

Colour, Form and Space
Rietveld Schröder House Challenging the Future

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COLOUR, FORM AND SPACE

RIETVELD
SCHRÖDER
HOUSE
CHALLENGING
THE FUTURE

Marie-Thérèse van Thoor [ed.]

COLOUR, FORM AND SPACE

TU Delft, in collaboration with Centraal Museum, Utrecht.
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Marie-Thérèse van Thoor [ed.]



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INTRODUCTION

MARIE-THÉRÈSE VAN THOOR

The Rietveld Schröder House in Utrecht was designed in 1924 by Gerrit Thomas Rietveld (1888-1964) for Mrs Truus Schröder-Schräder (1889-1985), as a home for her and her three young children. Mrs Schröder had very decided ideas about the modern family, the upbringing of her children, and a corresponding way of living. She wanted a flexible house that would be able to evolve over time in tandem with the changing needs of her family. Known and celebrated as the architectural expression of the ideology and design ideas of the De Stijl movement,¹ the house is just as much the expression of the personal attitude to life and wishes of the client who commissioned it. In Rietveld, Mrs Schröder felt she had found the ideal interpreter of her modern ideas.

Mrs Schröder lived in the house until her death in 1985, during which time it underwent several changes and alterations. By the 1960s the house was showing the effects of inadequate maintenance and the need for a comprehensive restoration became increasingly urgent. In 1974 work began on the restoration of the exterior. The interior followed after Mrs Schröder's death. Both restorations were carried out by the architect Bertus Mulder (b. 1929), who had worked with Rietveld in the early 1960s and knew his body of work better than anyone.² In his restorations, Mulder opted to return the house as much as possible to its original condition, whereby the re-establishment of the original concept was considered more important than presenting or respecting the history of the house and its occupancy. Since the restorations the house is once more a shining manifesto of De Stijl and modernist living. Few realize that this is also one of the first examples of a restored modern heritage building. The Rietveld Schröder House

is also a milestone in the history of modern heritage restoration and a manifesto for the concern for modern heritage in the Netherlands.

In 2009, Bertus Mulder gave a personal account of the restorations of the house in the book *Het Rietveld Schröderhuis*.³ He had already prepared a similar overview for the dossier in support of the UNESCO World Heritage nomination. Various reports and memoranda are also to be found in the Bertus Mulder archive. Owing to the restoration architect's advancing years, the opportunities to draw on his memories in conversations are gradually diminishing. It was the value of this form of historiography – oral history – that motivated this study, which was made possible by a Keeping It Modern Grant from The Getty Foundation (2015). The conversations yielded a wealth of information, which was then weighed against the 2009 publication, and more especially with the many archival sources, in an effort to bring a degree of objectivity to the history of these restorations. During our investigations more and more new documents and pictures came to light and these have contributed substantially to the end result.⁴

The aim of this historical research was to reconstruct the 'Bertus Mulder time period'. This involved examining the guiding principles, points of view, choices, and outcomes. Also considered were the respective roles of Truus Schröder (photo on page 6),⁵ of the client who commissioned the restorations (the Stichting Rietveld Schröder Huis / Rietveld Schröder House Foundation), and of the heritage agencies. And, given that the

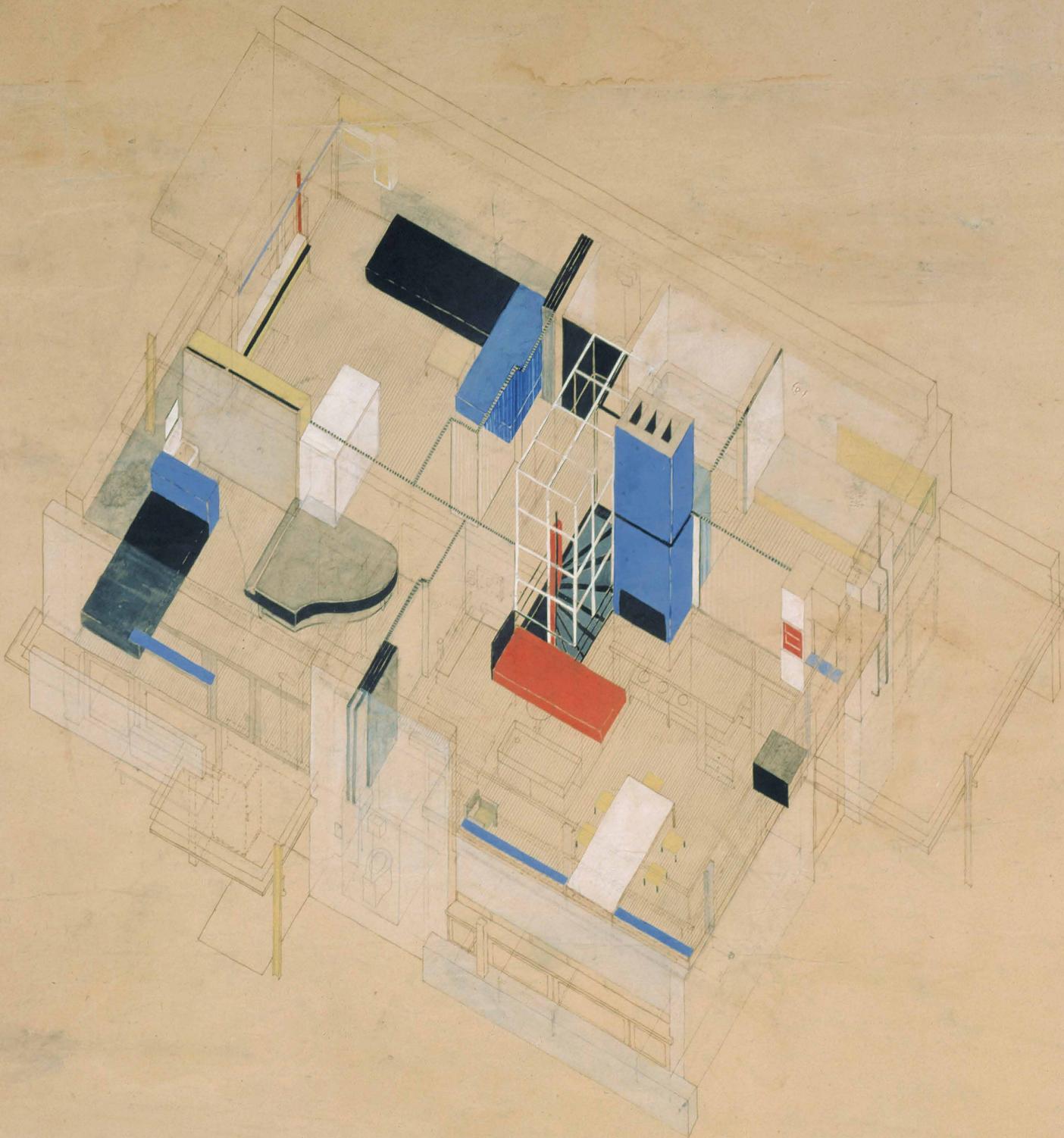
house has been managed by the Centraal Museum and opened to the public as a museum house since the completion of the restorations in 1987, the museological decisions made during the restoration of the interior were also subjected to scrutiny.⁶

In Rietveld's design concept the materialization of the external and internal walls, in plasterwork and paintwork, were of crucial importance. In addition to the three-dimensional spatial composition of horizontal and vertical elements, and the interplay of inside and outside, open and closed, the Rietveld Schröder House as a whole, from ground level to roof, from floor to ceiling, displays smoothly finished and painted surfaces. In restoring the original concept of the house, the finishing of those external and internal walls, the paintwork and the choice of colours, were therefore key considerations. This is why the first three chapters focus on the ideas and principles that informed the restoration of the inner and outer skin of the house. The crumbling of the internal plasterwork (2016) gave the research an unexpected twist and also led to a limited material survey of the wall finishes.

During the restorations Mulder dismantled large areas of the inner and outer skin down to the structural shell. After which he 'made a recreation of the Rietveld Schröder House, together with Truus Schröder and the advisers'. The architect is convinced that with this the last, definitive phase in the creation of the house was completed.⁷ This recreation of Rietveld's work has added a new dimension to the history of the house. This is not only important from a historiographical perspective, but also forms a new challenge for future restorations.

In the fourth chapter, the guiding principles of the furnishing of the museum house are placed within the context of the occupational history of the house. After the death of Truus Schröder the interior of the Rietveld Schröder House was restored in an 'abstract manner' in the spirit of the 1920s. But how can the supposedly all-important 'domestic culture' be represented if the museum house is not allowed to suggest that the occupant has just stepped outside?

Finally, one further aspect, which is set to become very important for the future use of the museum house, is addressed: the indoor climate. Today, almost a century after the house was built, the measurement of temperature and humidity, in relation to outdoor climate and visitors, ought to be an essential part of ensuring a sustainable future for the Rietveld Schröder House as heritage building, as museum house and as collection object.





1 / THE RESTORATION OF THE EXTERIOR

MARIE-THÉRÈSE VAN THOOR



FIG. 1.1 In the beginning of the 1970s the state of repair of the Schröder House left a lot to be desired

In 1963 Pieter Singelenberg wrote an alarming article for the *Nieuw Utrechts Dagblad* about the Utrecht city council's plans to raise the Rijksweg, nowadays called Waterlinieweg, and construct a viaduct right in front of the Schröder House.¹ Singelenberg also brought what he called 'this unforgivable error' to the attention of the Rijkscommissie voor de Monumentenzorg (National Historic Monuments Commission). The Schröder House had, after all, enjoyed international renown since the 1920s and was ideologically on a par with housing designs by Gropius, Mies van de Rohe, Le Corbusier, Mart Stam and J.J.P. Oud. The proposed infrastructural works would have a devastating impact on the house in its context. Singelenberg informed the Commission that even in the United States there were initiatives aimed at preventing this negative impact. The Commission responded sympathetically, but dispassionately, as 'it [was] too late to stop the calamity'.²

The 1950s and '60s witnessed a veritable De Stijl revival; there were exhibitions on De Stijl (Amsterdam, Venice and New York, 1951 and 1952), on Rietveld (Utrecht and Amsterdam, 1958 and 1959) on Theo van Doesburg (Eindhoven, 1968) and on '50 Years Bauhaus' (Amsterdam, 1968-69). This re-evaluation of De Stijl had a big impact on the standing of Rietveld and his work.³ As such, it was impossible for the government to remain aloof on the question of the house and its future. In 1969, six years after Singelenberg's article and once again in the wake of a pleading letter – this time from the architect J.C. Meulenbelt to the relevant minister – the Commission, in the person of Ruud Meischke, acknowledged that maintenance of the Schröder House did indeed leave much to be desired and that 'urgent provisions' needed to be made [FIG. 1.1].



FIG. 1.2 Damage to the house became increasingly visible



FIG. 1.3 Plasterwork and wood exhibited serious blemishes

But the Commission also felt that Mrs Schröder probably did not have the means and was too advanced in years to undertake such a task. Although the house did not yet enjoy listed status, the Commission felt that the state should step in to enable the maintenance costs to be subsidized.⁴

Truus Schröder thereupon established the Rietveld Schröder House Foundation. With the formation of this foundation, in August 1970, the conservation and the maintenance of the house and its surroundings were in good hands.⁵ The arrangement provided greater certainty for the house's future. Mrs Schröder remained actively involved in the foundation, as she was a member of the first board, along with two of her children, Marjan and Binnert. The other board members were

experts from the world of design and modern architecture: Hugo Isaac, Pieter Singelenberg, Alexander Bodon and Willem Sandberg. In accordance with its statutes, the foundation also took on the task of seeking and securing a future function, a function that would do justice to the cultural significance of the house. In 1973 the foundation and Mrs Schröder further agreed that the foundation would purchase the building from her, and commission a by now urgently needed restoration. In order to implement this, the foundation depended on donations and subsidies, with the latter in turn linked to an official granting of listed status to the Rietveld Schröder House.⁶ Ever since its creation, therefore, the foundation has been actively engaged in promoting the interests and significance of the Rietveld Schröder House. The foundation's archive contains numerous requests

for and allocations of donations, and of subsidies.⁷ Funding bodies, businesses and architectural practices were quick to do their bit, and the state government and the city council also promised subsidies that would be available in 1975. In October 1974 Singelenberg wrote officially to the Director-General of the Rijksdienst voor de Monumentenzorg (Government Department for the Preservation of Historic Buildings, RDMZ for short in Dutch). In an impassioned defence of the house's significance for modern architectural history he argued – successfully – for it to be granted listed status, as of 1975. Fittingly, it was also officially 50 years since Truus Schröder-Schröder and her children had moved into the house designed by Rietveld.⁸

THE RESTORATION ARCHITECT

In October 1973, the foundation commissioned Bertus Mulder to restore the exterior of the Rietveld Schröder House.⁹ The first technical specifications for the restoration of the house had already been drawn up in 1970, by the architect Jan Veroude. At that time, or at any rate as long as Mrs Schröder continued to live in the house, the plan was merely to repair a number of defects and carry out necessary replacements. There was at that point no question of a more thoroughgoing intervention involving renewing certain elements, such as the roof, or of restoring the house to its original state. Meischke, however, was even then more in favour of full restoration than of just carrying out urgent consolidating repairs.¹⁰ After Mulder had surveyed the condition of the house it became clear that more was needed than repair work alone [FIG. 1.2/1.3].¹¹ Nonetheless, Truus Schröder continued to live in the scaffold-encased house. According to Mulder she was keen to experience it all for herself and actually enjoyed the flurry of activity around her.¹² The restoration of the interior was to be carried out at a later date, after she had moved out.

Jan Veroude was part of the Utrecht practice Architectengroep 5, voor Architectuur en Stedebouw, which the foundation had engaged in 1970 for the restoration of the Schröder House.

Veroude had worked with Rietveld, he was familiar with his output and also with the house because he had at one time lodged with Truus Schröder.¹³ The first preparatory works, together with the aforementioned technical specifications, were carried out by Veroude. He also contacted J. Baart de la Faille of Utrecht's Municipal Heritage Preservation Department who informed him that the restoration would not be overseen by the municipal department but by the RDMZ. Veroude's initial contacts with that body were with H. Mooijbroek, who subsequently left the RDMZ and whose successor was at that point unknown.

Meanwhile, Veroude himself had been appointed architect with the city of Amsterdam. He suggested to Mrs Schröder and the foundation that he should finish the restoration of the Rietveld Schröder House together with his colleague Bertus Mulder. Mulder had a good knowledge of Rietveld's work and had also worked in his office.¹⁴

The board was not happy with Veroude's sudden announcements, which prompted them to revisit the whole question of the choice of architect. There were other architects in contention besides Mulder, such as the young architect J.C. Meulenbelt, or B. Timmler, Jan van Tricht's partner. Singelenberg even suggested Han(neke) Schröder. The choice was left to Truus and her children. After a few discussions with Truus and Han Schröder, the choice fell on Bertus Mulder. According to Mulder, Truus and Han Schröder were aware of his familiarity with Rietveld's work, and of the mutual trust that had developed between him and Rietveld.¹⁵ Mulder's first description of works was still under Veroude's name, but thereafter he assumed total responsibility for the work.¹⁶ He was not quite so popular with Baart de la Faille, who felt that Mulder had already 'destroyed one heritage building' in Utrecht – a 'modern' renovation of a student parish building on Nieuwegracht – and should not be given an opportunity to do it again.¹⁷ However, the acting head of the RDMZ, C.A. van Swigchem, was of the view that the city council (Baart de la Faille) should stay out of it: 'don't worry; Mulder is acceptable to the government agency and that's what

matters'. H. Bardet was mentioned as a possible restoration supervisor on behalf of this agency.¹⁸ But the most important thing in his view was that the board included people who understood modern architecture.¹⁹

THE APPROACH TO THE EXTERIOR

It is clear from his contribution to the 2009 book *Het Rietveld Schröderhuis*, from his recent remarks, and from the conversations we had with the restoration architect, how much weight Mulder attached to Truus Schröder's opinion, with respect both to the restoration of the exterior and later in the lead-up to the restoration of the interior. He had many conversations with Mrs Schröder, and he corresponded regularly about the work with her daughter Han in the United States, and her son Binnert. The board had appointed Han adviser for the restoration and the archives of Bertus Mulder and Han Schröder contain several examples of the correspondence between Mulder and Truus's children.²⁰ In the conversations Mulder frequently referred to the fact that his relationship with Han was, alas, difficult, but that relations with Binnert were conversely very good.²¹

Despite the foreshadowed supervision by the heritage agency (specifically Bardet), the government agency's involvement failed to materialize. Nor did anyone come to take a look: 'we won't appoint a supervisor because nobody has any expertise in the restoration of recent architecture because there is as yet no first-hand knowledge,' Cees van Swigchem is reported to have said. According to Mulder, Van Swigchem had forbidden his officials to get involved in the restoration.²² After the correspondence about granting the Rietveld Schröder House listed status, which occurred in 1975, and a few letters about subsidies, the next documentation emanating from the RDMZ dates from late 1979, when Rob Apell and Rob de Jong went to inspect the house and consult on the possibility of subsidies for the layout of the garden. On that occasion the problems that had arisen during the restoration of the plasterwork were also discussed.²³

The technical specifications for the restoration of the Schröder House, which Veroude had drawn up in 1970, contained fairly detailed instructions for demolition, repairs and necessary replacements on, to, and in the house.²⁴ These related chiefly to the roof, the roof joists, drains, building services, the repair of sections of walls, the eaves and the replacement of various windows and doors.²⁵

The technical specifications are equally detailed regarding the plasterwork. Areas of brickwork to be relaid (such as the projecting sections along the roof) were to be rendered in keeping with the existing plasterwork using a synthetic resin mortar, and then finished with cement mortar. Wherever the plasterwork was loose or cracked, as in walls below windows, it was to be replastered with cement mortar but only after the installation of a moisture barrier.

The same applied to the interior plasterwork, such as the wall in the first-floor study behind the dismantled timber wall construction. The underside of the stair to the first floor, and the cracks in the wall between hall and library – and any other damage – was to be patched up or completely replastered.

The instructions regarding the paintwork repeatedly refer to 'original colours', 'the same as the existing paintwork'. This applied to the external walls, the steel structure and all the woodwork, inside and out. In addition, the existing work 'had first to be stripped of the old paint layers', and where necessary repaired (filled, sanded, primed, given a final coat with good quality materials and by skilled workmen). Before the paint layers were removed, according to these instructions, 'duplicate colour samples of sufficient size [were to be] made of all existing colours'. The colour samples not only had to be carefully compared with the existing colour (gloss and structure), they also had to be approved by Mrs Schröder and the architect. After the preparation of a test piece, these samples would then be used to determine the new finish coats. One of the samples was for Mrs Schröder, the other for the architect.



FIG. 1.4 Unconventional constructions made the house vulnerable



FIG. 1.5 After 50 years the concrete of the balconies also showed signs of cracks and damage

After Mulder had taken over from Veroude his ideas on the principles of the restoration began to crystallize in the course of conversations with Truus Schröder and through an intensive study of the house and its 'grammar'.²⁶ Schröder and Mulder agreed that the character and essence of Rietveld's work, in particular Rietveld's ideas about space, spatial effects and spatial perception, should be paramount in the restoration. Both felt that this would be best served by returning the house to the 'most original state'. The use of colour was frequently discussed because of the importance Rietveld attached to colour for the expression of his spatial ideas.²⁷

Once the house was surrounded with scaffolding, work could begin on the necessary repairs and replacements [FIG. 1.6]. The house had numerous defects and was not very stable.

This was mainly because Rietveld considered the spatial effect and associated appearance, and the optical effect, more important than a stable and sound construction [FIG. 1.4]. This had resulted in unusual combinations of traditional and modern materials (and their properties) and techniques which, after the passage of so many years had started to exhibit all manner of defects. For example, the way the steel beams had been tailed into the (single-skin) brickwork had led, through the action of moisture, to rust and hence to cracks in both brickwork and plaster. At Rietveld's insistence, the concrete slabs used for the balconies had to be very thin so that here, too, moisture had been able to corrode the steel edges, which had started to rust, and the concrete had begun to display cracks [FIG. 1.5].



FIG. 1.6 Scaffolded Rietveld Schröder House at the start of the restoration of the exterior, 1974



FIG. 1.7 The roof required extensive repairs to prevent further sagging and leaks

The roof construction and finishing employed had given rise to sagging, resulting in numerous leaks [FIG. 1.7]. The skylight needed to be replaced. Likewise, much of the timber used in windows and doors, which Rietveld had dictated should be flush with internal and external walls, in other words without sills or projecting edges, was due for replacement. This was especially true of the windows and balcony door in the east elevation, followed by Truus's room. The damage and defects were treated invasively by Mulder, using contemporary materials and techniques, in order '[to] achieve the durability desired by Truus Schröder [FIG. 1.8]. Not through restoration according to traditional standards, but to a large extent through reconstruction of the form using a new, technically superior method.' According to Mulder this was the result of the RDMZ's 'wise decision' to keep the agency's officials well away from the work.²⁸



FIG. 1.8 Although the house was surrounded by scaffolding, Truus Schröder continued to live in it during the restoration of the exterior

PROBLEMS WITH THE PLASTERWORK

The restoration of the exterior was carried out between March and September 1974. The cracks in the plasterwork were mainly in the east and south elevations and once that plaster had been chipped away cracks were also discovered in the brickwork behind it [FIG. 1.9].²⁹ The Stichting Onderzoek en Voorlichting (Foundation for Research and Information, SOV) of a firm specializing in plastering, terrazzo and plasterboard (STS) had been asked for advice and in February it had provided detailed instructions for the repair and treatment of damaged sections of brickwork and plaster, for the joints between plasterwork and wood, and for the concrete. SOV's J.F. (Hans) Geerken provided advice on the method as well as on the specific composition of the materials to be used. In accordance with this advice, Mulder

had the cracks in the brickwork treated with a synthetic mortar that was then coated with a synthetic dispersion to ensure that the rendering coat would adhere. Where the cracks were only in the plasterwork, the mortar layer was re-rendered and then plastered to the same level as the existing plasterwork, on which the existing layers of paint were still present. Instead of applying a fine render to the base coat, Rietveld had the plasterer impart texture directly to the (hardened) rendering coat. The circular motion of the trowel produced a grainy effect.³⁰ Geerken saw to it that the various stages of this work were carried out according to instructions.

Once the plaster was sufficiently cured the wall could be repainted under the supervision of K. van Zanen from Sikkens. This occurred in July and August 1974; after that a rest period of one year was to be observed to see how the colours would hold up and how they would change over time. After that year the final finishing could be carried out.

In spring 1975 the paintwork, on both the restored and unrestored wall sections, displayed small cracks.³¹ Tapping on the three restored walls revealed that the final coat of render had not bonded with the substrate. The coat of paint had also failed to adhere in several places resulting in a patchy appearance. In October 1975 these problems were inspected on site by Van Zanen, Geerken and Mulder, together with the contractor, plasterer and painter.³² It was decided to repair the paintwork. The plasterwork was more problematical. When a section of wall was broken open it was found that although the final coat of render had not bonded with the base coat, the base coat itself was not the cause of the problems. The poor adhesion could not be explained by the addition of the synthetic dispersion, but further analysis of the composition would be very costly. It was decided to remove the loose pieces of plaster on two of the three walls and give the final coat of render a supplement of synthetic dispersion.³³ On Geerken's advice, this was not done for the third wall because the cracks there could be 'bridged' in the coat of paint during normal maintenance (every four years).³⁴

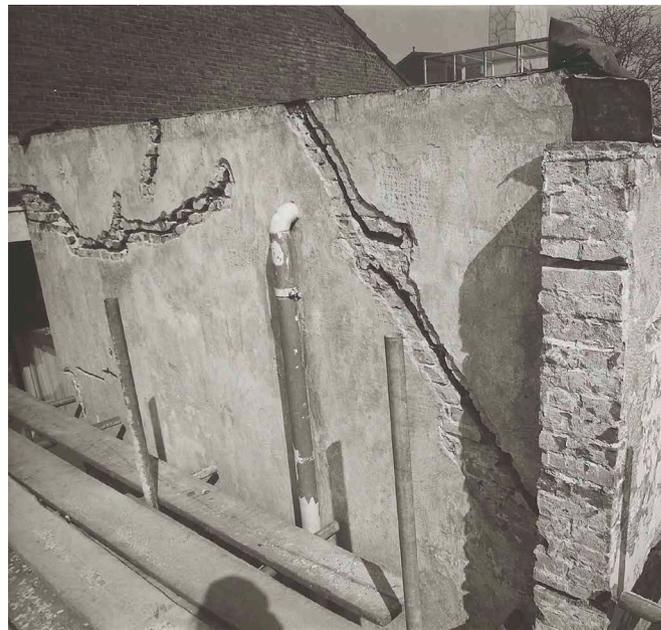


FIG. 1.9 The brickwork displayed deep cracks

However, this did not solve the problems, and the hairline cracks reappeared. Advice was sought from TNO (Netherlands Organisation for Applied Scientific Research), which in turn referred back to Geerken.³⁵ The SOV subsequently took on the commission as a research project and proceeded to experiment with several solutions.³⁶ Representatives of the heritage agencies also came to inspect the problems on site. This yielded nothing of substance, but the agencies declared themselves willing to grant a subsidy if a satisfactory method of repair was to be found.³⁷ In 1978 a decision finally had to be made whether 'to live with the hairline cracks in the walls or tackle the root cause'. Mulder and the foundation together opted for the latter.

In autumn 1978, in consultation with Geerken, it was decided to remove all the plaster down to the brickwork on the walls with problems.



