

# Painted decorations in the Rijksmuseum: The reconstruction of Cuypers

Anne van Grevenstein

## Introduction

A major renovation project of the Rijksmuseum in Amsterdam is currently under way and will be completed in 2008. The Limburg Conservation Institute (SRAL) was commissioned to carry out preparatory research into the original nineteenth-century decorative scheme. Research was facilitated at SRAL where (post-graduate) students of the *Training Programme for Conservators of Painted Decorations in Historic Interiors*, participated as part of their studies, in the scientific examination of the decorative schemes.<sup>1</sup> Based on these preliminary investigations, a treatment proposal for the painted decorations of the interior was formulated.

The immense challenge of this restoration project remains not only in the collation of information regarding the interior decorations, but also in the examination of the art historical findings. These findings must be viewed within the context of contemporary working methods, workshop practices and iconography of the late nineteenth century.

This short paper aims to give an overview of the methods, techniques and ideology implemented during this pilot project.

## The Rijksmuseum: its architect, alterations and advances

• *Pierre Josephus Cuypers (1827 - 1921)*

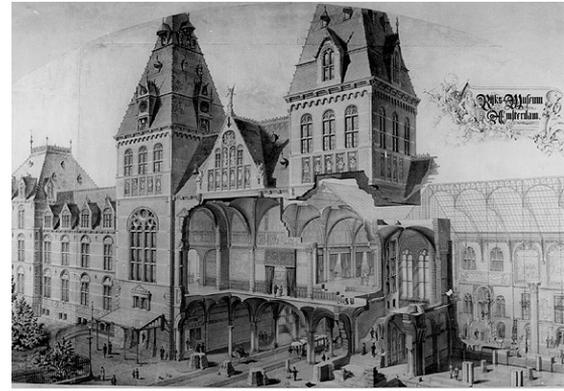
Cuypers was born in Roermond and studied architecture at the Art Academy of Antwerp between 1844 and 1849. In 1851, he became 'Architect of the City of Roermond' and began a workshop producing Arts and Crafts decorations for religious buildings. Cuypers became acquainted with the writings of the English architect A.W. Pugin (1811-1852) through his brother in law, the publicist J. A. Alberdingk Thijm (1820 - 1889).<sup>2</sup> Thijm who, since 1876, was Professor of Art History and Aesthetics at the 'Rijksacademie voor Beeldende Kunsten' in Amsterdam, had become a leading, influential figure in the field of architecture. Consequently, Cuypers' style became great-

ly influenced by English and German Neo-Gothic architecture. However, he was foremost a restoration architect, working in the tradition of E.E. Viollet-le-Duc (1814-1879), Architect to the French Government. As a result Cuypers' restorations often resulted in a 'finished' state possibly beyond the intention of the original architect.<sup>3</sup> These restorations include many major buildings in the Netherlands, such as the Sint Servaes Basilica in Maastricht and the Munster Church in Roermond. Thus, a large proportion of Dutch architectural cultural heritage now exhibit traces of his 'hyper-restoration.'<sup>4</sup> In 1865, Cuypers moved from the southern province of Limburg to Amsterdam and in 1874 was appointed as a member of the Society of Advisors of the State for Monuments of Art and History. Three years later, he received the official title of 'Architect of the State Buildings.' In restoration projects Cuypers worked in close collaboration with Victor de Stuers (1843-1916) who, since 1874, had been the President and leading figure in the same State Commission for Monuments.<sup>5</sup> Cuypers largest architectural creations were the Central Station and the Rijksmuseum, both in Amsterdam, designed in a Neo-Renaissance style. These buildings were largely completed by 1885, although the rich interior decorations took another twenty years to finish.

A close relationship existed between Cuypers' architectural ideas, their form and function, de Stuers' financial politics and Alberdingk Thijm's style and iconography (fig. 1). This association became of major influence in the Netherlands from the last quarter of the nineteenth until well into the twentieth century. These three figures all came from the southern Catholic part of the country and, during their lifetimes, they met with strong opposition emanating from the northern Protestant areas. The international aspects of their art and the sophistication of their methods deserve full attention today in an age where religious motives seem to have lost some of their importance. It is a field in which until now little research has been carried out and where the investigation into the original aspects of the materials employed deserves to be included in the art historical analysis of the period.



