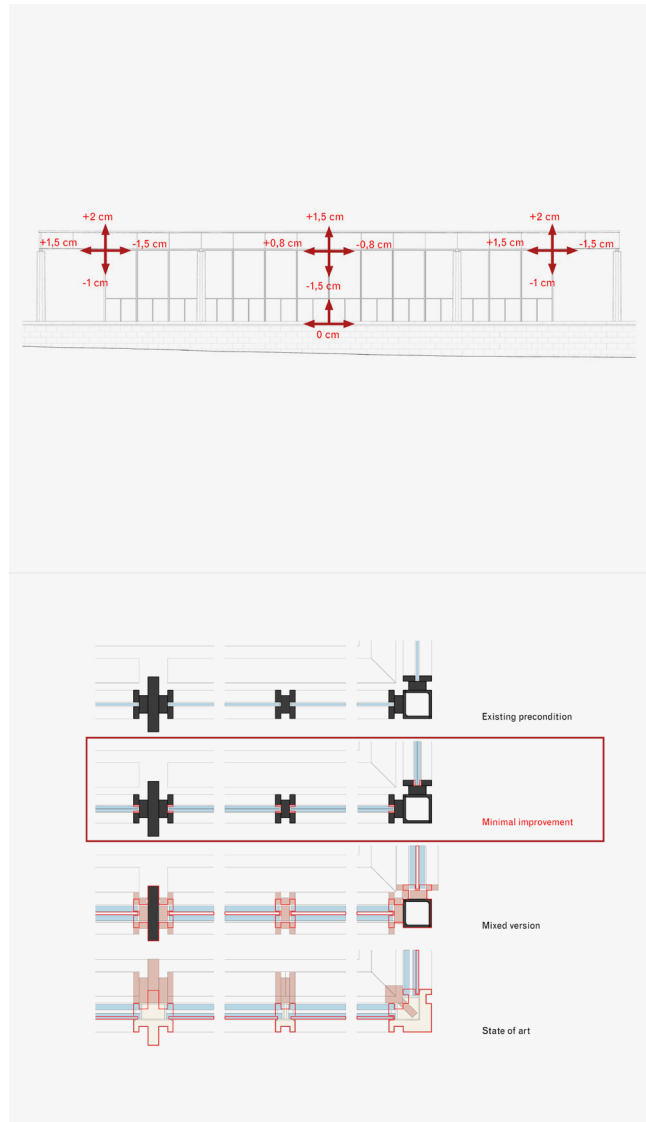
- 1 The building was completed one year before Mies van der Rohe's death.

- 09 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Refurbishment by David Chipperfield Architects, 2017. Section indicating the new construction of the storage area underneath the podium. © David Chipperfield Architects for the *Bundesamt für Bauwesen und Raumordnung*.



- 11 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Refurbishment by David Chipperfield Architects, 2017. The package of measures for the curtain wall façade with the introduction of three vertical expansion posts and shear-resistant design of the corner areas. © David Chipperfield Architects for the *Bundesamt für Bauwesen und Raumordnung*.

- 10 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Diagram for the deformation of the façade caused by thermal expansion and wind loads, indicating the fixed point, the directions of the movement and the longitudinal extensions. © David Chipperfield Architects for the *Bundesamt für Bauwesen und Raumordnung*.



- 12 Mies van der Rohe, *Neue Nationalgalerie*, Berlin, Germany, 1968. Refurbishment by David Chipperfield Architects, 2017. Studies for the consequences of a thermal upgrade of the façade. Existing precondition and planning variations, planning status 2015. © David Chipperfield Architects for the *Bundesamt für Bauwesen und Raumordnung*.

- 2 The visited archives in Berlin are: *Kunstabibliothek*, Staatliche Museen zu Berlin; *Neue Nationalgalerie (Pressearchive, Fotosammlung)*, Staatliche Museen zu Berlin; *Institut für Museumsforschung* (i.a. *Diasammlungen Waetzoldt und Grote*), Staatliche Museen zu Berlin; *Zentralarchiv*, Staatliche Museen zu Berlin; *Akademie der Künste* (i.a. *Fotosammlung Friedrich*) Berlin; *Landesarchiv Berlin*; *Berlinische Galerie*; *Bundesamt für Bauordnung und Raumwesen* (BBR); *Foto Marburg, Bildindex*; *bpk Bildagentur Preussischer Kulturbesitz*; *Bezirksamt Berlin-Tiergarten, Plankammer und Archiv Fachbereich Bau- und Wohnungsaufsicht*.
- 3 Translated: thesis paper for conservation.
- 4 Mies van der Rohe, *Letter to the General Director of the Staatliche Museen Stephan Waetzoldt* [letter] the Museum of Modern Art Archives, 1966.

- 5 One year after the commissioning, Mies van der Rohe presented, in 1963, the first design for his museum at the *Kulturforum* in Berlin. The folder consists of descriptive texts, plans, collages and model pictures.

Martijn Jaspers

(b. Belgium, 1989). Architect (Sint-Lucas Gent, KU Leuven, Belgium, 2012). In 2012 he started the master of Conservation of Monuments and Sites (Raymond Lemaire International Centre for Conservation, KU Leuven, Belgium). He joined the team of the *Neue Nationalgalerie* in 2013. His responsibilities at David Chipperfield Architects Berlin are restoration and conservation projects.

INTERVIEW

Fritz Neumeyer

In June 2017, Ana Tostões interviewed Fritz Neumeyer, reference expert on Mies van der Rohe, in order to discuss the importance of Mies's legacy. Neumeyer conducted a deep research on Mies's writings and intellectual activity that has resulted in the worldwide renowned publication *Mies van der Rohe. Das kunstlose Wort. Gedanken zur Baukunst* [The Artless Word: Mies Van der Rohe on the Building Art] (Berlin, 1986; Cambridge/London, 1991; Madrid/Paris/Milan, 1996; Seoul 2007 – see p. 93) offering a precursor critical anthology of Mies theoretical corpus.

This issue of *docomomo Journal* intends to discuss how the buildings of Mies van der Rohe survived the time and the challenges encountered on the restoration works conducted so far. I may say that the balance between construction and tectonics – evident in the works of Mies – has been resilient. How do you explain this relationship within his architecture?

Construction refers to the empirical act, how something is done, put together. Tectonics is the expression, using construction as a means of architectural expression. A column has a curve, a head, a flute, etc.; it's not just a constructional form. It explains to our senses the act of carrying load, how the building and its members are carrying. Mies was interested in tectonics from the very beginning, leading to its higher explicitly in his last work, the *Neue Nationalgalerie*, in Berlin. In the construction plans, we find the word "column". Mies not only used the term, as he actually designed a column, which so far was a taboo for the modern architect. 4 industrial profiles diminishing to the top were welded together to implement a kind of entails and even capital had been designed. He knew that this would be much more expressive than the mere technical form. This abstract use of a classical element was part of the Friedrich Schinkel-lesson that Mies learned in his early years in the Peter Behrens office.

An engineer would hardly suggest this huge roof to be supported by 8 columns, placed apart from the corners and moved to the outer edge of the roof plate, to the last centimetre possible, as Mies did in the *Neue Nationalgalerie*. This formal decision was about architectural expression *by* construction and not the result of constructive rational reasoning. This peculiar position of the 8 columns is essential for the tectonic impression of a majestically floating roof over a wide-span space.

By highlighting the character of materials, Mies was able to bring the great qualities of special woods, marbles, stones, into the creation of masterpieces.

Materiality for Mies became an important issue in relation with the process of abstraction of architectural form. He never wanted to have abstraction end with the white box as the ultimate ideal of the modernist abandoning of traditional architectural values. For Mies the process of abstraction never ended with abstract geometry but with the presence of architectural values in their elementary expression. As an equivalent to abstraction, the richness of materials secures the perception qualities of architectural space. This is what

makes Mies so unique as a modern architect. He used modern and classical materials next to another, without any ideological constraints. Maintaining opulence and richness under the condition of abstraction was the issue, and this prevented him from making the mistake of simplifying things to a dead end. I think one of the great virtues of his architecture is that it cultivates in a classical manner the sensitive relation between the haptic and the optic.

Daniela Hammer-Tugendhat once told me that, when her mother Greta returned to the house, in 1969, she was so relieved when she found the onyx wall, caressing it while muttering – "oh, thanks god you still here!" – like it was an animal.