FIG. 1.10 Plasterers at work on the wall between corner window and kitchen



FIG. 1.11 After the plaster with hairline cracks was removed, the new render was applied in a single homogeneous coat

All kinds of repairs had been carried out, and the house was also a melange of different materials and constructions. It was consequently decided that it would be best to limit the number of materials and adhesive surfaces as much as possible. The new coat would be applied in one operation.³⁸

Work started at the end of April and after the removal of the layer of mortar it was discovered that the repairs to the brickwork using synthetic mortar had held up well. The substrate was homogeneous, and according to Geerken the brickwork was of reasonably good quality.³⁹ Thus the problems lay with the rendering. Even more radical decisions were then taken on site. 'The render that had remained in place during the restoration also had to be removed in order to achieve a single homogeneous plaster coat and to avoid problems with joins between old and new work [FIG. 1.10/1.11].'⁴⁰ Whether this literally meant that all the

walls of the house should be replastered or just the walls with problems is not entirely clear from the report. Photographs taken during the restoration show bare brick walls but also sections with the render still intact, such as the surfaces below the kitchen window and the studio on Prins Hendriklaan [FIG. 1.12/1.13/1.14]. Because the photographs are undated it is difficult to determine whether the areas of render still visible in the photos were retained or perhaps also removed. When asked about this, Mulder was initially unable to recall precisely what had happened. However, in 2018 he wrote: 'Only on smaller surfaces that had not been repaired did the original render remain in place, such as the ground-floor walls below the windows in the kitchen and on Prins Hendriklaan. Large sections also remained in place on the white surfaces in the entrance elevation and the rear elevation.'⁴¹



FIG. 1.12 South elevation (Prins Hendriklaan) with bare brickwork

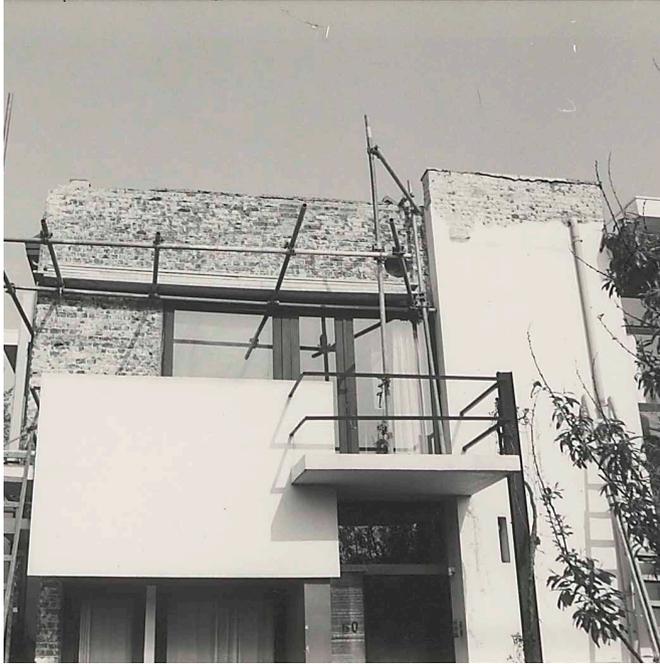


FIG. 1.13 East elevation with the plaster chipped away yet again



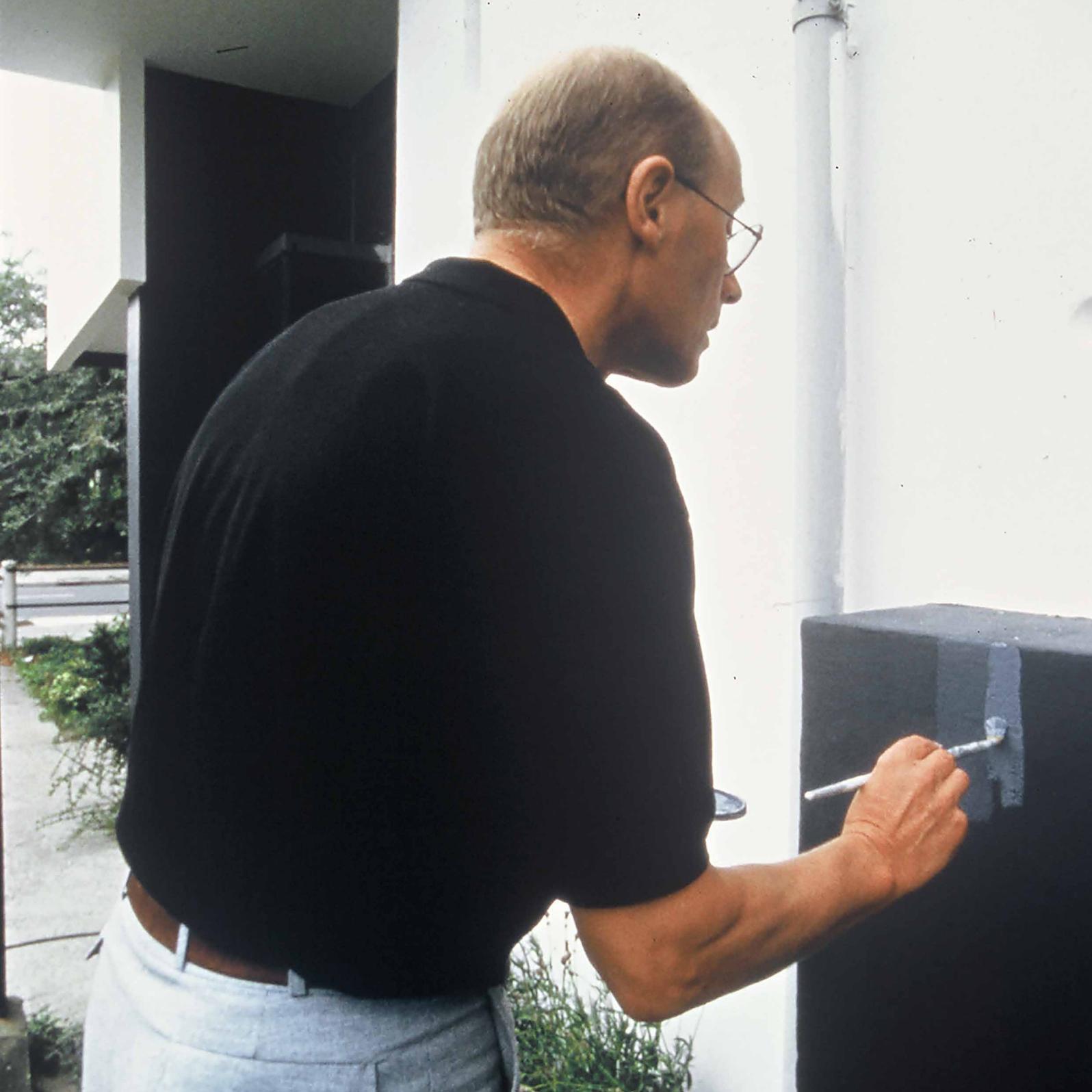
FIG. 1.14 Traces of plaster still visible on the wall below the studio window on Prins Hendriklaan

SAMPLE ANALYSIS

In spring 2018, at the request of TU Delft, TNO subjected four samples of plaster to petrographic analysis. It turned out that the two samples taken from the exterior of the house have different compositions. The plaster from the east elevation, below the balcony window on the first floor (above the front door), has a cement-lime binder. The binder in the plaster sample from the wall below the studio window on Prins Hendriklaan consists of an early Portland cement.⁴² This final sample, as later transpired, also displayed more finish coats than the first. Based on this it may be assumed that some walls – such as the aforementioned window walls and white surfaces – still retain plasterwork dating from before the restoration in the 1970s, and thus from Rietveld's day.

How much plaster and from precisely which period(s) it dates, is impossible to say. Rietveld experimented a lot and he did not record the details of the various wall treatments. Even the Specifications for the Schröder House, dating from July 1924, contain three different versions of plaster compounds, without any indication as to their specific application.

In any event, in April 1980, ten months after the restoration of the exterior had been completed, Mulder appeared to be very pleased with the final result.



2 / THE PAINTWORK AND THE COLOURS OF THE EXTERIOR

MARIE-THÉRÈSE VAN THOOR

A house like the Rietveld Schröder House, which relies on the chosen colours for its expression and character, needs to be painted very regularly. While he lived, Rietveld determined the colours on the spot, together with the painter.¹ He considered the light reflection, light diffusion and hence the light intensity of the coloured surfaces very important. Over the years, because of changes in the context and incidence of light, the house had started to look different. Rietveld also experimented with the colours. In a conversation with Bert Mulder, Truus Schröder remarked that the external walls looked very spotty after the initial painting.² That irked Rietveld, who went looking for a different brand of paint, eventually settling on Alpha, which was later taken over by Sikkens. Although Rietveld was initially not very enthusiastic about Sikkens, because of their colours, the company has continued to supply the paint for the Rietveld Schröder House up to the present day. Sikkens has also been frequently involved in research into the composition and colour of the paints, which the company supplied free of charge. The Stichting Sikkensprijs – later renamed Sikkens Foundation – also financed the research and the paint for the restorations.³

Mulder made notes of several conversations with Truus Schröder.⁴ Also present during these conversations was Gerrit-Jan de Rook, who collaborated with Mulder on the '50 Years Schröder House' exhibition (Centraal Museum, 1975).

On one of those occasions, the conversation turned to a lecture that Rietveld had given in Antwerp in 1963, during the 'Man, Colour, Space' study day.⁵ Rietveld spoke about the relation between colour and space.⁶ He always strove to achieve an even diffusion of light, over all spaces, at different times of the day, indoors and out. The reflection of light on the walls, or in the colours, could render space visible. Rietveld explained his way of working as follows. Having first decided, room by room, on the desired degree of light reflection, he then translated this into a variety of grey surfaces: the lighter greys for sections where the form needed to be emphasized, and darker greys for the flat 'bits in-between'. The execution was then up to the painter, who instead of greys might even recommend using a different colour with the same light value. This way of working did not follow set rules since a house – the 'artwork' – is constantly changing owing to alterations in the incidence of light, the context, or the surrounding greenery. Rietveld regarded the choice of colour as a 'live act of creation' that was not conducive to regulation. According to Schröder, this was why Rietveld did not decide on the greys of the various wall surfaces of the Schröder House beforehand. He decided, wall by wall, as he walked around the house.⁷ Thus, it is reasonable to suppose that the exact composition and intensity of the grey values was specified anew every time the house was painted (according to Mulder the walls needed to be repaired and repainted every five years).

During conversations in 1973, the question of just how many different greys there were or had been in the Schröder House was raised. Truus Schröder thought there were four, Han thought three.

The final repainting before the restoration was carried out in 1971 by the Van Poppel painting company, on the recommendation of construction company H.J. Jurriëns. Truus Schröder was not at all happy about this as the paint was applied in one go, just before the construction industry vacation.⁸ Van Poppel only painted the south and east elevations. The company did not adhere to the agreement to first prepare samples and then paint each surface based on those samples. After the holiday period Veroude belatedly made samples of the colours used. There were four shades of grey and one white. Together with Mr Prins from Sikkens, Veroude examined the still visible undercoat of paint and made samples of six shades of grey and one white. This coat had been applied by the J.F. van Santen company, after Rietveld's death. Van Santen had used the same colours as on the previous occasion, in 1963, when he had painted the Schröder House in accordance with Rietveld's instructions. Mrs Schröder was very satisfied with his work. Van Santen was in fact a vehicle spray painter, but Mrs Schröder said that Rietveld actually found that interesting. He also did painting for exhibitions and had accompanied Rietveld to the Triennale in Milan (1957). Thus, Van Santen turned out to be an important source of information about the colours used for the house and about Rietveld's way of working. Mulder came into contact with him via the furniture maker Gerard van de Groenekan and so was able to engage him again to paint the exterior in 1974.⁹

In November 1973, at the suggestion of Truus Schröder (and board member Til Oxenaar), Schröder, Mulder and De Rook visited Mr and Mrs Slegers, for whom Rietveld had designed a house in Velp in the 1950s.¹⁰ After a flawed initial painting, the paint was stripped away and the house repainted according to Rietveld's instructions. Mr Slegers recounted how he had had to order a large tin of grey paint to which small amounts of colour were repeatedly added in order to obtain a particular shade of

grey. Rietveld determined the colours from inside to outside, in relation to the points of the compass, the size of the surfaces, and as part of an overall composition. The group inspected samples of grey they had brought along, but concluded that any such choices would have to be made on site, 'and it would be best not to make too much of a fuss about it'.

HISTORICAL PHOTOGRAPHS OF THE SCHRÖDER HOUSE

The Rietveld Schröder Archive (RSA), The Utrecht Archive and the Bertus Mulder archive contain a variety of historical photographs of the Schröder House. With just a few exceptions, the photographs are only approximately dated. Thanks to the nature and size of the vegetation around the house or based on recognizable features – such as the lettering 'Montessorischool', the presence or absence of the rooftop extension or the driveway – it is possible to place them in chronological order, and to compare them with one another. The vast majority of the photos are black-and-white and they are not all exposed and printed in the same way, which makes an exact analysis of colours – especially the grey values – difficult. The colour photographs, from the later period, are largely overexposed and as such almost more difficult to interpret. Nevertheless, the photographs are interesting sources from which it is still possible to infer one or two things about the paintwork, the colour composition and colour contrasts over the years.

In the very first photographs taken directly or not long after construction, it is possible to see that various wall surfaces, as Truus Schröder had recalled, look very spotty [FIG. 2.1]. Apart from the spots, the photographs reveal that the walls were painted in white and shades of grey. But these images do not allow the number of greys to be ascertained – maybe four, maybe five. Looking at the photos from the next decade, there appear to be differences in the composition of the white and grey values of the various surfaces, but it may simply be a case of differences in nuance.



FIG. 2.1 One of the earliest photographs of the Schröder House, c. 1925



FIG. 2.2 The Schröder House in use as Montessori school, between 1933 and 1936



FIG. 2.3 The house in the late 1930s or early 1940s

In 1933-1936, the Schröder House was in use as a Montessori school [FIG. 2.2], and Truus and Marjan Schröder lived for a while on Erasmuslaan. In 1936, Marjan left the parental home and Truus Schröder returned alone to Prins Hendriklaan. Some practical alterations were carried out: the bathroom was renovated and Truus's bedroom was fitted out as a kitchen, allowing her to let out the ground-floor rooms. The rooftop extension, which was demolished in 1958 ahead of the exhibition on Rietveld in the Centraal Museum, also dates from this time. After the death of his wife Vrouwgien (in 1957), Rietveld came to live in the Schröder House as well, which was when the driveway was created for his car.

In the photographs taken in the period between the 1930s and 1960s, the house is increasingly hidden behind the foliage [FIG. 2.3/2.4]. This not only gives it a completely different presence than before, but the greenery also affects how the white and grey

values appear to interrelate in terms of composition and intensity. Variations in maintenance are also visible. Unfortunately, it is impossible to say whether the photograph with driveway and open gate but minus the rooftop extension shows the result of the final repainting under Rietveld's direction, in 1963, or the work of Van Santen after Rietveld's death. But it is quite possible that what we are looking at here is the final phase of the house from the Rietveld period [FIG. 1.1].

Most of the photographs dating from the early 1970s show the damage and poor state of repair – or perhaps the mediocre outcome of the Van Poppel paintwork – of the Schröder House. The contrasts between the greys are barely discernible, even in the colour photographs. According to Mulder, the greys from the period before the restoration were bluish as well, because back then the greys were only mixed with black [FIG. 2.5].¹¹



FIG. 2.4 In the 1940s or '50s the house was increasingly hidden behind greenery



FIG. 2.5 A colour photograph from before the restoration shows that the greys had become bluish

Despite the fact that the interpretation of the historical photographs is hampered due to a variety of causes, these images do at least show that the Schröder House had started to look quite different in the course of 50 years.

THE COLOURS OF THE EXTERIOR UP UNTIL THE RESTORATION

An important question when deciding on the colour scheme for the restoration of the house was which visual outcome those involved wanted to achieve. Was it the 1924 colour scheme, or that of 1963, when Rietveld himself oversaw the painting for the last time?¹² Mrs Schröder opted for 1924, and for returning the house to the originally intended state. She also suggested asking Hanneke for her memories of the colours. Mulder felt that the elements Rietveld had not expressly intended should at any rate be removed. De Rook thought that the alterations that had occurred over the years

should be recorded and he also felt that the ideas and contribution of Mrs Schröder were very important because the house was, after all, not the Rietveld House, but the Rietveld Schröder House. Mulder pointed out that if they were to opt for a return to the 1924 state, they would need to take account of the fact that the paintwork from that era had in all likelihood been removed during later repaintings and was therefore probably no longer recoverable.

After the first repainting – which Rietveld was evidently unhappy with because of the spottiness – the house was painted in a different way on each occasion. According to Mulder, Rietveld had initially believed that he could obtain the various shades of grey by adding black pigment to the plasterwork mortar. But that was not a success. Rietveld then had the rendered walls coated with whitewash mixed with linseed oil and varying amounts of black pigment. But when it rained that, too, was liable to become spotty, as can be seen in the early photographs.



FIG. 2.6 The house in spring 1975, about a year after the first treatment of the exterior

Sikkens' paints for exterior walls, first on a casein basis, later on a synthetic emulsion basis, were more weatherproof. New coats were applied over existing coats but sometimes, if older coats were too thick, Rietveld had these removed as well. Then a new coat was applied over the white base coat; that might be the first base coat, but equally well a newly applied base coat.¹³

Apart from the possible absence of the original, first colour coat, the historical photographs, as we have already seen, offered few clues as to the colour palette, especially the grey values. Rietveld did not make any drawings or plans for the original colour scheme. Nor could the coloured-in axonometric drawings of the Schröder House be used as sources for the 1924 state (photo on page 9).¹⁴ Han Schröder herself had in fact collaborated on the first series of drawings. However, these drawings were redone in the early 1950s for the De Stijl exhibitions, and they gave an ideal rather than a realistic impression of the original colour compositions. These drawings were consequently of no use for the restoration.



FIG. 2.7 In various places, such as the chimney, B. Mulder found still more finish coats and colours that he could include in his colour research

According to Veroude's 1970 technical report, mentioned in the previous chapter, all existing coats of paint on walls, woodwork and steel were to be removed before the restoration. Before repainting, samples were to be taken, which would then be used as a guide to the new colours.¹⁵ Mulder asked the TNO's Paint Research Institute whether it would be possible to separate successive coats of paint so as to reveal the colour of each coat. That would be no problem at all, TNO replied.¹⁶ When the restoration was in full swing Mulder promised the foundation's board 'photos, specimens, colour samples and other relevant information' [FIG. 2.6].¹⁷

Despite the fact that the Schröder House had been regularly repainted (possibly as many as ten times), and colour coats had been removed on previous occasions, old paint was evidently still to be found in certain places, such as behind the prickly ivy or on the chimney [FIG. 2.7].¹⁸ Mulder included these remnants in his colour research, and investigated their composition [FIG. 2.8].¹⁹ Once the restoration was finished he threw the samples away.



FIG. 2.8 Plaster and colour samples packed in plastic bags



FIG. 2.9 Wall below the kitchen window in the east elevation; B. Mulder chose the dark grey of the top right corner for the new colour scheme

Upon inquiry Mulder turned out to have yet more information in the form of a series of slides and a set of colour samples.²⁰ Detail photos of the chimney show various finish coats and it appears possible to distinguish several colours. Even more interesting is a photo of the wall below the kitchen window in the east elevation [FIG. 2.9]. We can see various shades of grey, from light to dark, and between them the white of a base coat. Mulder's caption reads: 'I opted for a dark grey from top right corner.'²¹ This is one of the wall surfaces that were not repaired and on which the original plaster is still present, according to Mulder. Nevertheless, we are left guessing about the dates of these grey coats because there is simply no further documentation and also because references to other wall surfaces are lacking. The layers of paint on the walls, which were entirely stripped in 1979, were removed together with the old layers of render.

All the woodwork and steel was also, in accordance with the planning, thoroughly cleaned so as to ensure that the new coats would bond properly.²² This means that it is now more difficult

than ever to find enough walls and elements on the exterior of the Rietveld Schröder House with traces of original layers of paint that would allow the overall colour palette of the house in 'the most original state' to be pieced together.

THE COLOUR SCHEME OF THE RESTORATION

In order to decide on his choice of colours and thus the exact colour composition of the exterior of the Schröder House, Bertus Mulder relied on his colour research and on his experiences and collaboration with Rietveld.²³ He had seen and learned how Rietveld determined the colours for the school in Badhoevedorp (1958–1962) and for the Pronk House in Enschede (1961–1962). He knew how Rietveld set to work and was familiar with his ideas on such matters as primary colours. Red had to be 'carmine-ish', not 'bloody'; blue should be 'ultramarine', and yellow had to be 'canary yellow', and not 'too orange'. According to Mulder, Rietveld used a colour fan when choosing the greys.



FIG. 2.10 The Rietveld Schröder House in 2017

Every time the house was repainted, he and the painter mixed the paints with reference to a new fan, so as to achieve the colours that came closest to the desired result, with 'white and black, a little bit of ochre and a speck of red'.²⁴

The primary colours have not changed much over time, nor have the black and white. During the restoration, the steel elements were painted yellow and black; doors and window and door frames were also painted black and accents were in yellow, white, red and

blue. Mrs Schröder recalled that when she first met Rietveld, many people considered black obtrusive, but according to Rietveld black actually receded into the background. He used it for elements – like door and window frames – that were not intended to obtrude, with the result that everything appears to be in the same plane and the composition is emphasized [FIG. 2.6/2.10].²⁵

Currently, the walls display not three, four or six, but five shades of grey, because that is what Mulder says he found during his on-site inspection [FIG. 2.10]. In consultation with the foundation he opted to return to the colour composition of the initial period. With that frame of reference, which involved mixing the greys on site with the painter, he made a composition with five greys (photo on page 22). For the record, Mulder said that making the different shades of grey was the most difficult part of the entire restoration and occasionally even drove him ‘to despair’.²⁶

While there was not much variation in the other colours, the greys were repeatedly changed over the years; Mulder claimed that the grey he encountered in the 1970s was different from the grey from 1924. That changing image is likewise reflected in the historical photographs. Mulder’s colour research also showed that the contrasts between the various grey values was initially much greater than in later years: ‘At first they tended towards ochre, later they were more bluish’ [FIG. 2.5]. For the restoration he reinstated the earlier contrast, using an ochreous grey, ‘a sort of elephant grey’. These greys were reconsidered and, in consultation with Sikkens, produced in new compositions. Mulder saw it as his task to emulate Rietveld in creating a ‘balanced colour composition’.²⁷ He did not achieve that in one go though. During the restoration of the interior, as we shall see, he gained new insights with respect to the greys, after which all the greys on the exterior had to be altered.

In July 1974, when the plaster layer was painted after the first repair, Han Schröder shared a few worries about the way it was being carried out with Mulder. He had been away for ten days and in that time important decisions had been taken.²⁸ These also related to the ‘aesthetic’ aspect of the choice of colour and type of

paint. Han Schröder also emphasized the lack of colour samples. She felt that the house was not as light since the repainting, possibly because of the ‘matt black of the frames’ and the amount of ochre in the grey walls, which in her view meant that the ‘lively’ character of the house (in variable light) was no longer evident. As she remembered it, frames and doors had always been glossy, and not the ‘current insipid stuff’. She also observed that she had been told that Mulder intended having the rainwater pipe in front of the white wall painted white – based on an inaccurate drawing – instead of grey: ‘why would you search everywhere for “original colours” and suddenly venture to create “your own composition” unsupported by documents?’ she wondered. On being asked about this, Mulder was unable to recall whether Han’s words resulted in a different approach. In his view Han ‘idolized’ Rietveld too much and he was unable to work according to her ideas and opinions. At a certain moment he stopped opening her letters and took no more notice of her opinions.²⁹

The various rainwater pipes were eventually treated in different ways. We can see both white against a pale grey surface (large wall Prins Hendriklaan) [FIG. 2.11] and pale grey against a white surface (to the right of the front door) [FIG. 2.12]. The pipe on the rear elevation is white against a white wall, and that next to the neighbouring building at Prins Hendriklaan 48 is pale grey against an identical pale grey background. This does not appear to be in accordance with the earliest period of the house. In photographs, especially those taken straight after the construction, the rainwater pipes are a natural zinc-grey in colour. But Mulder did regard the drainpipes and their colours as important elements of the overall composition. In an interview with *Cobouw magazine* in November 1974, a few months after the letter from Han, he raised the question of the rainwater pipes himself, in particular the white-painted downpipe on the ‘side elevation’, against the grey background. This downpipe had been absent for a while, was then painted in a zinc colour, and thereafter ‘painted white as [was] intended against the grey background’.³⁰ Thus, even the colours of the rainwater pipes could completely alter the character of the walls.



FIG. 2.11 Prins Hendriklaan wall, white rainwater pipe against pale grey background, 2017

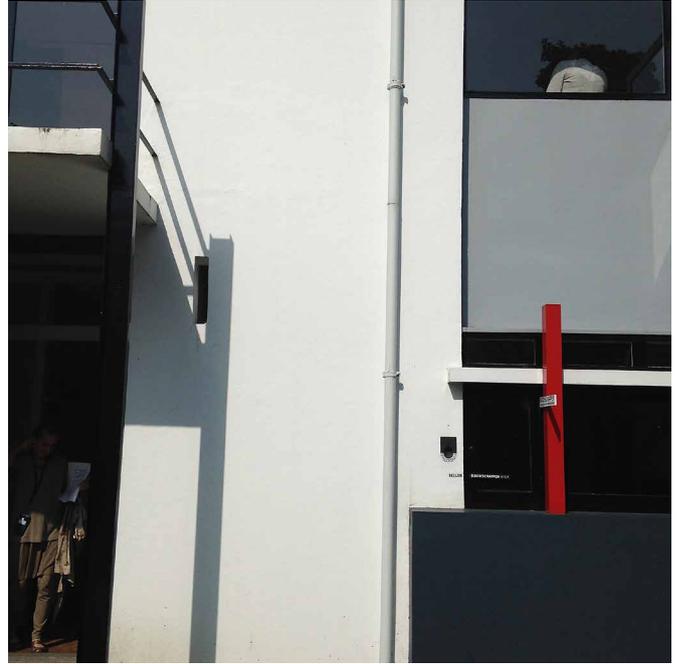
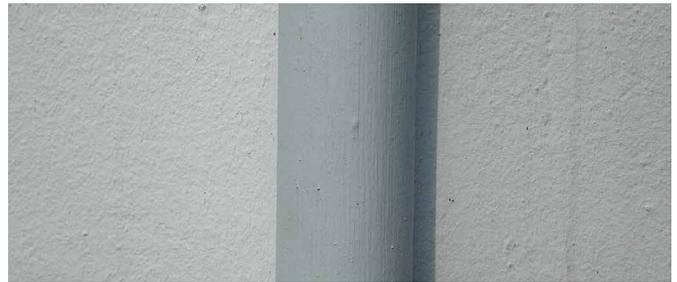
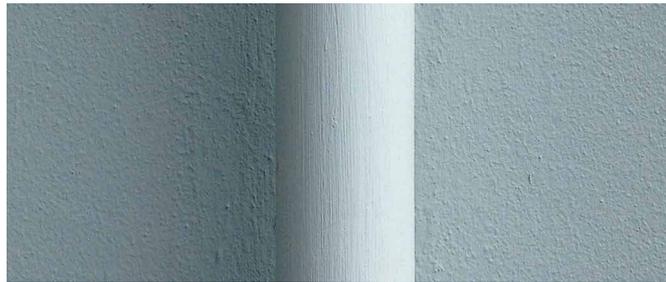


FIG. 2.12 East wall beside front door, pale grey rainwater pipe against white background, 2017



THE RESULT

The painting was finally carried out in 1979 using a paint with a synthetic resin base, and not with silicate paint as recommended by the STS trade organization.³¹ This can be

inferred from an internal memo from the RDMZ.³² The memo was in response to the question: 'Can the new external plasterwork be retrospectively approved?'. The answer was: 'With one or two qualifications the new plasterwork cannot be rejected'. The explanatory note refers to the fact that Rietveld had made his

decisions on the basis of outward appearance – ‘a kind of “décor design”’ – and that the problems relating to building physics were not recognized at that time. The hygroscopic properties of the materials, their thermal length changes, and the use of disparate materials had all led to problems in due course. With respect to the cracks filled with synthetic mortar it was noted that specific information (for example about elasticity) was lacking, and it would have been preferable to inject the remaining cracks.³³ In addition, according to the RDMZ, the chosen paint should not only have been less vapour-permeable, but would also require more maintenance and, because of its deviating hygroscopic behaviour (soiling), would also start to display hairline cracks.

The paint concerned is Alphatex IQ, the strongest wall paint Sikkens could supply. The single-brick wall is not watertight, but this dense coat of paint did make the wall somewhat more watertight. But the house, according to Mulder, is ventilated on all sides; ‘it’s as leaky as a sieve’. Owing to increasing vehicle traffic, the house quickly became dirty; it is now cleaned by hand once a year with an all-purpose cleaner to prevent dirt from becoming ingrained.³⁴

The RDMZ concluded its 1980 memo by noting that the time-consuming and costly venture involving the STS could have been avoided if ‘they had sought contact at an early stage’ [sic!]. This is quite remarkable given that this agency, which was officially responsible for supervising the restoration, had kept its distance during all those years. For the record, the RDMZ’s final conclusion was that the chosen solution was not the best, but neither was it the worst.

The exterior of the Rietveld Schröder House – the composition of colours and their intensity – was entirely conceived by Bertus Mulder in the ‘spirit of Rietveld’. According to Mulder there is not a ‘centimetre of colour’ that was not determined by him. He was confident that he had the full backing of his client, the Rietveld Schröder House Foundation. Truus Schröder was also very satisfied. She followed the work closely and Mulder kept her constantly informed of what was happening. The fact that

she had said that the restoration was in good hands with Mulder touched him deeply, he wrote.³⁵

During the restoration the colour formulas were not recorded: the colours were the result of intensive, on-site consultation between Mulder and the painter.³⁶ While the work was ongoing, Mulder kept the plaster samples properly organized and labelled, as can be seen in figure 2.8. Once it was finished he threw everything away. Colour samples from that period are also nowhere to be found, not in Mulder’s archive or that of the RSA, not even in that of the foundation. During the restoration the foundation’s board had regarded specimens, samples, photographs and other material relating to the restoration as important ‘safeguards’. After it was finished the matter was not referred to again and it seems that everyone assumed that the documentation was in good hands with the restoration architect. The foundation’s archive does not even contain a photographic record of the restoration process. That, too, is quite remarkable for board members with so much expertise and interest in modern architecture, as well as for the first major restoration of a ‘young monument’.