**Fig. 1** Cuypers, Alberdingk Thijm and de Stuers, white marble sculptures by Toon Dupuis 1914, collection of the Rijksmuseum



**Fig. 2** The main facade with a view into the Front hall and the Gallery of Honour on the first floor (Cuypers archive, NAI)

Cuypers received the commission for the Rijksmuseum in 1876 and proposed a rectangular building measuring 135 meters by 84 meters with a passage along the middle axis (fig. 2). This passage and the large towers at the corners of the building gave it the appearance of a majestic city gate, functioning as a focal viewpoint as well as giving access to the new quarters of the city. The ground plan (fig. 3) was also a revival of the mid seventeenth-century architectural design by Jacob van Campen for the Amsterdam City Hall on the Dam Square. Unlike those in other major European museums, the entrance to the museum could not be planned in the centre of the facade because of the passage, thus two entrances were intended on either side of the building. To the right and left of the central passage, two courtyards with glass roofs were designed for large sculptures and objects. Profuse daylight from the courtyards and from the glass roofs of the galleries was an essential element of the architectural concept. Cuypers' creative process allowed the architectural style of the exterior to evolve from a late Renaissance design, with classic stone pilasters, to an earlier more gothic appearance executed in bricks. The building was completed in 1885 and the last painted decorations within the interior in 1910.

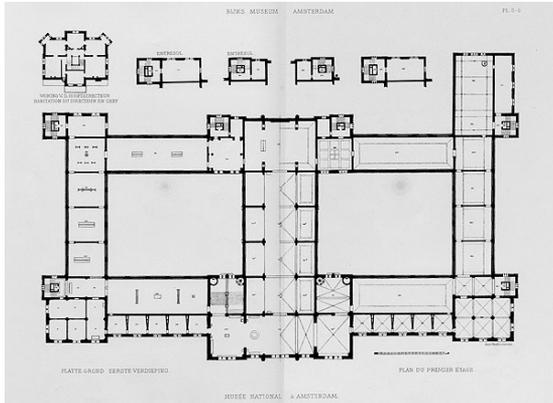
#### · Past Alterations and Future Plans

Later generations have turned their backs on the highly decorated architectural style of the late nineteenth century, called the 'Lelijke Tijd' (Ugly Period) by modern or progressive architects. Quite a large number of buildings from this period have been destroyed or the interiors systematically overpainted. As a result, little is known about the aesthetic appearance, the materials and techniques or the state of conservation of late nine-

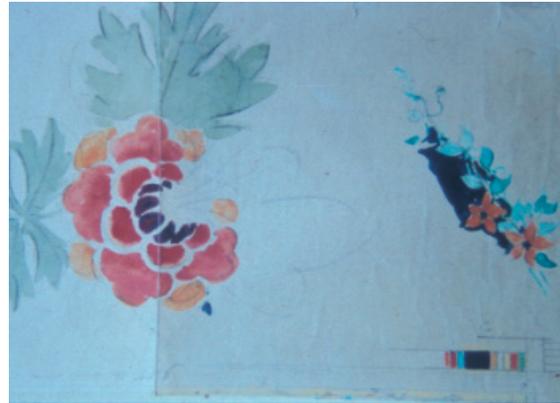
teenth-century decorations in general (and of the Rijksmuseum in particular), not to mention the feasibility of their restoration or reconstruction.

A mere twenty years after completion of the Rijksmuseum, alterations to the interior had begun to appear according to changes in taste and function of a twentieth century museum. These adjustments not only included the toning-down of interior decorative schemes, but also the filling-in of the inner courtyards with smaller rooms and the lowering of the gallery ceilings. Cuypers' concept of exhibits lit with abundant daylight was gradually eliminated with the introduction of artificial light in the structurally altered interior spaces. Over the years, although the exterior of this highly decorated building remained mostly untouched, the interior of the Rijksmuseum was painted mainly white, completely covering the elaborate decorative designs.<sup>6</sup>

