



# Studying the European Visual Arts 1800–1850

Paintings, Sculpture, Interiors and Art on Paper

CATS Proceedings, III, 2016

Edited by Joyce H. Townsend and Abbie Vandivere



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*Front cover illustration:* Detail from Johan Thomas Lundbye's watercolour painting of *Hellede Klint, Refnæs*, Kalundborg on 25 August 1843, Statens Museum for Kunst, Copenhagen, KKSgb17 (image: SMK).

*Back cover illustrations:* (top left) C.W. Eckersberg, *Adolf, Duke of Schleswig-Holstein, Declines the Offer to Accede to the Danish Throne*, 1819, oil on canvas, 46 × 39 cm, private collection (photo © SMK); (top right) Caspar David Friedrich, *Rocky Shore*, undated, sepia applied with a brush, inv. no. 37/598, catalogue BSJ 481, Kupferstichkabinett, Kunsthalle Bremen/ Der Kunstverein in Bremen, destroyed in World War 2 (image: Stickelmann); (bottom left) Thomas Fearnley, *Fearnley in his Studio*, probably 1826, oil on board, 48 × 62 cm, private collection (image: O. Væring Eftf. AS); (bottom right) detail from Charles West Cope, *J.M.W. Turner Painting at the British Institution*, 1837, oil on card, 159 × 130 mm, National Portrait Gallery, London, NPG 2943 (photo © National Portrait Gallery, London).

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# FOREWORD

The third CATS two-day technical art history conference took place at the National Museum of Denmark 15–16 June 2016. The conference theme was *Technology & Practice: Studying the European Visual Arts 1800–1850. Paintings, Sculpture, Interiors and Art on Paper*. The aim of the meeting was to explore tradition and changes in artistic practices seen in the light of the establishment of several national art academies in Europe throughout the previous century with a focus on artists' techniques and materials, written sources, conservation science, history of trade, and innovation of artists' materials during the first half of the 19th century. Two keynote presentations and 13 papers were offered to the international audience.

A scientific committee peer reviewed both abstracts and final papers, and under the most competent editorial management of Dr Joyce Townsend and Dr Abbie Vandivere this third volume of CATS proceedings presents 13 lavishly illustrated contributions on the making of artworks created during the first half of the 19th century, a period also known in Denmark as the Golden Age. Whether based on art historical interests or studies of our material culture, the current volume will be of interest to academic scholars and students as well as museum professionals, curators, conservators, art historians and conservation scientists. The 2016 conference was organised by CATS in collaboration with our colleagues at Nationalmuseet, Stockholm, Sweden; Metropolia University of Applied Science, Helsinki, Finland; and the Department of Archaeology, Conservation and History, University of Oslo, Oslo, Norway.

We hope that you will find the third volume of the CATS conference proceedings enlightening and enjoyable as well as inspiring for further studies. As with the previous two volumes in the series, this volume is available as a paperback book from Archetype Publications.

On behalf of the organisers  
Prof Dr Jørgen Wadum  
Director of CATS

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# THE DANISH REVOLUTION: NEW PRACTICES AMONG DANISH LANDSCAPE PAINTERS 1814–1850

Kasper Monrad

**ABSTRACT** In the first half of the 19th century, the working methods of Danish painters, especially landscape painters, were radically renewed. The introduction of open-air painting meant that artists moved from the familiar surroundings of their studios out into the city and the countryside to work, and it enabled them to observe their subjects much more carefully. This meant that they had to rethink their working procedures and adapt their choice of materials and tools to fit the new challenges that awaited them. This paper gives an account of how Danish painters – first and foremost Christoffer Wilhelm Eckersberg and his pupils – dealt with this innovation, and the effect it had on their art. Aspects of artists' working methods and their choice of materials are described.

## The introduction of open-air painting in Danish art

In the spring of 1814, during his three-year stay in Rome, Christoffer Wilhelm Eckersberg (1783–1853) took a decisive step that changed the course of Danish art: he began painting in the open air in front of the subjects that he had chosen.<sup>1</sup> Until then he had only drawn outdoors in front of the motif, but had executed his paintings in the studio. We know almost the exact date on which he started as on 9 May 1814 he wrote in his diary: '[bought] a portable painter's box ... and an iron fitting for a camp stool'.<sup>2</sup> These were the practical prerequisites of his new practice: the painter's box allowed him to fix the canvas to the lid of the box and to carry the mixed colours as well as the canvas safely to the painting location and back again, and the camp stool allowed him to sit while working. The impression that open-air painting became his passion is confirmed by a letter he wrote just a couple of months later to his fatherly friend and advisor, the engraver J.F. Clemens:

I intend to make a collection of the most beautiful of the many picturesque parts of Rome and the surrounding area, I have been working on them throughout the spring, I have already almost half a score of small sketches finished, all of which were completed on the spot after nature, I limit myself especially to architectural things, I try to obtain the greatest possible accuracy in colour, form and line.<sup>3</sup>

In this frequently quoted statement two points should be noted. Firstly, to Eckersberg the word 'sketches' did not mean rapidly executed paintings with broad and loose brushstrokes: the so-called sketches are in fact carefully finished paintings that were executed over a period of several days – in Rome, Eckersberg never painted a landscape sketch in the proper sense of the word. The other aspect is the wording that the paintings 'were completed on the spot after nature'. This meant that he was



**Fig. 1** Christen Købke, *Eckersberg and Marstrand on a Study Trip*, 1832, pencil on paper, 14.7 × 18.4 cm, Statens Museum for Kunst, Copenhagen, KKSgb1640.



**Fig. 2** C.W. Eckersberg, *The Wall of the Forum of Augustus with the Mars Ultor Temple and the Campanile of San Basilio, Rome*, 1814, private collection, Denmark.



**Fig. 3** C.W. Eckersberg, *View of the Gardens of the Villa Borghese in Rome*, 1814, oil on canvas, 28 x 32.5 cm, Statens Museum for Kunst, Copenhagen, KMS1310.

directly confronted with the subject and was able to make observations while finishing the paintings *in situ*. We can probably deduce his working method from this: he would start out with a detailed drawing of the chosen subject on the spot. Back in the studio he would transfer the subject carefully to the canvas. From a recent study of his working methods in his Roman views we know that he did not copy

it mechanically, but drew it once more from scratch on the canvas.<sup>4</sup> He would then apply the underpainting, probably still in the studio. Finally, he would return to the original outdoor location to finish the painting (Fig. 1). Considering the many layers of paint and the richness of detail, this last part of the work would have extended over several days.

## Eckersberg in the open air

The advantages of Eckersberg's new method of working are made clear if two of his Roman views are compared: one executed before and the other after the change. In January 1814, he finished painting *The Wall of the Forum of Augustus with the Mars Ultor Temple and the Campanile of San Basilio, Rome* (Fig. 2). Although it is evident that he based his depiction on thorough studies of the subject, the limitations of the rendering become clear when it is compared with a painting executed a few months later, *View of the Gardens of the Villa Borghese in Rome* (Fig. 3).<sup>5</sup> Both paintings are dominated by the shadow from a building in the left part of the picture. However, in the later view he has profited from direct observation while painting, as he has been able to differentiate the varying degrees of light in various parts of shady foreground with far greater consistency. In many of the Roman views it is even possible to determine the exact time of the day when Eckersberg chose to depict the light. As well as the obvious advantages, the new working method also had some disadvantages: as he had to spend several days working on each painting, he could only choose subjects that were within walking distance from his lodgings in Rome. A rare example of a subject chosen at some distance from Rome is a view of Lake Albano, but quite characteristically it is a drawing executed in pencil and wash on paper and was probably finished within a single day.

During the first years after his return to Copenhagen in 1816, Eckersberg was apparently too busy as a history painter and as a portraitist to paint landscapes or cityscapes. Quite surprisingly, the latter two types of motifs never again attained the same significance in his oeuvre as before and during his Roman sojourn. Nine years passed before he started making short trips to the countryside north of Copenhagen to paint from nature.<sup>6</sup> The landscapes he now executed were of moderate size. As in Rome, most of the works done on these trips were intended as finished paintings. The *View of Lake Fure near Rudersdal, North Zealand* (Fig. 4) is a typical example,<sup>7</sup> and from his diary we can follow his working process. He started painting on the spot on 11 August 1833, but only continued for as long as the weather permitted. Back in the studio, he carried on painting for the next two days, and on 14 August he finished the view. Therefore, the painting was started as a study *en plein air* and completed in the studio. This was contrary to his practice in Rome, but was typical of many of the small paintings he started on his one-day trips.<sup>8</sup>





**Fig. 4** C.W. Eckersberg, *View of Lake Fure near Rudersdal, North Zealand, 1833*, oil on zinc sheet, Statens Museum for Kunst, Copenhagen, KMS4794.

### Eckersberg's pupils: oil studies on paper

On one rare occasion, however, Eckersberg did paint a proper oil sketch. In the middle of July 1826 he undertook a two-day trip to Elsinore in Northern Zealand, and in his diary he summarised his achievement: 'On the 15th painted view of the flag station, the lighthouse and part of Kronborg and the Sound between 9 o'clock and 2 o'clock, the light at 1 o'clock.'<sup>9</sup> The last words are particularly important, as they reveal that he executed the sketch in just five hours and, significantly, that he had been working for four hours before he decided on the position of the sun, and accordingly on the distribution of light and shade in the picture. Ironically it took Eckersberg three years to finish the large version of this motif.<sup>10</sup>

In the early 1830s, Eckersberg took some of his close students along on study trips to the countryside outside Copenhagen. These trips have attracted much attention from Danish art historians and have been seen as a pioneering contribution to the history of open-air painting, even in an international context.<sup>11</sup> However, as has been pointed out recently, several young Danish artists had started making similar trips on their own a decade earlier,<sup>12</sup> having been advised to do so by Eckersberg's friend, the landscape painter Jens Peter Møller, but Eckersberg would certainly have supported Møller's initiative.

One of Eckersberg's first pupils to paint in the open was Martinus Rørbye (1803–1848). During his trip to Norway in 1830 he painted a small study *Norwegian Landscape with Cliffs in the Foreground* (Fig. 5).<sup>13</sup> Its small size meant that it fitted into the lid of his painter's box, and compared to his master's Roman views it differs in one significant respect: it is painted on paper.<sup>14</sup> Eckersberg had always used canvas as his painting support (except on a few occasions when he used metal plates). The holes made by the drawing pins with which

Rørbye's paper was fixed to the lid are still visible. This sketch is one of the earliest preserved examples of oil painting on paper by a Danish artist, although a drawing by Rørbye of an artist painting *en plein air* from 1826 reveals that younger artists had started using paper as the support a few years earlier (Fig. 6).<sup>15</sup>

The advantage of using paper instead of canvas was that there was no need for artists to take stretchers along on their study trips thereby allowing them to venture farther away from their lodgings and store more than one freshly painted oil study in the paint box. In the present case, Rørbye may not have been sufficiently experienced with the new practice, as he left a thumbprint in the wet paint when he removed the paper from the lid, probably back at his lodgings. At that point he did not attempt to mix the colours again to repair the damage as it was meant as a study purely for his own use.

The use of paper as support for oil studies was not a Danish invention – it had been employed sporadically by artists in previous centuries and was popular among European open-air painters in Italy by the end of the 18th century. The two pioneers were the Frenchman Pierre de Valenciennes, who took up the practice in Rome around 1780,<sup>16</sup> and the Welshman Thomas Jones who had even begun a few years earlier in Wales, before leaving for Italy.<sup>17</sup> The practice also spread to artists who never travelled to Italy, such as John Constable, who painted his first studies on paper around 1810.

Eckersberg had not heard of the two British painters, and it is highly unlikely that he would have had the opportunity to view Valenciennes' epoch-making oil studies while in Paris (whereas he might have read part of his perspective treatise). But in a Danish context it was of great importance that the Norwegian landscape painter Johan Christian Dahl (1788–1857) started using paper as a support in Italy in August 1820.<sup>18</sup> He must have recognised the advantages of



**Fig. 5** Martinus Rørbye, *Norwegian Landscape with Cliffs in the Foreground*, 1830, oil on paper on cardboard, 18 × 30.2 cm, Statens Museum for Kunst, Copenhagen, KMS7280.



**Fig. 6** Martinus Rørbye, *An Artist Painting by a Shipyard*, 1826, pen and grey ink, brush and brown wash over pencil on paper, 15.3 × 24.5 cm, Statens Museum for Kunst, Copenhagen, KKS1987-208.

this practice immediately, as a couple of months later on the island of Ischia he was able to sign three oil studies on the very same day, two of which were on paper and one on canvas.<sup>19</sup> It is unlikely that he would have been able to handle three canvases at the same time, but he could have kept the studies on paper separated from each other in the paint box.

Young Danish artists probably became familiar with the new practice and its potential through Dahl when he visited Copenhagen in 1826. Dahl was greatly admired in Copenhagen, and the Academy pupils were inspired by him in several ways. It is difficult to determine, however, when oil studies on paper became a regular part of their practice, and it seems that in the 1820s they did so only infrequently, but by the 1830s it became a common, albeit inconsistent, practice. One of Eckersberg's followers had obvious reasons for

pursuing this issue: Fritz Petzholdt (1805–1838), who was the only one of Eckersberg's close pupils to choose landscape painting as his specialist subject. It is unclear whether some of his undated studies on paper of Danish landscapes were actually executed in the 1820s, before he left for Germany and Italy in 1830,<sup>20</sup> but during his Italian sojourn (1832–36) he definitely started working more consistently on paper for oil studies. No doubt his repeated stays at Casa Baldi as part of the community of German artists in Olevano influenced his working method. The fellowship with the landscape painters working in the countryside around the small mountain village seems to have convinced Petzholdt of the advantages of using paper as his support. In particular, the oil studies by Fritz Nerly may have had an impact on the Danish painter, as they show great affinity with his (Fig. 7).<sup>21</sup>





**Fig. 7** Fritz Petzholdt, *Italian Mountain Landscape with Overgrown Rock, Probably near Olevano*, 1832–36, oil on paper on canvas, 39 × 47.1 cm, Statens Museum for Kunst, Copenhagen, KMS8152.



**Fig. 8** Christen Købke, *View from a Window Looking Towards the Citadel of Copenhagen*, c.1833, oil on paper on canvas, 15 × 27.5 cm, Statens Museum for Kunst, Copenhagen, KMS3156.

## Christen Købke

It seems that the use of paper as a support by the Danish painters was not dictated by a firm overall intention but was more a matter of practicality, utilising the materials that were at hand. No artist exemplifies this more than Christen Købke (1810–1848).<sup>22</sup> One of his earliest oil studies on paper is his *View from a Window Looking Towards the Citadel of Copenhagen* from c.1833 (Fig. 8).<sup>23</sup> It was painted in his studio near the citadel so there was no practical necessity to

dictate his choice of support. The small views from the citadel ramparts that he had executed on the spot in the previous few years are all painted on canvas therefore it is likely that Købke simply wanted to test the new process when he painted the view from his studio. But a few months later, when he was preparing a large composition of the north gate of the citadel, he returned to his familiar canvas support for the painted study. However, while working on a large painting of Frederiksborg Castle at Hillerød, north of Copenhagen in 1835 and waiting for the paint to dry, he decided to paint a



**Fig. 9** Christen Købke, *Frederiksborg Castle Seen from the Northwest: Study*, 1835, oil on paper on canvas, 24 × 27 cm, Statens Museum for Kunst, Copenhagen, KMS1493.



**Fig. 10** Christen Købke, *The Garden Steps Leading to the Artist's Studio on Blegdammen*, c.1845, oil on paper on canvas, 22.5 × 33 cm. Statens Museum for Kunst, Copenhagen, KMS6605.

small oil sketch of the castle from another angle, this time on paper (Fig. 9).<sup>24</sup> In this case he may have taken the issue of transport back to the city into consideration and therefore chose an appropriate support. Similarly, during his two-year stay in Italy, Købke probably felt that he did not have any choice: almost all the oil studies are painted on paper.

While abroad, in particular, artists had to plan their work carefully. In one case Købke was able to execute both the preliminary drawing and the oil sketch in one day. We know

that he only made three separate one-day trips to Pompeii in the summer of 1840, and on the second trip on 3 July he must have decided which view he would draw and paint on his next visit, a week later, when he executed the drawing and oil study of a *View of the Forum in Pompeii*.<sup>25</sup> On his return to Copenhagen in 1840, Købke continued this practice but adopted a new presentation for the oil studies. In a number of cases he mounted the painted sketch onto a canvas that was slightly larger than the paper and, significantly, created a dark green painted framing around the paper, probably before hanging the studies on the wall. A good example is his well-known study of *The Garden Steps Leading to the Artist's Studio on Blegdammen* (Fig. 10).<sup>26</sup> This effectively transformed the sketch into a finished painting but none of these studies were exhibited publicly and were only accessible to visitors to his studio.

This practice seems to have been a specifically Danish feature that is also noticed in the oeuvres of Rørbye and Johan Thomas Lundbye (1818–1848). In one case, a study of two Italian buffaloes on paper painted in June 1837 in Rome, Rørbye apparently finished the painting after mounting it on canvas. When he added the brown grass in the foreground and the light blue sky he also applied the oil paint to the surrounding canvas, probably before he exhibited the study at Kunstforeningen (Fine Arts Society) in Copenhagen in February 1838.<sup>27</sup> In contrast, the German painter Carl Blechen did not mount his oil studies on canvas, but kept them as studies, probably in his





**Fig. 11** Christen Købke, *A Corner of the Artist's Father's House on Blegdammen*, c.1845, oil on paper on canvas, 28.5 × 37 cm, Statens Museum for Kunst, Copenhagen, KMS3612.

studio.<sup>28</sup> The Norwegian painter Thomas Fearnley (1802–1842) made the same choice but perhaps for a different reason: unlike Købke he was a cosmopolitan and frequent traveller who always brought a folder filled with oil studies along, ready to show to fellow artists he might meet,<sup>29</sup> which may account for his influence on Rørbye<sup>30</sup> and possibly Købke.<sup>31</sup> Several of the motifs Købke chose in Capri are identical or similar to subjects Fearnley had painted previously, and Købke's new more painterly style in quite a few of the Italian oil studies may have been inspired by Fearnley.

## Unanswered questions

Many long-lived artists who had started using paper as support for their oil studies in their youth continued to do so after 1850, but the practice was not continued by younger generations of painters, and finally oil sketching on paper died with the artists who had used it.<sup>32</sup> The use of paper as a support for oil studies raises some questions that have never been fully answered. The technique employed by Danish painters when painting on paper is still awaiting investigation.<sup>33</sup> It is generally assumed that in most but not all cases, they primed the papers before applying the oil-based paint, but this needs to be confirmed. As artists generally mounted the papers on canvas or cardboard after painting, the kind of paper they used is not known for certain. Furthermore, no systematic analysis of the paint layers has been undertaken and the glue used for mounting the paper on canvas has not been examined.<sup>34</sup> When judging the general condition of the oil sketches

by these Danish painters it seems that some are better preserved than others. Does that relate to the artist's painting technique or to his choice of paint medium and/or paper? Or is it due to the later treatment of the studies, including differences in their subsequent exposure to light?

Two paintings by Købke illustrate these issues more than any others: *The Garden Steps Leading to the Artist's Studio on Blegdammen* (Fig. 10) and its counterpart, *A Corner of the Artist's Father's House on Blegdammen* (Fig. 11).<sup>35</sup> Almost identical in size, they are mounted on canvas similarly with a green-painted framing on the canvas. In 1847, they were separated and only united again in 1969, therefore their exposure to light would have differed. As the supporting papers are not exactly the same size, Købke may not have used the same type of paper in both paintings. Today the colour schemes in the two paintings differ significantly: *A Corner of the Artist's Father's House* has a reddish tone that is not in harmony with the overall colour tone in the other painting. It is difficult to believe that this difference in colours was intended by the artist so what has caused their contrasting appearances today: the choice of supporting paper, the priming of the papers, the pigments used, the glue used for the mounting on canvas or the subsequent exposure to light? We hope to be able to answer questions such as these in the future.<sup>36</sup>

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## Notes

1. K. Monrad, 'Eckersberg and open-air painting', in P. Conisbee (ed.), *Christoffer Wilhelm Eckersberg 1783–1853*, Washington DC, National Gallery of Art, 2003, pp. 14–25; K. Monrad, 'Eckersberg on the European stage', in K. Monrad (ed.), *Christoffer Wilhelm Eckersberg*, Copenhagen, Statens Museum for Kunst and Munich, Prestel Verlag, 2015, pp. 11–54.
2. V. Villadsen (ed.), *C.W. Eckersbergs dagbøger 1810–1853*, vol. 1, Copenhagen, Nyt Nordisk Forlag Arnold Busck, 2009, p. 98.
3. Eckersberg to J.F. Clemens 23 July 1814 quoted in Monrad 2003 (cited in note 1), p. 14. See also: H. Bramsen, H. Ragn-Jensen, B. Jørnæ and M. Saabye (eds), 'C.W. Eckersberg: *Dagbog og breve. Rom 1813–16*', *Meddelelser fra Thorvaldsens Museum*, 1973, pp. 19–129, esp. p. 57.
4. K. Monrad, M. Scharff and J. Wadum, 'Hidden drawings from the Danish Golden Age: drawing and underdrawing in the Danish Golden Age views from Italy', *SMK Art Journal*, 2006, pp. 111–119, esp. pp. 112–115.
5. Monrad 2015 (cited in note 1), p. 204, cat. 29, 32.
6. For some of the earliest examples of open-air studies from 1825, see Monrad 2015 (cited in note 1), pp. 211ff., cat. 59, 60, 61.
7. Monrad 2015 (cited in note 1), p. 215, cat. 76.
8. Monrad 2003 (cited in note 1), p. 23.
9. Villadsen 2009 (cited in note 2), p. 211.
10. K. Monrad, *Turner and Romantic Nature*, Copenhagen, Statens Museum for Kunst, 2004, pp. 91, 97, 244, cat. 52, 53.
11. See for instance Monrad 2015 (cited in note 1), p. 49.
12. J. Svenningsen, 'For pleasure and for prizes: Danish *plein air* painting of the 1820s', *Perspective*, 2015. Available at: <http://perspective.smk.dk/en/pleasure-and-prizes-danish-plein-air-painting-1820s>.
13. K. Monrad in C. Johnston, H. Leppien, K. Monrad *et al.*, *Baltic Light: Early Open-Air Painting in Denmark and North Germany*, Ottawa, National Gallery of Canada and New Haven and London, Yale University Press, 1999, p. 196, cat. 96.
14. Little is written on the use of paper as a support; see T. Gunnarsson, *Friluftsmåleri före friluftsmåleriet. Oljestudien i nordiskt landskapsmåleri 1800–1850*, Uppsala, Acta Universitatis Upsaliensis, 1989, p. 53.
15. Svenningsen 2015 (cited in note 12), fig. 10.
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25. K. Monrad, 'In Pompeii', in Nørregård-Nielsen and Monrad 1996 (cited in note 22), p. 311, cat. 156.
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27. The study of the two buffaloes was mentioned in a review of Rørbye's exhibition at Kunstforeningen; see *Dansk Kunstblad* 3(1), 17 February 1838; cf. Bruun Rasmussen, auction no. 786, 23 April 2008, lot 164 (as 'unknown Danish painter'; now in a private collection). This information was kindly provided by Jesper Svenningsen. This also seems to be the case with Rørbye's *Young Clergyman Reading*, 1836 (Art Institute of Chicago), which may also have been retouched in Copenhagen before the same exhibition; see J. Wadum, T. Filtenborg, K. Monrad and J. Svenningsen, 'Principal version or replica? Examining Martinus Rørbye's practice when copying others or his own paintings', in this volume, pp. 72–81.
28. For this reason most of Blechen's oil studies are today kept at the Kupferstichkabinett and the Stiftung Archiv der Akademie der Künste in Berlin in the Prints and Drawings collection.
29. Cf. Monrad 2004 (cited in note 10), p. 189 n. 84.
30. S. Willoch, 'Thomas Fearnley og de danske malere i Italia', *Kunst og Kultur* LXIV, 1981, pp. 249–257.
31. K. Monrad, 'In Italy', in D. Jackson, *Christen Købke: Danish Painter of Light*, Edinburgh, National Galleries of Scotland, 2010, p. 108; D. Jackson, 'Fearnley, Italy and the oil sketch tradition', in A. Sumner and G. Smith (eds), *In Front of Nature: The European Landscapes of Thomas Fearnley*, London, D. Giles Ltd., 2012, pp. 47ff.
32. This was pointed out by Marianne Saabye (personal communication). For instance P.S. Krøyer never used paper as a support for his open-air studies; see M. Saabye, *Krøyer: An International Perspective*, Copenhagen, Hirschsprung Collection, 2012.
33. John Constable's use of paper as support has been studied by Sarah Cove; see S. Cove, 'Fit for purpose: Constable's use of millboard and paper for oil sketching, c. 1809–29', in H. Chivian Cobb (ed.), *Constable's Oil Sketches 1809–29: The Maria Bicknell Years*, New York, Salander-O'Reilly Galleries, 2007, pp. 122–141.
34. In several cases the glue lining chosen for Constable's oil sketches on paper when mounting them on canvas has damaged the paint layers, see Cove 2007 (cited in note 33), p. 137.
35. Nørregård-Nielsen and Monrad 1996 (cited in note 22), pp. 374 ff., cat. 159, 160.
36. A research project with an in-depth investigation of Danish painters' use of paper as supports in their oil studies is planned by the two CATS consortium partners, Statens Museum for Kunst and the School of Conservation, The Royal Danish Academy of Fine Arts Schools of Architecture, Design and Conservation, Copenhagen.

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# THE REFORM CLUB, LONDON: THE GRAND BRITISH–ITALIAN PALAZZO OF THE INDUSTRIAL AGE

Fernando Caceres Jara

**ABSTRACT** This paper presents some of the workshop practices and materials used by the builders and craftsmen of the interiors of the Reform Club in London. These were researched during the conservation of the interiors, undertaken between 2010 and 2014 by International Fine Art Conservation Studio (IFACS), Bristol. A close assessment of the building's structure, and paint and material analysis aimed to establish the historical development of the architectural interior decorations. The coupling of technical and historic research has offered new insight into the design and development of the Reform Club. It has also highlighted some of the club's innovative architectural features, such as the glass dome and tessellated floor of the Grand Saloon. The technical study of the working practices and the innovative materials used in the early 19th-century building was essential to understanding of its conservation problems. The findings helped to develop a comprehensive and appropriate programme to restore the interiors of the Reform Club to their magnificent splendour.

## Introduction

The remoteness and privacy created by the Pall Mall elevation with its sober and unpretentious façade is mirrored by the delicate privacy of the Club rooms within.<sup>1</sup>

The Reform Club is a remarkable specimen of British–Italian palazzo architecture with some unique architectural details found nowhere else. It is a building that represents one of the most iconic British institutions: the gentleman's club (Fig. 1). During its 175 years, it has witnessed some of the most important political events in the history of Britain and the world. Located in the heart of 'London's clubland', Pall Mall, the Reform Club has been described as the 'king of the clubs' and has stood relatively unchanged since its erection in 1841 by Sir Charles Barry. The comfortable and elegant house with its unique interiors reflects the ideas and ideals of its founders. The club borrowed its name from the Reform movement, which culminated in the Reform Act of 1832.

Historians have perpetuated the image of Barry as a safe and rather tame architect. It has often been said that he rarely used any materials, ideas or construction methods that had not been proved elsewhere, or that he simply repeated the Italian palazzo formula.<sup>2</sup> On the contrary, it can be argued

that although he adhered strictly to the principle of 'honesty' in architecture, he successfully transmuted stylistic languages and thereby created an original, truly British–Italian palazzo that was adapted to both British taste and weather. Undeniably, Barry looked to the Italian classics for inspiration, but he was also strongly influenced by English classic architecture.

Technical examination and analysis of the materials used in the Reform Club were undertaken during the conservation of its interiors by International Fine Art Conservation Studios (IFACS), Bristol, between 2010 and 2014. This information, supplemented by evidence from art historic records and documentary sources – such as Charles Barry's and John Lewis Wolfe's diaries – shed light on some of the original architectural elements of the building. This in turn led us to rewrite some assumptions concerning the history of the building and also to confirm some other aspects of Barry's inspirations. This paper discusses some of the club's unique architectural elements, the people who worked on them, and the materials and construction methods they used.

## Charles Barry's diaries and travels

Charles Barry's architectural education was practical and to a great extent autodidactic.<sup>3</sup> In 1810, he was apprenticed



Fig. 1 Belton Moore, *View of Pall Mall*, 1840, watercolour on paper, The Reform Club Collection. (Image used with permission of the Reform Club.)

to Middleton and Bailey – surveyors to the parish of Lambeth – and six years later became manager of the practice. Barry was also a fine draughtsman, and from 1812 he exhibited regularly at the Royal Academy. Barry's understanding of architectural repertoire styles was shaped during his three-year grand tour upon which he embarked on 28 June 1817. He first travelled in the company of Sir John Soane's friend, Charles Conduit,<sup>4</sup> then with the painter Sir Charles Lock Eastlake, and finally with John Lewis Wolfe, a pupil of the architect, antiquarian and author Joseph Gwilt. All Barry's travel partners left their mark in his work and life. During his travels, Barry filled 16 notebooks with manuscript notes, sketches and drawings, which provide an invaluable source of information on the formation of his architectural language.

Barry's relationship with Eastlake went back to 1817, when they first met in Rome and decided to explore the ancient treasures of Greece and Malta together.<sup>5</sup> They were fascinated by the 'grandeur, beauty and symmetry' of the Parthenon.<sup>6</sup> Specifically, it was the use of colour in Greek architecture that made a lasting impression on both of them. They were inspired by the revolutionary discoveries of colour residues on the Temple of Aphaia at Aigina, which the architect Charles Robert Cockerell had made in 1811.<sup>7</sup>

In 1840, Eastlake published an annotated translation of Goethe's *Theory of Colours*, which became an influential book among English-speaking artists and architects. Both Barry and J.M.W. Turner owned copies; Turner's is filled with marginal notes and scribbles.<sup>8</sup> In his translation, Eastlake had particularly accentuated 'the theory of

the Ancients' and its connection with the practice of Italian painters of the Renaissance;<sup>9</sup> this would turn out to be influential in Barry's architectural colour palette. When the Fine Art Commission under Prince Albert's presidency commissioned the interior decoration of the new Houses of Parliament (1841), Barry and Eastlake were finally able to combine their creative forces.<sup>10</sup> Both were fond of frescoes, and while they were able to integrate frescoes into Westminster, the Grand Saloon of the Reform Club would ultimately be adorned with stern political portraits, to Barry's great disappointment.<sup>11</sup>

Joseph Gwilt's work and writings also guided Barry. After a visit to Italy in 1816, Gwilt published his *Notitia architectonica italiana* (*Concise Notices of the Buildings and Architects of Italy*). Barry carried this architectural pocket guide with him while travelling to Italy in both 1817 and 1820. Furthermore, he purchased Gwilt's edition of Sir William Chambers's *Treatise on the Decorative Part of Civil Architecture* (1825) and his English translation of Vitruvius's *Ten Books on Architecture* (1826).

Barry's closest friend and collaborator, John Lewis Wolfe, began his first tour of Europe in September 1816, spending six months in Rome, Greece, Geneva and Cologne. He probably returned to England in 1818, since he exhibited a design for a national museum at the Royal Academy in the same year. He went abroad again in 1819, arriving in Rome in February 1820. By the end of the month, he had met the 25-year-old Charles Barry<sup>12</sup> and together they travelled to Florence, Vicenza, Venice and Verona. Wolfe encouraged Barry to study, measure and criticise Italian architecture more closely: 'We took a



liking to each other and agreed to work together – in measuring the buildings as we thought novel and useful as examples, in practice, but of which no drawings had yet been publish'd.<sup>13</sup>

Reading Barry's journals, his admiration for the Florentine and Roman urban palaces is obvious. For example, he lauds, 'their clear uniform lines, spaciousness and overall austere exteriors'.<sup>14</sup> His comments that accompany the sketches of Michelozzo's Palazzo Medici Riccardi in Florence (1444–1469) are very revealing in this respect: he writes that it is 'one of the fine examples of the severe and characteristic architecture of the Florentine Republic. ... It stands at the corner of a wide street presenting two similar elevations and commanding by its austerity and extent a silent admiration'.<sup>15</sup> The ecclesiastical architecture of Italy had less influence on Barry's future work yet its traces can be detected in the interiors and ornamentation of many of his designs.

The time that Barry spent in Egypt and Syria, observing architecture relatively unknown to other English architects at the time, also greatly influenced his professional life. His travel notes and sketches reveal his deep fascination for Egyptian ornamentation.<sup>16</sup> Wolfe's travel notes, which complement Barry's, are at times more articulate. His memoir no. 4 is particularly revealing with regard to the cross-linking of Greek, Egyptian and Italian influences during Barry's years abroad:

His thoughts ever more anxiously turned to the practices of his profession as he began to perceive that Italian was the style most capable of adaptation to modern requirements and resolved that for the few months he had left to spare, it should be the chief object of his studies. By degrees, the beauties of Italian architecture grew upon him ... His early love for Greek art continued to exercise more or less influences upon him and it was some years before all traces of it disappeared from his designs. But from time to time, his imagination was haunted by dreams of Egypt.<sup>17</sup>

The friends parted in July 1820 – Barry to begin practice in England and Wolfe to travel for another year in Greece. Upon his return to England in 1821, Wolfe introduced Barry to a circle of young London architects, including Thomas Leverton Donaldson and Samuel Angell. Wolfe eventually gave up architecture to join his brother as a stockbroker. However, his passion for building design was indirectly sustained by a close involvement with Barry's flourishing practice. Stylistically, Barry assimilated Wolfe's suggestions for clean, simple and corniced *Cinquecento* Italianate designs with his own predilection for symmetry and overall proportion in both the Travellers and Reform clubs in Pall Mall.<sup>18</sup> Wolfe was an important influence on Barry's submission for a competition to design the Houses of Parliament, for example, by organising a tour of Belgium to study the Gothic town halls as inspiration. Wolfe was godfather to Barry's youngest son, Sir John Wolfe-Barry, to whom he left much of his estate upon his death in 1881. He also contributed towards Barry's memorial statues in Westminster Abbey in 1867 with equal generosity.<sup>19</sup>

## The Reform Club

The Reform Club opened its doors on 24 May 1836 at Dysart House, 104 Pall Mall, London. Charles Barry was commissioned to build 'a club house which should surpass all the others in size and magnificence',<sup>20</sup> possibly referring to its rival, the Carlton Club, a fine classical building that stood next door. Barry was allocated a budget of £37,500 (equivalent to £1,653,750 today) but the final bill came to £84,082 (£3,708,016 today). He delivered an outstanding example of British–Italianate architecture – the Reform Club can be seen as a continuation of the designs of both the Travellers Club and the first drafts for the Manchester Athenaeum.

Contemporary and later literature often suggest that Barry's designs of both the Travellers and Reform clubs were based on the Palazzo Pandolfini in Florence and the Palazzo Farnese in Rome.<sup>21</sup> It may have been Joseph Gwilt's treatment of the two *palazzi* in the *Concise Notices of the Buildings and Architects of Italy* as a paradigm of the Roman and Florentine Renaissance schools of architecture that informed these claims. Louis Fagan pointed out some notable difference between the Reform Club and the Palazzo Farnese, and the discussion of Barry's alleged architectural 'plagiarism' regarding the Palazzo Farnese has fascinated authors to this day. Studying Barry's diaries and notebooks indicates that his experience of seeing and studying other palaces and architectural samples during his grand tour contributed to the creation of his own palazzo formula, in which there is a balance between practical requirements and artistic expressions.<sup>22</sup> One example of this is the *cornicione* of the Reform Club, Barry's design for which was inspired by the *cornicione* of the Palazzo Pandolfini translated into his own architectural language.<sup>23</sup>

For the construction of the Reform Club, apart from the 220 workmen,<sup>24</sup> Barry engaged some of the leading craftsmen of the 19th century. He also drew on newly industrialised processes, utilising new materials and technical innovations and applying them for the first time in the building industry. It was described as 'a marriage of Art with new Technology',<sup>25</sup> and this is evident, for example, in the automatic ventilation system, the fireproofing, the glass dome of the Grand Saloon and the tessellated floor.

## The Grand Saloon

On his second day in Rome, Barry visited the Palazzo di Monte Cavallo. In his diary he recorded: 'Exterior majestic, fine detail in bad taste, Cortile the finest in Rome.' He admired the character of 'Simplicity and Solidity, elegance [combined] with strength.' Barry may have had all of these qualities in mind while designing the Reform Club's internal court surrounded by an arcade, also called a *cortile*.

The Grand Saloon, measuring 17.30 × 15.50 m, occupies the centre of the building (Fig. 2). Twenty ionic columns (5.80 m high) form a colonnade that surrounds a tessellated pavement and elegantly frames the atrium. On the first floor, the



**Fig. 2** Photographs of the interior of the Grand Saloon showing: (a) the glass dome ceiling, (b) the south view of the Grand Saloon and (c) the tessellated floor.

peristyle is completed by 20 columns of the Corinthian order. The atrium (10.40 × 8.50 m and 16.45 m high) is surrounded by a wide passage on the ground floor and a corresponding gallery on the first floor that provide access to all the other public rooms. The view into the Coffee Room on the ground floor and the Drawing Room/Library, however, is not straightforward. It seems that Barry was deliberately attempting to create intimacy through the elaborate subdivision of spaces. There are three bays each side of the atrium. In the four angles, the end columns are brought together with a square pillar upon a shared pedestal. Pilasters corresponding to the 20 columns divide the walls of the ground and first floors into five arcaded bays on each side. The middle arch on the north side of the ground floor is the main entrance from the vestibule. The opposite arch contains a single sheet of glass that allows a glimpse into the Coffee Room. A similar arrangement on the first floor leads into the Drawing Room/Library. The middle arch on the east side of the ground floor opens to the Main Staircase; the opposite arch contains a mirror, probably a later addition.

Scholars have suggested that Barry's decorations in the Grand Saloon were based on the model of the baptisteries of St Peter's in Rome and Florence and the Cibo Chapel in Santa Maria del Popolo in Rome.<sup>26</sup> It can also be argued that his colour schemes were influenced by Eastlake's translation of what he called the 'the theory of the Ancients', as they differed radically from what in 1841 was seen as the traditional palette for the painting and decorating of interiors. The innovative colour schemes in the rooms of the Reform Club reflect Barry's experiences during his grand tour rather than imitating or emulating specific Italian models.<sup>27</sup>

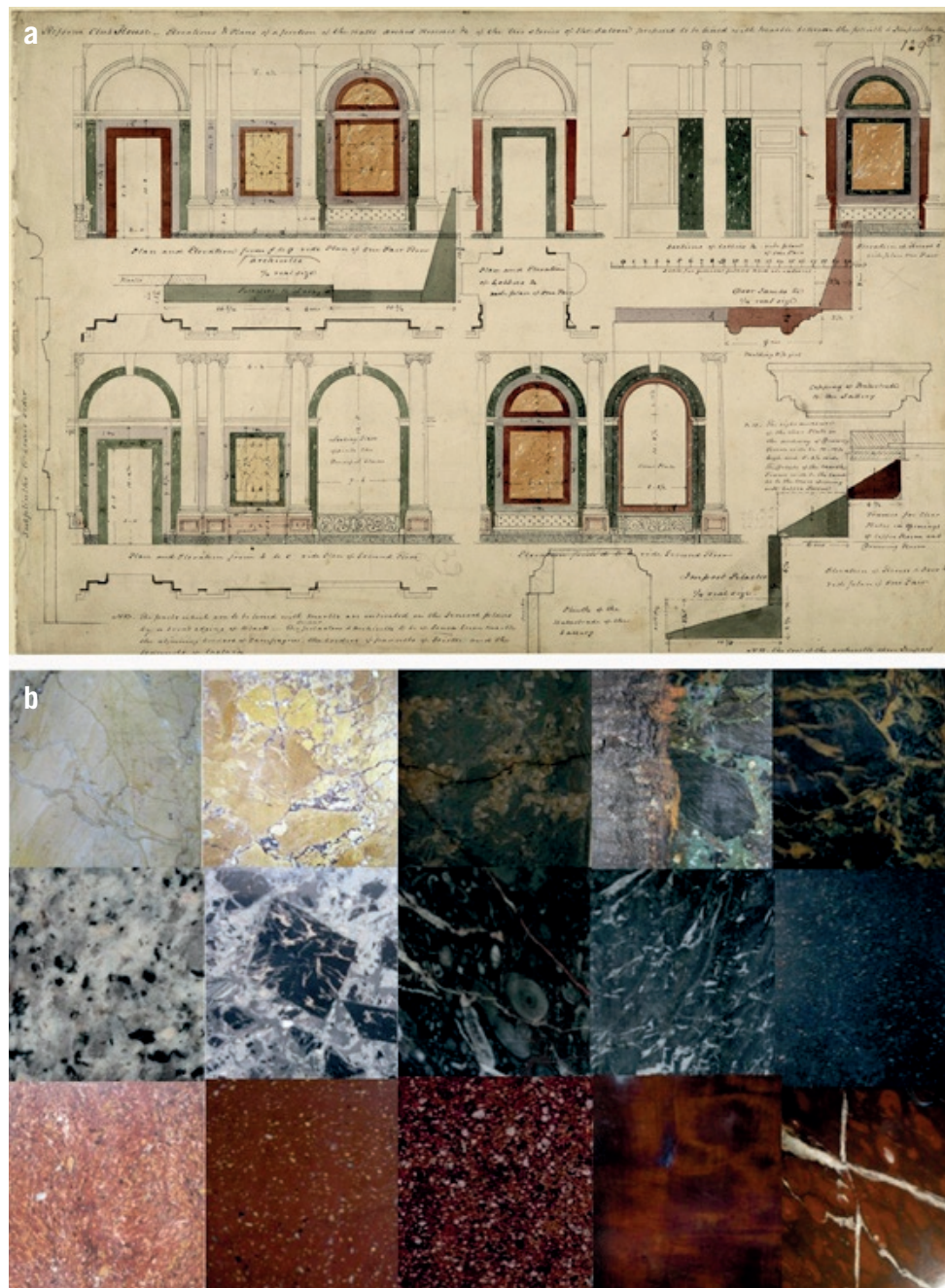
## Colour schemes in the Grand Saloon

The walls and the columns of the Grand Saloon have a superb finish of *scagliola*: artificial forms of decorative stone based on gypsum or lime plaster (Fig. 3). *Scagliola*

was used on all the walls of the Grand Saloon, which include the ground floor colonnade, the first-floor gallery and the Main Staircase.<sup>28</sup> Barry's choice for this material may have been influenced by 'the principles of utility and economy in architecture'<sup>29</sup> professed by Joseph Gwilt (who was also a Reform Club member) in *Rudiments of Architecture* (1826). There is no account of which materials were supposed to be used in his first design (1837) of the Grand Saloon, but considering that it was an open *cortile*, it is safe to assume that the columns were originally intended to be made of stone. However, once the *cortile* was redesigned and covered, *scagliola* could be used as it would be protected from the elements. *Scagliola* has far better thermal insulation than natural marble, a distinct advantage in the cold British weather, as it is easier and cheaper to keep the rooms at an appropriate temperature. Economically it also made sense to use *scagliola* – despite the initial cost of setting up, its stability, durability and low maintenance requirements ensured long-term cost effectiveness.<sup>30</sup> *Scagliola* had been used successfully in England since the 18th century in many other grand buildings by other architects such as James Wyatt, John Nash and Henry Holland. Barry appreciated its versatility and aesthetic qualities, particularly the advantage over marble of a greater variety of colours.<sup>31</sup>

The fluted three-quarter columns supporting the roof and the gallery in the Reform Club are made of *scagliola* applied *in situ* onto stone cores, while the other columns have strong timber cores. The fluted three-quarter columns in the Drawing and Coffee rooms were cast in 90 cm lengths, each with tiles embedded in coarse plaster. The *scagliola* on the walls of the Main Staircase was applied onto brickwork, panelled, mounted, and inlaid.<sup>32</sup> The refined *scagliola* finishes in the club are the result of a collaboration between two skilled craftsmen: J.M. Blashfield and Vincent Bellman (Fig. 4).<sup>33</sup> In Robson's London directory of 1838, Bellman was listed as a *scagliola* manufacturer, offering columns and pilasters with capitals and bases, pedestals, candelabra and slabs for tabletops. Blashfield was an enterprising businessman who was involved in a number of ventures connected with ceramics,





**Fig. 3** (a) Barry drawing with specification for *scagliola* finishes. RIBA Library Photographs Collection. (b) Detail of the diverse *scagliola* finishes in the Grand Saloon.

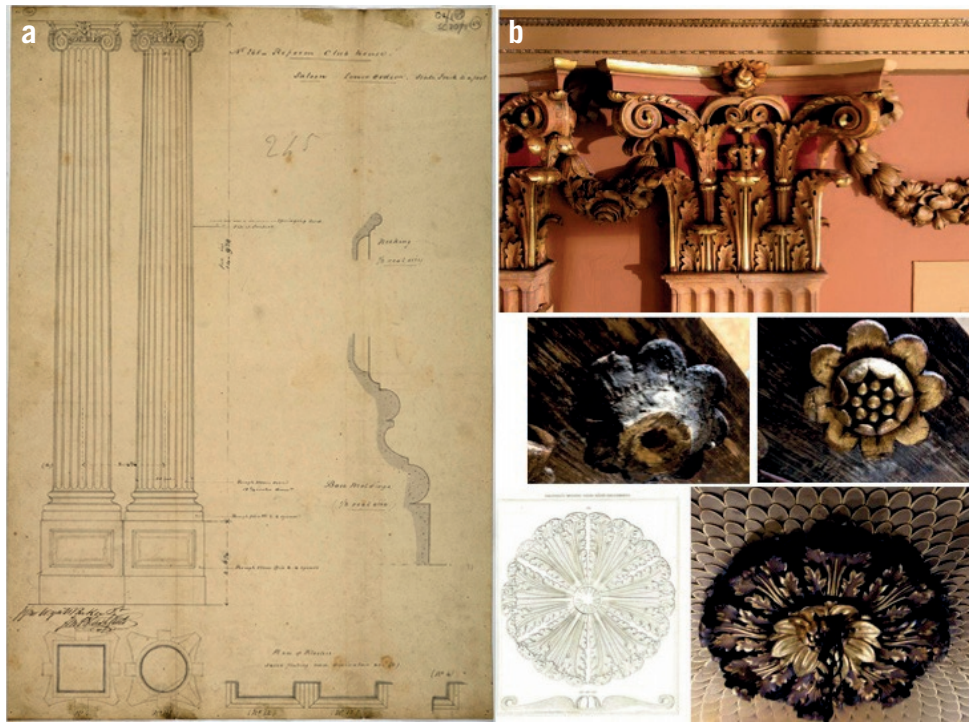
sculpture and architecture. He was Minton's representative in London and a partner in the firm of Wyatt, Parker & Co of Millwall.

The colour scheme of the Grand Saloon is created by different colours of *scagliola* that imitated fine marble (Figs 3 and 5). The skirting of the lower colonnade and Upper Gallery imitates Galway black and St Anne's marble respectively. The ionic *scagliola* columns have plain pedestals that resemble Egyptian red granite, bases that look like white statuary marble, and the fluted shafts imitate Siena marble. The ionic capitals were made by Charles Frederick Bielefeld using plaster and papier-mâché and are richly gilded. They carry an unbroken entablature comprising an enriched architrave, a frieze adorned with stencilled panels and an

enriched dentilled cornice. On the wall side of the colonnade on the ground floor and Upper Gallery, the *scagliola* impost pilasters of the lower order imitate light *giallo antico* (a type of yellow ochre). The skirting below the bases of the columns and pilasters resemble oriental green and Egyptian granite. The architraves of the doors were painted to simulate Egyptian porphyry, and the margins around them are in *scagliola* coloured with *verde antico* (a type of green).

The *scagliola* columns on the first floor are of the Corinthian order. The columns, the cornices and the pedestal plinth are in *scagliola* that imitates Siena marble. Dyes of blue-veined white marble were applied to the *scagliola* on the pedestals of the columns to imitate *brocatello* (also known as Siena marble) panels. The bases of the columns simulate





**Fig. 4** (a) Barry's drawing for the columns signed by J.M. Blashfield. RIBA Library Photographs Collection. (b) Papier-mâché finishes in the club.

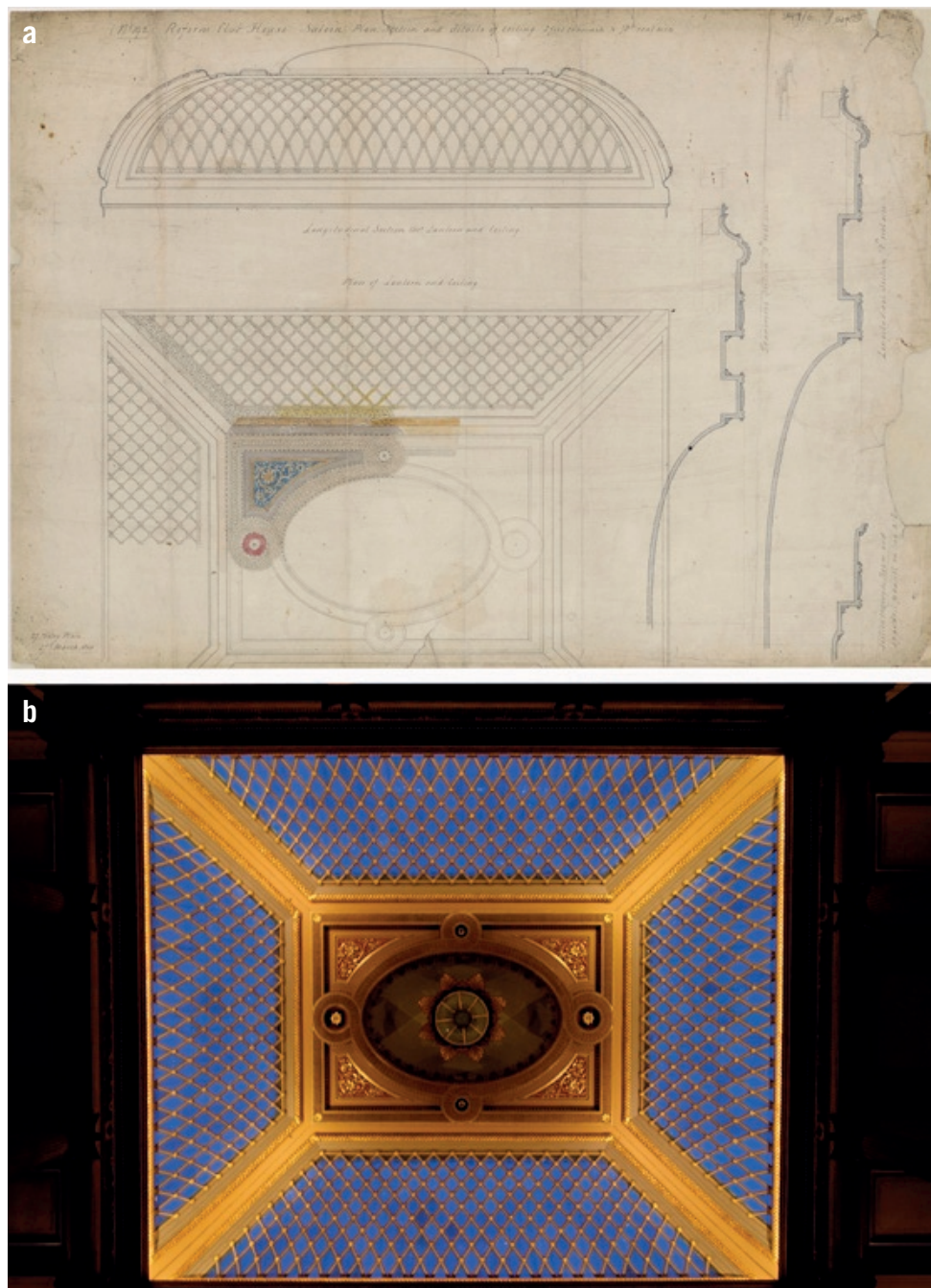


**Fig. 5** Detail of the *scagliola* finishes on the colonnade walls.

white statuary and the Corinthian capitals are richly gilded. The skirting below the bases of the columns and pilasters resembles *porto venere* green. The upper entablature is similar to the lower except that the frieze panels are modelled with foliage scrolls and flowers, and the enriched cornice has ornate brackets or modillions and dentils. The architraves of the doors are of rich *brocatello* and the balustrades are in white and light Siena marble.

## Paintings in the Grand Saloon

For the painted decoration of the Grand Saloon, Barry wanted to include a fresco. He suggested that it could be executed by the history painter Benjamin Robert Haydon (1786–1846) whose painting of *The Reform Banquet at Guildhall, London, July 11th 1832* might have attracted Barry's attention. The building committee, as well as considering other artists, preferred Edmund Thomas Parris (1793–1873), a decision that disappointed



**Fig. 6** (a) Barry drawing of the dome. RIBA Library Photographs Collection. (b) Corresponding photograph of the interior of the dome.

Haydon as he expressed in a letter to a friend.<sup>34</sup> Instead, easel paintings also adorn the walls of the Grand Saloon. A committee resolution of 1842 stated that no portraits of living members should be placed in the clubhouse, a rule that was only broken three times in the club's history.<sup>35</sup> In total, 19 Victorian and four grisaille vignettes hang in the Grand Saloon.<sup>36</sup>

### The glass cupola of the Grand Saloon

The atrium of the Grand Saloon is roofed by a ferro-vitreous construction: a two-storey glass dome (Fig. 6). On the architectural drawings submitted for competition (1837), Barry

designed the Grand Saloon with an open *cortile*. Prompted by a suggestion from the building committee, Barry redesigned it as a 'closed' atrium. On the preliminary architectural drawings, produced after winning the competition for the construction of the Reform Club, Barry proposed a large decorated cove with a hipped glass skylight roof, which may have been inspired by the top-lit central space in Cockerell's competition entry or influenced by the writings of Reform Club member Joseph Gwilt. Reworking a theory of climate that was influential in the Italian and French Renaissance, Gwilt commented: 'the general forms and combinations of styles are the result of endeavours to suit the climate in which they are planted, and to obviate the inconveniences against which in each country it is more peculiarly necessary to provide.' In the 'delicious regions of southern



Europe, open galleries and colonnades, terraces whose only covering is the constantly azure sky, seem almost to induce an opinion, that the interiors of the dwellings to which they are attached are scarcely used but for the purposes of shelter and rest.<sup>37</sup> With his revised design (1838) for a covered *cor-tile* that would become the heart of the Reform Club, Barry was acknowledging that London was indeed not a 'delicious region' of the south. By covering the traditionally open-air *cor-tile* with a refined glass cupola, he created a new central space and one of the most significant features of the club.<sup>38</sup> However, the cupola on Pall Mall was built in such a way that it remained entirely private and invisible from the outside. This new architectural feature was an important and clear move away from the more traditional architectural paths usually taken by Barry. Innovation in this set of building politics came from within, from the very centre.

Barry was familiar with Halle au Blé in Paris, one of the largest glass ceilings in the world; he saw it during the first part of his grand tour, but was critical of it.<sup>39</sup> He may also have been familiar with the Stair Hall at Sezincote House in Gloucestershire, built in 1806 by Cockerell and Repton. This is a windowless interior space with light emanating from upper fanlights and an architectural lantern/cupola above. Alternatively, the Reform Club cupola may have a more modest inspiration: greenhouses, the first metal and glass structures built in England since the beginning of the century. In 1811, John Claudius Loudon invented an iron glazing bar that made curved glazing possible. He erected various prototype hothouses incorporating his structural and other practical ideas, such as Bicton Park in Devon. New developments in the metal industry, such as the rolled iron I- and U-sections, permitted the construction of early space frames thereby allowing the construction of more experimental and larger greenhouses.<sup>40</sup>

An encounter with Apsley Pellatt, one of the most successful English glass manufacturers, inventor, author, politician and member of the Royal Society of Civil Engineers, may also have influenced Barry's final design of the existing vaulted skylight. The Falcon Glass House in Blackfriars and a large showroom at St Paul's Churchyard were part of the Pellatt and Green Company.<sup>41</sup> Pellatt and the prominent scientists, Humphrey Davey and Michael Faraday, took a great interest in glass chemistry, resulting in experiments on optical glass in the 1820s. In 1819, Pellatt patented *crystallo ceramic*: the process of encasing a medallion in glass known today as 'cameo incrustation' or 'sulphides'. He documented this process in 1821 in *A Memoir on the Origin, Progress and Improvement of Glass Manufacture*.

The Reform Club's cast-iron roof structure clearly represents the highest state of 19th-century building technology. The roof is composed of four rectangular glazed 'coves', each of which consists of curved cast-iron lattice frames bolted together. These support the lead crystal glass panes, which are held in place with linseed oil putty. The cast-iron frame is composed of 18 separate sections bolted together.<sup>42</sup> This entire structure is set in brick and wood walls, which connect with a flat roof. In the centre of the vaulted skylight hangs a Chinese sun burner which was added in 1852. Originally the Grand Saloon was also lit by four hanging Colza lamps.

An innovation that set the Reform Club glass roof apart from other glass structures is the use of prismatic glass, which reflects the light that passes through. Pellatt, drawing on his father's experience, may have suggested the use of prismatic glass to create the effect of daylight by redirecting natural light from outside into the interior of the clubhouse through refraction and reflection. At a cost of £600, Pellatt produced 770 lozenge-shaped pieces of English lead crystal: a heavy and durable glass characterised by its brilliance, clarity and highly refractive quality, with an average lead content of 35–40%. The panes were designed to be arranged in a lattice pattern. In total, there are 11 different shapes: the top and bottom rows are triangular, the remainder are elongated quadrilaterals or lozenges. The largest lozenge is 600 mm in height, and all the lozenges are 19 mm thick, with a curved face on the side reminiscent of a whisky tumbler and ground margins (Fig. 7).

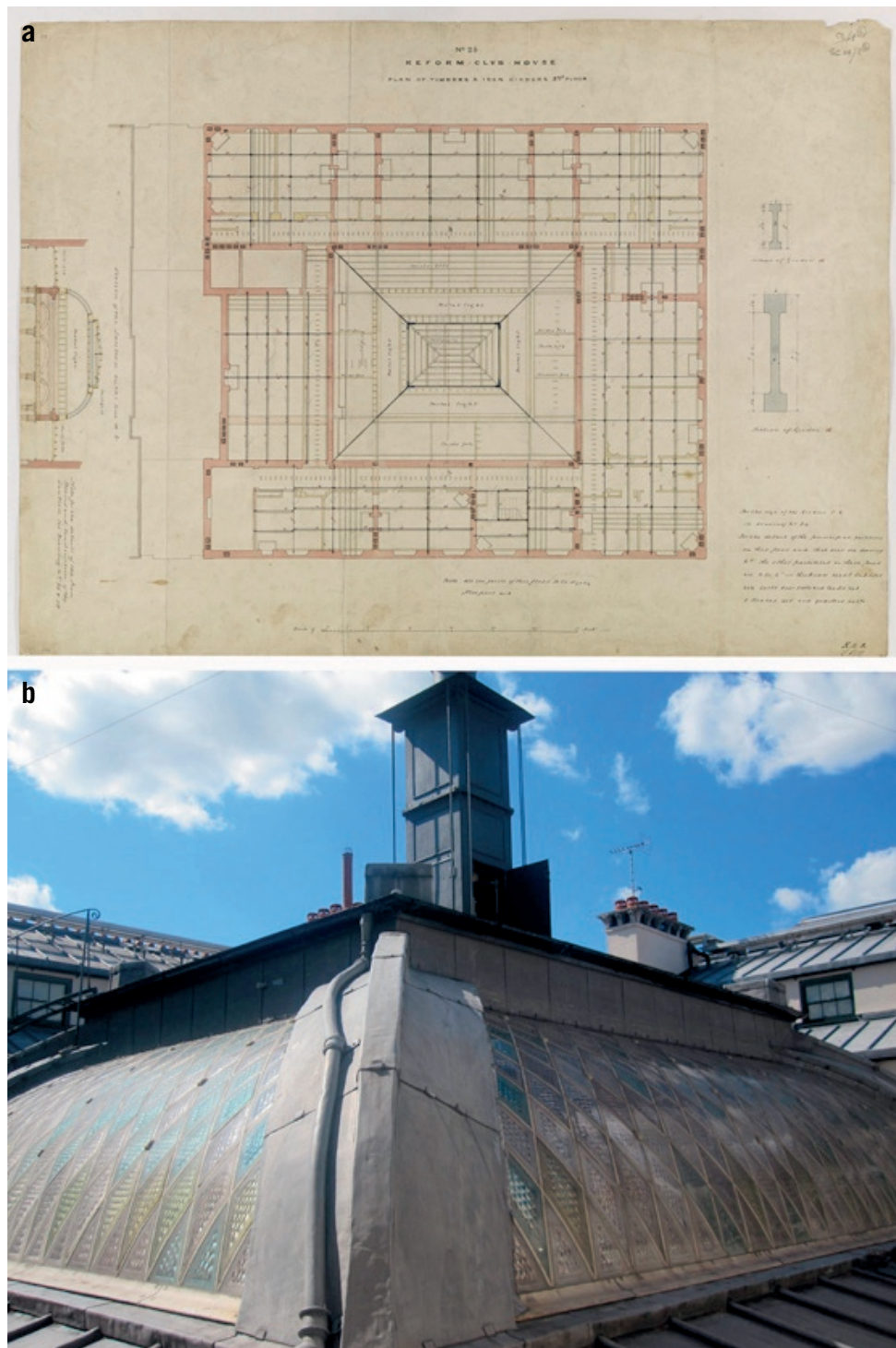
Some of the original glass of the cupola may have been made from sand derived from the colony of Australia. In 1675, George Ravenscroft developed flint glass; by 1830 the potash lead glass gave way to the development of English lead crystal, making England the leading glass producer in the world. By 1832, concerns were being raised about the high amount of iron oxide in the sand of Lyme Regis, which was used by most glassmakers. In 1833, 11 bags of sand arrived from the colonies: an extract from the report by Pellatt and Co. reveals the importance of this valuable discovery: 'We have much pleasure in acquainting you, that having used the quantity of sand furnished by your house from Sydney; we find it decidedly superior to any we have previously employed.'<sup>43</sup> Their correspondence and paperwork reveal that Pellatt and Co. attempted to import this high siliceous sand from the colonies, but unfortunately there is no evidence that any significant quantities arrived in England for use in the glass industry. However, thanks to Pellatt's navy connections (his father invented the 'glass illuminator', better known as deck lights), any sand he acquired was brought to England onboard ships from Australia as ballast. Therefore, it is possible that some of that sand found its way into the Reform Club glass lozenges.