The colour samples the restoration architect recently handed over to the Centraal Museum are the ones that Akzo Nobel – which took over Sikkens – made for Mulder in 1992.³⁷ Even after the restoration, the Rietveld Schröder House had to be regularly repainted. In 1986, based on new insights into the colours of the interior, the exterior walls were all repainted in revised shades of greys. After the restoration, Mulder himself took charge of maintenance and necessary repairs. This occurred mainly on an ‘ad hoc’ basis, so in 2002 he suggested that the maintenance of the house be tackled periodically, in accordance with a maintenance plan based on advice from Sikkens.³⁸ During major maintenance in 2010 all the colours were again determined by Mulder, who on this occasion had arranged with Sikkens for the formula to be fully documented.³⁹



3 / RESTORATION OF THE INTERIOR

MARIE-THÉRÈSE VAN THOOR

Even before the restoration of the exterior was officially completed, the foundation's board started to reflect on what line to adopt with the restoration of the interior.¹ Should their starting point be the initial 1924 period, the current condition of the house, or something in between? There were quite a few differences between these periods; what was to be done with the kitchen, the beds, the floor coverings and colours, the desk below the windows, the piano, and so on. Key to all these deliberations was the decision about the house's future function. From June 1980 onwards, the restoration of the interior featured regularly in board meeting agendas. They spoke of 'internal restoration', but it was quite clear that this included both the restoration of the architecture and the refurbishment of the interior. They were interconnected, of course, but as will become apparent, each came with its own particular considerations and problems. Initially, three options were discussed: consolidation of the existing interior; reconstruction of a phase of the interior between 1924 and the current day (1980s); and reconstruction of the interior as it was around 1924.²

The board realized straight away that the first option, consolidation of the existing interior, was not only the option most in line with contemporary views on heritage preservation and restoration, but that it was also less prone than the other options to erroneous interpretations. The second option, requiring them to settle on a single intermediate phase, was fraught with difficulties. Two board members, Til Oxenaar and Benno Prensela, had lengthy discussions with Truus Schröder about the changes that had taken place inside the house, and many of

them proved difficult to date. Although the reconstruction of the period around 1924 was based on strong principles, it was also liable to deliver a very abstract result. Moreover, it was important that both the house as building and the house as an example of a particular 'domestic culture' should be visible. But whereas domestic culture calls for a dynamic presentation of life in the house over the years, the reconstruction of a single phase of the architecture is like a freeze-frame shot. It was decided to gather as much documentary evidence as possible in order to get a better picture of changes to the interior. Mrs Schröder inclined towards a restoration of the original state of the house, not so much in details as in concept. Discussion then turned to how the original functions of the spaces could be shown, without getting too bogged down in details.

In 1980 it had not yet been decided which architect should carry out the restoration.³ Besides Bertus Mulder, Aldo van Eyck, Herman Hertzberger and Wim Quist had been mentioned and Han Schröder was invited to add other names to this list. In February 1981 the board considered the possibility of asking Mulder to oversee the process with advice from Han Schröder on the colours, when the time was finally ripe. Later that year, since it was considered desirable that the foundation should have a public voice with respect to the options for the restoration, the Commissie Bodon (Bodon Committee) was set up. It was made up of Alexander Bodon, Til Oxenaar and Benno Prensela, advised by Han Schröder. Its brief was to establish the guiding principles for the restoration.

The committee's first proposal was to prioritize the architectural aspect of the restoration and to appoint Bertus Mulder as restoration architect. This gave rise to two issues that needed to be clearly defined: the limits of the restoration architect's remit, and the desired end result of the restoration. The possibility of forming a supervisory committee made up of board members was raised. In addition, the Bodon Committee would need to decide on the period to which the house should be restored. Those present stressed that the board should make a decision about the restoration because of impending talks with the Utrecht city council regarding the latter's possible takeover of the Rietveld Schröder House.

At the end of 1981, the Bodon Committee proposed returning the house, in an 'abstract manner', to the situation of circa 1925–1930. The committee was of the view that Truus and Han Schröder should be involved in preparations for the restoration. Meanwhile, Mulder was already busy measuring everything inside the house and he was also involved in the plans for the garden drawn up by the garden architect W. Boer.⁴ In early 1983 the choice of restoration architect was raised again, but the foundation still did not seem to regard this as urgent. It was not until October of that year that a formal decision was taken to ask Mulder to draw up a restoration plan and a budget, in consultation with the restoration committee.⁵

The foundation had already handed the Rietveld Schröder House over to the city council in a long-lease arrangement known as *erfpacht*. Over the course of 1984 and in early 1985, the board discussed the layout, furniture and floor coverings on several occasions. The house was to be restored as a museum house and it would be open for small groups of people. The council was keen to purchase the neighbouring building whose ground floor would be fitted out as a documentation centre and reception area for the museum.

During a board meeting on 6 February 1985, the restoration committee proposed (via Pieter Singelenberg) that Mulder's

plans for the 'internal restoration' be approved. From May 1985 onwards, Ida van Zijl was also invited to attend board meetings. As the 'future custodian' of the house she had intensive contact with Mulder, the foundation and Hanneke Schröder.

For their part, the heritage authorities were initially, and understandably, less than happy with the proposal to reconstruct the interior to its 1924 condition with a view to a museological function. Reconstruction of the 1924 condition would ignore the history of Truus Schröder's occupation of the house. Schröder had lived in the house from its completion until her death in 1985 and had had considerable influence on the interior design and any changes made to it over the years. Moreover, many of those changes were carried out by Rietveld himself, and were thus, 'in more than any other modern house', part of the heritage value, according to an advisory report by Wim Denslagen.⁶ Reconstruction of the initial 1924 situation would make it impossible to evaluate any later changes introduced by Schröder and Rietveld. And, the report continued, visitors would be unable to understand how the house was lived in. Denslagen advised that any government grant for this restoration should contain the proviso that the work be confined to the reinstatement of the existing situation. He further advised against the proposed ground-floor break-through to the neighbouring house as it would compromise the internal space.

From correspondence in the following months it appears that Denslagen's advice was not adopted; the city council and government decided to adopt the foundation's guiding principles and to present the original concept rather than the history of the house and its occupation.⁷ Initially a degree of reticence was recommended, but later on both council and government agreed to the proposed reconstruction, including the 'absolutely essential' passage through to the neighbouring house. The RDMZ also advised that the starting point for the restoration should not be the situation immediately after construction in 1924, but rather the period around 1930, by which time several improvements had been made, including a wholesale reconstruction of the kitchen on the ground floor.

MULDER'S INTERPRETATION OF THE RESTORATION CONCEPT

The Bertus Mulder archive contains various descriptions, budgets, proposals and letters relating to the approach to the interior of the Rietveld Schröder House. These have recently been supplemented with a 'Memo' containing Mulder's recollections (2018) and with records of recent conversations with him. If one focuses on references to the approach to the plasterwork and paintwork in these documents, one is struck by a degree of inconsistency.

It is possible that a 'description with budget' of the restoration of the interior of the Rietveld Schröder House, from December 1984, was in fact the plan the foundation finally approved in February 1985.⁸ Earlier that year Mulder had articulated his views on the restoration of the interior, in a 'memo concerning a more detailed description of the task'.⁹ In it he writes that he is in agreement with an approach that would show the house as it appeared in the 1920s: 'To convey the essence of the house it is by no means necessary to wipe out all traces of its history'.¹⁰ But the proposals that follow relate mainly to reconstructions of parts of the house in the interests of restoring the earlier spatial picture, such as the removal of the kitchen that Rietveld had made in Truus Schröder's former bedroom in 1936, and the reconstruction of the kitchen on the ground floor. Mulder's focus is clearly more on the interior layout and refurbishment than on the (architectural) restoration of the house, because he touches on a variety of minor details and features, such as the kitchen table, the delivery window, the speaking tube and the food lift. 'It is certainly so that the removal of the kitchen means that something very nice will disappear. On the other hand, the concept of a succession of continuous spaces around a core will be much clearer.' Evidently this concept had remained intact with the redesign of the bathroom (1936), because according to Mulder it did not need to be altered. He did, however, think that it was very important for the spatial picture that the division of the floor surface be restored. This concerned the floor of the upper storey of the house, where the plasterwork also needed to

be completely renewed. Of the ground floor plasterwork, Mulder noted that it should be 'renewed or repaired'. And all the interior walls of the house needed to be repainted.

In his 'description and budget' Mulder noted meticulously for each floor and for every space and for every part or surface of that space, what needed to be dismantled, disassembled, taken down, renewed, repaired, or reconstructed. Included were plumbing, metal structures, wiring, carpentry, plasterwork and painting, as well as permanent furnishings, from cupboards and shelves to the umbrella stand. The detailed survey was preceded by general remarks in which explicit mention was made of the plasterwork and paintwork. All the walls and ceilings in the house were plastered and painted and the plasterwork on the walls was coming loose in many places. Mulder noted that the ceilings, which consisted of plaster on reed matting, were cracked in several places. He suggested renewing all the plasterwork in the house. The plaster-on-reed ceilings could be demolished and replaced by plaster-on-wire mesh. The plaster on the brick walls would need to be chipped off by hand and the walls replastered with a base coat which could then be sanded.¹¹

In autumn 1985, there followed a new description for this second phase of the house's restoration, which was scheduled to start in November.¹² In this document Mulder called the walls and ceilings – the stable, imperforate elements separating inside and outside, ground floor and upper floor – the elements of primary importance. Their plastered surfaces were to be painted in a colour that reflected light. Because these elements are so important for the overall spatial picture, the architect felt that they should be restored to a high standard, without cracks and irregularities. In his view, spot repairs of plasterwork were rarely if ever flawless. Accordingly, he again advised that all the plasterwork and paintwork on walls and ceilings be replaced so that the original spatial picture would once more be clearly visible. An added advantage would be that the metal conduits (for the electrical wiring) above the reed-mat ceiling of the upper floor could be replaced by PVC conduits, and the roof could

be properly insulated. The brickwork could be repaired and replastered as before and sanded in the rendering mortar. This, too, would result in a texture more like the original. In the checklist drawn up a month later we read that the contractor would be given the task of removing the plaster from walls and ceilings on the upper floor and carrying it away in plastic bags.¹³ Before that, samples of the paint layers on all wall surfaces were to be placed in PVC bags for safekeeping. With regard to the rooms on the ground floor – the hall, the study, the former kitchen, the (help's) room and the studio – it was noted that the contractor and architect should remove the plasterwork from the walls and ceilings 'as necessary'. Here, too, samples of paintwork were to be taken and carefully stored. The reasons for dealing with the ground and upper floors in different ways are not entirely clear.

November 1985 saw the beginning of initial dismantling work in aid of further research, and in December, after the departure of the last tenant, Corrie Nagtegaal, the actual work commenced.¹⁴

It appears from the minutes of the first work meeting, in January 1986, that the work had got off to a good start. The first floor had been cleared, and the furnishings and floor coverings had been stored on the ground floor. 'All the plaster has been stripped from walls and ceilings and taken away.'¹⁵ The cleaned brickwork turned out to have a lot of cracks and it had proved necessary to 'inject [it] structurally'.¹⁶

In March work ground to a halt because no agreement had been reached with the fire service regarding the fire safety and security system. Mulder wanted a system that would not be visible in the house, but that – like the problems with the brickwork – entailed additional, unbudgeted costs.¹⁷ While waiting for a solution to this issue, he was keen to press on with the laying of the conduits so that the plasterers could set to work. 'I very much hope that we will then no longer have to look at those bare brick walls,' he sighed [FIG. 3.5/3.6/3.7].¹⁸ Once the wiring was laid, the roof had been repaired and the plasterwork on the upper floor was finished, Mulder would be able to present the board with a new time schedule. It was

also agreed with the board that the building committee would 'in due course' discuss the extent of reconstruction on the ground floor.¹⁹ For the restoration of the interior, unlike for that of the exterior, there were regular work meetings with the building committee.

THE UPPER FLOOR WITH BARE BRICK WALLS

Truus Schröder died in the Rietveld Schröder House on 12 April 1985. The day after her funeral Bertus Mulder had the interior of the house photographed as a record of how Schröder had lived in the house towards the end of her life.²⁰ Together with his assistant Paul Koster he proceeded to measure the house in an attempt to draw the original condition. Ever since the restoration of the exterior, Mulder had been a frequent visitor to the house and he had also helped Truus Schröder with a variety of maintenance tasks. This had given him the opportunity to talk to her about the house, its history, and the future. As the next chapter will show, Schröder's memories were to prove vital for the layout and furnishing of the museum house. Schröder was also able to tell Mulder a lot about architectural and other changes that the house had undergone over the years. She felt that after her death the house should be presented not as she would leave it, but as a manifesto of a new architecture and a new way of living. This was most clearly visible on the upper floor, which was actually one large space that could be divided up by means of sliding walls into landing, living room, and bedrooms for Schröder herself, her two daughters, and her son. The fact that a reconstruction of that situation would mean demolishing the kitchen in her former bedroom 'that Rietveld had so lovingly made for her' pained her deeply. But she understood that it was a necessary sacrifice.

Mulder had consequently become very familiar with the house over the years and was able to form a reasonably accurate picture of the original situation. He also knew whereabouts in the house to look for more traces of the earliest period. In November 1985, he and Koster made a cautious start on the dismantling, after which the building contractor removed the rest of the plasterwork.



FIG. 3.1 The dismantling of wall, floors and ceiling yielded a lot of information about pipes, connection points and the attachment of furniture



FIG. 3.2 The floor gave an indication of the division of the floor surface and the position of the beds

The survey of the now stripped-back house yielded a lot of new information [FIG. 3.1].²¹ For example, pencilled lines and painted and stained areas were discovered on the floors, which provided insight into the division of the floor surface and the position and size of the beds [FIG. 3.2]. Holes in the walls indicated where cupboards and other items of furniture had been fixed to the walls. Mulder also recovered original parts of the former kitchen. And during the inspection of the electrical services, a 'strangely insulated hot water system' was discovered under the floor.

The hot water pipes ran under the floor inside ducts insulated with sawdust. After the plasterwork had been removed, the chased pipes for the wash basins came to light in the brickwork, together with the attachment points of the beds in the girls' room. With the removal of the reed ceiling, the wooden beams on the underside of the rooftop extension were exposed and its structure could be studied, measured and drawn. All these discoveries were invaluable for the reconstruction and re-furnishing of this floor.²²



FIG. 3.3 The partially dismantled upper floor

The most visible and radical aspect of the restoration of the upper floor was the stripping of the walls and ceiling, the elements that were so crucial to the spatial picture [FIG. 3.3/3.4]. Stripped back they revealed only 'bare brickwork' and a bare soffit [FIG. 3.5/3.6/3.7]. 'The [foundation] and I were of the opinion that we would only be able to make the original spatial picture clearly and definitely tangible if the delimiting surfaces that determine that picture were once more of impeccable texture and colour,' Mulder later wrote. Even the possible withdrawal of the RDMZ's grant did not persuade the foundation to change its mind according to Mulder.²³ In 2016 Mulder still recalled a visit to his office by Ida van Zijl and Wim Denslagen. There was further discussion of the rigorous approach, which according to Denslagen did not correspond to what RDMZ was used to. Mulder explained once more that for him the original spatial experience went hand in hand with the restoration of space and surfaces. 'Denslagen disappeared, and that was the end of it'.²⁴ And so Mulder proceeded to reprise the reconstructive approach he had previously applied to the exterior.



FIG. 3.4 The corner window during the restoration, with a view of the viaduct and the houses on Erasmuslaan

He secured the assistance of a small team of trusted tradesmen who worked under his direction at a steady pace. The most important of them was Jan Zwaak, the sole employee of the building contractor C. Moolenbeek, who had also been Rietveld's regular contractor and had even been involved in the construction of the Schröder House. Zwaak himself had also worked for Rietveld and helped him build various stands for international trade fairs. Because Mulder was unimpressed by the painting of the exterior by Van Santen, he was now working with a painter from Bilthovens Bouwbedrijf De Jong B.V.²⁵ Unlike the exterior (with the exception of alterations carried out in the 1930s) the finishing of the interior was still pretty much original. Occasionally bits of paintwork or plasterwork had been damaged. Mulder related how Schröder's cleaning lady would then buy a pot of paint and patch up the damage.²⁶ After the house had been cleared out, however, the full extent to which the plasterwork was damaged, cracked, had come loose or been repaired, became clear. Rietveld had evidently never been bothered by this in all those years, but for Mulder it was incompatible with the impeccable spatial picture he was so set on recreating.



FIG. 3.5 The upper floor of the Rietveld Schröder House in dismantled state



FIG. 3.6 Bare brick wall and stripped ceiling

Before the walls were replastered, the cracks in the brickwork were, like those in the exterior, filled with synthetic mortar. The new metal lath ceiling was suspended from the joists using a (floating) steel network in order to minimize the chance of cracks.²⁷ The plastering was carried out by the firm of H. van de Kant Afbouwbedrijf Zeist B.V. H. van de Kant recalled that the existing plaster had to be carefully removed and placed in bags in plastic trays, sorted according to wall area and colour. This enabled Mulder to carefully examine the plaster and layers of paint on top of it.²⁸ After that examination the old plaster was carried away and destroyed. Although the abovementioned memos from 1984 and 1985 refer to a specific plaster mix, Mulder and Van de Kant stated, when asked, that the exact proportions of cement, sand and lime were decided on site. Ultimately, it was the plasterer who determined this, just as in Rietveld's day. After applying the plaster, the plasterers had to sand the base coat 'with jute on a wooden board', to achieve the same effect as under Rietveld. It resulted in a smooth surface with here and there a stray grain of sand, but without any traces of repair work or restoration.

THE COLOURS OF THE PAINTWORK ON THE UPPER FLOOR

In the photographs taken in the 1970s and '80s, it is obvious that the plasterwork on the upper floor was at that moment painted white [FIG. 3.3/4.14/4.19/4.20]. The only exception was the chimney. The interior had been less frequently repainted than the exterior and significantly fewer different shades emerged when Mulder started to inspect and 'scrape' in search of underlying coats of paint. The greys were less bluish than those he had encountered on the exterior, while the red, blue and yellow were less vivid than on the exterior, especially the yellow, which was 'softer'.²⁹ On the plasterwork, and also on wooden and metal elements like the window seat in the living area, on cupboards, on the newel post, behind sliding walls, on the floor, on radiators and on the rails of the sliding walls, Mulder found the remains of what was very probably the original paintwork. These traces formed the basis for the new colour scheme in which the colours used to paint the plasterwork were white, yellow, blue and two shades of grey, while the woodwork and radiators were painted in white, black, red, yellow, yellowish green, blue and grey [FIG. 3.8].

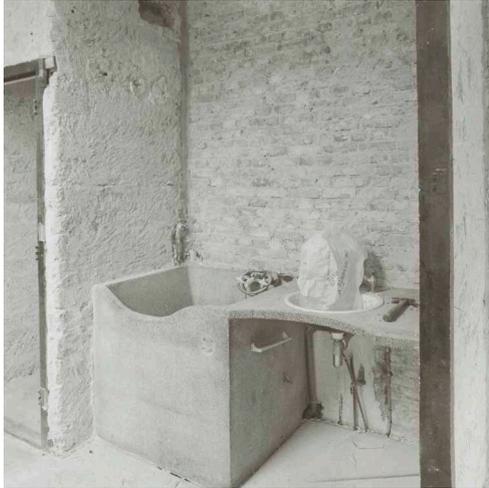


FIG. 3.7 Stripped bathroom with 'lavette'



FIG. 3.8 A black-and-white photograph of the upper floor after the restoration shows the new spatial composition and colour scheme

When it came to the chimney, Mulder deviated from the original colour. His colour research had shown that the chimney was first painted yellow (in the same shade of yellow as elsewhere on this floor), then lavender blue and finally blue.³⁰ Mulder initially considered lavender blue for the new coat of paint, because that was also used on the ground floor. After consulting Rietveld's oldest daughter Bep, he eventually opted for the darker ultramarine blue. Bep Rietveld had convinced him that lavender blue in combination with the other colours would be too 'muted'.

What mattered was the entire composition of colours and surfaces, which was supposed to restore the original spatial experience. During the removal of the plasterwork in the girls' bedroom, Mulder had discovered a grey that matched the compositional image of the space. The wall, which ran from inside to outside, had been white on the inside back when Mulder had devised the colour scheme of the exterior in the 1970s. When the painting of the interior was completed, however, it turned out that the grey on the inside of this wall was different from the grey of the exterior section. Because it was important for the overall image

that the wall should be the same colour inside and out, Mulder had the exterior repainted [FIG. 3.9]. But it didn't end with the repainting of the balcony wall on Prins Hendriklaan; the entire composition of greys on the exterior had to be determined all over again.

In the minutes of the meetings with the building committee and with the board of the foundation we read that the readjustment and repainting of the greys would result in considerable additional expense.³¹ Yet the colour research and the overall colour composition were not raised. 'Even with the restoration of the interior, it didn't occur to anyone to interfere or to think of doing things differently,' according to Mulder [FIG. 3.10].³² He did everything 'on his own initiative', but he felt that he had the full support of the foundation. As with the exterior, Mulder did not record his research findings, and the samples were thrown away once the work was finished. He says that at most one piece of the plaster from behind the heater was preserved.³³ Before being repainted, all the original woodwork and metal was thoroughly cleaned and sanded. The only place where there might still be older coats of paint, according to Mulder, was on the yellow window ledge below the corner window.



FIG. 3.9 The wall in the girls' room runs from inside to outside, so B. Mulder had both the inner and outer sides of the wall painted in the same shade of grey, 2015



FIG. 3.10 The colour composition of the floor, 2018

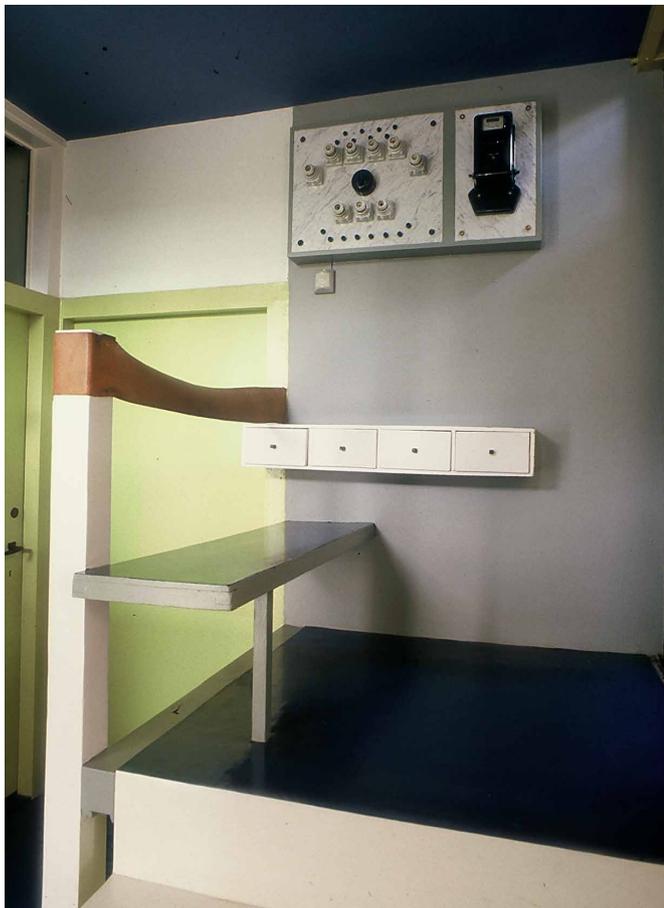


FIG. 3.11 Hall, 1985

Although the colours were once again 'precisely determined in consultation with the Sikkens laboratory', no information about this phase of the restoration has been found in the paint manufacturer's archive.³⁴



FIG. 3.12 Hall, 2015

THE GROUND FLOOR, AN INCOMPLETE RECONSTRUCTION

In the very first conversations we had with Bertus Mulder, the emphasis was on the reconstruction of the original condition of the Rietveld Schröder House. With the interior, discussions focused on the restoration of the experience of uninterrupted space on the upper floor.



FIG. 3.13 The plasterwork at the top of the south wall of the study was damaged and came loose in October 2016

Most of the illustrations in *Het Rietveld Schröderhuis* were of this floor, plus one or two photographs of the reconstructed kitchen or freshly painted hall on the ground floor. If we compare the hall in its current state with a photograph taken in 1985, immediately after Truus Schröder's death, the differences in colour are obvious [FIG. 3.11/3.12]. The architect repeatedly stressed that everything in the interior was created by him, that he had stripped the inner surface of the walls back to the structural shell, and

that he had 'recreated' the walls and ceilings as impeccably as possible. We therefore assumed that the ground floor had been restored in the same manner as the upper floor. The documents we consulted tended to support the impression of a full reconstruction of the interior finish throughout the house. In the minutes of the discussion with the foundation and the building committee, 'the extent of reconstruction of the ground floor' was mentioned only in relation to the furnishings. There was just one sentence in *Het Rietveld Schröderhuis* that deviated: 'For the rest everything [on the ground floor], including the plasterwork, was repaired and repainted.'³⁵

In October 2016 a piece of plaster came loose at the top of the south wall of the study [FIG. 3.13]. This provided an opportunity to have both the cause of the loosening and the composition of the plaster investigated by, respectively, TU Delft and TNO.³⁶ Quite by chance it was possible to show a sample of this plaster to Hans Geerken, who had been involved in the restoration of the exterior. He thought it looked as if it had been composed of coarse sharp sand from Buslo with putty lime and cement; he thought the sand dated from the 1970s. In addition, the top layer of paint was probably Alfatex IQ latex.³⁷ Thus it looked as if the plasterwork on this wall had been renewed. However, TNO's petrographic analysis indicated that the sample did not contain any cement and consisted of lime mortar base coats, lime mortar finishing coats plus two top coats. 'It's possible the sample was a fragment of the original plaster,' was TNO's conclusion.³⁸

Armed with this information, we spoke again with the architect and took another look at the archival documents. We also obtained access to previously unavailable documents and photographs.³⁹ Given that the kitchen and adjoining daily help's room had been radically renovated, we focused on the study, next to the entrance, and on Rietveld's former studio, on the Prins Hendriklaan side. The latter was conceived as a garage, but was first used as studio and later served a number of different purposes. Various colour schemes can be gleaned from the historical photographs, all with an emphasis on white [FIG. 3.14].



FIG. 3.14 Undated photograph of the studio with view of Prins Hendriklaan; predominantly white colour scheme



FIG. 3.15 In 1985 the lower sections of the studio walls are grey; the inner side of the door to Prins Hendriklaan is painted black

However, a photo taken in April 1985 shows the lower sections of the walls painted grey, and the inside of the door onto Prins Hendriklaan in black rather than white [FIG. 3.15]. Upon inquiry Mulder recalled that he had based the colour scheme of the ground floor on what he had encountered there.⁴⁰ The studio was therefore repainted in the colours of the top coat, without searching for traces of the original colours and also without

stripping away the plaster. The colour scheme of the adjoining study, in particular the greys, appeared to have changed little over the course of time, to the extent that this could be established based on historical photographs [FIG. 3.16/3.17]. Mulder recalled that the black ceiling in this room had looked pockmarked and had to be repainted. He had the other surfaces in this room repainted in the existing colours as well.