This quality of a seemingly "bodily" physical presence is exactly what makes architecture open to acquaint life and allow specific experiences. The surfaces and materials and their careful embodiment define the atmospheric quality of a space and its peculiar aesthetic life.

I was very surprised while visiting the Dom in Aachen, when I immediately realised "Mies was here!".

I've always had a rather similar impression, with regards to the marriage of opposites which determines the philosophy of Mies — and the *Neue Nationalgalerie* is a brilliant demonstration of it; the marriage of the monumental and heavy with transparency and openness. I don't know any other architect who was able to produce a kind of light monumentality or vice versa a monumental transparency. In the Aachener Dom, you have exactly these two different architectural worlds attached to another: the massive Octagon Romanic building and the filigree construction of the gothic chapel with walls consisting almost only of pure colour attached to another as if they were Siamese twins; two opposite worlds come together, if you wish, the classical and the modern, and form a whole. To unite these two worlds has been Mies's ultimate goal, according to his own words. Maybe, Aachen was already preparing the grounds for what Mies called "bound dualism" as he described his concept for architecture in the late 1920s. But one can also think of Schinkel's concept of morphology, which also relates to opposites and their gradual transformation from one condition into the other. It is possible to create a tangent between two poles, the monumental and the transparent, the classic and the modern. In the typical modernist perspective, if one is a classicist, one can't be modern. Mies proves that these are stupid dichotomies and that it is artistically much more interesting to

have opposites starting a dialogue and being used for expressing architectural ideas. When I first stood inside the Dome of Aachen I also thought: "Here you have it, Mies!". On the outside the magnificent bronze door from the 11th century shows a grid with proportions that make one think of the Seagram's façade!

Your work from the 1980s, *Das kunstlose Wort*, was fundamental to further understand Mies. In his text "*Baukunst und Zeitwille*" (1924), Mies makes clear that he was not looking for being or not being modern, but the ability of translating the time into space.

Yes. Mies was not so much interested in modernity as such, but in what could be regarded as essential for his own time and how to translate it into architectural properties. First modern construction work as such seemed for him to be the expression of it; but rather soon he realized that not the technical as such was valuable but what you are able to make out of it. For Mies the modern achievement of a new kind of freedom of movement in space challenged the architectural understanding of space and the relation between inside and outside. As modern transportation techniques like cars, airplanes etc. allowed man to freely move in space, modern construction in architecture would allow a new type of architectural space open for movement and bringing closer together the opposites of inside and outside. The ground floor plans of Mies tell a fascinating story about this idea.

It's very interesting to find that idea in a family house too, as it is the case of the Tugendhat House. I always explain the students that it's not a house of a *marchand d'art* or from an exotic couple; it's a normal house, with children, parents, cakes, birthdays, bicycles; with a family who lived there appreciating everything and creating this notion of freedom in space.

In his explanations for the House Hubbe of 1935, Mies speaks about an architectural space sheltering and protecting us, but at once making the horizon to become part of the interior. This space is at once both confining and defining. In the Tugendhat House, you can experience this double orientation towards two poles in an exemplary fashion: you have the openness of the glass walls providing a great view into the landscape in front of you and a monumental slab of onyx marble in your back which holds you in your place like a magnet and protects you from being pulled away through the lowerable glass walls into the open space, to the horizon.

Looking at so many unique, almost epic and transcendental, characteristics of Mies architecture, it is inevitable to conclude how difficult must be to rehabilitate his works.

It's not easy. Within the refurbishment works of the *Neue Nationalgalerie*, I was hired as an independent person to evaluate things from my point of view of Mies's architecture; My job is to explain Mies's idea of architecture exem-

plified in this amazing building and to act as the protector of both. We started our work in 2011/2012. We made a visit to the USA to learn about the restoration problems with Mies buildings in Chicago, Toronto, Houston and New York. In the meantime, all participants in some way have become Mies experts or lovers, and this makes the collaboration between the different participants a real pleasure; I believe, we are really a good team.

You have been teaching how to read Mies.

Yes. And there have been a couple of things where my point of view has had some impact, for example on the use of the sculpture on the podium of the *Neue Nationalgalerie*. Exactly in the main axis of the entrance, the Barnett Newman sculpture, *The Broken Obelisk*, has been placed some years ago, which I think was terribly wrong. First, because as an object, it is an obstacle occupying the position that the visitors should obtain, blocking the view through the upper hall; plus, it miniaturizes the architectural dimensions; and second, Mies never, ever, in any of his buildings and drawings, employed abstract geometrical sculpture for his spaces. His choice of sculpture always referred to anthropomorphic or abstract organic forms, but never abstract geometrical forms. Why? Because sculpture in Mies's understanding has to produce a kind of complimentary element to architecture. While architecture necessarily tends towards geometrical abstraction, sculpture should represent the anthropomorphic or organic which in the process of modern abstraction has been banished from the formal language of architectural expression. For Mies, abstract geometrical sculpture was redundant. It equals modern abstract architectural form, but it adds no complementary formal quality to it in terms of a tension between the opposites of expression. Following my argument, the museum removed the *Broken Obelisk* from its frontal and central position to the back of the pavilion.

I'm also insisting on the sculpture garden being reconnected to the museum-path because it is an essential part of the tremendous spatial sequence and experience Mies provided for this museum. This space-journey begins when entering the podium with the experience of an outside-inside dualism in the moment you step under the floating roof. Being inside the glass hall this dualism becomes much more intense as due to the surrounding glass walls the interior space is almost like an exterior. Leaving the main hall, you get down into the lobby, connected to the exhibition spaces of the ground floor with the main axis leading into the courtyard of the sculpture garden - which like a *bortus conclusus* open only to the sky - completes the morphological span of architectural spaces this building can provide.

This travel offers a unique sequence of opposite spatial experiences in connection to the experiencing of exhibited artwork. This makes the building being a unique kind of

museum. It merges the experiencing of art and architectural space and provides a wide range of opportunities of viewing artwork, from the almost intimate encounter in an enclosed space in the ground level to the almost public and urban condition of the upper hall where one can see works of art against the backdrop of the city: the bustles of modern life to be seen in the background but inside a space of silence. Mies's artwork of architectural space creates a moment of a halt, of stepping aside, although being in the middle. This experience of both distance and centrality at once can reorganize and re-sensitizes our attention and make a dialogue between you and the art object happen. There is no better preparation for viewing art that architecture can provide than here, and to preserve this quality is a must.

Museums today tend to turn into event machines for art mediation. However, this type of museum might be outdated in 10 or 20 years, when people may be fed up with media excitement and the experience of unmediated encounter with art in space and the intimate dialogue between the viewer and the work of art will be recognized and estimated even more. The Mies museum is a singular place for the perceiving of art. It is more a place of meditation than mediation. As such it has to be estimated and preserved.

And after this journey we are different.

In some way, yes! Here we can experience spatial perceptions only architecture can provide. Nothing else. Here we also can experience what architecture finally is about: it is the art of space, which is more than art of producing built objects. And we can think about the relevance of Mies's architectural understanding that time expresses itself at first hand by space and not by the object.

With regards to the issue of conservation, there are a lot of problems with the Mies building. All the original glass sheets broke due to constructive tension and friction. Today, no one in the world anymore produces 16-millimeter thin glass sheets of that enormous size. Plus, the thermic shortcomings of such a thin glass sheet are no longer acceptable to us today. The new glass sheets will be of 25 mm and this has consequences for the frame construction. You can't just make the steel profiles grow in size accordingly. On the contrary, they have to be made thinner on one side in order to keep the proportions of the façade-system. Instead of one 16 mm single glass sheet, we will now have two of 12mm, glued together with a very thin insulation in between; as a consequence of this change the optical reflections are slightly different. This affects the view from outside to inside and thus the visual continuity of the roof structure. Also, the preservation of steel provides some difficulties once rust has taken over.

Today we have all the normative regarding energy, comfort and safety, to address.

Yes, there is a number of things we have to adopt to today, just in terms of climate and se-

curity and building rules. But also the current loan conditions of artwork are much more restrictive as at the time of Mies. Collectors and museums today lend their artefacts only if a certain level of humidity, temperature, light can be guaranteed. Improving the climate therefore is a serious issue for the restoration of the building in order to maintain its function as a museum.

But in the end, when the restoration will be finished and the building looks like it looked before, people will ask themselves what for 100 million Euro have been spent, because you won't see it. And if it is like this, then we have done our job well, because this means we preserved its identity and likeness. I am rather confident that the restoration work will be done as good as one can do it. Every one of us gives his best.