During the major restoration of the glass dome in 1998, it was found that 'the roof contained glass of different types', some of which must have been later replacements.<sup>44</sup> The original glass lozenges from 1841 were colourless with a slightly grey tone. Several of the lozenges that have a slightly yellow tint are thought to be late 19th or early 20th-century soda glass replacements with low lead content. The remainder of the lozenges were made of greenish silica glass: probably post-war replacements without any lead content.

## The tessellated floor: inspiration and technological advances

The building committee had specified 'that the hall be paved with some materials which will not require them to be covered with cloth.'<sup>45</sup> In the competition drawings, Barry proposed a stone floor of an octagonal geometrical pattern. The current



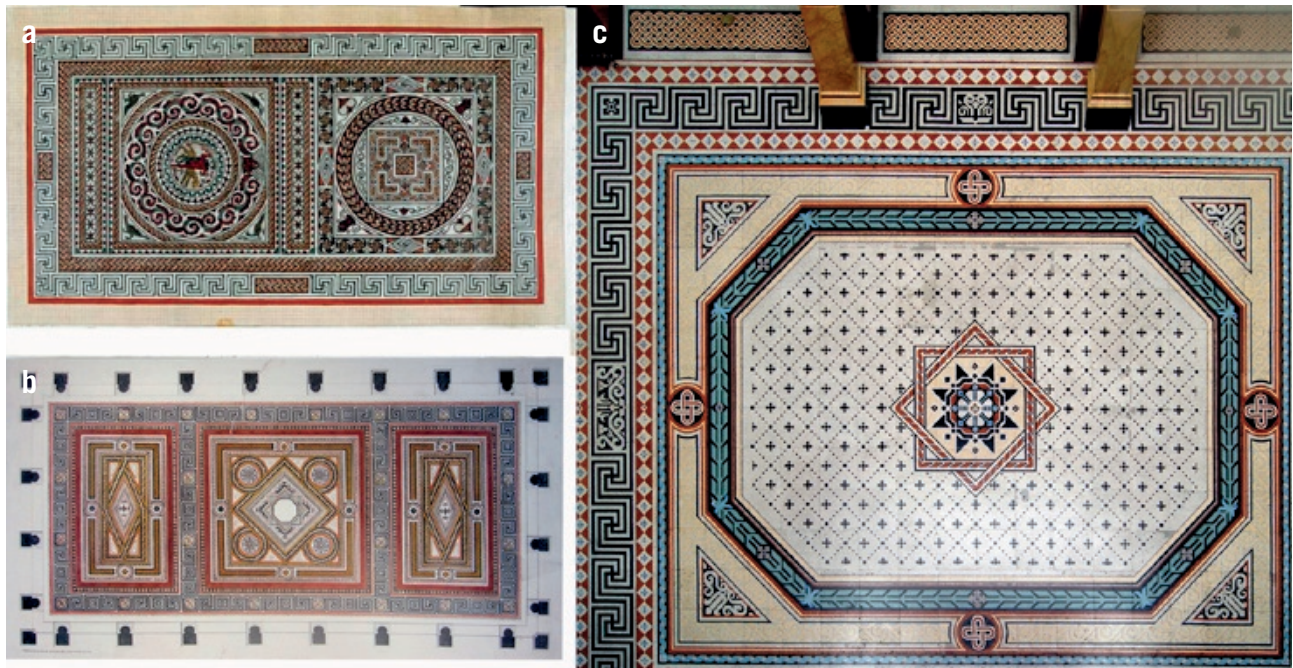


**Fig. 7** (a) Barry's architectural structural drawing of the exterior of the dome. RIBA Library Photographs Collection. (b) Photograph of the exterior of the dome.

tessellated pattern may have been chosen when the decision was made to roof the *cortile*. The tessellated floor of the Grand Saloon is the embodiment of the Victorian technological spirit (Fig. 8): the symbiosis of new building techniques, the entrepreneurial character of the epoch, the aesthetic inspiration in the revival of the classic, fuelled by invention and improvement of past techniques. The Grand Saloon floor bears witness to the very first chapter in the history of the revival of the ancient tessellated floor and tile technology. Newly developed methods in the hands of craftsmen such as Singer, Blashfield and

Milton would establish one of the most striking architectural features of Victorian England: the tile floor. G.O. Ward, in the *Magazine of Science*, wrote of 'a pavement so beautiful and generally admired, that it can hardly fail to give an impulse to the re-introduction of mosaic decoration, hitherto so sparingly employed by modern architects'.

The stimulus for the designs of the tessellated floor has been debated and disputed throughout the historical literature. It was the architect Owen Jones, in his book on tessellated pavements, who attributed the design of the floor



**Fig. 8** (a) Drawing of the Roman mosaic floor at Stonesfield. (b) Design of the floor by Singer and Pether for the new Royal Exchange building. The Guardian Royal Exchange Collection. (c) Photograph of the floor of the Reform Club Grand Saloon.

to Etruscan origins.<sup>46</sup> However, it can also be argued that, in common with other architectural elements of the club, Barry looked to the English-Roman examples for inspiration to create a unique architectural language. His concept of the tessellated floor may have come from a lecture delivered at the Royal Institution in April 1839, which was reported in many leading London journals. A recently patented invention was presented as ‘Certain Improvements in the Preparation and Combination of Earthenware or Porcelain, for the Purpose of Mosaic or Tessellated Work’.<sup>47</sup> The new process for making tessellated floors, invented by Alfred Singer and Henry Pether from the Vauxhall pottery, should be regarded as one of the important steps towards the renaissance of the art of tile floors in England.<sup>48</sup>

In 1840, Barry contacted his friend Samuel W. Singer (father of Alfred Singer, who ran the Vauxhall pottery) to seek professional advice on how to manufacture the floor of the Grand Saloon.<sup>49</sup> Alfred Singer was pioneering a technique of manufacturing tessellates using vitreous clay. After being prepared and coloured with metallic oxides,<sup>50</sup> the clay was formed by machine into a long thin ribbon, about 1½ cm thick and approximately 1 m long. From this ribbon, the various patterns and shapes of the tiles were cut by machines in order to obviate the necessity of chipping them to make them fit.<sup>51</sup> The pavement formed into smooth flat slabs according to the pattern or shape required by placing the tesserae face down into a tray with a smooth flat surface until they found their own level. They were then backed with fine Roman cement, which filled the crevices between the tesserae.<sup>52</sup> The Reform Club’s Grand Saloon pavement was the first to be commissioned using the new technique, and is one of the few surviving examples of this method.<sup>53</sup> There is no doubt that the floor was appreciated as a triumph of new technology. According to Jones: ‘It was an improvement to the Roman

tessellated floors [especially] the superiority of the modern process of uniting the tesserae to form pavements’.<sup>54</sup>

No drawing or specifications for the floor has been found, but it can be assumed that Singer and Pether worked on the basis of Barry’s design, following the classic tradition of a Hellenistic mosaic flooring and mirroring the architectural features of the Grand Saloon’s ceiling onto the floor.<sup>55</sup> While designing the floor, Barry may have been reminded of his friend Eastlake’s recommendations for designing floors and carpets:

the forms and hues employed should be merely calculated to gratify the sight. ... I would also include the nature of mere surface, as well as the distinction of every apartment. Thus a pavement, however decorated should still express the character of firmness and solidity. ... Geometrical forms would thus be alone admissible: the variety is infinite.

The ceramist and the artist took inspiration from the British-Roman tessellated pavements that had been discovered in Britain in the early 18th century,<sup>56</sup> some of which were displayed at the British Museum and could be seen by visitors as early as 1814. They also used black-and-white geometrical patterns in the Pompeian style.

The next chapter in the history of the revival of the tessellated floor was made possible by the application of an invention by Mr Prosser, who patented the technique of ‘dust-pressing’ in 1840.<sup>57</sup> Consisting of a mixture of flint and fine clay, reduced to a dry powder, and subjected to strong pressure between steel dies, the result was a solid substance of extraordinary hardness. Blashfield recognised the potential of this new invention, and after various trials and experiments, produced high quality tessellates. Using Singer’s method of





**Fig. 9** Photographs comparing the architectural details on the floor and ceiling of the Grand Saloon: (a) double chain pattern; (b) an octagonal band filled with laurel leaf decorations; (c) the torque rope design.

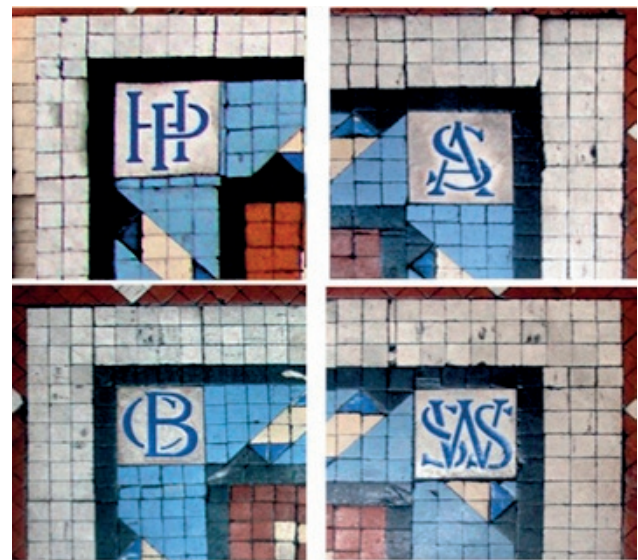
laying the tessellates, Blashfield improved the process of laying pavements.<sup>58</sup>

It was an achievement that Barry managed to gather some of the greatest 19th-century craftsmen of his time under one roof to work on the Reform Club. Blashfield was present during the laying out of the floor as he was working on the *scagliola* walls and columns.<sup>59</sup> Sir William Cole, an active member of the Reform Club and a close friend of the architect, Owen Jones, may have contributed to the many discussions on the creation of the floor.<sup>60</sup>

## The floor patterns

The large floor of the Grand Saloon extends to the outer edge of the atrium, between the columns, into a rectangular black background where it sets a *guilloche* on interlaced white and red ochre tiles. This double chain pattern is also found in the ceiling (Fig. 9a). Similar patterns are seen in the Roman tessellated floor from the Woodchester Roman villa, Gloucestershire, now preserved at the British Museum.<sup>61</sup>

The atrium is framed by a wide border composed of a double Greek key pattern in black-and-white tiles, and two bands of geometrical tiles coloured in red ochre and white in which is set a cross pattern in blue. Like the floor at Stonesfield in Oxfordshire, there are four rectangular panels decorated with flower motifs – Singer's interpretation of the anthemion flower which is depicted on the ceiling decoration. A narrow black band follows filled with a torque rope design in light blue and white at the four corners on a white background (Fig. 9c). Each of the four corners contains a monogram in blue lettering: 'CB' (Charles Barry), 'AS' and 'HP' (Alfred Singer and Henry Pether, the makers) (Fig. 10). Fagon attributes the last



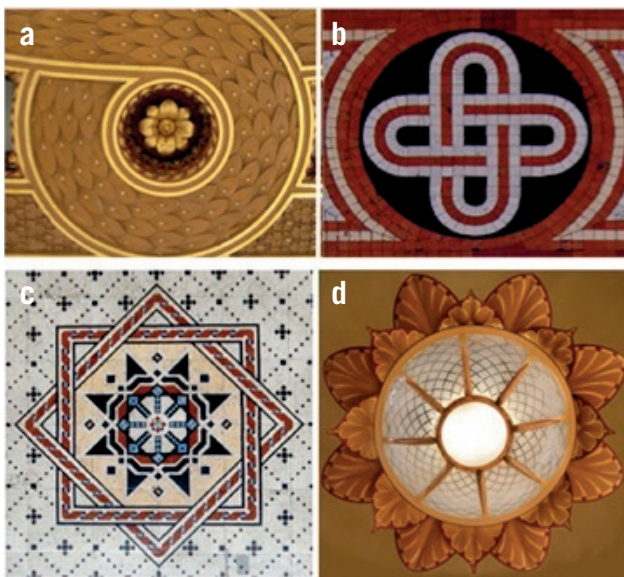
**Fig. 10** Detail of the monograms for 'HP' (Henry Pether), 'SA' (Alfred Singer); 'CB' (Charles Barry) and 'SWS' (Samuel Weller Singer) on the mosaic floor of the Grand Saloon.

monogram 'SWS' to Sir William Spotiswoode<sup>62</sup> but this was quickly disputed and corrected by W. Watkiss Lloyd, who assigned the 'SWS' initials to Samuel Weller Singer, Alfred Singer's father.<sup>63</sup>

A band of white and yellow ochre tiles follows, forming a rather stiff Vitruvian scroll (Fig. 11c and d). In the middle of the four sides are four roundels filled with *guilloche* knots (Fig. 12a and b). Reflecting the architectural elements in the ceiling are spandrels in the four corners where Singer's interpretation of the classic flower decoration was reused. A line of red ochre tiles frames this band. Next to these is a wide octagonal band filled with laurel leaf decorations in red ochre,



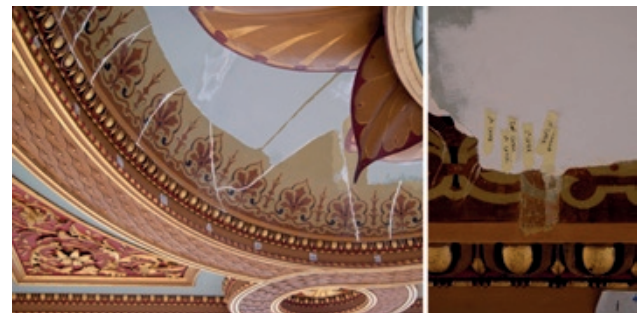
**Fig. 11** Photographs comparing architectural details (*left*) on the ceiling and (*right*) the floor of the Grand Saloon: (a) and (b) glass lozenges and reticulated grid; (c) and (d) a Vitruvian scroll.



**Fig. 12** Photographs comparing the architectural details on the tessellated floor and the ceiling of the Grand Saloon: (a) and (b) *guilloche* knots; (c) central panel on the floor; (d) Chinese lantern on the dome.

black and light blue tiles (Fig. 9b). In the central part of the floor, black-and-white tiles in a reticulated grid closely mirror the glass lozenges in the glass cupola (Fig. 11a and b).

The central panel is composed of two interlocking squares (Fig. 12c); the bands of the squares are filled with torque rope designs coloured with light blue and red ochre. In the centre sits an eight-pointed star, which seems to have taken



**Fig. 13** View of the interior of the dome during conservation works in 2011 to remove several paint layers applied on top of original decoration by Charles Barry.

its inspiration from the floor at Woodchester. Upon closer inspection, the Chinese lantern hanging in the cupola seems to mirror the central panel, although this may simply be a stylistic coincidence as the Chinese lantern was only installed in 1852 (Fig. 12d).

## Current condition

The actual condition of the Reform Club pavement is delicate but stable. Apart from the normal wear and tear, the grout has been eroded in some areas by water leaks from the cupola. Some of the tesserae have been damaged by impact, probably by furniture, the metal points of the gentleman's canes



or ladies' stilettos. It has been covered with a new printed protective cover until a full conservation treatment can be carried out.

By 2009, the interiors of the club had suffered significant visual deterioration due to Second World War damage, ingress of water, intermittent repairs of damaged areas, and repainting of some rooms. The building committee therefore commissioned IFACS, Bristol, to undertake full conservation of its interiors in accordance with current heritage bodies' specifications to rediscover, preserve and re-present the original decorative surfaces in their authentic state following the guiding principles of minimal intervention, conserve as found, and careful reinstatement of missing parts. Edward Barry had reused some of his father's painting schemes and overlapped them with his own: for example, the coffers in the ceiling of the colonnade and the main dome on the glass cupola of the Grand Saloon.

The success of the project can be summed up by the comment that 'English Heritage is delighted with the scholarly programme of restoration and conservation work at the Reform and considers that its outstanding interiors are greatly enhanced by the lighting scheme adopted.'<sup>64</sup>

## Conclusions

Charles Barry was one of the architects who helped to establish palazzo architecture in England. By examining his work and personal diaries, it has become clear that his architectural language was shaped during his three-year grand tour of Italy, Egypt and Syria. His professional life was also greatly influenced by his friendships with Sir Charles Lock Eastlake, Joseph Gwilt and John Lewis Wolfe. While Italianate buildings such as the Reform and Travellers clubs designed by Barry are clearly based on Italian models, it is evident that English traditional classical architecture also played a part. When designing the Reform Club, Barry veered away from the traditional architectural paths, which resulted in new architectural features such as the glass ferrous cupola, the tessellated floor in the Grand Saloon and the innovative colour schemes of the rooms.

Barry's success was the startling fusion between the work of leading craftsmen of the 19th century and newly industrialised processes. He was the first to take advantage of new building materials and technical innovations, as exemplified by the tessellated floor of the Grand Saloon, which was a significant step in the revival of ancient tessellated floor and tile technology. When deciding on the decorative elements of the club, Barry struck a balance between practical requirements and artistic expressions, one example being his use of *scagliola* for the Grand Saloon walls. This historical research and technical investigation identified historical changes to the clubhouse's interior decorations and surfaces, thereby guaranteeing a successful conservation and restoration. Today's Reform Club is as splendid as it was when it was opened in 1841.

## Acknowledgements

I am grateful to Prof. Peter Urbach for his valuable comments during the writing of this paper.

## Notes

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16. This is further confirmed by J.L. Wolfe, memoir no. 5.
17. J.L. Wolfe, memoir no. 4.
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30. W. Millar, *Plastering Plain and Decorative*, London, Batsford, 1899; Y. Adamson, 'The art of scagliola', *Listed Heritage Magazine*, May/June 2013, pp. 48–52, esp. p. 48.
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32. Millar 1899 (cited in note 30).
33. Vincent Bellman acted as a sole trader until 1860 then became Bellman, Ivey & Carter Ltd.
34. Hayden, in letter dated 16 August 1842, in Crook 1973 (cited in note 11), p. 8; Fagan 1887 (cited in note 11), p. 58.
35. These exceptions include the bust of H.H. Asquith (1866), the portraits of C.P. Villiers and Herbert Henry (hung in 1885), and portraits of William Gladstone and Lord Hartington (1887).
36. Crook 1973 (cited in note 11), p. 68.
37. J. Gwilt, *Sir William Chambers's Treatise on the Decorative Part of Civil Architecture*, 1825, pp. xxxi–xxxii.
38. Olly 1985 (cited in note 25), p. 42; Crook 1973 (cited in note 11) p. 2; for 'precedence of Cockerell' see also J.L. Wolfe, memoir no. 33.
39. Barry 1820 (cited in note 15).
40. An example is the greenhouse at Felton Park in Northumberland, built in collaboration with Loudon and W. & D. Bailey.
41. Apsley Pellatt joined his father's business in London around 1811 and took over the company when his father died in 1826.
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43. T. Joyce, *Inchicore Glass Scrapbook Gazette*, 2011, p. 4.
44. Vonberg and Hammond 2000 (cited in note 42).
45. Building Committee Minutes, 8 June 1837.
46. O. Jones, *Designs for Mosaic and Tessellated Pavements*, London, John Weale, 1842, p. 6.
47. Patent No 8042, to Alfred Singer and Henry Pether, sealed on 23 April 1839. The lecture was given by Mr Cowper.
48. G.O. Ward, 'Tessellated pavements, ancient, and modern', *The Magazine of Science and School of Arts*, G. Francis (ed.), London, 1843, p. 19.
49. 'Miscellanea', *The Athenaeum* 804, 25 March 1843, p. 293.
50. Professor W.M. Carty, from New York State College of Ceramic Engineering and Materials Science, confirmed that some of the brightly coloured tiles used are metallic oxides (see E. Shales, *Toying with Design Reform: Henry Cole and Instructive Play for Children*, Oxford, Oxford University Press, 2009, p. 11). Singer's company used a tin-glaze technique to glaze its pottery.
51. W.R. Chambers (ed.), *Chambers's Information for the People*, Philadelphia, J.B. Lippincott & Co., 1867.
52. 'Miscellanea', *The Athenaeum* 837, 11 November 1843, p. 1013.
53. Singer and Pether would later make pavements to decorate Blenheim House and the new Royal Exchange; those did not stand the test of time and were removed a year after their construction, possibly because they were in the open and exposed to the elements. Although a small surviving floor survived, none of the large floors were preserved, making the floor of the Reform Club a unique historical piece.
54. Jones 1842 (cited in note 46), p. 5.
55. C.L. Eastlake, letter to Lady Mary Fox, *The Country House*, London, J. Murray, 1842, p. 52.
56. These include: Woodchester (Gloucestershire), Stonesfield (Oxfordshire), Aldborough and Bignor Roman Villa (West Sussex).
57. Initially, the technique was intended to manufacture buttons. The use of the invention was leased to Minton and Co; see P. Jones (ed.), 'Tessellated pavements, ancient and modern', *Journal of the Franklin Institute* 35–6, 1843, p. 44.
58. Jones 1842 (cited in note 46), p. 4. In cooperation with Wyatt, Parker, and Co., Blashfield laid out the floor in the now demolished Deepdene Mansion in Surrey for Thomas Hope. Later he did the same for the Oxford and Cambridge Club, which can still be admired. The next step in the modern tile industry in England was the revival of the encaustic tile by Herbert Minton, who went on to become one of the most important ceramic producers of the 19th century.
59. Fagan's description of 'some plastic material' possibly refers to a bitumen coloured with metallic oxides pioneered by Mr Blashfield; see Jones 1843 (cited in note 57), p. 43.
60. F. Summerly (Sir Henry Cole), *Handbook for Holidays Spent in and near London*, London, 1844, p. 34. In addition to writing, design and invention, Cole was passionate about decorative manufacture and appreciated these elements in the Reform Club floor. Cole became a member of the Reform Club in 1836, and his admiration for the building is reflected in his *Handbook for Holidays Spent in and near London* in which he mentions the Reform and Travellers clubs as remarkable specimens of architecture in the metropolis and worldwide.
61. Jones 1842 (cited in note 46), p. 2.
62. Fagan 1887 (cited in note 11), p. 56.
63. *Notes & Queries*, 7th series, 4(83), 1887, p. 86. The misunderstanding may have arisen from an 1842 publication by Mr Blashfield. Samuel W. Singer wrote a revealing letter to the editor of *Notes & Queries* demanding greater credit for his son Alfred. Although Owen Jones recognised the importance of Singer's invention, he also praised Blashfield's ingenuity in using an invention by Mr Prosser to make tessellated floors.
64. Reform Club 2013 (cited in note 1), p. 3.

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# COROT'S *THE FOUR TIMES OF DAY*: A DECORATIVE SCHEME FOR DECAMPS'S FONTAINEBLEAU STUDIO

Sarah Herring, Hayley Tomlinson, Gabriella Macaro  
and David Pegg

**ABSTRACT** In or around 1858, Jean-Baptiste-Camille Corot (1796–1875) painted *The Four Times of Day* for the studio of the Fontainebleau house of his friend and fellow artist, Alexandre-Gabriel Decamps. Since the acquisition of the four separate panels in 2014 by the National Gallery, London, they have been the subject of in-depth research and technical examination for the forthcoming catalogue of 19th-century landscapes in the collection of the National Gallery. The panels have been found to be remnants of wall panelling, probably salvaged from an earlier, recycled scheme. Alongside a discussion of Decamps's purchase of his house and Corot's decorative work, this paper presents a detailed description of the panel supports, and analysis and discussion of the distemper layers with which the panels were originally painted with reference to manuals on interior decoration of the late 18th and early 19th century. It concludes with a discussion of the studio itself and the probable positions of the four panels.

## Decamps's house

On 11 July 1858 the orientalist and Barbizon artist, Alexandre-Gabriel Decamps, bought a house at 108 rue de France, Fontainebleau (Fig. 1). This was the second property he owned in the town – he was already in possession of a small house in an adjacent street, 26 rue Saint-Merry, which he had inherited from his mother. The rue Saint-Merry house was described by both his biographer Adolphe Moreau and Decamps himself as a *pied-à-terre* and he may have felt the need to buy something grander and more spacious.<sup>1</sup> He lived in the house in the rue de France for only two years; on 22 August 1860 he died after falling from his horse while out riding in the Forest of Fontainebleau.

Decamps's new house had originally been built in around 1825–30 as the *Hôtel Britannique*.<sup>2</sup> After moving there in 1858, Decamps embarked on a decorative scheme for the dining room. He painted a number of works on canvas on the theme of food and in addition he commissioned a further painting by François Bonvin and two by Philippe Rousseau. Unfortunately most of these paintings seem to have disappeared but two by Decamps – *Still Life with Herring, Bread and Cheese* and *Still Life with Pipe and Matches* – are now in the collection of the Cleveland Museum of Art, Cleveland, USA.<sup>3</sup>

We do not know the circumstances under which Decamps and his friend Jean-Baptiste-Camille Corot (1796–1875) agreed the latter would paint the *The Four Times of Day* series for his studio, but it was most probably in the same year: 1858. Decamps and Corot shared both a friendship going back a number of years and a long association with the town of Fontainebleau and its surrounding forest. Corot had been a frequent visitor to Decamps's smaller house in the rue Saint-Merry and, together with other Barbizon painters



Fig. 1 108 rue de France, Fontainebleau. (Image: Patrick Daguenet.)



**Fig. 2** Jean-Baptiste-Camille Corot, *The Four Times of Day*, c.1858, oil on panel, 142.2 × 72.3 cm (*Morning*); 142.2 × 62.2 cm (*Noon*); 142.2 × 72.3 cm (*Evening*); 142.2 × 64.7 cm (*Night*), National Gallery, London. Bought with the assistance of the Art Fund (with a contribution from the Wolfson Foundation), 2014. From left to right: *Morning* (NG6651), *Noon* (NG6652), *Evening* (NG6653), *Night* (NG6654).

Théodore Rousseau and Narcisse Diaz, he apparently painted directly on its interior walls. A description of these paintings was included in the 1884 obituary of the publisher Edouard Dentu (who married one of Decamps's daughters, Louise-Léonie Faure-Decamps):

Dentu even owned and Mme Dentu still devoutly looks after the small house where Decamps shut himself up to work in the forest of Fontainebleau. At times Corot, Rousseau, Diaz came to join the Orientalist master, and each of them, in the manner of a visiting card, added to the door or the wall some stroke of the paintbrush. There are, without taking into account the unrecorded works by Decamps, unknown Corots in the painter's small house.<sup>4</sup>

These decorations in the rue Saint-Merry house have long since disappeared but fortunately the beautiful panels depicting the four times of day (Fig. 2), which Corot executed for the rue de France house, have been preserved. They came on long-term loan from the Loyd Collection to the National Gallery in 1997, and were acquired in 2014. The panels show four different landscapes, tracing the day's progress from glowing dawn to starry night. They are indebted to the classical landscape tradition that evolved in the 17th century, with each scene viewed, as in a theatre set, framed on either side by tall, graceful trees. The decorative tradition of depicting times of the day had reached its height of popularity in the 18th century, as exemplified by the many schemes of artists such as Claude-Joseph Vernet. An artist's skill at rendering nature under different light conditions was also integral to the tradition of *plein air* oil

sketching, a tradition practised by Corot in both his native France and during three visits to Italy. Corot was a prolific painter of decorative schemes for patrons, friends and fellow artists. While *The Four Times of Day* is the only one to treat this subject, many of his decorations contrasted the light of morning and evening, as in the later pair painted in c.1865–70 for Madame Castaignet at Monthléry: *Le matin – Gardeuse de vaches* and *Le soir. Tour lointaine*.<sup>5</sup> The four panels that he painted for fellow artist Léon Fleury around 1855–65 for the dining room of his house at Magny-les-Hameaux also exhibit very distinct lighting effects, such as the peachy cream touches in the clouds and horizon of *Wooded Landscape (Evening)*.<sup>6</sup> The painting technique of many of his decorative schemes is very broad and direct; this applies particularly to *The Four Times of Day*, where the sketchy brown *ébauche* is visible throughout. Many details, such as the figure and his dog in *Night* are painted in thin, dark brown paint, the dog appearing simply as a thin brown silhouette. In places, Corot used the end of his brush to scratch into the wet paint, as in the grasses on either side of the tree trunk in *Noon*.

Corot famously completed *The Four Times of Day* within a week. In his 1875 study of Corot, Henri Dumesnil reported a conversation with the artist on 22 January 1865:

The free and easy handling, perhaps even more than was usual, was caused by the rapidity with which they were painted:- [*sic*] in one week; it came quickly and well. Decamps, dazed by this extraordinary agility, said from time to time to his friend: 'Not so fast, don't hurry yourself so, there is enough soup here for a few more days!' But, replied Corot, from whom I have these



details, 'it had a momentum of its own: I could not hold myself back'.<sup>7</sup>

Corot's biographer Alfred Robaut also recorded that Decamps spent hours contemplating the panels, and that his dismay at their quality in relation to his own work led him to comment:

What a misfortune to see that at my age. Ah! If I were to start my career again how I would give up all my cooking and my sauces. Why has it all been ruined for me? That is what has lost me my career, because it has prevented me from looking sufficiently. What I have been lacking is your supreme possession: sincerity.<sup>8</sup>

The following description by Dumesnil is almost certainly the first published reference to these works: 'Four panels, large in height, representing the Four Times of Day, decorated the studio of his friend Decamps, at Fontainebleau'.<sup>9</sup> They are, however, also listed in the unpublished 1861 inventory of Decamps's estate: 'In the studio, three landscape studies, and in a little room leading to the attic, a Turkish School by Decamps, Summer by the same, four landscapes on wood panels by Corot, and various sketches'.<sup>10</sup> Decamps's original studio (his *cabinet de travail*), as recorded in the inventory, was a room on the first floor of the main house in which he stored the majority of his paintings; these were inventoried by Philippe Burty in 1860 and had been removed by March 1861. The Corot panels were in storage in an adjoining room, 'the little room leading to the attic', at the time the inventory was taken. However, according to an article of 27 March 1864 in the local paper, *L'Abeille de Fontainebleau*, Decamps was preparing a room situated on the first floor of the left-hand of 'two lodges' or pavilions set in the courtyard in front of the house for his studio, which was still unfinished at the time of his sudden death (Fig. 3). This studio was described in detail in an article dated 10 April 1864 reporting on the forthcoming sale of Decamps's two houses (when presumably that at 26 rue Saint-Merry did not sell).<sup>11</sup> In an account of the house and its outbuildings, the article describes the left-hand lodge as:

that on the left composed on the ground floor of a stable for two horses near to which is the dung-pit, with a hayrack and wooden manger, of a saddlery with a canopy over the door, of a room for two carriages, of a vestibule containing the stairs; on the first floor, a large landing lit by a window and a French window and vast studio looking over the courtyard and with a window over the road, a chimney for a studio stove.

In other words, Decamps was preparing a studio in an outbuilding, on the upper floor of a stable block, and there is no doubt that, as a keen rider, he would have kept horses in the stables below. A visit to the house confirmed that the interior of the upper floor corresponds to both the descriptions in the inventory and the article.<sup>12</sup> A staircase leads up to the main room in which two windows look out onto the courtyard, and there is, at the end, a further small room.



**Fig. 3** Lodge with stabling and atelier on first floor, 108 rue de France, Fontainebleau. (Image: Patrick Daguene.)

### Corot's *The Four Times of Day*: materials and techniques

The rough overall dimensions of *The Four Times of Day* are 142 × 65 cm per panel, although *Morning* and *Evening* are slightly wider than *Noon* and *Night*.<sup>13</sup> Each painting is actually a composite made up of two panels sandwiched together. The 'upper' or 'foremost' painted panel is slightly smaller in dimensions than the 'lower' or 'background' panel onto which it has been adhered (Fig. 4). The resulting shallow border around the edge is approximately 13 mm wide. The wood from which the panels are made appears to be cherry although this has not been confirmed.<sup>14</sup> The X-radiographs show a dense material in a continuous band around the edge of the smaller panel in each case (Fig. 5), presumably the adhesive that was used to sandwich the two panels together. The panels have been thinned and cradled, procedures believed to have been carried out at a later date either in the late 19th or early 20th century. The resulting effect of this arrangement (a smaller panel stuck on top of a larger one) is that of a simple relief decoration. The same type of relief decoration – raised flat areas with shallow borders around them – was (and still is) commonly encountered in modest forms of wooden wall panelling made in France. Indeed, looking more closely at Corot's *Four Times of Day*, the less they seem like panels that have been specifically prepared as painting supports, and the more likely it seems that they started life as wall panelling.

A surprising characteristic of the panels is the relatively poor quality of the supports: there are numerous knots and prominent wood grain visible throughout. Viewed in raking light, the surfaces appear rough and uneven (Fig. 6). However, one 18th-century source referred to 'the defects, cracks, knots and the different shades that one typically encounters in the wooden boards used for wall panelling'.<sup>15</sup> In other words, it was entirely usual that relatively poor quality wood would be used for this purpose. Another notable feature is the large number of boards. Each of the panels is made up of a number of narrow vertical boards: four on average for the upper and lower panels, i.e. eight boards in total for each painting (Fig. 7). One



Fig. 4 Detail of the top left corner of *Noon*, National Gallery, London

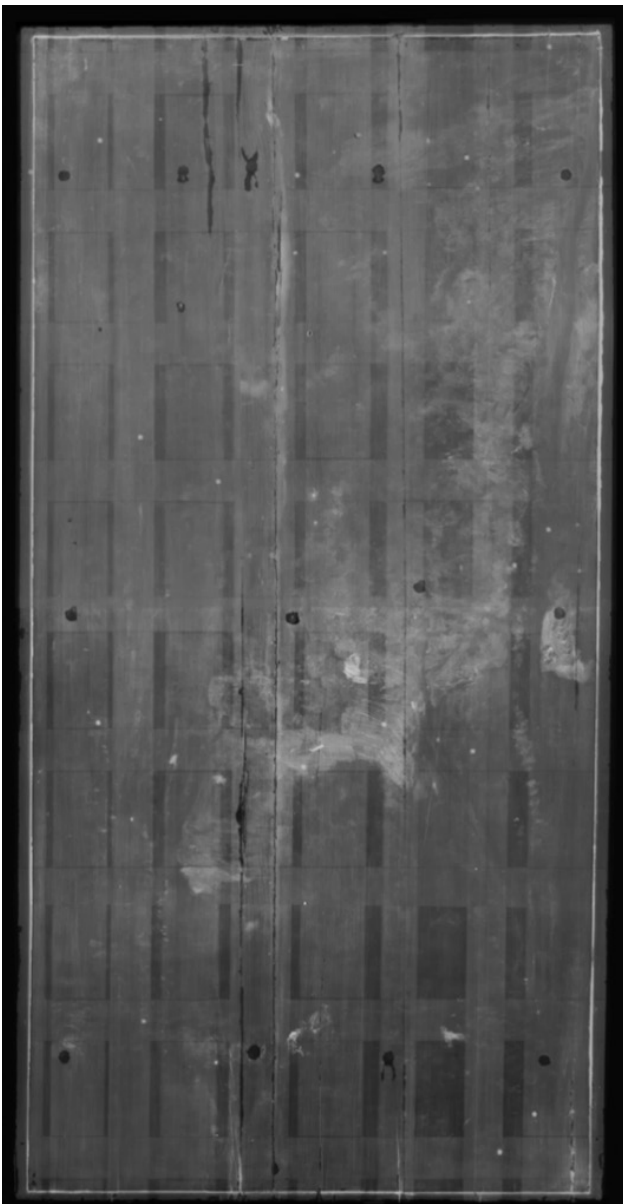


Fig. 5 X-radiograph of *Evening*, National Gallery, London.



Fig. 6 Raking light photograph of *Noon*, National Gallery, London.

of the most useful sources for descriptions of wall panelling in the 18th century is André Jacob Roubo's *L'art du menuisier, première partie et seconde partie* of 1769–70. According to Roubo, in order for the boards to be as straight as possible with a reduced chance of warping and splitting, the widest should fall between 6 and 8 (French) inches: a comparatively narrow measurement.<sup>16</sup> Although at least three of the boards used for *The Four Times of Day* exceed this limit, the average board width is approximately 15 cm (6 UK inches), in keeping with Roubo's suggestion.

In the case of simple wall panelling without any carving, Roubo advised the use of tongue and groove joints (Fig. 8).<sup>17</sup> All the joints that can be seen in the supports used by Corot are of this type, albeit in a partial state due to the

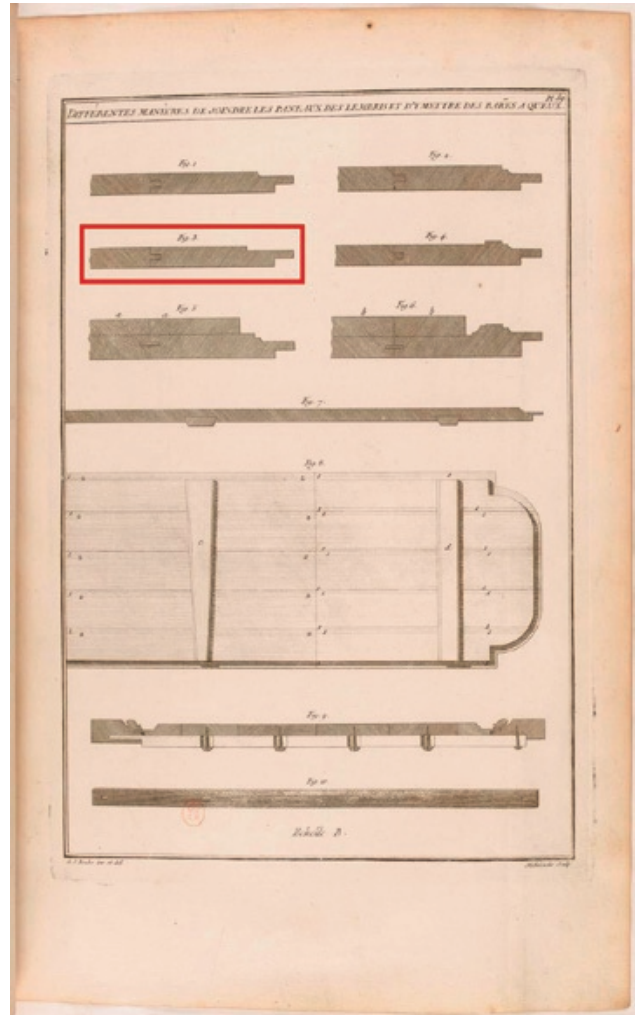




**Fig. 7** X-radiograph of *Evening*, National Gallery, London. The boards of the upper panel are delineated in yellow; the boards of the lower panel are indicated in red.

panels having been thinned (Fig. 9). Incidentally, it can be inferred from the remains of the joint that approximately one-third of the original thickness of the panel has been lost, reducing it from about 7.5 mm to the current thickness of 5 mm.

The same images that Roubo used to illustrate board joints also demonstrate a range of panelling profiles (Fig. 8). It is interesting to note that the profiles of the supports for *The Four Times of Day* (Fig. 10), notwithstanding the loss of the original shape of the reverse, relate to the very simplest of Roubo's diagrams. However, there is an important difference:



**Fig. 8** Plate 59 from André Jacob Roubo's *L'art du menuisier, première partie et seconde partie* (1769–1770, p. 59). Figs 1–4 show tongue and groove joints; Figs 1–6 show a range of panelling profiles (with a red box around the profile that is closest to Corot's). Different ways of attaching reinforcing battens are shown in Figs 7–10. (Image: Bibliothèque nationale de France.)

the panelling upon which Corot painted is quite distinct from Roubo's models in that it required very little in the way of carpentry as no wood was removed to create the border. It appears to represent a rather lazy, crude and presumably cheaper version of Roubo's third figure (shown in Fig. 8). The presumed use of cherry is also interesting, given that the wood type most commonly used for wall panelling was oak, although other wood types (chestnut, lime and pine) are also known to have been employed.<sup>18</sup>

Roubo proceeded to discuss the use of reinforcing battens, which could either be set into a channel in the back of the panelling or screwed into the back (Fig. 8).<sup>19</sup> Two of the National Gallery panels, *Noon* and *Evening*, had reinforcing battens attached by means of screws. The battens and the screws have long since been removed, but in each case three rows of old screw holes can be seen indicating where they were attached (Fig. 5).<sup>20</sup> The screws were put in from the front and covered with fill material, confirmed by analysis as consisting predominantly of chalk.<sup>21</sup> This is a similar material to that recommended by Pierre François Tingry for filling nail



**Fig. 9** Detail of the top edge of *Morning*, showing the partial tongue and groove join between the first and second boards.

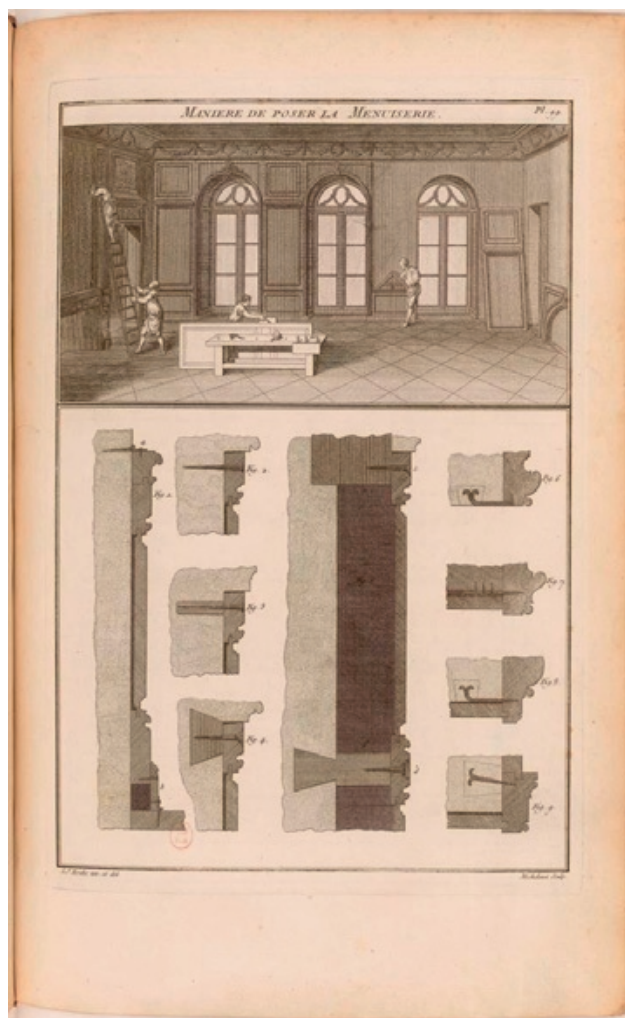


**Fig. 10** Detail of the top right corner of *Night* in profile, including the cradle member which represents half of the thickness of the panel as it appears today.

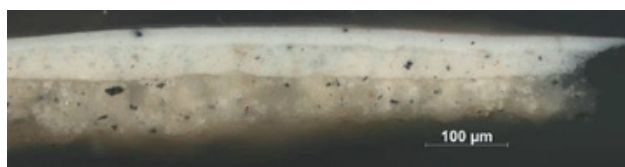
holes in wooden panelling prior to painting: ‘ceruse [a mixture of lead white and chalk] putty or glazier’s putty’.<sup>22</sup> It is not known why only two of the panels had battens but the most plausible explanation is that this relates to the poorer quality of the wood making up these panels: this is particularly obvious in the case of *Evening*, which includes several areas of very uneven grain. Quite possibly it was deemed wiser to reinforce certain groupings of boards, which might not remain straight without extra reinforcement, but unnecessary for others.

Finally, in his description Roubo provided important information on the mechanism and procedure for physically attaching the panelling to the wall (Fig. 11).<sup>23</sup> First, a wooden support structure (*l'appui*) was fixed to the wall. The upper or central section of panelling (*le dessus*) was then slotted in, tongue and groove, like a painting being fitted into its frame. No nails or screws were used to attach the ‘upper’ panelling. It seems, however, that this might represent an ideal scenario, perhaps more typically encountered in wealthier settings, as recent research indicates that a range of attachment methods was used.<sup>24</sup> In the case of *The Four Times of Day*, the evidence of small, randomly positioned nail holes across the four panels suggests that these may have been the means of attachment or at least an auxiliary method.

Technical analysis of the paint layer structure provided an opportunity not only to examine Corot’s materials and technique, but also to investigate the original finish of the wood



**Fig. 11** Plate 99 from André Jacob Roubo’s *L’art du menuisier, première partie et seconde partie* (1769–1770, p. 99). Figs 1–5 illustrate methods of attaching panelling to the wall (shown in profile). (Image: Bibliothèque nationale de France.)



**Fig. 12** Cross-section from the left-hand edge of *Morning*, shown in darkfield at  $\times 20$  magnification.

panelling in its household context. Cross-sections taken from the edges of the paintings and the borders revealed that beneath the ground and paint layers were layers of what appeared to be a pale grey distemper (Fig. 12). Analysis of these layers confirmed a very high proportion of chalk, most probably in a proteinaceous binder.<sup>25</sup> After seeking the opinion of a historic interiors conservator and researcher, it was confirmed that the lowest layers looked like a chalky glue-size house paint. (Interestingly, the conservator noted that distemper in cross-section resembles sorbet as opposed to oil paint which looks more like ice-cream.)<sup>26</sup> Unfortunately, due to sampling difficulties, it was not possible to confirm whether this distemper continued under the painted compositions, but it is highly likely that it does. It almost certainly





Fig. 13 Interior of atelier, 108 rue de France, Fontainebleau. (Image: Patrick Daguenet.)

represents the original coating applied onto the wood paneling before it was employed as an artist's support.

Two important books by Jean Félix Watin and Pierre François Tingry published in the late 18th and 19th century provide comprehensive accounts of the materials and methods of interior house painting in France, including large sections devoted to distemper. Watin's *L'art du peintre, dorure et vernisseur*, first published in 1772, was in its 14th edition by 1906 while Tingry's *Traité théorique et pratique*, first published in 1803, was in its third edition in 1830. Watin introduced the subject thus:<sup>27</sup>

To paint in distemper is to paint with colours that have been ground in water and tempered with glue. Distemper is surely the oldest method of painting. Well-executed distemper painting will stand the test of time; it is the most commonly employed method of painting; it is used for plaster, wood and paper; entire rooms are decorated with it.

Watin and Tingry both state that there were three types of distemper:<sup>28</sup>

- Common distemper;
- Varnished distemper, called *chipolin*; a variety containing more expensive pigments than common distemper, and a finishing varnish layer;
- The King's white, a very complicated and also fragile version of distemper painting requiring the most expensive pigments and multiple applications of paint.

Given the inexpensive materials in the distemper layer on the Corot panels – chalk (the cheapest white material

available for the purpose) with small amounts of charcoal and red earth – there is little difficulty in characterising it as common distemper. Watin went on to make an entirely fitting comment that 'common distemper is the one used for rough work not requiring a lot of care, and which doesn't demand any preparation, such as ceilings, floorboards and staircases.'<sup>29</sup>

The changing fashions in interior decoration for prestigious interiors have been carefully charted and were in all likelihood reflected in the decoration of more modest houses.<sup>30</sup> We know that wall panelling (the ornate variety known as *boiseries*) was generally stained dark brown and left unpainted at the beginning of the 18th century, but from 1730 onwards light colours (delicate yellows, greens and blues) were preferred. From 1750, although light colours were still used for private quarters, white and gold were the main choice for ceremonial rooms or sometimes grey.

More specifically, in relation to the colour of the distemper under *The Four Times of Day*, Tingry states that 'these light grey backgrounds are very sought after for rooms, especially when they are in a position to receive full sunlight'.<sup>31</sup> Both Watin and Tingry provided extensive instructions on how to make different light grey colours, such as silver grey, pearl grey, flax grey and ordinary grey, by combining different blacks and some other pigments with white.<sup>32</sup> The light grey beneath *The Four Times of Day*, which consists of chalk and carbon black with traces of red earth pigment, is undoubtedly 'ordinary grey'.<sup>33</sup> Both authors detailed the exact method for its preparation but Watin's description follows:<sup>34</sup>

1. Crush some Spanish white [chalk]<sup>35</sup> in water, let it infuse for a couple of hours.
2. At the same time infuse some carbon black in water.

3. Mix the black with the white, just the amount to get the tint you want.
4. The tint ready, distemper it with a good strong glue, sufficiently thick and hot.
5. Spread it on the subject; one can apply several layers.

The grey colouring of the distemper suggests a date of installation and painting of these panels as between the mid-18th and early 19th century, when we know grey was fashionable. At an unspecified later date, however, the panels underwent a subtle colour change. Cross-sections taken from *Morning* and *Evening* demonstrate the presence of a second chalky distemper layer on top of the first, apparently white rather than grey, with an intermediary size layer.<sup>36</sup> This rather uneven second layer almost certainly represents a quick 'freshening up' of the first decoration, a commonplace occurrence.<sup>37</sup> The intermediary glue layer is entirely expected; it was understood that paint layers with high levels of chalk could be very dry, and that it could be difficult to make a new layer stick.<sup>38</sup> The size layer would have been applied to counter this potential problem.

Given that the landscapes were painted on wall panelling, an important question to consider is whether these four panels were ever fitted into a panelling framework in Decamps's studio; the alternative is that Corot painted on loose pieces of wall panelling, dismantled from elsewhere, and that they were subsequently hung on the studio wall in the manner of easel paintings. It is unlikely that the Hôtel Britannique was originally panelled during construction. When it was built in the 1820s, the fashion for installing new schemes of panelling was already in decline and being replaced by fabrics and wallpapers in particular.<sup>39</sup> However, the vogue for panelling did not totally die out in France during the 19th century, and recycled panelling could have been installed in the house at some point before the 1850s or by Decamps himself. The poor quality of the panelling here – hastily assembled and roughly finished – and the cheap variety of distemper that was used suggests one or both of the following possibilities: that the panelling started out life in a rather modest dwelling, and that if it had subsequently been installed in the house, it would have been placed in a room of low status. The description by Dumesnil of Corot's panels (*quatre grands panneaux en hauteur*) does suggest that they were four separate panels rather than an integral part of the wall decoration.<sup>40</sup> As stated above, the inventory also indicates that in March 1861, the panels along with other paintings were not located in the main room of the studio but in an adjoining small room, having undoubtedly been removed from the walls for storage purposes. This further suggests that they were loose panels rather than part of the panelling scheme. The panels used by Corot were perhaps provided by Decamps and may have been sourced from old pieces that had previously been fitted in the house.

Corot was no stranger to painting on such supports. Indeed, in many of his other decorative schemes he painted directly onto the walls – not only onto wood panelling but also onto plaster. His very first scheme, now destroyed, was painted in around 1834–35 alongside those of a number of

other artists. This was for the salon of the apartment shared by Gérard de Nerval, Camille Rogier and Arsène Houssaye in the Impasse du Doyenné near the Palais du Louvre. According to Houssaye, they were painted directly onto the 'white panelling outlined with gold', presumably installed in the 18th century. Gérard de Nerval managed to save some of the panelling, including Corot's 'two long panels representing two landscapes of Provence', but unfortunately these have been lost.<sup>41</sup> In the 1840s, Corot painted a scheme of scenes of Italy for the bathroom belonging to François Robert in Mantes, this time painting directly onto the plaster walls without any preparation.<sup>42</sup> In the 1850s, he painted four landscapes for the family of Daniel Bovy in the Château de Gruyères in Switzerland. These were painted directly onto the 18th-century wall panelling which Bovy had prepared: the priming was an ivory-coloured paint onto which he had drawn the ovals to contain the landscapes.<sup>43</sup> Robaut also noted that Corot painted the scenes for Léon Fleury directly onto the wall; as with the Robert bathroom they have since been either lined or transferred onto canvas, and it is difficult to determine their original support.<sup>44</sup> In the case of *The Four Times of Day*, Corot, or perhaps Decamps, primed the panels with two layers. Although this appears to contradict Corot's previous practice of painting on walls without any preparation, the particular rough surface of these panels may have rendered this priming necessary.

## The sequence, before and after Decamps's death

Decamps's original studio was situated on the first floor of the house, at the beginning of the corridor, with a window at each end, one overlooking the garden and the other the courtyard. Initially Decamps probably hung *The Four Times of Day* in this studio as a continuous row on either of the other two walls, at right angles to the windows. However, this was almost certainly a temporary hang (which can be taken as further evidence for their not being part of a panelling scheme). Decamps's ultimate intention was almost certainly to hang them in pride of place in his new studio in the pavilion (Fig. 13), and it seems logical that he had in mind the long wall opposite the windows, the only one where they could also have been hung as a row. When the series is viewed in such a way, it is striking how carefully worked out the compositions are, despite Corot's speed of execution (Fig. 2). The landscapes, the grouping of the trees and placement of the signatures were obviously meticulously planned around the sequence in which they would have been hung. *Morning* and *Evening* are signed on the left, *Noon* and *Night* on the right. In *Morning*, the two substantial tree trunks on the left are offset on the right by two rather delicate specimens; in *Noon*, the composition is reversed, with the more spindly trunks set on the left, and slightly farther back, and the clump of fuller-leaved trees set on the right on a grassy bank around which the path curves. In *Evening*, the thicker clump of trees are set on the left with the thinner trunks on the right, and in



*Night* one slender trunk is positioned on the left and a thicker clump of slender trees on the right. Both *Noon* and *Night* have paths leading the eye into the landscape. Viewed in a row, one can appreciate how the rock in *Morning* is balanced by the hilltop town in *Night*, how the mass of trees is placed at the centre and even how the four different landscapes flow seamlessly from each other. It is logical to conclude that they were conceived as a unit. Even if Corot was not intending to paint directly onto the walls, as in other decorative schemes, he was clearly envisioning an effect created by a sequence of panels hung together in the manner of interior panelling.

After Decamps's death, the panels were sold along with his other effects in Paris in 1865. They were bought by Frederic Lord Leighton and displayed in the drawing room of his house in Holland Park Road, London. An 1866 report describes how they were initially hung: 'in the walls are four paintings by Corot, in panels wrought in cement, and intended to be fixtures'.<sup>45</sup> The term 'cement' probably referred to a sort of plaster or stucco; it is notable that both *Morning* and *Evening* have the broken remains of a putty around the inner edges of the borders that lies not only on top of the grey distemper layers, but also on the priming layers, indicating that it postdates Corot's landscapes and could perhaps represent a vestige of a stucco frame. Other paintings owned by Leighton, including two large 16th-century Venetian paintings, were also treated as fittings and encased in plaster picture frames fixed into the wall.<sup>46</sup> It is probable that Corot's panels were not framed while they hung in Decamps's studio, thus necessitating the addition of frames after their purchase in the sale. However, the theory of stucco frames has to remain a hypothesis (pending further research), particularly in view of the fact that only two of the panels exhibit putty remains. In addition, an 1895 photograph of the drawing room, probably taken by Adolphe Augustus Boucher, shows them hung in conventional frames on either side of a recessed window. Leighton ignored their proper sequence, choosing instead to pair *Evening* and *Noon* on the left and *Night* and *Morning* on the right.

## Conclusions

A combination of visual examination and technical analysis has provided an insight into the modes and practices of interior decoration in late 18th- and early 19th-century France, leading to an understanding of the original function of the panels used by Corot. In addition, archival research and a study of their original location have shed light on how they were probably hung, and the probable sequence of hanging.

## Acknowledgements

We would like to acknowledge the invaluable help provided by the following: the current owner of the house in Fontainebleau; Elizabeth Gaillochot-Bordé and her daughter Pomme Cramer; the author and

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## Notes

1. See A. Moreau, *Decamps et son Œuvre*, Paris, D. Jouaust, 1869, pp. xviii–xix and letter from Decamps dated 26 January 1853 to Philippe Comairas, published in A. Lajoix, 'Philippe Comairas (1803–1875), un peintre d'histoire oublié', *Bulletin de la Société de l'Histoire de l'Art français*, 2011, pp. 95–143, esp. p. 129.
2. The novelist George Sand stayed there on two occasions, with Alfred de Musset in 1833 and in July 1837 in the company of the comedian Bocage, under the names of Monsieur and Madame Gratiot; see P. Daguene, 'Jean-Baptiste-Camille Corot à Fontainebleau (1822–74)', *Fontainebleau: la revue d'histoire de la ville et de sa région* 4, 2014, pp. 33–40.
3. See L. d'Argencourt with R. Diederer, *Catalogue of Paintings. Part Four: European Paintings of the 19th Century*, vol. 1, Cleveland, Cleveland Museum of Art, 1999, pp. 208–211, nos. 75 and 76.
4. Anon., *E. Dentu 1830–1884*, obituary in *L'Illustration*, Paris, Impr. De Noizette, 1884, pp. 40–42.
5. See A. Robaut, *L'œuvre de Corot. Catalogue raisonné et illustré précédé de l'histoire de Corot et de ses œuvres par Étienne Moreau-Nélaton, ornée de dessins et croquis originaux du maître*, 5 vols in 4, Paris, H. Floury, 1905, nos. 1792 and 1793. Both are now in the collection of the Musée d'Orsay, Paris.
6. See Robaut 1905 (cited in note 5), nos. 1179–80. This scheme included *Wooded Landscape (Morning)* and *Wooded Landscape (Evening)* (both Vienna, Österreichische Galerie Belvedere), *The Italian Villa behind Pine Trees* (Kunstmuseum Basel), and *The Fisherman* (Collection of Frank and Demi Rogoziński).
7. See H. Dumesnil, *Corot: souvenirs intimes*, Paris, Rapilly, 1875, p. 67.
8. See A. Robaut, *Notes, croquis, photographies, estampes*, 35 cartons, Bibliothèque de France, département des Estampes, manuscript BN/CE SNR, déposé à la documentation du département des Peintures, Musée du Louvre, vol. 18. The anecdote is given in slightly different form in A. Robaut, 'Corot: peintures décoratives', *L'Art* XXI, 15 October 1882, pp. 45–53 esp. p. 48 and by Moreau-Nélaton in Robaut 1905 (cited in note 5), vol. I, p. 188.
9. 'Quatre grands panneaux en hauteur, représentant les *Quatre heures du jour*, ornaient l'atelier de son ami Decamps, à Fontainebleau'; see Dumesnil 1875 (cited in note 7), p. 67.
10. 'Dans l'atelier, trois études de paysage, et dans un petit cabinet conduisant au grenier une école turque par M. Decamps, L'été par le même, quatre paysages sur panneaux de bois de Corot et ébauches diverses.' *Decamps inventaire après décès*, dated 18 March 1861. Minutes et répertoires du notaire Maxime François Gripon, Archives Nationales, Paris, MC/ET/LV/456.
11. 'Vente des deux maisons Decamps', *L'Abeille de Fontainebleau*, 10 April 1864. We thank Patrick Daguene for drawing our attention to these articles.