FIG. 3.16 The study painted in white, black and shades of grey, c. 1974



FIG. 3.17 Undated photograph of the study

In Mulder's view the ground floor, with its rather traditional layout, was not so crucial to the value of the architecture. The layout had been necessary in order to obtain planning approval (in 1924), but it contributed little to the spatial picture, which was all-important for the house. This was why he treated the ground floor differently from the upper floor. The walls and ceiling were not dismantled, just repaired, with visible repairs being tolerated.⁴¹ In 2018, in order to verify this, TNO and the Stichting Restauratie Atelier Limburg (Foundation Restoration Atelier Limburg/SRAL)

were asked to analyse the composition of the plaster and finish coats [FIG. 3.18/3.19]. On that occasion samples were also taken of the exterior; these have already been discussed in Chapter 1. Supplementing TNO's conclusions, the SRAL analysis confirmed that there were probably still traces of coloured layers of plaster in several places on the exterior, in two shades of grey. The visual composition and the properties of these layers seem to point in the direction of the stipulations in the Specifications for the Schröder House (1924).⁴²

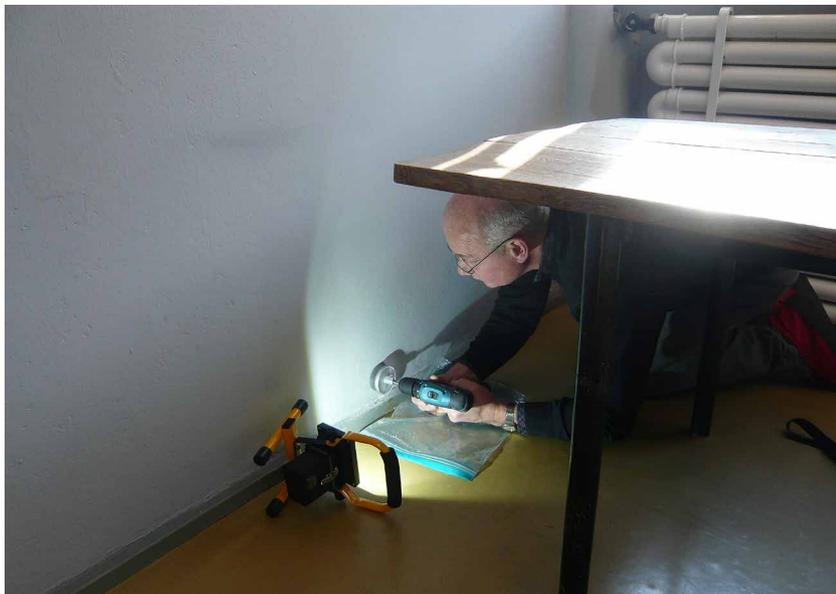


FIG. 3.18 SRAL specialist taking a sample from the east wall of the studio



FIG. 3.19 Plaster sample from the wall below the studio window on Prins Hendriklaan

Samples were taken on the ground floor from the south wall of the study and from the east wall of the studio, and on the upper floor from the south wall of the girls' room. These provided insight into the possible differences in composition and finishing of the plasterwork, which turned out to be definitely not (upper floor), and possibly (ground floor) original. The TNO analysis produced one unexpected result: the two plaster samples proved to have the same stratigraphy, which would seem to indicate that both are instances of renovation plaster.

Yet one of the two samples was from the same south wall of the study from which a piece of plaster had come loose in 2016 and in 2017 been declared a possible remnant of the original plaster. But the stratigraphy of the 2016 sample turned out to be far more complex. Accordingly, it is possible that the wall in the study comprises both original and renovation plaster.

The SRAL investigated not just the finish coats of the samples concerned, but also carried out a limited visual inspection elsewhere on the ground floor. In the samples from the rooms on the ground floor remains of 'the original layers of paint from 1925' were discovered. 'These are matt finishes with a clearly visible brush stroke, in which calcium is predominant'. During the visual inspection, the SRAL discovered two finish coats, which date from before the restoration of the interior, in other words from the Rietveld period. The SRAL was also able to establish that starting with the restoration, the interior had been repainted three times with a synthetic wall paint. It was noted that the current colours differ from both the original colours and the colours from the restoration period. In addition, the smooth texture of the current, roller-applied coats differs from the surface of the original coats which 'have a clearly streaky and matt texture'. The last two coats were probably applied during the repainting in 2004 and 2010, to which R. de Jager from Sikkens referred.⁴³

IN CONCLUSION

Mulder only applied the principle of an impeccable interior finish to the upper floor, which was reconstructed in an 'abstract manner'. The idea was more important for him than the material. According to this view, the authenticity of the Rietveld Schröder House rests on the concept and the spatial picture, which have survived thanks to the 'recreation' of Rietveld's design. The material is of secondary importance. Yet by merely repairing the original interior finish in certain parts of the ground floor, Mulder has in fact preserved the material authenticity in those places. Paradoxically, this puts him in accord with other, more generally accepted restoration ideas, and with 'what the heritage authorities are used to'.

This (more) original materiality could serve as a starting point for future repairs or restorations in these parts of the house. In order to gather reference material, however, a more extensive material investigation of all the walls and ceilings of these rooms would then be necessary, given that the historical documentation has proven to be very scanty in this respect. This applies equally to the restorations by Bertus Mulder (and the subtle alterations since then) which, after the passage of decades, have also become part of the history of the house. Unless, of course, it is decided to adhere to Mulder's views and, instead of adopting the principle of material authenticity, to pursue the restoration of an abstract and impeccable image.



4 / THE HOUSE OF TRUUS SCHRÖDER: FROM HOME TO MUSEUM HOUSE

NATALIE DUBOIS

On 3 April 1987, the Rietveld Schröder House finally opened its doors to the public, ready to fulfil its new function as a study object and museum house. The heritage building had been handed over to the City of Utrecht in a long-lease arrangement (*erfpacht*), and the Centraal Museum had been entrusted with its management and upkeep.¹ The role of the foundation receded into the background.

Anyone visiting the Rietveld Schröder House today in its role as museum house will find the interior laid out and furnished as it was in 1925-1930. That, at least, is the suggestion that is created. Is that picture accurate, or are visitors getting a misleading impression? More than thirty years after it was opened to the public, we now know so much more about the history of the house, owing to new discoveries in the archives and conversations with people who were involved at the time. Moreover, thanks to the passage of time we are able to reflect more dispassionately on the choices they made back then. From today's perspective we are now able to state that the house in its current presentation does not do full justice to either the design or the occupants. What changes could be made that would improve the interior design and inform the visitor more fully?

During her marriage to Frits Schröder, Truus Schröder-Schröder lived at Biltstraat 135 in Utrecht. In common with many houses at that time, the interior of the mansion was crowded. Heavy

curtains hung at the windows, there were multicoloured carpets, and the furniture was heavy and dark. It was not to Truus Schröder's taste. When her husband died in 1923, she asked the young furniture maker Gerrit Rietveld to remodel and furnish a house for her. Rietveld and Truus Schröder had known one another for several years. In 1921 Rietveld had redesigned one of the rooms in the Biltstraat house for her and they had discovered they were kindred spirits. When no suitable house could be found, they decided to build a house from scratch on a plot on the outskirts of Utrecht, with an unimpeded view over the polder landscape. When Truus left Biltstraat for good in January 1925, she sold nearly all the furnishings, taking only a chair, the bathtub, a heater and a piece of brown linoleum with her to her new house at Prins Hendriklaan 50.²

In its early years, the Schröder House was the home of a young widow and her three children, Binnert, Han(neke) and Marjan. There would have been toys lying around, books were read, music was made, and homework was done. Friends came around, there was a daily help, a neighbour dropped by to play the piano and Gerrit Rietveld, who had his studio in the house, worked there every day. In short, it was a house brimming with life.

Truus Schröder lived there virtually uninterrupted for sixty years. First with her children, later with tenants and later still, after his wife died in 1957, with Rietveld. Over the course of all those

years the house changed along with its chief occupant. When she died on 12 April 1985 the house was no longer the house it had been sixty years earlier. Schröder lived exclusively upstairs, her original bedroom had become a kitchen, some of the sliding walls could no longer slide and the house was crammed with plants, boxes, books, cuttings, a television and the sorts of things designed to make an elderly lady's life more comfortable, such as an adjustable plastic garden chair with a thick cushion. This is in marked contrast to the way the house is now presented to the public by the Centraal Museum: empty, sterile, and with few signs of life.

GUIDING PRINCIPLES FOR THE LAYOUT AND DESIGN OF THE MUSEUM HOUSE

As indicated in the previous chapter, the restoration and the future of the house had been discussed at meetings of the Rietveld Schröder House Foundation since the 1970s.³ The talk was about the restoration of the exterior and the interior but less about the furnishings: in other words, the layout, and occasionally the walls and the floors, were discussed but not so much the furniture that would occupy the spaces.

In 1973, when he was commissioned to supervise the restoration of the exterior of the Rietveld Schröder House, Mulder had looked through a series of black-and-white photographs of the interior together with Truus Schröder and Gerrit-Jan de Rook.⁴ A short record of this meeting can be found in the foundation's archive.⁵ Apart from the colours, the main topic of discussion was the interior design as well as the origin and relative importance of various interior elements, such as the origin of the bookcases in the girls' bedroom.⁶ Schröder indicated that she was very attached to the lamp that hung from a steel rod beside the front door. Mulder concluded at the time that it would be a good idea to record the historical situation by making drawings of all the internal walls of the house showing where everything was. A good suggestion, of course, since the lack of any clear structure in

the records of these conversations means that the details come across as somewhat random. Unfortunately these drawings do not appear in the archives and it is unclear whether they ever in fact existed.

The board's first discussion of the interior design of the museum house took place during a meeting held in June 1980.⁷ Ideally, two aspects should remain clearly recognizable: the unique architecture of the house, and the house as an example of a distinctive domestic culture.⁸ What exactly was meant by 'distinctive domestic culture' was not explained.

In addition, Truus Schröder informed board members of her preference, which was that the house be returned to its original state as a living testimony to Rietveld's work and ideas.⁹ Schröder effectively relegated herself to the background with this decision, even though Rietveld and she herself had often referred to her as co-designer. The important thing was to capture the essence, the concept of the house, rather than endeavouring to restore as many details as possible. The meeting reached a number of conclusions. The kitchen should be removed from upstairs and reinstalled on the ground floor. Instead of attempting to recreate a detailed replica of the interior, the restoration would concentrate on the abstract image. There was no need to reinstate the piano, cupboards, and washbasin with mirror, and while it was not important whether the light switches and taps dated from the 1920s, it was essential to bring back the black-and-white floor covering.

The board then turned its attention to the desirability of in some way showing how the house had changed over time along with its occupant. Han Schröder felt that the house should be more of a workplace than a carefully preserved home. Photographs and architectural drawings were mentioned as sources; the drawings would serve as a model for the desired abstract presentation.¹⁰ It is possible that they were referring to the architectural drawings made by Rietveld's practice in 1951 for the De Stijl exhibition in the Stedelijk Museum Amsterdam (photo on page 9).¹¹

It was almost a year later before the board discussed the internal restoration again.¹² The board members insisted on the formulation of a clear statement about the interior design. This would then need to be tested against future operational possibilities, on which front the board was hoping for a concrete proposal from the City of Utrecht; the Centraal Museum was not yet in the picture as a possible custodian.

When the decision was taken in 1981 to present the 1925–1930 situation in an ‘abstract manner’, this idea was put to Truus and Han Schröder. Around this time, board member Til Oxenaar reported back on several tours of the house she had made in the company of Truus Schröder. Her aim was to gather detailed information about the interior design in the chosen period. She recorded everything Truus could recall about this early period, from the colour and fabric of the curtains to the telephone wall plates. These reports were then annotated with comments by Han Schröder.¹³ Sometimes the two women’s memories confirm what we can see in the early photographs, sometimes not, which is a salutary reminder to be cautious when using these memories as a source for our analysis.

In 1982 Frank den Oudsten and Lenneke Büller interviewed Truus Schröder on several occasions for hours at a time. They talked about the first encounter between Truus and Rietveld, their motivations and ideas, and how they arrived at the decision to build the house. There was very little mention of the future of the house. The only comment Truus Schröder made about its future use after her death was: ‘You could, of course, say: I’ll furnish that room properly ... I don’t think that it’s necessary to do that now anymore, because it will quite probably be treated differently later on. ...you could also say we’ll furnish it, and also that young people will come along later and say: hey, what an interesting chair, how does it fit together? Can I take it apart, can I have a look, hold it upside down, and so on? ...That kind of approach is much nicer, I think. ...And none of that’s been resolved and I don’t think it’ll be resolved for the time being. How it should be. One person thinks it should reflect the earliest condition, someone

else says no, it should reflect the condition after you’d lived in it for a long time, but with the children, and then it naturally becomes a very different sort of space.’¹⁴

It was not until two years later that the internal restoration was raised once again.¹⁵ It was noted that there were still many unresolved questions about the furnishings. In order to get a better oversight, the series of photographs of the interior circa 1925-1926 would be used as reference. These were the same photographs that Mulder had looked through with Truus Schröder in 1973, when he had received the commission for the restoration of the exterior, but it was only now that it was decided to treat them as a key source. An important argument for doing this was to avoid creating a sterile living environment.

The minutes of a board meeting in late 1984 record another discussion of the future interior design of the house.¹⁶ It was noted that ‘movables’, which is to say furniture, needed to be added to the restoration budget. To that end, Mulder drew up an inventory of the movable and immovable components of the interior. Also raised at this meeting was the question of whether the floor coverings should be adapted to suit the future museum function. The conclusion was that it would be good if the white rubber flooring could be relaid, but it turned out that white rubber was no longer available. At a meeting in October 1985, white vinyl or a not entirely white rubber were considered as possible alternatives, but no decision was made.¹⁷ It should be noted that neither the budget nor Mulder’s inventory could be found in the archive, which raises the question of whether they ever existed.

On 28 May 1985, a little over a month after Truus Schröder’s death, Mulder made a list of household effects that were to remain in the museum house.¹⁸ The heirs, Schröder’s three children, gifted these items to the Centraal Museum since it was by now clear that the museum would take over the management of the house. The heirs looked for a different destination for the remaining items in the house.

Five months later, Mulder reported the discovery of the old deliveries shelf and kitchen-sink unit.¹⁹ The worktop had been found, sawn into pieces, in the basement. The question of the piano was broached, be it much later.²⁰ Everyone involved was agreed that the piano should return, despite Truus's objection to this idea five years earlier. In November 1986 the architect duly set about trying to track the piano down. Mulder recently stated that the piano had stood for many years in Rietveld's own home on Vredenburg.²¹ When Rietveld moved in with Truus in 1958, Bertus Mulder and his family moved into Rietveld's former home. Rietveld had left nearly all his belongings behind. Mulder allowed Rietveld's children to take whatever they wanted and the rest, including a piano that had previously stood in the Rietveld Schröder House, became Mulder's property. Mulder had sold the piano. In 1986 he placed advertisements in the papers in an effort to buy it back for the Rietveld Schröder House, but to no avail.²²

From conversations with Bertus Mulder, Ida van Zijl²³ and Wim Crouwel,²⁴ it is clear that Mulder had a free hand and that the Centraal Museum was only involved in the final detailed phase of the interior design. The museum's role, as revealed by the foundation's archive, had not yet been legally formalized. The museum executives and curator were present at board meetings as observers and talked mainly about security and the opening of the house to the public rather than the interior design as such. There were hardly any board meetings during this final phase of the restoration. Mulder updated the foundation once a year and board members met only sporadically. Wim Crouwel referred to the complete trust placed in Mulder and noted that there were no meetings during the restoration. This was because the foundation met in the house and this was not possible while internal restoration work was going on.²⁵ Mulder confirmed the complete trust vested in him. No one asked critical questions and he was allowed to go his own way. Every now and then he reported back to the board and that was duly noted. Mulder kept records of this process. They contain many details about the interior design, such as the ordering of the blinds and washbasins. Mulder's archive was gradually transferred to the Centraal Museum; the final items were handed over in 2018.

THE HOUSE IN 1925-1926 VERSUS THE CURRENT MUSEUM HOUSE: SOURCES

In evaluating the refurbishment of the interior, it is a good idea to follow Mulder's example and compare historical photographs of the situation in 1925-1926 with how the interior looks today. The presentation of the house in 2018 is pretty much the same as the situation in 1987 when the house was first opened to the public. We can therefore use the current situation as a starting point for a comparative analysis.²⁶ Where does the presentation differ from the old photographs and why? When the situation differed from that of circa 1925-1926, or still more from that of circa 1925-1930, Mulder was wont to argue that 'it wasn't important for the spatial picture'.²⁷ But what the concept of 'spatial picture' actually meant was never specified. We may assume that it refers to the composition of the house: the arrangement of the space and the division of the surface and distribution of colour. Not just the composition of floors, walls and fixtures, but also the arrangement of the movable objects. Yet it is hard to resist the suspicion that pragmatic considerations often weighed more heavily than the reconstruction of this spatial picture; or that decisions were arbitrary. Arbitrariness also hovered over decisions about the future, which is why it is also important for the current custodian to know what is meant by the terms 'domestic culture' and 'spatial picture'.

In addition to a series of early photographs, we have the Bodon Committee's principles and Truus and Han Schröder's memories from the early 1980s, as collected by Til Oxenaar. A letter from Han Schröder to Corrie Nagtegaal²⁸ begins thus: 'This is what I recall and what I think. That doesn't necessarily mean that it's true. Take it with a grain of reality. Since then it's got mixed up with a lot of experiences.'²⁹ It is important to realize that memories are unreliable sources. The memories of the very elderly Truus Schröder dated from almost sixty years earlier and those of Han Schröder from her childhood. Personal matters also played a role. Mulder and Han Schröder did not enjoy a warm relationship and Han's remarks were ignored by Bertus Mulder on more than one occasion.³⁰



FIG. 4.1 Upper floor interior, view from girls' room, c. 1925

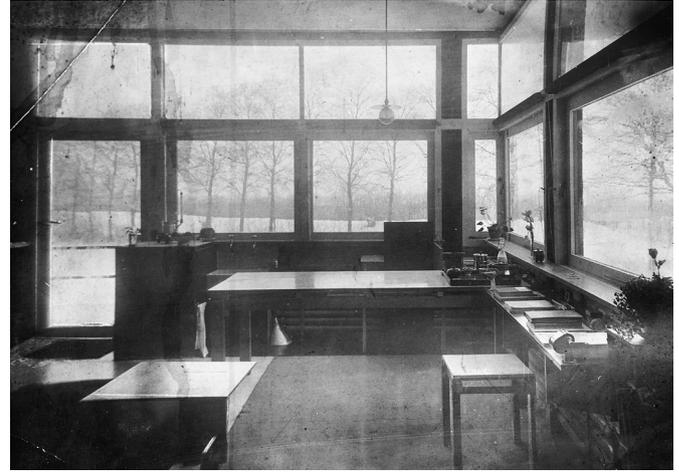


FIG. 4.2 Upper floor interior, view from dining area, c. 1925

It would have been logical to have given Gerard van de Groenekan a bigger role in the reconstruction of the house, given that he had worked with Rietveld as furniture maker and in 1925 had even worked in the house helping to finish the interior. If anyone knew how the house looked in the earliest years, it was Van de Groenekan. Yet he was scarcely involved in the restoration and reconstruction.³¹ We can only guess at the reason for this.

During the process concerning the reconstruction of the interior design, those involved had recourse to the aforementioned photographs, a number of drawings and Schröder's memories. Over the years more sources from a variety of archives have been added, enabling us to reflect on the decisions made back then. For the following space by space discussion, the series of photographs that were a major source for the reconstruction were once again examined. Also consulted were the interviews with Truus Schröder, Han Schröder and Bertus Mulder, as well as notes and comments in the Rietveld Schröder and Stichting Rietveld Schröder Huis archives and drawings from both the 1920s and the 1950s.

A TOUR OF THE HOUSE

Normally speaking it would be logical to begin a discussion of a house on the ground floor. This is also how nearly every publication about the Rietveld Schröder House proceeds, but for this study it is more logical to examine it from the top down. The upper floor was the primary focus of the restoration of the interior; it was the heart of the house. That was where people lived and that was also where a modern concept of space was to be found. The lower floor was secondary. The fact that ten years after the house was finished Truus Schröder lived almost exclusively on the upper floor demonstrates that for her this was what it was all about: upstairs, openness, pure space.

THE DINING AND LIVING AREA, 1925-1926

This corner of the house appears to have been Schröder's favourite place. In photographs of herself in the interior she is often seen sitting at the dining table, close to the corner window. In the 1920s a military table stood in this space, with two Berlin chairs [FIG. 4.1/4.2].³² The table top was covered with white rubber, which Schröder thought worked beautifully against the grey felt on the floor.³³



FIG. 4.3 Upper floor interior, view from dining area, c. 1925



FIG. 4.4 View from Binnert's room, undated

For the children there were military stools.³⁴ Their colour is unknown but what we do know is that the cross bars and legs were a different colour from the seat and the ends of the cross bars. In drawings the stools are always coloured black and white.³⁵

Next to the dining table, attached to the wall below the window ledge, there was a blue fold-up reading and writing desk with holes for ink pots. Strip lights mounted below the window ledge provided light to study by [FIG. 4.2].

Vases of flowers and small pot plants stood on the window ledges. The blinds were made of blue Lancaster fabric.³⁶ Above the table hung a lamp consisting of a light bulb topped by a circular sheet of glass [FIG. 4.3]. This lamp was designed especially for the house.

Against the top of the stairwell stood a wide, fairly heavy couch upholstered in a red fabric [FIG. 4.3]. Couches, also known as day beds, were a common feature of living rooms in those days.

According to Schröder, Jacob Bendien, who lodged with Truus's sister An and her husband Rein Harrestein in Amsterdam, had an identical couch. The Schröder House couch was scattered with cushions in two different colours. The children could move the couch up to the desk and sit on it to do their reading and homework. There are photographs in which the couch stands beside the heater and others in which it has been moved to the desk. In some photographs there is a divan table in front of the couch [FIG. 4.3].

The heater in this room [FIG. 4.8] was the one that had originally stood in the Schröders' house on Biltstraat. Next to the heater stood an elongated metal side table³⁷ and on it a table lamp³⁸ of the same design as the one Schröder and Rietveld had designed together in 1925 for the hi-fi cabinet for René Radermacher Schorer. Schröder recalled that the lamp had often stood on the window ledge and we can indeed see that in one of the photos. It is clear from the photographs that many items of furniture had no fixed place but were moved around as required.



FIG. 4.5 Upper floor interior, dining area, undated

It was a house that was actively lived in and that was able to adapt to the needs of the occupants.

The yellow modular cupboard [FIG. 4.1] was made when the house was already occupied, but not yet finished. It was probably made by Gerard van de Groenekan. Truus had been keen for the design to include removable boxes. There were three, one for each child perhaps: two in grey, one in white. The cupboard held the gramophone and a film projector. Next to the cupboard, which Rietveld considered too sculptural, stood a small, two-shelf cabinet designed by Schröder in 1926.

THE DINING AND LIVING AREA, 1930S–1980S

For one brief period the space fulfilled a different function. From 1933 to 1936 Schröder rented the house to a Montessori school and during this time the upper floor was used as a classroom for infants. During the long period when Schröder herself lived in the house, this space was always a dining area. It was here that

she usually sat, at the dining table, first in the Berlin chair at the military table, later in the zigzag chair with armrests at the table with the irregular-edged wooden top, dating from around 1940 [FIG. 4.5].³⁹ In the 1930s or thereabouts, the modular cupboard was replaced by an open bookcase because more space was needed for books [FIG. 4.4]. The red couch had already been replaced around 1928 by the current smaller couch that can be extended lengthwise [FIG. 4.4]. The original couch was a solid, heavy piece of furniture and may not have suited the flexible, light spatial concept. It would also have been rather heavy to move back and forth to the desk.

The heater from Biltstraat was replaced by a round, coal-fired heater. By the 1930s, the food lift between the upper floor and the kitchen on the ground floor was no longer used and had been locked in place on the upper floor to be used as extra storage space. The hanging lamp was replaced by a spherical ceiling lamp [FIG. 4.4/4.5]. The floor became all one colour and the grey felt disappeared.

THE DINING AND LIVING AREA IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

The original military table, which Schröder had loaned, minus the white rubber top, to the Centraal Museum in 1959 was returned to the house in 1987. A copy of the Berlin chair was placed beside the table. Above it hangs a replica of the original lamp. While the children's stools are no longer there, the desk has been reconstructed, but without the strip lighting and the holes for ink pots [FIG. 4.6].

The original small extendable couch is still there, upholstered in a dark grey fabric.⁴⁰ The divan table has been replaced by the side table with blue-painted plywood top and metal base, a design of Gerrit Rietveld from around 1932 [FIG. 4.6].⁴¹ The metal table still stands beside the heater, without the table lamp.⁴² The round coal-fired heater stands in front of the chimney and above it hangs a strip light that did not appear in the early series of photographs. On the mantelpiece stands a photo of Gerrit Rietveld. The modular cupboard has been partially reconstructed.⁴³



FIG. 4.6 Upper floor interior, dining area, 2018

One of the removable boxes, which was retained by Marjan Schröder, is original. New blue blinds can be lowered to shut out the light. The food lift has been drawn up to this floor and is displayed empty. The adjoining cabinet contains cups and glasses that belonged to Truus Schröder in order to convey the purpose of the cabinet. These items do not date from the 1920s.

TRUUS SCHRÖDER'S BEDROOM, 1925-1926

Schröder's bed was yellow, the same colour as the yellow field on the wall. Above the bed was a graphic work by El Lissitzky [FIG. 4.7]. In combination with the narrow red shelf on which Truus put her watch at night, it made for a wonderful division of the wall plane. There was a cupboard with a washbasin, and lighting in the form of a simple pear light bulb. Under the window, a fold-out shelf with telephone gave Schröder a small desk in her bedroom.



FIG. 4.7 Upper floor interior, Schröder's bedroom viewed from dining area, c. 1925



FIG. 4.8 Upper floor interior, Schröder's bedroom, c.1925

There was another folding shelf in the opening to the living room. In one of the drawings from the early 1950s, a military chair is drawn up to the desk below the window. The divan table stands beside the bed in one of the early photographs [FIG. 4.8].

TRUUS SCHRÖDER'S BEDROOM, 1930S–1980S

When Schröder returned to the house after the children had left home (c. 1936) and the contract with the Montessori school had

ended, she decided to live upstairs. She moved the kitchen into what had been her bedroom [FIG. 4.9]. Rietveld built a blue kitchen counter with sink below the window and a cupboard with yellow sliding doors; two individual gas burners stood on top of the blue counter and another two on a counter with square white tiles.⁴⁴ The cupboard with washbasin had remained intact so the kitchen had two sinks. The room was chock-full and in the photos some of the many pans, saucepans, jugs and dishes can be seen on the wall shelves.



FIG. 4.9 Upper floor interior, kitchen, 1985

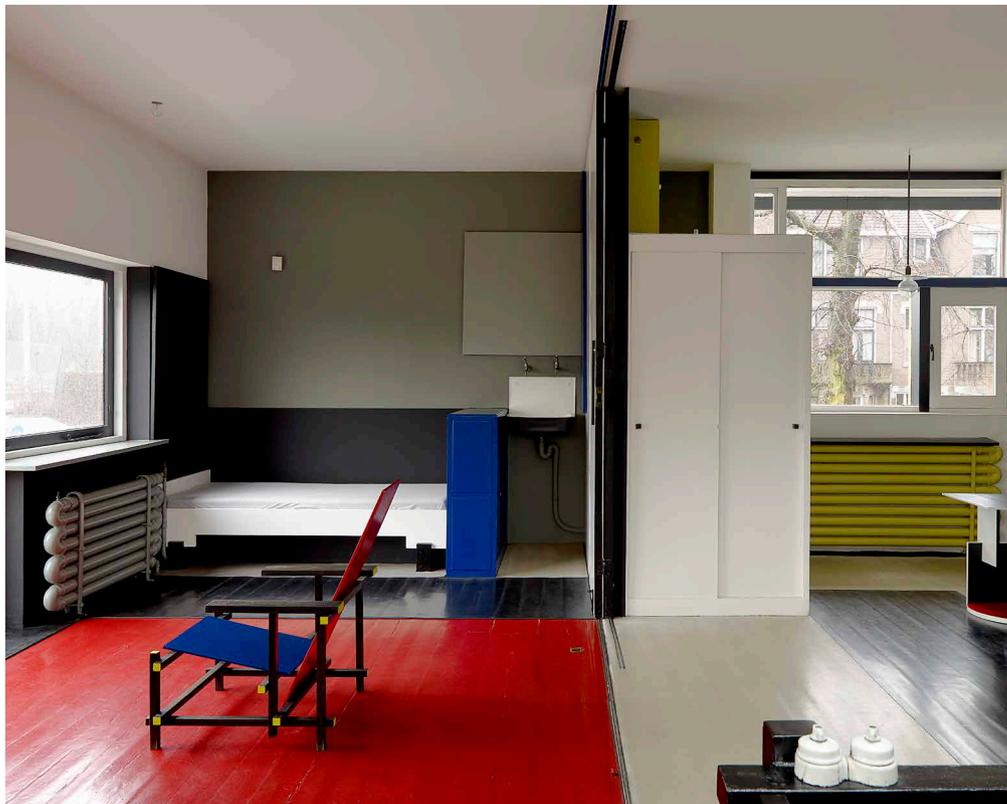


FIG. 4.10 Upper floor interior, Binnert's room, 2010

TRUUS SCHRÖDER'S BEDROOM IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

The current bed differs in colour from the original, which was yellow. In a photograph from 1925-1926 [FIG. 4.7] it is obvious that the bed is a different colour from the white wall. Now the bed is white, like the wall. This bed also seems wider than the original one. In all the drawings, whether from the 1920s or the 1950s, it is clearly a single bed. And in the older photographs the bed does not extend beyond the left-hand window; now it does [FIG. 4.11]. The current bed is some 20 centimetres wider than the original single bed. The desk below the window has been reinstated, as has the desk near the doorway. The red shelf has been reconstructed.