The renovation plans for the building, entitled the 'New Rijksmuseum, moving forward with Cuypers' were devised in 2001. These outline a return to the authentic architectural structure of the building and a rediscovery of its original interior spaces. In this new plan, formulated by the Spanish architects Cruz y Ortiz and by the restoration team of Van Hoogevest Architecten<sup>7</sup>, the two inner courtyards will be opened up and the main entrance relocated under the central axis of the building. SRAL was commissioned in 2002 by the Rijksgebouwendienst (State Building Agency) to carry out a research programme aimed at determining the extent of the original decorations within the interiors and the possibility of their recovery. The modern day function of the museum and the feasibility of restoration versus reconstruction also had to be assessed and



**Fig. 3** Original ground plan of the first floor showing in its centre, the main axis of the building with the Front Hall, the Gallery of Honour and the Rembrandt Room (from V.de Stuurs en P.J.H.Cuyper, Het Rijks-Museum Amsterdam, Amsterdam 1897)



**Fig. 4** Watercolour sketch of Cuyper outlining the design and colour scheme of the palette, Cuyper Archive of the NAI in Rotterdam (Cuyper Archive, NAI)

considered whilst choosing conservation options. The most crucial decision with regard to revealing or reconstructing original decorations was resolved by a preliminary stratigraphic investigation. Initial small stratigraphic windows were extended to reveal larger surface areas of original paint layers. These larger windows have been used in the field of polychrome sculpture for many years and in this case illustrated the extreme fragility of the original decorations and the impossibility of uncovering them in a safe manner. Thus, it was concluded that the only feasible means by which Cuyper's original concept could be re-envisioned was by reconstruction of the decorative elements within the Rijksmuseum's interior spaces.

• *New advances*

Future plans for the execution of the reconstructions within the Rijksmuseum would also require the availability of large numbers of painters specialised in this type of nineteenth century painting technique. With this challenge in mind, collaboration with the vocational training programme for decorative painters at the Sint Lucas School in Boxtel was sought where students are trained in the reproduction of historical decorative surfaces.<sup>8</sup>

Archival studies, carried out between 2002 and 2004, combined with stratigraphic examination of selected overpainted areas and scientific analysis of relevant paint samples, produced a rich harvest of historical, technological and aesthetic data (fig. 4).<sup>9</sup> This information was directed towards enlightening the museum director, the architects and last but not least the museum public about 'the Colours of Cuyper.' All practical

research was carried out by conservators and students in the areas of the museum that were open to the public. These visible investigations were essential in the didactic process and have confirmed the fact that curiosity, research and the joy of discovery are very much linked in the hearts of museum visitors. The practical aspect of the research is ongoing as the reconstruction process moves from room to room within the museum. A commission overlooking the reconstruction of the painted decorations was appointed at the beginning of this project. In the future, this commission and the project team will have the possibility to further the knowledge of the technical and artistic language of the Arts and Crafts movement in the Netherlands. A few rooms will be briefly discussed in this paper as examples of work in progress and used as illustrations of the working methods of an interdisciplinary team of conservators, chemists and historians of architecture.

**Renovations, Restorations and Reconstructions**

- *The Front Hall, the Gallery of Honour and the Rembrandt Room on the first floor*

The two entrances on the ground floor give access to staircases on the left and right side of the central axis of the building. These lead to the large Front Hall on the first floor of the Rijksmuseum (fig. 5). The Front Hall has a high ceiling, laced with gothic vaults and huge stained glass windows that completely fill the exterior wall. Thus, upon entering the museum the visitor moves from the relative darkness of the stairs into a space filled with brilliant light and colour. The walls of



Fig. 5 The Front Hall in 1910 with the completed decorations

the hall are covered with painted decorative motifs, applied to areas of plaster and canvas. The large door in the middle of the hall gives access to the Gallery of Honour, again a space with subdued lighting coming from small circular openings in the vault. Small side galleries for paintings, strongly illuminated by daylight, are situated on either side of the Gallery. Originally these galleries were partially closed off from the Gallery by curtains allowing for quiet contemplation in a secluded space. The Rembrandt Room, situated at the end of this long passage, is brilliantly lit by daylight entering through the glass ceiling. It is the culmination of the museum visit. Four Caryatids support the vault on either side of the *Nightwatch* by Rembrandt and of the entrance to the room. These represent Day, Night, Morning and Evening. This symbolism, expressed through the use of space and light in the architecture, is further exemplified in the applied painted decorations. Cuyppers constructed the Rijksmuseum with the general theme of the 'Temple to the Arts' in mind; a temple dedicated to beauty, available to the layman, and built within the tradition of humanistic and Christian iconography.<sup>10</sup>