12. Visit made by Sarah Herring, 23 April 2016.
13. *Morning and Evening* both measure 142.2 × 72.3 cm; *Noon* measures 142.2 × 62.2 cm; *Night* measures 142.2 × 64.7 cm.
14. Peter Schade and Britta New, both of the National Gallery, London, examined the panels in May 2016 and believe them to have come from a fruit tree, specifically cherry.
15. Quoted in J. Feray, *Architecture intérieure et décoration en France des origines à 1875*, Paris, Berger-Levrault, 1997, p. 225.
16. See A.J. Roubo, *L'art du menuisier, première partie et seconde partie*, Paris, Saillant et Nyon, 1769–1770, p. 172.
17. See Roubo 1769–1770 (cited in note 16), p. 171.
18. See K. Scott, *The Rococo Interior: Decoration and Social Spaces in Early Eighteenth-Century Paris*, New Haven and London, Yale University Press, 1995, p. 14.
19. See Roubo 1769–1770 (cited in note 16), pp. 172–173.
20. Examination of the X-radiographs of *The Four Times of Day* initially seems to show that the screw heads are still present, but they are in fact imprints of the screw heads in the fill material.
21. Calcium carbonate was confirmed using Fourier transform infrared (FTIR) spectroscopy.
22. See P.F. Tingry, *Traité théorique et pratique sur l'art de faire et d'appliquer les vernis, sur les différents genres de peinture par impression et en décoration, ainsi que sur les couleurs simples et composées. Accompagné de nouvelles observations sur le Copal, de notes historiques sur la nature de matières et sur les procédés mis en usage par les compositeurs de couleurs et de vernis, at par les peintres vernisseurs et décorateurs, &c. &c. &c. avec gravures*, Geneva, G.J. Manget, 1803, p. 143. For a full explanation of 'ceruse', see R.D. Harley, *Artists' Pigments c.1600–1835*, London, Archetype Publications, 1982, p. 171.
23. See Roubo 1769–1770 (cited in note 16), pp. 165–166.
24. See A. Forray-Carlier, *Les boiseries du Musée Carnavalet*, Dourdan, Vial, 2010, p. 31.
25. Calcium was identified in cross-section using scanning electron microscopy with energy dispersive X-ray (SEM-EDX) analysis. FTIR carried out on an unmounted fragment of the chalky layer confirmed calcium carbonate (chalk). The strong carbonate band made identification of the binder difficult, but the results suggested a proteinaceous rather than an oil binder.
26. Helen Hughes, personal communication, January 2016.
27. See J.-F. Watin, *L'art du peintre, dorure et vernisseur*, 2nd edn, Paris, Grangé, 1773, pp. 65–66 (first published 1772).
28. See Watin 1773 (cited in note 27), pp. 65–83 and Tingry 1803 (cited in note 22), pp. 257–292.
29. See Watin 1773 (cited in note 27), p. 69.
30. For a history of the decoration of wealthy interiors, see Feray 1997 (cited in note 15), pp. 223–326 and Forray-Carlier 2010 (cited in note 24), pp. 46–61.
31. See Tingry 1803 (cited in note 22), p. 141.
32. See Watin 1773 (cited in note 27), p. 44 and Tingry 1803 (cited in note 22), p. 141.
33. Pigments were identified from paint cross-sections using SEM-EDX analysis.
34. See Watin 1773 (cited in note 27), p. 69 and for Tingry's description see Tingry 1803 (cited in note 22), p. 270.
35. For a full explanation of the different names given to chalk, see Harley 1982 (cited in note 22), pp. 164–166.
36. Analysis of cross-sections was carried out using optical microscopy and SEM-EDX. No black pigment was present in the second chalk layer of the two samples analysed therefore we can presume this layer was not intended to be grey.
37. Feray 1997 (cited in note 15), p. 223. Scott quotes from Girard's *Mémoire concernant l'établissement d'un peintre décorateur attaché et fixé au Département des châteaux du Roi*: 'Decorative painting is easily prone to losing its freshness, and if it is neglected, it soon deteriorates; sun, fresh-air and damp together conspire to destroy such works, either by eroding them in part or by destroying them completely'; see Scott 1995 (cited in note 18), p. 21.
38. See Tingry 1803 (cited in note 22), p. 271.
39. Now there is panelling in two of the ground floor rooms: unpainted wood in the dining room and simple grey and white panelling in the sitting room. Both schemes were installed during the 20th century. The scheme present in the salon in the 20th century was transported from the south of France (Patrick Daguene, personal communication, 14 March 2016 and 1 May 2016).
40. See Dumesnil 1875 (cited in note 7), p. 67.
41. See A. Houssaye, *Les confessions. Souvenirs d'un demi-siècle 1830–1880*, first published 1885–1891 (3 vols), vol. I, Geneva, 1971, pp. 298–299; G. de Nerval, 'Petits Châteaux de Bohême', in G. de Nerval, *Oeuvres. Textes établis, avec un sommaire biographique, une étude sur Gérard de Nerval, des notices, des notes, un choix de variantes et une bibliographie par Henri Lemaitre* (2 vols), vol. I, Paris, Éditions Garnier Frères, 1958, p. 10 (1st edn 1853); G. de Nerval, *Aurélia, texte présenté et commenté par Pierre-Georges Castex*, Paris, Société d'édition d'enseignement supérieur, 1971, p. 75 (1st edn, 1855). Nerval had first taken them to Dr Blanche's clinic.
42. See Robaut 1905 (cited in note 5), nos. 435–40. These paintings were transferred to canvas and are now in the Musée du Louvre, Paris.
43. See P. Clerc, 'Corot à Gruyères', in P. Lang *et al.* (eds), *Corot en Suisse*, Musée Rath, Geneva, Somogy, 2010, pp. 47–51 and no. 173. Robaut described the Gruyères panels as 'quatre panneaux décoratifs peints sur la boiserie du château de Gruyères'; see Robaut 1905 (cited in note 5), nos. 1078–81.
44. See M. Hohn, 'Stimmungsräume. Corots Wanddekorationen', in D. Schäfer *et al.* (eds), *Camille Corot. Natur und Traum*, Staatliche Kunsthalle Karlsruhe, Heidelberg and Berlin, Kehrer Verlag, 2012, pp. 293–299, esp. p. 294.
45. See the *Building News and Engineering Journal* 9 November 1866, quoted in D. Robbins and R. Suleman, *Leighton House Museum, Holland Park Road, London*, London, Royal Borough of Kensington and Chelsea Museums and Arts Service, 2005, p. 42.
46. This is noted in Robbins and Suleman 2005 (cited in note 45), p. 37. We are grateful to Barbara Bryant for bringing this to our attention and for her help concerning the history of Leighton House.

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# THE ART HISTORICAL AND TECHNICAL EXAMINATION OF SIR JOHN SOANE'S 'EXPERIMENTAL ROOM' AT NO. 12 LINCOLN'S INN FIELDS

Helen Hughes

**ABSTRACT** Recent research carried out at No. 12 Lincoln's Inn Fields, London, revealed that Sir John Soane used the Withdrawing Room of his own home as a laboratory for testing his avant-garde decorative schemes. During his 20-year occupancy of the house, Soane applied seven decorative schemes to the room, which illustrate the development of his experimentation with space, colour and painting materials. These schemes demonstrate Soane's interest in brightly coloured panelled wall decorations and the use of dark browns, possibly intended to imitate porphyry. His use of distemper rather than oil paint for the execution of a series of intermediate decorative schemes and their incomplete nature reflect the experimental nature of this phase of works, which probably date from c.1800. The Withdrawing Room of No. 12 retains evidence of the cross-fertilisation of ideas between Soane and the Crace family decorating firm. John Crace carried out work for the royal family at Carlton House, Woburn Abbey and the Royal Pavilion at Brighton. Soane and Crace also collaborated on decorating works in Soane's house and those of his private clients. This paper demonstrates the importance of combining documentary and material research to fully understand the evolution of historic interiors.

## Introduction: John Soane and the development of Nos. 12, 13 and 14 Lincoln's Inn Fields, London

This paper looks in detail at one room: the first-floor Withdrawing Room of Sir John Soane's family home at No. 12 Lincoln's Inn Fields (Fig. 1). The schemes applied by Soane during his occupancy of the house (1792–1813) reflect the decorations, materials and the painting techniques he was employing in the houses of his clients, and which were to dictate the decoration of British interiors during the 19th century.<sup>1</sup>

Sir John Soane (1753–1837), one of Britain's most famous architects, was born the son of a bricklayer. He trained as an architect and rose to the top of his profession, eventually becoming professor of architecture at the Royal Academy. His wife inherited a fortune from her uncle which enabled the couple to purchase a large 18th-century townhouse in 1792: No. 12 Lincoln's Inn Fields. After acquiring the property, Soane promptly demolished the existing house and replaced it with one of his own design. He and his family moved into

the house in 1793 and lived there until 1813. During the next four decades, Soane acquired the two adjacent houses: Nos. 13 and 14 Lincoln's Inn Fields. He repeated the process, in turn demolishing and rebuilding each property. By the time of his death Soane had created, by a process of continual adaptation, a structure that has been hailed as one of the most complex, intricate and ingenious series of interiors ever conceived.

In 1813, Soane and his wife (his two sons having left home) moved next door into No. 13 Lincoln's Inn Fields. The backyard area, which then contained his architectural office, was carefully incorporated into that of No. 13. After 1824, No. 12 was rented out to a series of small businesses, mainly firms of solicitors, the name of one of which has been retained on the outer face of one of the first-floor doors. Soane acquired No. 14 in 1823. Again, he incorporated the backyard of the house into the complex accessed from No. 13 as part of his office and collection display. But Soane never lived in No. 14: it was leased to tenants. After Soane's death in 1837, his property and all its contents were managed as a museum by trustees. To ensure that his collection was not dispersed, Soane had taken out an act of parliament which stated that the interiors



**Fig. 1** The exterior of No. 12 Lincoln's Inn Fields, London. The Withdrawing Room is located on the first floor.

of No. 13 were to be retained as they were at the time of his death. In 1873, No. 12 was sold and the building continued to be used by successive firms of solicitors. By the time the Sir John Soane's Museum trustees had the opportunity to reacquire No. 12, the Withdrawing Room had been used as office space for 140 years.

The room was then redecorated by the museum (1969–71) and used for administrative purposes and to house its extensive archive. At this time, the wall faces of the Withdrawing Room were covered with hessian-backed lining paper which was painted white. All the joinery, windows, window reveals, dado, skirting and doors were stripped revealing the rather poor quality softwood Soane had used to line the walls. The condition of the room after completion of these works was recorded by *Country Life* photographers in 1972. This was the decorative state of the room when the architectural paint investigation commenced in September 2009 (Fig. 2).

The research was carried out as part of a much broader project called 'Opening Up the Soane', which aimed to provide public access to most of the spaces that had originally been occupied by John Soane.<sup>2</sup> The aim of the architectural paint research was to establish the original decorations that Soane applied to the Withdrawing Room and other specified interiors within the museum complex. The investigation of the Withdrawing Room not only provided information on the development of the room, but also insights into changes in interior decoration fashions and painting materials during the late 18th and early 19th century, and a unique insight into the thought processes of an architectural genius.



**Fig. 2** The Withdrawing Room of No. 12 Lincoln's Inn Fields, London. View of the northwest corner, photographed in September 2009.

## Architectural paint research: documentation

The paint research programme was directed by two bodies of existing research: firstly, the extensive archival research carried out by the museum's deputy director Helen Dorey, who identified the documentation relating to the room; and secondly, the findings of the paint research programme carried out by Ian Bristow in 1993 in other rooms.<sup>3</sup> Previous paint investigation by Bristow at No. 12 had identified several original decorative schemes: Soane's use of a varnished Pompeian red on the walls and the early use of satinwood graining in the Dining Room, and a delicate trompe l'oeil trellis ceiling in the Breakfast Room hidden beneath 16 layers of paint (which was subsequently revealed by the conservator Pauline Plummer). A distinctive black glaze applied over a white undercoat to the walls of the Staircase Hall was 'intended to provide an antique or stone-like effect'.<sup>4</sup> It had been established that the outer faces of the doors on the staircase were originally grained in imitation of a blue-grey harewood (a stained sycamore).



The appearance of many of his interiors was recorded in a series of detailed watercolours commissioned by Soane but unfortunately there are no surviving watercolours of the Withdrawing Room of No. 12. The discoveries of the unusual decorative schemes applied by Soane in ground-floor rooms and the staircase of No. 12 in 1993 gave researchers hopes of finding equally ornate and innovative original decorative schemes in the first-floor Withdrawing Room. The most valuable piece of documentary evidence was Soane's plan of the first floor. The floor plan (Fig. 3) had been annotated, presumably by Soane, noting the proposed position of chairs, pier tables and the *sopha* in the Withdrawing Room. A small sketch in the right margin outlines the design of a large mirror placed over the chimneypiece on the west wall, and also denotes the placement of a dado rail and skirting. One of the most intriguing annotations was a note on the proposed decoration of the ceiling: 'Withdrawing Room. Ceiling painted light blue Sky - Rays in the lantern + a Lustre suspended from the same 24 by 1 : 3'. As the centre of the ceiling was fitted with a Medusa's head located in a recessed drum, Soane had obviously revised his original design intentions, abandoning the idea of a suspended hanging lighting feature. It had been assumed that the idea of painting the ceiling as an illusionistic sky ceiling had also been discarded.

Ad hoc notes in Soane's journal are the only record of payments to painters and decorators during the building works, but they do not specify the areas in which these craftsmen were working. In January 1793, £150 was paid to Mr Nelson 'on Dec(orating) of Lincoln's Inn Fields'; this may have been payment for a large amount of general painting works within and around the building. On 13 December 1793, Soane noted: 'Crace in full to this day £75', suggesting that some, perhaps more specialist, decorative work had been carried out at No. 12 by Craces by this date. Soane had already established a working relationship with the firm: John Crace had been employed to apply specialist finishes to the Bank of England, and Soane was to commission Craces to carry out further work at his own properties at Lincoln's Inn Fields and his house, Pitzhanger Manor in West London in c.1802.

The family firm of Crace had been greatly influenced by a team of French specialist decorative painters including Jacques Boileau and his principal assistant Louis-André Delabrière, who were working at Carlton House during the mid-1790s. The impact of Carlton House, the sumptuous townhouse of the Prince of Wales, on interior design of prominent houses at this period cannot be underestimated.<sup>5</sup> At Carlton House the French decorators created a series of dramatic interiors decorated with rich colours, marbling, grained decorations and illusionistic sky ceilings. It was claimed that John Crace had learned these painting techniques by observing these foreign painters, and had reintroduced the imitation of marbling and graining of woodwork into English decoration in the 1790s. The new paint finishes of Carlton Terrace were recreated almost immediately by his firm at No. 12 Lincoln's Inn Fields, and in later works for the Prince of Wales at the Royal Pavilion Brighton. Soane's journal of 1794 records a further payment to the firm – 'Crace for Lincoln's Inn Fields, 40.0.0': again, the specific work carried out was not itemised. Two years later in 1796, a further payment of £5.2.0 was paid to John Crace.

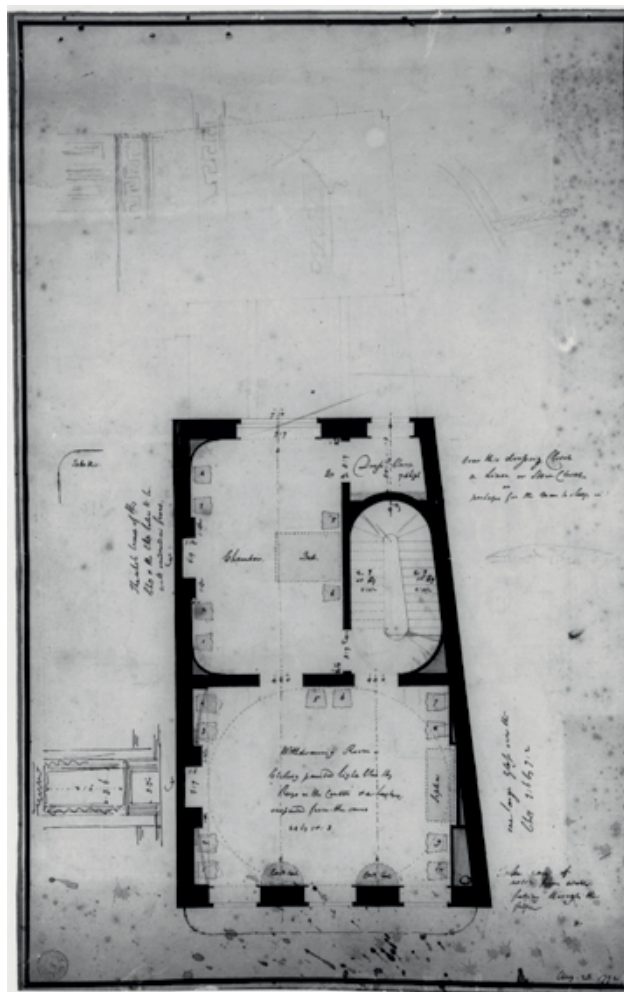
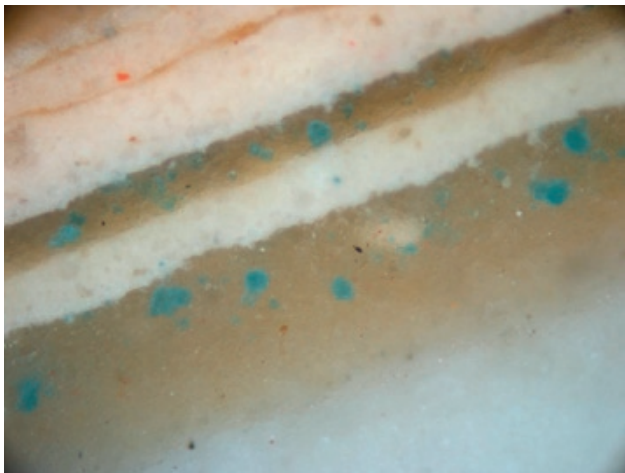


Fig. 3 First-floor plan, No. 12 Lincoln's Inn Fields, London, dated 12 August 1792 (Ref. 32/2A/5).

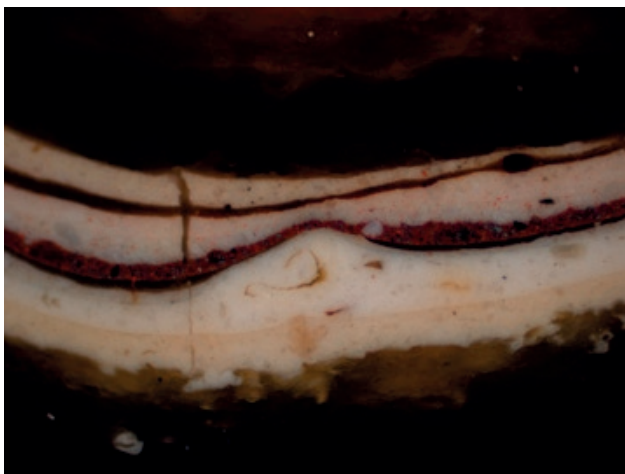
## Architectural paint research: the ceiling

The investigation of the applied paint finishes in 2009 began with the removal of paint samples from the slightly coved ceiling of the Withdrawing Room. Examination of the samples mounted in cross-section (Fig. 4), under high magnification ( $\times 50$ – $500$ ) using normal and ultraviolet (UV) illumination, revealed that Soane's instructions for a sky blue ceiling had indeed been carried out.

To create the illusionistic skied ceiling, the ceiling bed had originally been painted in a sequence of translucent blue distemper paint layers (tinted with the pigment blue verditer), and opaque white lead-based oil paint. Several clouded ceilings had been created at Carlton House: the ceiling of the Dining Room was painted to represent a light summer sky while that of the Circular Room was decorated with billowing clouds set against a blue sky.<sup>6</sup> There are numerous examples of clouded ceilings in Parisian townhouses of the 1770s and 80s. Although sky ceilings had been a feature of earlier English interiors, it has been suggested that it was those created at Carlton House during the 1790s that promoted their revival during the late 18th and early 19th century. Several clouded ceilings are included in Pyne's illustrations of the interiors of Frogmore House in Berkshire, which predate c.1819.



**Fig. 4** Cross-section of a paint sample from the ceiling bed (Ref. 7-5), ×200 magnification. Blue distemper layers and white cloud layers



**Fig. 5** Cross-section of a paint sample from the joinery (Ref. 15-AAA), ×200 magnification. The original varnished blue-grey harewood graining was overpainted in dark brown 'porphyry' decoration.



**Fig. 6** North wall of the Withdrawing Room. Detail of the surface of the discoloured varnished patent yellow scheme (Decoration 7 c.1810) under hessian. Areas of the red frame and black lining of Decorations 3 and 4 have been exposed.

The technique of creating sky ceilings is described in various house painter's manuals, but it is evident that there was an element of secrecy concerning the process and the materials used. The sky ceiling at No. 12 provides important physical evidence of the application technique, pigments and media, which helps to clarify existing documentary

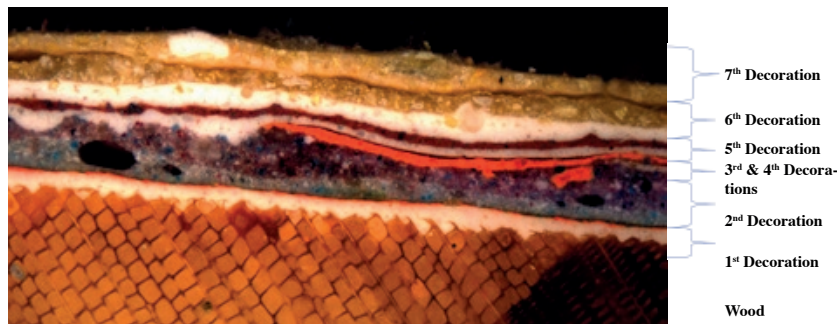
evidence. Crace's account of the work at the Saloon at the Royal Pavilion, Brighton, in 1802 confirms that the creation of a clouded sky effect was a two-stage process. The first stage, 'Three times fine Sky colour distemper', was the application of three coats of a sky blue paint. The second stage, carried out some days later, was the 'Clouding the doom [dome] ceiling': the application of clouds. It may be assumed that the clouds were executed in oil paint.<sup>7</sup> Clearly there was considerable scope for artistic invention and skill in building up the translucent and opaque layers to create the illusion of a clouded blue sky. The application of blue verditer in distemper demonstrates an appreciation of the working properties of this artificial copper carbonate pigment. While blue verditer discolours in oil and turns green, when applied in distemper it will retain its colour. The later application of the clouds – 'Clouding the doom' in an oil paint medium – does not seem to have been mentioned in manuals of the period, possibly a calculated omission to protect the 'tricks of the trade'. The opaque lead-based white paint would have created a sense of depth when applied over the more translucent blue distemper.

Close examination of the mounted samples taken from the ceiling of the Withdrawing Room at No. 12 reveals that both the clouds and blue sky may have been modified with small amounts of red and blue pigments, probably to create more dramatic overcast skies and clouds. Although they were popular in the early 19th century, by the 1820s such ceilings had lost their novelty value and were becoming rather commonplace. It was noted that the rage for clouded ceilings had 'of late much fallen off'.<sup>8</sup> An ornamental ceiling at No. 12 was restored by Crace in 1807, but Soane did not create a sky ceiling in No. 13 Lincoln's Inn Fields in 1813 – it seems that by this date he had already tired of this fashion.

## Discoloration of the sky blue ceiling

During the gradual exposure of the surface of the sky scheme in 2010, it became evident that the blue paint had become heavily discoloured and now looked green. The original contrast between the blue sky and the white clouds had been lost. This green discoloration is possibly due to a combination of factors. The ceiling was subject to prolonged exposure to coal fumes and/or tobacco smoke from 1792 onwards. The Crace bill of 29 October 1807 included an item for cleaning: 'Bread, Soap & including the expense of cleaning and repairing the ornamental painting.' This suggests that after 11 years of exposure, the sky scheme was in need of cleaning and renovation. It also implies that Soane was still fond of the sky ceiling so while he was making radical alterations to the rest of the room he was happy to retain the light airy quality of the original ceiling decoration. The major factor in the discoloration of the blue scheme was probably the oil from the painted decorations applied during the late 19th century; the oil-based undercoats would have been absorbed by the porous distemper layers.





**Fig. 7** Cross-section of a paint sample removed from the wall face panelling (Ref. BBB 45),  $\times 200$  magnification. Decoration 1: dark orange/red glaze applied over a white undercoat lies on the surface of the wood. Decorations 2–7 overlies the original decoration. Note two layers of coarsely textured patent yellow at the upper levels.

In 2010 it was decided to proceed with the uncovering of the entire scheme which, despite its discoloration and damaged condition, still retained the original 1792 Soane finish. Areas of loss caused by the installation of later light fittings and the addition of a chimney-breast on the east wall, as well as areas of paint delamination prior to the application of a later grained decoration, were carefully inpainted.

### Architectural paint research: the joinery

The paint investigation was then directed towards determining the appearance of the wooden joinery during Soane's occupancy. The joinery had been stripped during the 1969–71 refurbishment of the room, but it was discovered that the original decoration – a varnished blue-grey harewood graining – had been retained on several elements. Interestingly the overdoor panels on the north wall had been lined with paper rather than wood (perhaps as an economy measure by Soane) and the paper had retained all the historic paint layers. The original dado rail had been removed by Soane around 1800, and the original skirting was replaced during the 19th century, but it was still possible to detect the ghost of the original skirting which retained traces of the original paint. The inner door faces had been stripped, but the outer faces (those on the staircase landing) showed traces of the original blue-grey harewood graining.<sup>9</sup> Further research established that the dado face had originally been painted in the same finish as the skirting and doors. At a later date, the original harewood was overpainted by Soane in a distinctive dark brown paint, possibly intended to imitate porphyry (Fig. 5).

### Architectural paint research: the decoration of the wall faces

Areas of the 1960s lining paper and hessian were removed from the wall faces, revealing a brown-coloured paint layer that had been left exposed during the long period in which the room had been used as an office. Removal of the discoloured

surface of this decoration revealed that it had originally been a bright vibrant yellow colour and was in fact the last decorative scheme that Soane had applied to the walls of the room (Figs 6 and 7).

Tantalising glimpses of early red, purple and green decorations exposed during the investigations suggested that at some earlier date, the room had been very brightly decorated. Further on-site investigation established that sections of the east and west walls were originally finished in plaster, and the painted decorations in these areas had been applied over lining paper, while the north and south walls were lined with wood panelling. A series of paint samples was removed from all of the upper wall faces. Initial examination of the mounted paint samples was perplexing as some inconsistencies and anomalies were observed in what otherwise seemed to be a consistent stratigraphy pattern. To clarify the sequence of decorations, it was necessary to carry out further on-site revealing of specific areas and to take more paint samples for cross-section examination. It was eventually established that the room had been decorated seven times during Soane's occupancy. Each step in this decorative process is described in the following sections.

### Decoration 1: original decorative scheme (Fig. 8)

Examination of paint samples removed from the upper walls revealed that they had originally been decorated with a dark orange/red glaze applied over a white undercoat. The red glaze contained very fine pigment particles, evenly dispersed (or dissolved) in a varnish-rich oil medium. Examination of the dark orange/red glaze under UV illumination showed the layer to be a tinted varnish-rich glaze.<sup>10</sup> When an area of the surface of dark orange/red glaze was uncovered, it was observed that the glaze had been thinly applied over the white undercoat to produce a subtle translucent effect. The brushstrokes of the white undercoat are quite pronounced and provide a striated texture to the top coat of the decoration. It is likely that the colour has faded over time, and that the scheme was probably much brighter and richer in tone

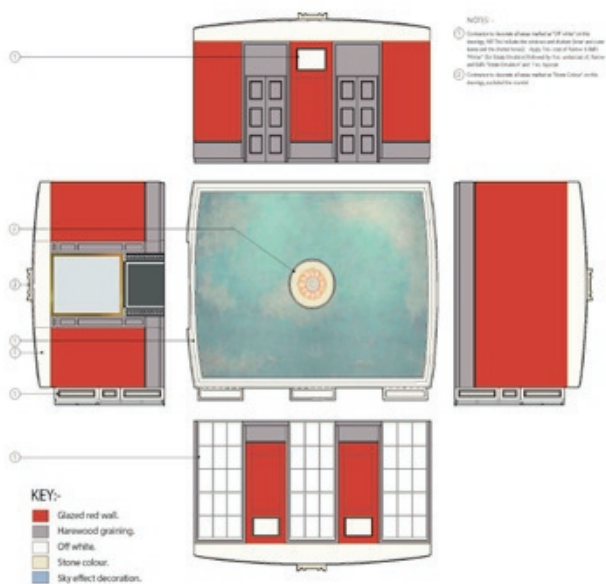


Fig. 8 Decoration 1: original decorative scheme.

when first applied. This decoration is subtly different from the original red decoration applied to the Dining Room on the ground floor, which was described as ‘a varnished deep red similar to that recently instated in the Study at No. 13, but of a more purplish cast.’<sup>11</sup> The use of deep red for the decoration in the Dining Room and the Withdrawing Room of No. 12 in the 1790s would have been quite extraordinary. The first decoration of the room – with its illusionistic blue sky ceiling, delicate red glazed walls, and joinery grained in imitation of blue-grey harewood – was a radical development that evidences Soane’s awareness of Roman antiquity and the schemes applied to the interiors of Carlton House.

### Decoration 2: an experimental phase (Fig. 9)

The intermediate decorative schemes discovered in the Withdrawing Room of No. 12 may be described as ‘experimental’ and evidence Soane’s interest in panelled wall faces and bold colours. The use of distemper rather than oil paint for the second decorative scheme is perplexing, and suggests that these decorations were temporary experiments. During this period Soane may have been influenced by the work carried out by the Craces at the Brighton Pavilion in c.1801, which divided the wall face into brightly coloured panels. Soane used panelled wall faces in the Library at Pitzhanger Manor (1801), and later offered less radical versions of this decorative style to his private clients. By c.1815, the use of painted panelling of walls had become commonplace in fashionable homes. During the second phase, painted panel beds were decorated in a mid-green-coloured distemper-type paint. The panel frames were painted in a coarsely textured purple-coloured distemper-type paint.<sup>12</sup> A thick black line was applied to cover the junction of the green and purple.

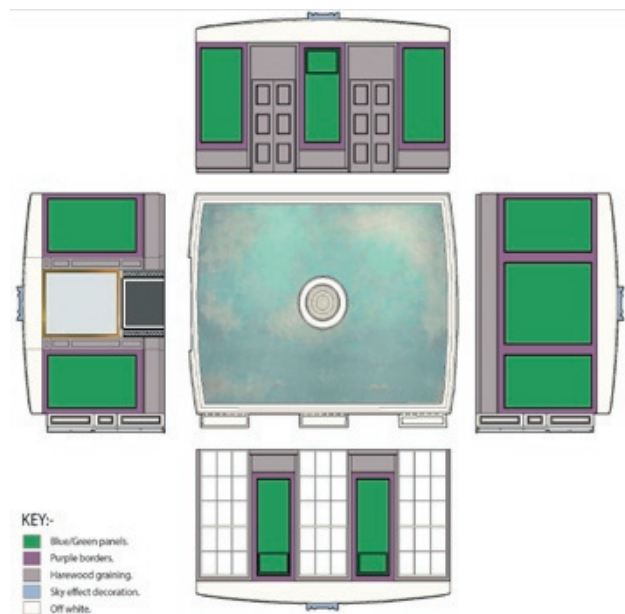


Fig. 9 Decoration 2: an experimental phase.

### Decoration 3: an experimental phase (Fig. 10)

After experimenting with purples and greens, Soane decided to modify Decoration 2 by repainting the purple frame in a deep red oil paint followed by varnishing. The mid-green-coloured distemper of the second decorative scheme was retained on the panel beds. On-site investigation suggests that this red scheme was applied carefully, retaining the existing black lining. Examination of further samples removed from the west wall indicates that the southwest panel bed was painted brown (see below).

### Decoration 4: an experimental phase (Fig. 11)

As part of the last experimental phase Soane obliterated the original highly varnished light blue-grey harewood graining. He then applied a dark brown paint layer on top, perhaps to imitate porphyry: a dense dark purple-red stone. The dark red-brown matrix contains large irregular graphite particles and is a mixture of an iron oxide red and a coal mineral black. This decoration was not varnished which is perplexing and suggests that a dull finish was desired. This dramatic alteration foreshadows the darker graining Soane was to use at No. 13 Lincoln’s Inn Fields. This new ‘porphyry’ scheme was also applied over an area of the wall face directly above the dado rail, thereby reducing the width of the lower edge of the red frame of the painted wall panels. Although the dado rail was still in place, it would have been visually ‘lost’. This may suggest that Soane was now unhappy with the low height of the dado rail and wished to create a higher horizontal line within the room. These changes may reflect general changes in decorative fashions. Around 1800, the painted imitation of porphyry was becoming popular as a decorative finish and yet again, Carlton House may



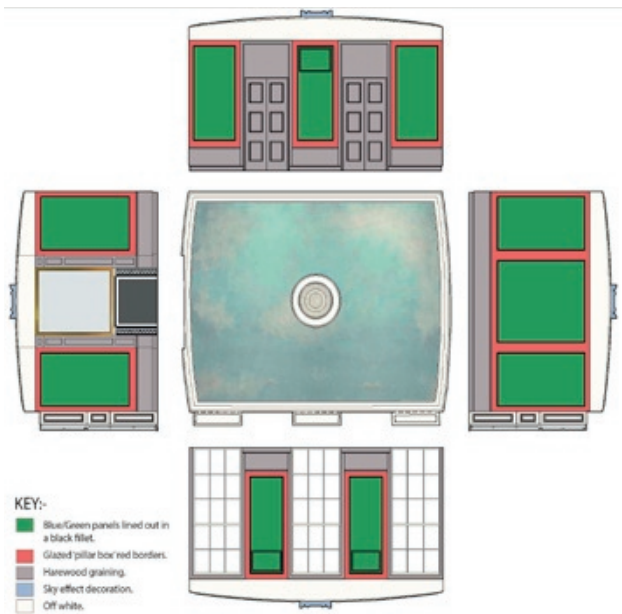


Fig. 10 Decoration 3: an experimental phase.

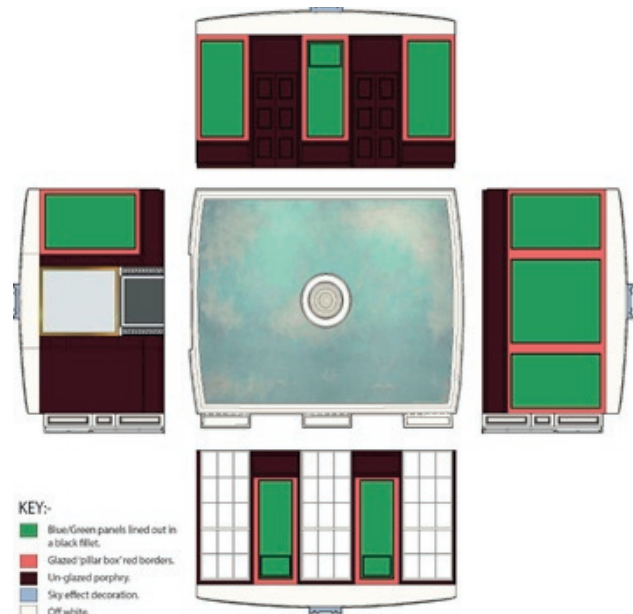


Fig. 11 Decoration 4: an experimental phase.

have been the inspiration for this alteration as porphyry was used in the entrance hall. The Craces created areas of painted porphyry in the Billiard Room of the Royal Pavilion in 1802, and in 1803 Soane had elements of the Breakfast Room at Pitzhanger Manor painted in imitation of a red porphyry.<sup>13</sup>

### Decoration 5: removal of the dado rail and application of a pink/grey scheme (Fig. 12)

The dado rail, having been visually removed in Decoration 4, was physically removed as part of Decoration 5. This alteration may have coincided with the removal of the dado in the ground-floor Dining Room as the detachment of the dado evidently caused some localised disruption. New plaster and a layer of lining paper were applied in the area around and over the damage. The entire wall face was then decorated in a thin layer of a light pink/grey-coloured oil paint. The absence of an undercoat and the utilitarian plainness of the scheme suggest that this decoration was perhaps intended to be a quick temporary scheme.

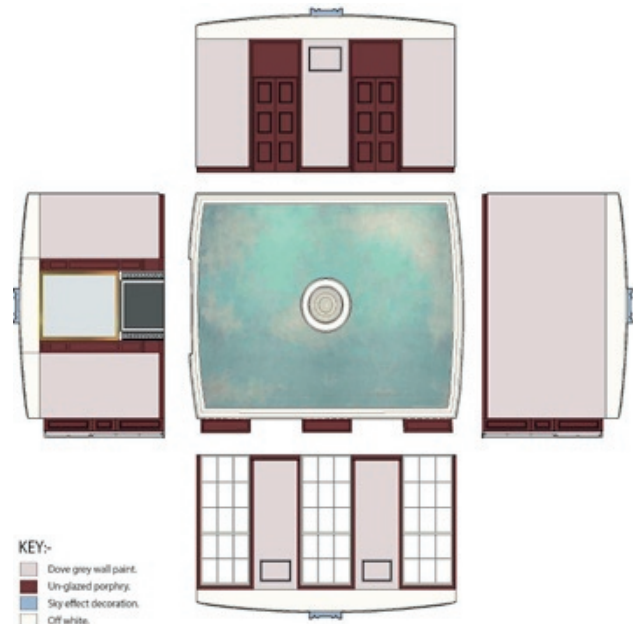


Fig. 12 Decoration 5: removal of the dado rail and application of a pink/grey scheme.

### Decorations 6 and 7: varnished patent yellow (Fig. 13)

The precise dating of Decorations 2–5 is unclear, but they were probably executed before 1807, the supposed date of the application of Decoration 6. The clue to the date of Soane's sixth and seventh decoration of the Withdrawing Room is found in a bill for work carried out by the Craces in 1807 listing the pigments used for the decoration of an unspecified room within No. 12 Lincoln's Inn Fields; this is identified as

the Withdrawing Room because of the inclusion of the pigment patent yellow in the list:

For men's time and materials at Lincoln's Inn Fields. 473 [lbs or ft?] of white lead white, 12 gallons of linseed oil, 12 gallons of turpentine, Sundry articles of Copal varnish, lake, Patent Yellow, Umber, Oaker, Vermilion, Purple-brown[?], putty, pumacestone. Bread. Soap & including the expense of cleaning and repairing the ornamental painting, 129 days work for painters, 77,6s.10d.<sup>14</sup>

The inclusion of patent yellow in the list of materials used by Crace is of particular interest: it was identified in the

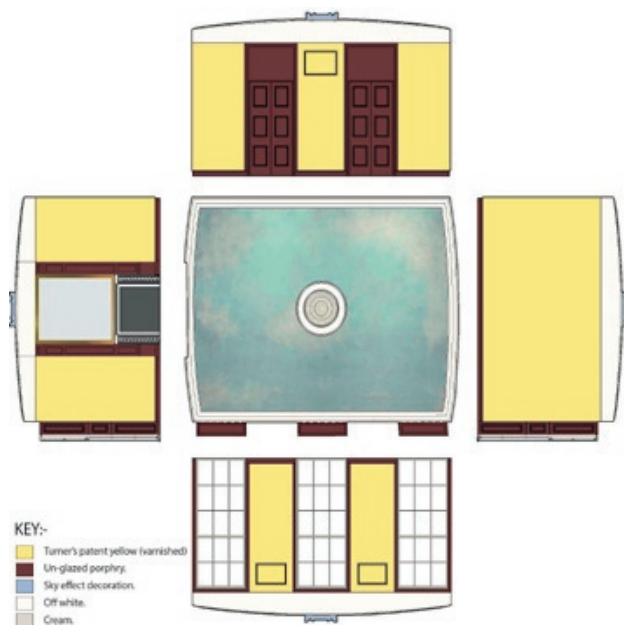


Fig. 13 Decorations 6 and 7: varnished patent yellow.

last two Soane decorations applied to the wall faces of the Withdrawing Room of No. 12.

Patent yellow (lead oxychloride) was invented by Carl Wilhelm Scheele, a Swedish chemist in c.1770. It is an attractive bright yellow pigment and was hailed as a cheap alternative to orpiment and Naples yellow. The pigment may be readily identified in cross-section by its large fractured translucent crystalline particles.<sup>15</sup> James Turner took out a patent for the manufacture of the pigment in England in 1781,<sup>16</sup> claiming that it could be used in both water-based paints and oil paints, but in oil, patent yellow has a tendency to discolour and is quite coarse in texture therefore it was not ideal for house painters. It was, however, widely used by coach painters who understood its technical drawbacks. They took care to mix the pigment with a varnish-rich medium and also protected the surface with the application of numerous layers of varnish. The Craces began trading as coach painters, providing designs for the decoration of coach panels, and would have been very familiar with the working properties this pigment. During the 1820s, patent yellow fell out of use as it was superseded by chrome yellow, a more finely textured bright yellow pigment.<sup>17</sup>

Previous research carried out by Ian Bristow in the South Withdrawing Room of No. 13 Lincoln's Inn Fields established that the walls of this room were decorated c.1813 using varnished patent yellow. This scheme is illustrated in a watercolour by J.M. Gandy painted in 1825 and Bristow established that it was repeated in 1833 when the room was slightly altered.<sup>18</sup> The use of the unusual pigment patent yellow at No. 12 some five years earlier is significant, as it suggests that Soane had already experimented with a bright yellow for the decoration of the Withdrawing Room of No. 12 Lincoln's Inn Fields.

Helen Dorey's archival research has established that the first floor was extensively refurnished in 1807–8.<sup>19</sup> Carpets and furniture supplied by John Robins are detailed in his account for 13 May 1807 including: 'A brown & yellow &c. Brussels Carpet made up with border to close fit the drawing rooms.'

The furniture, also supplied by John Robins, included two second-hand card tables, 'A wainscot pillar & claw table', '8 neat cane seat Bamboo Chairs, Japan'd etc.', 'Two Square Turkish Ottoman Foot Stools with best Materials Covered with Druggit & Carpet border on Round Balls finish's Black, and four further Bamboo Japan'd chairs as before'. In 1808 the room was fitted with yellow curtains 'a set of yellow &c. Moreen draperies, fringed with Grecian fringe for Drawing Room windows' (£11 16s 6d), and a 'japaned pole cornice 21ft 7 inches long with Balls at the end, laths & fastenings' (£3 0s 0d).

The reference to 'drawing rooms' (plural) suggests that at this date, if not before, the rear first-floor room was no longer used as a bedroom and both rooms functioned as drawing rooms: an arrangement later replicated on the first floor of No. 13. The bill also mentions 'Japanning two Trypods Black and Gold' (£2 2s 0d). The list of new furnishings and the amount of japanned furniture<sup>20</sup> suggests that the two drawing rooms had an oriental feel. John Robins had collaborated with John Crace between 1801 and 1810 to supply furniture for Soane at the Bank of England and Pitzhanger Manor.

Decoration 6, a varnished bright patent yellow, can therefore be dated to the 1807 refurbishing of the two Withdrawing Rooms. The colour scheme used to decorate the wall faces may indicate the influence of earlier *chinoiserie* schemes executed at Woburn Abbey (Chinese Dairy) and Brighton Pavilion, although the furnishing of the room clearly indicates that the decoration was intended to be neoclassical in style.

The actual decoration of the two Withdrawing Rooms of No. 12 was probably undertaken at some point before the installation of new carpet and furniture in May and June 1807. It is suggested that the 'ornamental painting' cleaned and repaired by the Craces' painters at this time was perhaps the recently discovered c.1792 sky ceiling. The Decoration 7 scheme is a replication of Decoration 6, and was probably executed in 1809–10 to freshen up the existing scheme upon completion of the building works to the second floor of No. 12.

On moving into No. 13 Lincoln's Inn Fields three years later, Soane replicated the arrangement of the two Withdrawing Rooms. He simply repeated the varnished patent yellow decoration and installed his existing furniture and curtains. The discovery of this vibrant yellow scheme in the Withdrawing Room of No. 12, executed some five years before it was repeated in the Withdrawing Room of No. 13, is highly significant. By this date Soane had already established his own decorative convention: the use of dark red for dining rooms and studies, and yellow for the decoration of drawing rooms. This is illustrated in his decoration of the interiors of Pell Wall Hall in Shropshire (1822–28).

## Planning the move to No.13 Lincoln's Inn Fields

Alterations to No. 12 carried out c.1807 were prompted by a series of factors. Soane's adult sons had both left home and vacated the bedrooms on the upper floors. By this time, he had realised that neither of his sons would pursue careers in



architecture and had little interest in his architectural collections. This prompted the sale of his other house, Pitzhanger Manor, which had contained his growing collection of architectural models and artworks, and his purchase of No. 13 Lincoln's Inn Fields in 1807. Soane had been appointed professor of architecture at the Royal Academy and he wanted to provide his students ready access to his collections. In 1808–9 he embarked on major alterations to the rear of both Nos. 12 and 13. The former owner of No. 13, George Booth Tyndale, continued to occupy the main part of No. 13 as a tenant. Soane demolished the stables at the rear and created two new areas known as the Museum and the Dome, which he used to house his Pitzhanger collection, new acquisitions and a new office. From 1809, Soane allowed students to visit his new Museum on specific days. Records of payments made to R. Martyr and John Crace for £580.00 in August 1809 can be related to alterations to the second floor of No. 12. In September 1809, Soane recorded in his notebook that he was 'At home all day direct altrns. Of House.' These alterations evidently created a lot of dust and dirt. Mrs Soane, who had suffered the disruption of building and redecoration works from early 1807 (if not before), pleaded with her husband in a letter written from Margate dated 30 September 1809 to have the Dining Room and Library (Breakfast Room) of No. 12 painted so 'that we may not be plagued with dirt next year'. Soane evidently heeded her plea and ordered some redecoration. In a letter dated October 1809, he admitted that 'the smell of paint had driven me almost entirely to Chelsea.'

This decoration campaign was the last undertaken by Soane within No. 12. On 10 October 1813, Soane and his wife moved into No. 13, their new home, and enjoyed tea in their new Breakfast Room on the ground floor. Their new Withdrawing Rooms on the first floor would already have been painted in the varnished patent yellow and furnished with classical black and yellow furniture; they had all been carefully moved from No. 12 and set up in their new location, mirroring their original arrangement in No. 12.

The patent yellow scheme in the Withdrawing Room, which they had just left in No. 12, was never overpainted. Its surface discoloured and became so brown that it was probably assumed to be some dark oak graining by the generations of solicitors and their staff who occupied the room during the late 19th and first part of the 20th century. Eventually a coarse hessian was tacked over the surface and covered with layers of lining paper.

## Conclusions

Soane designed and decorated the Withdrawing Room of No. 12 Lincoln's Inn Fields seven times during his family's 20 years of occupancy of the house between 1792 and 1813. Recent research suggests that Soane used the room as a laboratory for testing and refinement of new and avant-garde decorative schemes. The first decoration of the room included an illusionistic sky ceiling, a delicate red-glazed wall face and joinery grained in imitation of blue-grey harewood. It was

a radical scheme that reflected Soane's awareness of Roman antiquity and the recent faux painting at Carlton House. Sky ceilings were to become very fashionable in England until the late 1820s. Soane had recreated a trellis ceiling in the Library at Pitzhanger Manor (1801–10), but he had evidently tired of such schemes by 1813 as no sky ceilings were created at No. 13 Lincoln's Inn Fields.

Soane then embarked on a series of experimental panell schemes on the walls using bold colours and retaining the sky ceiling throughout his occupancy. At a later date, the dado rail was removed and a light pink/grey applied to the entire wall face. This scheme was then overpainted in a striking varnished patent yellow. Soane was clearly content with this decoration, repeating it once in the Drawing Room of No. 12, then on moving next door into No. 13 Lincoln's Inn Fields three years later, recreating the scheme in his two Withdrawing Rooms on the first floor. The recent discovery of this vibrant yellow decoration in the Withdrawing Room of No. 12, executed some eight years before it was repeated in No. 13, is highly significant. Soane was clearly very satisfied with the scheme and retained it until his death in 1837. After years of constant refinement, it is evident that by 1813, following 20 years of experimentation in No. 12, Soane had established his own decorative convention: the use of dark red for dining rooms and studies, and yellow for the decoration of drawing rooms. This research project revealed the thought processes of an architectural genius.

## Acknowledgements

I would like to thank Tim Knox, Helen Dorey and all the staff at Sir John Soane's Museum; the project architect Lyall Thow and the staff at Julian Harrap Architects; the conservators of International Fine Art Conservation Studios (IFACS) and the painters at Hare & Humphreys.

## Notes

1. H. Hughes, unpublished MSS report, *The Withdrawing Room and Bedchamber – No.12 Lincoln's Inn Fields –The Decorative Development*, 2011. Digital copy of the report is available from [www.helenhughes-hirc.com](http://www.helenhughes-hirc.com).
2. Julian Harrap Architects, *The Soane Masterplan Core Project*, unpublished report, 2008.
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4. I.C. Bristow, unpublished MSS reports, Soane Museum: *South Drawing Room, No. 13* (1986), *Dining Room, No.12* (1993), and *Hall and Staircase, No. 12* (1993).
5. M. Aldrich, *The Craces: Royal Decorators 1768–1899*, London, John Murray, 1990, pp. 10–21, esp. pp. 12–19.
6. Aldrich 1990 (cited in note 5), pp. 11–12.
7. I.C. Bristow, *Interior House-Painting Colours and Technology 1615–1840*, New Haven, Yale University Press, 1996, p. 141.
8. T.H. Vanherman, *The Painter's Cabinet, and Colorman's Repository*, 1828, p. 45.

9. Bristow 1993 (cited in note 4).
10. Samples from the recessed panels on the north and south walls revealed that the white undercoat had been applied to these elements but not the dark orange/red glaze.
11. Bristow 1993 (cited in note 4).
12. On-site trials suggested that this was a distemper decoration because the paint was readily soluble in water.
13. Bristow 1996 (cited in note 7), pp. 193–4.
14. A bill from Crace to John Soane dated 29 October 1807, Sir John Soane's Museum Archives Ref, 16/2/1. My additions to the quotation are in square brackets.
15. A microscopist's hint: the pigment resembles crushed bitter lemon sweets.
16. There was a lengthy dispute regarding the patent, which resulted in the pigment being marketed as 'Turner's Patent Yellow'. The name of the pigment has no association with the artist J.M.W. Turner (1775–1851); Bristow 1996 (cited in note 7), pp. 36–38.
17. Chrome yellow mixed with Prussian blue produced an affordable green pigment: chrome green (often called Brunswick green).
18. Bristow 1986 (cited in note 4).
19. H. Dorey, 'The furnishing of Nos. 12 & 13 Lincoln's Inn Fields', *Journal of the Furniture History Society* XLIV, 2008, pp. 21–23.
20. Furniture decorated with a varnish paint effect intended to imitate Japanese lacquer.

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# CANVAS SUPPORTS AND GROUNDS IN PAINTINGS BY C.W. ECKERSBERG

Troels Filtenborg and Cecil Krarup Andersen

**ABSTRACT** The supports and grounds of 43 paintings on canvas by the Danish painter C.W. Eckersberg, dating from throughout his career, were investigated by visual examination, X-radiography, computer-assisted automated thread counting and weave mapping, as well as by cross-section analysis. The analytical data were complemented by written sources such as Eckersberg's diaries, accounts and letters. The results show certain patterns in his practice which are discussed in relation to the locations and conditions in successive phases of his career and in view of contemporary paint technical treatises and circumstances such as Danish 19th-century customs regulations. Conservation implications of Eckersberg's choice of supports and grounds are briefly considered.

## Introduction

C.W. Eckersberg (1783–1853) was the leading painter in Denmark in the first half of the 19th century (Fig. 1a and b). As a professor at the Royal Academy of Fine Arts in Copenhagen he has been called 'the father of Danish painting' because of the huge influence he exerted, on the technical as well as artistic level, on a generation of painters from the so-called Golden Age of Danish painting, (c.1810–1850). Eckersberg's own training at the Royal Academy in Copenhagen (1803–1809) was followed by studies in Paris (1810–1813) where he was a pupil of Jacques-Louis David. From 1813 until 1816 he worked in Rome and during that period, Bertel Thorvaldsen had an important influence on his work.

After his return to Copenhagen in 1816, Eckersberg was appointed professor at the Royal Academy (1818) and worked in this capacity until his death in 1853. As a result, his legacy was felt profoundly among many younger artists, and information on his technique and materials is therefore key to understanding the practice and technical development of Danish painting in the first half of the 19th century. This paper presents the results of an investigation of the supports and grounds in paintings by Eckersberg. Canvas was his preferred support, with very few exceptions including four small paintings on sheet metal from 1833. A total of 43 canvas paintings, dated between 1806 and 1847, have been investigated by visual examination, X-radiography, computer-assisted automated thread counting and weave mapping, as well as cross-section microscopy.<sup>1</sup> Written sources such as Eckersberg's diaries, accounts and letters, as well as contemporary technical treatises for painters, have been studied to

complement the analytical data. The investigation is a pilot study for a large-scale project on the technique and materials of Eckersberg and his contemporaries.

Eckersberg's diaries are a rich source for the study of his working method, technique and materials. They begin in 1810 and continue until just three days before he died of cholera in 1853. In the early years, before c.1818, the concise entries include little more than accounts of his day-to-day purchases and expenses. Eventually evolving into proper diary records, they remain relatively factual in their character. They contain a wealth of information regarding Eckersberg's commissions, his dealings with pupils, his suppliers, the stages of his work on individual paintings, the colours he prepared, and the purchase



**Fig. 1** (a) Christoffer Wilhelm Eckersberg, *Self-Portrait*, 1807/10, oil on canvas, 33 × 26 cm, Statens Museum for Kunst, Copenhagen, KMS1764. (b) Johan Vilhelm Gertner, *Portrait of C.W. Eckersberg*, 1850, oil on canvas, 83.4 × 59.1 cm, The Royal Academy of Fine Arts, Copenhagen, KS63.

**Table 1** Dimensions and automated thread counts of 42 paintings by Eckersberg dating from throughout his career. Blue and pink tints indicate the paintings executed in Paris and Rome, respectively (automated thread counting can be applied only to plain-weave canvases, namely those listed in this table.)

Title	Date	Dimensions (in cm)	Threads/cm (vertical × horizontal)
<i>Alexander the Great on his Sickbed</i>	1806	54.5 × 65.5	12.1 × 10.7
<i>Self-Portrait</i>	1807–10	33 × 26	9.1 × 11.5
<i>Loki and Sigyn</i>	1810	134 × 162.5	13 × 13.8
<i>Landscape with a Stile, The Isle of Møn</i>	1810	58 × 74.8	9.1 × 9.2
<i>Three Spartan Boys</i>	1812	81 × 63.8	9.4 × 9.8
<i>A Young Archer Sharpening his Arrow</i>	1812	64.2 × 72.5	11.7 × 11.2
<i>Pont Royal seen from the Quai Voltaire</i>	1812	55.5 × 71	8.9 × 9.6
<i>The Return of Ulysses. Scene from Homer's Ulysses</i>	1812	60 × 72	13.5 × 12.7
<i>Two Shepherds</i>	1813	55.5 × 71	7.8 × 9.5
<i>A View from the Château of Meudon</i>	1813	55.5 × 71	9.3 × 9.3
<i>Alcyone's Farewell to her Husband.</i>	1813	fragment	15.6 × 13.9
<i>View of the Garden of the Villa Borghese in Rome</i>	1814	28 × 32.5	9.9 × 9
<i>The Israelites Resting after the Crossing of the Red Sea</i>	1815	203.5 × 283.6	7.4 × 6.8
<i>Portrait of the Model Maddalena or Anna Maria Uhden</i>	c.1815	31 × 21.3	9.9 × 10
<i>View of the Tiber near Ponte Rotto in Rome</i>	c.1815	28 × 44	11.7 × 9.5
<i>View of the interior of the Colosseum</i>	1813–16	29.1 × 25.6	18.3 × 17.6
<i>View of the Gardens of the Villa Albani. Rome</i>	1814–16	27 × 34.5	9.2 × 9.3
<i>A Pergola, Italy</i>	1814–16	34 × 28.5	9.8 × 9.1
<i>View from the Fontana Acetosa, Rome</i>	1814–16	25.5 × 44.5	7.7 × 5.1
<i>Julie Eckersberg, née Juel, the Artist's Second Wife</i>	1817	31.5 × 27.5	13.6 × 14.8
<i>Portrait of Sophie Hedvig Løvenskiold and her Three-Year-Old Daughter</i>	1817	62.5 × 51.5	12.2 × 13.7
<i>The Nathanson Family</i>	1818	126 × 172.5	15.7 × 15.3
<i>Portrait of the East India Merchant Albrecht Ludwig Schmidt</i>	1818	156.7 × 98.3	16.1 × 11.7
<i>Portrait of Frederikke Christiane Schmidt</i>	1818	157.5 × 97.5	15.5 × 16
<i>Princess Wilhelmine, Daughter of Frederik VI</i>	1819	46.5 × 37	10.5 × 12.2
<i>Mendel Levin Nathanson's Elder Daughters, Bella and Hanna</i>	1820	125 × 85.5	14.5 × 13.3
<i>Portrait of Emilie Henriette Massmann, Betrothed of Frederik Wilhelm Caspar von Benzon</i>	1820	53.5 × 43.5	13.8 × 12.4
<i>Susanne Juel. The Artist's Sister-in-Law, later to Become his Third Wife</i>	1823	31.5 × 28	12.2 × 14.3
<i>A Russian Fleet at Anchor near Elsinore</i>	1826	31.5 × 59	12 × 14.7
<i>Study of Clouds over the Sound</i>	1826	20.5 × 32.3	11.8 × 13.8
<i>A Danish Corvette Laying in order to Confer with a Danish Brig: The Scene Being Set in West Indian Waters</i>	1827	58 × 86	10.2 × 11.2
<i>The Russian Ship of the Line 'Asow' and a Frigate at Anchor near Elsinore</i>	1828	63 × 51	13.5 × 11.5
<i>A Corvette on the Stocks</i>	1828	27.5 × 37	13.2 × 13.9
<i>Renbjærg Tile Works by Flensburg Fjord</i>	1830	22.5 × 32.5	14.5 × 12.2
<i>View of Koster from the Ferry Pier at Kalvehave</i>	1831	23.2 × 33	12.8 × 10.8
<i>Langebrogade, Copenhagen, in the Moonlight with Running Figures</i>	1836	45.5 × 33.5	Twill weave
<i>Seated Male Nude, Peter Krstrup</i>	1837	94.5 × 62.5	10.8 × 14.2
<i>Male Nude with Staff, Carl Frørup</i>	1837	94.5 × 62.5	11.3 × 14.1
<i>The Corvette 'Galathea' in a Storm in the North Sea</i>	1839	47.5 × 63.5	13.4 × 10.8
<i>The Corvette 'Galathea' Lying to in order to Send Help to the Brig 'St. Jean'</i>	1839	63 × 84	10.7 × 9.9
<i>Street Scene in Windy and Rainy Weather</i>	1846	23.8 × 26.6	13.7 × 15.7
<i>Ships in the Sound North of Kronborg Castle</i>	1847	39.5 × 50	13.9 × 13.6

of materials such as canvas, stretchers and pigments. In addition to his correspondence, this makes the diaries a unique source for the study of the technical aspects of his practice.<sup>2</sup>

Other sources that have been taken into account in the study are 19th-century French technical paintings manuals including *Manuel des jeunes artistes et amateurs en peinture* by M.P.L. Bouvier (1827), and *Traité complet de la peinture* by J.-N. Paillot de Montabert (1829).<sup>3</sup> Contemporary with Eckersberg, both publications were widely read, came in several editions and were translated into other languages. Their descriptions on the basis of French academic painting

practice are indicative of the training Eckersberg would have received, if not at the Royal Academy in Copenhagen, then at David's studio in Paris.

## Canvas

Nearly all the canvas supports of Eckersberg's paintings have a plain weave. Different weave types such as twill are found only occasionally such as in a large-scale painting from 1841



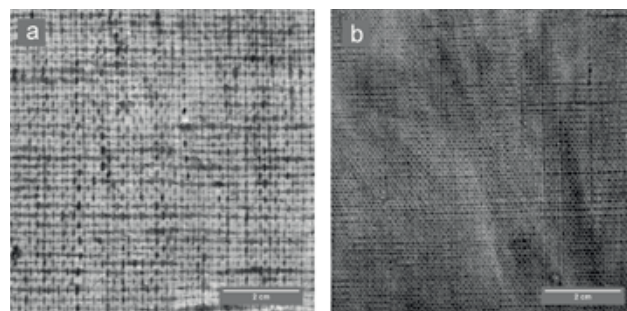
for the Christiansborg Palace and three smaller paintings from 1836 and 1845.<sup>4</sup> A herringbone weave has so far only been observed in a small fragment of a composition from 1828.<sup>5</sup> Although there are variations in the quality of the supports regarding the fineness and tightness of the weave throughout his oeuvre, a pattern does emerge, especially when comparing the early paintings to those he produced after his return to Copenhagen in 1816. While the range of thread counts in the Danish paintings is 10–16 threads per centimetre in both directions, the canvases of his French and Roman paintings tend to be slightly coarser, with a more open weave and thread counts of 9–13 threads per centimetre. However, the range in the latter group is wider, with a couple of canvases having an unusually high thread count; on the other hand, there is also an example among the Roman paintings with a density of no more than  $c.5 \times 8$  threads per square centimetre (Table 1 and Fig. 2).<sup>6</sup>

Few fibre analyses have been carried out on the canvases at this stage: three had bast fibres which could not be further characterised. It is possible that the supports of Eckersberg's French and Roman paintings were made entirely of hemp or, alternatively, a hemp-linen mixture – with the warp of hemp and the weft of flax – as has been found in studies of French and Italian 18th-century paintings.<sup>7</sup> Hemp was still recommended in the 19th century as preferable to flax for painting canvas because of its alleged greater strength; this preference was discussed by contemporary French writers such as Bouvier and Paillot de Montabert.<sup>8</sup>

Eckersberg's paintings were examined with the naked eye and computer-assisted weave analysis based on computed digital X-radiographs.<sup>9</sup> These methods show that his canvases were normally cut from larger, pre-primed pieces before being stretched on their individual stretchers or strainers. In the investigated paintings all the tacking edges were covered by ground. In addition, the lack of primary cusping along most sides of the individual paintings supports this assumption. In some cases, similarities in the weave patterns and thread counts between paintings of comparable dates corroborate the impression from Eckersberg's diary that this was a common practice in his production.

## Standard support dimensions and grounds

The commercial priming of canvases emerged in Europe in the 17th century, and was a firmly established line of business by the early 19th century when Eckersberg began his career. Depending largely on where he worked at the time, Eckersberg's own practice included the purchase of commercially prepared canvases, as well as employing the services of helpers for priming larger pieces of canvas that he bought unstretched. During his years in Paris (1810–13), he clearly took advantage of easy access to artists' supply shops in the city, including their range of canvas painting supports. Several records in his diary imply that he purchased ready-primed and ready-stretched canvases, and indications are that these conformed to a pattern of standard sizes.<sup>10</sup>



**Fig. 2** Details of X-radiographs showing the differences in the weave density and thread count between the two paintings executed in Rome and Copenhagen, respectively: (a) *View from the Fontana Acetosa, Rome, 1814/16* and (b) *The Nathanson Family, 1818*.