BINNERT'S ROOM, 1925-1926

Truus Schröder called Binnert's room 'the red room' because the floors were painted red. Binnert's single bed was white and according to Schröder upholstered in blue fabric. In drawings from the 1950s the covering is black. The wall had been lined with soft sheet material so that the boy didn't have to sleep up against the hard brick wall.⁴⁵ At the foot of the bed stood a small cupboard in which to hang towels so that they were out of sight [FIG. 4.12]. During the day the mirror could be covered with a shutter that was placed against the window in the evening. A second shutter, needed to darken the room at night, was attached to the sliding wall, and at the head of the bed there was a third shutter.



FIG. 4.11 Upper floor interior, Schröder's bedroom, 2018



FIG. 4.12 Upper floor interior, Binnert's room, c. 1925



FIG. 4.13 Upper floor interior, view of Binnert's room with piano, c. 1925



FIG. 4.14 Upper floor interior, Schröder's desk, 1978



FIG. 4.15 Upper floor interior, children's room, 2010

Above the bed hung an abstract still life, *Bowl with apples*, by Bart van der Leck [FIG. 4.12].⁴⁶ There were pot plants on the window ledge and a military stool served as bedside table. Two stringed instruments hung on the sliding wall and there was a tall, fitted black wardrobe [FIG. 4.13].

From the dining section of the living area there was no direct view of Binnert's bed, which was hidden behind the piano [FIG. 4.12/4.13]. Piano players had their back to the bed. The piano had been adapted: a shelf for books had been installed beneath the piano and the edge of this shelf and the piano lid were both painted a light colour. Behind the piano stood a piano chair fashioned from black poles with blue ends and with a leather back and seat.⁴⁷

BINNERT'S ROOM, 1930S–1980S

After the children left home, this space was turned into a study. The piano vanished from the interior furnishings.⁴⁸ The bed, the washbasin and the towel cupboard were removed and replaced by a free-standing spare bed. The desk that Rietveld and Truus Schröder had designed in 1932 was positioned over the radiator.

For a while a reproduction of a female portrait by Pablo Picasso hung above the bed. Bart van de Leck's *Composition '18-'19* also hung in the room.⁴⁹ The floor was still red: the floorboards were covered with red felt. The space was increasingly filled with piles of paper. From the mid 1970s a red-blue chair and an Amersfoort chair stood in this corner. There were net curtains that are closed in nearly every photo [FIG. 4.14].

BINNERT'S ROOM IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

The white bed no longer has any cover, just a white fitted sheet covering the mattress. The towel cupboard was still in Marjan's possession and was returned to the end of the bed. It is painted blue [FIG. 4.10], as in drawings from the 1950s, although in the early photographs it appears to be lighter in colour. On the spot where the piano stood prominently in front of the bed, the red-blue chair now stands [FIG. 4.10]. Visitors expect to see this chair in the house, yet it was not part of the interior furnishings in the 1920s. The only photo from the 1920s in which the chair can be seen is a photo of the exterior where the chair, along with the divan table, stands on the balcony attached to Schröder's bedroom.⁵⁰ The first photograph showing the chair in the interior dates from 1974.



FIG. 4.16 Upper floor interior, girls' room, c. 1925



FIG. 4.17 Upper floor interior, girls' room in daytime position, c. 1925



FIG. 4.18 Upper floor interior, corner wash basin in girls' room, c. 1925

HANNEKE AND MARJAN'S ROOM, 1925-1926

Here, as in Binnert's room, the wall behind the beds was lined with a soft sheet material [FIG. 4.16/4.17], providing a warm buffer between beds and wall. There were two single beds, one each for Schröder's two daughters Hanneke and Marjan. A pear-and-milk-glass lamp like the one in the living room hung from the ceiling [FIG. 4.2/4.18]. During the day the beds were covered in blue baize.⁵¹ In Van Doesburg's coloured-in photographs the bed against the wall is upholstered in black and the bed against the sliding wall in blue (photo on page 54).⁵² In drawings from the 1950s the beds are also blue and black (photo on page 9). Red, yellow and grey pillows were propped against the wall.⁵³ The beds had a night-time position in which the bed heads and ends were protectively folded up [FIG. 4.16]. During the day they were folded down, the beds encased in slip covers and lined with large cushions, thereby allowing the beds to be used as couches [FIG. 4.17]. Below the beds were drawers.

In one of the photographs [FIG. 4.18] there are two telephones on the window ledge; the house had three telephone connections in all. Schröder had ordered the two wall cupboards used as bookcases in

America [FIG. 4.16/4.17]. There was a chest of drawers referred to as the 'Montessori chest'. On it was a standing mirror specially designed for this house [FIG. 4.18]. The window ledge contained various pot plants. Schröder recalled a blind. In the photo there are dark, open-weave curtains rather like the curtains in Binnert's bedroom. Against the radiator stood a child's chair of unknown design.

Schröder remembered the wall cabinet as being yellow.⁵⁴ On the wall was an early drawing by Douwe van der Zweep. Van der Zweep gave it to them just after they had moved into the house.⁵⁵

HANNEKE AND MARJAN'S ROOM, 1930S-1980S

In the 1930s, this became Truus Schröder's bedroom. Her single bed, covered with a spread and scattered with thick cushions, was placed behind a chest of drawers [FIG. 4.19], and a large desk, covered with a tablecloth, was positioned in front of the window [FIG. 4.20]. Various chairs have stood at the desk, including the piano chair designed by Rietveld and a black metal chair of unknown design.⁵⁶ The hanging lamp near the window made way for a spherical ceiling lamp [FIG. 4.19/4.20].



FIG. 4.19 Upper floor interior, Schröder's desk and bedroom, undated



FIG. 4.20 Upper floor interior, Schröder's desk and bedroom, 1978



FIG. 4.21 Upper floor interior, girls' room, 2005

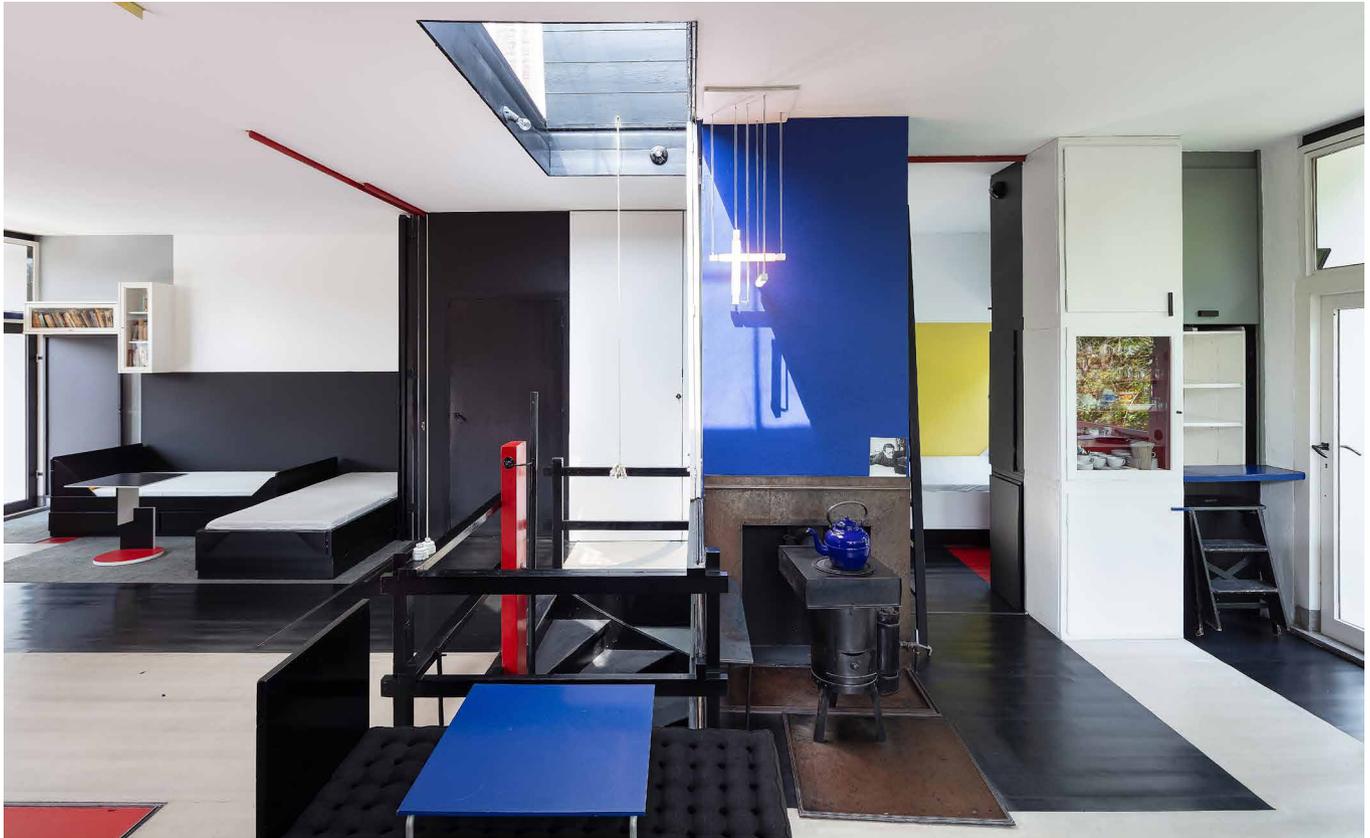


FIG. 4.22 Upper floor interior, girls' room, 2018

Further illumination was provided by typical 1970s desk lamps in black and white. In the 1970s this corner looked fairly empty, but by the 1980s it was filled with books, papers and a television. Other items intended to make life easier for the ageing Schröder were added, such as a magnifying glass and an electric radiator [FIG. 4.19/4.20].

HANNEKE AND MARJAN'S ROOM IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

The beds were made by Mulder based on old photographs and, like Binnert's bed, are displayed with just a mattress and white fitted sheet [FIG. 4.15/4.21/4.22]. There are no coloured pillows

or pillow slips. A replica of the divan table stands beside one of the beds and until 2012 an original red military chair stood beneath the window [FIG. 4.21].⁵⁷ The wardrobe is original and has always stood there [FIG. 4.21].⁵⁸ Behind the wardrobe is the washbasin. A replica of the original lamp hangs from the ceiling. There are no curtains anymore. Hanging on the wall are replicas of the bookcases, filled with books from Schröder's bookcase [FIG. 4.21/4.22]. The books do not date from the early period of the house; their purpose is to convey Schröder's interests and more particularly the function of the cabinets.

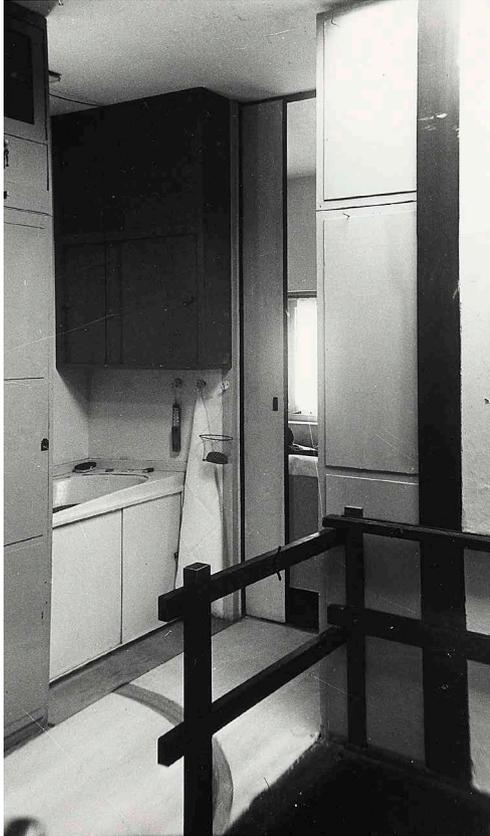


FIG. 4.23 Upper floor interior, bathroom with bathtub, c. 1925

THE BATHROOM, 1926-1925

One of the few items Schröder brought with her from her old house on Biltstraat was a bathtub on legs, a typical late nineteenth-century bath. In her new bathroom the bath was concealed behind wooden partitioning and surrounded by cupboards [FIG. 4.23]. The cupboards were in different colours; the partitioning was light-coloured. Against the right-hand wall was a dark-coloured cupboard with four doors, and to the left a tall cupboard.



FIG. 4.24 Upper floor interior, bathroom with 'lavette', c. 1936

THE BATHROOM, 1930S-1980S

In the 1930s, Rietveld modified the bathroom. He removed the cupboards on the left and right sides and put in a modern bathroom-cum-laundry sink unit ('lavette') and a granite washbasin [FIG. 4.24]. He made a new storage space below the washbasin. During the war a nearby explosion caused almost all the glass in the house to break, including the thick frosted glass of the letterbox. Rietveld used remnants of this glass to make two shelves in the bathroom with rounded edges echoing the sinuous edges of the sink unit and the washbasin [FIG. 4.24].



FIG. 4.25 Upper floor interior, bathroom with 'lavette', 2010

THE BATHROOM IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

In 1982 Han Schröder suggested leaving the bathroom as it was and illustrating the old situation with photographs. It was indeed decided to preserve the 1930s bathroom in the museum house [FIG. 4.25]. Both Mulder and Van Zijl stated that this option was chosen because this bathroom was more of a Rietveld design than the original bathroom. To remove it would be to 'remove Rietveld'. The bathroom was so beautiful that it would have made no sense to remove for the sake of recreating the original situation.⁵⁹ According to Mulder the bathroom was not an essential element of the spatial picture and was consequently of less importance. Paul Koster endorsed this view at the time in an article in *De Volkskrant*.⁶⁰ The bathroom was self-contained and Koster agreed that the interior designed by Rietveld was much more interesting than the anonymous bathtub.

FIRST FLOOR TOILET, 1925-1926

Photographed by Paul Citroen in the 1920s, the toilet was later described by Han as a cosy nook. She suggested making the passage through to the neighbouring house (the visitor centre at Prins Hendriklaan 48) here. And if not, considering reinstating the old toilet design.

Interestingly, the wooden toilet seat was placed crosswise on the toilet, resulting in a larger sitting area.

FIRST-FLOOR TOILET, 1930S–1980S

There is only one early photo of the toilet; thereafter no photographs were taken of this room. At a certain point the toilet was modernized. The washbasin is original, the pipes have been concealed.⁶¹

FIRST-FLOOR TOILET IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

The modernized toilet was not altered for the museum house. Visitors do not get to see the toilet unless they ask to.



FIG. 4.26 Entrance with lamp and letterbox, c. 1925

THE HALL, 1926-1926

Above the entrance hung a simple pear light bulb at the end of a rod [FIG. 4.26]. To the left of the door the number of the house – 50 – was painted in dark numerals.

The letterbox beside the door was made of glass so that it was possible to see from a distance whether there was any mail [FIG. 4.27]. Above and below the letterbox there was space to put things like outdoor toys.



FIG. 4.27 Ground floor, hall with letterbox, c. 1925

The hall coat stand had two shelves for hats and the like and there were two rods with hooks: a high one for adults and a low one where the children could hang their coats [FIG. 4.28].

To the left of the coat stand was a cast iron umbrella stand. It was ornamental, so Rietveld had attached it to the wall upside down with the plain part at the top so that it looked more modern.



FIG. 4.28 Ground floor, hall with coat stand, c. 1925

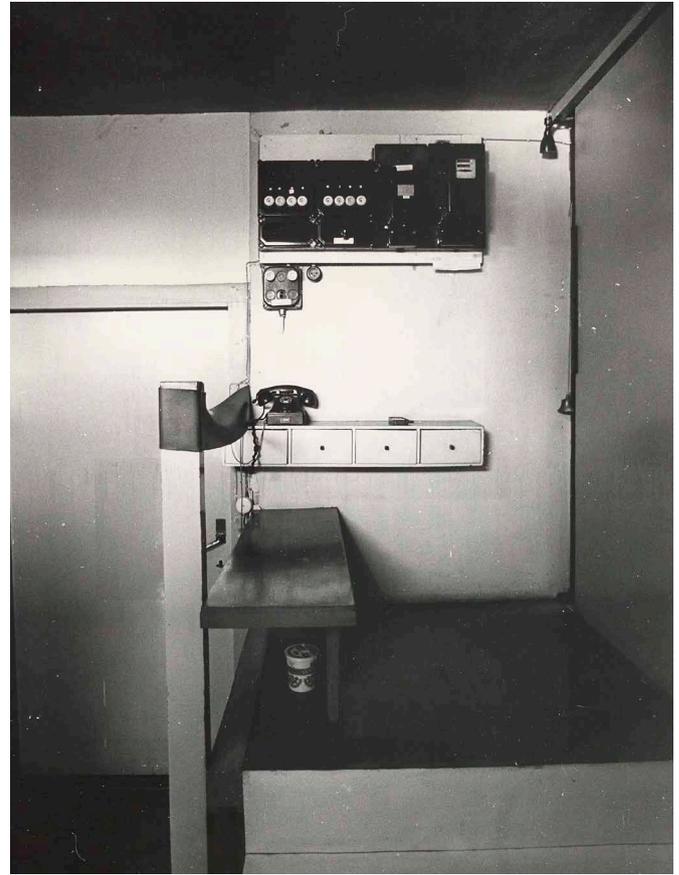


FIG. 4.29 Ground floor, hall with fuse box and platform, undated

Schröder called the space below the platform between the stairs 'the little landing'. It was where the dirty washing was kept; in a photograph from around 1926 a laundry basket can be seen there.⁶² There was a bench with a leather back on the platform. Against the wall was a shelf and below that four small white drawers, one for each member of the household. A telephone stood on the shelf. On the wall hung a dark fuse box [FIG. 4.29]. There were a great many fuses because there were two circuits per room, as back up in case one blew.

THE HALL, 1930S–1980S

The lamp in front of the front door was very important for Truus Schröder; Han Schröder also mentioned it on several occasions. Han was keen for it to be reinstated. The lamp still features in photographs from 1974. The panel in front of the shelving beside the front door is of glass. The original glass had to be replaced after a munitions vehicle exploded nearby during the Second World War. The new sheet of glass was put in upside down, with the result that the letterbox ended up closer to the front door.



FIG. 4.30 Ground floor, hall with fuse box and platform, 2010

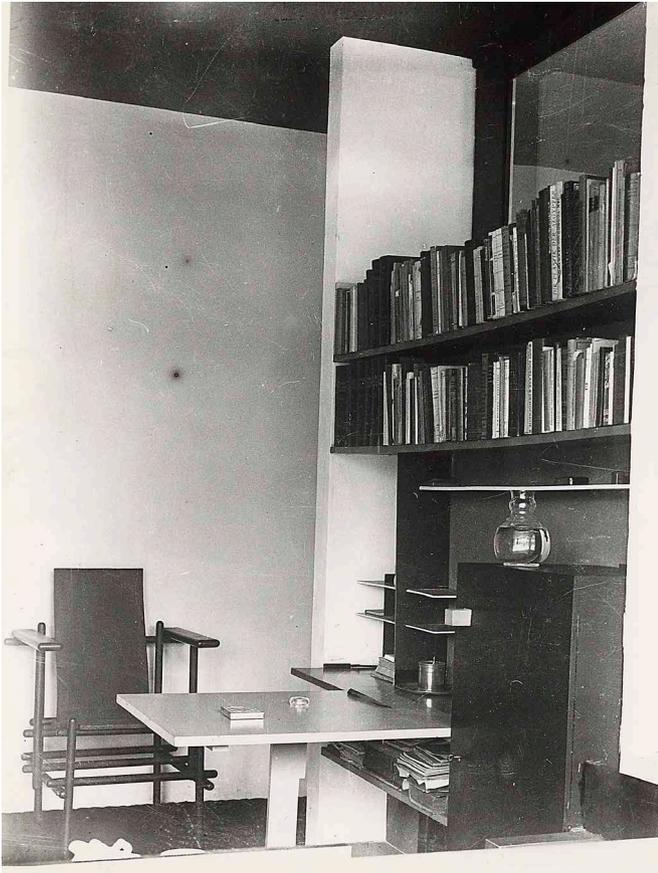


FIG. 4.31 Ground floor, study, c. 1925

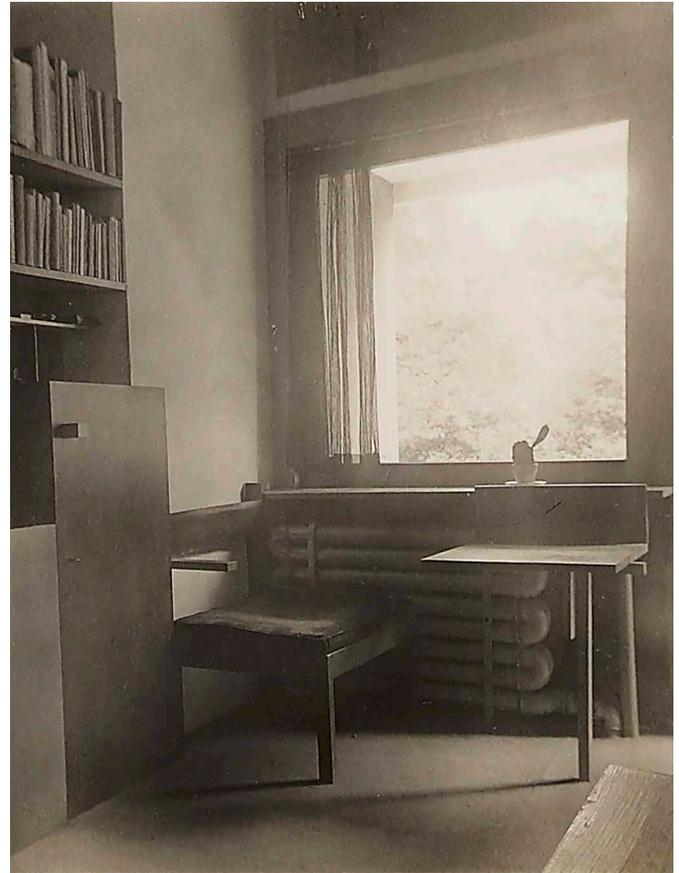


FIG. 4.32 Ground floor, study, c. 1925

One clear difference is the fuse box. The original box, which remained in place until the mid 1970s, was black with white fuses. The current fuses are mounted on a pale stone backplate [FIG. 4.30].

THE HALL IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

No attempt was made to find the original fuse box. Mulder explained this by saying that he thought the new pale stone was more attractive.⁶³ The lamp beside the front door that was so important for Truus and Han was not reinstalled and the glass in

front of the shelving/letterbox remained exactly as inserted in the 1940s. The coat and umbrella stands remained unchanged.

THE STUDY, 1925-1926

Schröder called this room the 'Rietveld room'. She remarked that she considered this the most 'homely' room in the house [FIG. 4.31]. There were coarse black curtains [FIG. 4.32], which look like the curtains in the children's bedrooms [FIG. 4.12]. The space above the window, beneath the balcony was hollow [FIG. 4.32].



FIG. 4.33 Ground floor, study, c. 1974

Schröder was irritated by the space and quite early on had it closed off with sliding doors [FIG. 4.33].⁶⁴ Among the furniture in this room is the piano chair that originally stood behind the piano upstairs. When it started to creak and intrude on the music it was quickly moved downstairs. We also see the armchair, which was specially designed for this room. In another photo this chair stands beside the dining table.

THE STUDY, 1930S–1980S

The furnishings did not change at all during those years. The shelves became more crowded, chiefly with work by and mementoes of Rietveld. In photographs from 1974 we can see that the shelves are crammed with books and with several architectural and chair models by Rietveld [FIG. 4.34]. Schröder worked on the ground floor organizing the archive.



FIG. 4.34 Ground floor, study, c. 1974

THE STUDY IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

When the house was opened as a museum, the red chair with sprung seat stood behind the table.⁶⁵ In 2006, it was replaced by the black armchair that originally stood here. The piano chair, which had migrated to the study early on, probably stood there for a long time; it appears in the photos taken in the 1970s. Although the piano chair is part of the Centraal Museum's collection, it has not been in the house since 1987.⁶⁶ Han Schröder suggested that the foundation should try to find a piano chair to take its place.⁶⁷ A few books have been placed on the shelf to indicate that books had once stood here [FIG. 4.35]. There are no curtains.



FIG. 4.35 Ground floor, study, c. 2010



FIG. 4.36 Mart Stam and El Lissitzky with Gerrit Rietveld at entrance to studio, 1926



FIG. 4.37 Ground floor, studio, c. 1925

THE STUDIO, 1925-1926

A photo from 1926 shows Mart Stam and El Lissitzky visiting Rietveld [FIG. 4.36]. The visitors are standing in front of the half-opened door of the studio, Rietveld stands on the other side of the door. The photo provides a glimpse into this room. It is just possible to make out artworks hanging on the wall [FIG. 4.36]. Unfortunately, the photo is not sharp enough to identify the works, but they display a close affinity with Theo van Doesburg's designs for *La Maison Particulière* (1923). At any rate, they are architectural and in the *De Stijl* mode. Truus Schröder recalled a display case in the studio window space. A photo of the interior [FIG. 4.37] reveals that the window ledge was closed off on the inner side with glass panels with vertical posts. No photograph showing works displayed in the case has been found. We must rely on the memory of Truus Schröder, who said

that the window was used as a display case in the early years. Its purpose was to make contact with the outside world and to cultivate understanding for the new. One practical advantage of the display case was that it shielded the interior from the gaze of passers-by. The display case was made of frosted glass mounted in aluminium. Works displayed there included a drawing by Jacob Bendien. The window of the display case could be opened in the room and behind it were blinds.

There was a long table on wheels. In a photo of the interior [FIG. 4.37] there are two black rectangles against the wall and the radiator. They cannot be painted surfaces because they overlap the radiator. They could be wooden panels, possibly used to extend the square table. The light-coloured floor covering consisted of diagonally placed *Genemuïden* mats.