Victor de Stuers describes this architectural symbolism in the following words: 'The decoration in the Front Hall is dominated by one thought. It symbolises in one cycle human life and its endeavours. The floor is devoted to the realm of matter, the walls and the windows to the social world and the vaults and everything situated on the same height, are devoted to the world of intellect.'<sup>11</sup> Thus, the original decoration of the Front Hall was divided into three horizontal zones of iconography. The symbolic elements were interpreted by the different craftsmen involved, using diverse materials and techniques, but created in one coherent unified style. This style, outlined by the architect Pierre Cuyppers, was clearly recognisable throughout the whole museum and involved the representation of figures with dark delineated contours. It is equally recognisable on the exterior of the building and in the decorative features such as the ceramic tiles. Large slabs of decorated lava stone were rediscovered on the outer wall of the Rembrandt room in November 2004. They formed part of the central composition of the wall that in 1910 was incorporated into the Vermeer wing. In this large scene, Rembrandt is depicted in his studio. The ceramic tiles below bear the inscription: 'Peint par E. Gilet, céramiste à Paris sous la direction de Pierre Cuyppers Arch., Georg Sturm inv.'

Other decorative aspects within the Front Hall were created by an international multidisciplinary team of artists. The stained glass windows, representing great historic figures of philosophy, religion, art and science, were manufactured by W. J. Dixon from London. The canvas paintings were executed by the Viennese artist Georg Sturm, a teacher at the Arts and Crafts School in Amsterdam. They showed various examples of outstanding bravery and exceptional social behaviour. The mosaic floor, depicting the cosmos within its centre, in addition to the alpha and omega of creation, was created by the Frankfurt based Italian firm Theodorico. The decorations that had been completed by 1910 remained only briefly in their original state. Under Frederick Schmidt-Degener, director of the Rijksmuseum from 1922 until 1942, they were successively dismantled and the appearance of the interior has understandably changed over the last century. The canvas paintings were gradually removed and the walls were painted white. The white paint further accentuated the change in iconography of the space that had originally been intended as a magnificent Temple to the Arts within the Catholic tradition of the Arts and Crafts movement of the late nineteenth century. In addition, two sixteenth century church organs were added high up on the walls, facing each other as in a classical



**Fig. 6** The Front hall in 1984, destruction of the paint- and plasterlayers



**Fig. 7** The Front hall in 2004, the white space

Protestant church. The changes to the Front Hall culminated destructively in the removal of all paint and plaster layers on the walls and the vaults in 1986 (fig. 6). The mosaic floor was also destroyed at the same time. The feasibility of reconstruction of the interior decorative motives was discussed by the architects, the museum personnel and the members of the Rijksgebouwendienst design team. An objective focus was needed and thus, a pilot proposal to reconstruct a corner of the Front Hall was accepted and executed by SRAL. The original colours of the Front Hall, Gallery of Honour (figs. 8-9) and Rembrandt Room (fig. 10) were discovered using stratigraphic examination of the areas containing sculpted decoration (fig. 11) that, fortunately, had remained untouched during the 1986 renovations. The main technical problem encountered in these areas was the impossibility to separate chemically or mechanically the overpaint layers from the original material. The first layer covering the very fragile original tempera paint was a solid layer of lead white paint in linseed oil (figs. 12-13). Unfortunately, this binding medium has absorbed into the original substrate. However, a broad range of cross sections were obtained from these areas and their analysis helped to identify Cuypers original 'palette'. Significantly, two very important fragments of original decorative elements were discovered beneath the church organs. As these areas had been protected by the organs they had never been overpainted. The unique information provided a reference to establish the painting technique and the degree of saturation of the colours. The use

of templates and perforated cartoons to apply the design, which was then executed in free hand final brushstrokes, and the application of glossy or light reflecting surfaces, was explored during this pilot project. These painting techniques in combination with accurate colour research allowed for an effective reproduction of the original design (fig. 14).