I know this building since its erection and I've also experienced the changing of the cityscape around it; the wall coming down, the *Potsdamer Platz* going up, with the building maintaining its corner-stone capacity and autonomy as an urban monument.

Resisting.

And getting even stronger in its presence in space. The turmoil around it even more underlines the tremendous quality of this building as an island of order. Its podium is a balcony onto the city overlooking the chaotic landscape of the so called *Kulturforum* which is nothing else than a collection of individual buildings unable to create any kind of acceptable urban space. Mies related his building to the only historical remnant which survived the war, a small classicist brick church. Mies visually connects with this building so that both together can establish a minimum of urban coherence and create a refuge of order and calmness.

Like an acropolis. Like a victory.

Yes, even more, because this modern acropolis provides the only inviting urban space within this urban desert; the only space which provides a place like an urban square that justifies the term "forum" to be used here at all.

Fritz Neumeyer

(b. 1946, Germany). Architect, PhD in engineering, Professor Emeritus of the *Technische Universität Berlin*, where he held the chair of architectural theory (1992-2012).

He also taught at the *Universität Dortmund*, the Princeton University, the Southern California Institute of Architecture in Santa Monica, the Graduate School of Design at the Harvard University, the *Université de Louvain*, the *Institut d'Humanitats de Barcelona* and the *Universidad de Navarra*.

Among his most important publications are *Das Haus Wiegand von Peter Behrens in Berlin-Dahlem* (1979); *Mies van der Rohe. Das kunstlose Wort: Gedanken zur Baukunst* (1986); *Oswald Matthias Ungers Architektur 1951-1990* (1991); *Friedrich Gilly 1772-1800. Essays on Architecture* (1994); *Ludwig Mies van der Rohe. Hochhaus am Bahnhof Friedrichstraße* (1992); *Der Klang der Steine. Nietzsches Architekturen* (2001) and *Quellentexte zur Architekturtheorie* (2002).

The pioneering restoration of the Peter Behrens's *Haus Wiegand* (1912, Berlin), in 1979, and the *Planwerk Innenstadt Berlin*, in 1997, must be highlighted among his architectural works.

INTERVIEW

Jong Soung Kimm

On the 15th February 2018, in New York City, Ana Tostões interviewed Jong Soung Kimm, an internationally renowned architect and educator, a collaborator at the office of Mies van der Rohe (1961 - 1972) and design studio teacher at Illinois Institute of Technology in Chicago (1966 - 1978). He is founder and honorary president of SAC (Seoul Architects Consultants) International Ltd.

You left Seoul and went to Chicago to study at Illinois Institute of Technology (IIT). Did this choice have to do with your approach to tectonics and to construction?

It was my third year in middle school when the Korean War broke out. My family and I had to take refuge in the southern port city of Busan. But after the Korean War ended in armistice in 1953, I returned to Seoul and in the following year, 1954 I was about to enroll at a university. At that point, probably three quarters of all buildings in Seoul were destroyed. Although I did not have a clear understanding of what architecture was at the time, I had an idea, an intuition, that architecture must be useful to rebuild a devastated Seoul. So, in 1954 I entered the Seoul National University.

At the time, there were virtually no reference books or original texts to be found at the university, so I began to think about studying abroad. I was sort of predisposed to the United States rather than Europe, so I began to research which school to go to.

I remember reading the small Pelican book by James M. Richards, who used to be the editor of *Architectural Review* (1937-1971). His pocket book, "An introduction to Modern Architecture" (1940) gave me a general idea of Walter Gropius who had just retired from Harvard and established the TAC (The Architects Collaborative) with his former students. I read about Pietro Belluschi, Dean at MIT, William Wurster, Dean at U.C. Berkeley and of course, Mies van der Rohe who had moved to Chicago in 1938 to teach architecture at IIT. Some small photographs in Richards' book gave me an idea that unlike some other architectural direction of inventing form just like a sculptor would, Mies van der Rohe's work would give the impression that it was based on tectonics, that space was built with post-and-lintel. It was then that I decided to study at IIT, so I applied. I arrived at the campus in February of 1956, the same semester when Crown Hall was finished. My class even helped arrange the brand-new drafting table in Crown Hall. When I started my studies at IIT, I decided I would give up the two years' credit I had studied at Seoul University and start from the beginning. In 1961 I completed my Bachelor of Architecture and began work on my masters that Spring. That was also the year I started working at Mies van der Rohe's studio. I completed my graduate degree in 1964 and two years later IIT recruited me, so I began to teach there, concurrent with my other duties at Mies' studio. I combined both. Mies van der Rohe passed away in 1969, but I stayed with the firm until 1972.

And the IIT curriculum, or, let's say, Mies' direction, was very different from other schools?

It was very different. And although Gropius' curriculum at Harvard was also quite different from more traditional curricula in most American architecture colleges, Mies van der Rohe's was very unique. He built the curriculum starting from absolute *CARTE BLANCHE*. I believe most architectural schools in America until the early 1940s were based on the traditional *Beaux-Arts* architecture education, and Mies van der Rohe built his 5 year-curriculum for IIT from his experiences at the Bauhaus. He began with the fundamentals and he would have the students learn the basics of architectural material: brick, timber, steel, reinforced concrete; and different methods of construction using these materials. Then, the last two years were devoted to studying the ideology and philosophy of architecture which Mies was trying to teach to the young generation. The fourth and fifth years were concentrated on studying structure as the starting point of architecture; an investigation on space as an architectural problem shaped by such structure. They studied the role of proportion in creating beauty and the effect of material, texture and color choice in architectural expression. And, if you think about it, we can list these five points as constituting the philosophy of Mies van der Rohe's architecture.

You worked in a special kind of office, right? With people from different parts of the world, with you being the only Asian in the office?

We were about 36 people in the office, including Mies van der Rohe. Joseph Fujikawa, a very important collaborator of Mies, his right-hand man, although he was American born, was Japanese-American. So, other than he, I was the only other Asian. There was a sprinkling of Germans, but they did not stay long; at any given time, there were three or four young architects who graduated from technical universities in Germany who'd come and knock on the door, and Mies' office was willing to give them one or two years of work experience. There were also several English people, some of them stayed longer than others.

I stayed 11 years. So, I worked for Mies van der Rohe all through the sixties until he died in '69. I spent most of my time at the studio on the Toronto-Dominion Centre, which was being designed at the same time as the *Neue Nationalgalerie* in Berlin. So, although it was in the twilight of Mies van der Rohe's career, it was, in a way, a very important and productive period of the master.

It is clear that, until the war, he had never had the chance to work at a large-scale. But in the USA, he was able to show and to extend his experiments which were already very acute before the war. It was, in fact, incredible that he chose the US to immigrate from Germany.

I think that the United States, and especially Chicago, was probably the right environment for Mies van der Rohe's philosophy to blossom. The people there are not temperamental or emotional, they have a very solid work ethic and are also very pragmatic. So, in that sense I think that Chicago provided Mies van der Rohe with the right environment and human resources to develop his philosophy.

You had Daniel Burnham, in Chicago, who had a very ambitious and solid plan for the city, and the work ethic of most of the population that made up the people in Chicago, German people and a lot of central Europeans. Unlike a lot of southern cities in America, more Mediterranean, more emotional temperament, Chicago was very solid. You always had to work hard to achieve what you wanted.

Although it was possible to invite Mies van der Rohe to a southern city like Miami, Florida, if we think of such a hypothetical case, Mies' philosophy would not have blossomed. It was Chicago that provided the temperament.

Upon his arrival to the US, Mies was not completely alone as Ludwig Hilberseimer was his companion.

Hilberseimer was a year older than Mies, and, unlike Mies, who was more of a self-made architect, Hilberseimer was from the solid German intelligentsia. I believe he had provided much of the philosophical framework for Mies van der Rohe's architecture. So, it is difficult to think of Mies' architectural blossoming in Chicago without the presence of Hilberseimer. He would test certain of Mies' ideas, and Mies would tell Hilberseimer his updated thinking.

Hilberseimer also gave classes in IIT, in urban planning, right?

Yes, in city and regional planning. Hilberseimer was always looking at the larger picture, not only the city plan, but the entire region. I think it was he who established city planning at the Bauhaus before Mies van der Rohe became the third director. They mutually complemented each other.

Let's turn to your career to realize the impact of sharing space and working with Mies for 8 years.