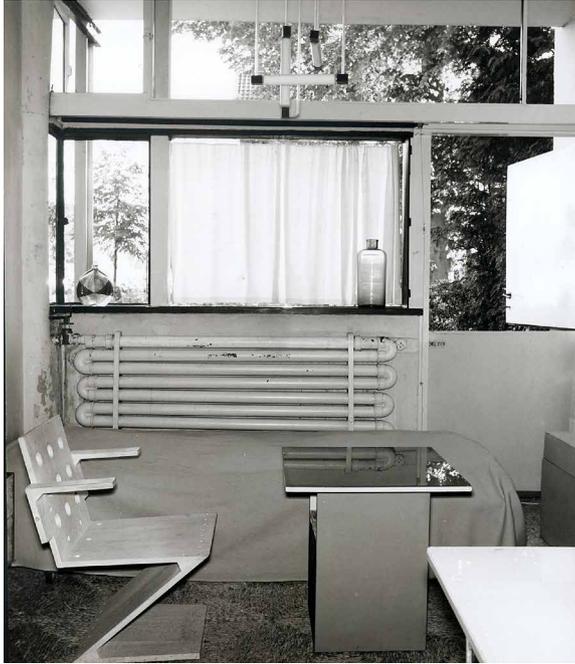


FIG. 4.38 Ground floor, studio, c. 1938



FIG. 4.39 Ground floor, studio, undated

The photograph of the interior shows the studio while Rietveld was still using it. On the desk are a ruler and setsquare and the stackable cabinets designed by Truus Schröder in 1926 are stacked against the wall. The strip lamp hangs in front of the window and behind the work table stands a tube-framed chair. This photo must have been taken after 1926, since Rietveld designed the tube-framed chair in 1927, and before 1933 when Rietveld relocated his office to Oudegracht.

THE STUDIO, 1930S–1980S

The Genemuiden rugs can be seen in photographs from various periods [FIG. 4.38/4.39] when the room served as a bedroom and study for tenants. A bed stood beside the window, there were curtains and Rietveld furniture: the zigzag chair with holes and arm rests, the piano chair and the upright armchair. Rietveld

designed the desk in 1931 together with Truus Schröder, but the side table is attributed solely to Schröder.⁶⁸ Corrie Nagtegaal rented this space from 1983 to 1985. Not long after Schröder's death in 1987 it was cleared out and the Rietveld Schröder House Foundation gave the furniture on loan to the Centraal Museum.⁶⁹ Up to that point, the part of the ground floor rented by Nagtegaal⁷⁰ contained the following furnishings: two red military chairs, a black table on steel legs, zigzag chair with holes and arm rests, a desk, a blue side table, a Stelman chair, a hanging lamp consisting of three strip lights with black blocks, a white cupboard from the former kitchen, and on the wall two steel-framed glass display cases (one in grey, the other black).⁷¹



FIG. 4.40 Ground floor, studio, 2018



FIG. 4.41 Ground floor, studio, 2010

THE STUDIO IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

In the first years of the museum house, this room was used for consulting the archives – by staff, researchers or members of the public [FIG. 3.15]. When the Rietveld Schröder Archive was complete, it was transferred to the library of the Centraal Museum at Agnietenstraat 3.⁷²

Today the studio is presented with a wooden dining room table [FIG. 3.15] that stood for a long time upstairs in the dining area, together with the zigzag chairs.⁷³ In the 1980s the table stood in the studio and, according to Ida van Zijl, simply stayed there. The original strip light was still there as was the painting that Elisabeth (Bep) Eskes-Rietveld, Rietveld's daughter, made of Truus Schröder around 1935.⁷⁴ There is also a square black table with red base [FIG. 4.40/4.41]. The room is no longer reminiscent of a studio.

The black table stood in this room in 1985 and, like the wooden table, simply remained there. In dimensions and design it looks very like Rietveld's original work table, as seen in an early photo [FIG. 4.37]. It is difficult to determine whether it really is the same table.

IN-BETWEEN ROOM, 1925-1926

There are no early pictures of this room. It was originally Rietveld's darkroom. It does not appear in the blueprint submitted with the building permit application.⁷⁵ In the drawing it is part of the studio and identified as 'storage/bicycles etc.'

The room was set up for developing photographs and films. Rietveld soon added a workbench where he made all kinds of chairs; it was a kind of mini workshop. The deep wardrobe was already there in 1925. The room was also used as a laboratory by the children.



FIG. 4.42 Ground floor, in-between room, 2017

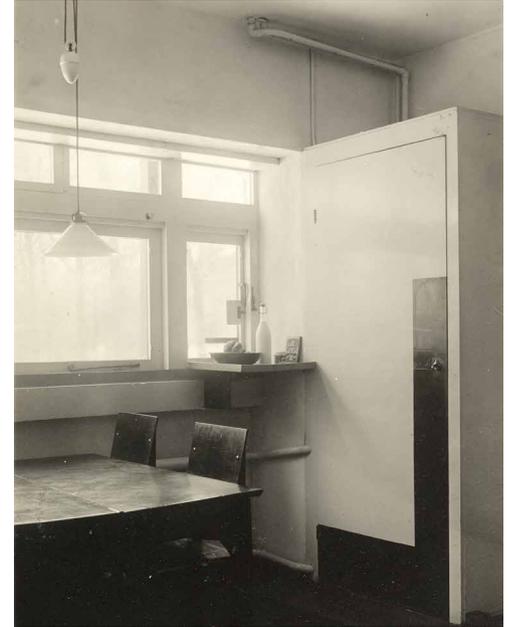


FIG. 4.43 Ground floor, kitchen with deliveries shelf, c. 1925

IN-BETWEEN ROOM, 1930S–1980S

Drawings from the 1950s show a washbasin in this room, which is logical given its darkroom function. When Schröder rented out the ground floor this space became the tenants' cooking and shower space. There was a small counter with cooking facilities on one side and opposite it a shower. This layout is known from drawings in the Bertus Mulder archive.⁷⁶

IN-BETWEEN ROOM IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

From 1987 onwards this room was presented with a blue workbench and no washbasin [FIG. 4.42]. In the open-fronted cupboards are a few (empty) design drawing cylinders and a typewriter. There is nothing to suggest a darkroom; it is more redolent of a storeroom or archive room.

THE KITCHEN, 1925-1926

The most striking thing about this space is the hinged blue deliveries shelf near the window [FIG. 4.43], which was apparently Schröder's idea. Milk and groceries could be handed through the window and placed on the shelf. This was clearly indicated outside on the wall above the window: 'deliveries here' and 'deliveries // ring first, if no answer use speaking tube'.

In the mid 1920s a lamp with a pendulum [FIG. 4.43] hung above the kitchen table. There was also a square red folding table. At least two original military chairs in the colour red were drawn up to the kitchen table [FIG. 4.43]. According to Truus, the worktop was ugly and the sink too deep, but it was a good height. Above the worktop were cupboards with glass sliding doors through which the crockery was visible [FIG. 4.44].



FIG. 4.44 Ground floor, kitchen, c. 1925

Next to the worktop was a dishwasher [FIG. 4.45], a gift from the director of Pegasus, the Utrecht electricity company. Installing such a modern machine in this very modern house was good publicity for the company. There was a free-standing stove [FIG. 4.46] and above it a rack for pots and pans.

The floor was covered with yellowy-brown linoleum, which the thrifty Schröder had brought with her from the old house on Biltstraat.



FIG. 4.45 Ground floor, kitchen with daily help, c. 1925

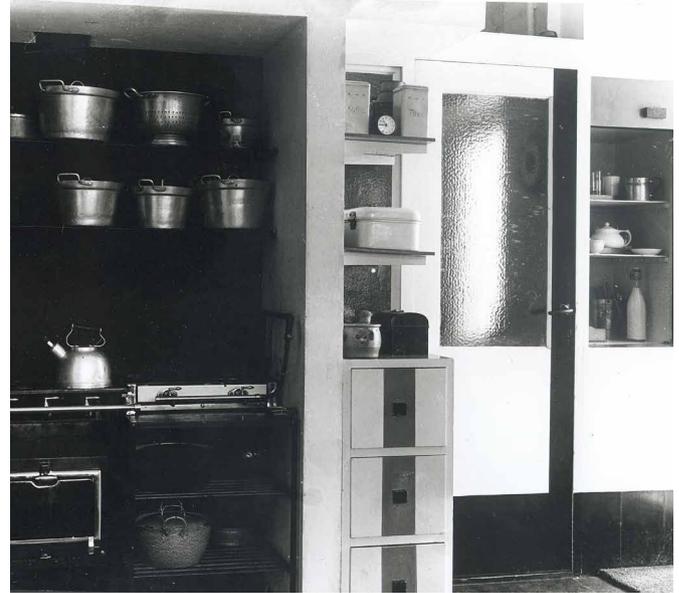


FIG. 4.46 Ground floor, kitchen, c. 1925



FIG. 4.47 Ground floor, kitchen with Marjan Schröder, c. 1985

THE KITCHEN, 1930S–1980S

From the 1930s onwards, this room was a guest room. It was also let to students. From 1958 to 1964 Rietveld had a workplace here and there was a drawing table. After his death in 1964 it reverted to guest room and archive space. The stove had long since disappeared; likewise the worktop and the wall cupboards above it [FIG. 4.47]. The cupboards beside the door to the help's room and the large standing cupboard at the entrance to the kitchen remained in place throughout all those years.

THE KITCHEN IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

The kitchen worktop and the glass-fronted cupboard were reconstructed, but the two shelves to the right of the cupboard were not [FIG. 4.49].



FIG. 4.48 Ground floor, kitchen, 2005



FIG. 4.49 Ground floor, kitchen, 2018

Crockery and pots and pans were placed in the cupboard to illustrate its function [FIG. 4.48/4.49].

Like the cups and glasses upstairs, these do not date from the early 1920s, but are a medley of household goods found in the house after Truus's death.

Mulder discovered the deliveries shelf under the stair in the hall and had it reinstated, together with the notice on the outside.

The square red table is part of the Centraal Museum collection but has not been returned to the house.⁷⁷ Mulder knew of the original table's existence but felt it was too small for a family with three children.⁷⁸ Yet the red surface of the table was clearly part of the spatial picture. The decision to replace it with a larger, uncoloured 1930s table design is at odds with the foundation's principles and shows the extent to which Mulder had free rein.

There are now zigzag chairs drawn up to the table [FIG. 4.49].⁷⁹ In 1987, two earlier zigzag chairs from upstairs were placed in the kitchen. In 2006, one of these chairs was removed and is now frequently on display in the Centraal Museum. One of the military chairs stands in the kitchen, against the wall where the dishwasher previously stood [FIG. 4.49].⁸⁰

On the spot where the stove stood is a photo of the original stove. There is no longer any hanging lamp.

HELP'S ROOM, 1925-1926

'There were always curtains in this room, green and open-weave,' Schröder recalled.⁸¹ Later, shelves were installed. Perhaps Schröder meant shutters? Or the grey shelf above the radiator [FIG. 4.50]? The floor was yellow but Schröder did not say what kind of material it was.

There is not a single photograph of this room from before 1987. It is the only room of which we have no idea how it looked in the mid 1920s. Nor do we know how the room was used. Perhaps the wash hung here to dry, or the daily help had a rest here now and then, or Rietveld incorporated this room into his studio.⁸² In drawings from the 1950s the shape of a single bed or daybed has been sketched.

HELP'S ROOM, 1930S–1980S

Nothing is known about the use to which this room was put during this period, although tenants have remarked that this space was also let and used as a study.

HELP'S ROOM IN THE MUSEUM HOUSE, 1987 TO THE PRESENT

After the house was opened to the public in 1987, there was a door here connecting the ticket office at Prins Hendriklaan 48 with the Schröder House. It was used as entrance and exit by security personnel. This connection was closed off in 2007 when the ticket office was temporarily relocated to Erasmuslaan 5.⁸³ The room is now shown in an empty state. There is nothing to recall its original function.

THE MUSEUM HOUSE TODAY

When the museum house opened in 1987, Paul van den Akker and Marijke Küper took issue with the restoration, pointing out the downside of the chosen restoration concept. In their view, such a restoration and reconstruction could not but result in a heritage building riddled with historical contradictions.⁸⁴ And indeed, when we examine the guiding principles of the refurbishment, many questions about the final design of the museum house arise.

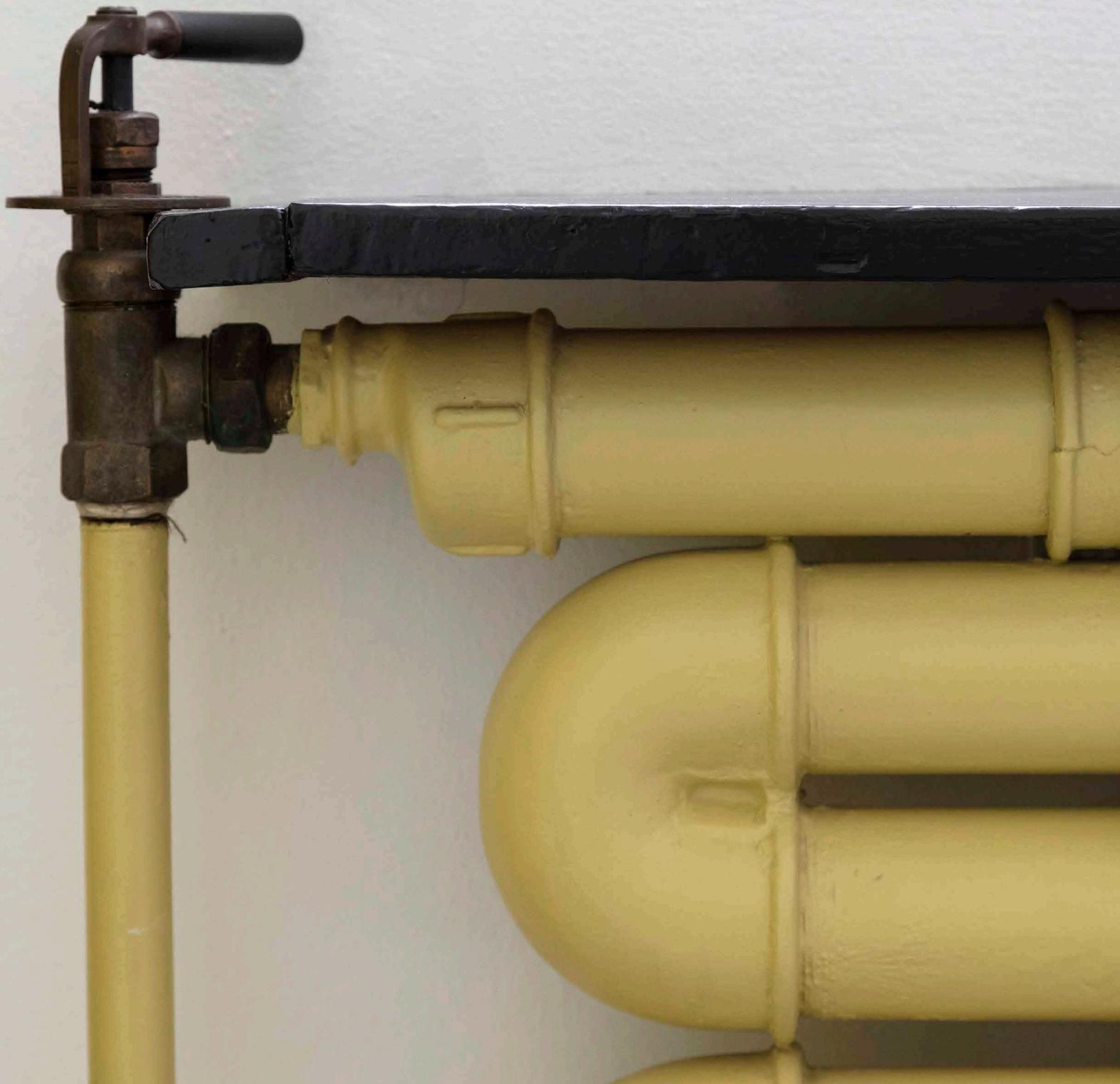
The notions of 'spatial picture' and 'domestic culture' were liberally deployed, but never defined. We may reasonably assume that spatial picture refers to the basic concept of the house, to the form, the colours, the composition and the interplay between inside and outside. But what is meant by domestic culture? Perhaps it means a Spartan lifestyle stripped of everything superfluous. Or is the Rietveld Schröder House actually an example of an extremely modern way of living? For the client and the architect of the restoration it was in any event clear that it was Rietveld and his design that should be visible, not Mrs Schröder. The house should not look as if the occupant had just stepped outside. But in the final phase of the reconstruction, the interior fit-out was supplemented with items designed to illustrate function, such as a book on a bookshelf, or a pot on a pot rack. But why no bottle of milk on the deliveries shelf or inkpots on the desk? And why didn't they abide by the period 1925-1930 when selecting such functional decoration? The furniture, too, is a mixture of original and reconstructed. The originals are now more than ninety years old and have acquired a different patina.

The furnishing of the interior was based on the early series of photographs. But sometimes it was decided to deviate from what could be seen in the images, even when the original furniture was still available.

Whatever the case, it is clear that the extent to which the interior layout is inconsistent, it is because several different principles were employed.



FIG. 4.50 Ground floor, room for the help, 2018



5 / INDOOR CLIMATE IN THE RIETVELD SCHRÖDER HOUSE

BARBARA LUBELLI AND ROB VAN HEES

The Rietveld Schröder House is not only an icon of Dutch architecture, but also a museum welcoming about 18,000 visitors each year. The unusual experimental character of the construction and the fact that the house is open to the public can be expected to affect the indoor climate and to pose some risks for the conservation of the building and the furniture. In order to assess possible risks related to the indoor climate and, if necessary, take measures, a monitoring of the indoor climate was carried out in 2017.

The monitoring was aimed at answering the following questions:

- What is the indoor climate and its response to the outdoor climate?
- What is the effect of visitors on the indoor climate?
- What are the risks posed by the indoor climate to the conservation of the objects and the building, and what measures can be taken to minimize those risks?

The research included a survey of the state of conservation of the building and furniture and monitoring of the indoor and outdoor climate; data were elaborated in order to answer the research questions listed above.

SURVEY

Prior to the monitoring, a visual survey of the state of conservation of the building and the furniture was carried out; this was repeated at the end of the monitoring programme. Thermographic images were collected as well. The moisture content of the wooden window frames was indicatively evaluated by means of a moisture meter (based on electrical resistance). Information on the type of heating system, number of visitors, opening times and other possibly relevant facts were collected.

MONITORING OF THE CLIMATE

The temperature and relative humidity (RH) of the air on the ground and first floors of the building [FIG. 5.1], were measured at 15-minute intervals for more than a year; additionally, the climates in the skylight and in the basement were recorded for a period of several months. The temperature at the construction surface was monitored for different materials (wood, masonry, steel frame), to assess the risk of surface condensation. The outdoor climate (temperature and RH) was monitored as well.

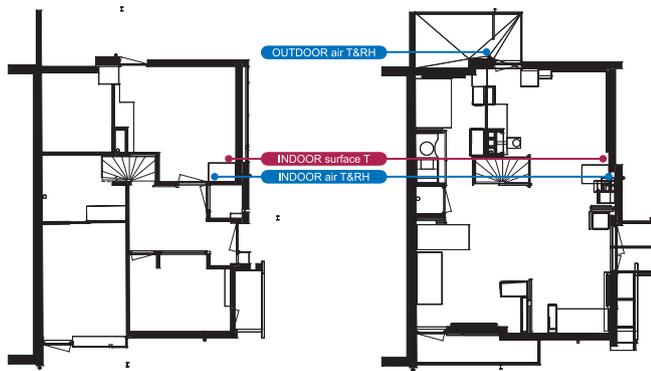


FIG. 5.1 Location of the sensors on the ground (left) and 1st (right) floor.

As well as calculating several statistical parameters, including averages and fluctuations, data were elaborated using the Climate Evaluation Chart (CEC), generated by the web tool available at <http://www.monumenten.bwk.tue.nl/>. This chart provides a clear overview of all data in a single graph.

The effect of visitors on the indoor climate was assessed by comparing periods in which the building was open to the public (Tuesday to Sunday, from 11:00 to 17:00) with those in which the building was closed.

The indoor climate was analysed with special attention to the air humidity. Based on the difference between the water vapour pressure inside and outside the building during the winter months, the indoor climate class of the building, defined according to R. van Hees¹, was assessed.

Moreover, the correspondence of the indoor climate to the specifications defined for indoor climates in museums in the ASHRAE handbook was checked.² Depending on the building class (based on the type of construction, use, and climate control

system) and the outdoor climate, the ASHRAE handbook defines several 'classes of control' options, ranging from D (only prevent dampness) to AA (precision control) [TABLE 5.1]. These classes indicate what can feasibly be achieved in terms of indoor climate, depending on the type of building (e.g. presence of insulation, single- or double-glazed windows, type of construction materials, etc.) and existing system of climate control (e.g. heating, ventilation, air conditioning, etc.). For each of the ASHRAE classes, different risks for the conservation of the objects can be expected. Considering the type of construction of the Rietveld Schröder House (uninsulated, single-glazed windows, heating with no control for air humidity), it seems reasonable to expect that the building may well fulfil the specifications for control class C. Therefore, the correspondence of the indoor climate to the specifications for class C (RH within 25 to 75% RH year-round) was checked.

In order to evaluate the risks for the conservation of the furniture, we first referred to the ASHRAE specifications [TABLE 5.2].³ However, ASHRAE guidelines do not mention the risks when the climate only fits the control class for part of the time. Moreover, the listed risks cannot be easily linked to a specific type of objects (wooden furniture, in this case). To overcome these limitations, the evaluation of the possible risks posed by the indoor climate to the object concerned was carried out following the approach proposed by M. Martens⁴ and the web tool at <http://www.monumenten.bwk.tue.nl/>. The main purpose of this approach is to consider the response time of the object (i.e. the time the object takes to respond to changes in temperature and RH) and its mechanical behaviour. Two main degradation mechanisms are considered: biological (moulds) and mechanical (plastic deformation). Among the classes of objects available, the class 'furniture' was selected for the evaluation of the risks. The calculations for this class of objects was originally developed by Martens based on the case of a lacquered wooden object;⁵ this object class was considered most similar to the furniture present in the Rietveld Schröder House out of the four classes of objects available.

CATEGORY OF CONTROL	BUILDING CLASS	TYPICAL BUILDING CONSTRUCTION	TYPICAL TYPE OF BUILDING	TYPICAL BUILDING USE	SYSTEM USED	PRACTICAL LIMIT OF CLIMATE CONTROL	CONTROL CLASS OPTION
Uncontrolled	I	Open structure	Privy, stocks, bridge, sawmill, well	No occupancy, open to all viewers all year.	No system	None	D (if benign climate)
	II	Sheathed post and beam	Cabin, barn, shed, silo, icehouse	No occupancy. Special event access	Exhaust fans, open windows, supply fans, attic venting. No heat.	Ventilation	C (if benign climate) D (unless damp climate)
Partial control	III	Uninsulated masonry, framed and sided walls, single-glazed windows	Boat, train, lighthouse, rough frame house, forge	No occupancy. Summer tour use. Closed to public in winter.	Low-level heat, summer exhaust ventilation, humidistat heating for winter control.	Heating, ventilation	C (if benign climate) D (unless damp climate)
	IV	Heavy masonry or composite walls with plaster. Tight construction; storm windows	Finished house, church, meeting house, store, inn, some office buildings	Limited occupancy. Staff in insulated rooms, gift shop. Walk-through visitors only. No winter use.	Ducted low-level heat. Summer cooling, on/off control, DX cooling, some humidification. Reheat capability.	Basic HVAC	B (if benign climate) C (if mild winter) D
Climate controlled	V	Insulated structures, double glazing, vapour retardant, double doors	Purpose-built museum, research library, gallery, exhibit, storage room	Unlimited occupancy. Education groups. Good open public facility.	Ducted heat, cooling, reheating, and humidification with control dead band	Climate control, often with seasonal drift	AA (if mild winters) A B
	VI	Metal wall construction, interior rooms with sealed walls and controlled occupancy	Vault, storage room, display case	No occupancy. Access by appointment.	Special heating, cooling and humidity control with precision constant stability control.	Special constant environments	AA A Cool Cold Dry

TABLE 5.1 Classification of climate control potential in buildings (ASHRAE 2007)

TYPE	SET POINT OR ANNUAL AVERAGE	MAXIMUM FLUCTUATION AND GRADIENTS IN CONTROLLED SPACES			COLLECTION RISKS AND BENEFITS
		CLASS OF CONTROL	SHORT FLUCTUATIONS PLUS SPACE GRADIENTS	SEASONAL ADJUSTMENTS IN SYSTEM SET POINT	
General Museums, Art Galleries, Libraries, and Archives	50% RH (or historical annual average for permanent collections) Temperature set between 15 °C and 25°C	C Prevent all high-risk extremes	Within 25 to 75% RH year-round. Temperature rarely over 86°F, usually below 77°F.		High risk of mechanical damage to high-vulnerability artefacts; moderate risk to most paintings, most photographs, some artefacts, some books; tiny risk to many artefacts and most books. Chemically unstable objects unusable within decades, routinely less at 86°F, but cold winter periods double life.

TABLE 5.2 Temperature and RH specifications, and risks and benefits for collection for control class C (ASHRAE 2007)



FIG. 5.2 Deformation of thin timber elements of furniture

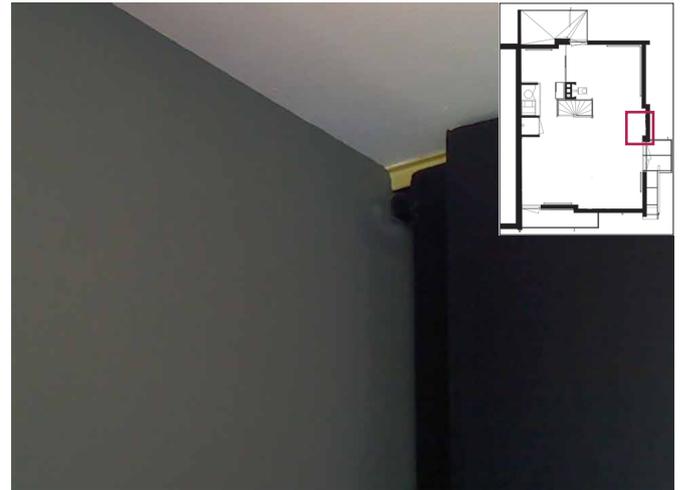
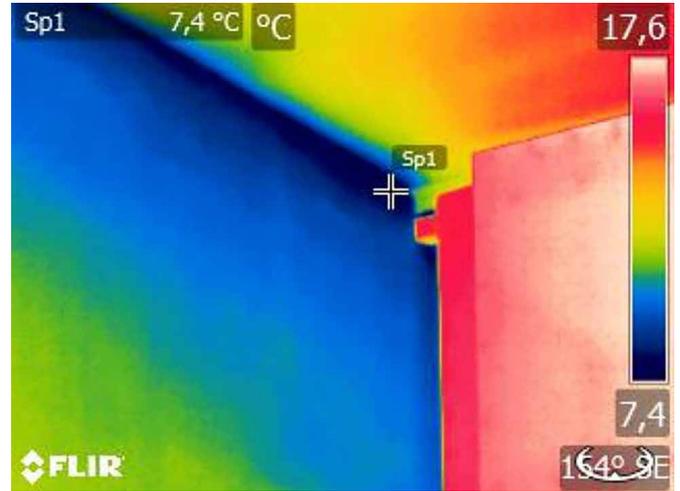
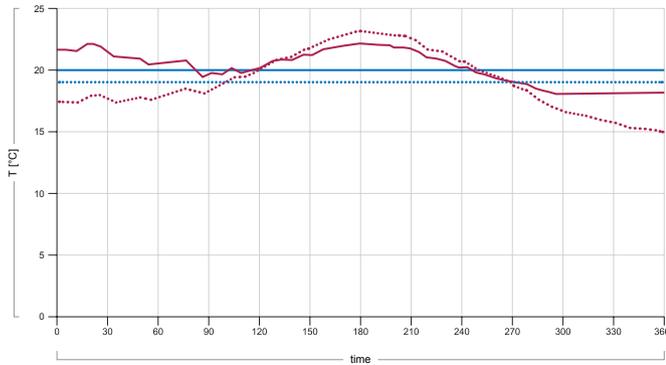
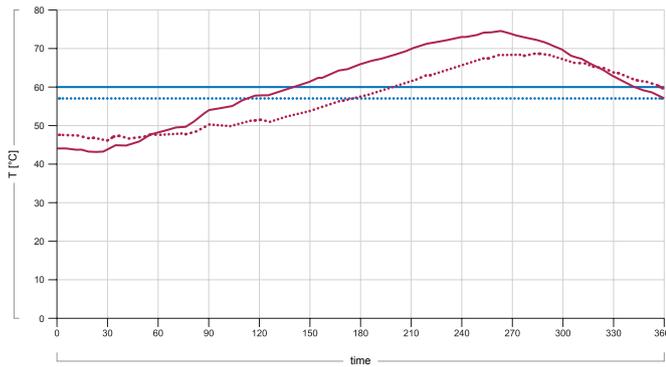


FIG. 5.3 Surface temperature in a corner of the construction, top: IR image, bottom: normal image; the insert shows the plan of the 1st floor with the location (in red) of the inspected area

GROUND AND 1ST FLOOR – T YEARLY AVERAGE AND SEASONAL RUNNING AVERAGEGROUND AND 1ST FLOOR – RH YEARLY AVERAGE AND SEASONAL RUNNING AVERAGE

— T/RH (yearly avg.) ground floor T/RH (yearly avg.) 1st floor
 — T/RH (seas. running avg.) ground floor T/RH (seas. running avg.) 1st floor

FIG. 5.4 Temperature and RH yearly and seasonal average on the ground and 1st floor.