To complete this pilot project one of the original canvases by Georg Sturm was temporarily put back in place and the north-west corner of the Front hall could be assessed as trial surface for the decorative ensemble. Numerous black and white photographs from the Rijksmuseum archives, dating from 1910 after the completion of the decorations, provided missing information regarding the motifs and their placement. The interior decorative scheme consisted of a combination of three-dimensional architectural features with two-dimensional painted surfaces. The continuation of the sculptured architrave, for example, painted in *trompe l'oeil* effect on the flat walls is essential for the legibility of the three-dimensional architecture.<sup>12</sup> As mentioned above, the Sturm canvas was returned provisionally to its original setting during the initial pilot project. On this canvas, the original paint layers were covered by thick overpaints. Examination and tests showed that a complete unveiling of the original surface would not be possible without creating considerable damage. Thus, once *in situ*, the missing *trompe l'oeil* effects on the canvas could be reconstructed on top of the overpaint layers (fig. 15). This argument was accepted by the architects on the museum committee. The option to



Fig. 8 The Gallery of Honour 1954, the white space



Fig. 9 The gallery of Honour, 1910



Fig. 10 The Rembrandt Room in 1910, detail of the cornice, caryatids and vault (photo archive Rijksmuseum)



Fig. 11 Removal of overpaints on the sculptured decoration in the Front Hall shows how form is accentuated by colour

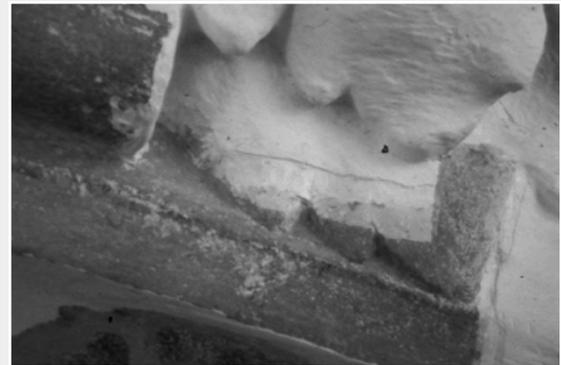


Fig. 12 Stratigraphic examination of the paintlayers in the Front hall. The precise relief of the sculptured decoration is affected by thick layers of overpaint

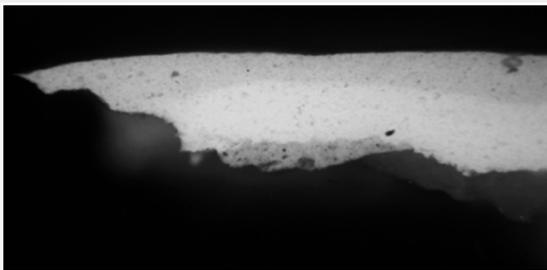


Fig. 13 The cross sections show a thick and insoluble layer of leadwhite in linseed oil over the original paintlayers



Fig. 14 Reconstruction trial in the Gallery of Honour by Claudia Jungen

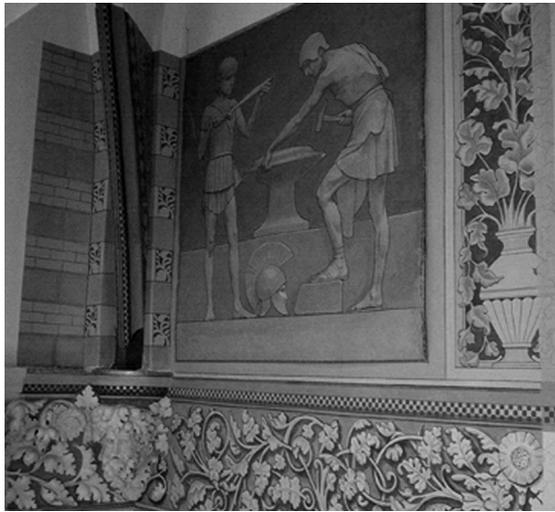


Fig. 15 Reconstruction trial in the Front Hall by Katherine Kolff and Claudia Jungen

Fig. 16 The Library in 1910 (photo archive Rijksmuseum)

reconstruct the Cuypers decorations in the main stairs, Front Hall, Library and Aduard Chapel was incorporated into the definitive plans for the New Rijksmuseum by the end of 2004. However, the decision regarding the reconstruction of the Gallery of Honour and the Rembrandt Room has been postponed.