After Mies died in 1969 I continued to teach at IIT until 1978. I taught the fourth year, what we called the core of Mies philosophy. I taught it for 12 years, from 1966 to '78. Then, I was asked by my client for the Seoul Hilton hotel (1983) if I would accept his invitation to design the Seoul Hilton. So I decided to leave teaching and to concentrate on building.

As far as I know, it is a very complex building, in terms of structure, and it is amazing what you

did with the void space in the middle: it is quite a structural miracle.

Yes. I was also inspired by my years of teaching at IIT. What space I could create, based on Mies' philosophy, but going beyond. Mies van der Rohe had never introduced light from above. For Mies, it was always cross-lighting, never from above. And then I started thinking, while still teaching at IIT, how would it be if Mies van der Rohe's Convention Hall in Chicago, 216m square, had a skylight in the middle. How would that be? I started thinking about introducing natural light into the Seoul Hilton design, which otherwise would be a "Miesian" building. So I brought natural light inside the building — the zenithal light — that's what I did at the Hilton.

Afterwards, you started to get commissions in Korea, namely the Kyongju Museum (1987–1991).

I may have done more than 120 buildings with my SAC for 20 years, but if I remove most of it, and then come down to maybe 10 or 12 buildings, Kyongju Museum would be among them.

Which you chose as the key buildings for the exhibition in 2014.

I may have done 20 office buildings, large and small. But SK Corporation Building (1986–1999), this is the best. The most ideal office building that I can think of. Everything is so efficient, the structure, air conditioning, the distance of 12 meters from the elevator core to the glass wall, which is the optimal distance for offices. I was very happy while doing it. I start from the function. The client says, "I want an office building of 250,000 m², the building code limits the height to 36 floors," so I start to do it and find the optimal structural systems. But then, as I learned from Mies van der Rohe himself, creating the things with a very pleasant proportion, you end up with harmony. Although I start with what the client wants, later I bring in the tectonics. I choose the correct structure and the correct use of the material.

Mies stands as a classicist from the Western world — his DNA is pure Greece, not Rome, he is so elegant! In a way, a strong character, but always very delicate. And he is also very German.

Mies is German. He is European. He is a classicist. He is Greek at heart! Those are very important components of Mies van der Rohe, the artist. What separates art from very ordinary buildings is proportion, and Mies was the unquestionable master of *Baukunst*.

You worked on the retrospective of Mies in 1968. It must have been a nice experience.

I was 32, a young assistant professor and working in Mies' office. I think Mies, together with his right-hand man, Joseph Fujikawa, his grandson Dirk Lohan and Bruno Conterato, chose me to do it because I was teaching "space problematic" at the time at IIT, which Mies himself considered very important. For that reason, they thought I was the right person to do it, more than any senior staff in the

office. So, I was lucky to work on that project, it was my good fortune.

The exhibition took place in *Akademie Der Künste*, in Berlin, in the Hansaviertel. Werner Düttmann, the architect of the building was still alive, Hans Scharoun being the president of the AdK that year. So, at the opening of the Mies van der Rohe Retrospective, Hans Scharoun came and gave a congratulatory speech.

Düttmann's building was a very active concrete building, with a skylit shed. We had a canvas stretched on the horizontal plane to make the roof plane very quiet, not too active. And that was the old trick that Mies himself used in 1928, in Berlin, with Lilly Reich.

Oh, you are talking about the velvet and silk exhibition?

Yes, and there was another one, of ladies' fashion, "*Die Mode der Dame*" exhibition where the velvet would be drawn in a curve from the roof. But Mies had a canvas stretched to create a flat anonymous plane, because the skylight was too visually busy. So, I picked up that trick: I had the blessing from Mies.

So, finally, was it easy to work with Mies? The legend refers to him as a hard guy.

It was easy. Actually, Mies died when he was 83 and toward the end of his life, he was very quiet: he would even tell the younger staff "Please, could you do this", instead of "Do this!". He would be very gentle. The story we hear of Mies van der Rohe during his life in Europe is that he was a very wild and demanding person. For example, when he became the director of the Bauhaus, after Hannes Meyer, he interviewed every student, and he expelled some of the left-wingers who sympathized with Hannes Meyer. He was a very strong-minded person.

There were two or three American students at the Bauhaus, and one of them eventually came to teach at IIT, Howard Dearstyne. When it was his turn to be interviewed by Mies, the new director, Howard Dearstyne asked Mies "Is it still correct to seek beauty in architecture?" — this was Dearstyne, shaking inside, asking the master. And then Mies, of course, was smoking his cigar, probably said "Ja, it is right to seek beauty! *Schönheit in Baukunst*".

We must not forget that he was born and lived in Aachen, where stands the fantastic cathedral, the Dom, and as far as I know he sang in the choir, when he was a young boy.

When we were invited to his apartment, he would tell us that when he was small, his mother took him to the Cathedral of Charlemagne in Aachen. Sitting there and looking at the stained-glass window from the 15th century, he would be impressed by how tall the "vindow" (Mies would pronounce w as v) was.

Mies's father was a stonemason and his older brother, Ewald, was a sculptor, who inherited the family business. They did a competition for the Bismarck Monument in

Bingen am Rhein. Mies did the scheme, and Ewald did the sculpture.

He told us at the office that, at one time, all the marble at Charlemagne's Chapel was removed to in order to be redone, and he saw the bare brick behind the marble, like a Roman building.

The other thing is that he was kind, smooth, in giving orders. Was he very considerate?

He was very focused, and when he wanted to say something in English, he would speak very slowly until the end of his life. But when Werner Düttmann, the city architect, came to Chicago to discuss the *Neue Nationalgalerie*, Düttmann and Mies would have dinner in Mies' apartment, and then he would invite the people from the office to come and join afterwards. Although I did not understand German, what I noticed was Düttmann and Mies suddenly would talk like a machine gun, very quick, while Mies was very slow when speaking English.

Mies said in an interview with the students of North Carolina State College, which goes back to 1967, that when he wanted to say something, he would construct the whole sentence in his head, making sure he's not making any mistakes, only then he would say it. After saying aloud, if someone asks him to repeat the sentence, this man would repeat the sentence exactly, without changing a single word.

Mies van der Rohe, the artist, is a very complex person. Sometimes, he would do things that an architectural historian or a theoretician could not explain. He would do things clearly by intuition. At the Museum of Fine Arts in Houston, there is stone masonry coming in from both sides, and then, from the wall to wall, is enclosed by glass. How much masonry to bring in? How much glass? He did it by eye. That was while I was working on the Toronto-Dominion Bank, and while the *Neue Nationalgalerie* was in progress, the Museum of Fine Arts expansion was also in progress. He would come in and look at the model, the elevation, and he would say "bring in more, bring in more, end it right there". And that was not at the module! Scholars and historians would have a hard time explaining why. But Mies did it by eye.

Looking back now, after 50 years, I think I was so lucky to have selected IIT to go and study, and then work for the master, and teach at my old school. That was my real fortune!

Jong Soung Kimm

(b. 1935, South Korea) Architect, FKIA, FAIA
Jong Soung Kimm studied at Seoul National University and IIT in Chicago. Kimm worked for Mies van der Rohe during the 1960s and taught at IIT 1966–78. He established SAC International, Architects in Seoul in 1978. Kimm has been a speaker or panelist at UIA Congresses in Montreal, 1990 and Tokyo, 2011; the Getty Research Institute for the History of Art & Humanities, 1998; the CTBUH congresses in Melbourne, 2001 and in Seoul, 2011.

Kimm was the jury president for the Grand Egyptian Museum competition in 2002–03, and the Museum of Polish History in Warsaw in 2010.

Mies van der Rohe. The MoMA Collages

Exhibition at Ludwig Forum

Aachen, Germany, 28 October 2016 – 12 February 2017

Mies van der Rohe is generally known as the architect of icons of modern architecture like the Barcelona Pavilion, Farnsworth House or the Seagram Building. What – until now – was less known, is the fact that many of his unbuilt designs survived on paper. Not just in drawings and plans, but in a more vivid medium: the collage. In cooperation with the Museum of Modern Art in New York the Ludwig Forum in Aachen, the town Mies was born in 1886, has shown 50 Mies van der Rohe collages and montages in an extraordinary exhibition. It was the first time ever that an exhibition was dedicated to that chapter of Mies van der Rohe's oeuvre and the first time that those works were on display all together. There was too much to be seen, too many interesting aspects to talk about, which can't be handled in such a short review. It is therefore very pleasing that the associated catalog, written by noted researchers and the curators, makes an important contribution to current Mies van der Rohe research concerning his collages and montages. Maybe one would have expected to find the collages and montages combined with the built work of Mies van der Rohe, but the director, Andreas Beitin, and his team had something different

in mind. As Mies van der Rohe dealt with art throughout his whole life why not connect the collages with art and artists that surrounded and influenced him as well as artists who were influenced by him and his work?