RESULTS

The state of conservation of the building, as assessed visually, is good. The moisture content measured in the timber window frames is low and no moisture spots, indicating the presence of moisture due to e.g. leakages or surface condensation, were observed on the walls of the building. The only exception was the study on the ground floor where parts of the plaster layer detached in 2016. Possible cause was moisture infiltration and measures were taken; later measurements of the moisture content showed that the masonry was dry.⁶

The state of conservation of the furniture is generally good. However, some pieces of furniture, mainly the thinner parts, are visibly deformed [FIG. 5.2]. Floor finishes (carpet and linoleum) become worn due to use and are regularly replaced.

INDOOR CLIMATE: EFFECT OF OUTDOOR CLIMATE AND VISITORS

Thermographic images made it possible to identify thermal bridges in corners and at connections between walls and ceiling in the external envelope of the building [FIG. 5.3].

When analysing the indoor climate data, periods with high temperature values (and corresponding low RH values) in the months January-March 2017, are immediately evident: these are due to malfunctioning of the heating system; this problem was solved in April 2017.

The yearly and seasonal temperatures and RH averages on the ground and first floors are reported in figure 5.4. Based on these values it can be concluded that the average temperature and RH are higher on the ground floor than on the first floor. When daily T and RH variations are considered, larger variations are recorded for the first floor than for the ground floor. This suggests that the climate on the first floor is more affected by variations in the outdoor climate.

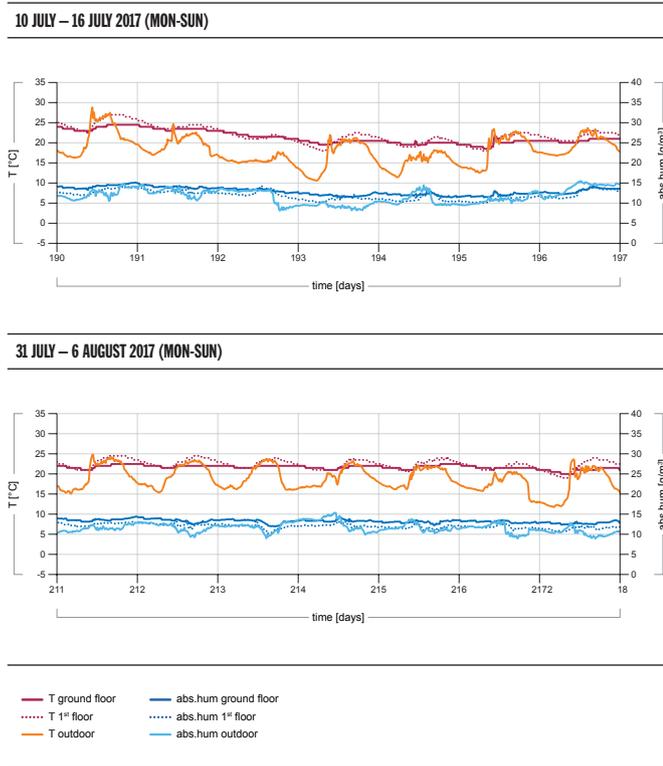


FIG. 5.5 Indoor and outdoor temperature and absolute humidity on the ground and 1st floor during two weeks in the summer period

This conclusion is confirmed when the indoor climate is correlated with the outdoor climate: the strong influence of the outdoor climate on the indoor climate is evident in the summer months, when the heating system is not in use; this is clearer on the first floor [FIG. 5.5], mainly due to the presence of large window surfaces and stronger (natural) ventilation.

The highest RH values are registered at the end of the summer period and in autumn, when the outdoor air is most humid; the lowest values are recorded during winter, when the heating system is active.

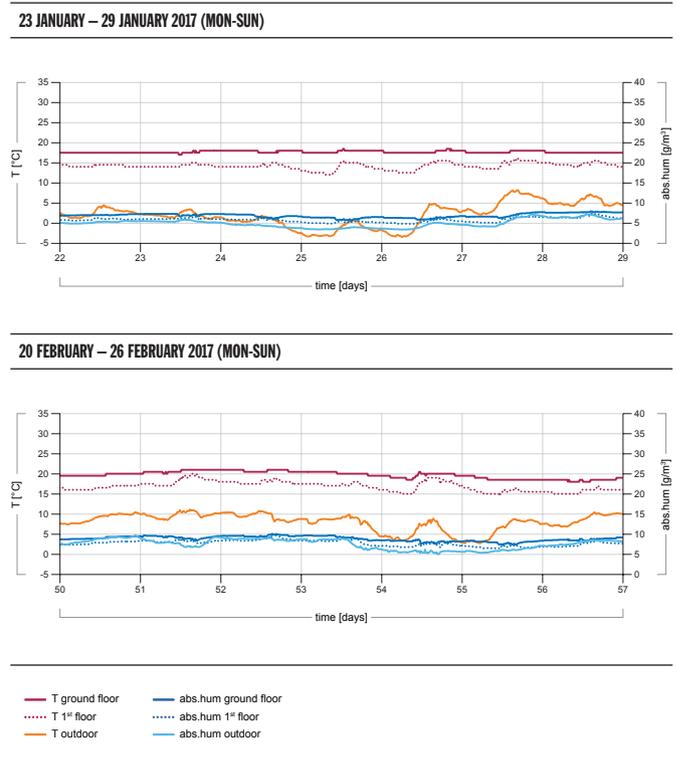


FIG. 5.6 Indoor and outdoor T and absolute humidity on ground and 1st floor during two weeks in the winter period

The presence of visitors has no evident effect on temperature and absolute humidity in the building: it is not possible to distinguish any peak in temperature and/or indoor absolute humidity during the visiting hours; not even during winter [FIG. 5.6], which might have indicated the production of heat or moisture by people. This means that ventilation nullifies any effect produced by visitors and confirms that the building is open to the outdoor climate.

In the skylight, large variations in temperature due to sun radiation were recorded. The temperature in the basement is very stable throughout the year, whereas the RH varies considerably, with the highest values recorded in the summer period.

20 JANUARY – 20 MARCH 2017

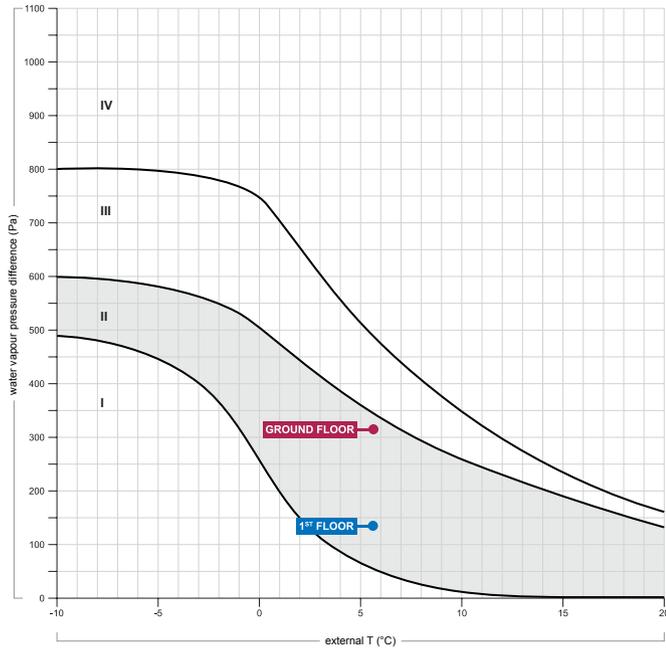


FIG. 5.7 The indoor climate class on the ground and first floors of the building (the period between 20/01/17 and 20/03/2017 was considered)

RISKS FOR THE CONSERVATION OF BUILDING AND FURNITURE RELATED TO THE INDOOR CLIMATE

First of all, in order to assess the risk of surface condensation and/or mould growth, the indoor climate is compared to the classes of indoor climate as defined in Van Hees (1986);⁷ the ground floor is more humid than the first floor, but both fall within climate class II, which means that the indoor climate is sufficiently dry [FIG. 5.7]. Therefore, in principle (under the current regime) no moisture problems in the sense of surface condensation or mould growth on the building construction are to be expected.

FURNITURE	RISK OF MOULD	LIFETIME MULTIPLIER	RISK FOR BASE MATERIAL
Ground floor	safe	0.745	safe
First floor		0.877	safe

TABLE 5.3 Result of the elaboration performed using the web tool available at <http://www.monumenten.bwk.tue.nl/> for the evaluation of risks posed by the indoor climate to the conservation of different types of objects; in this case the results for the object category 'furniture' were considered.

The absence of surface condensation is confirmed by the measurements of the surface temperature and the calculation of the resulting RH at the surface. Despite no surface condensation being detected, high values of air RH (> 80-85% RH) might still lead to biological growth on plaster and wooden surfaces in the event of extended periods of high RH; in addition, variations in RH and temperature might lead to risks for the conservation of the building materials and furniture. These risks are further examined. First the correspondence of the indoor climate to the specifications for ASHRAE climate control class C, which is the expected class, was assessed. Figures 5.8 and 5.9 show that, when considering RH specifications, 88% and 98% (for the ground floor and first floor respectively) of RH values are within the given criteria for class C. In summer and autumn, there is still a significant percentage of values which exceeded the RH requirements; this percentage is higher for the ground floor than for the first floor. No risk of fungal growth was detected. A few temperature values exceeded 30 °C (due to malfunctioning of the heating system), while a significant number of values exceeded 25°C in the spring and summer period (mostly on the first floor). For climate control class C, according to the ASRHAE guidelines,⁸ risks of mechanical damage are mainly present for highly vulnerable objects and for paintings, some books and some artefacts [TABLE 5.2]. However, as the ASRHAE does not further specify which type of artefacts, and the indoor climate does not fully meet the specifications for class C, it is difficult to draw conclusions as to the risks for the conservation. Another approach, which considers the response of the material to the indoor climate,⁹ was therefore adopted (see above). Table 5.3 reports the outcome of this elaboration, performed using the web tool at <http://www.monumenten.bwk.tue.nl/>.

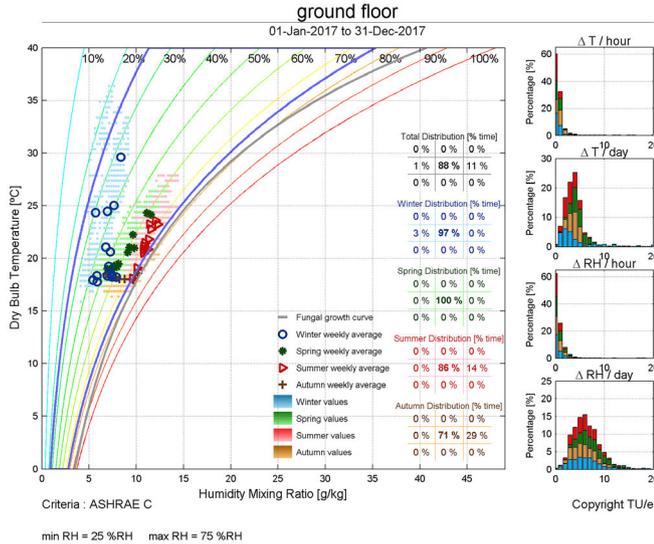


FIG. 5.8 Temperature and RH data recorded on the ground floor of the building in 2017 compared to the specifications for class C; graphical elaboration performed using the web tool available at <http://www.monumenten.bwk.tue.nl/>

Based on these results it is possible to conclude that the indoor climate is safe as far as the wooden furniture is concerned; neither biological growth (germination and growth of spores) nor mechanical damage are to be expected. However, the lifetime multiplier (LM), is relatively low, especially for the ground floor, which means that the service life is lower than it would be in ideal conditions (stable 20 °C and 50% RH).

CONCLUSIONS AND RECOMMENDATIONS

Based on results of the climate monitoring, it can be concluded that the current indoor climate is mainly governed by the variations in the outdoor climate; this is most evident on the first floor. The effect of the visitors on the indoor climate is negligible. This is most probably due to the small number of visitors (10-12 persons for each guided tour) and to the high ventilation due to the quite open building structure.

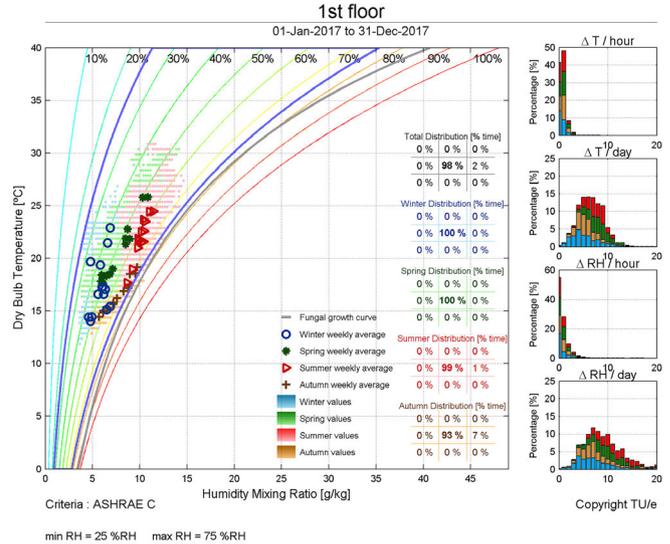


FIG. 5.9 Temperature and RH data recorded on the first floor of the building in 2017 compared to the specifications for class C; graphical elaboration performed using the web tool available at <http://www.monumenten.bwk.tue.nl/>

During the heating season, periods with higher than desirable temperatures and lower than desirable RH values were recorded, mainly due to a malfunction of the heating system. During the summer season, very high RH values were recorded.

The indoor climate of the building falls largely within the ASHRAE class of control C, which can be considered the class of control possible for this building (uninsulated masonry, single-glazed windows, heating without RH control). The risk to the furniture of mechanical damage and biological growth is low.

Based on the results of the monitoring, it is suggested that the indoor temperature and RH level be monitored, and an alarm system used so as to be able to intervene promptly in case of malfunctioning of the heating system.

In order to reduce RH in the summer, air dehumidification should be considered. Ventilation will not be sufficient, as the absolute outdoor humidity during summer is high.

When considering the indoor climate under the current heating and ventilation regime, there is no reason to reduce the number of visitors.

No immediate risks of biological growth or mechanical damage have been detected. The option of replacing the original pieces of furniture with copies, might still be considered if the lifetime needs to be optimized or when other risks (e.g. mechanical damage caused by visitors) need to be avoided.

No immediate risk of biological growth or surface condensation was detected in the present situation. However, as several severe thermal bridges are present in the construction, the risk of mould growth on the construction might arise should interventions like sealing of windows be undertaken without simultaneously introducing RH control.



EPILOGUE

Interest in museums and heritage is huge these days, with increasing numbers of people visiting museums and more and more unique buildings being opened to the public. But that increased public interest also entails increased responsibility in the maintenance and preservation of these important buildings, which in turn depends on research and enhanced insight. Anyone surveying the developments in this field in recent decades will appreciate just how much progress has been made, especially with regard to the importance of interpretation and data-based critical reflection. The 'digital spatial database', supported in part by the Rijksdienst Cultureel Erfgoed, makes it possible to bring all the information about the Rietveld Schröder House (RSH) together in one place and to continue to add to it. In the past three years a great deal of new information and new archival materials have come to light and we are convinced that still more will surface. A recent example concerned Truus Schröder herself. We are very grateful to Jessica van Geel, who published her biography of Schröder last year, for generously sharing her research findings with us.

Museums have a long tradition in conserving artworks, design objects and historical artefacts. Drawing on this knowledge, we and our partners were able to carry out an exceptional study of one of the most significant modernist private houses in the world. The contribution of our partners was indispensable and the exchange of knowledge both stimulating and essential. In complex management issues, the interdisciplinary approach and the collaboration with TU Delft proved highly rewarding. I am therefore extremely grateful to Marie-Thérèse van Thoor who took the initiative for this research four years ago and put it to my predecessor Edwin Jacobs, who responded enthusiastically.

Many thanks to Barbara Lubelli, Rob van Hees and Sander Pasterkamp of TU Delft for making their know-how available, to the members of the advisory board, Jannneke Bierman, Jurjen Cremer, Andy van den Dobbelsteen, Alice Gut, Harrie Schuit and Marije Verduin, and to our own Centraal Museum staff members who were involved in the project. A special mention is owed to our design curator Natalie Dubois, who applied her considerable expertise and boundless enthusiasm to the task of coordinating this wonderful project on behalf of the Centraal Museum.

The Getty Grant enabled us to bring together existing knowledge about the RSH, the archives, the photographic material, the personal and foundation archives and make them available to today's managers and researchers and secure them for consultation far into the future. The house, owned by the Rietveld Schröder House Foundation, is not just a national heritage-listed building and a UNESCO World Heritage site, but also part of the Centraal Museum's collection: Inv. no. 34934. Because of its special status we apply higher standards to the building in terms of temperature, humidity, visitors and the furniture displayed there. The results of the technical research carried out under the auspices of the Getty Grant will help to inform the updating of our Conservation Management Plan and provide a solid basis for technical research for the next big restoration of the RSH. Thanks to The Getty Foundation, the house has entered a new phase in which it will now be possible to further explore issues relating to the different 'chronological layers' in the choice of furniture.

Many thanks are due to all the interviewees, especially Bertus Mulder, who was always ready to answer questions. During the course of the research project, he also gifted the last part of his personal archive to the Centraal Museum. We are therefore

particularly pleased that we were able to complete this research in the year of his ninetieth birthday.

In 2024 the RSH will be one hundred years old, something the Centraal Museum will celebrate with great fanfare. As such, we greatly value the results of this research project as the basis for future-proofing this world class, publicly accessible heritage building.

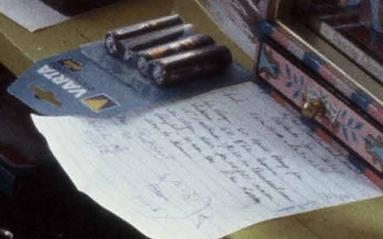
Bart Rutten
Artistic director, Centraal Museum

BOODSCHAPPEN
EERST BELLEN BIJ GEEN GEHOOR SPREEKBUIS

SPREEKBUIS

BELLEN

BOODSCHAPPEN HIER



ENDNOTES

INTRODUCTION

- 1 The Rietveld Schröder House is one of only ten Dutch UNESCO World Heritage Sites, and of these ten the only private home. See De Jong, Van Zijl and Mulder 1999.
- 2 See for example Mulder 2010.
- 3 B. Mulder, 'Het huis als monument', in: Van Zijl and Mulder 2009, 68-93.
- 4 All this information, like the results of the simultaneously conducted technical investigations, will be made available via a digital spatial database on <http://rsh-ruimteboek.centraalmuseum.nl/>.
- 5 The recently published novel, *I love you, Rietveld*, and the research data gathered by Jessica van Geel proved very useful in this respect; see Van Geel 2018.
- 6 Since the privatization of the Centraal Museum the Rietveld Schröderhuis has become part of the museum's collection.
- 7 Mulder 2018.
- 8 RCE, DS 6138, Monument number 18329, old archive 1971-1979, various correspondence with the SRSRSH.
- 9 Bertus Mulder archive, unnumbered, letter from Dr. P. Singelenberg, 16 October 1973.
- 10 RCE, DS 6138, Monument number 18329, old archive 1971-1979, Architectengroep 5, 'Technische omschrijving voor de restauratie van het Schröderhuis aan de Prins Hendrikklaan 50 te Utrecht', 14 August 1970; various correspondence with SRSRSH and internal memoranda.
- 11 SRSRSH archive, minutes of board meeting with Mulder in the Rietveld Schröder House (RSH), 14 June 1974.
- 12 Van Zijl and Mulder 2009, 76.
- 13 RCE, DS 6138, Monument number 18329, old archive 1971-1979, letter from state secretary to SRSRSH 23 June 1972. The other Architectengroep 5 architects were Dick v.d. Kamp, Jan v.d. Beld, Gesine Albers and Jan Koudijs.
- 14 SRSRSH archive, letter from Veroude, 27 June 1973; minutes of board meetings, 26 July 1973, 15 October 1973. Veroude had already taken up his post in Amsterdam the previous year. The board had discussed Veroude's suitability back in 1971 in light of mistakes made in the choice of colours (without Schröder's knowledge); minutes of board meeting, 21 July 1971.
- 15 Mulder 2018.
- 16 The Bertus Mulder archive contains a summary account of the 'urgent restoration of the schröderhuis', dated 30 August 1970, written by Bertus Mulder. Bertus Mulder archive, BM 073.
- 17 Conversation with Bertus Mulder, 25 March 2016.

CHAPTER 1

- 1 Singelenberg 1963.
- 2 RCE, DS 6138, Monument number 18329, old archive 1963-1969, correspondence between Singelenberg and Rijkscommissie voor de Monumentenzorg.
- 3 Van Zijl, 'De Stijl as Style', in: Dettingmeijer, Van Thoor and Van Zijl 2010, 226-249.
- 4 RCE, DS 6138, Monument number 18329, letter from J. Meulenbelt to the Minister for Culture, Recreation and Social Work, 21 January 1969; minutes of Rijkscommissie meeting, 21 March 1969.
- 5 CM, Copy of the charter of the Stichting Rietveld Schröder Huis, Utrecht, 28 August 1970.
- 6 RCE, DS 6138, Monument number 18329, old archive 1971-1979, various correspondence with the SRSRSH.
- 7 SRSRSH archive, not inventoried, unnumbered, various correspondence; accessed 18 July 2016, 16 and 18 January 2017 (since the summer of 2017 the SRSRSH archive has been inventoried). The foundation also sought publicity. See Archiefbeschrijving Stichting Rietveld Schröder Huis (1970-2016) and RSA, cuttings file RSH.
- 8 RCE, DS 6138, Monument number 18329, old archive 1971-1979, letter SRSRSH, 10 October 1974.
- 9 Bertus Mulder archive, unnumbered, letter from Dr. P. Singelenberg, 16 October 1973.
- 10 RCE, DS 6138, Monument number 18329, old archive 1971-1979, Architectengroep 5, 'Technische omschrijving voor de restauratie van het Schröderhuis aan de Prins Hendrikklaan 50 te Utrecht', 14 August 1970; various correspondence with SRSRSH and internal memoranda.
- 11 SRSRSH archive, minutes of board meeting with Mulder in the Rietveld Schröder House (RSH), 14 June 1974.
- 12 Van Zijl and Mulder 2009, 76.
- 13 RCE, DS 6138, Monument number 18329, old archive 1971-1979, letter from state secretary to SRSRSH 23 June 1972. The other Architectengroep 5 architects were Dick v.d. Kamp, Jan v.d. Beld, Gesine Albers and Jan Koudijs.
- 14 SRSRSH archive, letter from Veroude, 27 June 1973; minutes of board meetings, 26 July 1973, 15 October 1973. Veroude had already taken up his post in Amsterdam the previous year. The board had discussed Veroude's suitability back in 1971 in light of mistakes made in the choice of colours (without Schröder's knowledge); minutes of board meeting, 21 July 1971.
- 15 Mulder 2018.
- 16 The Bertus Mulder archive contains a summary account of the 'urgent restoration of the schröderhuis', dated 30 August 1970, written by Bertus Mulder. Bertus Mulder archive, BM 073.
- 17 Conversation with Bertus Mulder, 25 March 2016.

- 18 SRSB archive, minutes of board meeting, 15 October 1973.
- 19 Conversation with Bertus Mulder, 25 March 2016; Mulder 2018.
- 20 Bertus Mulder archive and IAWA, Han Schroeder Architectural Papers 1926-1998, various correspondence. With thanks to Jessica van Geel.
- 21 Conversation with Bertus Mulder, 31 August 2017 and 3 July 2018.
- 22 Quote from note 145 in: Van Zijl and Mulder 2009, 104-105. Conversations with Bertus Mulder, 21 April 2016 and 31 August 2017. Architect, contractor and painter all had to be acceptable to the heritage agencies. SRSB archive, minutes of board meeting, 26 July 1973.
- 23 RCE, DS 6138, Monument number 18329, old archive 1971-1979, minutes of meeting in the RSH, 20 December 1979.
- 24 RCE, CM, RSA, SRSB archive and IAWA, Han Schroeder Architectural Papers 1926-1998: Architectengroep 5, 'Technische omschrijving voor de restauratie van het Schröderhuis aan de Prins Hendriklaan 50 te Utrecht', 14 August 1970.
- 25 The technical specifications relating to the replacement of frames and windows mention pine, and components in hardwood. In 1973 Han Schröder argued strongly for the use of pine, the same wood that Rietveld had used. Bertus Mulder archive, BM 041, letter to Bertus Mulder, 24 August 1973.
- 26 Van Zijl and Mulder 2009, 70.
- 27 See also M.T. van Thoor, 'Factors of the Visible. Rietveld's Ideas about the Renewal of Architecture', in: Dettingmeijer, Van Thoor and Van Zijl 2010, 154-173.
- 28 Mulder 2018; conversation with Bertus Mulder, 31 August 2017. For a more detailed description of the work carried out, see Van Zijl and Mulder 2009, 70-76. See also H. Zijlstra, 'Flat Roofs and Open Corners', in: Dettingmeijer, Van Thoor and Van Zijl 2010, 118-137. Available drawings and other information about these and later repairs can be found in the Bertus Mulder archive and will be linked to the digital spatial database: <http://rsh-ruimteboek.centraalmuseum.nl/>
- 29 The report on the plasterwork states 'south and west sides', probably referring to the front facade and the elevation on Prins Hendriklaan, respectively the east and south elevations. Bertus Mulder archive, BM 006, werkplaats voor architectuur bertus mulder, 'Rapport over de gang van zaken met betrekking tot de reparatie van het stucwerk van het Rietveld Schröder Huis', with appendices, 10 April 1980; BM 141, bertus mulder architect, 'restauratie rietveld schröder huis', 6 October 1975.
- 30 Normally a coat of render with finer sand was applied to the base coat, but that was not Rietveld's method. In the specifications for another Rietveld house, Huis Van den Doel, this is stated explicitly: 'sand in the rendering mortar'. Conversation with Bertus Mulder, 31 August 2017.
- 31 In a memo from October 1975 small cracks in the unrestored surfaces were defined as craquelure, in the other surfaces as hairline cracks. This applied to the two wall surfaces on the east elevation: above the balcony (I), and between the corner window and kitchen (II), as well as the large wall surface on the south elevation (III). The coat of paint had failed to adhere because of the alkalizing effect of the substrate. Bertus Mulder archive, BM 141, 'restauratie rietveld schröder huis'.
- 32 Respectively Messrs Klootwijk (Centraal Bouwbedrijf), Peizel and J.F. van Santen.
- 33 The synthetic dispersion was Flevopol; the synthetic mortar beneath it was Wapex from Sikkens.
- 34 The plasterwork repairs on the two – unspecified – walls were carried out on 8 October.
- 35 K.H. Wesseling (MSc) from TNO's Architecture working group, told Mulder about the problems with rendering external walls in the Netherlands, northern Germany and Denmark. He recommended Geerken. Letter from Mulder to Binnert Schröder, 9 August 1976 (annex BM 006).
- 36 SOV bore the costs and used its own plasterers. Repairs using lime sand mortar resulted in shrinkage cracks. In one of the areas where the brickwork had been repaired with synthetic mortar, the top and base layers were removed and the whole was finished with a 'slightly elastic synthetic mortar coat'. That appeared to have gone well, but hairline cracks still appeared.
- 37 Mulder writes 'at this time' but it is not entirely clear what year this refers to. RDMZ was represented by R. Apell and the Utrecht city council by Mr Verlaan. No reports of these visits have been found at these agencies.
- 38 To be carried out by the plasterers who had worked on the Kurhaus in Scheveningen.
- 39 J.F. Geerken, Bedrijfschap STS, 'Advies nummer 36/1979', 7 May 1979 (annex BM 006).
- 40 All of this led to considerable additional work and higher costs. The report also details how the work was carried out. The STS annex contains a list of the materials used. STS also recommended using a breathable mineral paint for the paintwork (see STS annex, BM 006). The national, local and provincial governments also subsidized the additional costs, despite the irregular procedure of only applying for this subsidy after the work was completed. RCE, DS 6138, Monument number 18329, incl. correspondence between SRSB and RDMZ.
- 41 Conversation with Bertus Mulder, 31 August 2017; Mulder 2018.
- 42 Nijland 2018. The four samples were from: south wall interior study, ground floor (RSH 18/1); south wall interior former girls' room, first floor (RSH 18/3); east wall exterior beneath balcony window first floor (RSH 18/4); south wall exterior below studio window Prins Hendriklaan (RSH 18/5).