The standardisation of the dimensions of canvases and strainers, which followed with the practice of commercial priming, was documented in France by the mid-18th century. A list of 15 set formats of primed and stretched canvases, named according to their individual price, appeared in A.-J. Pernety's *Dictionnaire portatif de peinture, sculpture et gravure* from 1757.<sup>11</sup> The sizes listed by Pernety, as well as their individual terms, were repeated almost identically by Paillot de Montabert, as well as in the catalogues from Lefranc & Co from around 1850 (in an extended version).<sup>12</sup> When Eckersberg recorded the purchase of a *Toil* (*sic*) in his Paris diary, an expense that occurred on a number of occasions during 1812,<sup>13</sup> it is safe to assume that he bought a standardised, commercial product of a predetermined size. The paragraph on painting canvas in Diderot's *Encyclopédie* indicates that the term *toile* referred to an already stretched and primed canvas, although it does not specify whether the term also implied a standard format.<sup>14</sup> However, among Eckersberg's paintings from Paris, the majority are very close to the French standard sizes (Table 2).<sup>15</sup> Significantly, no stretchers are mentioned in the diary during this period, whereas the purchases of stretchers are itemised repeatedly in the later diaries from Rome and Copenhagen. Looking at standard sizes, an element of uncertainty must be accepted, as paintings have often changed over time due to conservation treatments, trimming, enlargement or repeated keying out. The modest degree of deviation from the standard formats in some of Eckersberg's Paris paintings therefore supports the assumption that they were largely executed on ready-primed and ready-stretched commercial supports.

In early 19th-century Rome, another important artistic centre, professional colourmen or artists' supply shops, and the range of associated services, would have been abundant.<sup>16</sup> Remarkably, indications are that soon after his arrival in the city in 1813, Eckersberg altered his practice and prepared the canvases himself, or had them primed separately.<sup>17</sup> During the first months of his sojourn, on one occasion he still used the French term *Toil* (*sic*) when recording the purchase of a canvas, suggesting a possible continuation of his French practice; however, while expenses for canvas were mentioned at regular intervals in the following three years, only one record specified that the support was ready-primed. In two other entries, Eckersberg listed separately the cost of having canvas

**Table 2** The dimensions of paintings by Eckersberg, executed in Paris, seen in relation to the French commercial standard formats as they appeared in A.-J. Pernety's *Dictionnaire portatif de peinture, sculpture et gravure* (converted into metric measurements) and in catalogues from Lefranc & Co. from 1850 and 1855. Green tints indicate paintings with formats close to one or both of the French standards.

Title	Date	Dimensions in cm	Equivalent French standard in cm (Pernety 1757)	Equivalent French standard in cm (Lefranc & Co 1850–55)
<i>Nude Reclining on a Bed</i>	1810–13	22 × 27		21.6 × 27
<i>Scene from Holberg's comedy 'Jeppe paa Bjerget', Act 3, Scene 3</i>	1811	58.5 × 73	59.5 × 72.1	59.4 × 72.9
<i>The Origin of Painting</i>	1811	61.7 × 50.2	60.9 × 50.1	
<i>Reclining Female Nude</i>	1811–13	30 × 26.5		
<i>Odysseus Fleeing the Cave of Polyphemus</i>	c.1812	81 × 64	81.2 × 65	81 × 64.8
<i>Scene from Holberg's comedy 'Jean de France', Act 1, Scene 6</i>	1812	60 × 73	59.5 × 72.1	59.5 × 72.1
<i>A Young Archer Sharpening his Arrow</i>	1812	64.5 × 72.5		
<i>The Return of Odysseus</i>	1812	60 × 72	59.5 × 72.1	59.4 × 72.1
<i>Hermod Begging Hel, Queen of Death, for the Return of Baldur</i>	1812	81.3 × 63.5	81.2 × 65	81 × 64.8
<i>Three Spartan Boys</i>	1812	81 × 63.8	81.2 × 65	81 × 64.8
<i>Christ Blessing Little Children</i>	1812	201 × 147		
<i>Hagar and Ismael in the Wilderness</i>	1812	65 × 80	65 × 81.2	64.8 × 81
<i>Pont Royal Seen from the Quai Voltaire in Paris</i>	1812	55.5 × 71		
<i>The Longchamp Gate in the Bois-de-Boulogne</i>	1812	33 × 40.5	32.5 × 40.6	32.4 × 40.5
<i>Figures Walking at the Acqueduc de la Vanne</i>	1812	32.5 × 40	32.5 × 40.6	32.4 × 40.5
<i>A View of the Château of Meudon near Paris</i>	1813	55.5 × 71		
<i>Two Shepherds</i>	1813	53 × 42		
<i>The Model Emilie</i>	1813	25.5 × 20		

primed, implying that by now this was his normal procedure. By late 1813, he itemised separate expenses for stretchers (and nails) in his Roman records.<sup>18</sup>

A survey of the paintings that Eckersberg executed in Rome, as well as those dated after his return to Copenhagen, shows that the sizes differ from his earlier canvases. Only a few can be said to conform approximately to the standardised French formats as listed by Pernety, Paillot de Montabert and Lefranc. Passages in his diary and letters from Rome suggest that, although he was now buying canvas by the local measure, the *canna*,<sup>19</sup> he often operated within the Danish units of measurement such as the *ell* when deciding the dimensions of his compositions.<sup>20</sup> The formats of his Roman paintings in general can be said to make as much sense measured by these units as by the local scale.<sup>21</sup> In a number of cases, the Danish *ell* (*alen* = 62.77 cm) was obviously the starting point for the format: the measure recurs in at least one dimension of several canvases (sometimes including their tacking edges) either as a whole or a subdivision such as  $\frac{1}{2}$  or  $\frac{3}{4}$ . Likewise, the *ell* is the term Eckersberg uses in relation to purchases of canvas after 1816, although the length of the acquired batch is not always specified in his records.

It appears that towards the middle of the century, a certain import or commercial production of ready-primed painting canvases with standard sizes derived from the French model may have taken place in Denmark. Although it is not apparent in the formats or other features in the works by Eckersberg, evidence can be found in works by artists in his circle. The small *Portrait of the Marine Painter Anton Melbye*, c.1848, by Eckersberg's pupil Emil Bærentzen, has the number 4 stamped on the reverse of the canvas; it is an almost perfect match to the dimensions of the equivalent number in the French lists of standard sizes (Fig. 3a and b).<sup>22</sup> Interestingly,

an entry in Eckersberg's diary from 1847 mentions his purchase of two ready-stretched canvases, indicating that these articles were in fact commercially available in Copenhagen by this time.<sup>23</sup> However, no canvases by Eckersberg from around this date have so far been identified as conforming to the standardised size system or resembling the low-quality support of Bærentzen's portrait. Therefore, the two canvases on their stretchers may simply have been made to order. The cases remain anomalous in his practice after his return to Copenhagen in 1816.

## Customs regulations and Dresden canvas

Danish fiscal policy of the 18th century was dominated by protectionism, with restrictions placed on the import of products such as flax and linen. Customs regulations for some commodities persisted well into the 19th century and included high tariffs imposed on canvas,<sup>24</sup> therefore Eckersberg's canvas supports from the earlier part of his career in Copenhagen are likely to be of Danish origin, but the gradual lifting of the trade regulations is also reflected in his practice. As evidenced by his diary entries in 1834 that refer to his work on large-scale paintings in a series commissioned for the rebuilt Christiansborg Palace, he obtained an exemption from the customs duty related to an import of canvas from Dresden.<sup>25</sup> The fact that this was granted is probably not surprising in view of the prestigious nature of this royal commission. The main reason for importing canvas from Dresden may have been the need for a fabric of extraordinary width, rather than a particular quality.<sup>26</sup> However, another reason for Eckersberg to opt for this

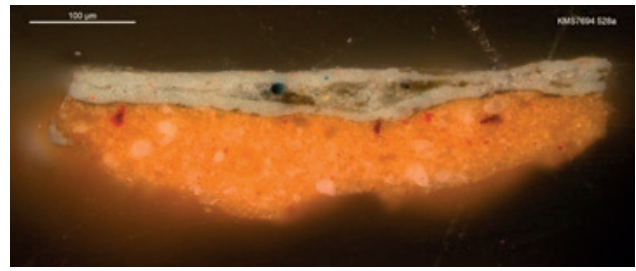




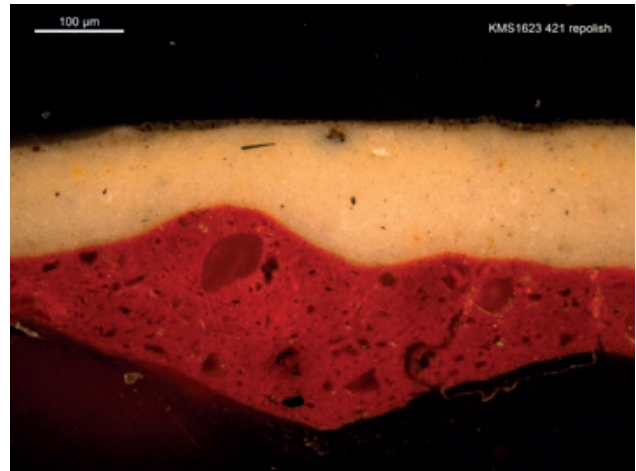
**Fig. 3** Emil Bærentzen, *Portrait of the Marine Painter Anton Melbye*, c.1848, 32.2 × 24.5 cm, Statens Museum for Kunst, Copenhagen, KMS8718: (a) reverse and (b) detail of the canvas.

canvas may have been that it was ready-primed. It appears that he already had some experience with this canvas from earlier purchases, as he bought it on at least three occasions from the Bing & Son shop in Copenhagen between 1827 and 1832.<sup>27</sup> Significantly, no subsequent priming of the Dresden canvas for the Christiansborg paintings is mentioned, as opposed to the procedure recorded in connection with the work on the other large canvases in the series.

The production of canvas made specifically for painting supports in and around Dresden is mentioned in three contemporary German encyclopaedic sources from the first decades of the 19th century.<sup>28</sup> In one case, the term *Malertuch* ('painter's canvas') was used for a ready-primed product, as the text states that the Hammerschmidt factory in



**Fig. 4** Cross-section of ground and paint layers in C.W. Eckersberg, *Landscape with a Stile, The Isle of Møn*, 1810, oil on canvas, 58 × 74.8 cm, Statens Museum for Kunst, Copenhagen, KMS7694. The single warm yellow ground layer is covered with two warm grey paint layers.



**Fig. 5** Cross-section of the ground layers in C.W. Eckersberg, *A View from the Château of Meudon*, 1813, oil on canvas, 55.5 × 71 cm, Statens Museum for Kunst, Copenhagen, KMS1623. The lower red ground layer is followed by an upper, slightly toned white ground layer and an ultra-thin brown paint layer.

Friedrichstadt near Dresden offered canvas in various weave qualities. These had a standard yellowish-grey ground as well as custom-made grounds with a pure white, bluish or reddish tone.<sup>29</sup> The term *Fabrik* ('factory') used in some of the written sources to describe the Dresden makers of painting canvases suggests, if not an industrial production, then manufacture on a significant scale.

## Grounds

The vast majority of grounds in Eckersberg's paintings are white or off-white, slightly muted by a light yellowish or greyish toned upper layer. Despite this limited range, a development in the stratigraphy of the grounds shows a pattern clearly correlated to the date of his paintings and the location of their genesis (Table 3). Among the exceptions to the predominantly white grounds are a few pale red or yellow grounds from Eckersberg's early years as a student at the Royal Academy in Copenhagen (Fig. 4).<sup>30</sup> His use of coloured grounds echoes the practice of his teacher, Professor Nicolai Abildgaard (1743–1809), who in fact employed a highly diverse range of grounds throughout his career with

**Table 3** Ground layers examined in cross-section in 43 paintings by Eckersberg, dating from throughout his career. Blue and pink tints indicate paintings executed in Paris and Rome, respectively.

Title	Date	Lower ground layer(s)	Upper ground layer or single ground
<i>Alexander the Great on his Sickbed</i>	1806		white
<i>Self-Portrait</i>	1807–10	1. yellow, 2. red	white
<i>The Sons of Jacob at the Deathbed of their Father</i>	1809		white
<i>A View North of Kronborg Castle</i>	c.1810		pale red
<i>Loki and Sigyn</i>	1810		pale red
<i>Landscape with a Stile, The Isle of Møn</i>	1810		pale red
<i>A Young Archer Sharpening his Arrow</i>	1812		white
<i>Pont Royal seen from the Quai Voltaire</i>	1812	red	white
<i>The Return of Ulysses. Scene from Homer's Ulysses</i>	1812		white
<i>Two Shepherds</i>	1813	red	white / pale grey
<i>A View from the Château of Meudon</i>	1813	red	white
<i>Alcyone's Farewell to her Husband.</i>	1813	yellowish white	white
<i>Portrait of Bertel Thorvaldsen</i>	1814	yellowish brown	white
<i>View of the Garden of the Villa Borghese in Rome</i>	1814		white
<i>The Israelites Resting after the Crossing of the Red Sea</i>	1815	yellowish white	white
<i>View across the Tiber from Trastevere towards Castel S. Angelo</i>	c1815	yellowish white	white
<i>View of the Tiber near Ponte Rotto in Rome</i>	c1815	yellowish	white
<i>A Pergola, Italy</i>	1814–16		ochre yellow
<i>View from the Fontana Acetosa, Rome</i>	1814–16	yellowish brown	yellowish white
<i>View of the Interior of the Colosseum</i>	1816	yellowish brown	yellowish white
<i>Julie Eckersberg, née Juel, the Artist's Second Wife</i>	1817		white
<i>Portrait of Sophie Hedvig Løvenskiold and her Three-Year-Old Daughter</i>	1817		white
<i>The Nathanson Family</i>	1818		white
<i>Portrait of the East India Merchant Albrecht Ludwig Schmidt</i>	1818		white
<i>Princess Wilhelmine, Daughter of Frederik VI</i>	1819		white
<i>Mendel Levin Nathanson's Elder Daughters, Bella and Hanna</i>	1820		white
<i>Portrait of Emilie Henriette Massmann, Betrothed of Frederik Wilhelm Caspar von Benzon</i>	1820		white
<i>The Duke Adolph</i>	1821		white / pale grey
<i>Susanne Juel. The Artist's Sister-in-Law, later to Become his Third Wife</i>	1823		white
<i>A Russian Fleet at Anchor near Elsinore</i>	1826		white
<i>Two Russian Ships of the Line Saluting</i>	1827		white
<i>The Russian Ship of the Line 'Asow' and a Frigate at Anchor near Elsinore</i>	1828		white
<i>A Corvette on the Stocks</i>	1828		white
<i>Renbjerg Tile Works by Flensburg Fjord</i>	1830		white
<i>An American Naval Brig Lying at Anchor while Her Sails are Drying</i>	1831–32		white
<i>The 84-Gun Danish Warship 'Dronning Marie' in the Sound</i>	1834		white
<i>Langebrogade, Copenhagen, in the Moonlight with Running Figures</i>	1836	reddish brown	pale brown
<i>The Corvette 'Galathea' in a Storm in the North Sea</i>	1839	yellowish	white
<i>The Corvette 'Galathea' Lying to in order to Send Help to the Brig 'St. Jean'</i>	1839	reddish brown	white
<i>Christian I Conferring the Order of the Elephant</i>	1841		white / pale grey
<i>A Female Nude Putting on her Slippers</i>	1843	reddish brown	white
<i>Christian VIII Aboard his Steamship 'Ægir' Watching the Manoeuvres of a Squadron near Copenhagen</i>	1844	1. reddish brown 2. pale brown	white
<i>Ships in the Sound North of Kronborg Castle</i>	1847	reddish brown	white

no obvious correlation between their occurrence and the date of the individual paintings.<sup>31</sup> This, and the variation in Eckersberg's choice of grounds during his student years, which also includes a couple of examples of white grounds (see Table 3), suggests that no particular type was standard at the Royal Academy in Copenhagen at the time.

However, by the time Eckersberg arrived in Paris, the white ground was established as his preferred type and largely remained so for the rest of his career. His early coloured grounds consist of one layer but three of the Parisian

paintings have double grounds with a red lower layer followed by a white upper layer (Fig. 5) and one painting has a ground with a single white layer.<sup>32</sup> The predominance of the white grounds in Eckersberg's paintings after he arrived in Paris is hardly surprising in view of his training with Jacques-Louis David who, in common with other French painters of the neoclassical movement, favoured white grounds, which often remain visible at the surface of his paintings. As a highly influential teacher in these formative years of Eckersberg's career, it is reasonable to assume that David was the chief



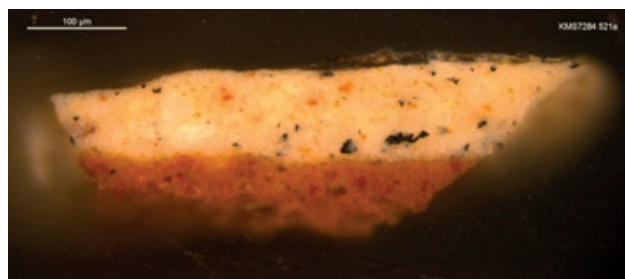
inspiration for his choice of ground. French writers of the early 19th century, such as Bouvier and Paillot de Montabert, also recommend white grounds as the most suitable for painting, although they both endorsed versions lightly toned with black and earth pigments rather than a pure white,<sup>33</sup> reasoning that the colour should be adapted according to the planned tonality of the subsequent composition: advice evidently followed by Eckersberg in paintings such as his moonlight scene *Langebro, Copenhagen, in the Moonlight with Running Figures* (1836), which has a ground toned precisely in accordance with these prescriptions (Fig. 6).<sup>34</sup>

Other materials mentioned in the two treatises correspond to Eckersberg's practice. For the white pigment in the ground preparations, both writers mention the use of *ceruse*, a term often used for lead white mixed with chalk or barytes.<sup>35</sup> A mixture of lead white with chalk has indeed been identified in several of Eckersberg's white grounds.<sup>36</sup> As a variation on this, a double ground with a first layer of yellow or red ochre was described by Paillot de Montabert as favoured by some artists.<sup>37</sup> This matches the grounds found in a couple of Eckersberg's canvases from 1813 (see Table 3), which are likely to have been purchased ready-primed in Paris. Although recipes and instructions in these and earlier sources – such as Diderot in the *Encyclopédie* and Pernety in his *Dictionnaire portatif de peinture, sculpture et gravure* – give the impression that the procedure of priming was still considered to be part of a painter's technical skill, the general assumption was that canvases were purchased ready-prepared.<sup>38</sup>

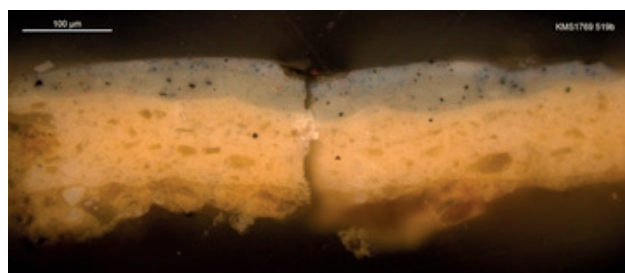
The double grounds with a white second layer were also found in nearly all of Eckersberg's paintings from Rome that were examined in the present survey. With his use of supports with a generally coarser weave in this period, this stratigraphy made sense as a way of moderating the effect of the canvas texture in the surface of the paintings. As opposed to the Parisian grounds, the first layer in the Roman grounds has a yellowish tone with shades varying from a yellowish white to a yellowish brown (Fig. 7) with the exception of a painting with a single ochre-yellow ground and another with a single white ground (see Table 3).

As in Paris, painting on a white or light ground was a common practice in Rome by the time of Eckersberg's arrival in 1813. If not standard practice, it had at least been widespread among the international set of painters (including many French artists) since the previous century. The celebrated German painter Anton Raphael Mengs (1728–1779), who worked in the city in the 1770s and was known for his writings as well as his art, advocated the use of light coloured grounds in his *Lezioni pratiche di pittura* from 1780.<sup>39</sup> It is revealing that his treatise was first published in Italian before being translated into Mengs's native German a couple of years later. Examination of paintings by Mengs shows that he used light coloured or white grounds much earlier in his own paintings, as did Eckersberg's professor at the Academy in Copenhagen, Nicolai Abildgaard, when he worked in Rome in the 1770s.<sup>40</sup>

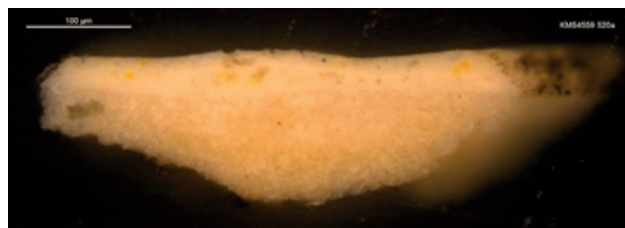
After Eckersberg's return to Copenhagen in 1817, the single white ground remained dominant in his paintings for many years (Fig. 8) and in the present study, it was found in all of the examined paintings dated between 1817 and 1827.



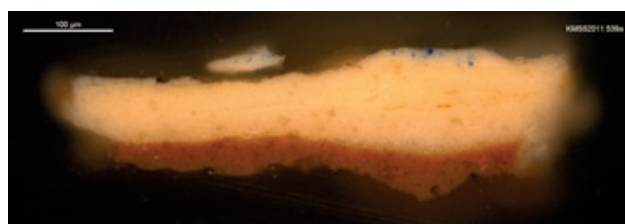
**Fig. 6** Cross-section of the ground layers in C.W. Eckersberg, *Langebro, Copenhagen, in the Moonlight with Running Figures*, 1836, oil on canvas, 45.5 × 33.5 cm, Statens Museum for Kunst, Copenhagen, KMS7284. A lower golden brown ground layer is followed by an upper ground layer of white, lightly toned with black, yellow and brown pigments.



**Fig. 7** Cross-section of ground and paint layers in C.W. Eckersberg, *Alcyone's Farewell to her Husband. From Ovid's Metamorphoses*, 1813, fragment, oil on canvas, 72.5 × 48.5 cm, Statens Museum for Kunst, Copenhagen, KMS1769. A lower yellowish ground layer is followed by an upper white ground layer and two blue paint layers.



**Fig. 8** Cross-section of ground and paint layers in C.W. Eckersberg, *Portrait of Emilie Henriette Massmann*, 1820, oil on canvas, 53.5 × 43.5 cm, Statens Museum for Kunst, Copenhagen, KMS4559. A single white ground layer is covered with two thin white paint layers slightly toned with bright yellow pigment particles.



**Fig. 9** Cross-section of ground and paint layers in C.W. Eckersberg, *The Corvette 'Galathea' Lying to in Order to Send Help to the Brig 'St Jean'*, 1839, oil on canvas, 63 × 84 cm, Statens Museum for Kunst, Copenhagen, KMS2011. A lower brownish-red ground layer is followed by an upper white ground layer and two paint layers: an ivory-coloured layer and the remnants of a blue layer.

However, from the late 1830s another clear shift occurred in Eckersberg's practice – the double ground started to reappear, becoming the principal type found in the paintings from the next decade. Although there is some variation, the



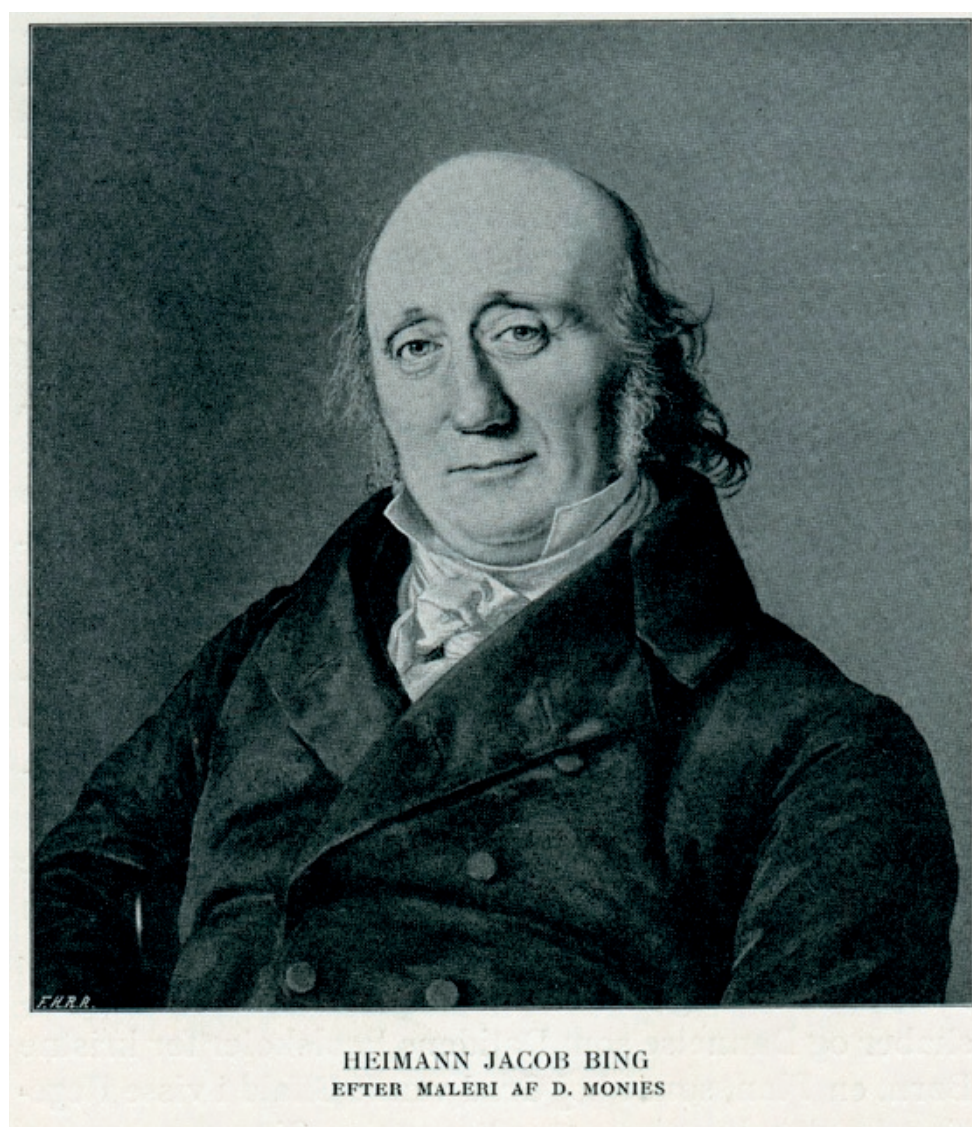


Fig. 10 Heimann Jacob Bing (1776–1844), lithograph after a portrait by D. Monies.

stratigraphy of the majority of these grounds, which have a brownish-red first layer, is similar to that found in the paintings from Paris (Fig. 9).

The diaries reveal that after his return to Copenhagen, Eckersberg enlisted the services of caretakers at the Royal Academy of Fine Arts to prime his canvases. Alongside expenses for stretchers and frames made by the carpenter and gilder Mr Bjørnsen, several entries record payment for priming to a succession of named employees.<sup>41</sup> The entries show that Eckersberg commissioned the priming of canvases only at certain intervals. This evidence, as well as the fact that the tacking edges of his paintings are covered with ground, points to a practice of having larger pieces of canvas primed to be cut to size and stretched for the individual paintings.

The method of applying the ground may have been similar to that described in an article in the contemporary periodical *Nyt Magazin for Kunstnere og Haandværkere* (*New Magazine for Artists and Craftsmen*) published by Eckersberg's close friend Georg Frederik Ursin.<sup>42</sup> A length of canvas was attached on one side with iron hooks to a 15–18-ft-long wooden frame (i.e. about 5 m in length), while along the opposite side another

set of hooks inserted in the canvas was connected with strings to wooden screws (like violin pegs) plugged into holes in the frame. The canvas was then stretched, either by turning the screws along the one side or alternatively, by expanding the entire frame with a system of screws in its corners. With the stretched canvas lying flat on the table, the priming material – washed chalk and lead white in heat-bodied linseed oil – was applied and spread in two or three layers with a large blade-shaped spatula of the same length as the width of the canvas. After drying, the ground was polished with pumice and water.

The process of sizing the fabrics before the application of the ground was not mentioned in Ursin's article or in Eckersberg's diaries, possibly because he did not carry out these operations himself or simply because it was considered to be an intrinsic part of the priming process. It is also possible that no sizing occurred. However, in one instance related to the priming in 1828 of the large canvas for one of the Christiansborg paintings, Eckersberg records having the canvas 'glued', followed by the application of the first layer of ground four days later.<sup>43</sup>

The gradual re-emergence of the double ground with a brownish-red first layer in Eckersberg's paintings, beginning in the late 1830s, was probably associated with a change in his practice with regard to who applied the grounds – although he continued to record the purchases of canvas and stretchers in his diaries, no mention of priming or related expenses appear from this time onwards. Additionally, the sequence of production evident from recurrent entries is that the underdrawing of the composition immediately followed the stretching of the canvas, making it clear that the supports were purchased ready-primed. Judging from the diaries, a frequent and probably his main supplier of canvas by this time was the aforementioned H.J. Bing store in Copenhagen (after 1838 named Bing & Son) (Fig. 10). Established in 1820 and initially trading in books and paper, the enterprise soon expanded to include the sale of artists' supplies such as canvas and paint brushes. The earliest mention of the store in the diaries is in 1827, when Eckersberg bought canvas from Mr Bing on two occasions, one being a Dresden canvas for a marine painting. The store, as well as the type of canvas, is mentioned on several later occasions, although not always within the same entry.<sup>44</sup>

The continued prevalence of the white or lightly toned grounds in Eckersberg's production can be explained by the way in which he exploited it as a luminous base tone for his thinly applied paint layers and colours, finely blended with almost imperceptible brushwork. Although it is not substantiated by any entries in his diaries, there may also have been an aesthetic reason for his preference for the double grounds, which are found in his paintings from the late 1830s onwards. His highly finished, precise manner of painting, devoid of conspicuous brushwork or impasto, also called for the canvas texture to be inconspicuous on the surface of his paintings, a feature that the double grounds would help to achieve. It also explains the occasional two or even three applications of the priming material in paintings with single grounds.

## Preservation

When assessing the implications of Eckersberg's choice of supports and grounds, it is worth considering the fact that the later stage of his career coincided with the early part of the mechanisation of linen manufacture. Machine-spun flax emerged as a commodity in Denmark during the 1840s, and according to contemporary sources, the yarns resulted in canvases that would absorb up to 30% more water than the fabrics woven with yarns spun by hand.<sup>45</sup> Importantly, this meant an increased swelling potential associated with these features. Nevertheless, a steep rise in the import of spun flax from the late 1830s meant that the domestic hand-spun yarns were gradually being superseded by the foreign products, some of which were machine spun.<sup>46</sup> On the looms, the imported machine-spun yarns were sometimes used for the warp while the hand-spun yarns were preferred for the weft.<sup>47</sup>

In Denmark, the earliest weaving of linen canvas using power looms started as late as 1893.<sup>48</sup> The German linen

industry, traditionally rural and domestic like the Danish industry, experienced a similarly slow development in its production methods, lagging behind in the establishment of power-driven spinning and weaving in England and Ireland.<sup>49</sup> Therefore, it is safe to say that the Danish as well as German canvases used by Eckersberg were hand-woven, but also that in paintings from the late 1830s onwards, they may contain yarns manufactured by power spinning. In light of this, an increased moisture response in the canvas supports of Eckersberg's later paintings would be expected, as has been found in works by some of his contemporaries.<sup>50</sup> That being said, the vast majority of Eckersberg's paintings, including almost the entire group of works in the present survey, have been subjected to structural treatment on one or more occasions during the approximately two centuries since their creation. In this respect they are similar to other paintings from the same era, and factors other than their material composition, such as ambient environmental conditions, would have affected their preservation. At this stage, it has not been possible to attribute structural components in the construction of the paintings as the main factor predisposing them to a heightened sensitivity. On the contrary, in some cases environmental conditions appear to have played the major role in the deterioration of paintings with similar dates but different material compositions.

Likewise, it might be expected that the development of Eckersberg's use of different grounds, with the shift between single and double structures, would be reflected in the condition of his paintings in a pattern correlated to the occurrence of the respective types. In theory, the double grounds with their extra layer inserted between the support and the paint would be more heterogeneous structurally, resulting in paintings with a higher incidence of structural problems. However, no such pattern has been identified in the present investigation.

These cases illustrate that a number of factors should be taken into account when assessing how Eckersberg's technique and choice of materials have affected the preservation of his paintings. Nevertheless, the data resulting from the above investigation will form a valuable basis for the future study and assessment of the potential consequences of his choice of supports and grounds.

## Acknowledgements

We are grateful to the staff of the Centre for Art Technological Studies and Conservation (CATS) for their contribution to the analysis, especially lab technician Johanne Marie Nielsen who carried out preparation and photography of a large number of cross-sections. Many thanks also to conservators Tanja Larsen and Pauline Lehman Banke for their help in sampling paintings for analysis and sharing important observations. Photographer Jacob Skou-Hansen collaborated in the X-radiography of most of the paintings, which was greatly appreciated. Lastly, we extend our thanks to Mikkel Scharff, Head of the Institute of Conservation, Copenhagen, Denmark, for supplying images and illustrations.



## Notes

1. The investigated paintings are from the collections of the Statens Museum for Kunst, Copenhagen; the Hirschsprung Collection, Copenhagen; the Ny Carlsberg Glyptotek, Copenhagen; the Royal Danish Academy of Fine Arts, Copenhagen; and the Christiansborg Palace, Copenhagen. Samples for cross-section analysis were embedded in Technovit resin in EasySections moulds, polished using Micro-Mesh with grit size up to 12000, and photographed with a Leica DM4000 microscope using a Leica DFC 490 camera.
2. A transcribed, annotated and indexed edition of Eckersberg's diaries can be found in J. Villadsen (ed.), *C.W. Eckersbergs dagbøger*, Copenhagen, Nyt Nordisk Forlag Arnold Busk, 2009. The dated diary entries in the notes below refer to this edition. Many letters to and from Eckersberg are held in the Royal Library, Copenhagen. A substantial part of his correspondence, particularly from his years in Rome, is held by the Thorvaldsens Museum archives; see [http://arkivet.thorvaldsensmuseum.dk/documents?q=Eckersberg&from=&until=&sender\\_id=258&sender\\_nationality\\_index=&concipist\\_id=&document\\_status\\_id=&recipient\\_id=&recipient\\_nationality\\_index=&lang\\_id=&sender\\_index=1&order=time](http://arkivet.thorvaldsensmuseum.dk/documents?q=Eckersberg&from=&until=&sender_id=258&sender_nationality_index=&concipist_id=&document_status_id=&recipient_id=&recipient_nationality_index=&lang_id=&sender_index=1&order=time).
3. See M.P.L. Bouvier, *Manuel des jeunes artistes et amateurs en peinture*, Paris, 1827, p. 508; and J.-N. Paillot de Montabert, *Traité complet de la peinture*, vol. 9, Paris, 1829, p. 139.
4. *Christian I Conferring the Order of the Elephant*, 1841, oil on canvas, 301.2 × 212.5 cm, Christiansborg Palace; *Langebrog, Copenhagen, in the Moonlight with Running Figures*, 1836, oil on canvas, 45.5 × 33.5 cm, Statens Museum for Kunst, Copenhagen, KMS7284; *A Corvette Reeling Sails in a Freshening Wind and some other Ships*, 1836, oil on canvas, 47.4 × 63 cm, Statens Museum for Kunst, Copenhagen, KMS1125; *A Frigate and some other Ships Cruising*, 1845, oil on canvas, 47 × 63 cm, Statens Museum for Kunst, Copenhagen, KMS1443.
5. *The Carnival in Rome. Fragment*, 1828, oil on canvas, 31.5 × 29 cm, Statens Museum for Kunst, Copenhagen, KMS3394.
6. According to A.-J. Pernety, in his *Dictionnaire portatif de peinture, sculpture et gravure* (Paris, 1757, pp. 534–535), 18th-century canvases were labelled according to their country of origin and with an implied reference to their quality. These included terms such as *Toile d'Italie*, *Toile de Flandres*, *Toile Flammande* and *Toile Française*. With regard to Eckersberg's practice, it is worth noting that *Toile d'Italie* was the term for fabric with the coarsest weave. It may have implied a general practice among Italian painters to paint on coarser supports than their French colleagues, as *Toile Française* represented the finest weave. In fact, economic considerations may well have been a significant factor in Eckersberg's choice of coarser fabrics during his years as a student in Paris and Rome.
7. See M. Koller, 'Das Staffeleibild der Neuzeit, Maltechniken im 17. und 18. Jahrhundert', in *Reclam's Handbuch der künstlerischen Techniken* 1, Stuttgart, Reclam, 1984, p. 339; K. Vanderlip Carbonnel, 'A study of French painting canvases', *Journal of the American Institute of Conservation* 1(20), 1980, pp. 3–20; E. O'Donoghue and V. Rasmussen, 'The treatment of two overdoor paintings by François Boucher', in *AIC Paintings Specialty Group Postprints*, Norfolk VA, 14–15 June 1996, p. 41.
8. See Bouvier 1827 (cited in note 3), 508; Paillot de Montabert 1829 (cited in note 3), p. 139.
9. Computer-assisted automated thread counting and weave mapping were carried out on digital X-radiographs using software developed by C.R. Johnson, Jr., Cornell University, New York and D.H. Johnson, Rice University, Houston Texas. X-radiography was performed by Jacob Skou-Hansen and T. Filtenborg with an Yxlon Smart Evo 160D X-ray tube at 25–30 kV, 5 mA, 90 seconds on Dürr NDT CRIP3040109 digital HD image plates with a resolution of 50 µm. These were subsequently scanned using a Dürr HD-CR 35 NDT laser scanner. For descriptions of the thread-counting and weave-mapping method and interpretation of results, see D.H. Johnson, C.R. Johnson Jr., A.G. Klein, W.A. Sethares, H. Lee and E. Hendriks, 'A thread counting algorithm for art forensics', in *Proceedings of the 13th IEEE DSP Workshop*, Marco Island, Florida, January 2009, pp. 679–684; C.R. Johnson Jr., E. Hendriks, P. Noble and M. Franken, 'Advances in computer-assisted canvas examination: thread-counting algorithms', paper presented at the *PSG Program AIC Annual Meeting*, Los Angeles, 21 May 2009, pp. 1–17.
10. Diary entries 8 June 1812; 4 July 1812; 23 July 1812; 19 September 1812; 4 December 1812.
11. See Pernety 1757 (cited in note 6), pp. xc–xcii. Pernety's measurements are given in the pre-Napoleonic *pieds*, *pouces* and *lignes* (corresponding to feet, inches and lines) of 32.484 cm, 2.707 cm and 0.226 cm respectively. The metric system was introduced in France in 1795.
12. See Paillot de Montabert 1829 (cited in note 3), p. 147; Lefranc & Co. catalogue 1850, in A. Callen, *Artists' Materials and Techniques in Nineteenth-Century France*, PhD dissertation, Courtauld Institute of Art, London, 1980, p. 64, fig. 14, and p. 69, fig. 17; D. Bomford, J. Kirby, J. Leighton and A. Roy, *Art in the Making: Impressionism*, London and New Haven, The National Gallery and Yale University Press, 1980, p. 45, fig. 30.
13. See note 10.
14. See D. Diderot, *Encyclopédie ou dictionnaire raisonné des sciences, des arts et des métiers, par une société de gens des lettres*, vol. 16, Paris, 1765, p. 379: 'Toile, en terme de Peinture, signifie un cadre de bois couvert d'une toile imprimée de quelques couleurs en huile, sur laquelle les Peintres peignent leurs tableaux. Ce sont ordinairement les marchands droguistes – épiciers qui vendent les drogues & couleurs des peintres, qui font aussi imprimer & qui débitent ces sortes de toiles.'
15. In his diary entry dated 19 September 1812, Eckersberg mentions the purchase of a *Toil (sic)* for *Scene from Holberg's 'Jean de France'* (60 × 73 cm, Statens Museum for Kunst, Copenhagen, KMS461) and one for its counterpart *Scene from Ludvig Holberg's 'Jeppe på Bjerget'* (58.5 × 73 cm, Statens Museum for Kunst, Copenhagen, KMS462). Both have formats that originally matched the French standardised format No. 20 (59.5 × 72.9 cm), as listed by Pernety 1757 (cited in note 6), pp. xc–xcii.
16. The German painter Johann Gottlieb Puhlmann, in a letter from Rome to his parents 10 June 1777, records having purchased primed canvas: 'Am 12. kauft ich mir Figuren von Wachs und Leinwand couleurt', in G. Eckardt (ed.), *Ein Potsdamer Maler in Rom; Briefe des Batoni-Schülers Johann Gottlieb Puhlmann aus den Jahren 1774 bis 1787*, Berlin, Henschelverlag, 1979, p. 130. In the same letter, but related to the following month, Puhlmann mentions: 'Am 15. fing ich an der Diana zu malen. Die Leinwand kost mir ½ Zechin', in Eckardt 1979, *op. cit.*, p. 131.
17. For Eckersberg's practice in Rome with regard to canvas supports, see diary entries: 17 July 1813; 28 August 1813; 17 September 1813; 18 September 1813; 5 February 1814; 24 February 1814; 2 July 1814; 16 July 1814; 29 July 1814; 23 September 1814; 28 February 1815; 6 May 1815; 13 May 1815; 3 June 1815; 12 February 1816.
18. See diary entries: 4 October 1813; 26 February 1814; 1 July 1814; 29 July 1814.
19. See diary entries: 5 February 1814; 24 February 1814; 2 July 1814; 6 May 1815. Italy had no standardised unit of measurement before the decimal system was implemented in 1850 – until then, a variety of local units often had names in common, but



- represented different values. As an example, the *canna* was in Naples = 10 *palmi* (c.2.26 m), in Sicily = 8 *palmi* (c.2.07 m) and in Tuscany = 5 *Bracci* (c.2.92 m). In addition, measurements could vary depending on the item measured. A *braccio* of wool was c.68 cm, but a *braccio* of silk was only c.64 cm. See <http://brevarkivet.thorvaldsensmuseum.dk/emner/artikler/maal-og-vaegt> (accessed May 2016). In Rome a *pie*de (foot) was 29.33 cm and an inch 2.465 cm. The Roman *canna* for cloth was equivalent to 2 m but it was 2.234 m for buildings.
20. When mentioning his now famous portrait of Thorvaldsen in a letter to J.F. Clemens, Eckersberg describes its size in Danish *ells* and inches (letter dated 12 February 1814 from the Thorvaldsens Museum archives). According to the official regulations of 1683 and 1698, a Danish *ell* was set at two Rhineland feet (62.77 cm) a measure that remained valid until 1907. However, until the first decades of the 19th century, different *ell* measures were still in use locally, varying between 56.5 and 62.8 cm. See A. Friis and K. Glamann, *A History of Prices and Wages in Denmark 1660–1800*, London, Longmans, Green and Co., 1958, pp. 119–120.
  21. For some large-format paintings, the measurements were presumably predetermined by those who commissioned them such as *The Israelites Resting after the Crossing of the Red Sea* (1815, oil on canvas, 203.5 × 283.5 cm, Statens Museum for Kunst, Copenhagen, KMS69) painted for the merchant M.L. Nathanson, and the altarpiece *The Women with the Angel at the Sepulchre*, made for the Norwegian count J.C.H. Wedel Jarlsberg (1814, oil on canvas, 252 × 158 cm, Sem Church, Tønsberg, Norway). Eckersberg had canvases and stretchers made to order: see diary entries 29 July 1814, 23 September 1814 and 27 August 1816, and a letter to J.F. Clemens dated 23 July 1814 (from the Thorvaldsens Museum archives).
  22. E. Bærentzen, *Portrait of the Marine Painter Anton Melbye*, c.1848, oil on canvas, 32.5 × 24.5 cm, Statens Museum for Kunst, Copenhagen, KMS8718.
  23. Diary entry 29 January 1847.
  24. See J.O. Bro Jørgensen in A. Nielsen (ed.), *Industriens Historie III*, Copenhagen, Gad, 4, vol. 2, 1943, pp. 104–106, 150 and vol. 3, 1944, pp. 128, 170, 282; O.J. Rawert, *Beretning om Linnedvæveriets, fornemmligen Linnedhusflidens nuværende Tilstand i de danske Provindser*, Copenhagen, Gyldendal, 1844, pp. 107–108. For a discussion of the customs regulations and their consequences see C.K. Andersen, T. Filtenborg, A. Scharff and M. Scharff, 'The industrialisation of canvas production in Denmark and its implications for the preservation of Danish nineteenth century paintings', in M. Ryhl-Svendsen, K. Borchersen and W. Odder (eds), *Incredible Industry: Preserving the Evidence of industrial Society, Proceedings of the NKF Congress*, 25–27 May 2009, Copenhagen, pp. 39–49.
  25. Diary entries 28 July 1834; 29 July 1834; 1 August 1834; 2 August 1834.
  26. At least one Danish linen manufacturer of the time, the Køng mill, was capable of producing wide batches of canvas. It is therefore possible that the supports of some of Eckersberg's paintings in the Christiansborg series were products of this mill. For a discussion of the role of the Køng mill and Danish 19th-century linen manufacture see Andersen *et al.* 2009 (cited in note 24), p. 43. Eckersberg also records buying *Flamskdug* ('Flemish cloth') for one of the Christiansborg paintings in 1828 (diary entry 25 February 1828). The term *Flamskdug* in its Danish single-word version was used for a high-quality sailcloth, 154 cm wide and made of hemp: see C.L.L. Harboe, *Dansk Marine-Ordbog*, Copenhagen, 1839, published by the author, p. 353. Eckersberg was intensely interested and knowledgeable on all things maritime and would have been familiar with the term as well as the quality of the fabric.
  27. Diary entries 12 November 1827; 10 June 1828; 22 December 1830; 25 January 1832.
  28. See *Allgemeine deutsche Real-Encyclopädie für die gebildeten Stände. (Conversations-Lexicon)* (12 vols), vol. 9, 7th edition, 1836, Leipzig, F.A. Brockhaus, p. 563; A.F.W. Crome, *Geographisch-statistische Darstellung der Staatskräfte von den sämtlichen, zum deutschen Staatenbunde gehdrigen Ländern*, vol. 1, Leipzig, Gerhard Fleischer, 1820, p. 330; Anon., *Neueste Länder- und Völkerkunde. Ein geographisches Lesebuch für alle Stände*, vol. 20, Prague, Diesbachische Buchhandlung, 1827, p. 117.
  29. Anon. 1827 (cited in note 28), p. 117.
  30. Pale red grounds were used in paintings such as *Loki and Sigyn* (1810, oil on canvas, 134 × 161.5 cm, Statens Museum for Kunst, Copenhagen, KMS39), *Landscape with a Stile* (1810, oil on canvas, 58 × 74.8 cm, Statens Museum for Kunst, Copenhagen, KMS7694), and *A View North of Kronborg Castle* (c.1810, oil on canvas, 42.5 × 78 cm, The Hirschsprung Collection, DHS3064).
  31. For grounds in Abildgaard's paintings see T. Filtenborg, *Between Formula and Freestyle: Nicolai Abildgaard and 18th-Century Painting Technique*, London, Archetype Publications in association with Statens Museum for Kunst and CATS, Copenhagen, 2014, pp. 17–30.
  32. A single white ground was used in *The Return of Odysseus* (1812, oil on canvas, 60 × 72 cm, Statens Museum for Kunst, Copenhagen, KMS7256). Double grounds with a red first layer are found in *Two Shepherds* (1813, oil on canvas, 53 × 42 cm, Statens Museum for Kunst, Copenhagen, KMS1333), in *A View from the Château of Meudon* (1813, oil on canvas, 55.5 × 71 cm, Statens Museum for Kunst, Copenhagen, KMS1623), and *Pont Royal Seen from the Quai Voltaire* (1812, oil on canvas, 55.5 × 71 cm, Statens Museum for Kunst, Copenhagen, KMS1624).
  33. See Bouvier 1827 (cited in note 3), pp. 531–534; Paillot de Montabert 1829 (cited in note 3), pp. 160, 179–180.
  34. *Langebro, Copenhagen, in the Moonlight with Running Figures* (1836, oil on canvas, 45.5 × 33.5 cm, Statens Museum for Kunst, Copenhagen, KMS7284).
  35. See N. Eastaugh, V. Walsh, T. Chaplin and R. Siddal, *The Pigment Compendium: A Dictionary of Historical Pigments*, Oxford, Elsevier, 2004, p. 97.
  36. The following paintings were examined by SEM-EDX and FTIR-ATR: *A View from the Château of Meudon* (1813, oil on canvas, 55.5 × 71 cm, Statens Museum for Kunst, Copenhagen, KMS1623); *A Russian Fleet at Anchor near Elsinore* (1826, oil on canvas, 31.5 × 59 cm, Statens Museum for Kunst, Copenhagen, KMS1671); *Portrait of Bertel Thorvaldsen*, 1814, oil on canvas, 91 × 74.5 cm, The Royal Academy of Fine Arts, Copenhagen, KS3; *The Russian Ship of the Line 'Asow' and a Frigate at Anchor near Elsinore* (1828, oil on canvas, 63 × 51 cm, Statens Museum for Kunst, Copenhagen, KMS 608). Results will be discussed in a forthcoming publication by C. Krarup Andersen *et al.*
  37. See Paillot de Montabert 1829 (cited in note 3), p. 160.
  38. See for instance Pernety 1754 (cited in note 6), pp. 13–14; Diderot 1765 (cited in note 14), p. 379; Bouvier 1827 (cited in note 3), p. 552. For a discussion of written sources for ground recipes, see M. Witlox, and L. Carlyle, 'A perfect ground is the very soul of the art' (Kingston 1835): ground recipes for oil painting, 1600–1900', in I. Verger (ed.), *Preprints of the ICOM-CC 14th Triennial Meeting*, London, James & James, pp. 519–528.
  39. See A.R. Mengs, *Lezioni pratiche di pittura*, Parma, Dalla Stamperia Reale, 1780; German translation 1783 *Praktischer Unterricht in der Mahlerey*, Nuremberg, Ernst Christoph Grattenauer, pp. 66–67.
  40. Unfinished portraits by Mengs, in which light and in some cases almost white grounds are visible, corroborate that his practice

accorded with his instructions. Cross-section analysis of his *Portrait of King Charles III of Spain* (1765–66, Statens Museum for Kunst, Copenhagen, KMS1831) also shows a very pale grey ground composed mainly of lead white and chalk, toned with very little earth pigment and black. For Abildgaard's use of white grounds see Filtenborg 2014 (cited in note 31), pp. 17, 25–26.

41. Diary entries: 21 May 1818; 15 May 1819; 13 May 1821; 18 June 1821; June 1824; 18 March 1826; 1 November 1826; 28 September 1827; 26 March 1828; 10 November 1829; 20 January 1830; 6 July 1830; 21 January 1831; 3 March 1832; 30 October 1832; 23 December 1833; 23 June 1835; 6 January 1837; 7 February 1837. The first was caretaker Mr Glisner who also served as a model. After Glisner's death in 1823, Eckersberg paid his successors – the caretaker Jens Linder and the servant Jens Fjældsøe – at intervals for the priming of canvas.
42. See G.F. Ursin and C.G. Hummel (eds), 'Lakeret Lærred eller Voksdug', in *Nyt Magazin for Kunstnere og Haandværker* 93, 1838, pp. 261–264. The polytechnic periodical was published between 1826 and 1842.
43. Diary entries: 5 March 1828; 9 March 1828; 26 March 1828.
44. Diary entries: 12 November 1827; 12 December 1827; 10 July 1828; 19 January 1831; 25 January 1832; 6 January 1834; 31 August 1834; 1 June 1836; 23 January 1843; 6 June 1843. In a number of other entries during these years, Eckersberg records buying canvas without specifying the type or the supplier. However, in the cases where no subsequent priming is mentioned, it seems likely that the support was ready-primed and that therefore it may have been identical to the Dresden canvas. Double grounds with the same structure as that seen in Eckersberg's canvases from Dresden have been identified in works from the 1830s and 1840s by other Danish painters such as Christen Købke, Dankvart Dreier and Johan Thomas Lundbye. See C.K. Andersen, *Lined Canvas Paintings: Mechanical Properties and Structural Response to Fluctuating Relative Humidity, Exemplified by the Collection of Danish Golden Age Paintings at Statens Museum for Kunst (SMK)*, unpublished PhD dissertation, Schools of Architecture, Design and Conservation, The Royal Academy of Fine Arts, Copenhagen, 2013, Appendix, pp. 13–17. Occasionally, Eckersberg would buy canvas from other suppliers such as Mr Lorents Holmer, a decorator who, on two occasions in 1833, provided him with pieces of canvas: see diary entries 23 August 1833 and 28 December 1833.
45. For a discussion of the implications of the mechanisation of the linen manufacture, see Andersen *et al.* 2009 (cited in note 24), pp. 39–49.
46. Bro Jørgensen in Nielsen 1944 (cited in note 24), p. 127.
47. Bro Jørgensen in Nielsen 1944 (cited in note 24) p. 119.
48. [http://www.kulturarv.dk/kulturarv/industrisamfundet/kort/midtjylland/grenaa\\_damp/index.jsp](http://www.kulturarv.dk/kulturarv/industrisamfundet/kort/midtjylland/grenaa_damp/index.jsp) (accessed 21 January 2009); <http://slks.dk/kommuner-plan-arkitektur/kommune-og-turisme/industrikultur/industrihistoriens-danmarkskort/grenaa-dampvaeveri/> (accessed 30 June 2016).
49. See W.O. Henderson, *The Rise of German Industrial Power 1834–1914*. Berkeley and Los Angeles, University of California Press, 1975, pp. 63–64, 146–147.
50. See Andersen *et al.* 2009 (cited in note 24), pp. 41, 44–45.

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# FROM COURBET TO DAUBIGNY: THE MYSTERY BEHIND *SLUICE GATE AT OPTEVOZ*

Eva Ortner

**ABSTRACT** This paper describes the history, art technological investigation and conservation treatment of *Sluice Gate at Optevoz*: a French landscape painting from the mid-1850s. The painting was acquired by the Bayerische Staatsgemäldesammlungen for the Neue Pinakothek, Munich in 1909 as a work by Gustave Courbet and was accepted and appreciated as such by art historians for more than 100 years. Doubts as to its sole attribution to Courbet emerged during technical examination in 1995, when Daubigny's signature was discovered on infrared images, and it transpired that Courbet's name on the painting was added at a later date. The theory of a joint authorship by Courbet and Daubigny was put forward. A more detailed analysis of the painting from 2006 onwards revealed that the picture had already been considerably reworked before being acquired in 1909. These changes had been made intentionally to create a forgery and it has been confirmed that they were executed long after Courbet's death. After careful consideration, the decision was made to restore the work. Only by removing all later additions to the painting was it possible to make an art historical re-evaluation. The Munich *Sluice Gate at Optevoz* is now attributed to Charles-François Daubigny, who painted this motif several times.

## Introduction

*Sluice Gate at Optevoz* is a French landscape painting of the mid-1850s, acquired as a work by Gustave Courbet (1819–1877) by the Bayerische Staatsgemäldesammlungen for the Neue Pinakothek in Munich over 100 years ago. Following findings made during an initial technological examination carried out in 1995, the painting became a mystery; only as the result of a careful re-examination and after a complex conservation process, completed in 2014, could the case finally be resolved.

In autumn 1909, Hugo von Tschudi, then director of the Pinakothek museums, travelled to Paris to acquire works of French realism for the Munich collections.<sup>1</sup> Tschudi was one of the first museum directors in Germany to recognise 19th-century French painting as a stimulus in the development of modern art. Among the artists highly regarded by Tschudi was Gustave Courbet and he bought no less than six paintings by this artist for the Neue Pinakothek, including *Sluice Gate at Optevoz* (Fig. 1).<sup>2</sup> The painting depicts a rugged, rocky landscape with a simple sluice gate in the centre of the composition. Water gushes through the open gate down into the shallow riverbed with its muddy banks in the foreground. The motif has been located close to the small town of Optevoz in

the Dauphiné region in southeastern France where the sluice gate still exists to this day. In the lower left-hand corner the 'Courbet' signature was executed with red brushstrokes.

In 1909 the painting was offered to Tschudi by the well-known collector and art critic Théodore Duret, who had



**Fig. 1** Charles-François Daubigny (formerly attributed to Gustave Courbet), *Sluice Gate at Optevoz*, c.1855, oil on canvas, 63.5 × 84.5 cm, Neue Pinakothek, Munich, inv. no. 8584: before treatment. (Image: Bayerische Staatsgemäldesammlungen Munich.)

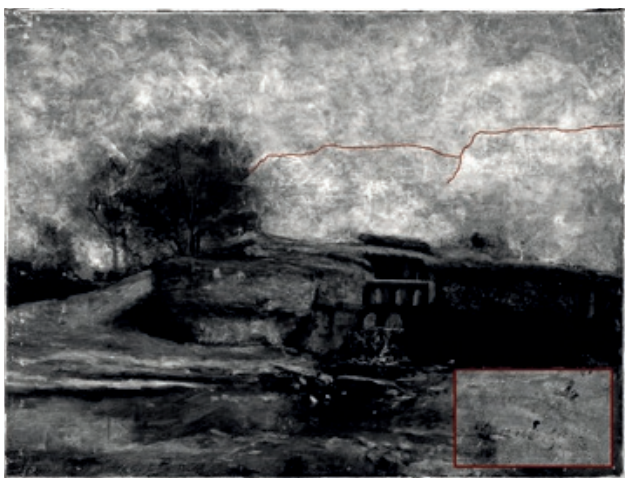




**Fig. 2** Charles-François Daubigny, *Écluse dans la vallée d'Optevoz*, 1855, oil on canvas, 91 × 162.5 cm, Rouen, Musée des Beaux-Arts, inv. no. D 886.1. (Image: bpk/RMN-Grand Palais/Gérard Blot.)



**Fig. 3** *Sluice Gate at Optevoz*, c.1855, oil on canvas, 63.5 × 84.5 cm, Neue Pinakothek, Munich, inv. no. 8584: after treatment. (Image: Bayerische Staatsgemäldesammlungen Munich.)



**Fig. 4** *Sluice Gate at Optevoz*, Munich: IRR with detail of the signature 'Daubigny' in the lower right-hand corner. The red line indicates the horizon of the first landscape. (Image: Bayerische Staatsgemäldesammlungen, Doerner Institut Munich.)

known the artist personally since 1862 and was among the first to admire and promote Courbet's art. For Tschudi, Duret's collection at that time had an unquestionable provenance: several years earlier he had already acquired Courbet's *The Wave* (*La Mer Orageuse / La Vague*) for the Nationalgalerie in Berlin from this same source.<sup>3</sup> However, Duret's reputation suffered its first severe setback in 1910 when several works listed in his Van Gogh monograph were revealed to be forgeries. After Duret's death in 1927, numerous forgeries were discovered in his collection during the creation of an inventory of works in his estate.<sup>4</sup>

Another crucial aspect in the case at hand is that the painter most closely associated with the landscape around Optevoz was not Gustave Courbet, but his contemporary Charles-François Daubigny (1817–78), who frequently depicted the motif of the sluice gate at Optevoz, varying the composition slightly from one picture to the next. According to the catalogue raisonné compiled by Robert Hellebranth, eight versions exist.<sup>5</sup> The most famous, most elaborate and largest version, now in the Musée des Beaux-Arts in Rouen, was painted by Daubigny as a state commission following his early success as a landscape painter (Fig. 2). The painting was on display at the Salon de Paris in 1855 at the time of the Exposition Universelle. A much smaller, sketchy and more hastily executed version of the sluice gate motif in the Kunsthalle Karlsruhe was probably created earlier and should be classified as a preparatory study.<sup>6</sup> Tschudi was aware of at least one of Daubigny's 'sluice gate' landscapes. In his request to the ministry for permission to purchase Courbet's *Sluice Gate*, he mentions Daubigny's version of the motif which was, and still is, on display in the Musée du Louvre in Paris. Tschudi compared the two landscapes, emphasising the higher quality of Courbet's depiction: 'The painting which dates from the mid-1850s is of the highest pictorial delicacy and, regarding its sublime conception, outclasses a painting by Daubigny in the Louvre portraying the same subject.'<sup>7</sup> The comparison of the Munich version of Courbet's *Sluice Gate at Optevoz* with

Daubigny's motif seems to have been an interesting topic within the art historical discussion of the past, with basic differences in the artistic approach being recognised.<sup>8</sup>

## A joint work by Courbet and Daubigny?

Fig. 1 shows the painting in the condition when Tschudi bought it, and how it was displayed for nearly 100 years at the Neue Pinakothek in Munich. Since its acquisition the painting had remained untouched until the conservation treatment which was completed in 2014.<sup>9</sup> As a result of this treatment, the landscape changed significantly (Fig. 3): the gloom vanished and the sky turned into a light blue, partly hazed over with white clouds. Details of the landscape reflect the light and the autumn foliage glows in yellow and red – even Courbet's signature in the lower left-hand corner disappeared.