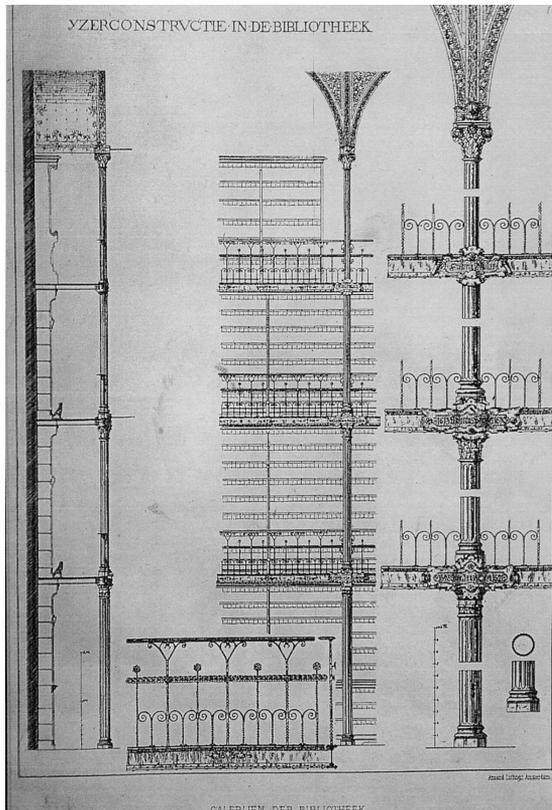
#### · The Library

The library, in its present appearance, is one of the rare spaces in the Rijksmuseum that has largely kept its authentic historical appearance (fig. 16). On entering a feeling of almost untouched, unadulterated history is evoked by the materials present: the bookshelves, the metal structure of the supporting columns, even the smell of the books themselves, bring back the sensation of past times. This is accentuated by the quietness and air of contemplation that exists within a collection of rare and early art historical books and prints. However, although a general atmosphere of authenticity still prevails, changes have been made to the decorative scheme. The ceiling and part of the walls have been repainted in white and the original red and deep yellow colours on the metal structures have been covered with a grey sponged dappled motif. This was added in the 1930s under the directorate of Schmidt Degener who wanted to tone down the excessively bright original colours. At the same time, the metal and the trompe l'oeil shields that belong to the authentic period decorations on the walls in the upper zone were overpainted. Consequently, original texts and names incorporated in the prints published



in 1897 (fig. 17) were obscured.<sup>13</sup> Large stratigraphic windows (fig. 18), executed on the metal shields revealed the original inscriptions that included the names of famous book and printmakers. The overpaints in these areas could be safely removed due to the structural integrity of the original paint layers.

The use of strong raking light helped with the identification of the original inscriptions on the walls (fig. 19). One of these texts has been identified as part of a series known from literary sources. Until this moment, it was not known whether this text, and the rest of the series, had been included in the final stage of the original decorations. The inscription *If science and art are often fighting, it is to the science of art that this room is dedicated*, corresponds exactly with the literary source.<sup>14</sup> Parts of the original decoration of the Library were discovered behind the existing bookshelves. The pattern in these areas comprised a subtle geometric design, applied on a white background, delineating simply the forms of the architectural elements. The incorporation of structural *trompe l'oeil* elements such as nuts and bolts in the library's decorative scheme is clearly visible in this hidden area. These motifs are repeated, as far as could be



**Fig. 17** The print of the Library from the publication of 1897 gives an indication of the decoration and of the texts on the metal shields. (from V.de Stuers en P.J.H.Cuyper, "Het Rijks Museum te Amsterdam" pl.15, Amsterdam, 1897)

assessed, throughout the entire original decoration of the Rijksmuseum. The inclusion of these 'down to earth' elements emphasises the integral concept of form and functionality that has indeed become an important legacy of the Arts and Crafts movement.