CHAPTER 2

- 1 Van Zijl and Mulder 2009, 76-78.
- 2 Bertus Mulder archive, BM 068, notes of five conversations, note 1, 30 October 1973.
- 3 SRSR archive, various correspondence.
- 4 Bertus Mulder archive, BM 068, notes of five conversations, 30 October – 29 November 1973.
- 5 BM 068, note 2, 1 November 1973.
- 6 RSA, G.T. Rietveld, 'Kleur in architectuur', in: *Studiedag Mens, Kleur, Ruimte*, organized by the v.b.k.a., Vereniging van Belgische Kleurenadviseurs [Association of Belgian Colour Consultants], Antwerp 16 November 1963.
- 7 Bertus Mulder archive, BM 068, notes of five conversations, note 1, 30 October 1973.
- 8 The note mentions 1972, but 1971 is more probable given that the foundation discussed this round of painting and the 'wrong colours' in 1971. One of the painters had even recommended a different company, but the foreman refused to admit the mistakes. It prompted the board members to wonder whether Veroude was the right choice of restoration architect. SRSR archive, minutes of board meeting, 21 July 1971.
- 9 The J.F. van Santen painting company in Goedestraat in Utrecht still exists, although Van Santen himself is deceased. Unfortunately, the company no longer has any information about the various repaintings of the Schröder House.
- 10 Bertus Mulder archive, BM 068, notes of five conversations, note 4, 22 November 1973.
- 11 Van Zijl and Mulder 2009, 77.
- 12 Bertus Mulder archive, BM 068, notes of five conversations, note 2, 1 November 1973.
- 13 Conversation with Bertus Mulder, 25 March 2016; Van Zijl and Mulder 2009, 76-77; Mulder 2018.
- 14 Drawings in the collections of CM and HNI.
- 15 The copy of Veroude's report held in the SRSR archive contains the following comments in the margin: 'are our safeguards' and 'to assign (labels)'.
16 Bertus Mulder archive, BM 113, letter from Mulder to the Paint Research Institute TNO, 5 November 1973; BM 068, notes of five conversations, note 3, 15 November 1973.
- 17 SRSR archive, minutes of board meeting with Mulder in the RSH, 14 June 1974. The board regarded these as important safeguards.
- 18 Van Zijl and Mulder 2009, 77; conversation with Bertus Mulder, 25 March 2016.
- 19 De Jong, Van Zijl and Mulder 1999, 31.
- 20 This material has since been handed over to the Centraal Museum where it will be included in the Bertus Mulder archive. The colour samples date from 1992 and 1995.
- 21 Mulder 2018. The base coat may be original but could also be a new base coat from a later date.
- 22 De Jong, Van Zijl and Mulder 1999, 31.
- 23 Conversations with Bertus Mulder, 21 April and 27 June 2016; Mulder 2018.
- 24 Mulder 2018.
- 25 Bertus Mulder archive, BM 068, notes of five conversations, note 2, 1 November 1973.
- 26 Van Zijl and Mulder 2009, 77; conversation with Bertus Mulder, 31 August 2017; Mulder 2018.
- 27 Conversations with Bertus Mulder, 25 March and 21 April 2016.
- 28 IAWA, Han Schroeder Architectural Papers 1926-1998, letter from H. Schröder to Mulder, 20 July 1974.
- 29 Conversation with Bertus Mulder, 31 August 2017, 3 July 2018.
- 30 RSA, cuttings folder RSH: 'Het is onvoorstelbaar wat die man met de basiskleur grijs heeft kunnen doen' ['It's unbelievable what that man could do with the basic grey colour'], interview with Bertus Mulder, *Cobouw magazine* 2 (1 November 1974).
- 31 See note 40 (in chapter 1).
- 32 RCE, DS 6138, Monument number 18329, P.K. v.d. Schuit to Apell, memo from the RDMZ department of architectural research and documentation, 26 August 1980.
- 33 With the added comment: 'Perhaps this can still be tackled from the inside out at a later stage'.
- 34 Conversation with Bertus Mulder, 31 August 2017; Mulder 2018. The cleaning of the exterior is included in the maintenance plans for the RSH that were drawn up from 2003 onwards, Bertus Mulder archive (RSH Onderhoud file 676).
- 35 Mulder 2018.

- 36 The Bertus Mulder archive (RSH Onderhoud file 676) does contain a 'Technical note' from K. van Zanen of Sikkens, 13 July 1979, with advice about cleaning, sanding, wiping down, priming, etc. For the walls Alphatex IQ was mentioned, for the woodwork and steel, Rubbol SB.
- 37 In 1992, the Sikkens laboratory received a request from Bertus Mulder to develop a colour formula in Alphatex IQ (white and grey) for the walls, and in Rubbol AZ (yellow, blue, white and black) and Rubbol SB (red) for wood and steel. Various memos and 'Technisch advies' [Technical advice] by D.J.F. Zandee of Sikkens, 11 May 1992. Bertus Mulder archive (RSH Onderhoud file 676).
- 38 Bertus Mulder archive (RSH Onderhoud file 676), 'Notitie met betrekking tot het onderhoud van het Rietveld Schröder Huis' [Memo regarding maintenance of the Rietveld Schröder House], 21 November 2002; maintenance work plans, November 2002 and 4 November 2003; 'Technisch advies' [Technical advice] by D. Kuipers, 19 February 2002.
- 39 This formula was recorded by René de Jager from Sikkens. The Rietveld Schröder House had also been completely repainted in 2004. Conversation with De Jager and Hans Vrijmoed, Sikkens Sassenheim, 12 April 2017. Following this conversation, the SRSR contacted Sikkens and the relevant documentation on the colours of the RSH was subsequently transferred to its archive.

CHAPTER 3

- 1 SRSR archive, minutes of board meeting, 28 April 1976. According to a memo from the RDMZ, the restoration of the exterior was completed on 17 February 1981.
- 2 SRSR archive, minutes of board meetings, 2 June, 25 June and 3 October 1980.
- 3 For 1980-1983: SRSR archive, minutes of board meetings, 27 February, 4 May 1981, 25 September 1981, 18 December 1981, 8 October 1982, 14 January 1983, 21 December 1983.
- 4 The garden was eventually laid out according to Mulder's plans and in consultation with the City of Utrecht. SRSR archive, minutes of board meeting, 8 April 1983. See also Van Zijl and Mulder 2009, 90-91.
- 5 The members of this restoration committee were A. Bodon, B. Premsele and P. Singelenberg.
- 6 RCE, DS 6138, Monument number 18329, memo W.F. Denslagen, Art-historical Department, restoration advisory report, 22 April 1985.
- 7 RCE, DS 6138, Monument number 18329, various correspondence between Utrecht city council, RDMZ and the Ministry of Welfare, Health and Culture, August-November 1985. An 'urgent memo' from the RDMZ (31 October 1985) duly stated that only the cost of structural repairs to existing interior elements was eligible for subsidy, because the plan was 'rather reconstructive'. The other costs were financed by AMEV. Besides Denslagen also R. Apell (RDMZ) and W. Kastelijin (Municipal Heritage Agency) were involved.
- 8 Bertus Mulder archive, BM 010, 'Rietveld Schröder Huis. Restauratie interieur, omschrijving + begroting II', 21 December 1984.
- 9 Bertus Mulder archive, BM 234, 'de restauratie van het interieur van het rietveld schröder huis. notitie ter nadere beschrijving van de opgave', undated [probably spring 1984, given a reference to Friday 30 March].
- 10 Bertus Mulder archive, BM 234, 'de restauratie van het interieur van het rietveld schröder huis. notitie ter nadere beschrijving van de opgave'.
- 11 The mortar mixture for the walls: 1 part cement, 4 parts sand.
- 12 SRSR archive, unnumbered, Bertus Mulder, 'Beschrijving van de werkzaamheden voor de tweede fase van de restauratie en rekonstruktie van het rietveld schröder huis per 22 oktober 1985', 23 October 1985. The mortar mixture was now specified as: 1 part Portland cement, 5 parts sand, ½ part lime.
- 13 Bertus Mulder archive, BM 015, 'restauratie van het interieur van het rietveld schröder huis. draaiboek', 19 November 1985. With respect to the plasterwork in the toilet there was a reminder to 'check whether it is necessary to replace the plasterwork in 2.7'.
- 14 SRSR archive, minutes of board meeting, 29 November 1985.
- 15 Bertus Mulder archive, unnumbered, minutes of work meeting no. 1 on 14 January 1986, 16 January 1986. Those present at the meeting were the restoration committee, the secretary of the SRSR, I. van Zijl and Kastelijin. The furniture was taken to the Centraal Museum's depot.
- 16 To stiffen the structural frame the brickwork was injected with non-shrink grout by the firm Vogel Injection from Zwijndrecht.
- 17 Bertus Mulder archive, unnumbered, minutes of work meeting no. 2 on 18 February 1986, 7 March 1986; SRSR archive, minutes of board meeting, 18 March 1986.
- 18 SRSR archive, letter from B. Mulder to the members of the building committee, 7 March 1986.
- 19 SRSR archive, minutes of board meeting, 18 March 1986. We may assume that the building committee consisted of the members of the restoration committee, supplemented by Van Zijl, Kastelijin and the secretary of the SRSR, L. Oosterbaan.

- 20 Bertus Mulder archive, BM 019, [Bertus Mulder], 'De restauratie van het interieur van het Rietveld Schröder Huis', undated. This was a personal account written as a letter to Maria [Griffioen-de Bruijn]; the chapter: 'Het huis als monument', in: Van Zijl and Mulder 2009, 78-90, is partly based on this account.
- 21 Van Zijl and Mulder 2009, 80-83.
- 22 For the execution of parts of the reconstruction, such as the complicated reconstruction of the shutter construction of the rooftop extension, see Van Zijl and Mulder 2009, 84-88.
- 23 Bertus Mulder archive, BM 019, Bertus [Mulder], 'De restauratie van het interieur van het Rietveld Schröder Huis', undated; Van Zijl and Mulder 2009, 81-82. Mulder refers in the letter and the book to discussions about the removal of the plasterwork and the undermining of the authenticity of the heritage building with the board, Apell, Kastelijn and Van Zijl. No records of these discussions have been found in the SRSR archive.
- 24 Conversation with Bertus Mulder, 21 April 2016. The Bertus Mulder archive (RSH Onderhoud file 676) contains a copy of the extension of the permit issued by RDMZ 'for the reconstruction of the interior of the Rietveld Schröderhuis', 29 November 1985.
- 25 The plumber and electrician were men with whom J. Zwaak often worked.
- 26 Conversation with Bertus Mulder, 27 June 2016.
- 27 Bertus Mulder archive, BM 019, Bertus [Mulder], 'De restauratie van het interieur van het Rietveld Schröder Huis', undated.
- 28 Telephone conversation between H. van de Kant and M.T. van Thoor, summer 2017; conversation with Bertus Mulder, 21 April 2016.
- 29 Conversation with Bertus Mulder, 21 April 2016 and 27 June 2016. See also: Bertus [Mulder], 'De restauratie van het interieur van het Rietveld Schröder Huis', undated (BM 019) and Van Zijl and Mulder 2009, 88-90.
- 30 Van Zijl and Mulder 2009, 88 states: '...first lavender blue..., later pale yellow... and finally ultramarine blue'. This does not tally with the information gleaned from the letter (BM 019) and conversations with B. Mulder.
- 31 SRSR archive, minutes of board meeting, 4 June 1986; Bertus Mulder archive, unnumbered, minutes of work meeting no. 6 on 22 September 1986 and no. 7 on 27 October 1986, 1 October and 30 October 1986. As a result of the unanticipated injection of brickwork cracks, parts of the exterior had to be repainted as well.
- 32 Conversation with Bertus Mulder, 25 March 2016.
- 33 Conversation with Bertus Mulder, 27 June 2016. Until mid 2018 part of Mulder's archive was still with him at home; those records have since been transferred to the Centraal Museum. They include a piece of plaster, which may be from behind the heater.
- 34 Another small piece of the older yellow coat of paint might also remain below the sheet of glass beside the wash basin, according to Mulder (conversation 27 June 2016). A visit to the Sikkens archives in Sassenheim, on 12 April 2017, revealed that they no longer contain any documentation relating to the Rietveld period, or to the restorations in the 1970s and '80s.
- 35 Van Zijl and Mulder 2009, 88.
- 36 The surveys were carried out by B. Lubelli and R. van Hees (Lubelli and Van Hees 2017) and T. Nijland (Nijland 2017).
- 37 Information given by Hans [J.F.] Geerken to B. Lubelli, 28 March 2017.
- 38 Nijland 2017.
- 39 These were sections of the Bertus Mulder archive that Mulder still had at home; it also transpired that the CM had not yet inventoried photographic files concerning the RSH.
- 40 Conversation with Bertus Mulder, 11 September 2017.
- 41 Conversations with Bertus Mulder, 11 September 2017 and 29 March 2019; Mulder 2018.
- 42 Nijland 2018; Friedrichs, Junge and Van der Woude 2018. See also Chapter 1, note 42.
- 43 See note 39 in Chapter 2.

CHAPTER 4

- 1 The SRSR handed management of the house to Utrecht's Centraal Museum in 1983.
- 2 F. den Oudsten and L. Büller, interview with Truus Schröder, 1982.
- 3 The first notes about the restoration of the house date from 24 March 1970. SRHS archive, minutes of board meeting.
- 4 RSA, series of photographs from circa 1926.
- 5 Bertus Mulder archive, BM 068, five records of conversations, record 2, 1 November 1973.
- 6 Truus Schröder ordered these in the United States from the Sears department store. They disappeared and in 1985 were reproduced with the help of a Sears catalogue. Van Zijl and Mulder 2009, 87.
- 7 SRHS archive, minutes of board meeting, 25 June 1980.
- 8 SRSR archive, minutes of board meeting, 25 June 1980.
- 9 SRSR archive, minutes of board meeting, undated [probably 25 July 1980].
- 10 SRSR archive, minutes of board meeting, 25 June 1980.

- 11 RSA, drawings. Inv. nos. 004A072, 004A106, 004A114a, 004A113a.
- 12 SRSR archive, minutes of board meeting, 4 May 1981.
- 13 Comment by Han Schröder in: T. Oxenaar, conversation with Truus Schröder, 1982. With thanks to Jessica van Geel.
- 14 F. den Oudsten and L. Büller, interview with Truus Schröder, 1982.
- 15 SRSR archive, minutes of board meeting, 14 June 1984.
- 16 SRSR archive, minutes of board meeting, 16 October 1984.
- 17 SRSR archive, minutes of board meeting, 5 February 1985.
- 18 SRSR archive, minutes of board meeting, 28 May 1985.
- 19 SRSR archive, minutes of board meeting, 29 November 1985.
- 20 SRSR archive, minutes of board meeting, 13 March 1987.
- 21 Conversation with Bertus Mulder, 13 March 2018.
- 22 Conversation with Bertus Mulder, 13 March 2018.
- 23 Ida van Zijl was curator of applied arts at the Centraal Museum from July 1978 to September 2013. Conversation with Ida van Zijl, 20 June 2017.
- 24 Wim Crouwel was a member of the board of SRSR from 27 January 1975 to 11 October 1991 and chairman from 14 August to 11 October 1991.
- 25 Conversations with Wim Crouwel, 26 February 2017 and 12 June 2017.
- 26 The only change concerns the chair with sprung seat (inv. no. 26107) in the study, which has been replaced by the armchair (inv. no. 12578) that originally stood there.
- 27 Conversations with Bertus Mulder, 1 January 2016, 27 May 2016, 4 July 2017, 19 December 2017, 16 February 2018, 3 March 2018.
- 28 Corrie Nagtegaal lived on the ground floor of the Rietveld Schröder House from 1983 to 1985.
- 29 RSA, unnumbered, letter from Hanneke Schröder to Corrie Nagtegaal (c. 1985).
- 30 This came up in more than one conversation with Bertus Mulder. On 13 March 2018 he revealed that he often didn't open Han's letters.
- 31 G. van de Groenekan made a copy of the divan table and reconstructed the yellow modular cupboard, Mulder revealed in an email to N. Dubois, 3 December 2018.
- 32 Both designed by Gerrit Rietveld, 1923.
- 33 Comment by Han Schröder in: Til Oxenaar, conversation with Truus Schröder, 1982.
- 34 Designed by Gerrit Rietveld, 1923.
- 35 The Centraal Museum's collection includes three stools from the bequest of Truus Schröder, two with white seats, one with a black seat (inv. nos. 26155, 26156, 26157) and a stool with a white seat gifted by Han Schröder (inv. no. 31152).
- 36 This cotton cloth was named after the town of Lancaster in England from which it originated.
- 37 Designed for the Rietveld Schröder House by Gerrit Rietveld, c. 1925-1926.
- 38 CM collection, inv. no. 26175.
- 39 The table that now stands in the studio; designed by Gerrit Rietveld (inv. no. 26094).
- 40 CM collection, inv. no. 26131.
- 41 CM collection, inv. no. 26146.
- 42 CM collection, inv. no. 26136.
- 43 CM collection, inv. no. 26630.
- 44 This cupboard was part of the Centraal Museum's collection (no inv. no.); the gas burners have been added to the collection (inv. nos. 26182-001/002).
- 45 In a conversation with T. Oxenaar, Schröder referred to this material as 'celotex'.
- 46 CM collection, inv. no. 14547.
- 47 Designed by Gerrit Rietveld, 1923.
- 48 The piano can be seen in a photo from around 1947 of the interior Rietveld's house on Vreeburg; it seems likely, therefore, that the piano was removed sometime between 1936, when Rietveld moved to Vreeburg, and 1947.
- 49 This work is now in the CM collection, inv. no. 26344.
- 50 Photo in the RSA, inv. no. 084 F 006.
- 51 Baize is a very coarse, felted woollen fabric. Til Oxenaar, conversation with Truus Schröder, 1982.
- 52 HNI, Van Doesburg archive, DOESAB5309, DOESAB5310. When Van Doesburg coloured the photographs is not known. Presumably it was early in the house's history since Van Doesburg died in 1932. The colours in the photographs correspond to the colours of items of furniture mentioned by Schröder and colours in drawings from the early 1950s.
- 53 According to a photo coloured by Theo van Doesburg, HNI, Van Doesburg archive, DOESAB5309.
- 54 Til Oxenaar, conversation with Truus Schröder, 1982. Cabinet from the CM collection, inv. no. 26113.

- 55 There is no drawing by Van der Zweep in any of the photographs.
- 56 CM collection, inv. no. 26108.
- 57 Military chair, 1923. CM collection, inv. no. 26187.
- 58 Although for a long time it stood rotated ninety degrees in this space.
- 59 Interview with Bertus Mulder, *NRC Handelsblad*, 3 April 1987.
- 60 Koster 1987.
- 61 This also applies to the toilet on the ground floor.
- 62 Bertus Mulder archive, BM328.
- 63 Conversation with Bertus Mulder, 13 March 2018.
- 64 When exactly the space was closed off with sliding doors is unknown.
- 65 CM collection, inv. no. 261070.
- 66 CM collection, inv. no. 26151.
- 67 Comments by Han Schröder on a conversation between Til Oxenaar and Truus Schröder, 1982.
- 68 All are in the collection of the Centraal Museum: zigzag chair with holes and armrests (inv. no. 26190), piano chair (inv. no. 26151), upright armchair (inv. no. 26105), desk (inv. no. 26189), side table (inv. no. 26146)
- 69 In 1988 this loan was converted into a gift by Truus Schröder's heirs.
- 70 In addition to the studio, she rented the in-between room and the room originally intended for the help.
- 71 According to the loan contract of 31 March 1987 between Rietveld Schröder House Foundation and Centraal Museum.
- 72 In 2016 the archive was relocated to the Centraal Museum depot.
- 73 In photographs from the 1950s and '60s the table stands in the dining room. Photographs from the 1980s show it upstairs (two days after Truus Schröder's funeral) and in the studio, where it was used as an archive table.
- 74 The original work, which was part of the CM collection (inv. no. 31197), was adversely affected by the climate in the studio and in 2016 it was replaced by a photo of the painting.
- 75 RSA, inv. no. 004 A 098.
- 76 Bertus Mulder archive, drawings. The final part of this archive was handed over to the Centraal Museum in 2018, but it has not yet been fully inventoried.
- 77 CM collection, inv. no. 26149.
- 78 Conversation with Bertus Mulder, 13 March 2018.
- 79 CM collection, inv. no. 26158 (zigzag chair) and inv. no. 26095 (table).
- 80 CM collection, inv. no. 26187.
- 81 Til Oxenaar, conversation with Truus Schröder, 1982.
- 82 Truus Schröder said in an interview with Til Oxenaar (1982) that this room was also used as a studio.
- 83 In 2012 the Centraal Museum rented the ground floor of Prins Hendriklaan 48 again and brought the ticket office back to its original location.
- 84 Van den Akker and Küper 1987.

CHAPTER 5

- 1 Van Hees 1986.
- 2 ASHRAE 2007.
- 3 ASHRAE 2007.
- 4 Martens 2012.
- 5 Martens 2012.
- 6 Lubelli and Van Hees 2017.
- 7 Van Hees 1986.
- 8 ASHRAE 2007.
- 9 Martens 2012.



LITERATURE

- Akker, P. van den and M. Küper, 'Rietveld-Schröderhuis voor een deel onttakeld', *De Volkskrant*, 16 April 1987.
- American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., *ASHRAE Handbook - Heating, Ventilating, and Air-Conditioning Applications (I-P Edition)*, 2007, Retrieved from <https://app.knovel.com/hotlink/toc/id:kpASHRAE12/ashrae-handbook-heating/ashrae-handbook-heating>.
- Blotkamp, C. et al., *De Stijl: The Formative Years 1917-1922*, Cambridge 1986.
- Blotkamp, C. et al., *De vervolgjaren van De Stijl 1922-1932*, Amsterdam/Antwerp 1996.
- Dettingmeijer, R., Thoor, M.T. van, and I. van Zijl (eds), *Rietveld's Universe*, Rotterdam 2010.
- Friedrichs, A., Junge, C. and N. van der Woude, *Beperkt kleurhistorisch onderzoek, Rietveld-Schröderhuis*, report SRAL, Maastricht 2018.
- Geel, J. van, *I love you, Rietveld*, Amsterdam 2018.
- Hees, R.P.J. van, *Vochtproblemen in bestaande woningen*, Report no. 151, Stichting Bouwresearch, Rotterdam 1986.
- Jong, R. de, Zijl, I. van and B. Mulder, *Rietveld Schröderhuis, Utrecht/(Rietveld Schröder House, Utrecht) The Netherlands*, Utrecht/Zeist 1999.
- Koot, R., Lange, V. de, Zijl, I. van and N. Dubois (eds), *Rietveld Schröderhouse*, Utrecht 2017.
- Koster, P., 'Het Rietveld-Schröderhuis werd niet onttakeld maar ontmanteld', *De Volkskrant*, 28 April 1987.
- Küper, M. and I. van Zijl, *Gerrit Th. Rietveld. The complete works*, Utrecht 1992.
- Lubelli, B. and R.P.J. van Hees, *Onderzoek naar het pleisterwerk van het Rietveld Schroder Huis*, report TU Delft, 2017.
- Lubelli, B. and R.P.J. van Hees, *Monitoring of the indoor climate in the Rietveld-Schröder House*, report TU Delft, 2018.
- Martens, M., *Climate risk assessment in museums: degradation risks determined from temperature and relative humidity data*, PhD thesis, Eindhoven University of Technology, 2012.
- Mulder, B., *Gerrit Thomas Rietveld. An outline of his life, thought and work*, Amsterdam 2010.
- Mulder, B., *Notitie betreffende de restauratie en reconstructie van het Rietveld Schröderhuis naar aanleiding van het Getty onderzoek door Marie-Thérèse van Thoor*, Utrecht 3 April 2018.
- Mulder, B. and M. Oort, *Plan voor het in stand houden van de gerestaureerde staat van het Rietveld Schröder Huis te Utrecht in opdracht van Stichting Rietveld Schröder Huis*, Utrecht 2003.
- Mulder, B., Rook, G.J. de and C. Blotkamp, *Rietveld Schröder Huis*, Utrecht 1984.
- Mulder, B. and I. van Zijl, *Het Rietveld Schröderhuis*, Utrecht 2009.
- Nagtegaal, C., *Tr. Schröder-Schröder. Bewoonster van het Rietveld Schröderhuis*, Utrecht 1987.
- Nijland, T., *TNO-rapport 2017 R10902 Petrografisch onderzoek pleister Rietveld-Schröderhuis te Utrecht*, Delft 2017.
- Nijland, T., *Petrographic investigation of plasters & renders from the Rietveld-Schröderhuis, Utrecht*, report TNO, Delft 2018.
- Rietveld, G.T. and P. Brattinga, *Rietveld, 1924. Schröder Huis*, Amsterdam 1963.
- Singelenberg, P., 'Rietveld's huizen en Utrechts "wijsheid"', *Nieuw Utrechts Dagblad*, 14 September 1963.
- Thoor, M.T. van, *Conclusions and recommendations from the research Colour, Form and Space. Rietveld Schröder House challenging the Future*, Keeping it Modern Grant, The Getty Foundation, TU Delft, 2018.
- Vöge, P. and P. Overy, *The complete Rietveld furniture*, Rotterdam 1993.

ARCHIVES

Bertus Mulder archive
Collection Centraal Museum (CM)
Het Nieuwe Instituut (HNI)
Het Utrechts Archief (HUA)
International Archive of Women in Architecture (IAWA)
Rietveld Schröder Archive (RSA), Centraal Museum
Rijksdienst voor het Cultureel Erfgoed (RCE)
Stichting Rietveld Schröder Huis archive (SRSH)

CONVERSATIONS

Natalie Dubois with Bertus Mulder: 29 May 2015, 3 December 2015,
2 February 2016, 27 May 2016, 18 November 2016, 3 December 2017;
Marie-Thérèse van Thoor with Bertus Mulder: 25 March 2016, 21 April 2016,
27 June 2016, 31 August 2017, 29 March 2018; Natalie Dubois and
Marie-Thérèse van Thoor with Bertus Mulder: 11 September 2017, 3 July 2018.

Natalie Dubois and Marie-Thérèse van Thoor with Wim Crouwel:
26 February 2016; Natalie Dubois with Wim Crouwel: 12 July 2017.

Natalie Dubois and Marie-Thérèse van Thoor with Ida van Zijl:
18 November 2016; Natalie Dubois with Ida van Zijl: 20 June 2017,
13 March 2018.





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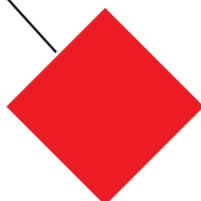
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