It is quite clear that the steps taken in the conservation treatment represent a turning point in the painting's history. Its case history first takes us back at least 20 years. In 1995, as part of a technical research project on paintings of the Barbizon School, an initial investigation of *Sluice Gate at Optevoz* was carried out by Konrad Laudénbacher, Andreas Burmester, Bruno Hartinger and Johann Koller.<sup>10</sup> During their investigation, three unexpected observations were made. Firstly, infrared reflectography (IRR) revealed an inscription in the lower right-hand corner of the painting covered by paint layers and therefore invisible to the naked eye (Fig. 4). There was no doubt that this newly found inscription was Daubigny's signature. Secondly, stereomicroscopic examination revealed that the 'Courbet' signature in the opposite corner was a later addition to the painting. Thirdly, X-radiography indicated that the size of the painting had been reduced in the past. Unfortunately, due to time constraints while working on the Barbizon exhibition in Munich in 1996, a thorough interpretation of these findings was not possible and therefore had to be postponed. In the exhibition catalogue, the painting was described as a joint work by Courbet and Daubigny.<sup>11</sup>

## Further investigations, more questions

Not surprisingly, when the case was resumed in 2006, the main focus was the question of authorship. Removal of the yellowed varnish was also considered. During this second phase of investigation, a thorough re-evaluation of the existing IR and X-ray images took place. *Sluice Gate at Optevoz* was examined extensively under the stereomicroscope, and samples were taken and embedded as cross-sections. This led to three important findings. Firstly, the depiction of the sluice gate is not the only composition on the canvas; secondly, the painting underwent two profound format changes before its acquisition in 1909; and thirdly, the sky had been almost completely overpainted with a dark greyish-blue paint. This raised several questions such as: What was the subject of the first painting? When and why was the sky overpainted? And

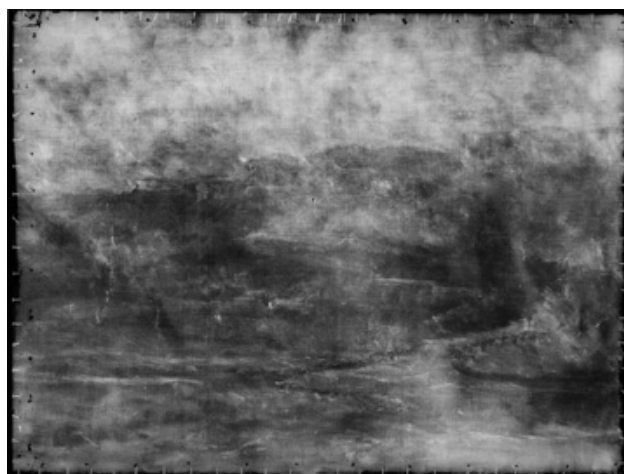


Fig. 5 *Sluice Gate at Optevoz*, Munich: X-radiograph showing the two landscapes. (Image: Bayerische Staatsgemäldesammlungen Munich.)

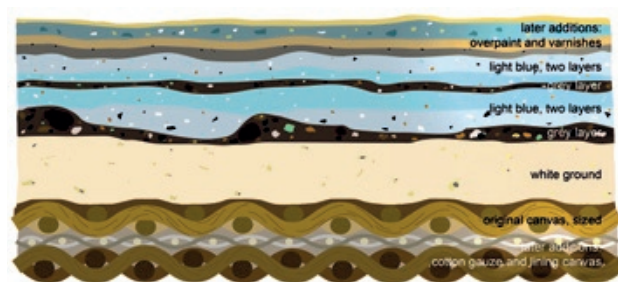


Fig. 6 *Sluice Gate at Optevoz*, Munich: schematic diagram showing a cross-section of the sky area. (Image: Stephanie Dietz.)

by whom – by the artist himself or was the overpaint applied later perhaps due to damage in the sky area? Answering these and several other questions was essential in order to inform the planned conservation treatment.

## Two landscapes, one palette

A closer look at the X-ray reveals that *Sluice Gate at Optevoz* is not the first landscape on the canvas (Fig. 5) – another hidden landscape with a higher horizon can be seen beneath the current composition. A ridge of hills rises from the left to the right; in the foreground an area of water, such as a lake or river, can be distinguished. In the IRR, the line of the horizon is also visible, as well as a V-shaped groove which gives a key hint to the identification of the first composition (Fig. 4): it is most likely a scene near Optevoz depicting the Étang de Bas, one of the many ponds in the area.<sup>12</sup> The existence of the first landscape also explains the Daubigny signature, which belongs to this first painting. A comparison with other signatures by him underlines the authenticity of the hidden signature.<sup>13</sup> There is, therefore, good reason to suppose that the first landscape on the canvas is a work by Daubigny and the signature indicates that he considered the work to be (at least almost) completed. The composition with the sluice gate, however, was created later. Who was the artist of this new composition?





**Fig. 7** *Sluice Gate at Optevoz*, Munich: first alteration (between 1860 and 1890), reduction of size and framing. (Image: Stephanie Dietz and Eva Ortner.)



**Fig. 8** *Sluice Gate at Optevoz*, Munich: second alteration (after 1894 and before 1909), re-enlargement, overpainting and falsification. (Image: Stephanie Dietz and Eva Ortner.)

To answer this question, it is necessary to look more closely at the structure and materials in the paint layers (Fig. 6). After sizing, the canvas was prepared with a white ground applied with a spatula. The ground was then covered completely with a dark grey paint layer, which served as a preparation for the first landscape. In cross-sections from the sky, two light blue paint layers are visible on top of this – these layers were the sky of the first landscape, which was not covered with a varnish. The next layer visible in the cross-section is another dark grey paint that was applied over the entire surface of the first

landscape. On top of this are two additional light blue layers used to paint the sky, followed by two varnish layers and several other layers. Pigment analysis has revealed that both grey layers that covered the whole surface consist of the same six pigments, mixed in very similar proportions: ochre, chrome yellow, plant black, lead white, chalk and barium sulphate.<sup>14</sup> As the composition is specific and complex, it can be concluded that the grey layers that underlie both landscapes must have been made using the same paint. Likewise, samples from other areas of the painting yield a similar result; apart from



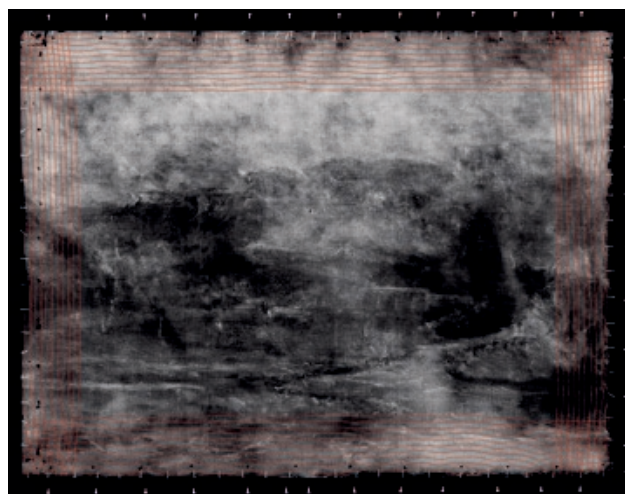
small differences, the same pigments were used in both compositions. The layers of blue for both skies are composed of lead white, Prussian blue, red ochre, plant black and chalk. In both landscapes, the green paint layers consist of mixtures of Prussian blue, chrome yellow, ochre, plant black and chalk. A minimal difference can be observed in the green of the landscape visible today, which has a morphologically different chrome yellow variant compared to the first composition.<sup>15</sup>

To summarise, it can be stated that the painter of *Sluice Gate at Optevoz* used the canvas bearing Daubigny's first depiction of a landscape, overpainted it with Daubigny's grey mixture, and made use of his palette of paints. This leads us to conclude that Daubigny was the author of the first landscape as well as of the overlying *Sluice Gate* composition. The finished painting was subsequently given two layers of varnish.<sup>16</sup> When the first layer was applied, craquelure had already formed in the paint layer, which was then penetrated by the varnish. Bearing this in mind, it can be assumed that there was a distinct gap between the time the painting was completed and the application of the first layer of varnish. One conspicuous characteristic of the first layer of varnish is its greyish colour. Cross-section samples and analyses revealed that the effect was caused by soot particles, nicotine and deposits of air pollution on the surface of this varnish.<sup>17</sup> When, some time later, the second varnish was applied, this was carried out without cleaning the picture beforehand.

## Early alterations and falsification

Sometime between 1860 and 1890, the Munich *Sluice Gate at Optevoz* painting was removed from its stretcher in order to mount it on another one that was considerably smaller, especially in width (Fig. 7). As a consequence, about 7 cm of the original work was cut off on the left-hand side.<sup>18</sup> During remounting, the tacking margins on the right were reused, whereas on the other three sides, the edges of the painted canvas were wrapped around the stretcher and nailed to it through the paint layers. With its reduced dimensions of roughly 59 × 81 cm, the painting then accorded with the standard format for landscape paintings (*paysages*) typically found in France. Lefranc & Cie., for example, offered stretcher frames measuring '810 × 594 millimètres' in its list of items for sale in 1855 under the heading 'Dénomination 25'. Standardised formats for portraits, landscapes and seascapes had already become established in the 18th century, and this enabled ornamental frames that fitted around them to be produced in series in advance.<sup>19</sup> Traces of gold leaf found along the new edges of the *Sluice Gate* painting obviously came from a gilded frame – presumably, a gilded, standard-sized frame already existed and the painting was reduced in size to fit into it.

Some time later, another major alteration took place starting with a re-enlargement of the painting (Fig. 8). It was removed once again from its stretcher and the painted edges were folded back. The remaining tacking margins (along the top, bottom and on the right) were cut off; in addition, a strip



**Fig. 9** *Sluice Gate at Optevoz*, Munich: X-radiograph showing cusping along the edges at the top, bottom and on the right. On the left the cusping has been completely removed. (Image: Bayerische Staatsgemäldesammlungen Munich.)

of the sky some 0.5–1 cm wide was also removed from the top. The canvas was then lined and mounted onto a new stretcher, giving the painting its present format of 63.5 × 84.5 cm. Apart from the slight loss of part of the sky, its height corresponds fairly closely to that of the original. The width, however, is missing the strip measuring approximately 7 cm wide which, as already mentioned, had been cut off from the left-hand edge when the format was first altered. X-ray images provided the necessary indications to establish its original size, as they clearly show the course of the threads in the original canvas (Fig. 9). Along the top, bottom and right edges, deformations caused by nailing the canvas to the stretcher are visible over a width of approximately 7 cm in each case. Along the right and at the bottom, cusping is still present over virtually the full width as these edges of the paint layers were not cut off. On the left, however, the cusping was completely removed when the format was reduced: this edge shows no deformation caused by stretching. If, as can be assumed, the fabric on the left-hand side had deformations as wide as those on the right-hand side, then we can deduce that a strip of the picture at least 7 cm wide is missing here. The painting's original format can therefore be calculated as about 64.5 cm high and at least 91 cm wide;<sup>20</sup> 91.8 × 64.8 cm would have corresponded with the standard format 'Number 30', as shown on the 1855 sales list of Lefranc & Cie. for landscapes and seascapes.<sup>21</sup>

Over the course of this second alteration, the two previously applied layers of varnish were either completely or partially removed from the sky.<sup>22</sup> Folds and nail holes in the paint layers, originating from the first intervention, were filled with putty and roughly retouched. The sky was then almost completely overpainted with a dark grey-blue paint.<sup>23</sup> Fewer changes were made to the other areas of the landscape but one obvious alteration was the addition of numerous reddish-brown coloured accents, randomly applied with a brush: for example on the left-hand opening of the sluice gate, on tree trunks and at the tops of trees, as well as scumbled horizontal lines on the water.<sup>24</sup> Finally, the entire surface was varnished once again giving the leaden appearance and solemn



**Fig. 10** *Sluice Gate at Optevoz*, Munich: during removal of varnish and overpaint. Detail showing fragments of newspaper along the left edge of the painting. (Image: Bayerische Staatsgemäldesammlungen Munich.)

atmosphere so familiar in numerous works by Courbet. His signature was added after the varnish had already begun to crack.

Could it have been Gustave Courbet who carried out all these changes to Daubigny's painting and then signed it? The dotted and unsophisticated style of the overpaint, which showed no signs of autonomous artistic intention, clearly argues against Courbet's authorship. This has been confirmed by the discovery of fragments of newspaper along the edges of the painting (Fig. 10).<sup>25</sup> In French paste-lining it was

common to substitute the cut-off tacking margins temporarily with strips of newspaper in order to fix the painting onto the worktable.<sup>26</sup> The fragments on *Sluice Gate at Optevoz*, which originate from a French newspaper, are printed with stock exchange prices. Several of the named stock companies had been on the market since the mid-1880s; however, one company, the Société industrielle des téléphones, was officially listed under this name for the first time in 1894.<sup>27</sup> Considering the fact that Courbet died in 1877, this much later date proves that the overpaint and the signature cannot possibly have been applied by him.

Furthermore, it became clear during our investigations that the paint layers in the lower right-hand corner of the sluice gate landscape had been manipulated in the course of the second phase of alteration: only this area of the painting had obviously been treated with solvents that caused damage and made a subsequent overpaint necessary. The solvents were probably used to remove Daubigny's signature, which had also existed on this second landscape.<sup>28</sup>

### Treatment: decision-making, objectives and execution

All of these insights into the original process of manufacture and early alterations were achieved without interfering substantially with the painting itself; only a few microsamples were taken for cross-section and pigment analyses. At this point, it was necessary to decide whether or not to carry out a restoration treatment which, in this case, would mean either removing the overpaint and varnishes or leaving the painting untouched.

In favour of removing the overpaint, assuming this was feasible, were two major aspects. The overpaint almost completely covered the original surface of the sky, which significantly disturbed the authentic impression of the painting. Moreover, rather than revealing inherent artistic qualities its technical execution seemed more like an attempt to darken the sky in an unobtrusive manner. The reddish-brown brushstrokes in the landscape were applied on the upper of the two earliest layers of varnish and were quite obviously not a further development of the painterly process. In the words of Alois Riegl, the overpaint had no 'artistic value'.<sup>29</sup> On the other hand, again according to Riegl, 'historic values' had to be considered. The overpaint and the Courbet signature had defined the perception of the picture and its attribution for more than 100 years: it was accepted and valued as an early landscape by Courbet. Besides, the overpaint and the signature attested to how the art market contributed to the falsification of paintings for commercial reasons.<sup>30</sup> After careful consideration, in a consensus reached by art historians, conservators and conservation scientists, we finally voted in favour of treating *Sluice Gate at Optevoz*. Given the artistic value of the original work, we considered that the removal of the overpaint and the varnish layers was a prerequisite for an art historical re-evaluation of the painting. Deviating from the objective of this restoration, the small area with the 'Courbet' signature



was to be preserved as a significant document in the history of the Munich *Sluice Gate*, as well as an important source for future investigations.<sup>31</sup>

After these conceptual decisions had been made, the result of any possible removal of the varnish and overpaint (referred to as 'cleaning' in the following) had to be estimated before this could actually be put into practice. X-ray and IR images did not reveal any major damage or losses to the paint layers. After the positive outcome of cleaning tests, which began with the mechanical exposure of small squares in the sky section, the areas were successively enlarged which showed that the original surface of the sky was well preserved. However, cleaning turned out to be an extremely time-consuming process since it had to be carried out gradually under a stereomicroscope.

Several important aspects of the restoration should be mentioned. The technical conditions for cleaning differed significantly: not only between the sky and landscape sections but also within these areas. As expected, the light paint layers, with a high percentage of lead white, were relatively resilient to the solvents used.<sup>32</sup> For most of the other paint layers in the landscape section, brief exposure to the solvents had little noticeable effect. Fortunately, this was also true of the thinly applied layer of brown paint with which the branches and numerous shapes in the landscape area had originally been sketched. Brown glazes and black applied over large areas, on the other hand, proved to be particularly sensitive. Varnish removal was mostly achieved using solvent gels and free solvents.<sup>33</sup> However, in areas with a pronounced impasto, or with sensitive brown glazes and black paint layers, the overlying old varnish layers had to be removed mechanically. In the sky, the overpaint was initially resistant to removal with solvents (Fig. 11), presumably due to its high pigment content. In the areas where overpaint sat on top of layers of varnish, it was possible to make the varnish swell and remove both overpaint and varnish together but in order for the solvent to penetrate the lower layers of varnish, the overpaint first had to be pared down mechanically with a scalpel.<sup>34</sup> In other areas, where overpaint lay directly on the surface of the original paint layer, its removal had to be done purely mechanically.<sup>35</sup> Having come so far, the re-exposed original paint surface turned out to be in remarkably good condition despite all the interventions in its history. Only in small areas, for example around the nail holes along the edges and at the cut left-hand edge of the canvas, was filling required to small losses of the paint layer together with some minor inpainting. With regard to the Courbet signature, it was decided to hide it by retouching in order to avoid any misinterpretation by museum visitors. Finally, an extremely thin varnish was applied over the entire painting.

### Aspects of the painting technique and comparison to other works by Daubigny

After treatment, Daubigny's painting technique could be studied in detail. The Munich *Sluice Gate at Optevoz* was



Fig. 11 *Sluice Gate at Optevoz*, Munich: during removal of varnish and overpaint. (Image: Bayerische Staatsgemäldesammlungen Munich.)



Fig. 12 *Sluice Gate at Optevoz*, Munich: after treatment. Detail of the trees showing branches that were painted with a thin, flat bristle brush. In some areas in the centre of the picture, the dark grey underpaint is visible. (Image: Bayerische Staatsgemäldesammlungen Munich.)

painted on a dark grey layer that covered the earlier composition (Fig. 6). In some places this was left visible at the surface and incorporated into the composition (Fig. 12). Daubigny worked mainly with opaque paints on top of this grey layer, commencing with dark colours then moving to lighter ones. In different phases of the work process, he also applied translucent dark brown glazes, reminiscent of old master painting techniques. To speed up the drying process, small amounts of oil varnish, including Venice and Cyprian turpentine, were added to the oil paint.<sup>36</sup> Daubigny applied the paint with flat





**Fig. 13** *Sluice Gate at Optevoz*, Munich: after treatment. Detail of the waterfall, which was created exclusively with a palette knife. (Image: Bayerische Staatsgemäldesammlungen Munich.)

bristle brushes of different sizes or palette knives depending on the detail that was to be depicted. In the sky, traces of both brushwork and application with a palette knife can be observed; the latter made scratches in the soft paint, which evidently did not concern the artist.

Other parts, for example the embankment and the ripples on the water in the foreground, were executed using a brush only, as were the branches and leaves of the trees and bushes, which are an excellent example of Daubigny's efficient and lively working process. Typical of Daubigny's painterly style are the thin, bare branches that were created by slightly turning a thin, flat brush with bristles (Fig. 12). On the other hand, the rocks beside the sluice gate and the waterfall were almost exclusively created with a palette knife (Fig. 13).

From a current perspective, the results of the technological analysis and restoration leave no room for doubt that the Munich *Sluice Gate at Optevoz* belongs to the oeuvre of Charles-François Daubigny. The most important indication of the painter is his signature found on the original landscape painting, combined with the knowledge that the depiction of the sluice painted on top lay on top of the same grey preparatory layer and was executed with a virtually identical palette. This is supported by findings that this picture was also originally signed in the same place as the first landscape. In general, it is not possible to attribute a painting to any one specific artist simply based on the materials he used and the way these were applied. Technological aspects, however, can support the art historical attribution to a particular painter. For this reason, the technological findings relevant to the Munich *Sluice Gate* being classified as a work by Daubigny should be discussed.<sup>37</sup> Its original dimensions corresponded to one of the standard formats available on the market, as already described. There are a number of paintings in Daubigny's oeuvre with standard formats; the version of *Sluice Gate* from 1859 in the Musée du Louvre, for example, is executed to match 'format no. 20, *marine basse*' for small seascapes.<sup>38</sup> The ground, applied by hand, is found in most of Daubigny's paintings on canvas, including the Munich, Rouen and Karlsruhe versions of *Sluice Gate*.<sup>39</sup> There are also other examples in Daubigny's work of painted canvases being reused, including the Karlsruhe *Sluice Gate*.<sup>40</sup> The technical

characteristics of the Munich *Sluice Gate* are a good match to those in Daubigny's work; these are, however, also to be found to the same extent in paintings by Courbet and other artists of the Barbizon School.

Furthermore, the question had to be answered as to whether the pigments on the Munich picture provided any clues as to Daubigny's possible authorship. The pigment analyses conducted in 1995 detected cobalt blue within the Karlsruhe *Sluice Gate* and in five other works by Daubigny.<sup>41</sup> No evidence of Prussian blue or synthetic ultramarine was found. On the other hand, no cobalt blue was found in the Munich *Sluice Gate*, which at that time was considered to have been painted jointly by Courbet and Daubigny, nor was it found in Courbet's other works examined at that time; instead, Prussian blue and synthetic ultramarine were detected. In short, these findings were ultimately considered decisive factors leading to the conclusion 'that the Munich *Sluice Gate* ... is the work of two hands but ... was painted only using Courbet's palette'.<sup>42</sup> As part of the recent examination, selective pigment analyses were carried out for the first time on the Daubigny *Sluice Gate* from Rouen.<sup>43</sup> This yielded completely different results: in samples from the blue sections in the Rouen painting, Prussian blue was also found in addition to cobalt blue, sometimes mixed together.<sup>44</sup> An additional sample taken from the dark blue waves in the flowing water below the waterfall in the Munich *Sluice Gate* revealed that synthetic ultramarine was also used in certain areas of this canvas. In the meantime, it has been confirmed that this pigment was also used in several other works by Daubigny such as the London *River Scene with Ducks*.<sup>45</sup> Today, the use of cobalt blue, Prussian blue and synthetic ultramarine can be identified in works from the 1850s by both Courbet and Daubigny so these pigments cannot be used to distinguish one artist from another. Despite the similarities in the blues used by both Courbet and Daubigny, the palette of pigments utilised for the Munich *Sluice Gate* certainly matches that of Daubigny's creative period in the 1850s.

Finally, the construction of the picture and the painterly style of the Munich *Sluice Gate* have to be compared with works securely attributed to Daubigny. For this purpose the sluice pictures in Karlsruhe and Rouen were examined due to the similarities between the motifs.<sup>46</sup> On a cautionary note, however, it should be mentioned that the Karlsruhe picture is a preliminary study, whereas the painting in Rouen is a fully elaborated version of the subject commissioned by the state. To start with the differences, none of the paintings were executed on the same type of preparatory layers. In the case of the Rouen *Sluice Gate*, the picture was painted directly on a white ground. The Munich painting has a white ground then a dark grey layer that covered the complete surface area to prepare it for the first landscape composition; the same dark grey layer was used to obliterate the earlier landscape before the current composition was painted (Fig. 6). The depiction in the Karlsruhe *Sluice Gate* was painted directly over the first composition, which had been rejected.<sup>47</sup>

The application of paint in the sky section of the Karlsruhe version was executed exclusively using a bristle brush, swiftly and energetically, with a frequent change of direction and

dabbing in certain areas. Many of the cloud formations were painted with wavy lines or in short W-shaped strokes, characteristic of Daubigny's brushwork. In contrast, the paint in the sky above the sluices in the Munich and Rouen paintings, both very similar to each other in this respect, was applied with both bristle brushes and palette knives. Both paintings exhibit scratches caused when the paint was applied with a knife; these are found time and again in Daubigny's work.<sup>48</sup> The same procedure was used when painting both the Karlsruhe and Munich versions, with the sky being executed first and the landscape in a second step, the line of the horizon being corrected later in places when the sky received a new application of paint. In the Rouen version, on the other hand, the landscape was painted before the sky.

There are considerable similarities in the configuration of the trees and bushes in all three paintings: very fine, flat bristle brushes were used in the execution of the branches. To vary the width of the lines, the brushes were twisted repeatedly, but only slightly, while painting. Areas of light colour were subsequently added to the branches in the large clump of trees to suggest openings and light reflections. The areas along the banks above the standing water, painted with striking long brushstrokes, are largely identical as is the water itself with its light reflections and the rocks and stones in it. All three pictures were executed in the relatively 'dry' paint, supplemented in places with dark brown glazes.

The most striking difference in the painting technique between the Munich picture and the other *Sluice Gate* versions is the wide use of the palette knife for the ground in the middle distance of the landscape section. However, a varied and experimental application of paint can be observed consistently in Daubigny's work and are perfectly in keeping with the artist's style. It is possible that the Munich *Sluice Gate at Optévoz* is an early version in which Daubigny experimented both with the technique and the motif, searching for a definitive composition to be used for the work commissioned by the state.<sup>49</sup>

## Conclusions

Through the technological investigation and the restoration of the Munich version of *Sluice Gate at Optévoz*, greater knowledge has been gained of Daubigny's painting technique. An early work by the artist was (re)discovered and can be appreciated by researchers and the general public. In 1909, when Hugo von Tschudi acquired *Sluice Gate at Optévoz*, he had no idea that a beautiful landscape by Daubigny was hidden underneath the landscape allegedly painted by Courbet and, therefore, he unwittingly provided a starting point for a case that turned out to be very mysterious. It is quite remarkable that Tschudi's 'Courbet' landscape led an untroubled existence as part of the artist's oeuvre for about 100 years. This was unmasked only through an interdisciplinary approach and, it might be added, despite the difficult decision-making connected to the conservation treatment, it is ultimately preferable for the Neue Pinakothek to possess a real Daubigny than a false Courbet.

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## Notes

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2. Hohenzollern and Schuster 1997 (cited in note 1), pp. 42–59, nos. 1–8.
3. C. Fabre, "L'expertise, c'est vraiment dangereux!" Théodore Duret, Verfechter und Vermittler der Avantgarde', in Bayerische Staatsgemäldesammlungen (ed.), *Courbet > Daubigny. Das Rätsel der 'Schleuse im Tal von Optévoz'*, Munich, 2014, pp. 36–45, esp. p. 45, n. 26.
4. Fabre 2014 (cited in note 3), p. 40.
5. R. Hellebranth, *Charles-François Daubigny 1817–1878*, Morges, Matute, 1976, nos. 520 (Rouen, Musée des Beaux-Arts), 525 (Paris, Musée du Louvre), 527 (Valence, Musée de Valence), 528 (Houston, Museum of Fine Arts) and 529 (Karlsruhe, Staatliche Kunsthalle); R. Hellebranth and A. Hellebranth, *Charles-François Daubigny 1817–1878* (supplement), Morges, Matute, 1996, nos. 108 (private collection), 110 (private collection), 111 (Essen, Museum Folkwang).
6. Charles-François Daubigny, *Schleuse im Tal von Optévoz*, c.1855, oil on canvas, 48 × 81.5 cm, Karlsruhe, Staatliche Kunsthalle, inv. no. 2581.
7. 'Neuerwerbungen für die Neue Pinakothek', 10 December 1909, in *Akten über Erwerbungen für die Staatsgemäldesammlungen durch Kauf, 1904–1910*, Munich, Bayerische Staatsgemäldesammlungen, archive shelf 23, no. 1.
8. See, for example, L. Dittmann, 'Courbet und die Theorie des Realismus', in H. Koopmann and J.A. Schmoll gen. Eisenwerth (eds), *Beiträge zur Theorie der Künste im 19. Jahrhundert*, vol. 1, Frankfurt am Main, Klostermann, 1971, pp. 215–239, esp. pp. 234–239; K. Herding, 'Egalität und Autorität in Courbets Landschaftsmalerei', *Städte-Jahrbuch* 5, 1975, pp. 159–199, esp. pp. 170, 194, n. 126; W. Hofmann and K. Herding, *Courbet und Deutschland*, exh. cat., Cologne 1978, pp. 219ff., no. 231 (P.-K. Schuster).
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10. A. Burmester and C. Denk, 'Comment ils inventaient ces verts chatoyants? – Blau, Gelb, Grün und die Landschaftsmalerei von Barbizon', in A. Burmester, C. Heilmann and M.F. Zimmermann (eds), *Barbizon. Malerei der Natur – Natur der Malerei*, Munich, 1999, pp. 295–329; K. Laudenbacher, 'Beobachtungen zur Maltechnik an ausgewählten Bildern der Schule von Barbizon', *op. cit.* pp. 393–402, esp. pp. 398–399; J. Koller and U. Baumer, 'Die Bindemittel der Schule von Barbizon', *op. cit.* pp. 343–369.

11. C. Heilmann, M. Clarke and J. Sillevs, *Corot, Courbet und die Maler von Barbizon*, exh. cat., Munich 1996, pp. 144–145, no. B 32; see also A. Pophanken in Hohenzollern and Schuster 1997 (cited in note 1), p. 46, no. 2.
12. H.W. Rott, 'Courbet, Daubigny und die "Schleuse im Tal von Optevoz"', in Bayerische Staatsgemäldesammlungen 2014 (cited in note 3), pp. 12–35, esp. pp. 22–23.
13. I would like to thank René Boitelle (Van Gogh Museum, Amsterdam) and Marcia Steele (The Cleveland Museum of Art, Ohio), for kindly making comparable material available.
14. Doerner Institut, Munich, pigment analyses report (ident no. 5131), 2007–2014 (unpublished).
15. Ibid.
16. Linseed oil and larch turpentine were analysed as being original components in both layers of varnish. Doerner Institut, binding media analyses report (ident no. 5131), 2007 (unpublished).
17. Ibid.
18. The reconstruction of the painting's original dimensions is explained later in the text.
19. B. Haaf, 'Industriell vorgrundierte Malleinen. Beiträge zur Entwicklungs-, Handels- und Materialgeschichte', *Zeitschrift für Kunsttechnologie und Konservierung* 1(2), 1989, pp. 7–71; P. Labreuche, 'The industrialisation of artists' prepared canvas in nineteenth century Paris: canvas and stretchers. Technical developments up to the period of Impressionists', *Zeitschrift für Kunsttechnologie und Konservierung* 22(2), 2008, pp. 316–328.
20. Comparisons of the motif with other depictions of the sluice gate at Optevoz by Daubigny support this reconstruction of the original format.
21. Haaf 1989 (cited in note 19); Labreuche 2008 (cited in note 19).
22. During restoration it emerged that the first two layers of varnish had been removed from about 20% of the sky area.
23. In some areas, the overpaint extended right up to the brown paper strips used to mask off edges of the painting that had been added during lining.
24. Other areas of overpaint were found, especially in the filled areas and along the left-hand and bottom edges of the picture.
25. The newspaper fragments were found under the brown paper strips masking the edges and a double-layered paper gauze that was glued on during lining (see note 23).
26. See, for example, É. Rostain, *Rentoilage et transposition des tableaux*, Puteaux, 1981, pp. 48–52.
27. Rott 2014 (cited in note 12), pp. 28–29.
28. When the painting was first examined it was assumed that the signature revealed in the IRR was directly underneath these layers of overpaint; see Laudenbacher 1999 (cited in note 10), pp. 398–399. It is in fact on the first landscape, the existence of which was not known at that time.
29. A. Riegl, 'Der moderne Denkmalkultus. Sein Wesen und seine Entstehung', in A. Riegl, *Gesammelte Aufsätze*, Augsburg and Vienna, Braumüller, 1929, pp. 144–193.
30. Rott 2014 (cited in note 12), pp. 27–30.
31. Underneath the area around the signature, the previous overpaint on the lower edge of the picture has also been retained in places as have all varnish layers.
32. See also L. Keith and R. White, 'Mixed media in the work of Charles-François Daubigny: analysis and implications for conservation', *National Gallery Technical Bulletin* 23, 2002, pp. 42–49, esp. p. 42. Isopropanol, ethanol and Shellsol A were used. Glazes, as described in the essay by Keith and White on Daubigny's work, were not found in the sky section of the Munich *Sluice Gate at Optevoz*.
33. To remove the upper, readily soluble, varnish layer, a mixture of isopropanol and iso-octane was used in different ratios. To minimise penetrating the original layers the solvent was thickened with ethylcellulose to form a gel. The lowermost layer of varnish that contained linseed oil (cited in note 16) could be made to swell by using a mixture of 4 parts isopropanol + 1 part ethanol + 2 parts iso-octane + 1 part Shellsol A.
34. The best cleaning results were achieved using a ceramic blade.
35. While exposing these sections the magnification setting on the stereomicroscope was continuously changed from  $\times 40$  for mechanical work and  $\times 60$  for an optical inspection of the result.
36. Nut oil, or (a mixture of) linseed and poppyseed oil were analysed as binding agents. Doerner Institut, binding media analyses report (cited in note 16); Koller and Baumer 1999 (cited in note 10), pp. 357–369.
37. To date, the painting techniques used by Daubigny in his early works have hardly been researched.
38. See note 5 and Haaf 1989 (cited in note 19); Labreuche 2008 (cited in note 19). The Rouen and Karlsruhe versions of the sluice gate motif, on the other hand, do not have a standard format. Of 13 paintings by Daubigny on canvas in the collection of the Van Gogh Museum, Amsterdam and the Mesdag Collection in the Hague, five works are of a standard size. I would like to thank René Boitelle (Van Gogh Museum, Amsterdam) for this information.
39. In individual cases, however, Daubigny also used industrially manufactured, pre-grounded supports; see R. Boitelle and C. van der Elst, 'A new look at old definitions: examining notions of finish in Barbizon School landscapes', in Burmester *et al.* 1999 (cited in note 10), pp. 153–159, esp. p. 156.
40. See, for example, Laudenbacher 1999 (cited in note 9), p. 398; Boitelle and Van der Elst 1999 (cited in note 39), p. 156.
41. Burmester and Denk 1999 (cited in note 10), pp. 312–315.
42. Ibid., p. 305.
43. The pigments were analysed at the Doerner Institut in 2014.
44. Doerner Institut, pigment analyses report (cited in note 14). In addition, viridian green and emerald green (copper arsenate) were found in the Rouen *Sluice Gate at Optevoz*. These were new pigments at that time and were not used in the Karlsruhe or Munich versions.
45. *Bords de l'Oise près d'Auvers*, 1859, The National Gallery, London, inv. no. 2622. Before 1995, synthetic ultramarine had been found in Courbet's paintings, but Daubigny's works had not yet been thoroughly researched.
46. For an evaluation of differences in motifs in the various versions of *Sluice Gate at Optevoz* see Rott 2014 (cited in note 12), pp. 30–33.
47. As the application of paint in the sky area does not completely cover the painting underneath, predominantly black and dark madder shades of paint can be seen in a number of minute openings left by the brushstrokes.
48. Clearly evident scratches caused by a palette knife can be seen, for example, in Daubigny's painting *Le Ru de Valmondois*, c.1870/75, The Mesdag Collection, The Hague, inv. no. hwm 98 and *Soleil couchant*, 1871, The Mesdag Collection, The Hague, inv. no. hwm 95.
49. Rott 2014 (cited in note 12), p. 33.

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# A TECHNICAL STUDY OF 19TH-CENTURY PAPERS USED BY DANISH ARTISTS

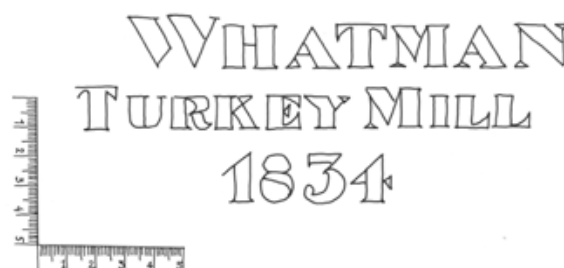
Anna-Grethe Rischel

**ABSTRACT** Papermaking by hand was replaced by machine-made paper of reduced durability in Europe during the 19th century. The poet Hans Christian Andersen and the Golden Age painters Constantin Hansen, Christian Købke, Johan Thomas Lundbye and Martinus Rørbye had access to both types of papers in Denmark and Italy on their grand tours. Technical studies of Andersen's non-exhibited drawings and paintings at the Odense City Museum (OBM), Denmark, and those of the Golden Age painters at the National Gallery of Denmark (SMK), have resulted in new knowledge on the artists' use of laid and wove paper in this century. Documentation of watermarks illustrates that these artists preferred Dutch and English papers for the works that they produced in Denmark and Italy, apart from Andersen, who also used local papers in Italy. Watermarks are seldom fully preserved and are often missing altogether because of the small sizes of the cut-down paper formats they used. Notes, signatures and inscribed dates provide information on the provenance of the drawings and the artists' preferences, while in Denmark and Italy, for the well-known imported handmade laid and wove paper.

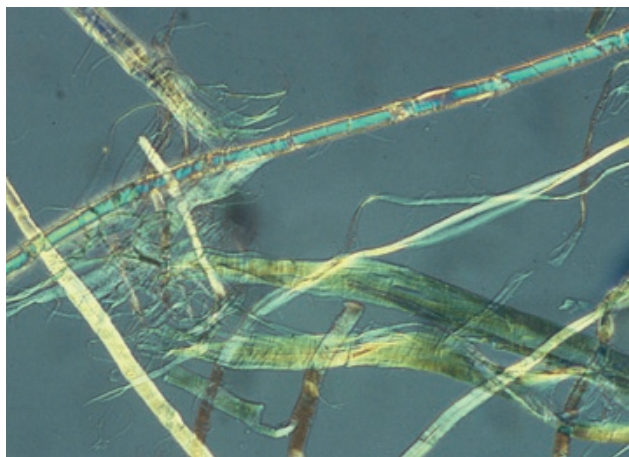
## Introduction

The importance of watermarks for providing information on the origin and date of European paper was discovered at the end of the 19th century by the paper historians Augusto and Aurelio Zonghi in Italy and Charles Moise Briquet in Switzerland. The documentation of watermarks has since been a key feature of the study of European paper history and its sources of supply. An increasing demand for paper led to the invention of a machine for making a continuous web of paper at the beginning of the 19th century, followed by industrialisation of the 500-year-old tradition of papermaking by hand in Europe. The 19th century can therefore be regarded as a revolutionary period in paper history. It was also the century in which the Danish artists Hans Christian Andersen, Constantin Hansen, Christen Købke, Martinus Rørbye and Johan Christian Lundbye all found inspiration in Italy during their grand tours. The first Scandinavian papermaking machine started operating in 1829 at Strandmøllen, Denmark, therefore paper with new characteristics was available as well as handmade Danish and imported papers. Technical studies of the papers chosen by these Danish artists for their watercolour paintings and drawings on paper illustrate their preference for either handmade laid or wove papers.

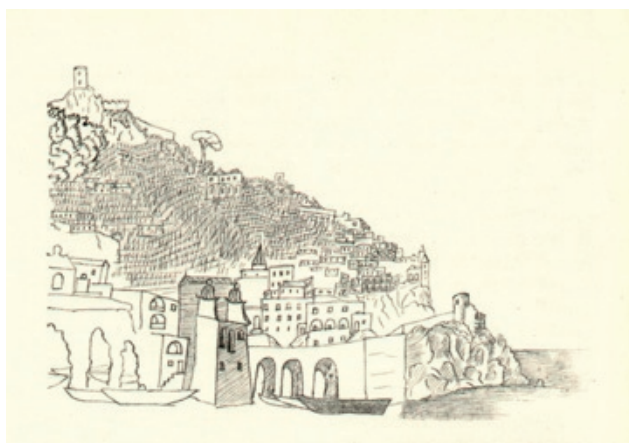
Wove paper had originally been developed as a printing paper during the latter part of the 18th century by the British papermaker James Whatman the Elder because John Baskerville needed a very smooth paper for printing books with a font suitable for the smaller point sizes of his new typefaces. This paper was later developed for drawing and watercolour painting by James Whatman the Younger and first produced at the Turkey Mill in Kent, England,<sup>1</sup> where the year of production was incorporated into the watermark (Fig. 1).



**Fig. 1** Documentation by pencil drawing on transparent paper of watermark in wove Whatman 1834 drawing paper, which Christen Købke used for a graphite pencil drawing of the embankment in Copenhagen, Statens Museum for Kunst, Copenhagen, SMK KKS 2918. (Image: SMK.)



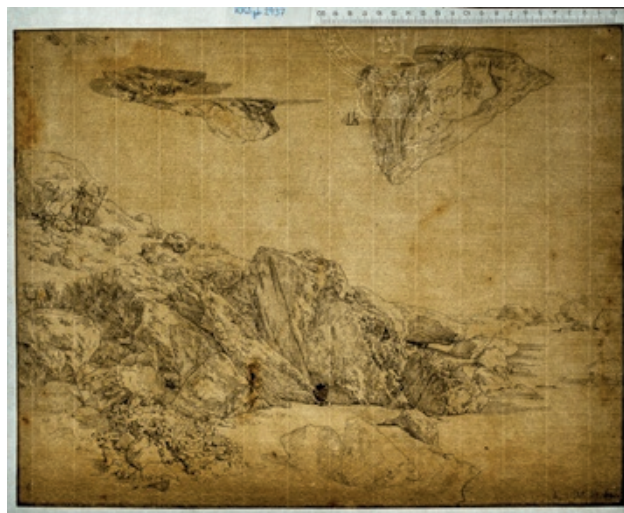
**Fig. 2** The mixture of linen fibres with even width and hemp fibres with frayed ends illustrates a rag paper with a foolscap watermark. The sample originates from an architectural drawing c.1690 of Our Saviour Church, Copenhagen, Antiquarian Topographical Collection, National Museum of Denmark. (Image: A-G Rischel.)



**Fig. 3** Hans Christian Andersen's pencil and ink drawing illustrates his impression of Amalfi in Italy, which he visited in March 1834 on his first grand tour to Italy. The thin paper lacks chain and laid lines or a visible watermark. (Image: A. Tajani.)



**Fig. 4** Martinus Rørbye's graphite pencil drawing dated 1 June 1835 from Castellamare, Italy, illustrating his fellow travellers, is painted on laid paper with an impression of chain lines, but without a visible watermark in this cut sheet, now measuring 20.6 × 27.1 cm, Statens Museum for Kunst, Copenhagen, SMK KKS1974-56. (Image: SMK.)

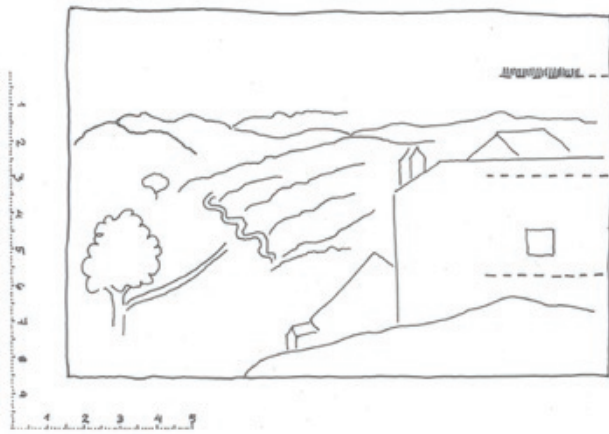


**Fig. 5** The transmitted light digital image of Christen Købke's graphite pencil drawing from the coastline of Capri with stones and cliffs and a distant ship illustrates the visible impression of the metal wire structure with vertical chain and horizontal laid lines, and part of a 'Pro Patria' watermark, Statens Museum for Kunst, Copenhagen, SMK KKSsgb2937. (Image: SMK.)

The ability to weave metal wire into a web like a woven textile revolutionised western papermaking, particularly after the French and British invention of the Fourdrinier machine, which formed the paper on an endless woven wire cloth with a similar texture to that produced in the mould for making handmade wove paper. Wove paper came to dominate paper production in many countries in Europe in the first half of the 19th century. Recycled linen and hemp rags had hitherto served as the source of fibres for European handmade papers (Fig. 2), but a lack of good quality and clean rags combined with the increasing demand for machine-made paper led to the use of mechanical and chemical wood pulp in the second half of the 19th century. Unfortunately, the early production of the new machine-made paper has suffered from serious degradation over the course of time.

It was originally Andersen's drawings from Amalfi in Italy that inspired me to examine the papers that he and the four other Danish artists had used during their grand tours in Italy in the period from 1833–1847, tours which lasted from six months to eight years. The questions that the research aimed to answer were which paper types were available in Italy and which qualities the artists chose. The 29-year old Andersen might very well have used the local handmade Amalfi paper from one of the numerous paper mills in Valle dei Mulini for his sketches of this beautiful town on the Salerno Bay (Fig. 3). Through documentation of the watermarks might samples of 19th-century Amalfi paper and other local Italian papers be found among Andersen's letters and drawings from his grand tour 1833–34 in the collections in the Odense City Museum (OBM)? Italian papers might also be preserved at the National Gallery of Denmark (SMK) among the drawings and watercolour paintings in the Royal Collection of Graphic Art of the four Danish Golden Age artists, as for example Rørbye's drawing from Castellamare in Italy (Fig. 4).

The drawings and watercolour paintings from this Golden Age raise the question as to whether these four young



**Fig. 6** The horizontal chain and vertical laid lines of Hans Christian Andersen's small pencil and ink drawing, measuring 10.0 × 14.9 cm, Odense City Museum, OBM HCA XXIII-A-1/0222. Documented using graphite pencil on transparent paper with the addition of the outlines of Andersen's drawing of the mountainous landscape. This helps to differentiate between the many tracings of drawings with similar sizes. (Image: traced by A-G Rischel.)

painters, on their grand tours together, continued to use the good-quality handmade paper with which they were familiar from their studies at the Royal Academy of Fine Arts in Copenhagen or whether they also utilised the new machine-made paper. During studies at SMK, it was observed that these artists preferred high-quality papers – laid papers with rippled impressions of laid lines from the mould's metal wire screen, supported by wooden ribs, were represented in their works. Wove paper, which lacks such structure because of an extra layer of plain woven wire cloth mounted on top of the metal wire and the supporting wooden ribs, was also found among the examples at SMK.

## Documentation methods

Digital photography of the watermark in paper (Fig. 5) is a very efficient documentation method that enables comparison with watermark databases. Manual recording by drawing with pencil on tracing paper, however, was the simple method used in this project at the conservation workshop in OBM and SMK. The manual recording method was originally developed by the Italian paper historians Aurelio and Augusto Zonghi, who published the first volumes of watermarks from archives in Fabriano 1881 and 1884 with pencil drawings of 13th-century watermarks organised by their design.<sup>2</sup>

The non-destructive examination used for this study included noting the macroscopic features visible with the naked eye in direct and raking light, such as the dimensions of the work, the motif, technique, and the structure and condition of the paper. The structure was observed in transmitted light using a fibre optic light sheet. Using a pencil and tracing paper, certain features – the chain lines, laid lines and watermarks as well as fibre distribution and the dominant fibre direction – can be recorded. All observations were noted schematically in a logbook, including the catalogue number,



**Fig. 7** Hans Christian Andersen's letter dated 18 March 1834 from Italy on *papier velin* with the 'Johannot' watermark, Odense City Museum, OBM A-123-0003 HCA 206.14. (Image: traced by A-G Rischel.)

mounting method and artist's name; the paper quality, structure and condition; and the artist's signature and his own notes. A sketch of the work was also included in the logbook, marking the position of the watermark and the orientation of the chain and laid lines, the width and height, the position of signatures and dates, and notes of any damage observed. In some cases, the subject was also sketched (Fig. 6) to facilitate distinguishing between Andersen's numerous unique sketches of similar size.

Examination of the collection of Andersen's non-exhibited 20 letters and 130 drawings from his first cultural tour 1833–34 took place at the OBM paper conservation studio in Odense. Access to the SMK paper conservation studio in Copenhagen provided similar ideal working conditions for the project, allowing a total of 912 non-exhibited drawings and watercolours – by Constantin Hansen, Christen Købke, Martinus Rørbye and Johan Thomas Lundbye from Denmark, Norway and the grand tours in Italy – to be examined there.

## Watermarks in Andersen's papers

The dimensions of the drawings and letters in Odense, as well as the drawings and watercolour paintings in Copenhagen, make it difficult to locate and document all the watermarks. None of the papers are full-size sheets: most are half size and even smaller, such as Andersen's drawings, which were made on less than a quarter of a sheet with cut edges. Unlike the Danish artists he met in Rome, he did not use a classical sketchbook but single sheets of paper which he divided into halves and then quarters. He cut and trimmed the paper into pieces of more or less equal size for his pencil drawings, which he later finished with ink. All his drawings are therefore quite small and in many cases there is only a minor fragment of a watermark left at a trimmed edge.

Finding watermarks in his letters is easier because of the larger size of the sheet, which functioned both as a letter and as an envelope. Some of his letters were written on thin paper similar to modern airmail paper without an impression of the chain and laid lines of the mould wire. At first this was assumed to be machine-made paper until a letter with a watermark was found (Fig. 7), indicating that it was handmade wove



paper made by the French papermaker François Johannot at Annonay, France, who was an early producer of wove paper.<sup>3</sup> Andersen also used the same type of paper for drawing paper shortly afterwards, in Florence on 8 April 1834.

## Artists' signature, date and location

Unlike Hansen, Købke, Rørbye and Lundbye frequently added the date and location where the sketch was made as well as a signature to their sketches and paintings. These latter three artists therefore provide valuable data that is particularly helpful when studying the chronological development of papermaking. In combination with the watermarks and the details of paper technology, they document when and where locally produced versus imported papers were available and selected by these artists, and whether they chose laid or wove paper. Andersen also added dates and information on the location to his sketches. His diary also refers to the drawings – he documented in the style of a logbook where he stayed and what he observed and experienced. His small black-and-white drawings in pencil and ink are visual impressions, almost like snapshots of memories in Italy that he collected together with his diary for use in his future novels. In his diary, he painted with words the most beautiful and coloured impressions Italy had made on him, especially the Salerno Bay landscape, which he loved. The first quotation below describes where his first actual painting was done in northern Italy in October 1833 on his way to Rome:

At the Trasimeno Lake I saw the first laurel; the sun had just set and gave the sky the most brilliant colours. The mountains were bright purple, the sun set behind a little island, now dark blue, the whole air and water surface became a flaming gold, heavy purple coloured clouds were hanging in the sky, the coast line surrounded by rushes, a fishing boat was sailing out there – it was a painting I will never forget.<sup>4</sup>

The second quotation is from the region of Naples and Amalfi at Salerno Bay:

The evening was so endlessly beautiful; the sun set like a fire, the sky became a glittering gold changing to ethereal blue. The ocean was like indigo with the islands lying as pale blue clouds. It was a fairy-world. Naples turned paler and paler around the bay. The mountains with their white snow shone so beautifully, lying far away in the blue air; and close to us we had all the red lava of Vesuvius.<sup>5</sup>

## Findings and conclusions

Through this simple non-destructive study, a more detailed impression has been obtained on the paper selected by Andersen, Købke, Rørbye, Lundbye and Hansen for their

drawings and watercolour paintings in the first half of the 19th century. This was the Danish Golden Age, a period when new paper types became available such as wove and machine-made paper. Only limited numbers of 19th- and 20th-century watermarks have hitherto been published, and the documentation of 19th-century papers used by Danish artists in the first half of the century in Denmark, Norway and Italy will therefore contribute to knowledge on the production of, and trade in, paper made in Europe.

A study of European papers used for a selection of 18th-century architectural drawings at the Antiquarian Topographical Collection in the National Museum of Denmark revealed a dominance of Dutch laid paper.<sup>6</sup> Laid papers from Danish paper mills were only represented in this group by writing paper used for letters and reports in connection with the buildings described. In a later study, the notes and dates written by Andersen on his 130 drawings from his grand tour revealed that relatively new Whatman wove paper must have been available in Italy. The notes and dates added by Hansen, Købke, Rørbye and Lundbye on their numerous drawings and watercolour paintings from their grand tours, and from Denmark and Norway, document that the new Whatman wove paper was available not only in Italy but also in Denmark during the first part of the 19th century. It is obvious that Martinus Rørbye, like the English artists Gainsborough, Downman and Turner,<sup>7</sup> chose wove paper with a smooth vellum-like surface for his watercolour painting of the evening atmosphere in Procida, where the paper tone and texture was used in the painting as a colour in itself (Fig. 8). Rørbye's watercolour paintings and pencil drawings illustrate how the tone and texture of the paper unite with the thin layer of paint to create the composition without the use of varnish. Such extremely fine details could never have been done so perfectly on any type of paper other than wove, such as the one he used in his pencil drawing of Constantinople a few months later (Fig. 9). Rørbye only used coloured papers for drawings with pencil and chalk, whereas Hansen and Lundbye chose coloured papers not only for many of their drawings but also for watercolour paintings.

Dutch paper is still richly represented in the work of Andersen, Købke, Rørbye, Lundbye and Hansen – not only laid paper but also wove paper from C & I Honig's mill (Fig. 10). All the papers without laid and chain lines or watermarks might be either handmade wove paper or machine-made paper, which have a similar appearance. Clear evidence for the difference in fibre direction between the randomly oriented fibres in handmade paper and the existence of a dominant fibre direction for machine-made paper was not possible to obtain in this non-destructive macroscopic examination.

The fragments of watermarks, observed in Andersen's drawings from Florence, illustrate that these papers originated from Italian paper mills. Examination of the paper of the last drawing from Florence in OBM's collection confirmed that it originated from Gaetano Amatruda's paper mill in Amalfi (Fig. 11). Andersen had indeed bought and used Italian paper from one of the numerous paper mills in Valle dei Mulini in Amalfi, as had been anticipated at the beginning of the study. The Amatruda paper mill still exists and is now



**Fig. 8** Martinus Rørbye's watercolour painting on wove paper is, according to his notes, from June 1835, and shows a view from Procida towards Vesuvius, Statens Museum for Kunst, Copenhagen, SMK KKSgb6218. (Image: SMK.)

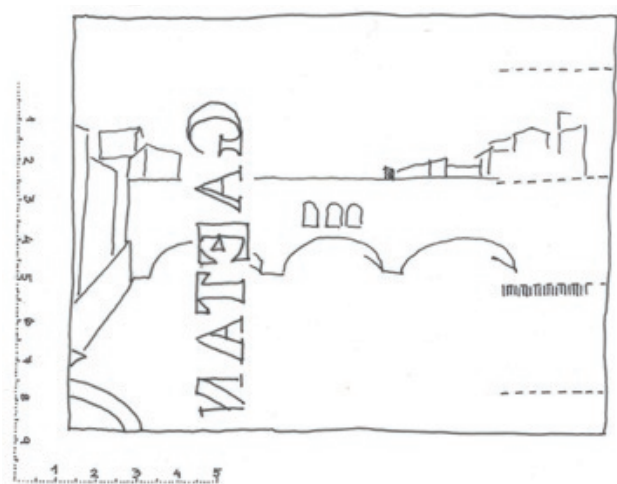


**Fig. 9** Martinus Rørbye chose a wove paper without any impression of the mould wire for his pencil drawing in Constantinople of Punto del Seraille, Statens Museum for Kunst, Copenhagen, SMK KKS1974-66. (Image: SMK.)



**Fig. 10** Johan Thomas Lundbye painted his watercolour and ink painting on 10 February 1848 at the coast of Godthaab, taking in a view towards Kronborg Castle in Elsinore, on laid Dutch paper from the C & I Honig paper mill, Statens Museum for Kunst, Copenhagen, SMK KKSgb103. (Image: SMK.)





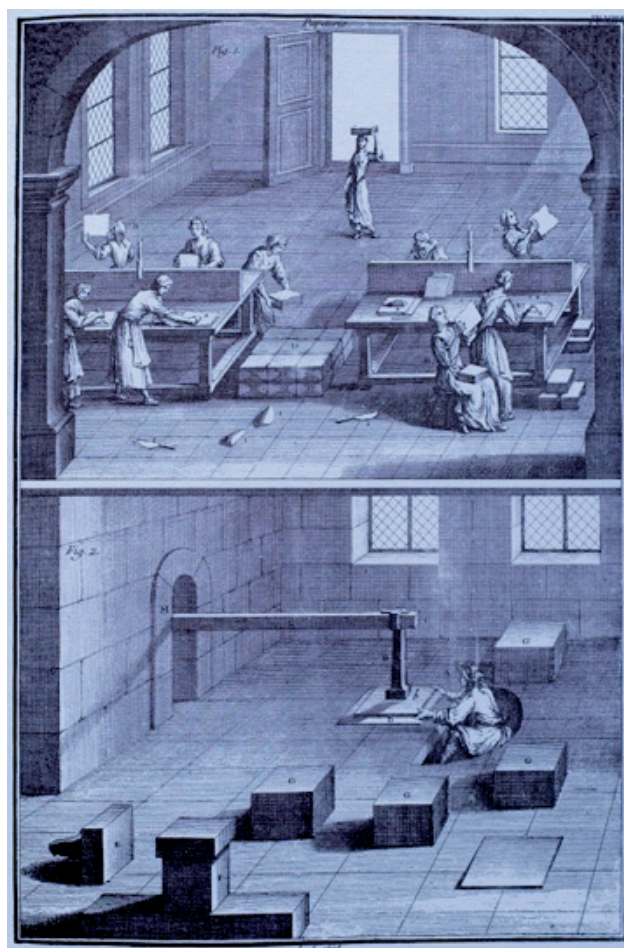
**Fig. 11** Hans Christian Andersen's small pencil and ink drawing of the bridge over the Arno River, Florence, is dated 12 April 1834. The small piece of paper, measuring only 10.2 × 13.4 cm, is laid paper with chain and laid lines, and part of a watermark indicating that the paper originates from one of the numerous Amalfi paper mills in the 19th century, Odense City Museum OBM XXIII-A-1/0231. (Image: traced by A-G Rischel.)



**Fig. 12** A greyish paper with tiny blue flecks, rather than a white paper, was chosen by Johan Thomas Lundbye for his watercolour painting of *Hellide Klint, Refnæs*, Kalundborg on 25 August 1843, Statens Museum for Kunst, Copenhagen, KKSgb17. (Image: SMK.)

the only one left in Amalfi, where high-quality handmade drawing paper is produced today by Gaetano's descendants, Teresa and Antoinetta Amatruda. Andersen also used handmade French and other Italian papers for his sketches, some of them wove, such as Johannot's *papier velin* from Annonay.

Without white rags of fine quality it was not possible to produce white paper for writing, printing and drawing. Papermakers often added blue pigments such as smalt or blue fibres to produce a white paper. The presence of coloured paper among the drawings and watercolour paintings at SMK could either illustrate a serious and growing scarcity of sufficient white rags for the production of white paper or a desire by the artists to use coloured paper other than the classical white drawing paper. Toned papers have always been used by artists for drawing with chalk, and drawings and watercolour paintings on coloured papers are well represented among the works in the SMK collection (Fig. 12). Much information can be found by simply studying the paper material with the naked eye, as illustrated by the print of the



**Fig. 13** Hand-finishing of paper: sorters examine the paper against the light to check for defects (from plate XIV, fig. 1, in *The Art of Papermaking*, 1976, English version of J.J. Le Français de La Lande, *L'art de faire le papier*, 1761). (Image: National Museum of Denmark.)

French papermakers' final check of paper sheets (Fig. 13) in Jérôme de La Lande's book *L'art de faire le papier* of 1761.<sup>8</sup> We should follow in their footsteps and continue to study paper to learn more of its history, technology and origin.

## Acknowledgements

I would like to thank the Odense City Museum and the National Gallery of Denmark for providing excellent working conditions at the paper conservation studios in OBM and SMK, with access to non-exhibited drawings, watercolour paintings and letters from the five Danish artists.

## Notes

1. R.L. Hills, *Papermaking in Britain 1488–1988*, London, Athlone Press, 1988, p. 36.
2. A. Zonghi, 'Le Marche principali delle Carte Fabrianesi dal 1293 al 1599, Fabriano', 1881, and 'Le antiche Carte Fabrianesi alla Esposizione Generale Italiana de Torino, Fano', 1884, in



- A. Zonghi and A. Zonghi, *Zonghi's Watermarks: Monumenta chartae papyraceae historiam illustrantia III*, Fabriano, Hilversum, 1953; G. Castagnari, 'News on the acquisition of the sample collection "Raccolta Augusti Zonghi"', *Excerpts of the 1st Convention in Italy on Industrial Paper Archaeology*, ISTOCARTA, Istituto Europeo de Storia della carta e delle Scienze cartarie Foundation in Fabriano, *IPH Paper History* 20(2), 2016, p. 19. The collection was acquired in 2016 by Fondazione 'Gianfranco Fedrigoni'.
3. R.L. Hills, 'The Whatmans and wove paper', in *Papermaking in Britain 1488-1988*, London, Athlone Press, 1988, p. 78. According to Hills: 'The elder Didot, the noted Parisian printer and publisher, regretted that it was not possible to print on laid paper with some of the fine type produced by the English type-founder Caslon, and sent a letter to Johannot, a skilled papermaker in Annonay. After studying the paper of Baskerville's Virgil, he carried out some trial experiments with woven wire cloth and produced paper called *papier velin*.' See also M.-H. Reynaud, 'Lettre de François Johannot à son fils, Annonay, le 6 Mars 1826', in *Une histoire de papier, les papeteries Canson et Montgolfier*, Papeteries Canson et Montgolfier, 1989, p. 69.
  4. Translation by the author.
  5. Ibid.
  6. A-G. Rischel, 'Adaptation and innovation in technology and quality: a study of 250 years of Danish and European rag paper', in *IPH Congress Book 2004*, Duszyniki Zdrój, Poland, Muzeum Papiernictwa 15, 2004, pp. 105-115; and A-G Rischel, 'Bonds between Chinese and European paper technology: adaptation and innovation', in *Tradition and Innovation: Proceedings of the 6th IDP Conservation Conference*, Beijing, National Library of China and London, British Library, 2005, pp. 26-36.
  7. P. Bower, 'The evolution and development of "drawing papers" and the effect of this development on watercolour artists 1750-1850', in P. Bower (ed.), *The Oxford Papers, Proceedings of the British Association of Paper Historians Fourth Annual Conference*, 1993, pp. 61-74; P. Bower, 'The white art: the importance of interpretation in the analysis of paper', in *Looking at Paper: Evidence and Interpretation*, Toronto, Canadian Conservation Institute, 1999, pp. 5-16.
  8. J.J. Le Français de Lalande, *L'art de faire le papier*, Paris, 1761. A copy of the first edition of 1761 is available in the library of the Danish Design Museum, Copenhagen. For an English translation see R. MacIntyre Atkinson, *The Art of Papermaking*, Mountcashel Castle, Kilmurry, Ashling Press, 1976. No. 391 of this limited edition is available in the library of the Conservation Department, National Museum of Denmark.

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# PRINCIPAL VERSION OR REPLICA? EXAMINING MARTINUS RØRBYE'S PRACTICE WHEN COPYING OTHERS OR HIS OWN PAINTINGS

Jørgen Wadum, Troels Filtenborg, Kasper Monrad  
and Jesper Svenningsen

**ABSTRACT** The Danish artist Martinus C.W. Rørbye, a central figure of the Golden Age of Danish painting, worked in Italy, Greece, the Middle East and the Balkans, as well as Norway and Denmark. Based on drawings made on his travels, Rørbye executed paintings on canvas. The question arises as to whether his underdrawing technique changed over time. As a favourite student of C.W. Eckersberg, Rørbye painted several copies after his master, some initially believed to be by Eckersberg himself. Would Rørbye at a more mature age carry out the same meticulous underdrawing when transferring his own composition to the canvas? Rørbye also often made repetitions of his own works, occasionally in up to four or five identical versions. In the present study, three versions of one subject – a standing clergyman – are examined. This paper investigates the different approaches that Rørbye used, ranging from his early copies after his teacher to his autograph replicas of his own paintings. The aim is to demonstrate development in the artist's practice, and in so doing offer a contribution to collectors and keepers of Rørbye's works when assessing the nature of his painting as either principal versions or replicas.