Thus, the exhibition began with a room dedicated to Mies van der Rohe's early photomontages (one might also call them "inserted drawings") combined with works of the avant-garde movement in the 1920s as well as paintings from his own collection, for example by Paul Klee or Kurt Schwitters. As the exhibition proceeded chronologically, the first work the visitor saw was Mies van der Rohe's earliest photomontage from 1910. Together with his brother Ewald Mies, he participated in the competition for a Bismarck monument on the Rhine riverside. It probably wasn't Mies van der Rohe's idea to visualize their project by a montage – at that time it was a rather usual procedure in an architectural competition to ask for such material – but Mies van der Rohe was indeed the only one who enlarged the given photography by adding drawn sections to the surroundings. He obviously recognized the possibilities inherent in that new medium, a fact that makes this piece of work so

important for the later collages and montages. In the early 1920s, Mies van der Rohe designed 5 buildings that were never realized but nonetheless mark a turning point in his work. Among them the famous glass skyscrapers and the concrete office building. Unfortunately, not all of the preserved photomontages were on display in the exhibition – some of them were at least shown in photographic reproductions – but in combination with other competition montages, e.g. for an office building in Stuttgart in 1928, it was quite enough to get a good impression

03 Kurt Schwitters, untitled (Cottage), paper on carton, collage, 25.5 x 21.2 cm, Staatliche Museen zu Berlin, Nationalgalerie (private loan, estate Mies van der Rohe), © VG Bild-Kunst, Bonn, 2016.



01 Mies van der Rohe in his apartment, Chicago, 1964. © Werner Blaser.

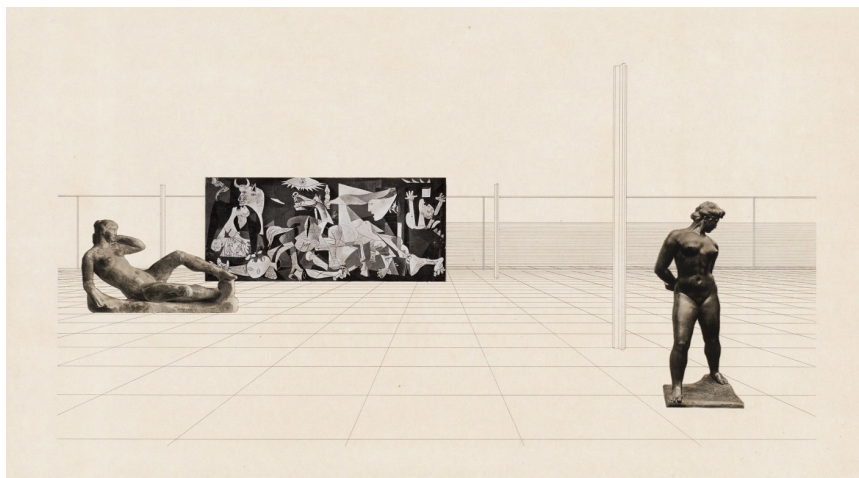


02 Exhibition *Mies van der Rohe. The MoMA collages*, Ludwig Forum Aachen, 2016. © Carl Brunn.

- 04** Mies van der Rohe, Resor House, project (Jackson Hole, Wyoming): Perspective of living room through south glass wall. 1937-1941 (unbuilt). New York, Museum of Modern Art (MoMA). Graphite and collage of wood veneer and cut-and-pasted reproduction and photograph and graphite on illustration board, 30 x 40" (76,1 x 101,5 cm). © The Museum of Modern Art, New York/Scala, Florence / VG Bild-Kunst, Bonn, 2016.



- 05** Mies van der Rohe, Museum for a Small City, 1942-43. Interior Perspective. New York, Museum of Modern Art (MoMA). Pencil and cut-out reproductions on illustration board, 30 x 40" (76,1 x 101,5 cm). The Mies van der Rohe Archive. © The Museum of Modern Art, New York/Scala, Florence / VG Bild-Kunst, Bonn, 2016.



- 06** Paul Klee, Regentag, 1931, watercolor on carton, nailed to the frame, 20,5 x 38,5 cm, Bern, Zentrum Paul Klee (loan of a private collection); a detail appears in the following collage: Row House with Interior Court project, after 1938, Interior perspective, collage (graphite, cut-and-pasted reproduction of Wilhelm Lehmbruck, Standing Female, 1910, and cut-and-pasted reproduction detail from Paul Klee, Rainy Day, 1931, on illustration board), 76,1 x 101,5 cm, New York, Museum of Modern Art (gift of the architect), © The Museum of Modern Art, New York/Scala, Florence / VG Bild-Kunst, Bonn, 2016.

of how innovative his designs were. At that time Mies van der Rohe participated actively in the German avant-garde movement. He joined the *Novembergruppe*, was a founder member of *Der Ring* and co-publisher of the famous avant-garde magazine *G. Magazin für elementare Gestaltung*. Therefore, the exhibition showed collages by Hannah Höch or Raoul Haussmann as well as several works by László Moholy-Nagy or even films, for example by Hans Richter, whom Mies van der Rohe knew very well. With regard to his photomontages and collages it is often said, that the Dada group may have influenced him. But if you compare their collages to the contemporaneous designs by Mies van der Rohe, they don't have very much in com-

mon. However, what is really evident, are the parallels to the constructivist drawings of Theo van Doesburg or the *Prounen* by El Lissitzky, which were both on display. Especially in comparison to a small photographic reproduction of the original drawing for a brick country house, which hung right next to them, this connection was quite obvious.

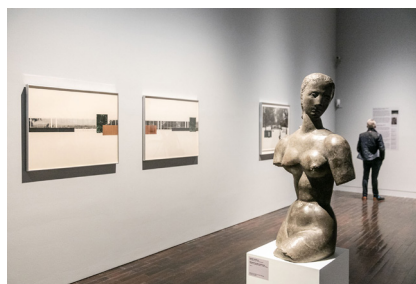
As already stated, Mies van der Rohe didn't invent the architectural collage or montage, it was used before – especially in context of urban landscapes – by artists, photographers, architects and even on common postcards. But the exhibition reveals clearly how much Mies van der Rohe appreciated this medium. When he came to the United States in 1938, he brought this technique with him and

developed a totally different way of presenting his designs. In the case of the unbuilt Resor House project (1937-41), Mies van der Rohe didn't use this medium to assimilate a building to its surroundings but, for the first time, created an impression of the interior including the view through the windows into the landscape. He, therefore, again made use of photography, but with a totally different purpose. In a cut and paste manner he took pictures of paintings, sculptures, landscapes or even marble surfaces, combined them with materials like thin wood panels and added them to a drawn interior. Therefore, those later works can be called collages compared to the earlier designs where he just combined photography and drawing. Mies van der Rohe preferred to include works of his favorite artists, such as Paul Klee, Wassily Kandinsky or Georges Braque, in the collages. In a work showing an inside view of the Resor House Klee's painting, *Bunte Mahlzeit* [colorful meal], of 1928 depicts a kind of partition wall.

According to that new technique the Resor House marked the transition to a new kind of design standard in Mies van der Rohe oeuvre as well as the transition to the second room of the Aachen exhibition. The second, quite smaller room was dedicated to Mies van der Rohe's courtyard house projects. Many of the collages that were on display in fact weren't made by Mies himself but by his students. After already teaching at the Bauhaus in Dessau and Berlin, Mies continued his teaching activities at the Armour Institute in Chicago, the later IIT. The courtyard houses or atrium houses were a type of architecture that Mies van der Rohe worked with throughout his whole life. Compared to the designs of



07 Exhibition *Mies van der Rohe. The MoMA collages*, Ludwig Forum, Aachen, 2016. Concert Hall Project, 1942. © Carl Brunn.