• *Future plans for research*

The interdisciplinary aspects of this project will be addressed in the coming years by a conglomerate team



that will focus on the ethics, aesthetics and techniques of conservation, restoration and reconstruction of nineteenth century interior decorations. The team will be able to interpret the technical data obtained from future investigations in an art historical context. Above all, the interdisciplinary nature of this project will enable further research into the origin of the formal decorative language of the late nineteenth century.<sup>15</sup>

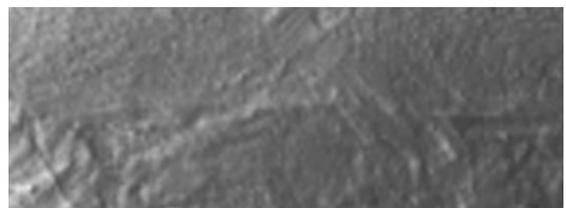
**Conclusion**

The examination and partial reconstruction of the nineteenth-century decorated schemes in the Rijksmuseum has shown that the established discipline of stratigraphic research, ensuing from the field of polychrome sculpture, can be applied to historic interiors. Stratigraphic research and subsequent examination proved that the original paint layers were vulnerable to both chemical and mechanical cleaning methods. Furthermore, this research, in addition to pigment and binding medium analysis, provided the necessary information with which to build a reversible reconstruction. Without this in-depth analysis, the information obtained via archival resources, such as the black & white photographs, the watercolor drawings and the blueprint designs, would not have been sufficient to create an accurate reconstruction.

The difficulty of interdisciplinary collaboration on a large scale, in addition to the logistics of gathering vast quantities of data and the problematical interpretation of that information, remain important challenges that must be met during the course of this project. The integration of these results into the context of a modern day art museum was a no less challenging task. However, preliminary findings have shown that the combined interdisciplinary effort is definitely worthwhile.

**Fig. 18** The texts after removal of overpaints on the shield in the library represent names and chronological data of famous book and printmakers

**Fig. 19** In raking light, texts and decorations in the Library can be localised and deciphered



### Acknowledgements

Many thanks to Claudia Junge who was responsible for the reconstructions in the Front Hall, Gallery of Honour and Rembrandt room. I would also like to thank Rijksgebouwendienst, Nederlands Architectuur Instituut, Rotterdam, Projectteam Het Nieuwe Rijksmuseum and Van Hoogevest Architecten. The students of the SRAL training program Judith Bohan, Roos Keppler, Katherine Kolff and their mentors Nico van der Woude and Angélique Friedrichs. René Hoppenbrouwers and Kate Seymour for their help with the proofreading and translation.

### Notes

**1** One student chose this project for her thesis in the final year of her studies. See: K. Kolff, *Rijksmuseum Amsterdam, Stageverslag SRAL*, [unpublished thesis, SRAL Training Program 'Restoration of historic interiors'] (Maastricht, 2003).

**2** A.W. Pugin, *An Apology for the Revival of Christian Architecture in England*, (London, 1843), 22: 'for we do not wish to produce mere

servile imitators of former excellence of any kind, but men imbued with the consistent spirit of the ancient architects, who would work on their principles, and carry them out as the old men would have done, had they been placed in similar circumstances to ourselves.'

**3** E. E. Viollet-le-Duc, *Dictionnaire raisonné de l'architecture française du XIe au XVIe siècle*, 10 vols, (Paris, 1854-1868); caption 'Restauration', *Dictionnaire*, VIII, 1866, p. 14 'Restauration. Le mot et la chose sont modernes. Restaurer un édifice, ce n'est pas l'entretenir, le réparer ou le refaire, c'est le rétablir dans un état complet qui peut n'avoir jamais existé à un moment donné. Ce n'est qu'à dater du second quart de notre siècle qu'on a prétendu restaurer des édifices d'un autre âge, et nous ne sachions pas qu'on ait défini nettement la restauration architectonique.'

**4** A. C. J. van Leeuwen, *De maakbaarheid van het verleden*, P. J. H. Cuypers als restauratie architect, (Zwolle/Zeist, 1995).