## Introduction

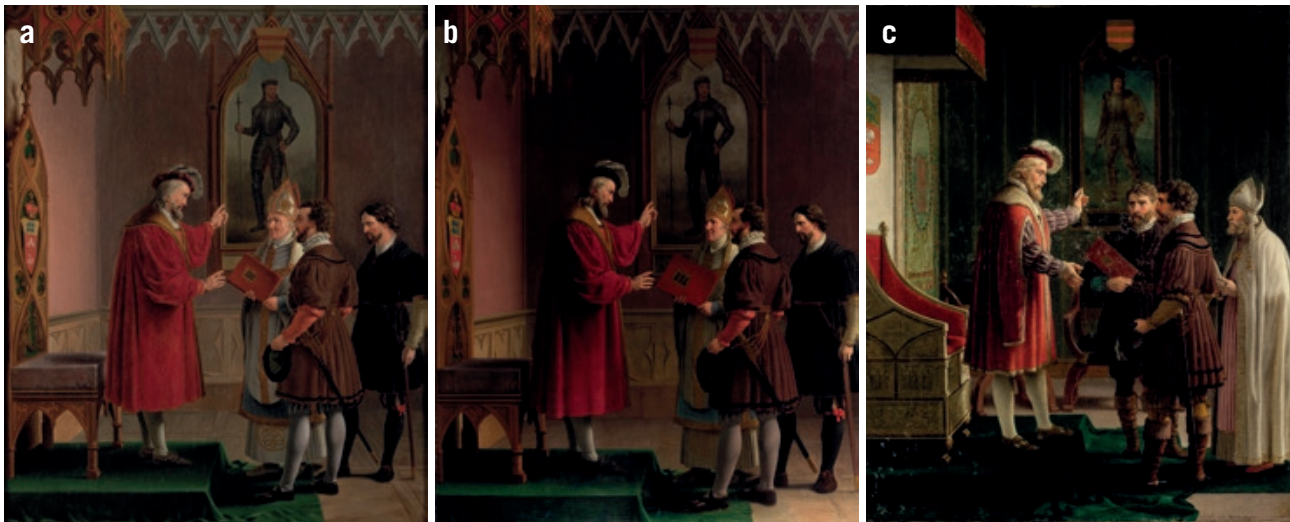
This paper examines how the Danish artist Martinus C.W. Rørbye (1803–1848), one of the most promising apprentices of C.W. Eckersberg (1783–1853), practised copying his master's works. It also describes how this relates to his execution when copying his own works, a frequent occurrence as Rørbye regularly made several versions of the same composition, years apart. The question is whether an evolution in his practice can be identified, and the assumption is that some change in his copying technique may have taken place. If this can be verified, it will contribute to the building of approximate chronologies of his paintings as either principal versions or autograph replicas.

Rørbye was born in Norway (which from 1536 until 1814 was united with Denmark under the Danish king as ruler), and he became a central figure of the Golden Age of Danish painting during the first half of the 19th century.<sup>1</sup> He worked in Italy, Greece and Istanbul as well as Norway and Denmark.<sup>2</sup> He was a favourite student of C.W. Eckersberg and formed a close association with him, as illustrated by his copies after his

master's works. In 1834 Rørbye received a travel scholarship from the Royal Danish Academy of Fine Arts, travelling by way of the Netherlands and France to Rome. In Italy, he also visited Sorrento, the Sabine Hills and Sicily. As one of the first western European artists, he went to Greece and Istanbul shortly after the end of the Greek War of Independence against the Ottoman Empire. He returned to Copenhagen in 1837, widely travelled, where his excellent orientalist studies won him the Danish public's attention. Rørbye often made repetitions of his own works, occasionally in up to four or five almost identical versions. In the present study, two of the five painted versions of a standing reading clergyman were examined along with a sixth, undocumented version of the same subject.

## Eckersberg and his influence

The foundations of the art of the period generally referred to as 'the Danish Golden Age' were laid down by Christoffer Wilhelm Eckersberg during his sojourn in Rome 1813–16.<sup>3</sup>



**Fig. 1** (a) M. Rørbye, *Adolf, Duke of Schleswig-Holstein, Declines the Offer to Accede to the Danish Throne*, 1825–26, oil on canvas, 47.2 × 36.5 cm, Statens Museum for Kunst, Copenhagen, KMS8676. (b) C.W. Eckersberg, *Adolf, Duke of Schleswig-Holstein, Declines the Offer to Accede to the Danish Throne*, 1821, oil on canvas, 309 × 249 cm, Christiansborg Palace, Copenhagen. (c) C.W. Eckersberg, *Adolf, Duke of Schleswig-Holstein, Declines the Offer to Accede to the Danish Throne*, 1819, oil on canvas, 46 × 39 cm, private collection. (Photo © SMK.)

He had a significant impact on almost all young Danish painters during the next three decades, including Rørbye.<sup>4</sup> The beginning of this survey, however, takes as its starting point the summer of 2012 when a private collector offered the Statens Museum for Kunst, Copenhagen (SMK) a painted sketch (Fig. 1a) for a large Eckersberg painting hanging at Christiansborg Palace, Copenhagen, depicting *Adolf, Duke of Schleswig-Holstein, Declines the Offer to Accede to the Danish Throne* (Fig. 1b).<sup>5</sup> This was the first of a series of four paintings executed by Eckersberg during the years 1819–28. In the composition, we see the aged Duke Adolf of Schleswig-Holstein receiving a delegation comprising a bishop, a nobleman and a representative of the third estate. Eckersberg shows the moment when the duke declines becoming king of Denmark and instead proposes his nephew, Count Christian of Oldenburg, who took the throne as Christian I. In the painting, Duke Adolf points to a full-scale painting of his nephew Christian on the back wall.

When the private collector presented SMK with the painted sketch for the large painting at Christiansborg, the gift was seen as an excellent opportunity to complement its collection with examples of artists' works relating to history paintings commissioned by the Danish royal house. It should be noted that archival sources show that the patron who commissioned the paintings, King Frederik VI, was very keen to have the 'story' painted according to verified and current knowledge. Therefore the historian Ove Malling (1747–1829) was assigned to assist Eckersberg in rendering the scenes accurately, which included painting their clothing faithfully for the period. This made the work difficult and time-consuming, as Eckersberg had to change the image according to Malling's interventions. Eckersberg received the commission in mid-1817 and six months later he presented the first drawn sketches featuring the story of Duke Adolf. Later, in 1819, he presented the first painted sketch, but was asked to make significant changes, which he could present for approval one month later.

When SMK acquired the abovementioned oil sketch, we were aware that a presumably earlier painted sketch of the subject was kept in a private collection (Fig. 1c).<sup>6</sup> Several compositional elements in this painting differ significantly from the large painting in Christiansborg Palace and from the recently acquired oil sketch of the same subject. This is the reason why SMK researchers at first thought that the latter could be Eckersberg's last and reworked version, which was translated directly to the large canvas. However, something did not quite fit the story. There is no clear documentation supporting the existence of a second version: in Eckersberg's own time only one sketch was mentioned, and there is no reference to a second version either in his diary or in other contemporary sources. The attribution of the recently acquired version to Eckersberg can only be traced to the early or mid-20th century, yet the catalogue of the Eckersberg sale in 1854 confirms that he owned a copy of this finished painting, executed by his student Martinus Rørbye. This raised doubt as to the attribution of the oil sketch to Eckersberg, and speculation as to whether it could be a faithful copy by Rørbye. This question prompted a desire to fully understand whether the painting offered to SMK did indeed reflect Eckersberg's working procedure and artistic considerations or if it was in fact painted by an ambitious student striving to attain the quality of his master.

Thanks to the owner of the first Eckersberg sketch, who was willing to loan his painting for examination, both oil sketches could undergo careful and comparable investigation using infrared reflectography (IRR).<sup>7</sup> In the version kept in a private collection, the IRR image (Fig. 2a) revealed a very detailed sketch beneath the paint. A ruler had been used in many places to achieve the correct perspective and architecture including a chequered floor that was later covered by the green carpet. A squaring of the entire composition was revealed using IRR; this was intended to aid the transfer of the small sketch to the large canvas planned for the palace. Surprisingly, it also uncovered a sketched female figure seated on the throne behind





**Fig. 2** (a) C.W. Eckersberg, *Adolf, Duke of Schleswig-Holstein, Declines the Offer to Accede to the Danish Throne*: IRR image of Fig. 1c. (b) M. Rørbye, *Adolf, Duke of Schleswig-Holstein, Declines the Offer to Accede to the Danish Throne*: IRR image of Fig. 1a.

Duke Adolf, something the historian Malling would surely have found most unsuitable for the composition.

By contrast, the IRR of the second version, closest in appearance to the final work at Christiansborg Palace, revealed a very tempered underdrawing almost identical to the finished work at the palace (Fig. 2b). Small dots along all sides of the canvas indicate squaring-up that cannot be detected by the IR camera, suggesting the possible use of threads instead of traced lines. No changes in or development to the complex composition can be observed, something that would be expected had this been Eckersberg's autograph second version therefore the underdrawing must reflect the work of a devoted student, Rørbye, and his method of copying one of his master's works. This must be the copy mentioned in the Eckersberg sale catalogue as executed by Rørbye.

To confirm this information and to discover how Rørbye copied his master, another work by the artists – a copy after Eckersberg's original *View into a Yard in Rome* (Fig. 3) – was examined.<sup>8</sup> This Roman courtyard was painted by Eckersberg in 1813–16, somewhat earlier than the Christiansborg history painting described above. Rørbye's faithful copy of the *View into a Yard in Rome* from c.1825 at SMK<sup>9</sup> (Fig. 4a) was consequently examined by IR imaging, which demonstrated that it appears precisely and carefully copied in a way comparable to the underdrawing in his copy of the history painting (Fig. 4b). Zooming in on the IR reflectogram, Rørbye's use of ruler and pen for the meticulous tracing of his master's motif can be observed. The vertical line of the receding wall with the large and small windows at the left is also visible through the roof over the small window. No sketchy tracing of the composition or its shadow areas is detectable, if present at all; the

contour lines alone seem to have been sufficient for the copying of the scene.

This method of drawing is comparable to the way Rørbye habitually finished his drawn sketches. Apart from a little wash, he often applied a very controlled line drawing in ink over the sketchier initial composition. In the drawing of *An Artist Painting at a Shipyard* (Fig. 5)<sup>10</sup> from about the same time as the copy after Eckersberg's Roman view, the initial drawing was in pencil and shadows are indicated by careful hatching made from repeated narrow tilted curves without lifting the pencil from the paper. At first glance this appears just as a rudimentary element, since other shadows have been indicated by a thin wash.

*Greeks Working in the Ruins of the Acropolis*, a drawing that Rørbye executed about a decade later, displays a comparable drawing technique.<sup>11</sup> The composition was captured using pencil, and although the contours were not drawn over using ink, the shading was carried out by means of the same controlled hatching and as in the drawing of the shipyard, where a light wash was applied. Later the drawing from the Acropolis served as an almost exact model for an underdrawing for a painting of almost identical size and of the same subject.<sup>12</sup> As the figures in the painting differ from those in the drawing it seems that only the architectural outlines were copied onto a new sheet of oiled paper. Apart from a few *pentimenti* – such as an alteration to the contours of a few architectural elements and a change in one of the fragmented columns piled up at the right foreground – the underdrawing shows little sign of sketching or hatching. Based on this observation, the tracing of a composition would seem to have been a method Rørbye employed when transferring a composition from a preliminary drawing to a canvas.



**Fig. 3** C.W. Eckersberg, *View into a Yard in Rome*, c.1813–16, oil on canvas, 34 × 27.6 cm, Ribe Art Museum, Ribe, RKMm046.

### *The Clergyman*

Drawing on the information from Rørbye's two copies after Eckersberg's paintings, as well as the underdrawing based on his own free drawing of the *Greeks Working in the Ruins of the Acropolis*, it may be possible to get closer to understanding the genesis of two of the five known autograph versions of *The Clergyman*. Based on their confirmed chronology, it concerns the first and fourth versions of this popular composition.

Additional information is provided by an engraving of *The Clergyman* by Joel Ballin (1822–1885), commissioned from the artist by the Fine Arts Society (Kunstforeningen)<sup>13</sup> in 1862 (Fig. 6), and distributed to all its members in 1864.<sup>14</sup> The engraving was allegedly made after one of Rørbye's 1838 versions as the plate is signed top right '1838 / M.R.' The engraving could therefore have been modelled after Rørbye's *The Clergyman*, signed identically '1838. M.R.', which is regarded as the first replica of the subject. According to Rørbye's manuscript list of his own paintings, this first replica was painted in March 1838<sup>15</sup> and the second version executed in this year was finished in November.<sup>16</sup> These two versions – as well as the later one from 1842 (Fig. 7a), now in the Ny Carlsberg Glyptotek (NCG) in Copenhagen<sup>17</sup> and a fourth autograph replica signed 'M. Rørbye 1846'<sup>18</sup> – are all based on Rørbye's initial work, signed and dated 'Subiaco 1836 MR'; which was kept by the artist's daughter Athalia Rørbye (1840–1919).<sup>19</sup> This painting, completed during Rørbye's second visit to Subiaco in 1836, was acquired in 2013 by the Art Institute of Chicago (Fig. 8a).<sup>20</sup> A recently discovered version of *The Clergyman*, unsigned and as yet unattributed, was also considered in the present survey. An

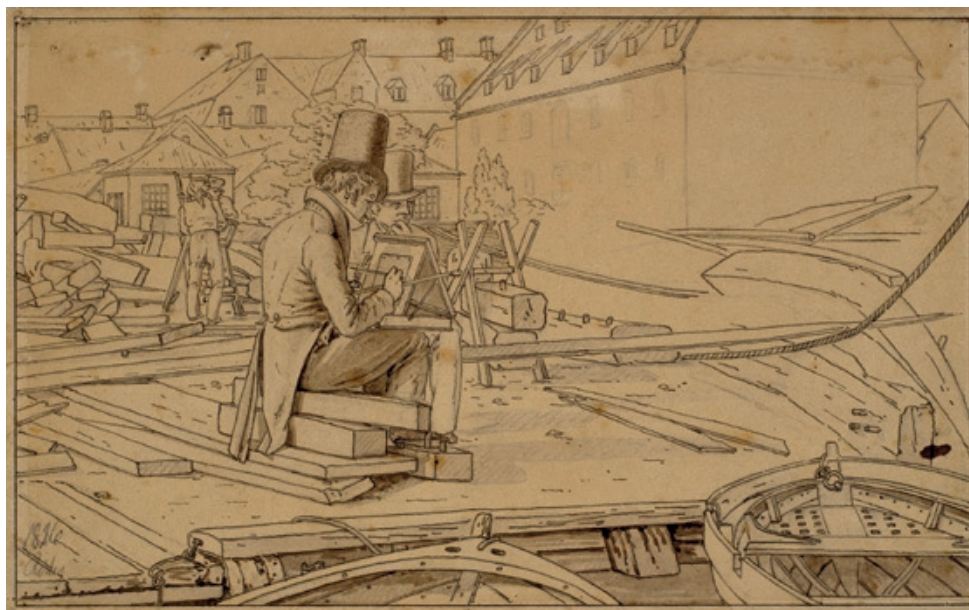


**Fig. 4** (a) M. Rørbye, after C.W. Eckersberg, *View into a Yard in Rome*, c.1825, oil on canvas, 33.6 × 27.6 cm, Statens Museum for Kunst, Copenhagen, KMS7342; (b) IRR image.

attempt was made to attribute and date this almost identical painting (Fig. 9a).

For this paper, IRRs and X-radiographs were available for three versions of *The Clergyman*: the original version from 1836, painted on paper and later mounted on canvas;<sup>21</sup> the NCG painting from 1842; and the unsigned version in a private collection. At first sight, the first and second of





**Fig. 5** M. Rørbye, *An Artist Painting at a Shipyard*, 1826, pen and grey ink, pencil and brown wash over pencil, 153 × 245 mm, Statens Museum for Kunst, Copenhagen, KKS1987-208.



**Fig. 6** Joel Ballin, after Rørbye, *The Clergyman*, 1862, engraving, 377 × 258 mm, Statens Museum for Kunst, Copenhagen, KKSgb10306.

these look quite similar in execution; however, in view of the time lapse between the dates of their completion (1836 and 1842), there are, unsurprisingly, differences in minor details. The IRR of the original 1836 version, painted *alla prima* directly on paper, did not reveal any underdrawing (Fig. 8b) whereas the IRR of the NCG version from 1842 revealed a clear and distinct underdrawing in a dry medium, possibly pencil (Fig. 7b). It is notable that in the underdrawing of this autograph copy painted six years after his first version, Rørbye used his drawing technique to shade unlit areas with slanted line hatching, as can be seen in a detail of the window (Fig. 7c). This is astonishingly comparable to Rørbye's drawing from 1835 of a *View Through a Window on*

*the Island of Procida* (Fig. 10),<sup>22</sup> where such line hatching can be observed below the translucent washes in grey or brown, applied at the same angle as in the underdrawing of the 1842 version of *The Clergyman*.

Comparing the IRR of the private collection version of *The Clergyman* to the IR images of the two former autograph versions would be the first test of its authorship. The image did indeed reveal an underdrawing, albeit with a somewhat restrained contour line and no hatching (Fig. 9b). Did the author of this undocumented version employ a different technique such as a cartoon or direct tracing? Only one detail seems to have been drawn differently from its final execution: the cross above the head of the clergyman, the only one in the group to depict the body of Jesus on the cross. The IRR image reveals a wider cross-bar positioned just below the final painted, narrower cross-bar.

Employing cartoons or tracings to produce multiple versions of paintings is a technique that has been used for centuries.<sup>23</sup> Would the multiple versions of Danish Golden Age painters' works also bear witness to this practice? The detailed and hatched underdrawing in IRRs of the NCG version of *The Clergyman* did not indicate this; however, in the Royal Collection of Graphic Art at SMK we found several tracings by some of Rørbye's contemporaries. One such was made in pencil on a semi-transparent paper, showing a group of figures found in a painting by August Kraft (1798–1829) depicting *An Old Beggar at the Door gets Alms from the Children* from 1829.<sup>24</sup> When this was later used for copying, the contours were traced with a hard instrument, leaving indentations on the new support (Fig. 11). A smaller drawing by Kraft of *Italian Musicians* was blackened on the reverse and subsequently 'carbon'-copied onto a new support.<sup>25</sup> This method would result in a practically unbroken contour line comparable to the IRR image below the paint of the version of *The Clergyman* now in a private collection.





**Fig. 7** (a) M. Rørbye, *The Clergyman*, 1842, oil on canvas, 38 × 27.5 cm, Ny Carlsberg Glyptotek, Copenhagen, MIN 937; (b) IRR image and (c) IRR detail.



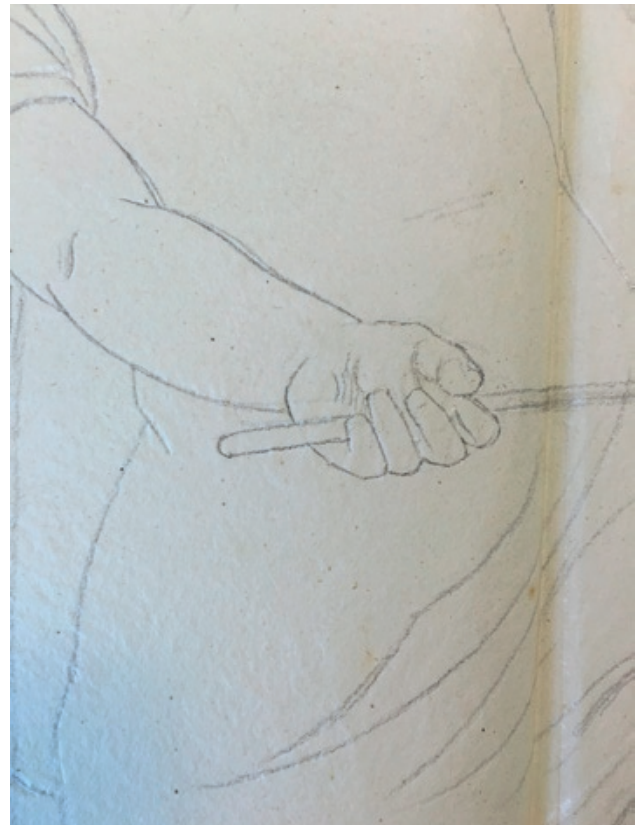
**Fig. 8** (a) M. Rørbye, *The Clergyman*, 1838, oil on paper on canvas, 39 × 27.5 cm, The Art Institute of Chicago, inv. no. 2013.56; (b) IRR image.



**Fig. 9** (a) Unknown artist, *The Clergyman*, oil on canvas, 38.5 × 28 cm, private collection; (b) IRR image.



**Fig. 10** M. Rørbye, *View Through a Window on the Island of Procida*, 1835, pencil and watercolour, 140 × 97 mm, Statens Museum for Kunst, Copenhagen, KKS1974-58.



**Fig. 11** August Kraft, *An Old Beggar at the Door gets Alms from the Children*, 1829, Statens Museum for Kunst, KKS (Bravo's archive, no inv. number): detail. The tracing of the painting on semi-transparent paper measures c.50 × 35 cm.

The question remains as to whether Rørbye employed the same tracing technique as Kraft and therefore could be considered the author of the unsigned and undated version of *The Clergyman* in private ownership. It is conceivable that Rørbye's copying practice may have changed to this extent. If we take a closer look at two additional autograph

drawings made by Rørbye as preparatory sketches for a large painting of *The Prison of Copenhagen* (1831),<sup>26</sup> we again find the sketchy outlines and hatched shadows in pencil, whereas in a second phase the contours were carefully drawn in brown ink and grey washes for the deep shadows.<sup>27</sup> The technique is comparable to Rørbye's other





**Fig. 12** M. Rørbye, *The Clergyman*, 1838, oil on canvas, 39.5 × 28 cm, whereabouts unknown.

drawings (see also Fig. 5) and naturally also to a related drawing of the figures to be set against the architectural drawing of the prison of Copenhagen.<sup>28</sup> This sketch is interesting in this context because it shows Rørbye's pre-occupation with the laws of perspective, something he had been taught by Eckersberg.<sup>29</sup> Below a horizon line – one-third of the distance from the lower edge of the paper and with an indication of the vanishing point at its intersection with the left vertical architectural element (shown on the drawing with '4') – Rørbye drew receding lines at specific intervals, converging in the vanishing point. By so doing he created the chequered tiles that would later be occupied by the crowd of the bourgeoisie.

Rørbye's endeavours to create a convincing perspectival setting for the earlier painting would suggest that he used similar careful observation and execution of the floor tiles in repetitions of this highly regarded image. However, as can be seen in the engraving from 1862, executed after versions of *The Clergyman* from 1838, the floor tiles were rendered in a manner very close to those in the first version. The floor tiles in the privately owned version also correspond to the careful perspectival rendering but this is not the case in Rørbye's autograph repetition from 1842 (NCG), which poses something of a puzzling departure for an artist trained by Eckersberg in the practice of working according the rules of perspective. We have no explanation for this anomaly in his oeuvre.

If the rendering of the floor tiles excludes the 1842 version as the model for the unsigned privately owned painting, it could perhaps have been made after one of the two 1838 versions, or after the print. Many details seen in the print, however, differ from this undocumented version of *The Clergyman*, the foremost small fold of the broad-brimmed hat being just one example. This slightly pointed fold is repeated in the 1842 version but cannot be found in either the earlier versions or the undocumented version. The later

painting must therefore have been painted using either the first version or one of the 1838 versions as its model. Rørbye's second replica in particular, owned in 1905 by Bernhard Hirschsprung (1834–1909), seems a likely candidate.<sup>30</sup> It is known only through an illustration in the 2005 sales catalogue of Museumsbygningen Kunstauktioner (Fig. 12);<sup>31</sup> however, the quality of the photograph allows for a comparison to the private version of *The Clergyman* (Fig. 9). It seems plausible that it was this second replica by Rørbye that was used as a model by someone who had access to the painting. Indeed, the entry on the second replica in the catalogue from the 1905 Rørbye exhibition at Kunstforeningen includes a reference that is significant: 'A copy (39 × 28) made by Mimi Larsen is owned by Museum Director P. Krohn.' This was Mathilde Minona Marie (Mimi) Larsen (1851–1932), the daughter of C.F. Schwartzkopf (1817–1893) and from 1892 the wife of author and professor Karl Larsen (1860–1931). Mimi Larsen trained as a painter under Carl Thomsen (1847–1912), the sculptor Louis-Ernest Barrias (1841–1905) and Gustave-Claude-Étienne Courtois (1852–1923) in Paris. Back in Denmark she also followed up with painting sessions from Pietro Købke Krohn (1840–1905), a Danish painter, illustrator, theatre director and museum director (and the father of the aforementioned curator Mario Krohn). Larsen, who specialised in portrait and still lifes, staged her first exhibition in 1883. As mentioned above, Pietro Krohn owned a copy of *The Clergyman* painted by Mimi Larsen and it seems likely that this painting, executed sometime after her debut as a painter in 1883 and indeed based on the second 1838 version, is identical with that in the possession of Bernhard Hirschsprung after 1880.<sup>32</sup>

## Conclusions

The investigation of Rørbye's painting techniques, and especially his draughtsmanship and use of underdrawing, has confirmed a careful and controlled manner for preparing and finalising his works. From his early years of copying paintings after his master Eckersberg and throughout his career, a consistent method can be observed. The use of a ruler combined with a controlled yet sketchy search for the composition, including a characteristic skewed hatching achieved without lifting the pencil from the paper or ground layer, is seen time and again in the examined works.<sup>33</sup>

The comparison of his working practice – visualised with IRR imaging combined with close study of the canvases used by the artist in the case of the two versions of *The Clergyman* – has demonstrated that the unsigned and undated painting must have been executed sometime after 1883, possibly by the artist Mimi Larsen. Further technical examination of the two paintings of the same motif executed by Rørbye in 1838 will be attempted, if the whereabouts of the paintings can be identified. Until this is possible, the present study has clearly demonstrated important aspects of Rørbye's working methods that will aid future examinations of his paintings and drawings.



## Acknowledgements

We express our gratitude to the Art Institute of Chicago, the Ny Carlsberg Glyptotek, Ribe Art Museum, and the private owners of Eckersberg's *Adolf, Duke of Schleswig-Holstein, Declines the Offer to Accede to the Danish Throne* and of the unsigned and undated painting of *The Clergyman*, for their unconditional support in sharing valuable photographic documentation of their paintings. Thanks also to R. Buccarella, J. Skou-Hansen and R. Hoberg Therkildsen for technical imaging of several of the works discussed.

## Notes

1. B. von Folsach and S.M. Søndergaard (eds), *Martinus Rørbye: Det nære og det fjerne*, Hellerup, Øregaard Museum, 2014.
2. K. Monrad, M. Scharff and J. Wadum, 'Hidden drawings from the Danish Golden Age: drawing and underdrawing in Danish Golden Age views from Italy', *SMK Art Journal* 2006, 2007, pp. 58–69 (English version pp. 111–119). Available at: [https://issuu.com/smk.dk/docs/2006\\_c11c8087092083](https://issuu.com/smk.dk/docs/2006_c11c8087092083).
3. See K. Monrad, 'The Danish revolution: new practices among Danish landscape painters 1814–1850', in this volume, pp. 1–8.
4. J. Wadum, M. Scharff and K. Monrad, 'The multiple views of Italy: reality or manipulated by the Danish Golden Age artists', in H. Verougstraete and C. Jansens de Bisthoven (eds), *Colloquium XVI for the Study of Underdrawing and Technology in Painting 'The Quest for the Original'*, Leuven, Peeters, 2009, pp. 143–151.
5. K. Monrad and J. Wadum, 'Eckersberg eller Rørbye?', *SMK Museumsmagasin* 7, 2013 pp. 56–61.
6. C.W. Eckersberg, *Adolf, Duke of Schleswig-Holstein, Declines the Offer to Accede to the Danish Throne*, 1817, oil on canvas, 46 × 39 cm, private collection.
7. The IRR imaging was carried out by R. Buccarella using an Osiris camera with an InGaAs array sensor, wavelength 0.9–1.7 µm, using a Rodagon lens with f:150 mm focal length. The composite image is assembled from a number of 3000 × 3000 pixel images, using Adobe Photoshop CS6 with photomerge function (reposition parameter).
8. C.W. Eckersberg, *View into a Yard in Rome*, 1813–16, oil on canvas, 34 × 27.6 cm, Ribe Art Museum, Ribe, RKMm0046.
9. M. Rørbye, after C.W. Eckersberg, *View into a Yard in Rome*, c.1825, Statens Museum for Kunst, Copenhagen, KMS7342.
10. M. Rørbye, *An Artist Painting at a Shipyard*, 1826, Statens Museum for Kunst, Copenhagen, KKS1987–208.
11. M. Rørbye, *Greeks Working in the Ruins of the Acropolis*, 1835, pencil, pen and black ink, brush and grey-brown wash on brownish paper, 271 × 424 mm, Statens Museum for Kunst, Copenhagen, KKSgb5808.
12. M. Rørbye, *Greeks Working in the Ruins of the Acropolis*, 1835, oil on paper on canvas, 28.5 × 41.5 cm, Statens Museum for Kunst, Copenhagen, KMS4299.
13. The history of the Copenhagen Fine Arts Society goes back to 1825, when a group of citizens including C.W. Eckersberg founded Kunstforeningen on a German model. The aim was to spread general knowledge of art and to forge a link between the elite Royal Danish Academy of Fine Arts and the wider public.
14. Joel Ballin, after M. Rørbye, *The Reading Clergyman*, engraving, 377 × 258 mm. See *Kunstforeningen i København*, Copenhagen 1864, pp. 124 ff., 191, 199.
15. In Rørbye's manuscript list of paintings executed during and after his first trip to Italy, this first replica is described as '1 Marts 1838 malet *En ung Abate læsende*. 15" h. 10 1/2" br. Grevinde Moltke, 80 Rd' (transcribed in J.B. Hartmann, 'Egenhændig fortegnelse over Rørbyes malerier vedrørende rejsen 1834–37', *Personallhistorisk Tidsskrift*, 71. Aargang, 12. Række, 5. Bind, 1950, p. 20 ff., esp. p. 21). The provenance of the first replica is: Count A.W. Moltke (1785–1864); by inheritance to his grandson, Count Frederik Christian Moltke-Bregentved (1854–1936); still in family ownership.
16. In Rørbye's manuscript list of paintings, the second replica is described as '1 November en Gjentagelse [af] *Den læsende Abate*. 15" h. 10" br. Grosserer Gerson, 80 R'; see Hartmann 1950 (cited in note 15), p. 21. The provenance of the second replica is: Nicolai Gerson (1802–1865); by inheritance to his son-in-law, Carl Ludvig Bull (1809–1879); his sale, Copenhagen, 15 March 1880, lot 42; bought by Bernhard Hirschsprung (1834–1909); his sale, Copenhagen, 16 January 1911, lot 745; bought by art dealer Richard Wilsstrup presumably on behalf of Eduard Rée (1856–1918); his sale, Copenhagen, 16–18 October 1918, lot 108; bought by art dealer Richard Wilsstrup. Wiggo P. Heymann; his sale, Bruun Rasmussen Auctioneers, Copenhagen, sale 39, 23 April 1953, lot 67; bought by F.R. Riis; Museumsbygningen Kunstauktioner, sale 26, 21 May 2003, lot 38 (bought in); Museumsbygningen Kunstauktioner, sale 38, 1 March 2005, lot 35.
17. Provenance of the third replica: Baron Henrik Stampe (1794–1876), Nysø; by inheritance to Count Otto Sophus Danneskjold-Samsøe (1804–1894), Gissfeldt; his sale, 14 June 1894, lot 17; bought by Carl Jacobsen (1842–1914) for his museum.
18. Provenance of the fourth replica: William Frederik Treschow (1786–1868). Peter Simonsen (1831–95), Christiania; his sale, Copenhagen, 24 February 1896, lot 931; bought by Carl J.V. Moresco (1905).
19. Provenance of the original version: the artist's daughter, Athalia Rørbye (1840–1919); Emil Bang (b.1865); his sale, Winkel & Magnussen, Copenhagen, sale 161, 8 October 1934, lot 320; bought by art dealer Axel Bruun. See also note 20.
20. Bruun Rasmussen Auctioneers, Copenhagen, sale 716, 2 December 2002, lot 1153; private collection; Bruun Rasmussen Auctioneers, Copenhagen, sale 778, 28 November 28, 2007, lot 61 (bought in); Bruun Rasmussen International, Copenhagen, sale 825, 28 November 2011, lot 17; bought by Galerie Michel Descours; purchased through the prior gift of Mr and Mrs Chauncey B. Borland by the Art Institute in 2013, inv. no. 2013.56.
21. Possibly the mounting on canvas was done by Rørbye himself or commissioned by him; retouching covering some of the edges of the paper and onto the canvas may be autograph. We have found documentation that his colleague Christen S. Købke (1810–1848) did this with his paintings on paper; see Monrad 2017 (cited in note 3).
22. M. Rørbye, *View Through a Window on the Island of Procida*, 1835, Statens Museum for Kunst, Copenhagen, KKS1974–58.
23. J. Wadum, 'Rembrandt under the skin: the Mauritshuis *Portrait of Rembrandt with Gorget* in retrospect', *Oud Holland* CXIV, 2000, pp. 164–187; B. Broos and J. Wadum, 'Het "Dochters schilderijtje" van Adriaen van der Werff', *Delineavit et Sculpsit* IX, 1993, pp. 11–16 (with summary in English).
24. A. Kraft, *An Old Beggar at the Door gets Alms from the Children*, 1829, oil on canvas, 90 × 72 cm, Statens Museum for Kunst, Copenhagen, KMS391. The tracing of the painting on semi-transparent paper measures c.50 × 35 cm, KKS (Bravo's archive, no inv. no.).
25. A. Kraft, *Italian Musicians*, drawing on semi-transparent paper, c.10–15 cm, KKS (Bravo's archive, no inv. number).

26. M. Rørbye, *The Prison of Copenhagen*, 1831, oil on canvas, 47.5 × 63 cm, Statens Museum for Kunst, Copenhagen, KMS206.
27. M. Rørbye, *A Sketch for the Painting the Prison of Copenhagen*, 1830, pen, brown ink, pencil, grey wash over pencil, 244 × 219 mm, Statens Museum for Kunst, Copenhagen, KKS7207.
28. M. Rørbye, *A Sketch for Figures in the Painting the Prison of Copenhagen*, 1830, pencil, pen, grey and brown ink, pencil, grey wash on paper, 227 × 322 mm, KKS1989-119.
29. K. Monrad in C. Høgsbro Østergaard and K. Monrad (eds), *Christoffer Wilhelm Eckersberg. A Beautiful Lie – Eckersberg*, Copenhagen, Statens Museum for Kunst, 2015.
30. In a catalogue of Rørbye's paintings issued on the occasion of an exhibition at Kunstforeningen in 1905, the curator Mario Krohn recorded: '1838. The Abbot. "M. Rørbye 1838", 39.5 × 28. Owned by Director B. Hirschsprung'.
31. See note 16.
32. He was the brother of Heinrich Hirschsprung, a Danish tobacco manufacturer, arts patron and art collector, and founder of the Hirschsprung collection in Copenhagen. A study conducted by means of automated thread count and weave mapping of the canvas, based on the digital X-radiograph of the privately owned version of *The Abbot*, was carried out to corroborate the theory that this painting could be identified as the copy executed by Mimi Larsen in the late 19th century. The extremely high thread count of the canvas (*c.* 27 × 28 threads/cm), as well as the even nature of the weave with very little deviation from the average density across the fabric, is indicative of a product woven on a power loom. For a canvas made in Denmark, this would date the canvas well within the second half of the 19th century. Its distinctive character is further illustrated when compared with the equivalent features of Rørbye's painting from 1842, with its much lower thread count of *c.* 12 × 14 threads/cm and a clearly varied density for the weft, characteristic of hand-woven canvas from the early 19th century.
33. More works by Rørbye also examined in this study (e.g. KMS3769 from 1844, KMS6374 from 1847, KMS7220 from 1848 and KKS1974-84 from 1835–36, Statens Museum for Kunst, Copenhagen) all fit this description.

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# THOMAS FEARNLEY EN ROUTE: A 19TH-CENTURY ARTIST'S CHOICE OF DRAWING AND FIXING MATERIALS

Birgit Reissland, Tina Grette Poulsson, Henk van Keulen and Ineke Joosten

**ABSTRACT** The National Museum of Art, Architecture and Design (National Museum, Oslo, Norway), owns about 750 drawings by Thomas Fearnley, a Norwegian romantic landscape painter. Examination of 190 pencil drawings by Fearnley enabled the identification of the drawing materials he carried on his extensive journeys through Europe. Watermark analysis confirmed that he bought his papers at local supplies and the results can serve as a basis for the attribution of drawings with unknown date to certain periods. The constant travelling on foot or in the coach required fixing of the delicate pencil drawings. Analysis using gas chromatography with mass spectrometry (GC-MS) on samples from two case studies identified milk as the fixative used by Fearnley. The different ageing behaviours of papers fixed with milk can be attributed to the presence of minute iron-containing particles. This research shed light on the material choices of itinerant artists in the first half of the 19th century and the ageing of drawings that were fixed with milk.

## Introduction

Thomas Fearnley (1802–1842) was a Norwegian romantic artist and gifted landscape painter (Fig. 1). His compatriot, the famous painter Johan Christian Dahl, described him as the most talented of his pupils.<sup>1</sup> Fearnley was born in 1802 in Frederikshald (today Halden) in Norway, a small town in the southeast of the country, a few miles from the current Norwegian–Swedish border. He was a restless soul, an excellent example of an itinerant artist in the early 19th century, and a cheery companion whose journeys with artist colleagues took him all over Europe. He died in Munich in 1842, only 39 years old, leaving his Norwegian wife and his newborn son Thomas with an impressive oeuvre of paintings in oil, *plein air* oil studies and a large collection of his drawings.

Today, the National Museum of Art, Architecture and Design in Oslo possesses 757 drawings by Fearnley, including drawings on the verso and in sketchbooks. Nearly all of them (733) were executed fully or partially in pencil. Many of these pencil drawings show a disturbing discoloration that obscures their images, indicative of the application of a fixative. Attempts to remove the fixative in the 1990s were unsuccessful, and its nature remained a mystery to paper conservators. In 2013, a joint project was started between the



**Fig. 1** Thomas Fearnley, *Self-Portrait with Pipe*, 1831, pencil on paper, 218 × 181 mm, The National Museum, Oslo, NG.K&H.B.00757. (Photo: Andreas Harvik, The National Museum, Oslo.)



National Museum in Oslo and the Cultural Heritage Agency of the Netherlands (RCE, Amsterdam), with the aim of identifying the fixative(s) used by Thomas Fearnley.<sup>2</sup> This initial query regarding the fixative grew into a larger project, as the investigation also shed light on the materials that Fearnley used to create his pencil drawings. For this study, 190 drawings were examined in detail, covering the entire period of Fearnley's career from 1823 to 1841. Two representative drawings executed in Ramsau, Bavaria, in September 1832 were used as case studies for the identification of the fixative: *St. Sebastian, Ramsau* and *Tree, Ramsau* (Figs 2 and 3).<sup>3</sup>

Deriving knowledge on Fearnley's techniques from the actual artworks was crucial as he has left few written records. Although some letters do exist, Fearnley was not very fond of writing, as he revealed in a letter to his artist colleague Johannes Flintoe in 1830: 'you know my weak side ... my damned antipathy to pen and ink.'<sup>4</sup>

## Thomas Fearnley

Thomas Fearnley grew up with his aunt and uncle in Christiania (today Oslo), where a career path either in the military or in his uncle's retail business had been mapped out for him. At the age of 18, he decided instead to follow his artistic vocation. He attended art academies in all the Scandinavian countries: the newly established Royal School of Drawing in Christiania (1819–21), the renowned Danish Royal Academy of Art in Copenhagen (1821–23), and the Royal Swedish Academy of Arts in Stockholm (1823–27). After a four-year period of residence in Stockholm, Fearnley never spent more than two-and-a-half years in the same place (Fig. 4). In 1829, he set out on his grand tour, leaving Scandinavia for Dresden – to study under Johan Christian Dahl – where he became acquainted with artists such as Caspar David Friedrich, a close friend of Dahl, and Carl Gustav Carus. After 18 months in Dresden, Fearnley moved on to Munich, where he spent two happy years before venturing out on a 700 km walk to Rome. On the way he visited, among other places, Ramsau, where the two drawings in question were made. In 1835, he turned back north, via France to England where he met J.M.W. Turner. Back in Norway, he married Cecilia Catharine Andresen (1817–1888), the daughter of his benefactor, in 1840. They had a son, Thomas, born in Amsterdam in 1841. The family then moved to Munich, where Fearnley unfortunately contracted typhus and died in January 1842.

## Fearnley in his studio and en route

Fearnley's self-portrait *Fearnley in his Studio* was probably made in 1826 when he was a 24-year-old student in Stockholm (Fig. 5). Fearnley depicted himself working on a large painting on a sunny but cold day. He gives us a glimpse into his artistic environment, including the equipment and materials he used to create his works of art. On the sideboard



**Fig. 2** Thomas Fearnley, *St. Sebastian, Ramsau*, probably September 1832, pencil on paper, 267 × 295 mm, The National Museum, Oslo, NG.K&H.A.03480. (Photo: Birgit Reissland, RCE.)



**Fig. 3** Thomas Fearnley, *Tree, Ramsau*, 14 September 1832, pen and pencil on paper, 343 × 248 mm, The National Museum, Oslo, NG.K&H.A.03393. (Photo: Birgit Reissland, RCE.)

to the left are some plaster cast models, symbols of academic drawing. Behind the oven, his trunk lies on the floor. Fearnley's coat, knapsack, pipes and trekking pole hang on the wall: necessary implements for the study tours he conducted through Norway and Sweden.<sup>5</sup> His watercolour paint

## Thomas Fearnley's Europe, 1802–42

COUNTRY	YEAR*	REGION *see map for more detail
Norway	1802–7	Fredrikshald
	1807–21	Christiania
Denmark	1821–3	Copenhagen
Germany	1823	Kiel
Sweden	1823–8	Stockholm
Norway	1824	Kongsberg, Labro Falls
	1828	Telemark
Denmark	1828/29	Copenhagen
Germany	1829	Scharfenberg
	1829–30	Dresden
	1830	Königssee
		Ramsau
		Munich
	1831	Murnau
		Königssee
Italy	1832	Ramsau
	1832–5	Rome
	1833	Sicily
		Palermo
		Sorrento
		Amalfi
		The Alban Hills, Ariccia, Albano and Nemi
		Capri
	1834	Capri
		Sorrento
		Olevano
Switzerland	1835	Brunnen
		Meiringen
		Grindelwald
France	1835–6	Paris
England	1836	London
Norway		Kongsberg, Labro Falls
		Sogn
		Romsdal
England	1836–8	London
	1837	Lake District
Germany	1838	Dresden
		Munich
Norway	1839	Sogn
	1839–40	Christiania
Holland	1840–41	Amsterdam
Germany	1841–2	Munich



**Fig. 4** Overview of Fearnley's journeys through Europe: 'Thomas Fearnley's Europe, 1802–42' Image: Helen Swansbourne. (Originally published in Sumner and Smith 2012 (cited in note 14), p. 13.) (Image © The Barber Institute and D. Giles Ltd.)

box rests on a chair to the right. The inserted paper label has a peculiar shape, suggesting that it might be a box made by the famous British manufacturer and 'Inventor of Superfine Water Colours in Cakes' William Reeves, or his successors Reeves & Inwood.<sup>6</sup> On the trunk rests a wooden board with a sheet of paper attached to it, already prepared for water-colouring. Leaning against the wall are two portfolios, one full of paper, and more portfolios lie on the bookshelf to the right. A map of Europe is prominently displayed on top of the bookshelf in anticipation of Fearnley's future travels.

The concept of the grand tour originated in the 17th century for aristocratic young men. It was still popular in the romantic period, especially among young artists, provided they could find a travel scholarship. 'All roads lead to Rome': those of the Scandinavian artists, notably the Danish artists of the Danish Golden Age, led to Rome via the states of the German Confederation. Lengthy stops at picturesque areas

were common, and visits to Dresden, Berlin and other artistic centres allowed the travellers to reunite with artist friends, exchange or acquire new artistic concepts and replenish their supplies.<sup>7</sup> Munich, with its famous artists' community, was the common starting point for the journey to Italy. The south tempted artists with its sites of classical antiquity, southern light and climate, an authentic culture and beautiful landscapes.<sup>8</sup> Hiking in small groups across the Alps to Rome became very popular, a kind of pilgrimage for 19th-century artists. The choice to hike was a conscious one: it allowed the artists to experience nature intimately, was affordable, and gave them freedom to choose their timing and their route.

Fearnley also travelled via Dresden to Munich, where he arrived in October 1830. In common with many other artists, he felt the draw of Italy. On 6 September 1832, at 6 am, he left Munich with two fellow artists, the Danish artist Wilhelm Bendz (1804–1832), with whom he studied at the art academy





**Fig. 5** Thomas Fearnley, *Fearnley in his Studio*, probably 1826, oil on board, 48 × 62 cm, private collection. (Image: O. Væring Eff. AS.)

in Copenhagen, and Joseph Petzl (1803–1871) from Munich, whom he first met in Dresden. They must have been a popular and sociable trio, as about 50 painters gathered for a farewell party the evening before they departed.<sup>9</sup> The artists were more or less the same age: in September 1832, Fearnley was the oldest at 29 years; Pretzl and Bendz were both 28 years old. The young artists' destination on leaving Munich was of course Italy.

About a week later they arrived in the Bavarian alpine village of Ramsau. Their suitcases had been sent directly to Rome, but they each still had almost 20 kg on their backs to carry across the mountains.<sup>10</sup> Their route differed from that normally taken by German artists.<sup>11</sup> They walked through Ramsau, Gosausee, Villach and Trieste, from where they reached Venice by boat.<sup>12</sup> A drawing by Joseph Petzl, showing Bendz in his travel outfit, reveals how the artists were equipped on their journey (Fig. 6). The three artists wore a costume typical for artists crossing the Alps in that period: a so-called *Altdeutscher Rock*, sign of a progressive attitude,<sup>13</sup> and under it 'a dark blue overcoat with many pockets and in addition a pair of trousers of white and blue striped ticking'.<sup>14</sup> They also had a cleverly contrived knapsack, equipped with a device for fixing the painter's box, pockets for paint bladders, a foldable stool and an umbrella. On top of Bendz's knapsack

is a cylindrical box which would have been made of tin and used to keep the drawing papers clean and dry.

The artists had clement weather in Ramsau and spent every minute sketching from nature. In letters to his fiancée Marie, Bendz described the mornings and evenings as bitterly cold.<sup>15</sup> The end of September was rather late for such a trip, with a cold winter approaching. They moved onto Salzburg and Gosausee, where Fearnley is known to have made several sketches. At this point, the weather became cold and wet. The artists walked up to 14 hours a day and the trek on foot over the Alps became very strenuous, especially for the somewhat corpulent Fearnley.<sup>16</sup> It should therefore come as no surprise that there are no known surviving sketches by Fearnley from the last part of their mountain crossing.

In late October 1832, the three companions reached Venice, at that time part of the Habsburg empire, where the three travellers said goodbye to go their separate ways: Fearnley was determined to carry on until he reached Rome, whereas Bendz wanted to stay in Venice. Bendz became ill, but moved on to Vicenza, where he died most likely from typhus just three weeks after he had parted from his friends. Fearnley finally arrived in Rome late November 1832 where he settled for a while, living amongst the Danish and German artistic community before turning further south.





**Fig. 6** Joseph Petzl, *Wilhelm Ferdinand Bendz*, 1832, 15.5 × 9.5 cm, Det Nationalhistoriske Museum på Frederiksborg Slot. (Photo: Hans Petersen.)

## Fearnley's papers

The papers Fearnley used for drawing show remarkable variety, ranging from thin, smooth papers of a light colour, to thicker, rougher papers with a surface texture, some containing coloured fibres. Fearnley used both laid and wove paper, possibly with a slight preference towards wove with its uniform surface.<sup>17</sup> Sometimes he drew on the wire side, and sometimes on the felt side. Almost half of the examined drawings (89) contain a watermark representing papers from at least 25 different paper mills. Chronological ordering of the papers with watermarks allowed the reconstruction of Fearnley's use of drawing papers, which was certainly influenced by the local availability of artists' papers, his personal preferences and the price (Fig 7).<sup>18</sup>

During his Scandinavian period (1823–1829), Fearnley worked predominantly on Honig papers (15 drawings) which were imported from the Netherlands and made by the different paper mills run by the Honig family in Zaandijk, near Amsterdam. Watermarks include: 'C & I HONIG', 'J HONIG & ZOONEN', 'HONIG J C & Z'. Just five other papers with

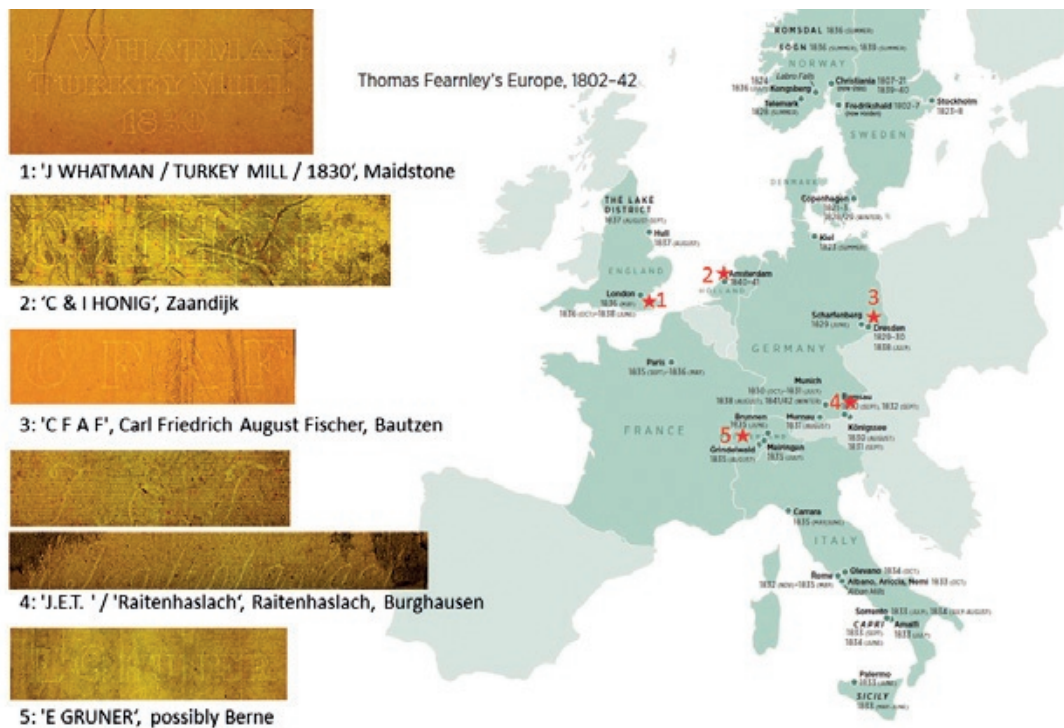
a watermark were present, three of which could not be attributed. Two were of English origin: one paper with the watermark 'C WILMOTT 1819', referring to the papermaker Charles Wilmott who ran the Sundridge Mill in Kent, and one Whatman paper. Since 1805, Whatman paper had been produced by two competing mills: the first by William Balston, a master papermaker and former employee of the Whatmans, who owned the Springfield Mill (watermark: 'J Whatman / year'). The second was the Turkey Mill owned by the Hollingworth brothers (watermark: 'J Whatman / Turkey Mill / year'). Both paper mills are located near Maidstone in Kent. Most Whatman papers used by Fearnley were from the Turkey Mill.

Fearnley's move to Dresden in 1829 is clearly evident in his choice of papers. We see a decline in the Honig papers and an increase in papers made at local factories such as papers with the watermark 'C F A F', which could be attributed to a paper mill owned by Carl Friedrich August Fischer, situated in Bautzen and Obergurk.<sup>19</sup> This mill was one of the larger and more important mills in the kingdom of Saxony, and the drawing *Elbe at Saloppe, Dresden*, made on 12 June 1830, was carried out on such a paper.<sup>20</sup> The watermark 'DRESDEN' on the drawing *Root of a Tree*<sup>21</sup> also refers to a paper produced in the kingdom of Saxony.

Fearnley took the Saxonian paper with him and used it for drawings during his tour through the Salzburger Land in August 1830. His arrival in Munich allowed him to replenish his stocks of paper in the city of the arts. Papers from a paper mill with a watermark bearing the initials 'M O' and another paper mill with the initials 'C M' appear. The presence of 11 papers of the latter mill during the years 1830–1831 evidences a clear preference for these papers. The two drawings *From Bavaria*<sup>22</sup> and *Landscape, Feldafing*<sup>23</sup> were executed in September and October 1830, when Fearnley visited the mountains. For these drawings he used laid paper from the local paper mill in Raitenhaslach, close to Burghausen. *From Bavaria* shows the watermark 'Raitenhaslach', and *Landscape, Feldafing* has the corresponding countermark 'J.E.T.'.

In August 1832, still in Bavaria, Fearnley once more worked on papers from the established paper mills Honig and Whatman, which he also used in Italy. In the Alps in September/October 1832, he worked on papers watermarked 'M.H' as well as Whatman papers from the Turkey Mill, probably carried in the tin box on his back. 'Fratelli Camera' is the watermark of an Italian paper and appears on a drawing made in Palermo on 7 May 1833. In Italy, one paper from the famous French paper mill Canson was used, as were papers with the watermark 'A TS'.

On his journey back north from Italy, Fearnley passed through Switzerland during the summer of 1835. The drawings *Brunnen, Kanton Swyts* and *Brunnen* were made on paper watermarked 'E Gruner'.<sup>24</sup> We know that the papermaker Samuel Emanuel Gruner had a paper mill in Berne from 1796 to 1810, and E. Gruner may be from the same paper-making family.<sup>25</sup> It is interesting how the different locations of Fearnley's voyage manifest themselves in the papers he used. A comparable pattern can probably be verified for Fearnley's



**Fig. 7** Map of some of the paper mills that provided paper for Fearnley's drawings. He used paper from well-known paper mills as well as local mills. (Image: The Barber Institute and D. Giles Ltd. and Tina Grette Poulsen, The National Museum, Oslo.)

stays in Paris, England, the Netherlands and Munich in the following years.

### Drawing easily *en plein air* thanks to the pencil

The invention of the pencil was as revolutionary as the introduction of the paint tube. For drawing *en plein air*, it freed the artistic community from the use of dusty pieces of chalk, charcoal or Cumberland graphite inserted in *porte-crayons*. While early wooden pencils had many disadvantages, the new pencils invented by Nicolas Conté in 1795 had a perfectly uniform consistency and different grades of hardness. Contemporary artists embraced the newly manufactured pencils. It is therefore not surprising that the majority of Fearnley's drawings were carried out in pencil – for an itinerant landscape painter who mainly sketched outdoors, pencils were small, light and easy to transport. Mechanical pencils were patented in England in 1822–23 by Hawkins and Mordan. They were very common from the 1830s onwards and were known as Mordan's 'ever-pointed pencils' because they did not need regular sharpening.<sup>26</sup> Taking a closer look at Fearnley's drawings, it seems likely that he used pencils of different hardnesses to create depth. Starting with light lines using pencils of a hard grade to outline the drawing, he added the darkest lines last, applying them with a soft pencil. This is common practice for experienced draughtsmen. In a few instances, Fearnley highlighted his pencil drawings with white chalk or gouache. In other drawings – for instance *Tree, Ramsau* (Fig. 3) – he combined pencil with other media such

as pen and ink. Occasionally he applied locally thin washes or diluted watercolour, pastel, charcoal or black chalk. However, pure pencil drawings constitute the majority of the drawings in the collection of the National Museum.

Pencil drawings, especially those executed with a soft pencil, smudge easily. How would such drawings respond to transport while coiled up in a cylindrical tin box during hiking for weeks in the mountains, or rubbing against each other within portfolios during long carriage rides?

### Protecting the drawings with a fixative

Fearnley used fixatives on his pencil drawings during his entire career, on loose sheets as well as in sketchbooks. About 100 drawings exhibit the presence of a fixative in daylight while some more drawings contain a fixative that is only visible in UV radiation. The fixative was applied quickly with a brush, to preserve the soft and fragile pencil lines. In most cases it covers the drawing only, not the whole sheet (Fig. 8). Often the brush has missed parts of the drawing or covers large areas of untouched paper. Traces of the brush and droplets of fixative that sometimes lie outside of the fixed area can be discerned under ultraviolet (UV) radiation (Fig. 9).

The fixative has been instrumental in preserving many of Fearnley's drawings. In some cases where it does not cover all of the pencil lines, the unfixed areas have been almost erased (Fig. 10). However, over time the fixative in many of the drawings has deteriorated severely and in the 1990s, several attempts were made to remove it. Upon examining the fixed drawings, an intriguing discovery was made: while the fixative





**Fig. 8** UV photograph of Thomas Fearnley, *St. Sebastian, Ramsau*: the fixative (with a brighter fluorescence) was applied with a brush in the areas of pencil only, omitting the upper part of the church spire. (Photo: Aafke Weller.)

on 73 drawings has discoloured, on 17 drawings the fixative seems to have protected the paper. Thorough examination showed that in the latter case a thin layer was present on the surface of the drawing (Fig. 11). Such a controversial ageing behaviour was expected to be the result of the use of two different fixatives. To investigate this hypothesis two representative drawings were chosen: *St. Sebastian, Ramsau* with a discoloured fixative (Fig. 2) and *Tree, Ramsau*, the paper of which has been protected by the fixative (Fig. 3). Both drawings were created mid-September 1832 during a week's stay at Ramsau, just before crossing the Alps towards Italy.

The fixative on both drawings shows a comparable whitish fluorescence under UV radiation (Figs 8 and 9). Initial microchemical tests were carried out on minute samples of both drawings.<sup>27</sup> The results were negative for starch (Lugol's solution) in areas both with and without fixative, and positive for protein (amido black) in areas where the fixative had been applied. *In situ* X-ray fluorescence (XRF) identified a greater

amount of calcium (Ca) in areas with fixative. The results of gas chromatography-mass spectrometry (GC-MS) were unexpected. In contrast to the initial hypothesis that different fixatives had been used, the chromatograms of the fixatives of the two drawings were quite comparable. Their interpretation was complex (Fig. 12): aspartic acid and phosphate were abundantly present; the absence of arabinose, rhamnose and hydroxyproline excluded gum arabic; the absence of hydroxyproline indicated that animal glue, gelatine or isinglass were not used as a fixative; and finally the chromatograms did not match egg white.

At this stage, source research offered valuable information. The question of how to protect delicate pencil drawings was discussed in several sources contemporary to Fearnley.<sup>28</sup> Besides isinglass, another ingredient frequently referred to as a fixative is milk. Skimmed milk was preferable to avoid greasing the paper, or a mixture of milk and water. It could be applied in different ways – by brushing it over the



pencil drawing, by soaking the drawing, or as described by MacKenzie (1829): 'Lay the drawing flat, upon the surface of the milk; then taking it up fast, hang it, by one corner, till it drains and dries.'<sup>29</sup> The use of milk was already common practice for protecting drawings created with black chalk,<sup>30</sup> and Gainsborough (1727–1788) employed milk as part of a complex technique to fix his watercolours.<sup>31</sup>

Since milk was not (yet) included in the GC-MS reference database of the RCE, no match was obtained during the initial testing phase. When reinterpreting the GC-MS results taking into account milk as a potential fixative, the results made perfect sense. Milk consists of casein (which explains the presence of phosphate, calcium and amino acids) and whey (a colloidal suspension of soluble proteins and milk sugar so-called lactose, a di-sugar of galactose and glucose, which accounts for the presence of sugars). However for a positive identification of milk, the height of the galactose and glucose peaks must match but this was not the case. The substrate, aged paper, also contains glucose. However, after subtraction of the blank (paper), the peaks still did not match; the glucose peak was now lower than that of galactose. Experimental verification was required.<sup>32</sup> The variation in peak height was explained by the different response of casein and whey during application onto a paper surface.

As is known from cheese production, milk is pH sensitive and in an acid environment (pH 4.5) the casein proteins coagulate and separate from the whey. Applying milk to a mildly acidic paper surface will cause the same reaction. As a result, a layer of casein is formed, while the whey spreads within the paper. During drying, the water evaporates and part of the whey remains in the paper. Casein is insoluble in most solvents commonly used in paper conservation, hence the fixative on Fearnley's drawings was reported to be insoluble.

The suggestion that Fearnley used milk as a fixative is feasible. We can easily imagine Fearnley and his travelling companions strolling around Ramsau, one of the most picturesque villages in Bavaria at the foot of high Alpine mountains. They were surrounded by nature, farmers and, most importantly, cows. When Fearnley sketched the tree and the prominent church of St. Sebastian during the week in Ramsau, milk was indeed a logical solution to fix his drawings – it was cheap, readily available and easy to apply. However, a final question remained: why would milk, applied in the same week, at the same place, react so differently on both papers?