08 Exhibition *Mies van der Rohe. The MoMA collages*, Ludwig Forum, Aachen, 2016. Bacardi Administration Building Project Santiago de Cuba, 1957. © Carl Brunn.

the 1920s and 30s they didn't interact with their surroundings at all, meaning that the drawings and collages focused completely on the interior in combination with the limited exterior of the courtyard. In the original collages one can discover that Mies van der Rohe used to draw into his students' works, for example a tree or a chair or something else that mostly served to give the design a more precise atmosphere.

Almost all of those collages showing an interior view involve pieces of art. Thus, the exhibition continued in the third room with a design for a Row House with Interior Court (after 1938) showing a painting, which was unknown until the curators discovered that it was a detail of Paul Klee's *Regentag* [rainy day] from 1931. They managed to borrow it from a private collection to place it in the exhibition together with a statue, *Große Stehende* [standing female] (1910), by Wilhelm Lehmbruck, which was also used in the collage. This ensemble impressively showed how Mies van der Rohe used to vary the proportions. In truth, the whole painting by Paul Klee measures only 20.5 x 38.5 cm while, in the collage, it seems to be a piece of furniture or a kind of small wall whereas the life-sized statue appears to be much taller in reality than in the collage.

In Berlin and in the United States, Mies van der Rohe was not very successful in winning any competitions, especially for public works. Struggling with that matter he didn't get tired of designing them. Some of these attempts were also on display in the third room of the exhibition, such as the national project Museum for a Small City (1942-43), which Mies van der Rohe designed together with his colleague George Danforth. For the collages of the interior they used no less than Pablo Picasso's *Guernica* (1937), one of the icons of modern painting and at the same time a political statement. Later it was again inserted in the collages for the *Neue Nationalgalerie*, so one might not think of a coincidence, but a potential statement by Mies van der Rohe who never talked about politics in public. This is only one example of how much Mies van der Rohe seemed to think about the

art he inserted in his designs, a fact that this exhibition points out very clearly. Relating to Mies van der Rohe's famous works, like the collages for the Convention Hall (1954, together with Edward Duckett) or the Concert Hall (1942), one might think about their qualities as works of art apart from functioning as a design. Not only in the context of this exhibition but in general, there is a question as to whether Mies van der Rohe's montages and collages can be labeled and presented as autonomous artworks. Despite the fact that this issue is totally irrelevant with regard to their importance within Mies van der Rohe's oeuvre, one may ask: why should they not be? Of course most of them arose from a design process and thus are somehow part of the designed, but mostly unbuilt architecture, but it was Mies van der Rohe who made them more than just standard plans or drawings. He gave them to exhibitions, he signed them, he gave them as presents (e.g. the Concert Hall collage). Especially the act of giving something to somebody releases the work from being just part of an act and underlines its outstanding importance. In short, Mies van der Rohe himself treated at least some of his montages and collages like artworks. Through presenting them in the same way like the works of Klee, Schwitters or Kandinsky this exhibition allowed an entirely new perspective on those impressively huge works.

As already stated, some of the collages and montages had been on display before, but now, as they were to be seen altogether, a totally new way of observing them was possible. If you followed the given path in the exhibition, it couldn't be missed, that Mies van der Rohe, like almost every great architect or artist, sometimes tended to revert to his own designs. This was most evident for the visitor heading to the fourth and final room, where the project for the Bacardi Administration Building in Santiago de Cuba, the Museum Georg Schäfer in Schweinfurt and finally the Neue Nationalgalerie in Berlin – the only building of those which was actually realized – echoed the architectural ideas already seen in the Museum for a Small City or the courtyard houses. According to Mies van der Rohe

this was not a problem at all as he always was convinced that a building's design should not be dependent on its use.

One might have expected that the unbuilt designs would be accompanied by plans, drawings and photographs of Mies van der Rohe built work. It would have helped visitors who are not that familiar with those buildings and would have given the experts the opportunity to have deeper discussions about the coherences between the different media. But in accordance with the exhibition exposing primarily art and not architecture, the curators decided to complement Mies van der Rohe's collages and montage as well as the works of classical modernism by creations of contemporary artists who dealt with Mies van der Rohe's architecture in many different ways. Among them famous names like Thomas Ruff, Mischa Kuball or Sarah Morris, whose film *Points on a Line* of 2010 discusses the relationship between Mies van der Rohe and Philip Johnson in very impressive images. Apart from the obvious connection with Mies van der Rohe's built oeuvre, the works somehow are all related to the idea of collage or montage, be it in the changing images that never allow one to recognize at once what one sees, for example in Inigo Mangano-Ovalles' film, *Always After* (2006), or the digital collage technique, for example in Thomas Ruff's pictures showing the Weißenhofsiedlung in Stuttgart (2001).

If one really became involved with this unusual compilation – or “collage” – of Mies van der Rohe, Paul Klee, Thomas Ruff and all the others, of drawings, paintings, photography and film, one could definitely gain new perspectives or maybe a new kind of awareness for the Mies van der Rohe myth. If not, there was still the pleasure of seeing a unique exhibition about one of the most important architects of our times.

Birgit Hammers

Scientific Researcher and Lecturer at RWTH Aachen University, Department for Art History

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Mies & the Inheritance of Modernism

Exhibition at SCHUNCK* Glaspaleis

Heerlen, The Netherlands, 10 April – 7 August 2016

At the occasion of the 130th anniversary of the birth of Mies van der Rohe, on 27 March 2016, the exhibition *Mies & The Inheritance of Modernism* was opened on 10 April 2016, in SCHUNCK*, Heerlen, The Netherlands. The project was focused entirely on the re-evaluation of the modernist architectural heritage. The central question which led the whole project was: how much do we value the inheritance of modernism and how should we deal with it? The exhibition was contextualized by an international program in which symposia, lectures, film screenings, excursions and guided tours provided a deeper knowledge. During a 4-month period, SCHUNCK* Glaspaleis radiated modernism and created, to some extent, a new supra-regional and international focus and mindfulness (*Achtsamkeit*) both for visitors, residents and politicians. The surprising awareness of visitors about the importance of their own region, but also the understanding of the cultural-historical value of modernist buildings as well as the great respect and honest recognition of the very accurately restored

masterpieces, testify to this rising awareness. The project was developed with a dual structure: an international and a regional perspective on modernist inheritance.

International Perspective of the Exhibition

The main focus of the exhibition was on the international part, which showed, on the basis of five selected masterpieces by Mies van der Rohe, the renovation processes as well as the possible concepts of preservation and brought at the same time the main representatives of this period to the attention of the public.

The 5 selected masterpieces were:

- Haus Tugendhat, Brno.
- Crown Hall, Chicago.
- 860–880 Lake Shore Drive, Chicago.
- Robert F. Carr Memorial Chapel, Chicago.
- Verseydag, Krefeld.

Didactically simple and arranged on a central axis, the exhibition in the museum (level-1) was subdivided in four different zones.

Introductory Zone/Oeuvre Survey, CV

On entering, the visitor was given a sort of introduction to Mies van der Rohe and the specific topic of the exhibition.

The information on Mies van der Rohe was based on a short CV with a number of key dates and an oeuvre overview of the complete built works of Mies van der Rohe. Each of the 79 buildings was briefly described on an information panel with a photo and core data. This provided the general public with a differentiated picture of his realized works and also made it possible to place the five selected projects in their context. Two museum texts served as an introduction to the theme of the exhibition.

Film Zone/Video-installation
"INTER/VIEW"

The wall high video-installation, 20 m long, was one of the core pieces of the exhibition, apart from the "laboratory" space. It provided the visitor with an introduction and accessibility to the theme. The visitors could learn here about the daily use of the five buildings that were central to the exhibition. The moving image at 1:1 scale, provided an impressive virtual tour of the buildings themselves, especially because there were no artificial interventions. The methodology for this "visual inspection" was to show the buildings, without any embellishment, in their real daily functionality and in all their facets. This panorama transformed the museum space into an aesthetic and spatial Mies van der Rohe world – quiet and concentrated on the essential.

Research Zone/Laboratory Space

In the research area "the laboratory" the renovation processes of the five buildings were shown. Based on an axes structure (horizontally five projects and vertically three thematic axes) a comparative analysis could be shown in a simple and easy way. The visitor had the choice to approach the various processes via the project axis or the theme axis. The five selected examples showed the whole spectrum, from selective interventions to core refurbishments. On so-called "labor tables", designed specifically for the exhibition, different working practises and interventions were demonstrated. The size of the tables was well suited to bring the different types of material to the imagination. The conceptual questions, the approach as well as the current process were made



01 © SCHUNCK* Heerlen, Romy Finke.