**5** J. Perry, *Ons fatsoen als Natie*, Victor de Stuers 1843-1916, (Amsterdam, 2004).

**6** G. van der Ham, 200 jaar Rijksmuseum. *Geschiedenis van een nationaal symbool*, (Amsterdam, 2000).

**7** Van Hoogevest Architecten, *Voorlopig Ontwerp Restauratieplan*, (Amsterdam, 2002).

**8** The training of specialists at various educational levels was seen as a major contribution to the separation of the profession into relevant specialisms, and indeed as an inescapable requirement for the future conservation of nineteenth century ensembles.

**9** A. van Grevenstein, *Een kleurverkenning in het interieur van het Rijksmuseum: zoeken naar Cuypers, van fragment tot ensemble*, SRAL report, (Maastricht, 2003).

**10** J. Becker, 'Ons Rijksmuseum wordt een tempel': zur Ikonographie des Amsterdamer Rijksmuseum', in: *Nederlands Kunsthistorisch Jaarboek*, 35, (Weesp, 1985), 227-326.

**11** V. de Stuers en P. J. H. Cuypers, *Het Rijks-Museum te Amsterdam*, (Amsterdam, 1897).

**12** Viollet-le-Duc, vol. VII, 1864, p.8 'La peinture appliquée à l'architecture ne peut procéder que de deux manières: ou elle est soumise aux lignes, aux formes,

ou dessin de la structure; ou elle n'en tient compte, et s'étend indépendante sur les parois, le voutes, les piles et les profils.'

**13** V. de Stuers and P. Cuypers, *Le Musée National d'Amsterdam*, (1897).

**14** A. Heijbroek, 'Een literaire wandeling door het Rijksmuseum', *Bulletin van het Rijksmuseum*, 38 (1990) 4, 368-370: 'Zijn Wetenschap en Kunst vaak met elkaar in strijd, hier is de Wetenschap der Kunst een zaal gewijd.'

**15** For further information about the 'Colours of Cuypers' in the Rijksmuseum, reference can be made to: A. van Grevenstein, "Anti-Scrape" in the Rijksmuseum Amsterdam, the reconstruction of the colours of Cuypers', in *Pre-prints ICOM-CC triennial meeting* (The Hague, 2005).

### Photo credits

SRAL©2001: 1

SRAL©2003: 2, 4, 7,11,12,13, 15, 17, 18,19

SRAL©2004: 14

Semi-Statistisch Archief

Rijksmuseum is de Wetenschap, 5,6, 8, 9, 10

## BOOKREVIEW

J.H. Townsend, M. Clarke,  
and A. Stijnman, editors

*Art of the Past - Sources and Reconstructions*, Proceedings of *Approaching the Art of the Past: Sources & Reconstructions*, Symposium organised by the study group *Art Technological Source Research*, ICN, Gabriël Metsustraat 8, Amsterdam - Thursday 14 and Friday 15 October 2004, (London, 2005). Archetype Publications, ISBN 1904982018. Price: £35.00.

The activity known as 'technical art history' has evolved over the recent years in a spectacular manner. This is to a very large extent due to the availability of sophisticated equipment. Scientists examine increasingly smaller samples in increasingly more detail. High resolution scanning electron microscopes - a few years ago considered a rather exotic beast for this type of study - are now being used on an almost routine basis. Special beamlines for advanced microdiffraction, XAFS, and XANES studies

have become available for the study of art and archaeology at synchrotron facilities (ID 21 and ID18F at ESRF in Grenoble). Novel imaging techniques with k-edge absorption, tomography, and terahertz imaging are being explored to complement the more conventional techniques like x-radiography and infrared reflectography. Very advanced inorganic mass spectrometry allows us to distinguish different isotope ratios in extremely small paint samples with a precision of five decades. The identification of binding media in paintings, that used to trouble many museum scientists, can now be accomplished with astonishing accuracy in, again, extremely small samples. Materials from paintings are subjected to radiations of different wavelengths and energies and characterised with impressive and expensive hyphenated instruments. The results of these come out in an almost endless stream of graphs and numbers.

But what does it all mean? This is where good old-fashioned reading comes in. It takes a healthy understand-