## Two papers: so similar and yet so different

The papers used in both *St. Sebastian, Ramsau* and *Tree, Ramsau* were handmade. They are wove papers, a paper quality introduced by the British papermaker James Whatman the Elder around the mid-18th century. Wove papers were much appreciated by printers, watercolourists and other artists for their uniform paper surface, undisturbed by the chain and wire lines of a papermaker's mould. Unfortunately, neither

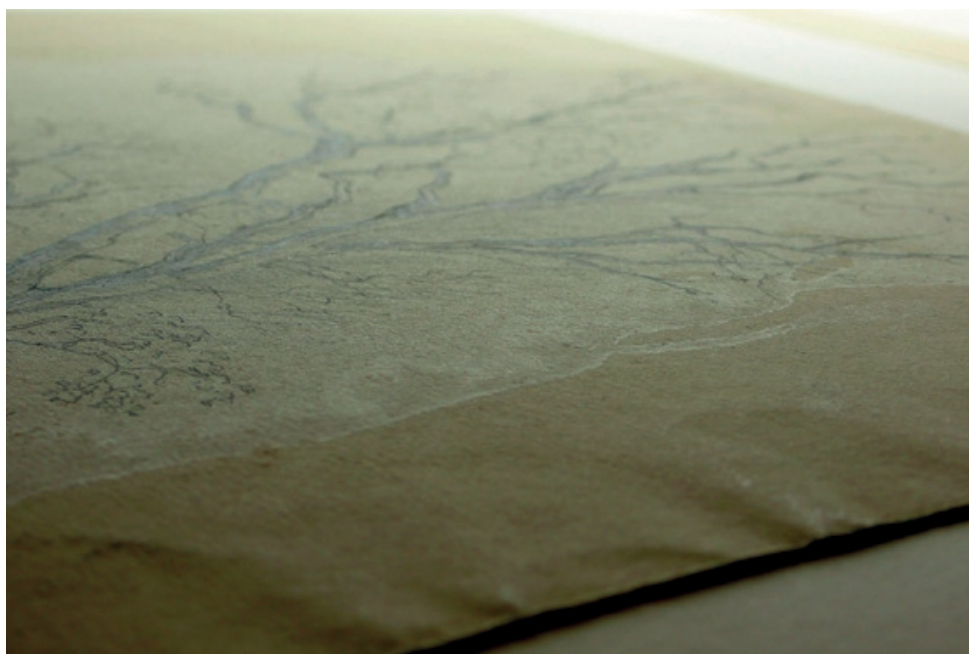


**Fig. 9** UV photograph of Thomas Fearnley, *Tree, Ramsau*: drips of the fixative (fluorescing areas) are visible along the right edge. (Photo: Aafke Weller.)

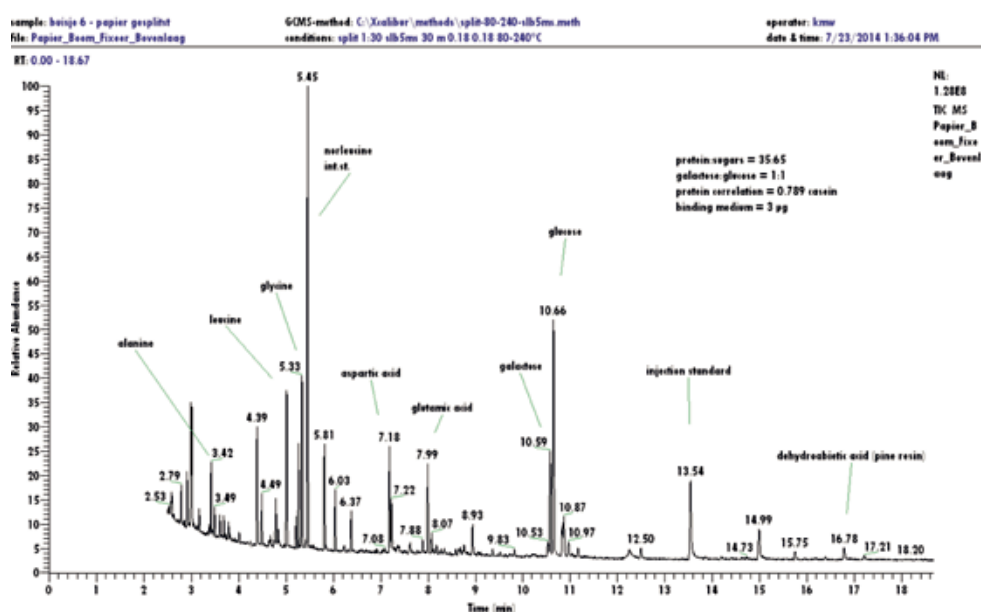


**Fig. 10** Detail from Thomas Fearnley, *Deciduous Tree, Haga*, 1825, pencil on paper, 420 × 318 mm, NG.K&H.A.03381: in the centre, where no fixative was applied, the pencil lines are visibly lighter than in those areas where the fixative protected the lines. (Photo: Tina Grette Poulsson, The National Museum, Oslo.)

of the two papers have a watermark. To identify them therefore the papers were compared visually to drawing papers of known origin used by Fearnley in the period 1830–32. The surface texture of the felt and the wire side, paper colour and thickness of the paper of the *St. Sebastian, Ramsau* drawing closely matched other papers watermarked 'M.H' but the mill that produced paper with this watermark has yet to be identified. Fearnley drew on two other 'M.H' papers on 19 September and 3 October 1832. Obviously he had taken a



**Fig. 11** Thomas Fearnley, *Tree, Ramsau*: raking light photograph showing how the fixative formed a layer on the paper's surface. (Photo: Tina Grette Poulsson.)

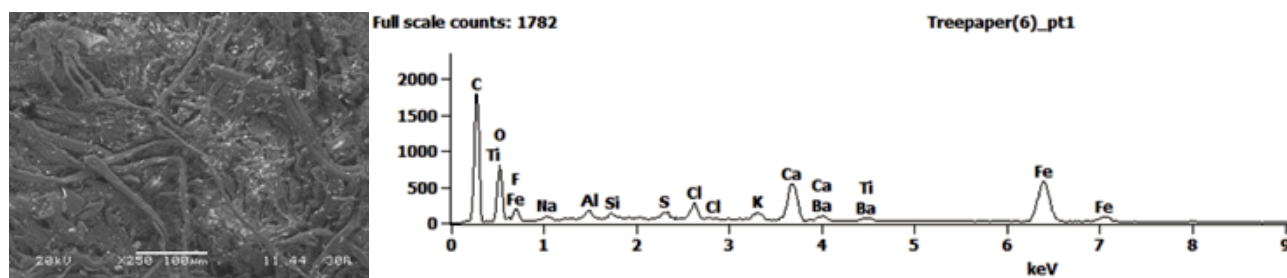


**Fig. 12** Thomas Fearnley, *Tree, Ramsau*: GC-MS chromatogram from a surface scrape sample of fixative. (Image: RCE Amsterdam.)

small stock of 'M.H' papers with him on the hiking tour and still used this paper in 1835 while travelling through Italy. The paper of the drawing *Tree, Ramsau* matched a Whatman paper produced by the Turkey Mill in Kent. Fearnley used that paper on two drawings made on 19 August 1832, shortly before starting the hiking tour. The paper of the *Tree, Ramsau* drawing has a homogeneous brownish discoloration,<sup>33</sup> contrary to the paper of *St. Sebastian, Ramsau*.

The UV images of both drawings confirm that the fixative did not penetrate to the verso of the paper: the versos just show a few fluorescent splashes and drip marks from the fixative indicating that the papers were well sized. GC-MS identified

animal glue as the sizing agent in both cases. Fibre analysis confirmed that both papers are rag papers, consisting of a mixture of linen and hemp fibres that were prepared in a Hollander beater. In general, the fibres of both papers were relatively short: the fibres of the drawing *Tree, Ramsau* appeared to be quite fibrillated, and some cotton fibres may have been added as well. Smalt was used for paper blueing. Scanning electron microscopy with energy-dispersive X-ray analysis (SEM-EDX) revealed that both papers contained chlorine, suggesting that both paper mills practised the relatively new chlorine-bleaching technique. Yet, this still could not explain the different appearance and ageing behaviour of both papers.



**Fig. 13** Thomas Fearnley, *Tree, Ramsau*: SEM image of particles on paper (left) and EDX spectrum of an iron-containing particle in the paper (right). (Image: RCE, Amsterdam.)

While the entire composition was astonishingly comparable, one difference was identified: while both papers contained minuscule particles (maximum diameter 25  $\mu\text{m}$ ) within the paper fibres, these differed in composition. In the case of *St. Sebastian, Ramsau*, the particles consist of gypsum, a reaction product formed during the ageing of paper. The paper of the *Tree, Ramsau* drawing shows a more varied mixture of particles, mainly consisting of clay or gypsum. A few particles in *Tree, Ramsau* have a high iron content (Fig. 13) and this is the determining factor, although the following explanation is to be regarded as hypothetical rather than factual since it has not yet been experimentally verified.

The combination of iron and an oxidising bleach such as chlorine is known to cause severe deterioration. While invisible initially, the reaction between iron and the oxidising agent causes the paper to degrade and change colour to a darker yellowish-brown tone in the long term.<sup>34</sup> In the case of *Tree, Ramsau*, this reaction probably occurred – the paper is homogeneously discoloured due to the fact that the paper mill (probably the Whatman Turkey mill) used iron-contaminated clay as filler during paper production. The milk protected the paper locally from discoloration.<sup>35</sup> In the case of the drawing *St. Sebastian, Ramsau*, the paper mill (most likely M.H) used an uncontaminated clay filler. The paper retained its colour, but the milk layer itself discoloured.

A closer look at the collection revealed that two more Whatman papers as well as one Canson and one van Gelder paper have a lighter area where the fixative was applied.<sup>36</sup> It is probable that these paper mills also used the detrimental combination of chlorine bleach and iron-contaminated filler material. Further examples revealing a comparable phenomenon of contradictory discoloration in the presence of milk include a series of world-famous pencil drawings by Vincent van Gogh, where it is known from his letters that he poured generous quantities of milk over them. In his case the purpose was not to fix them but to reduce the gloss of the shiny pencil lines.<sup>37</sup> It would be interesting to collect and share information on drawings on which milk was used as a fixative.

## Conclusions

The life of the Norwegian landscape painter Thomas Fearnley was short but blessed: he was able to visit the most beautiful

landscapes and the most important European art centres of his time. His itinerant life is reflected in the choice of his materials. For drawing outdoors his choice was particularly pragmatic: pencils of different hardness grades and papers of different origin. Besides using papers from well-established mills such as Honig and Whatman, easily available in cities with art academies, he also purchased paper of local origin. His delicate pencil drawings also had to be protected from the rigours of transportation for which he chose cheap and widely available milk. However, as a result of ageing, the appearance of the papers and fixative has changed in different ways. The use of an iron-containing clay filler in combination with a 19th-century chlorine bleach employed in the paper mill (probably the Whatman Turkey mill) caused that paper to discolour homogeneously whereas the applied milk protected the fixed areas from discoloration. In the other case, a paper, most likely from the M.H mill, did not contain iron particles and remained unaffected but the applied milk discoloured. It would be beneficial to verify if other drawing papers on which milk was added as a fixative and protected against discoloration all show a higher content of iron and chlorine.

## Experimental appendix

### Visual examination

The drawings were examined under different light sources: ambient light, raking light, transmitted light, and UV radiation.

### Microchemical tests

Amido black 10B: amino acid staining diazo dye used to stain for protein, A8181-1EA, (Sigma). Lugol's solution: iodine-potassium iodide ( $\text{I}_2\text{KI}$ ), reagent for starch detection, available from pharmacies.

### XRF

X-ray fluorescence, handheld Niton XL3t XRF (Thermo Scientific).



## GC-MS

Thermo Scientific Focus GC system, equipped with a ISQ mass spectrometer. The sample material was extracted with 5% ammonia and hydrolysed with trifluoroacetic acid (TFA), and analysed as meth-oxim-trimethylsilyl derivatives, split injection on a SLB5ms 20 m column with internal diameter 0.18 mm, a film thickness of 0.18  $\mu$ m, temperature range of 80–280 °C, with norleucine and the methylester of stearic acid (FA-C18) as internal standards.

## Polarisation microscopy of paper fibre samples

Trinocular Zeiss Axio Lab.A1 transmitted light microscope equipped with polarisation filters and a rotary stage. Samples were prepared on ultrasonically cleaned standard Super Frost slides, mounted in 50:50 water:glycerine and covered with a 20  $\times$  20 mm coverglass. The samples were examined under cross-polarisation and a retarder ( $\lambda$ ) plate in the light path. Z-stack images were produced with a Canon EOS 50D camera and Photoshop CS6 software.

## SEM-EDX

Carried out with a JEOL5910LV in low-vacuum mode, at 30 Pa pressure and 20 kV, using a Thermo Scientific SDD EDX detector and analysed with NSS7 software.

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## Notes

1. E. Haverkamp, 'Thomas Fearnley', in *'Nature's Way': Romantic Landscapes from Norway, Oil Studies, Watercolours and Drawings by Johan Christian Dahl (1788–1857) and Thomas Fearnley (1802–1842)*, exh. cat., Manchester, Cambridge and Oslo, 1993, p. 22.
2. The RCE is well known for more than 50 years of expertise in the field of art technological and scientific study of heritage, including art on paper. Heritage institutes without specialist laboratory facilities are always welcome to approach the RCE. Relevant problems can be solved with joint research projects.
3. Thomas Fearnley, *St. Sebastian, Ramsau*, probably September 1832, pencil on paper, 267  $\times$  295 mm, inv. no. NG.K&H.A.03480, and Thomas Fearnley, *Tree, Ramsau*, 14 September 1832, pencil, pen and ink on paper, 343  $\times$  248 mm, inv. no. NG.K&H.A.0339.
4. T. Fearnley to Johannes Flintoe, Dresden, 15 June 1830, National Library of Norway, Brevs. 1: Voksende samling. Arkivsignatur: Brevs. 1 / 446: [http://urn.nb.no/URN:NBN:no-nb\\_digi\\_manus\\_143997](http://urn.nb.no/URN:NBN:no-nb_digi_manus_143997).
5. S. Willoch, and H. Alsвик, 'Thomas Fearnleys tegninger. Fra reiser ute og hjemme 1824–1840', in *Gyldendal norsk forlag*, Oslo, 1952, p. 12.
6. According to Vyki Sparkes, Curator of Social and Working History at the London Museum, the museum possesses four paint boxes with a label of this particular shape from William Reeves and/or Reeves & Inwood. One of the boxes contains pigs' bladders of oil colour; the other three contain water-colour cakes. Inwood sold the premises to the Driver family by 1816, and subsequently Driver & Shaw advertised as successors to Reeves & Inwood. Whether Driver & Shaw used the same advertising label inside their boxes is not known. Considering that Fearnley started his artistic carrier in 1819, this box could possibly be one from Reeves & Inwood. The label *inter alia* advertises Reeves as the 'Inventor of Superfine Water Colours in Cakes'.
7. K.L. Grand, 'Rejsebilleder – Turist i Arkadien? / Travel images – A Tourist in Arkadien?', in K. Lykke Grand, L. Pennington and A.M. Thomsen (eds), *Gold: Treasures from the Danish Golden Age*, Aarhus, 2013, p. 212. PDF available at: [http://pure.au.dk/portal/files/85563798/4\\_KLG\\_Rejsebilleder\\_Turist\\_i\\_Arkadien\\_GULD\\_publiceret.pdf](http://pure.au.dk/portal/files/85563798/4_KLG_Rejsebilleder_Turist_i_Arkadien_GULD_publiceret.pdf).
8. Ibid., pp. 213–214. Grand emphasises that artists of the period of the Danish Golden Age were the last travellers to experience a relatively 'authentic' southern sphere in Italy before mid-19th century tourism changed the country and its folk culture irrevocably.
9. A. Johansen, 'Michael Raffenberg's uddrag af Wilhelm Bendz' rejsebreve', in *Wilhelm Bendz. Et ungt kunstnerliv 1804–1832*, exh. cat., Copenhagen, Den Hirschsprungske Samling, 1996, p. 225.
10. E. Johansson, *Wilhelm Bendz*, Copenhagen, Spektrum/Forum Publishers, 1995, p. 152.
11. The typical route passed through Salzburg, Innsbruck, Brenner, Bozen, Trento, Rovereto and Verona; see L. Richter, *Lebenserinnerungen eines deutschen Malers*, Leipzig, Hesse und Becker Verlag, 1909, pp. 116–147.
12. Johansen 1996 (cited in note 9).
13. E.M. Schneider, *Herkunft und Verbreitungsformen der 'Deutschen Nationaltracht der Befreiungskriege' als Ausdruck politischer Gesinnung*, unpublished dissertation, Rheinische Friedrich-Wilhelms Universität Bonn, Philosophische Fakultät, 2002. Available at: [http://www.burschenschaftsgeschichte.de/pdf/eva\\_maria\\_schneider\\_deutsch\\_nationaltracht\\_01.pdf](http://www.burschenschaftsgeschichte.de/pdf/eva_maria_schneider_deutsch_nationaltracht_01.pdf)
14. A. Sumner and G. Smith (eds), *In Front of Nature: The European*

*Landscapes of Thomas Fearnley*, London, D. Giles Ltd, 2012, pp. 93–95.

15. Johansen 1996 (cited in note 9), p. 225.
16. *Ibid.*, p. 226.
17. The 190 papers examined consisted of 81 laid and 107 wove papers. The texture of two papers was not determined.
18. Watermark research helps to establish the age of a paper and its origin, and can provide information on the artist's preferences. Identifying watermarks on drawings is complex. Unlike writing or printing paper, drawing papers often do not contain a watermark at all, or show only incomplete watermarks (or countermarks) as artists frequently cut their paper to a certain format. Describing a watermark is just the first step in identifying the paper mill. If only initials, a decorative mark or an incomplete watermark are present, watermark analysis is complicated. Unlike manuscripts or letters, drawings often remain undated and therefore only a few drawing papers are currently included in watermark databases; see also A.-G. Rischel, 'A technical study of 19th-century papers used by Danish artists', in this volume, pp. 65–71.
19. *Amtlicher Bericht über die allgemeine Deutsche Gewerbe-Ausstellung zu Berlin im Jahre 1844, Dritter und letzter Teil*, Berlin, Verlag von K. Reimarus, 1845, pp. 132–133.
20. Thomas Fearnley, *Elben et Saloppen*, 12 June 1830, pencil on paper, 255 × 463 mm, inv. no. NG.K&H.A.03773.
21. Thomas Fearnley, *Root of a Tree*, 1829–1830, pencil on paper, inv. no. NG.K&H.A.03732.
22. Thomas Fearnley, *From Bavaria*, 20 September 1830, wash and pencil on paper, 420 × 310 mm, inv. no. NG.K&H.A.03570.
23. *Landscape, Feldafing*, 12 October 1830, pencil on paper, 306 × 424 mm, inv. no. NG.K&H.A.03706
24. Thomas Fearnley, *Brunnen, Kanton Swytz*, 26 June 1835, pencil on paper, 277 × 443 mm, inv. no. NG.K&H.A.03240 and Thomas Fearnley, *Brunnen*, 27 June 1835, pencil on paper, NG.K&H.A.03235.
25. P. Bower, *Turner's Papers: A Study of the Manufacture, Selection and Use of his Drawing Papers 1787–1820*, London, Tate Gallery, 1990, p. 84.
26. L. Herbert (ed.), 'Mechanical pencil', in *The Engineer's and Mechanics Encyclopaedia*, vol. 2, 1836, pp. 284–285.
27. For detailed information, see the experimental appendix.
28. C. Hayter, *Hayter's Introduction to Perspective, Drawing, and Painting*, 3rd edn, London, 1820, pp. 169–170; C. Humphrys (tr.) and A. Müller (ed.), *Der englische Zeichenmeister. Oder die neuesten Methoden, Erfindungen und Verbesserungen im Zeichnen, Tuschen, Coloriren, Malen und Farbenbereiten [...] Ein nützliches Handbüchlein für angehende und geübtere Zeichner*, Gottfried Basse, Quedlingburg and Leipzig, 1832, p. 37.
29. C. Mackenzie, *Mackenzie's Five Thousand Receipts in All the Useful and Domestic Arts*, Philadelphia, James Kay Jnr. and Brother, 1829, p. 54.
30. Humphrys and Müller 1832 (cited in note 28), p. 37
31. J. Weir, 'Eggs, milk and fish: a practical investigation of artists' use of fixatives', *The Book and Paper Group Annual* 26, American Institute of Conservation, 2007, p. 134.
32. Experiments with organic, skimmed milk applied on three different historic papers from the Honig paper mill and three standard model papers demonstrated that the whey migrated into the papers where it remained even after drying. The samples of the original drawings were taken by scraping off the fixative on top of the paper surface therefore only components present on the surface were analysed, not the whey part with its high amount of glucose. This explains the different peak heights.
33. The Whatman papers used for printing and subsequent hand-colouring of the famous book *The Birds of America* by James Audubon (1827–1838) are contemporaneous to Fearnley's papers and also originate from the Turkey Mill. They are reported by Steiner to have 'a stronger tendency to go yellow or beige': B. Steiner, *Audubon Art Prints: A Collector's Guide to Every Edition*, Columbia, University of South Carolina Press, 2003, p. 29.
34. The cause is depolymerisation of cellulose due to autocatalytic oxidation triggered by iron ions which act as radicals. Conjugated groups are formed that cause discoloration of paper; see L. Niehus, U. Henniges, M. Horsky, T. Prohaska, A. Potthast and I. Brueckle, 'Reducing risks of hydrogen peroxide bleaching in presence of iron ions in paper', *Restaurator* 33, 2012, p. 3. A homogeneous distribution of iron particles in the paper causes a homogeneous discoloration – only in specific cases can a locally high iron concentration lead to local discoloration; see M. Kraan, F. Ligterink, B. Reissland, B. van Beek, B. van Velzen, I. Joosten and P. Hallebeek, 'A million brown spots after conservation: untangling the cause-effect chain', in S. Jaques (ed.), *The Institute of Conservation (ICON), Edinburgh Conference Papers*, 2007, pp. 59–66.
35. Casein has been suggested as an inhibitor of iron-catalysed oxidation (preliminary project on iron-gall inks, RCE Amsterdam in cooperation with Walter Castelijns, Rotterdam Archives, 1998/99, unpublished). Alternatively it could be an optical effect caused by the whitish layer developing on top of the paper surface.
36. Drawings with the watermark 'Whatman' NG.K&H.A.03384 and NG.K&H.A.03412; with the watermark 'Canson' NG.K&H.A.03222; and with the watermark 'Van Gelder' NG.K&H.A.03253.
37. He describes the method in his letters to his brother Theo van Gogh on 14 April 1882 (letter 217) and on 1 May 1882 (letter 222); see 'Vincent van Gogh: the Letters': <http://vangoghletters.org>. Both the Van Gogh Museum in Amsterdam and the Kroeller Mueller Museum in Otterloo possess drawings with such a different discoloration pattern. No research has yet been done to verify the presence of milk and explain the differing behaviour of Van Gogh's drawing papers.

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# FIT FOR PURPOSE: 30 YEARS OF THE CONSTABLE RESEARCH PROJECT

Sarah Cove

**ABSTRACT** The Constable Research Project (CRP) was established 30 years ago to study the oil painting materials and techniques of John Constable RA (1776–1837). Begun in collaboration with the Victoria and Albert Museum, London, and a private donor, the study widened to include fully attributed works from the most prominent UK public collections and east coast galleries in the USA, as well as important private collections. To date, over 250 oil paintings executed between 1799 and 1837, plus two paint boxes and Constable's final palette, have been examined. The CRP has examined the works of the British painter systematically to deepen our understanding of Constable's painting practice through a thorough study of his working methods and materials, and to assist scholars with questions of dating and attribution. These ambitions have been realised through collaborations with Constable scholars, conservators and technical art historians, a forensic paper historian and conservation scientists. This has produced a secure chronology through the dating of materials and techniques and a protocol to enable possible attributions as evidenced by the number of 'new' Constables that have been discovered in recent years. Through publications, lectures and TV appearances, the author aims to demonstrate just how radical Constable's extraordinary technique was for his time and to show that in many ways he is a true father of modern painting.

## Introduction

In such an age as this, painting should be *understood* not looked upon in blind wonder.

(John Constable RA)<sup>1</sup>

During the last quarter of the 20th century, technical examination and scientific analysis became increasingly seen as an essential part of art historical scholarship. They aim to identify the materials and techniques used by an artist and how these were combined to produce a work of art. This information provides an objective basis for the interpretation of an artist's oeuvre through the detailed study of his working practices. Understanding the way an individual painting is made can significantly increase the viewer's enjoyment of it and may also elucidate the artist's intentions in a particular work. However, the systematic examination of a large number of works across the entire career of a particular artist can make a more significant contribution to scholarship than the study of individual paintings by addressing traditional art historical concerns such as dating, the evolution of certain compositions and problems of attribution more effectively.

The Victoria and Albert Museum (V&A), London, holds the largest and most significant collection of paintings by John Constable RA (1776–1837), most having been

bequeathed to the nation in 1888 by Isabel, his last surviving child. This has been supplemented with important works from 19th-century collectors and some later benefactors. The oil paintings comprise outdoor sketches, studio studies, 'six-foot' sketches – the same size as Constable's major exhibition canvases of the 1820s–30s – and exhibited works dating from c.1800 until the artist's death in 1837. One of the most striking aspects of Constable's painting is the range and diversity of his work in oil. On a tiny fragment of paper, he can suggest a vast area of sky and landscape with supreme economy of brushwork. By comparison, he may labour over minute details of architecture and foliage on a six-foot canvas intended for the Royal Academy. His sketches demonstrate a passionate involvement with painting directly from nature, yet many of his greatest works were painted entirely in the studio. Whatever his approach to a particular subject, the paintings reveal a masterful ability to reproduce glorious effects of light, weather and atmosphere in paint. An additional consideration from the conservation standpoint is that his pictures appear to be in very good condition when compared to the works of many of his contemporaries and predecessors.

These observations prompt certain questions. Do the materials and techniques used in the sketches differ from those employed in the finished and exhibited paintings? Did his methods change throughout his career and if so, were new



effects a response to the availability of new materials or did he seek new materials in order to achieve a particular elusive effect? Are his methods and materials similar to, or different from, those used by his contemporaries, and were they traditional or innovative for the time? Why have Constable's paintings survived so well? Was he concerned with the preservation of his work for the future? With this in mind, did he take care in his choice of materials and pay special attention to technique? These questions assume that his paintings are, in fact, unchanged but this may not be the case – we may be looking at works that have been significantly altered by natural ageing of the materials or by the intervention of a later hand.

In addition, the dating of Constable's works is often difficult and confusing as he painted the same motifs repeatedly, sometimes hundreds of times during his career. Very few paintings are signed and dated, and those that are were mostly exhibited works and private commissions. Scholars have found it difficult to place many works from documentary sources and stylistic analysis alone. In addition, attribution to Constable is more than averagely complex: his work was copied by immediate family members while still in their possession and the oil sketches by his son Lionel in particular have been confused with his father's work. In the second half of the 19th century, Constable's style was much imitated by landscape painters at home and abroad, and his most popular motifs were included in deliberate pastiches and outright fakes. In the late 19th and early 20th century, attribution was further confused as 'certificates of attribution' based on style were issued for many dubious works by some of the leading authorities of the day.<sup>2</sup>

Before the establishment of the Constable Research Project (CRP), the primary exemplar of a published systematic technical study of a single artist's work was the Rembrandt Research Project, a collaborative project founded in the Netherlands in 1969. It comprised a committee of eminent Rembrandt scholars whose task was to evaluate and publish the known corpus of Rembrandt's work.<sup>3</sup> In the early 1980s, the idea for a systematic study of Constable's oil painting materials and techniques was put forward by the late Peter Young, then Head of Paintings Conservation at the V&A. In the spring of 1986, while completing an internship in easel paintings conservation at the V&A under the supervision of Peter Young, the present author was approached to write a proposal for a Constable research project based on the V&A collection, not only to increase our understanding of his materials and methods but also to assist curators and scholars with a range of art historical questions.<sup>4</sup> As a student at the Courtauld Institute, the author had carried out a study of the Jacobean portrait painter William Larkin, which first trialled the methodology of systematic technical and scientific analysis on a relatively large scale for a single British artist.<sup>5</sup>

The Constable Research Project was so named to suggest the Rembrandt example as a point of reference. A project based at the V&A, lasting approximately two years full time, was initially proposed.<sup>6</sup> Financing the project to completion was problematic until a private donor offered a limited stipend to enable the project to go ahead on the understanding that his significant Constable collection would also be

examined.<sup>7</sup> Work formally commenced in June 1986, almost exactly 30 years prior to the third CATS conference in 2016.

It should be noted that although the Rembrandt project was a model for the collaborative and interdisciplinary studies that ensued, the CRP was never a formal committee of experts.<sup>8</sup> Although this was the intention from the outset, it transpired that it may also have been a good management model. The original Rembrandt Research Project did not examine and pronounce on the full body of that artist's work in the 1990s as originally planned, and ultimately the work was continued by Rembrandt scholar and painter Ernst van der Wetering, with the final publication around 2014, a comparable timespan to the CRP. His interdisciplinary approach was similar to the methodology adopted for Constable by this author, and resulted in a successful denouement reviewed in these terms: 'We are finally presented with a newly defined corpus of Rembrandt's painted *œuvre*. This is made all the more meaningful and valuable by the vast amount of information and discussion about his practice as an artist that has accompanied the conclusions.'<sup>9</sup>

## Methodology

After an initial period of art historical and background research by the author, the systematic technical examination of paintings from the V&A and the private collection commenced. Paintings were studied in chronological order, having been selected on the basis of art historical significance and the security of the existing dating: some are signed and dated, inscribed by the artist, or their exhibition dates are known from documentary sources. Standard technical examination methods for the time were used and carried out systematically using the laboratories and studio facilities at the V&A and the Courtauld Institute Technology Department: surface microscopy using a binocular microscope, 35 mm film-based photomicrography and macrophotography; black-and-white infrared (IR) photography and IR reflectography using vidicon-based technology; paint cross-sections including examination with ultraviolet (UV) fluorescence; systematic staining for paint media on cross-sections; pigment and fibre analysis using polarised light microscopy (PLM). Film-based X-radiography was carried out at the Courtauld Institute (by the author) and the V&A (by staff photographers). Non-portable X-ray fluorescence analysis (XRF) was performed at the V&A on all paintings, including those from the private collection.<sup>10</sup> In addition, medium analysis by gas chromatography-mass spectrometry (GC-MS) and (then) ground-breaking energy dispersive X-ray analysis (EDX) of cross-sections was undertaken at the National Gallery, London. Later, direct temperature-resolved mass spectrometry (DTMS) at FOM-AMOLF, Amsterdam, was added to the battery of analytical techniques used for medium analysis.<sup>11</sup>

A paper-based report created for each work compiled up-to-date art historical scholarship in an introductory section, followed by a detailed technical report under the headings: support; ground and priming; underdrawing and preparation/squaring up; paint layers; handling; pigments and mixtures; suggested palette; comments; notes on condition. Cross-section



**Fig. 1** Sarah Cove (right) and Anne Lyles (left) at Willy Lott's cottage, Flatford Mill, the scene of Constable's *The Hay Wain* (see Fig. 8), in 2006. (Image © Constable Research Project.)

and other diagrams were attached and a standard set of 10 × 8 in. black-and-white photographs was produced (front, back, raking light, UV light, IR photographs or photographs taken from the vidicon screen, X-ray mosaic). In addition, 35 mm colour transparencies, including numerous details, macrophotographs, photomicrographs, cross-sections, PLM and fibre samples – sometimes as many as 60 transparencies per painting – were also attached. Each report was filed in chronological order by collection or owner.<sup>12</sup>

Despite the initial plan for a two-year full-time project based solely on the V&A and privately owned paintings, the research soon expanded to include works from other institutions and private collections that filled gaps in the chronology. In 1988, the author undertook a five-week study tour in America to examine more than 20 works, working closely with conservation colleagues with a comprehensive studio, technical and photographic facilities available.<sup>13</sup> This included two weeks as a Visiting Fellow at the Yale Center for British Art. The data collected between 1986 and 1991, the first concentrated phase of the project, formed a secure chronology based on fully authenticated works that would become the backbone of the project. These findings were summarised in Tate's *Constable* exhibition catalogue in 1991.<sup>14</sup> The project continued to expand in the new millennium: in 2005–06, the author worked closely with the curators in preparation for Tate's ground-breaking *Constable: The Great Landscapes* exhibition which also toured to Washington DC and Los Angeles. A large body of unpublished technical material freely supplied by colleagues at the lending institutions added to the data already collected by the author, significantly broadening our understanding of Constable's painting practice in the six-foot canvases of the

1820s–30s, and helping to clarify the sequence of preparatory sketches and the methodology behind certain compositions.<sup>15</sup>

Over the years, close relationships with conservators and curators at the key collections<sup>16</sup> of Constable's works have been established. The 1980s–90s was a period which witnessed considerable research into British painters and their works, not only in the UK, which centred on the Tate collection, but also by many colleagues who collaborated and openly shared their research, notably the 18th- and 19th-century British painting specialists working in the UK, such as materials historian Leslie Carlyle, conservator and art historians Rica Jones and Sally Woodcock, paint analyst Libby Sheldon, conservation scientist Joyce Townsend, and the paper historian Peter Bower. A great deal of credit goes to them for enriching the Constable material with a wealth of contextual information,<sup>17</sup> much of which was shared prior to publication. All the major Constable scholars of the late 20th and early 21st century have collaborated in the project; sadly, many of them are now deceased.<sup>18</sup> Anne Lyles, former Constable curator at Tate, is now the primary art historical authority (Fig. 1).

Constable possessed a large library of artists' handbooks and manuals, including first editions of significant texts such as Julius Caesar Ibbetson's *An Accidence, or Gamut, of Painting in Oil* (1803)<sup>19</sup> and the influential *Chromatography* (1835), published by Constable's great friend the innovative colourman George Field.<sup>20</sup> In order to establish whether Constable's methods were traditional, standard or innovative, a thorough study of the relevant 18th- and 19th-century literature was carried out early in the project, using the books in his library as the starting point.<sup>21</sup> To date, around 250 paintings dating from c.1799 to 1837 have been examined, although not all of them have been subject to the full systematic examination of the early years of the project. In addition, two paint boxes and Constable's last palette have also been examined and analysed. The technical data has been considered in the light of modern art historical scholarship, the eight published volumes of Constable's correspondence,<sup>22</sup> and 18th- and 19th-century painting conventions.

## Constable's methods and materials

### Painting technique

There was constant development in Constable's choice of materials. His early works are almost textbook copies from the instructions in Bardwell's painting manual of 1756, with pictorial references to Claude, Gainsborough and Dutch 17th-century landscapes.<sup>23</sup> As his career progressed, his painting methods became much more spontaneous and flamboyant than the casual observer might think. From the beginning, he had scant regard for his own early work, and regularly cut up used canvases or painted on fragments of unstretched primed canvas with roughly flattened tacking edges. From c.1808 he began regular oil sketching outdoors, honing his skills and developing a personal notation of rapid expressive brushwork. The V&A collection contains numerous oil sketches on canvas fragments that have never been



laid onto a secondary support. Some are double-sided, such as the 1810 sketch *Willy Lott's House* (Fig. 2), which has two other paintings underneath, distinguishable using cross-sections and X-radiography, making a total of six images on a single canvas scrap.<sup>24</sup> It has also been possible to 'virtually' rejoin several oil sketches, that are now kept thousands of miles apart, to form canvas 'jigsaws'. This was possible using X-radiography and cross-sections long before the development of today's computerised weave-scanning techniques.<sup>25</sup>

Constable constantly refined and improved his practice by adopting established techniques that were new to him, as well as developing his own unique methods. After a brief period of using his own laid writing paper, around 1812–15 he began to use laminated paper supports for oil sketching.<sup>26</sup> He prepared his own oil sketching supports in batches from standard 20 × 24 in. (50.8 × 61 cm) paper sheets, laminated together with a proteinaceous glue. When dry, a whole sheet was primed with an oil- or water-based ground and then cut into a range of regularly-used sizes, many to fit inside his paint box lid.<sup>27</sup> The paper and ground constructions of these sketches have been identified and it has been possible to reconstruct 'virtual' sheets using digital technology. A significant proportion of those from the 1820s are inscribed and/or dated. Where these form part of a reconstructed sheet, this has been useful in suggesting dates for previously undated works.

In the 1980s, when this research began, oils on paper by British artists had hardly been studied, so Constable's methods had almost no context and they seemed new and innovative. However, interest developed in this area and scholarship has moved on. A number of exhibitions and publications have shown that many British and European painters were also sketching outdoors in an oil medium on a range of papers and boards at this time.<sup>28</sup> As well as using home-made paper supports, Constable also employed shop-bought papers, millboard and 3- and 4-ply lightweight card. A sketch of *Dedham Lock and Mill*, c.1816, is painted on a 2-ply sheet with a buff-coloured wove wrapping paper on the front and a purplish-blue 'sugar' paper on the back.<sup>29</sup> This is identical to a support used by Turner, so it is presumed to be a purchased sheet.<sup>30</sup>

From the beginning, Constable favoured a range of brown and pink primings to give a unifying undertone to his modelling, and to enable his exemplary use of the 'turbid medium' effect in his skies. In the mid-1820s he altered his practice and began utilising a localised washy brown *imprimatura* only in the landscape, instead of the opaque dark reddish-brown priming that is typical of the first half of his career.<sup>31</sup> This is in the manner of Rubens, whom he greatly admired. It is interesting to note that almost no underdrawing is found in Constable's early works, probably because it was done in chalk that is no longer readily detectable over a brown priming. However, when painting on a light-toned ground, he would draw freely in ink and graphite pencil. This is one of the most distinctive features of his later works and a key to attribution and dating in paintings from the mid-1820s onwards.<sup>32</sup>

In 1821–22, Constable undertook a lengthy study of cloud formations, or 'skying' as he called it. He sketched outdoors, mostly on Hampstead Heath, London, in all weathers, from dawn until dusk, and built up a huge pictorial library of weather



**Fig. 2** John Constable, outdoor oil sketch for *Willy Lott's House*, oil applied to both sides of an un-stretched canvas fragment, 27.3 × 24.2 cm (10 $\frac{7}{8}$  × 9 $\frac{1}{2}$  in.), c.1810, Victoria and Albert Museum, reverse of 787–1888, in raking light. Willy Lott's cottage still stands today (see Fig. 1). (Image © Constable Research Project with permission of the Trustees of the Victoria and Albert Museum.)



**Fig. 3** John Constable, *Cloud Study, 1st August 1822*, oil on a whole sheet of laminated paper, 50.8 × 61 cm (20 × 24 in.), private collection. (Image © Constable Research Project.)

effects. From his correspondence, we know that he produced about 200 oil sketches in total, of which just over 100 are known today. The majority are painted on his laminated paper supports, cut to standard sizes as mentioned above. However, there are also four exceptionally beautiful large skies painted on a full laminated sheet, 20 × 24 in. (50.8 × 61 cm), and executed in





**Fig. 4** John Constable, *The Lock*, 1825, oil on canvas, 139.7 × 112 cm (55 × 48 in.), private collection. (Image © Sotheby's.)



**Fig. 5** Detail of *The Lock* (Fig. 4) showing the complexity of the paint surface in the sky. Constable interwove opaque and transparent layers and exploited the 'turbid medium' effect to create subtle optical blues and purples that cannot be directly mixed on the palette. (Image © Constable Research Project with the permission of Sotheby's.)

the late summer of 1822. By this time, Constable had achieved absolute mastery over his materials and subject matter.<sup>33</sup> The earliest of these, dated on the back in the artist's hand *1st August 1822*, is indisputably one of the finest sky sketches that he ever produced (Fig. 3). As a result of the lessons learnt during his 'skying' practice, Constable henceforth always prepared his painting supports, whether canvas or paper, with a very pale pink ground or priming to create luminosity. This resulted in the fabulous skies of his later exhibition pictures, such as *The Lock*, 1825 (Fig. 4).<sup>34</sup> This is the second version of this composition that Constable completed to a very high level of finish for his own enjoyment, having exhibited the first version at the Royal Academy in 1824. It is a wonderful example of his technique in finished paintings of the mid-1820s. The sky was painted with thin scumbles, translucent washes, rubbing back and scraping, finishing with natural ultramarine and the use of subtle optical purples created using the turbid medium effect (Fig. 5).<sup>35</sup>



## Studio materials

In addition to studying the actual paintings it has been possible to examine and analyse some of Constable's studio materials including a wooden sketching box (Fig. 6) belonging to the late Richard Constable, the artist's great-great grandson and a good friend and supporter of the Project from the beginning.<sup>36</sup> The box was reputed to date from the 1820s, but this is not corroborated by the technical evidence. Some of the pigments in glass phials definitely date from the 1830s as they were uniquely manufactured by George Field.<sup>37</sup> It was very useful to analyse paint splatters on the box and paint traces on brushes to discover Constable's working mixtures.<sup>38</sup> A tin paint box given to Constable's engraver, David Lucas, after the artist's death was also examined.<sup>39</sup> It contains 11 dried bladders (Fig. 7), open where they had been pierced, which yielded useful samples for extensive pigment and medium analysis. These include unmixed pigments such as Emerald green (copper aceto-arsenite) and chrome yellow (lead chromate). There are also what appear to be proprietary mixtures of several pigments to create shades of red and brown. The bladders contained a wide range of media including linseed drying oil (heat-bodied), poppy drying oil (with lead and zinc driers) and mixtures of these with egg yolk, beeswax, pine rosin, mastic resin and other additives, all of which would have altered the handling properties and drying time of the paint.<sup>40</sup>

One of Constable's palettes, believed to have been used on the day he died, has also been analysed.<sup>41</sup> It contains very few pigments: the primary colours – cobalt blue, vermilion, madder red and chrome, Mars and Patent yellows – plus black, white and Emerald green. Unlike many of his contemporaries, by the end of his life he had really honed his choice of materials.<sup>42</sup>

## Paint

Constable's early works, from c.1799 to 1812–15 (the dating of some works is uncertain) include a fairly standard late 18th-century palette of relatively coarsely ground pigments and mixtures. Prussian blue was his primary blue, mixed with Naples yellow to make greens; natural ultramarine was only used for finishing the skies of exhibited works. There are more yellows in his palette throughout his career than any other colour. From c.1815 he used very finely ground synthetic iron oxides known as Mars pigments. It was surprising to find that a yellow-green from c.1816 is a mixture of Prussian blue and a very bright Mars yellow that is considerably more vivid than those on the market today. It was used with a thick heat-treated linseed oil that gives body, gloss and a soft flow to the brushstrokes. This is quite different from the lean, crisp, quick-drying mediums formulated with linseed drying oil and oil-egg mixtures, used in earlier sketches (for example, the textured brushwork in Fig. 2).<sup>43</sup> Chrome yellow first appeared in Constable's paintings in early 1816, shortly after it became available in England and only two years after Turner first used



**Fig. 6** A wooden sketching box from the Constable family collection containing brushes, a metal palette knife, a graphite pencil and pencil holder, nine glass phials of pigment and a large piece of polished natural ultramarine. (Image © Constable Research Project with the permission of the Estate of Richard Constable.)



**Fig. 7** Dried bladders of paint containing chrome yellow (lead chromate) and Emerald green (copper aceto-arsenite) from Constable's tin paint box. (Image © Constable Research Project with the permission of the Estate of Sir Edwin Manton.)

it.<sup>44</sup> One of the most distinctive colours in Constable's paintings of the 1820s and 30s, he frequently employed it as pure yellow flecks and in mixtures to create almost luminous greens. In the late 1820s there were significant additions to his palette when two shades of madder – a red and a pink – were introduced, as well as Emerald green and some of George Field's unique colours.<sup>45</sup> Constable usually mixed greens from primarily blue and yellow, and Emerald green is the only true green pigment that has been identified on paintings and on the Tate palette discussed later (although verdigris was identified in the Manton paint box bladders, but this was possibly used as a drier).<sup>46</sup>

The chronology of pigments and mixtures, together with the dates of first use of pigments new to Constable, has greatly assisted with questions of dating and attribution. For example, in the run-up to the Tate's *Constable: The Great Landscapes* exhibition, a large sketch<sup>47</sup> for *The Opening of Waterloo Bridge*



**Fig. 8** John Constable, the 'six-foot' sketch for *The Hay Wain* 1821, oil on canvas, 137 × 188 cm (54 × 74 in.), Victoria and Albert Museum 987–1900. (Image © Constable Research Project with the permission of the Trustees of the Victoria and Albert Museum.)

was of uncertain date and until the late 20th century the attribution to Constable had even been called into question. However, technical examination revealed that it was started c.1820 using Constable's typical methods and materials for that date. Major revisions were subsequently made using the 'late' palette mentioned above, with pigments identified only after c.1828. Much of the reworking may have been carried out using Field's 'orange vermilion' and a proprietary mixture of vermilion and red lake that has been identified in paintings of the 1830s and in the paint box bladders.<sup>48</sup> This corroborates the suggested art historical date for the reworking of c.1831–32 in preparation for completing the exhibited canvas in time for the Royal Academy summer exhibition of 1832.<sup>49</sup>

### The 'six-footers' and their legacy

Throughout his career, Constable strove to achieve excellence in an academic context. In the 19th century this meant success at the annual Royal Academy summer exhibition. It is surprising to reflect that, despite now appearing to be the most conventional of English painters, Constable sold relatively few paintings during his lifetime and many of those that he did sell went to family and friends. In an attempt to secure his reputation for posterity, and to support his wife and

increasingly large family, he embarked upon a series of large exhibition canvases, the first of which, *The White Horse*, was exhibited at the Royal Academy in 1819.<sup>50</sup> These are commonly known as the 'six-footers' because they are painted on canvases roughly six feet (183 cm) wide.<sup>51</sup> They include some of Constable's most famous works: *Stratford Mill* 1820, *The Hay Wain* 1821,<sup>52</sup> and *The Leaping Horse* 1825.<sup>53</sup> For each picture Constable painted a full-size preparatory oil sketch in his studio on a six-foot wide canvas. The six-foot sketch for *The Hay Wain* (Fig. 8) was started in haste after a bout of family illness in the winter of 1820, only a few months before a finished painting was due to be displayed at the summer exhibition. As a result, it is the least painted of all the full-size preliminary works. It was laid in with large brushes and a palette knife over a pale pink ground. The six-foot sketches are unique in western art, since no other painter is known to have created a highly worked oil sketch, identical in size to a finished painting, in quite this way.<sup>54</sup> They were painted entirely in the studio based on drawings, outdoor oil sketches and small compositional oil studies. They were often worked on side-by-side with the final canvas while developing the composition. Bristle brushes and palette knives were used to lay in the composition directly, with little or no underdrawing. The surface was worked up wet-in-wet with rapid notational strokes, very high impasto, occasional scratching into the wet paint, even using finger marks. In these works, Constable had a complete disregard





**Fig. 9** Detail of the bush in front of Willy Lott's cottage, from Fig. 8. The white elderflower heads were applied with a palette knife. Drips and cracks are all part of the richly textured surface. (Image © Constable Research Project with the permission of the Trustees of the Victoria and Albert Museum.)

for conventional finish, allowing drips, smears and cracks to develop (Fig. 9): he regarded these imperfections as of no consequence as they were private pictures, simply expressing the germination and development of an idea, and they were not shown to anyone other than relations and close friends during his lifetime. The six-foot sketches were so radical in appearance that when they were eventually sold after Constable's death many were repainted by later hands to make them look less sketchy and more acceptable to 19th-century taste. Quite a few even became unrecognisable as Constables until they were cleaned and restored in the late 20th century.<sup>55</sup>

Many people are very familiar with Constable's work, especially such popular images as *The Hay Wain*, one of Britain's favourite pictures. Therefore, it is perhaps surprising that it was not sold when first exhibited in 1821. Despite its traditional appearance nowadays, at that time it was derided for its lack of conventional academic finish. In particular, critics did not like the use of coloured specks and crisp, stark, lead white and pale lemon highlights that later became ridiculed as Constable's 'snow'. The crusty impasto in the landscape areas, applied over a highly textured stippled priming, was also considered too rough and sketchy for popular British taste. Having seen *The Hay Wain* at the Royal Academy in May 1821 one reviewer commented: 'why the excess of piebald scrambling [*sic*] in the finishing, as if a plasterer had been at work where the picture hung, and it had received the spirits of his brush? ... this is certainly an affectation and trickery of art unknown to our best painters.' Others derisively noted 'scattered and glittering lights,' 'a mannered sparkle' and that the surface was too 'spotty'.<sup>56</sup>

By contrast, Constable's works proved to be very popular in France and, in time, became highly influential. The French painter Théodore Géricault saw *The Hay Wain* at the Royal

Academy on a visit to London in 1821. He reported back to fellow artists in Paris that he was *tout étourdi* (totally stunned) by it. In 1824 Constable sold *The Hay Wain* and a number of other works to the French art dealer John Arrowsmith who took them to Paris and exhibited them in his gallery to much acclaim in June of that year. The young Eugène Delacroix was an eager visitor to Arrowsmith's gallery and noted in his journal the remarkable impression that Constable's pictures had made on him. At that time, he was working on his own great masterpiece, *The Massacre at Chios* 1824.<sup>57</sup> It is known that he went on to repaint passages of this work using Constable's *facture* (manner). Arrowsmith exhibited his Constables at the Paris Salon of 1824, the French equivalent of the Royal Academy summer exhibition. *The Hay Wain* won a gold medal which was presented by the French king, Charles X. It was admired by leading painters of the day and as a result Constable's work became hugely influential both on these artists and later on a younger generation of *paysagistes*, the landscape painters of the Barbizon School such as Rousseau, Troyon, Huet and Diaz.<sup>58</sup>

Thirty-odd years after his death Constable was still casting his spell, as Monet and Pissarro are known to have commented on how impressive they found his works at the National Gallery when they visited London during the Franco-Prussian war. Therefore a direct thread can be traced from Constable's *The Hay Wain* to Géricault, Delacroix, the Barbizon School, through Courbet and Manet to Impressionism and post-Impressionism then via Cézanne to Picasso. It can be argued in fact that Constable is a true father of modern painting.

In late 1828 Constable's beloved wife Maria died after a long illness and early in 1829 he was elected to full membership of the Royal Academy. Together, these momentous events wrought a dramatic change on Constable's mental state and



**Fig. 10** Detail from *The Opening of Waterloo Bridge* ('Whitehall Stairs, June 18th, 1817') 1832, oil on canvas, Tate T04904. The yellow ochre-coloured paint is made with Patent yellow that has discoloured: it should be bright lemon yellow. (Image © Constable Research Project with the permission of Tate.)

his painting practice. Thereafter, as a Royal Academician, his paintings no longer needed the approbation of the Academy's Hanging Committee, so to a degree he could relinquish any residual worries about convention and finish and concentrate on painting what and how he liked. He appears to have taken out his grief on the canvas for the six-foot sketches for *Hadleigh Castle* 1828–29<sup>59</sup> and *Salisbury Cathedral from the Bishop's Meadows* 1830–31,<sup>60</sup> which commemorate the deaths of his wife and of his best friend and confidant John Fisher respectively. In these works, he wielded a palette knife with great ferocity, applying emphatic sweeping strokes of thick impasto that would not look out of place on a late 20th-century canvas. In many of the late works, both sketches and exhibited pictures, he used large amounts of the brilliant lemon yellow pigment, Patent yellow (lead oxychloride). This has discoloured (as he knew it would) so that paintings that even now seem brightly coloured to us, with spirited flecks of pure pigment, would have been even more vibrant when first painted (see Fig. 10).<sup>61</sup> We need to bear in mind that what we see now is nowhere near as startling as that seen (and often disliked) by the original audiences in the 1830s.

In the 1830s, Constable's paint handling became more and more expressive and dynamic. It is significant that from this time on his exhibited pictures contain extraordinary passages of abstract painting that are quite breathtaking for the early 19th century. He used brushes, a palette knife, and an impressed brush handle or stick to create lines and scratches and buttery impasto dragged and splodged. He applied wet over semi-dry, layer upon layer: more like the thickly woven surface of an embroidery than a painting. In his largest exhibited picture, *The Opening of Waterloo Bridge* 1832,<sup>62</sup> he painted a balcony crowded with figures using nothing more than abstract dabs and flecks of pure colour: black, white and the primary colours, red, blue and yellow. From normal viewing distance these meld together to capture perfectly the crush of excited spectators, a true *impression* (Fig. 10). These

paint strokes are even more purely abstract than those in Boudin's crowded beach scenes of the 1860s and the work of the French Impressionists almost half a century later.

One of the most fascinating aspects of the study of Constable's painting technique is the way in which it vividly illuminates his personality, in particular his passionate involvement with the physical act of painting. As we have seen, he began his career with a good knowledge of materials and a sound basic training. However, his desperation to paint at moments of inspiration often led him to ignore these early lessons and to use technically questionable practices, showing little concern for the long-term survival of his work. Technical examination has suggested that he intended his exhibited paintings, at least, to be lasting works. Nevertheless, in examples such as *The Centotaph*, where he extended the prestigious exhibition canvas at the sides with tacked-on strips of pine panelling at the last minute, his good intentions were compromised or forgotten once the painting was under way.<sup>63</sup>

Constable expressed few opinions regarding the permanence of his paintings. In general, thanks to his initial training, his work has survived relatively well, especially by comparison with the works of Turner, Wilkie and other contemporaries. Where paintings have deteriorated, the cause has usually been through the intervention of a later painter or restorer. The sketches, particularly those on paper and millboard, were particularly susceptible to damage. In many cases, their thin, delicate ground and paint layers blistered and flaked off during early lining treatments. Paint losses were then crudely repainted and the pictures were varnished – often with a toned pigmented varnish – thereby destroying the original surface. Fortunately, Constable's paintings on canvas have suffered little by comparison. In a few cases, there is some evidence to suggest that soluble paint layers have been removed, probably during 19th-century 'restorations'. Today, the appearance of Constable's paintings may be most radically affected by crude restoration and discoloured varnish; however, sensitive





**Fig. 11** Detail from the bottom right corner of *Shoreham Bay*, 22 May 1828, oil on paper, 20 × 24.8 cm (7¾ × 9¾ in.), V&A 155-1888 (G. Reynolds, *The Later Paintings and Drawings of John Constable*, 1984, R.28.7, p.192, pl. 681). (Image © Constable Research Project with the permission of the Trustees of the Victoria and Albert Museum.)

modern professional conservation can bring them as close as possible to the way in which Constable wanted his pictures to look. It is important to remember that he expected his paintings to change with time and he painted, to a certain extent, with this in mind: 'It is much to my advantage that several of my pictures should be seen together, as it displays to advantage their varieties of conception and also of execution, and what they gain by the mellowing hand of time, which should never be forced or anticipated. Thus my pictures when first coming forth have a comparative harshness which at the time acts to my disadvantage.'<sup>64</sup> We may now be seeing Constable's landscapes in the best possible circumstances.

## The Constable Research Project in 2016

The CRP is no longer financed by sponsorship or regular funding but work continues on an ad hoc project-by-project basis. In 2014–15, the author undertook a study of Constable's Brighton sketches at the V&A and the Royal Academy on the theme of the 2017 exhibition *Constable at Brighton* to be held in the same locality, at Brighton Museum (Fig. 11).<sup>65</sup> In 2015, a detailed essay on the second version of *The Lock*, 1825–26, which Constable copied for his own pleasure from his 1824 Royal Academy exhibit, was published; it had belonged to a single aristocratic family since the mid-1800s and this was the first time that it was to be shown publicly in over 150 years.<sup>66</sup>

Despite the fact that some of the findings have yet to be published, the CRP has become an essential resource for all serious Constable studies. A substantial body of work can be found in the conservation and Constable literature including a number of conservation journal articles and conference papers, major essays in two Constable exhibition catalogues for Tate and two essays in privately published catalogues for

a former commercial gallery in New York.<sup>67</sup> Unfortunately, these substantial catalogue essays have not been published in the conservation literature therefore there is a lack of awareness of the CRP by the conservation community. Information from these published sources is widely quoted in the first volume of the catalogue raisonné on Constable's early works (1795–1816) published in 1996, 10 years into the project.<sup>68</sup> However, there is no mention of the significance of the CRP and its important contribution to modern Constable scholarship in the text. Also, there are no references to this author's publications in the bibliography which makes it difficult for readers to find follow-up information.

The author lectures widely both nationally and internationally to conservators and the general public, enabling audiences to see Constable's paintings in a completely new light. This gives insight into his day-to-day practice and how this was affected by his emotions, his ambitions and the practical necessity of using the materials he had to hand. For example, since 2014 the author has been invited to contribute to seminars and to lecture publicly on the materials and techniques of Constable's six-foot landscapes in Cardiff, Newcastle and Edinburgh during the display of Constable's 1831 masterpiece, *Salisbury Cathedral from the Meadows*, as part of the Aspire project that bought the painting for the Nation.<sup>69</sup> It is interesting that the author of a recent biography of Turner predictably stresses the revolutionary aspects of his work (as have most commentators since Ruskin first championed this artist in the 19th century).<sup>70</sup> Yet, most people still do not associate a similar degree of spontaneity, artistry, passion and innovation with Constable's work, despite the fact that it is clearly evident on close examination.

In 2014, a Twitter feed and a Facebook page were established,<sup>71</sup> which have been useful in raising the profile of the project internationally. As a result, there has been a significant rise in contacts for information and in relation to





**Fig. 12** John Constable, a newly discovered oil study: *A Red-Tiled Cottage by a Wood with Windmill and Rainbow*, c.1832–34, oil on canvas lined onto card then canvas (possibly by the artist), 33 × 40.6 cm (12<sup>15</sup>/<sub>16</sub> × 16<sup>5</sup>/<sub>16</sub> in.), private collection. (Image © Constable Research Project with the permission of the owner.)

questions of attribution. Television appearances have also resulted in a flurry of interest, such as BBC One's programme *Fake or Fortune?*, which was instrumental in the discovery and later acceptance of two previously unknown Constable seascapes.<sup>72</sup> Working closely with Anne Lyles, the author has now established a formal staged protocol for assessing potential Constable material to give an objective professional opinion.<sup>73</sup> As a result of this initiative, the author has been instrumental in the discovery of a number of previously unknown works, most recently an unsigned and undated oil study that has been securely attributed to Constable and dated to c.1832–34 on the basis of its style, materials and techniques: *A Red-Tiled Cottage by a Wood with Windmill and Rainbow* (Fig. 12).<sup>74</sup> Anne Lyles has identified a watercolour sketch<sup>75</sup> for it at the V&A, placing it within the context of Constable's known oeuvre.

The Constable Research Project was begun in an era when Constable scholarship was dominated by traditional art historians, both in the public and private sectors, whose opinions were based on their knowledge of documentary sources and an experienced connoisseur's eye. On the whole, they had little or no interest in the painter's materials and techniques

and how these might inform and advance their scholarship. During the lifetime of the project, these attitudes have largely disappeared, not only in Constable scholarship but around the world, so that now a collaborative and fruitful approach between art historians, conservators and conservation scientists is commonplace. It is very gratifying that the Project is now recognised as contributing to major discoveries where the body of technical information is crucial to the attribution.

## Conclusions

Summarising the work of the past 30 years brings us back to the title of this paper: 'Fit for purpose', because that is exactly what Constable's oil painting technique is, especially when compared with that of many of his contemporaries. His paintings have survived incredibly well due to a sound technique and a profound understanding of the properties of his materials. His most popular works are all too familiar, to British audiences at least, from chocolate boxes, jigsaw puzzles, placemats and curtain fabrics. This means that they now symbolise tradition

and convention in the popular imagination. However, this research project has shown that in fact his style and technique were unconventional for the time and became increasingly so as he aged. He developed his own methods using traditional materials and standard techniques, as well as newly invented materials as soon as they came into his hands. He experienced periods of intense experimentation and innovation throughout his career, in a passionate quest to find his own unique means of expression. This study has been ground-breaking and revelatory on many fronts. It continues to open the eyes of museum professionals, art historians and the general public to the great modern genius that was John Constable RA.

## Acknowledgements

*In memoriam:* Richard Constable (1932–2016) great-great-grandson of the artist and Peter Young (1933–2016), former Head of Paintings Conservation, V&A, London.

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## Notes

1. Letter in the Constable family collection, quoted in the introduction to I. Fleming-Williams and L. Parris, *The Discovery of Constable*, London, Hamish Hamilton, 1984, p. vii.
2. Constable's posthumous reputation and the activities of copyists and forgers is discussed in Fleming-Williams and Parris 1984 (cited in note 1).
3. For the general history of the project see [https://en.wikipedia.org/wiki/Rembrandt\\_Research\\_Project](https://en.wikipedia.org/wiki/Rembrandt_Research_Project), <https://www.britannica.com/topic/Rembrandt-Research-Project>, and <http://www.rembrandtresearchproject.org>. See also M.W. Ainsworth, 'From connoisseurship to technical art history: the evolution of the interdisciplinary study of art', *Conservation Perspectives: Getty Conservation Institute Newsletter* 20, Spring 2005, at [http://www.getty.edu/conservation/publications\\_resources/newsletters/20\\_1/feature.html](http://www.getty.edu/conservation/publications_resources/newsletters/20_1/feature.html).
4. With a fine art background, a first degree in the history of art and a postgraduate diploma in the conservation of easel paintings, both from the Courtauld Institute of Art, London, the author was one of relatively few people in the UK at that time to have the technical, conservation and art historical

knowledge to undertake the suggested research.