05 © SCHUNCK* Heerlen, Klaus Tummers.



06 © chezweitz Berlin, Hanna Neander.



clear to the visitor through pictures, (original) drawings, texts, research studies, models and original material samples. Depending on the visitor's interest, there were three distinct layers of immersion. Replicas of original Mies van der Rohe construction/renovation drawings were presented on A2-size boards for further consultation, thereby giving each project an extra dimension.

Object Zone/Installation Large Artefacts

The object zone was an impressive installation of large-scale original elements and objects from the five buildings. This zone emphasized explicitly the matters of physical materiality.

Among others, the exhibition intended to stress the importance of the material, especially when maintaining and preserving the modernistic inheritance! It's one of the main difficult matters in these kind of restorations. The large amount of material specimens on the "labor tables" has also managed to demonstrate this to a certain extent.

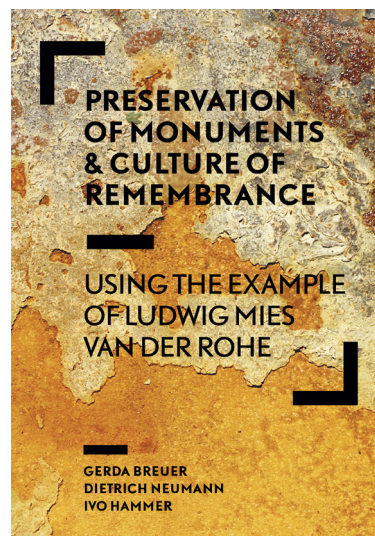
Regional Perspective of the Exhibition Showcase – Ground Floor

In the large showcase of SCHUNCK* situated at the market square, right in front of the entrance – the regional part of the exhibition was shown. A preliminary study demonstrated that there are more than 100 modernist buildings in the region. A rich inheritance of which the region was unaware!

The 40 buildings that were selected for the exhibition, are all very important for the character of the cityscape and of indispensable value for the identity and image of the Parkstad region. Situated close to the city center, the showcase translated the knowledge and questions concerning the use, value and treatment of the inheritance of modernism to the local situation in Heerlen and Parkstad Limburg.

The underlying intention to let the visitors make the projection from international to regional, was incredibly successful.

07 Gerda Breuer, Dietrich Neumann, Ivo Hammer, *Preservation of Monuments & Culture of Remembrance. Using the Example of Ludwig Mies van der Rohe*, Herlen, Schunck, 2016.



Publication | Essay Book

Accompanying the exhibition, a small essay book was published – Gerda Breuer, Dietrich Neumann, Ivo Hammer, *Preservation of Monuments & Culture of Remembrance. Using the Example of Ludwig Mies van der Rohe*, Herlen, Schunck, 2016 – mainly reflecting on (inter) national elements of remembrance, using the example of Mies van der Rohe. The essays related directly to the themes of the exhibition and complemented them from a different angle. Simultaneously, the book reflected on the current restoration practise of modernist monuments and the accompanying problems.

Andrea Croé

Senior curator architecture & urbanism SCHUNCK*

More Information

Curator & Project leader: Andrea Croé, SCHUNCK* Heerlen.
Scenography: Sonja Beeck, Detlef Weitz with Julia Volkmar, Chezweitz, Berlin.

Video-installation "Inter/View": Dominique Müller Videoir Zürich & Paris, Detlef Weitz, Chezweitz, Berlin with Fabian Wegmüller and Samuel Gfeller.

Scientific advisory board: Gunny Harboe, Harboe Architects, Chicago; Ivo Hammer, conservator-restorer, Vienna.

BOOK REVIEWS



Mies van der Rohe. Das kunstlose Wort. Gedanken zur Baukunst

Author: Fritz Neumeyer

Publisher: DOM Publishers

ISBN: 978-3-86922-264-6

Language: Deutsch

Year: 2016 [1986, Berlin, Siedler]

(Cambridge/London, 1991; Madrid/Paris/Milan, 1996; Seoul 2007)

Fritz Neumeyer's work, published in 1986, has become a classic of architectural theory. In this first scientific study of the Mies van der Rohe ideas, the word is the focus - as a key to his building philosophy. Fritz Neumeyer reveals direct personal influences as well as internal contradictions in the development and self-understanding of Mies as a representative of the modern age, through the profound analysis of original documents and through the intensive discussion within the reading of the great master builder. He also emphasizes the close connection between philosophy and architecture in his oeuvre. In addition, Mies himself speaks: The appendix documents all available texts by Mies, which deal fundamentally with the art of building in the age of modernity. They are eloquent testimonies of the architects' intellectual confrontation with architecture, and have not lost their basic importance to this day.

Translated from the Publisher.



Mies in Berlin

Edited by Terence Riley and Barry Bergdoll

Publisher: The Museum of Modern Art

ISBN: 978-0810962163

Language: English

Year: 2001

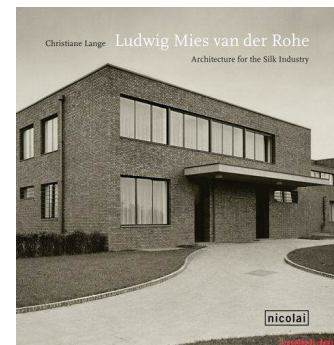
When Mies van der Rohe left Germany for the United States, in the summer of 1938, he was 52 years old. He had practiced as an architect for over 3 decades; had published, lectured, and exhibited; had produced designs not only for Germany but for The Netherlands, modern-day Poland, Spain, the modern-day Czech Republic, Belgium, and the United States; and had been a leader of the architectural community in his native land. Yet the book that accompanied his first retrospective exhibition, at The Museum of Modern Art in 1947, could nevertheless open with the remark, "Of all the great modern architects Mies van der Rohe is the least known."

Despite the historical importance of Mies van der Rohe's architecture, this observation holds in certain respects, for Mies van der Rohe's Berlin work has never been fully explored. Outside the handful of manifesto projects and built works that have become famous, his German practice has tended to be seen retroactively as but the first step toward the triumph of the International Style, which came during his years in the United States. Mies himself edited the story of his early career, focusing attention on his most dramatic designs.

Mies in Berlin undertakes a new study of Mies van der Rohe's Berlin production — not only his best-known projects but the work he excised from the record. The book is newly sensitive to the urban, suburban, and intellectual contexts of Mies van der Rohe's thought. Discussing his metropolitan skyscrapers and office buildings, it also examines the dense and vibrant urban fabric of central Berlin; analyzing his private houses, it relates them to German ideas about nature, and to the great work of environmental art constituted by

the cultivated landscape of Potsdam. It also explores Mies van der Rohe's responses both to Berlin's inherently conservative building tradition and to the city's artistic avant-gardes. Essays on recent discoveries and ideas, and on Mies van der Rohe's understanding of America, expand our knowledge of Mies van der Rohe's German career and offer new perspectives on his work as a whole. A plate section richly documents forty-six projects from his German years and includes an explanatory text on each one. Finally the book contains a project by the contemporary artist Thomas Ruff in reaction to Mies buildings. *Mies in Berlin* — which accompanies an exhibition of the same name at The Museum of Modern Art, New York — offers new insights into the work of this architect, so vitally significant both historically and in our own new century.

From the Publisher.



Ludwig Mies van der Rohe. Architecture for the Silk Industry

Author: Christiane Lange

Publisher: Nicolaische Verlagsbuchhandlung GmbH

ISBN: 978-3-89479-673-0

Language: English

Year: 2011

Mies van der Rohe (1886-1969) is one of the most important architects of the 20th century. Until 1938 he worked in Europe, ten years of which he cooperated with a small group surrounding the Krefeld collector and silk manufacturer Hermann Lange. During this extraordinary long term collaboration between Mies van der Rohe and his partner Lilly Reich with the Krefeld friends numerous important buildings were designed that are extensively presented in this splendid book. Mies van der Rohe's planned but not realized

projects are introduced with large-size computerized visualisations that have never been published before. This publication illuminates the close relationship of the architect and the Velvet and Silk City and gives fascinating insight into Mies van der Rohe's work.

From the Publisher.



Mies van der Rohe – The Built Work

Author: Carsten Krohn
 Publisher: Birkhäuser Verlag AG
 ISBN: 978-3-03821-287-4
 Language: English
 Year: 2014

This essential and comprehensive Mies van der Rohe monograph focuses in its analysis on Mies van der Rohe's design intentions: it reconstructs the buildings in their original state, examines them from the present day perspective and rediscovers the inspiring architecture of a great modern master. The book presents eighty of Mies van der Rohe's works in chronological order. Approximately thirty of these works are analyzed in detail in three parts. In the first part, the construction is documented in its built state; for this all the ground plans were redrawn by the author. The second part outlines the changes to the buildings and the third part develops the results of this investigation with regard to their relevance to the contemporary view of Mies van der Rohe's work.

From the Publisher.



Ludwig Mies van der Rohe. MIES 1:1.: Das Golfklub-Projekt in Krefeld / The Golf Club Project

Edited by Christiane Lange and Robbrecht en Daem architecten
 Publisher: Buchhandlung Walther König
 ISBN: 978-3-86335-644-6
 Language: English and Deutsch
 Year: 2014

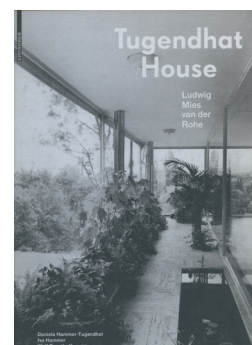
Ludwig Mies van der Rohe's 1930 design for a golf club-house in Krefeld never reached the construction phase. In 2013, however, a full-size model that could be entered and walked around was built at the originally planned site in cooperation with the Belgium architects Robbrecht en Daem architecten, based in Ghent.

The 1:1 architectural model took shape on the basis of the original plans, available in Mies's estate in MoMA in New York. In this way, one of Mies van der Rohe's never implemented designs was turned into a visible and phenomenological experience for visitors.

Over the course of five months, it was possible to observe and walk through this exciting combination of architecture and nature and experience Mies van der Rohe's unique understanding of space as an open structure of tense balance. The 1:1 model also served as a temporary memorial of Mies van der Rohe's comprehensive work for the German silk industry which resulted in a total of ten contracts.

This volume documents a unique exhibition project, MIES 1:1. With revealing series of photographs by well-known photographers, it discusses possible insights that architecture could gain from such models, both with regard to our understanding of space as well as further research on Mies. The publication of both the historical plans and the construction drawings of Robbrecht en Daem architecten makes this volume an indispensable reference for appreciation of Mies van der Rohe.

From the Publisher.



Tugendhat House. Ludwig Mies van der Rohe

Authors: Daniela Hammer-Tugendhat,
 Ivo Hammer and Wolf Tegethoff
 Publisher: Birkhäuser Verlag GmbH
 ISBN: 978-3-99043-509-0
 Language: English
 Year: 2015

Built and designed by Mies van der Rohe 1928–1930, the Tugendhat House in Brno/Czech Republic is one of the most significant buildings of European modernism. In 2001, UNESCO added the house to the List of World Cultural Heritage Sites.

Building on the book published by Daniela Hammer-Tugendhat and Wolf Tegethoff in 1998 (English edition 2000) the three authors, in this new edition, give personal and historic insights relating to the house; also documenting aspects pertaining to art history and conservation-science studies.

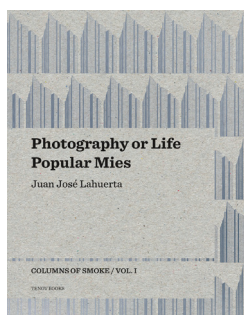
The appeal of this monograph lies in the published photographs which reveal an unusual view of the house and highlight the intended fusion between architecture and nature. The experimental artistic colour photographs by Fritz Tugendhat are among the pioneering achievements of amateur photography; that these images have remained intact is indeed remarkable.

Daniela Hammer-Tugendhat reflects on the question much debated in 1931, "Is the Tugendhat House habitable?" in a new, historico-cultural context. Using the example of the Tugendhat House Wolf Tegethoff explores the living concept of modernism. At the beginning, he critically reflects on the discourse surrounding the relationship between client and architect. Based on his research on the preserved plans and drawings he meticulously reconstructs the genesis of the project until the building's completion in late 1930.

In two contributions Ivo Hammer documents the eventful history of the house from the time its occupants emigrated until today. Based on the results of the international Conservation Investigation Campaign concerning the Tugendhat House he interprets

the materiality of this modern building in a cultural context, while outlining the results of the restoration from 2010–2012.

From the Publisher.



Photography or Life & Popular Mies

Author: Juan José Lahuerta
 Publisher: Editorial Tenov
 ISBN: 978-84-939231-5-0
 Language: English
 Year: 2015

“Photography or life” and “Popular Mies” make up the first volume of *Columns of Smoke*, a collection of essays which review the bases on which modernity has been constructed. Contrasting the canonical images of the history of 20th-century architecture with anonymous graphic materials or pictures from the popular press, Lahuerta creates an illuminating dialogue that dismantles stereotypes by revealing a less perfect but more plausible idea of modernity.

Pointing a camera at a building is not natural; rather it involves making decisions that are closely related to the meaning of architecture. Juanjo Lahuerta makes this clear in his analyses of, inter alia, the photographic gaze of Loos and Le Corbusier, whose irreconcilable approaches represent radically opposed ways of understanding architecture and life. Using this same method, Lahuerta’s analysis of the photographs of his works that Mies commissioned and published shows us how much the architect was influenced not only by Stieglitz and Camera Works but also by the popular tropes of a mass culture that included zeppelins, the music hall, X-rays and fantasmagorical gadgets. At the same time, in their portrayals of Mies van der Rohe’s work the press and anonymous photographers situated it in a popular context that provides the necessary counterpoint to conclude the account of a modernity that can no longer be thought of as heroic.

From the Publisher.



Ludwig Mies Van Der Rohe. Una Biografía Crítica

Authors: Franz Schulze
 and Edward Windhorst
 Publisher: Editorial Reverté
 ISBN: 978-8429121285
 Language: Spanish
 Year: 2016

This book, published by Editorial Reverté, is the Spanish translation of the publication *Mies van der Rohe: A Critical Biography, new and Revised Edition* (The University of Chicago Press, 2012) – a major rewriting, reformulation and expansion of Mies van der Rohe’s “critical biography”, published by Franz Schulze in 1985 (and translated into Spanish in 1986), which was the first full comprehensive study of this master German-American modern architect.

Coauthored with Edward Windhorst, this revised edition, features extensive new research and the best recent work of both American and German scholars and critics. The authors describe Mies van der Rohe’s professional career from his incorporation in the modern avant-garde, with innovative architectural works but with a modest scale, until his second stage in the United States, where he created a new architectural language with objective structural expression. The authors’ major contributions and discoveries of this new edition include the massive transcript of the early-1950s Farnsworth House court case, disclosing for the first time the facts about Mies van der Rohe’s battle with his client.

The text provides new information on Mies van der Rohe’s relationship with women, including the nature and the break-up of his marriage with Ada Bruhn, his close professional and personal relationships with Lilly Reich, and new details drawn from interviews with his American partner Lora Marx. This edition gives voice to dozens of architects who knew and worked with Mies, largely thanks to the exceptional collection of “oral history” from the Architecture Department of the Art Institute of Chicago. This complete and comprehensive biography

tells the fascinating story of how Mies van der Rohe (and his students and followers) created some of the most significant buildings of the 20th century.

Translated from the Publisher.



Mies van der Rohe: Montage / Collage

Authors: Andreas Beutin and Wolf Eiermann
 Publisher: Buchhandlung Walther König
 ISBN: 978-3960980537
 Language: English and Deutsch
 Year: 2017

Mies van der Rohe (1886–1969), one of the 20th century’s most important architects, created numerous montages and collages between 1910 and 1965 that are fascinating illustrations of the design principles of his architecture. These works, most of them large-format, are far more than merely sketches that accompanied his creative process as an architect. They are works of art in their own right that show Mies van der Rohe’s structural vision in its purest form. Like almost no other visual art technique, collage and photomontage reflect the aesthetic principles, the *zeitgeist*, and the attitude to life of Modernism. At the beginning of the 20th century, war, revolution and industrialization caused a shift in the way the modern world and progress were experienced and perceived, a shift that found expression in equal measure in newspapers and magazines, in visual and performing arts. Collage and photomontage were also soon being used in architecture. Influenced by Dada, Constructivism, and De Stijl, Mies van der Rohe exploited these new techniques – to a far greater extent than most of his contemporaries – to visualize his creative ideas on “New Building” (*Neues Bauen*).

From the Publisher.