5. S. Cove, *The Materials and Techniques of William Larkin, c.1610–19*, unpublished dissertation, Courtauld Institute of Art, London, 3 vols, 1985.
6. At the time, the author was registered at the Courtauld Institute for a doctorate, supervised by former Tate curator and Constable scholar the late Leslie Parris, and by the late Caroline Villers of the Courtauld Institute Technology Department.
7. In setting up the project John Murdoch, then Keeper of Paintings, Prints and Drawings and Jonathan Ashley-Smith, then Keeper of Conservation, supported the project from the outset and were instrumental in allocating staff time and funds to support it at the V&A. Conservator John Bull and the late Constable scholar Ian Fleming-Williams worked on behalf of the sponsor. Dr Christopher Green, Dr John Newman and the late Caroline Villers supported the application to register with the Higher Degrees Committee of the Courtauld Institute of Art. Later funding from the late Sir Edwin Manton was facilitated by the late Leslie Parris.
8. It represents primarily this author's lifetime of research and dissemination achievements.
9. See C. White, 'The Rembrandt Research Project and its denouement', *The Burlington Magazine* CLVII, 2015, pp. 71–73.
10. A close working relationship was established with Josephine (Jo) Darrah, former Senior Conservation Scientist at the V&A. Her expertise in pigment, medium and fibre analysis proved invaluable, and she also empowered me to carry out pigment and fibre identification; to make interpret, and use microscopical staining on cross-sections in the V&A conservation science laboratories. XRF at the V&A was carried out initially by Chief Conservation Scientist Graham Martin and then by Jo Darrah. All colour photography using 35 mm slides and black-and-white technical photography, including the IR vidicon system, was carried out by the author. Digital photography was undertaken from c.2004.
11. GC-MS was kindly carried out by Raymond White and EDX by Dr Aviva Burnstock, both then at the National Gallery, London (1986–91). DTMS was performed by Prof. Dr Jaap Boon at FOM-AMOLF, Amsterdam (1996–98). PLM and EDX were also carried out later by Libby Sheldon, Catherine Hassall and Rachel Grout at UCL Paint Analysis Ltd.
12. These reports are unpublished and remain in the possession of the author.
13. This trip was funded with the help of travel bursaries from the V&A, David Thomson, The Radcliffe Trust and the Courtauld Institute of Art Post-Graduate Student Travel Fund.
14. S. Cove, 'Constable's oil painting materials and techniques', in L. Parris and I. Fleming-Williams, *Constable*, London, Tate, 1991, pp. 493–552.
15. A. Lyles (ed.), *Constable: The Great Landscapes*, London, Tate, 2006.
16. V&A, London; Courtauld Institute of Art, London; David Thomson Collection; National Gallery, London; Tate, London; Royal Academy of Arts, London; Guildhall Art Gallery, London; National Museum of Wales, Cardiff; National Galleries of Scotland, Edinburgh; The National Trust; Ashmolean Museum, University of Oxford, Oxford; Art Institute of Chicago, Chicago; Currier Gallery of Art, Manchester, NH; Yale Center for British Art, New Haven; National Gallery of Canada, Ottawa; Art Gallery of Ontario, Toronto; John G. Johnson Collection, Philadelphia Museum of Art, Philadelphia; National Gallery of Art, Washington DC; Huntingdon Library and Art Gallery, San Marino, CA; Metropolitan Museum of Art, New York; The Frick Collection, New York; the late Sir Edwin Manton; Phillips Collection, Washington DC; Proby Collection, Elton Hall, Lincolnshire; Sotheby's, Christie's and Bonhams, London;



- the late Richard Constable; the Dowager Lady Ashton; Mrs J. Katz, New York; Salander-O'Reilly Galleries, New York; and anonymous private collectors.
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  20. See G. Field, *Chromatography: or, A Treatise on Colours and Pigments, and of their Powers in Painting, &c.*, London, 1835.
  21. 'Constable's Library, 1. Art', in L. Parris, I. Fleming-Williams and C. Shields (eds), *John Constable: Further Documents and Correspondence*, London, Tate and Suffolk Records Society, 1975, pp. 27–38.
  22. R.B. Beckett (ed.), Suffolk Records Society 1961–75, *John Constable's Correspondence*, 8 vols, see <http://www.suffolkrecordsociety.com/publications-general-series>.
  23. See T. Bardwell, *The Practice of Painting and Perspective Made Easy*, London, 1756. Constable owned a 1782 edition, see Cove 1991 (cited in note 14), pp. 493–494.
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  25. See for example C.R. Johnson Jnr, E. Hendriks, P. Noble and M. Franken, 'Advances in computer-assisted canvas examination: thread counting algorithms', *AIC Paintings Specialty Group Postprints*, Washington DC, 2009, pp. 1–17; and R.C. Johnson, D.H. Johnson, N. Hamashima, H.S. Yang and E. Hendriks, 'On the utility of spectral-maximum-based automated thread counting from X-radiographs of paintings on canvas', *Studies in Conservation* 56, 2011, pp. 94–103. Another example is described in 'Case Study 2: Flatford Mill from the Lock 1811–12: Preparatory Sketch (no. 52), Study (no. 53) and "Finished" Picture (no. 54)', in Cove 1991 (cited in note 14), p. 495 and fig. 205.
  26. For more details, see Cove 1991 (cited in note 14), p. 500; S. Cove, 'Constable's oil sketches on paper and millboard', in *Preprints of the Institute of Paper Conservation Conference 1992*, Leigh, IPC, 1992, pp. 123–128, esp. p. 127 and fig. 3; S. Cove, 'Fit for purpose: Constable's use of millboard and paper for oil sketching, c.1809–29', in H. Chivian-Cobb (ed.), *Constable's Oil Sketches 1809–29: The Maria Bicknell Years*, New York, Salander-O'Reilly Galleries, 2007, pp. 115–141, esp. p. 135 and figs 35–37.
  27. See Cove 1991 (cited in note 14), pp. 498–500 and figs 161–164; Cove 1992 (cited in note 26), pp. 124–126; S. Cove, '"Very great difficulty in composition and execution": the materials and techniques of Constable's cloud and sky studies of the 1820s', in F. Bancroft (ed.), *Constable's Skies*, New York, Salander-O'Reilly Galleries, 2004, pp. 123–152, esp. pp. 124–125 and fig. 22; Cove 2007 (cited in note 26), pp. 125–134 and figs 21–34. See also P. Bower, 'Catching the sky', in Bancroft 2004, *op. cit.*, pp. 153–179, esp. pp. 153–167 and figs 65–74; papers in this volume and H. Evans and K. Muir (eds), *Studying 18th-Century Paintings and Works of Art on Paper*, London, Archetype Publications, 2015.
  28. See P. Bower, *Turner's Papers 1787–1820*, London, Tate, 1990; D. Blaney Brown, *Oil Sketches from Nature: Turner and his Contemporaries*, London, Tate, 1991; P. Bower, *Turner's Later Papers 1820–1851*, London, Tate, 1999; K. Lowry, 'Thomas Jones: a technical study of his oil paintings', in A. Sumner and G. Smith (eds), *Thomas Jones 1742–1803: An Artist Rediscovered*, New Haven, Yale University Press and Cardiff, National Museums and Galleries Wales, 2003, pp. 89–99; P. Bower, 'Careful and considered choice: Thomas Jones's use of paper', in Sumner and Smith 2003, *op. cit.*, pp. 101–107; X. Bray, C. Gere and C. Riopelle, *A Brush with Nature: The Gere Collection of Landscape Oil Sketches*, London, National Gallery, 2003; Bower 2004 (cited in note 27); S. Herring and A. Mazotta, *Corot to Monet: French Landscape Painting*, London, National Gallery, 2003; S. Herring, 'Six paintings by Corot: methods, materials and sources', *National Gallery Technical Bulletin* 30, 2009, pp. 86–111; M. Rosenthal, A. Lyles and S. Parissien (eds), *Turner and Constable: Sketching from Nature. Works from the Tate Collection*, London, Tate, 2013. An exemplary survey of European *plein air* landscape painting from c.1780–1914 is given by J.A. Lopez-Manzanares, *Impresionismo y aire libre de Corot a Van Gogh*, Madrid, Museo Thyssen-Bornemisza, 2013; A-G. Rischel, 'A technical study of 19th-century papers used by Danish artists', in this vol., pp. 65–71; J. Wadum, 'Principal version or replica? Examining Martinus Rørbye's practice when copying others or his own paintings', in this vol., pp. 72–81.
  29. *Dedham Lock and Mill*, c.1816, oil on laminated paper, 18.1 × 24.8 cm (7½ × 9¾ in.), Victoria and Albert Museum, 145-1888. See G. Reynolds, *The Early Paintings and Drawings of John Constable*, 2 vols, New Haven and London, Yale University Press, 1996, R.16.108, p. 233, pl. 1367.
  30. I would like to thank Peter Bower for sharing his unpublished research on Turner's papers. See Cove 1991 (cited in note 14), pp. 498–499 and fig. 161; Cove 1992 (cited in note 26), p. 126; Cove 2007 (cited in note 26), pp. 127–128.
  31. Several publications discuss Constable's use of grounds and primings: a general section in Cove 1991 (cited in note 14), pp. 496–498 and figs 153–160; for the oil sketches Cove 2004 (cited in note 27), pp. 126–134 and figs 23–37; for the landscapes of the 1820s–30s, S. Cove, 'The painting techniques of Constable's "six-footers"', in A. Lyles (ed.), *Constable: The Great Landscapes*, London, Tate, 2006, pp. 51–67, esp. pp. 57–58 and figs 31–32.
  32. See Cove 2006 (cited in note 31), pp. 59–60 and figs 37–38.
  33. These are R.22.17 (private collection), R.22.21 (Tate), R.22.22 (Birmingham City Museum and Art Gallery) R.22.30 (Ashmolean Museum), in G. Reynolds, *The Later Paintings and Drawings of John Constable* (2 vols, New Haven and London, Yale University Press, 1984), which forms part II of the Constable catalogue raisonné. I would like to thank the owner, who wishes to remain anonymous, and David Moore-Gwyn and Julian Gascoigne of Sotheby's for their kind help in reproducing *Cloud Study, 1st August 1822*.
  34. *The Lock*, 1825, oil on canvas, private collection, sold at Sotheby's *Old Master and British Paintings Evening Sale*, 9 December 2015, 139.7 × 112 cm (55 × 48 in.).
  35. See S. Cove, 'The materials and techniques of *The Lock*, 1825, by John Constable', in *Constable: The Lock*, London, Sotheby's, December 2015, pp. 46–53, esp. p. 49 and figs 3 and 6. For a discussion of the 19-century notion of 'finish' in paintings and Constable's problems with it, see Cove 1991 (cited in note 14), p. 511 and Cove 2006 (cited in note 31), pp. 62–67. I would like to thank David Moore-Gwyn and Julian Gascoigne of Sotheby's for their kind permission to reproduce *The Lock*, 1825.
  36. Estate of Richard Constable. A softwood box (22.8 × 30.5 cm; 9 × 12 in.) with a hinged lid from which a panel can be removed.

- This was used to hold painting supports and painted sketches in place during transport. See Cove 1991 (cited in note 14), p. 501 and fig. 166, and Cove 2004 (cited in note 27), p. 134 and fig. 38.
37. See Field 1835 (cited in note 20). These are identified by original paper labels on the glass phials as Field's pigments red oxide of manganese, protiodide of mercury and sesquioxide of chromium, confirmed by EDX analysis, National Gallery, London. See Cove 1991 (cited in note 14), p. 507 and fig. 175, and Cove 2004 (cited in note 27), pp. 135–136 and figs 40 and 43.
  38. See Cove 1991 (cited in note 14), pp. 504–507 and figs 166, 169, and 171–175.
  39. Estate of the late Sir Edwin Manton, now at the Clark Institute, Williamstown, USA. A tin box with 17 divisions containing 11 hardened bladders of pigment, a glass phial of blue pigment and a lump of gypsum (3.3 × 8.5 × 5 cm; 13 × 3½ × 2 in.) in L. Parris, *Constable: A New York Private Collection (Supplement)*, published privately, 1998, pp. 46–47 (illus. in colour); see also S. Cove, 'Constable's studio materials,' in A. Lyles (ed.), *Constable: The Great Landscapes*, London, Tate, 2006, pp. 194–197: Constable's metal paint box, No. 70, p. 197 (illus. in colour). The analysis of the media in the bladders is published in S. Cove, 'Mixing and mingling: John Constable's oil paint mediums (1802–37), including the analysis of the Manton paint box (1837)', in A. Roy and P. Smith (eds), *Painting Techniques: History, Materials and Studio Practice*, London, IIC, 1998, pp. 211–216.
  40. See Cove 1998 (cited in note 39).
  41. Tate Gallery Archive, illustrated at <http://www.tate.org.uk/whats-on/tate-britain/exhibition/constable-great-landscapes/constable-great-landscapes-techniques>.
  42. The palette is fully catalogued in Cove 2006 (cited in note 39), pp. 194–195.
  43. See Cove 1991 (cited in note 14), pp. 504–505, fig. 169 and table I (p. 502).
  44. See J.H. Townsend, 'Turner's painting materials: a preliminary discussion', *Turner Studies* 10(1), 1990, p. 26; and J.H. Townsend, *Turner's Painting Techniques*, London, Tate, 1993, p. 41.
  45. As cited in note 37. Field could well have supplied the madder pigments too.
  46. As cited in note 36. Constable's 'late' pigments and mediums are the subject of Cove 1998 (cited in note 39); for verdigris as a possible drier, see p. 215.
  47. *The Opening of Waterloo Bridge seen from Whitehall Stairs, June 18th 1817*, full-size sketch, oil on canvas, 153.6 × 243.8 cm (60½ × 96 in.), Anglesey Abbey, National Trust, Cambridgeshire, UK. See R.32.2 in Reynolds 1984 (cited in note 33), p. 235, pl. 820.
  48. As cited in note 39.
  49. For a full discussion of the evolution of the composition *The Opening of Waterloo Bridge*, see A. Lyles (ed.), *Constable: The Great Landscapes*, London, Tate, 2006, cat. no. 65, pp. 184–189.
  50. *The White Horse*, 1821, oil on canvas, 131.5 × 187.8 cm (51¼ × 74 in.), now in the Frick Collection, New York, USA. See R.19.1 in Reynolds 1984 (cited in note 33).
  51. Constable's 'six-footers' were the main subject of the exhibition. In relation to canvas sizes specifically, see Cove 2006 (cited in note 31), pp. 54–57.
  52. *Stratford Mill*, 1820, oil on canvas, 127 × 182.9 cm (50 × 72 in.); *The Hay Wain*, 1821, oil on canvas, 130.5 × 185.5 cm (51¼ × 73 in.); both in the National Gallery, London. See Reynolds 1984 (cited in note 33): R.20.1, p. 43, pl. 129 and R.21.1, p. 67, pl. 213 respectively.
  53. *The Leaping Horse*, 1825, oil on canvas, 142.2 × 187.3 cm (56 × 73¾ in.), Royal Academy of Arts, London (268). See Reynolds 1984 (cited in note 33), R.25.1, p. 155, pl. 572.
  54. See J. Gage, 'Constable: "The big picture"', in A. Lyles (ed.), *Constable: The Great Landscapes*, London, Tate, 2006, pp. 20–22; C. Rhyne, 'The remarkable story of the "six-foot sketches"', in Gage 2006, *op. cit.*, pp. 42–49.
  55. This was the case with the six-foot sketches for *The White Horse c.1818* (National Gallery of Art, Washington DC, R.19.2); *Salisbury Cathedral from the Bishop's Meadows 1829–31* (Guildhall Art Gallery, London, R.31.2); and *Stoke by Nayland c.1835–7* (Kimball Collection, Art Institute of Chicago, Chicago, R.36.19), see Reynolds 1984 (cited in note 33) and A. Lyles (ed.), *Constable: The Great Landscapes*, London, Tate, 2006.
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  57. Eugene Delacroix, *Le Massacre de Scio*, 1824, oil on canvas, 419 × 354 cm (164 × 139 in.), now in the Musée du Louvre, Paris, Inv. 3823.
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  59. Now at Tate, London, and described in N. Duff, 'Constable's sketch for *Hadleigh Castle*: a technical examination', *Tate Papers* 5, Spring 2006, <http://www.tate.org.uk/research/publications/tate-papers/05/constables-sketch-for-hadleigh-castle-technical-examination>, accessed 30 December 2016.
  60. As cited in note 55.
  61. See Cove 2006 (cited in note 31), pp. 60–62 and figs 41–42.
  62. *The Opening of Waterloo Bridge seen from Whitehall Stairs, June 18th 1817*, 1832, oil on canvas, 134.6 × 219.7 cm (53 × 83½ in.), now in Tate, London. See Reynolds 1984 (cited in note 33), p. 233, pl. 819.
  63. *The Cenotaph*, 1836, oil on canvas, 132 × 108.5 cm (52 × 42¾ in.). Ironically, given its improbable construction, this was Constable's main entry for the RA summer exhibition in 1836 as homage to Sir Joshua Reynolds and his mentor and patron Sir George Beaumont; see Reynolds 1984 (cited in note 33), R.36.1, p. 285, pl. 1052.
  64. R.B. Beckett (ed.), *John Constable's Correspondence IV: Patrons, Dealers and Fellow Artists*, Ipswich, Suffolk Records Society, 1966, p. 129.
  65. See Fig. 11. Painted the year before Constable finally gave up outdoor oil sketching, his palette is simply reduced to the primary colours plus white and black. The strong green is a mixture of Prussian blue and chrome yellow. The vibrant salmon-pink ground enhances the glow of the setting sun on the landscape while the brushwork is reduced to a few notational strokes. The crisp white impasto was probably flattened while still partially wet as the sketches of the day were piled into the lid of the sketching box (Fig. 6) for transport back to the studio.
  66. *The Lock*, 1825 (cited in note 34). Limited edition individual sale catalogue, with essays by J. Gascoigne, Anne Lyles, Conal Shields, David Moore-Gwyn and Sarah Cove, Sotheby's, London, 2015.
  67. Most of the exhibition catalogues are now out of print however they can usually be obtained from specialist booksellers.
  68. Reynolds 1996 (cited in note 29).
  69. The acquisition was part of a new partnership, Aspire, between five national and regional galleries: Amgueddfa Cymru – National Museum Wales; The National Galleries of Scotland; Colchester and Ipswich Museums; The Salisbury Museum; Tate Britain.
  70. See F. Moyle, 2016. *The Extraordinary Life and Momentous Times of J.M.W. Turner*, London, Penguin.



71. At [www.facebook.com/constable.research.project](http://www.facebook.com/constable.research.project) and Twitter: #ConstableRProj @LoveConstable.
72. *Fake or Fortune? Constable*, BBC One, first shown on 26 January 2014. Clips from the programme can be seen at: <http://www.bbc.co.uk/programmes/b03srsjl>; <http://www.bbc.co.uk/programmes/p01q3rvj>; <http://www.bbc.co.uk/programmes/p01q3r4y>. A second Constable programme for series 6 is currently in production for summer 2017.
73. This is in addition to consultancy work for private collectors, art dealers and salerooms.
74. *A Red-Tiled Cottage by a Wood with Windmill and Rainbow*, c.1832–34, oil on canvas, 32.8 × 42.3 cm (12<sup>1</sup>/<sub>16</sub> × 16<sup>1</sup>/<sub>16</sub> in.), private collection. S. Cove, 'A "Jackson Pollock" for the 1830s: painting materials and techniques in *A Red-Tiled Cottage with Rainbow and Windmill*', online catalogue essay, Sotheby's Old Masters Evening Sale, 5 July 2017 (forthcoming).
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# TURNER'S *REGULUS*: A TALE OF VIOLENCE, ABUSE AND ACCIDENT, ILLUMINATED BY TECHNICAL STUDY

Joyce H. Townsend, Rebecca Hellen and Ian Warrell

**ABSTRACT** J.M.W. Turner's celebrated *Regulus* was one of three pictures that he painted and first displayed in Rome in 1828. Curiously, after returning from Italy, *Regulus* was not, unlike its companions, presented at any London exhibition venue until 1837, when Turner sent it to the British Institution rather than the Royal Academy. He is known to have reworked the sky during the 'varnishing days' before this exhibition opened. John Gilbert's description of this repainting process has gained a legendary status; however, it appeared much later and its veracity needed to be interrogated. Two sketches showing Turner transforming *Regulus* provide further clues on his working methods on varnishing days. This paper matches new documentary with technical evidence to explore the practical reasons why Turner needed to adjust his image, the materials he employed, and how extensively he used them. The painting has been studied with typical microscopical and imaging methods. In addition to the damage sustained by *Regulus* after its return from Rome, the paper reveals an iconoclastic attack in the 1860s, as well as a more minor 20th-century incident, all of which have contributed to its appearance and condition today. In fact, the painting's entire history can be observed within the paint surface, but making sense of its condition through the technical evidence was only possible in conjunction with the new archival research.

## Introduction

The prestigious annual exhibition of the Royal Academy of Arts, London, ran from late April to June, organised by its members for the public display of their works. It was then (as now) a forum in which reputations were made and pictures sold. J.M.W. Turner (1775–1851) was one of the most dominant figures there in the first half of the 19th century, and between 1796 and 1850 there were only four years in which he did not display oil paintings (1805, 1821, 1824 and 1848). In 1805, however, dissent among members and between the academy and its patron, the king, led to the formation of a rival body, the British Institution, which thereafter also staged an exhibition each year.<sup>1</sup> The aim of the aristocratic connoisseurs who founded the British Institution was to nurture native talent by encouraging imitation of old master prototypes. Although Turner showed there erratically, he remained unhappy about the limitations of its prescriptive direction, and from 1836 onwards tended chiefly to submit works he had not been able to sell at the academy.

Throughout his career Turner famously made last-minute revisions to his exhibited works at both of these venues. Once the paintings had been hung, it had long been customary for

artists to retouch areas that had sunk or to repair damage to barely dried paint when damaged in transport. Both exhibition organisations offered a number of 'varnishing days', varying from two to five over different years, as recorded in the official minutes. The British Institution led the way, formalising this measure in 1808, followed a year later by the Royal Academy.<sup>2</sup> Many artists besides Turner took advantage of these days to tone their works to best advantage once they had judged how the position of a painting was affected by factors such as height, lighting and its relationship with rival works hanging nearby.<sup>3</sup> While Turner was therefore not alone in modifying his pictures, over the years his interventions were increasingly watched with bemused fascination in the hope of gaining insights into his usually secretive processes. Some revisions reveal his generosity to fellow exhibitors, others his mischievous desire to outshine his neighbours. Because of his ability to alter a picture so significantly through the addition of relatively small amounts of paint, perceptions of what he actually did on varnishing days have become distorted today, creating the myth that he not only tweaked and finished his framed paintings during the permitted time, but that he sometimes did substantially more.





**Fig. 1** (a) J.M.W. Turner, *Regulus*, 1828 reworked 1837, oil on canvas, 895 × 1238 mm, Tate N00519, B&J292; (b) raking light from the left; (c) X-radiograph with 1828 tear and later damages marked in red – the crosses show the more minor losses of paint; (d) shown in UV light. (Photos © Tate.)

The subject of Turner's varnishing day 'performances' has often been discussed,<sup>4</sup> most recently by one of the authors,<sup>5</sup> who has evaluated the relationship of the celebrated anecdotes to the technical evidence. Her research and the present study grew out of speculation as to the causes of Turner's revisions to *Regulus* at the time of the multi-venue *Turner and the Masters* exhibition at Tate Britain in 2009.<sup>6</sup> The painting therefore underwent a technical examination in 2012 when it returned to Tate. *Regulus* (Fig. 1a) was studied using a variety of examination techniques: the surface and paint samples were viewed at up to ×100 with a stereomicroscope; with raking light (Fig. 1b); using film-based X-radiography (Fig. 1c); with ultraviolet (UV) examination (Fig. 1d); as well as energy-dispersive X-ray analysis. The results of these investigations inform this paper and are accompanied by new documentary discoveries on the painting's eventful history.

### Painting *Regulus*

Turner's interest in the Roman consul Marcus Atilius Regulus (c.310–c.250 BC) can be traced back to his exploration of classical myth and history in the first decade of

the 19th century. One of his attempts at poetry in 1811 indicates his admiration for the legendary self-sacrifice and patriotism of Regulus, which had served as a moral exemplar throughout the 18th century.<sup>7</sup> Regulus had been a successful Roman general who won the conflicts to the east of Carthage in 256 BC; however, he was defeated and captured the following year. According to tradition, he was permitted to go back to Rome to negotiate a peace favourable to the Carthaginians, but he also promised to return to Carthage as a prisoner if the terms were not accepted. Once on Roman soil, he defiantly stirred up the populace to fight again before returning honourably to Carthage and an inescapable fate. Accounts of his death vary, but one of Turner's sources was his copy of Oliver Goldsmith's *Roman History*, which described the imprisonment of the general at Carthage for four years. His captors then cut off his eyelids and exposed him to the glare of the sun until he was blinded. In a grisly finale, Regulus was placed in a spiked barrel which, according to some versions, was then rolled down a hill. When drawing up a list of potential subjects inside his *Roman History*, Turner's first intention was to represent the moment 'Regulus returns', which his own poem indicates was to Rome (rather than Carthage), thereby choosing a moment when the consul's violent end was not yet certain.<sup>8</sup>

The painting Turner eventually created (Fig. 1a) apparently evokes an earlier point in the story, as Regulus embarks for Rome, and is much more complex and oblique in its treatment of the narrative. Nevertheless, for Turner's viewers, the threat of impending violence was implicit in the subject.

A key visual source for the picture was Claude Lorrain's *Seaport with the Villa Medici*, which Turner studied closely and transcribed while at the Uffizi in Florence, on his way back from Rome early in 1820.<sup>9</sup> He already knew of other examples of Claude's harbour scenes, but would later structure *Regulus* around almost exactly the same components, balancing buildings with shipping. In addition to the recognisable Renaissance Roman landmarks flanking his harbour, Claude featured the large lighthouse at Genoa, the *lanterna*, which Turner saw for himself in 1828 en route to Rome a second time. Before arriving in the Eternal City that year, he passed through Florence again, giving him a further opportunity to view Claude's canvas.

### The Roman paintings of 1828 ...

Once in Rome that October, Turner rented studio space at 12 Piazza Mignanelli, near the Spanish Steps, then also occupied by the young Charles Lock Eastlake (1793–1865). Despite research by Powell<sup>10</sup> and other scholars since, little has emerged to shed light on the studio setup. There was clearly some creative exchange between the two artists, despite the discrepancies in their age and status: Turner was 53 and Eastlake 35.

Turner arrived with an expressed desire to paint in oils. This contrasts with his previous visit in 1819, when (contrary to prevailing trends) he had not sketched in oils but only in pencil and watercolour. By the time he left in January 1829 he had completed at least four, probably five, exhibitable pictures.<sup>11</sup> He had also made a start on perhaps as many as six further compositions including large figurative subjects and landscapes. It was his usual habit to work on several compositions simultaneously although not all were eventually completed. These mostly unfinished paintings can be divided into three types. The largest group have common 'Roman' features that are distinct from his usual supports and stretchers, as documented elsewhere.<sup>12</sup> Although several were lined in the 1950s–60s, conservation records indicate that the supports are made from a very coarse, plain- and open-weave canvas (around 9 threads per centimetre for both warp and weft). The canvas was fixed to roughly cut softwood stretchers with 'sprigs': long, fine nails with their heads knocked sideways into the stretcher (Fig. 2). Other artists visiting Rome from northern European countries, such as the influential Dane C.W. Eckersberg, used similar locally sourced coarse canvases, primed after stretching.<sup>13</sup> For Turner's canvases, the priming consisted of two layers of lead white and chalk, the upper layer containing a tiny amount of yellow-brown ochre. This corresponds with the fairly absorbent primings that Turner favoured more generally, so it seems likely they were prepared to his specifications in Rome.



**Fig. 2** The sprigs that attach the unprimed canvas of *Two Recumbent Nudes* to its locally sourced Roman stretcher with string and residual red (sealing) wax applied to the centre of the right edge. (Photo © Tate.)

A second category consists of two unfinished works painted on canvas with a fine, twill weave. These have been trimmed and lined, destroying evidence of their attachment to the stretcher; consequently it remains a possibility that this pair was not started until Turner was back in London.<sup>14</sup> As for the third Roman group, Turner had anticipated a discrepancy between local practice and his own preferences. He wrote to Eastlake from Paris while heading south (evidently supplementing a previous request), asking him to find two canvases with 'the best of all possible grounds' for a picture he planned to paint for Lord Egremont.<sup>15</sup> The resulting picture was *Palestrina – Composition*,<sup>16</sup> which has quite a different support of fine, plain-weave canvas (about 18 threads per centimetre in warp and weft), not dissimilar to those he might have used in London. Eastlake had clearly been successful in finding appropriate materials, which might well have been exported from Britain. The identity of the other canvas is not immediately obvious, but the most likely candidate seems to be *Landscape: Christ and the Woman of Samaria*: not one of Turner's own titles and not a work previously linked with the 1828 visit.<sup>17</sup> In addition to its thematic links with the Egremont commission, this canvas appears to resemble that of *Palestrina* based on the weave count from a photograph (without a scale bar) in the conservation record.





**Fig. 3** Daniel Wilson after J.M.W. Turner, *Ancient Carthage – The Embarcation of Regulus*, 1838, line engraving on paper, 384 × 569 mm, Tate T05788, Rawlinson 649. (Photo © Tate.)

In mid-December, Turner staged a one-man show in the Palazzo Trulli (since demolished) in the Via del Quirinale, featuring three new works: *Vision of Medea*, *View of Orvieto* and *Regulus*. Lasting for just a couple of weeks, the exhibition attracted around 1000 visitors. These included many international artists based in Rome, dominated by French and Germans, who were disgusted by the freedom of Turner's application of paint; they even invoked the old saying '*Cacatum non est pictum*' (It's shit; it's not painting!).<sup>18</sup> Turner also shocked these visitors with his casual display of the pictures, which Eastlake recalled were framed only by nailing a rope around the edges of each canvas and painting it 'with yellow ochre in tempera'.<sup>19</sup>

Of the pictures displayed, *Regulus* was almost certainly the first to be painted, apparently completed by early November in less than a month. His work in Rome had created considerable curiosity among his peers, so he told the sculptor Francis Chantrey that he had produced this first canvas 'to stop their gabbling'.<sup>20</sup> In the context of Rome, where Claude's achievement as a landscape painter had been nurtured and remained an ongoing influence, Turner's obvious pastiche was a somewhat brazen attempt to call attention to his comparable skills. Habituated to his manner and his vibrant colouring, Turner's compatriots in Rome largely judged the three pictures favourably. Joseph Severn, for example, wrote that 'Turner's works here were like the doings of a poet who had taken to the brush'.<sup>21</sup> Talking more specifically about *Regulus*, Eastlake noted that it was 'a beautiful specimen of his peculiar power, yet the wretches here dwelt more on the defects of the figures and its resemblance to Claude's compositions than on its exquisite gradation and the taste of the architecture. The latter was perfect for beauty of design, more Italian than Italy itself'.<sup>22</sup>

### ... and the technical evidence

Some of what was visible to Eastlake can still be seen in the picture, particularly on the right side of the image, which remained largely unaltered by later revisions. The outer edges of the canvas indicate that the sky was a brighter blue (like the skies in *View of Orvieto* and *Palestrina*), painted with natural ultramarine and pale chrome yellow, Turner's favourite yellow pigment in the later 1820s. There is also evidence from a cross-section that a natural resin varnish was applied over this paint while it was still barely dry, prior to its exhibition in Rome.

### Interpretations of *Regulus*

Turner's rendering of Regulus's narrative, with the dazzlingly bright sunlight funnelled over the water, has been interpreted in several ways and the title of the work has fluctuated accordingly, ranging from Turner's simple, eponymous one-word title to *Ancient Carthage – The Embarcation of Regulus* or *Regulus Leaving Rome*. Quite where we are, or what is actually taking place, appears to be of secondary importance to the overall effect of sunshine. Indeed, as reviewers in 1837 would later note: 'The picture has about as much to do with Regulus as with any other individual that ever placed foot upon Italian soil'.<sup>23</sup> As we see it now, the sun's rays permeate the whole image, catching the sides of buildings, and its warmth is almost a physical presence so that it becomes the principal actor within the image. The prominent position of the sun is ultimately derived from Claude's seaports, which Turner had referenced earlier in

1828 in his most recent treatment of the story of Queen Dido of Carthage.<sup>24</sup> As in the reviews of preceding years, critics had protested about the brilliance of that painting's sunlight, objecting to Turner's 'despotic ... sway over the sun,' and had suggested that viewers should veil their sight or 'be over-powered by the glare of the violent colours here assembled.'<sup>25</sup> In view of such comments, printed just months before *Regulus* was painted, the smaller painting's restatement of the same prototype takes on the status of a personal manifesto and an emphatic act of defiance by Turner.

In terms of its ostensible subject, the most obvious link with the *Regulus* tradition is the figure on the left, shielding his eyes and standing next to an open barrel. However, according to Daniel Wilson, who produced an engraving of the image under Turner's supervision in 1838, *Regulus* is the tiny figure, highlighted in white, amid the crowds on the terrace to the right, in the middle distance (Fig. 3, with detail in Fig. 8).<sup>26</sup> Wilson's image was published as *Ancient Carthage – The Embarcation of Regulus*, presumably a title sanctioned by Turner with the intention of encouraging the viewer to meditate on the full sweep of *Regulus*'s heroic actions as he departed for Rome and not just his tragic death. This unconventional marginalisation of the central drama has not convinced all scholars. It is very different from the pictures by Claude in the National Gallery, London, which depict the influential (for Turner) embarkations of St Ursula or the Queen of Sheba in which the protagonists may be marginal in scale but are easily identifiable.

Since the 1960s, when the idea was first put forward by Gage,<sup>27</sup> a common reading of the image has been to propose that the viewer takes the role of *Regulus*, forced to stare into the blinding light. Developing this theory, it has been suggested that Turner must also have had in mind the sight impairment suffered by three notable contemporaries, including his friend Sir David Brewster, in the course of their research into optics.<sup>28</sup> The symbolic force of this interpretation presupposes that light itself can be corrupted as a destructive agent; however, the real cause of pain in the *Regulus* narrative is man's inhumanity to man.

In any of these cases, however, we need to remember that the effect of the sun was possibly not quite so intense when Turner first exhibited the picture, and that it only acquired its more emphatic role in the image later, in 1837. Similarly, the ongoing discussion of these interpretations forms part of a wider acceptance that Turner's images often possess layers of symbolism and allusion that permit multiple interpretations.

## Transporting art from Italy

The process of conveying artworks back to Britain from Rome remains an under-researched area, but has begun to attract some interest in recent years.<sup>29</sup> Particularly useful is the detailed study of the *Westmorland*: an armed merchant ship which sailed from Livorno bound for London in 1778–79 with a cargo of books, paintings, sculptures and other artefacts acquired by returning grand tourists and dealers.<sup>30</sup>

Because the vessel was captured by the French and then taken to an allied Spanish port, many of these objects remain together in the national collection and the national art school of Spain, along with the ship's documents. While this provides an invaluable snapshot into the practical and economic factors underlying the formation of British art collections in the 1770s, it is likely that many of the processes documented in the history of the *Westmorland* continued to pertain into the early 19th century.

By the 1770s, there were specialised shipping agents in Italy who arranged warehousing, insurance and the transport of art. One British house was Hodgson and Earle, a company based in Livorno with family links to Liverpool.<sup>31</sup> Another port used by British exporters was Civitavecchia. Agents would also have overseen the payment of customs duty, although in the case of artworks, it was later arranged by Antonio Canova (in his official administrative role) that artists should not pay to export their own handiwork.<sup>32</sup> Despite the development of carriers specialising in fragile objects, caution was still advisable in ensuring the safe conveyance of prized objects. One of the collectors whose possessions travelled on the *Westmorland* had personally overseen the packing (with sawdust inside the case) and the closing of the shipping crate. He then prevented the usual perilous transit of cases from shore to ship using a sling, instead arranging for the crate to be hand-carried on board. Artists inevitably agonised about sending their paintings by sea but the long voyage was a cheaper and generally safer option than conveying bulky objects over the Alps. By the 1820s the shipping of art may have been more organised, but until the introduction of steam power, first on sea and later on land, the duration of the journey between Italy and England remained much the same, taking a minimum of three to four months.

## *Regulus* leaves Rome for London: the first damage and lining

After its display in Rome, it was assumed (by Eastlake at least)<sup>33</sup> that *Regulus* and the *View of Orvieto* would soon be exhibited in London. It is clear that Turner travelled back without them, and that they and his other paintings were transported using the longer sea route, apparently insured for 500 guineas.<sup>34</sup> His letters in 1829 indicate his hopes that all his new works would reach London during the spring, with the Royal Academy in mind. In fact, his anxieties were prolonged until 20 July, when they finally arrived, by then far too late for that year's exhibition. In alerting Eastlake to this news a few weeks later, he reported that his friend's picture had been slightly damaged at the exhibition but noted with relief that his own canvases had survived the homeward journey 'perfectly safe as to condition.'<sup>35</sup>

Two of the larger Roman canvases remain on their original stretchers, secured by the distinctive sprigs, and others were only re-stretched in the 1950s–60s.<sup>36</sup> This confirms that they were not removed and rolled in order to be transported



more compactly between Rome and London. Significantly, Turner noted in the same letter to Eastlake that their colleague William Linton had been angered to find his canvases rolled by the transport agents Smith and de Santis, manifestly contradicting his instructions. Turner's decision to leave his works on their original stretchers was therefore not unusual, but probably awkward for the shippers. These unwieldy objects (most with dimensions of over 2 m) were probably packed together by size in one or more crates. String and sealing wax survive on one of the original stretchers (Fig. 2), presumably from the packing. In addition to his paintings, Turner was responsible for the carriage of a fragment of classical sculpture (now at Petworth House, Sussex), an expensive acquisition that he had overseen on behalf of Lord Egremont. Therefore, his fears for the loss of these consignments were inextricably bound up in his renewed connection with this important patron.

The passing reference to the safe arrival of the pictures in July 1829 is all we have to document the presence of *Regulus* in London as Turner did not mention it again in any of the surviving correspondence. Furthermore, unlike the other canvases he had exhibited or finished in Rome, it was not shown in the years immediately following his Italian trip at the Royal Academy; both *Orvieto* and *Palestrina* appeared there, after some repainting on the varnishing days, in 1830, and *Vision of Medea* followed a year later. It remains a possibility that he had not checked all the canvases systematically by August 1829, and that he only subsequently discovered that *Regulus* had been damaged.

### ... and the technical evidence

This damage took the form of a large tear in the sky, shaped like a reverse question mark as noted in the Tate conservation record by the mid-20th century. Nevertheless, it was not then observed that ageing cracks in the thickly reworked sky around the tear indicated that the damage was repaired and heavily disguised by Turner some years before his work on the varnishing days of 1837. In order to disguise the extent of the damage, he repainted almost a quarter of the canvas, mostly in the sky. Raking light (at an acute angle) suggests the repair involved stitching. The canvas would also have been lined with heat and pressure using glue-paste adhesive as was common in Britain. It is unclear who did this for Turner, although several of his earlier pictures are known to have been treated by William Redmore Bigg.<sup>37</sup> The lining we see today dates from somewhat later, as will become apparent.

As to potential domestic causes of the damage, perhaps a clumsy attempt to move pictures on his own without the assistance of his father (who had died in 1829) resulted in the accident. Whether dropped or toppled from a stack of paintings, it would have needed a forceful impact onto something hard and unyielding to result in such a large and complex tear in young and still strong canvas. Perhaps it fell onto a protruding piece of furniture or the corner of a frame?

### *Regulus* transformed: the varnishing days of 1837 ...

Why Turner eventually decided to redisplay the picture has not generally been considered. Realistically, he cannot have hoped it would sell: between 1829 (when he returned from Rome) and 1837 (when *Regulus* was shown at the British Institution), Turner exhibited 41 oil paintings in London, of which merely 17 were sold. Just as significantly, of the six classical subjects he exhibited in these years, only one had found a buyer. Consequently the number of works that returned unsold stacked up, cluttering his gallery on Queen Anne Street, London.

On a positive note, by the mid-1830s Turner was attracting new collectors, the most significant of whom was H.A.J. Munro of Novar (1797–1864), who accompanied Turner on a sketching tour of the Alps in 1836. Among Munro's acquisitions was the *Rome, from Mount Aventine*,<sup>38</sup> which was begun in Rome in 1828 on a canvas secured by sprigs yet had been exhibited only in 1836. This suggests that by 1836 Turner was reassessing earlier canvases that had remained unseen since they had arrived back in London in 1829. How much work he needed to do to complete this image is not known, but whatever revisions were required took place in the studio because there are no stories of varnishing day transformations for the 1836 exhibition.

The likelihood that *Regulus* was unearthed as part of the same process that brought *Rome, from Mount Aventine* to light does not explain why, after being patched-up, Turner decided to send it to the British Institution, rather than to the Royal Academy. As noted earlier, in the 1830s he seems to have viewed the institution as a kind of clearance sale for pictures that had failed to sell at the academy the previous year, although there is no evidence that he dropped his prices accordingly when works appeared there. Another consideration, borne out by Turner's boldness in first showing it in Rome, is that he probably considered *Regulus* an instructive work (like his controversial *Appulia in Search of Appulus*, which he had exhibited at the British Institution in 1814). By showing it in 1837, he may have intended to offer a didactic contemporary example of how Claude could be updated.<sup>39</sup>

A further relevant factor was that the Royal Academy had staged its last exhibition at Somerset House in 1836, and so its exhibition in 1837 was to be the first in its new premises in Trafalgar Square (today the east wing of the present National Gallery, London). The move was guaranteed to attract huge interest and greater scrutiny. For Turner and his fellow Academicians, all the established attention-grabbing tactics relevant to the Somerset House rooms were no longer valid; everything had to be reinvented for a new stage. It is hardly surprising, therefore, that this exhibition featured three of the largest canvases Turner had shown for many years, but none of the smaller works, such as *Regulus*, that were in his standard format of 3 × 4 ft (91 × 122 cm). Nevertheless, he perhaps felt that *Regulus* was worth showing somewhere at a time when Munro and others were at last pursuing his works. He had already disguised the extent of the damage to the sky, but clearly felt the picture still needed rethinking or some

kind of resolution. This was where his legendary skills as a last-minute transformer of his exhibits came into their own.

Like the Royal Academy, the British Institution still offered a number of 'varnishing days' for artists to make final revisions to their canvases. In 1837 the private view in the institution's galleries on Pall Mall took place on Saturday 28 January. Turner was not named in the press among those who attended,<sup>40</sup> but he was certainly present earlier in the week, on the two (or more)<sup>41</sup> varnishing days that year, in order to paint over the area of ripped sky in the painting. It evidently did not take long before his fellow artists were captivated by his work.

Although there are several well-known instances of Turner reworking or resolving his pictures, this event is the only instance for which we have both a written account of the process and two painted depictions of him at work (Figs 4 and 5). Even so, they concur sufficiently in many details to indicate they are a substantially fair record. Both suggest that Turner worked with a palette and a fistful of (medium to large) brushes, as well as a range of materials in small vessels that he spread about him. He was also equipped with a good supply of rags (or handkerchiefs) – something that is consistent with the localised application and wiping out of megilp – to add drama and contrasts in gloss to the sunlit areas.

The larger and more detailed depiction (Fig. 4) is by the Norwegian landscape artist Thomas Fearnley (1802–1842), who worked in Britain between 1836 and 1838.<sup>42</sup> For his generation, Turner's standing as a landscape artist was insurmountable even if his idealisation of form and exaggeration of colour was increasingly at odds with the contemporary taste for naturalism. Fearnley was no doubt awed, but not really an admirer; indeed some of his correspondence suggests strong reservations. These perhaps informed the slightly satirical image he created of Turner, whose diminutive stature is emphasised by enlarging the canvas he is painting, as well as recording his need to stand on a bench to work on it. Fearnley additionally suggested that the glare from the picture was so intense that it caused shadows and provided Turner himself with a shimmering halo effect. The orb of the sun is positioned high in the image, very close to his head, seemingly proposing that he is the one blinded by its light.

The second picture (Fig. 5) depicts essentially the same scene and was possibly painted in playful competition with Fearnley by his British associate Charles West Cope (1811–1890).<sup>43</sup> However, Cope foreshortened *Regulus*, giving it a smaller and much squarer format, roughly similar to the nine works of this shape Turner would exhibit between 1840 and 1846. As in the Fearnley sketch, the forest of masts at the left edge of Turner's canvas means that it is unambiguously recognisable as *Regulus*. Cope's small format and card support, as well as its simple wet-in-wet painting, is perhaps more indicative of something created *in situ* than Fearnley's version.

Compared with the coverage that the Royal Academy exhibition regularly generated, the one at the British Institution attracted surprisingly little press attention. The *Morning Chronicle* considered that the show was 'not of a very striking character for individual excellence,' adding, rather jadedly:



Fig. 4 Thomas Fearnley, *Turner on Varnishing Day – The British Institution*, 1837, oil on paper laid on boards, 230 × 235 mm, private collection, Norway. (Reproduced with permission.)



Fig. 5 Charles West Cope, *J.M.W. Turner Painting at the British Institution*, 1837, oil on card, 159 × 130 mm, National Portrait Gallery, London, NPG 2943. Given by the artist's son, Sir Arthur Stockdale Cope, 1938. (Photo © National Portrait Gallery, London.)

'There are, to say the truth, few great names in the catalogue ... and a more liberal supply of "fruit pieces" and "still life" than we should exactly wish.'<sup>44</sup> Given these lower artistic expectations for the exhibition, it is less surprising that something (to us) extraordinary, such as Turner's repainting of *Regulus*, was



missed by the press. Perhaps details were preserved in artists' diaries or in correspondence that has not yet come to light; on the other hand, since Turner's varnishing day behaviour was by then well known, it may have seemed less remarkable to the older artists present.

One artist who witnessed Turner was John Gilbert (1817–1897) who, even though he was not yet 20, was beginning to establish his reputation. Gilbert submitted two illustrations of Scott's novels, which Gage has speculated possibly hung opposite *Regulus*.<sup>45</sup> Watching Turner at work left a profound impact, but it was not until 45 years later, in 1882, that Gilbert recounted the incident to George Scharf (1820–1895), the first Director of the National Portrait Gallery, London, who in turn passed the details on to his successor Lionel Cust (1859–1929). While the account preserves the marvelling observations of an impressionable young man, this form of 'Chinese whispers', perhaps accompanied by the distortions of time and memory, should be taken into account in assessing Gilbert's description.<sup>46</sup>

[Turner] had been there all morning, and seemed likely, judging by the state of the picture, to remain for the rest of the day. He was absorbed in his work, did not look about him, but kept on scumbling a lot of white into his picture – nearly all over it ... The picture was a mass of red and yellow of all varieties. Every object was in this fiery state. He had a large palette, nothing on it but a huge lump of flake-white: he had two or three bigish hog tools to work with, and with these he was driving the white into all the hollows, and every part of the surface. This was the only work he did, and it was the finishing stroke. The sun, as I have said, was in the centre; from it were drawn – ruled – lines to mark the rays; these lines were rather strongly marked, I suppose to guide his eye. The picture gradually became wonderfully effective, just the effect of brilliant sunlight absorbing everything and throwing a misty haze over every object. Standing sideway of the canvas, I saw that the sun was a lump of white standing out like the boss on a shield.

Since 1969, when this passage was first linked with *Regulus*, it has been frequently quoted as representative of Turner's activity on varnishing days.<sup>47</sup> However, to do so overlooks the special circumstances that caused him to intervene in reshaping the appearance of this canvas in 1837. Furthermore, Gilbert's account has not previously been tested against what can be detected in the picture itself.

### ... and the technical evidence

Generally it has been rightly assumed that Turner's repainting was confined to the sky, but it is now possible to offer greater detail about what he effected through his revisions. The repair discussed earlier meant that the sky had already been substantially reworked. In fact the paint of the yellow

sky is inordinately thick (even for a Turner oil from the 1830s), measuring 2–3 mm near the sun's orb. A wax-based yellow impasto was applied with a palette knife,<sup>48</sup> which had been necessary to ensure that the repair was not visually distracting. It is worth noting that many of Turner's thickest applications of impasto in his later paintings also appear to include wax as a medium modifier. This reworking helped give emphasis to the orb of the sun just below the tear, something now best seen in raking light (Fig. 1b). Gilbert's account claims that this detail formerly stood proud 'like a boss on a shield', but there seems to be insufficient texture in the area to suggest a previously raised disc of paint. Another questionable detail in Gilbert's account is the idea that Turner imposed 'ruled lines' radiating out from the sun, since no physical evidence remains to justify this claim.

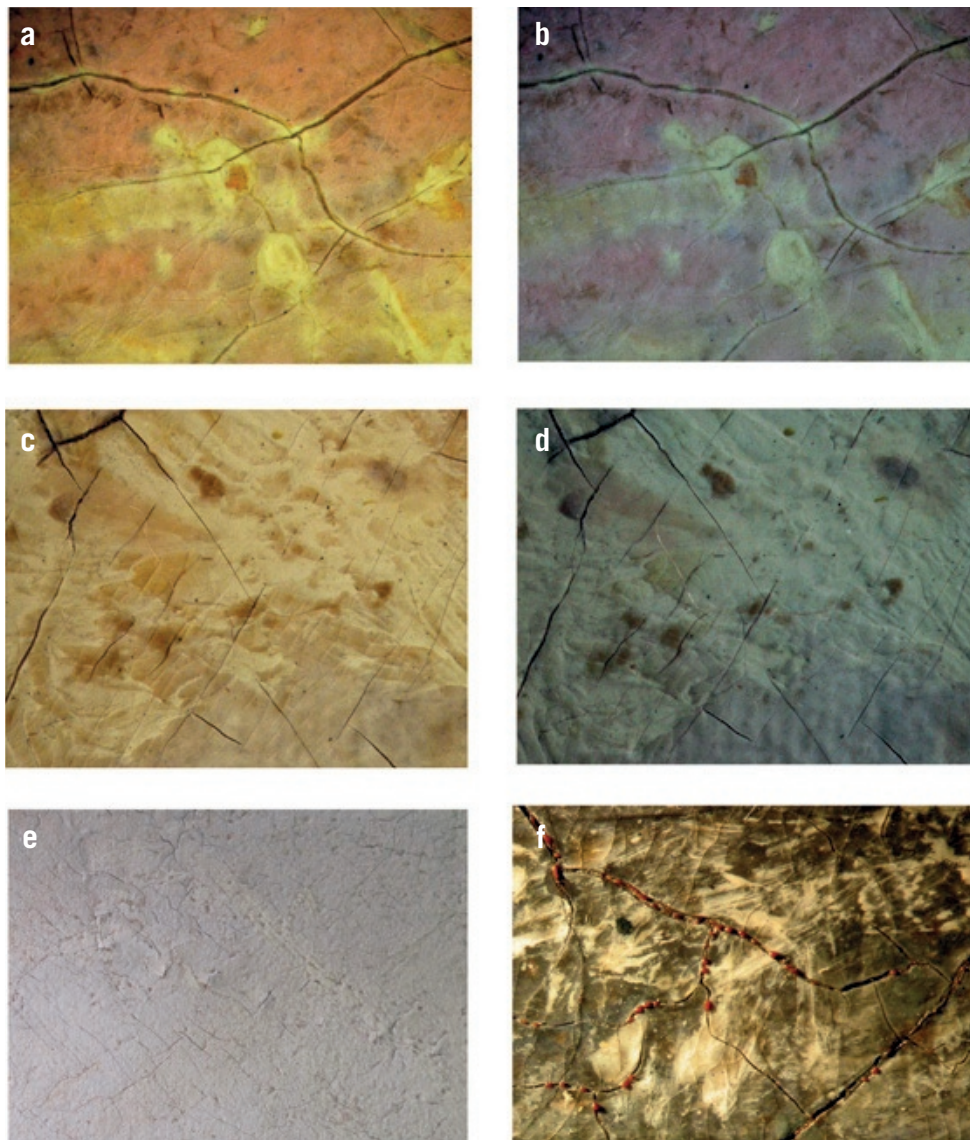
A paint sample from a recent retouching over the mended tear proved especially illuminating. Not surprisingly, it fractured and flaked (and is therefore not illustrated), since it included numerous layers:

- the priming
- the bright ultramarine and lead white for the Roman sky
- the natural resin-type varnish layer applied in Rome
- a number of thick and overlapping brushstrokes of yellowish paint, in a brittle wax and oil formulation (as suggested from the UV image), this being Turner's reintegration of the image following the tear mending
- a thinner reworking in brighter chrome yellow and red lake, which was very medium-rich, with a fluorescence more suggestive of natural resin or megilp, than wax.

This corresponds to Turner's work at the British Institution.

- Finally there was a natural resin type varnish, probably not original and therefore not Turner's, with substantial modern retouching on top.

The thin reworking noted can also be discerned as a thin and localised glaze-like application running over ageing cracks in the sky. It is most readily seen as curving strokes directly above the sun's orb and near the top of the canvas, where red lake is more prevalent than yellow pigment (Fig. 6). Elsewhere, the same mixture was used to strengthen the masts, for the reflections of buildings, and many elements towards the sides of the canvas. In the water it was combined with cobalt blue for the waves. Fig. 1d highlights the localised extent of the additions because the UV image renders these areas more yellow-white and less milky than the extensive pale yellow wax-based paint that disguised the mended tear. This fluorescence and the fine fracturing and cracking of its surface suggest megilp. Recent technical studies at Tate of paintings that Turner is known to have reworked on varnishing days have identified the common usage of a material that matches the appearance and UV fluorescence of analysed samples of lead acetate megilp. Since megilp dried (and cracked) quickly, it would be possible to achieve the kind of atmospheric revisions described by Gilbert. This material was presumably what he calls a



**Fig. 6** Details from *Regulus*. (a) and (b): Sky above the repaired tear, thin brushstrokes of weakly fluorescent red lake glazes from the varnishing days running over the cracked paint of the yellow sky reintegrated by Turner, imaged at  $\times 20$ , in visible and UV light. (c) and (d): Yellow sky reintegrated by Turner, running over cracks in the bluer sky exhibited in Rome, imaged at  $\times 20$ , in visible and UV light. (e): The tear after reintegration by Turner, and one lining. (f): The effects of two glue-paste linings on a highlight in the water. (Photos © Tate.)

‘huge lump of flake-white’, which was used extensively to dull down the ‘fiery’ red and yellows that were apparently the predominant colours before the transformation at the British Institution.<sup>49</sup>

## Responses to *Regulus* from 1837 to 1856

After Turner’s transformation of *Regulus* was complete, with its intensification of the sunlight, it featured in several reviews, all of which commented on the brilliance of the effect, for example:

His sun absolutely dazzles the eyes. Those who have never beheld the glorious orb in other climes, undimmed by the mists and vapours which ‘tone it

down’ in our northern regions, will probably think Mr Turner’s representation of it too brilliant. They may depend upon it, they are wrong.<sup>50</sup>

Elsewhere there were complaints:

*Turner* has so often repeated his wonderful *tours de force* of painting a blaze of sunlight with all the vividness and intensity of nature, that his splendours begin to pall upon the eye, and the mind craves something more satisfactory than a glare of light, to which a whole picture is sacrificed. As in reality a dazzling sun before the eye obscures the landscape, and makes one glad to look another way, so it is with *Turner’s* gorgeous effects – we wish the sun were out of the picture ... The only way to be reconciled to the picture is to look at it from as great a distance as the width of the gallery will allow





Fig. 7 Samuel Bradshaw, after J.M.W. Turner *Regulus Leaving Carthage*, 1859–61, print on paper, 211 × 268 mm, Tate T06333, Rawlinson 723). (Photo © Tate.)

of, and then you see nothing but a burst of sunlight. This is scene-painting – and very fine it is in its way.<sup>51</sup>

Although this particular critic was often supportive, this seems like damning with faint praise. Combined with the few other responses, it is hardly surprising that the picture was yet another sent home to Turner unsold.

Of broader interest, there was an apparently new development at the British Institution: gas lighting. A note on the last evening of the exhibition, during which the galleries had been illuminated, stated: ‘the effect of gas upon the works exhibited was extremely good. Those pictures which by daylight have appeared deficient in tone, were, through this medium, divested of their crudities.’<sup>52</sup> Very pointedly, without mentioning Turner’s name, the article continued: ‘while others that may have seemed overcharged with gaudy colours, were sobered down to a key that is more in unison with the truth of nature.’ Although catering to the standard critique of Turner’s colouring at this date, the comment raises an important question: since gas lighting had been available from the 1820s, is it possible that Turner worked with this form of lighting in his studio? If so, might this have been a contributing factor in his use of strong colours, which also had a bearing on his constant need to revise his pictures once they were *in situ* in the exhibitions? Clearly further research is needed on this point.

Despite the lukewarm response at the British Institution, Turner clearly continued to believe in the significance of *Regulus* and remained hopeful of a future sale. This is clear from his willingness to permit it to be engraved by the young Daniel Wilson (1816–1892), newly arrived in London from Edinburgh. Wilson had trained with William Miller

(1796–1882), one of the finest of the engravers who reproduced Turner’s images. He lobbied Turner for the opportunity to translate one of his works from colour into black and white, and was offered only *Regulus*. As he said, ‘It was not the one I would have chosen, but it was triumph enough to get one of his choice.’<sup>53</sup> Remarkably, although he worked closely with Turner over several months, Wilson remained unaware that the picture had been exhibited prior to its appearance at the British Institution.

The print (Fig. 3) was published in 1838, but it was not until 50 years later that Wilson wrote a very considered and useful account of the process. There was some initial discussion of the scale to which the picture would be reduced, which was eventually less than half of the dimensions of the original. Although Wilson’s proportions fractionally trimmed the top and bottom of the image, the width was slightly extended, causing Turner to introduce additional masts on the left-hand side during the proofing stage. As is common in the engravings based on Turner’s images, many details that are indistinct in the painting are clarified, presumably through discussion or compromise, especially in the treatment of the figures. The most important thing for our purposes is to compare the sky and the sun’s reflection in Wilson’s version with their current appearance in the painting. The print possesses a crisper linear definition of the rays fanning out on either side, as well as a suggestion that some clouds floated more distinctly within the span of the overall effect. But since Turner was content to improve on his picture in other ways, it is not possible to know how precisely these details reflected the image in 1837. On a tangential note, Wilson’s engraving could perhaps have shaped John

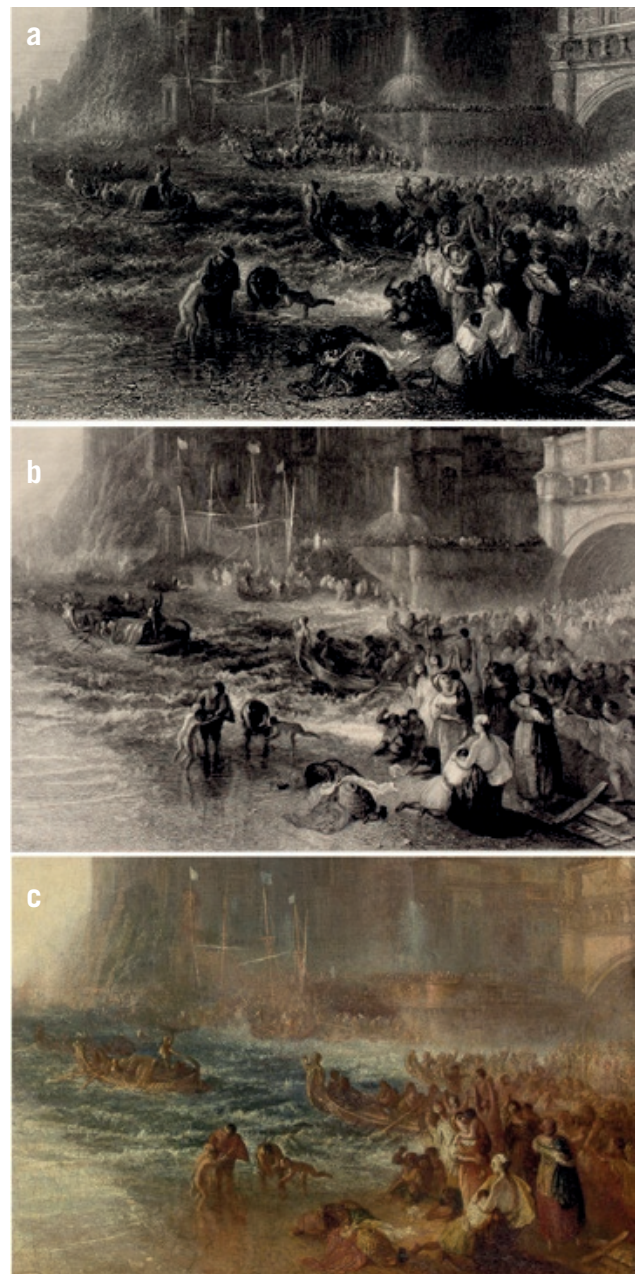
Gilbert's subsequent recollections of what emerged on varnishing day, bearing in mind his comments on the use of painted lines for the sun's rays.

Wilson's most important observations concern the condition of the painting itself. Despite his very close inspection of it during his work, he made no mention of the underlying damage, thereby testifying to the success of the recent restoration and the way Turner's repainting had unified the image. Wilson also discovered by attempting to clean an apparently dirty area with 'the wet corner of a silk handkerchief' that the paint of the sky was sensitive to water, and rationalised this as implying it was 'painted over an oil ground in mere size colours. These had obviously darkened.' In fact, our examination suggests otherwise: Turner had painted over well-dried and cracked paint that did not readily 'take' the megilp applied in 1837. Unaware of this, following his 'discovery', Wilson desisted in his cleaning, believing that 'if my operations were extended the whole clouds and tinting of the sky, with much else, would vanish'. Just as relevant is Wilson's belief, when writing his testimony in 1889, that the picture was then 'much in the same condition as when I was familiar with every touch on the canvas'. This was something he attributed to Turner's use of 'enduring pigments'. Once again, however, he failed to detect the underlying evidence of further violence in the intervening years.<sup>54</sup>

Once his work on the engraving was completed, *Regulus* remained among the hundreds of finished and unfinished canvases still in Turner's gallery, preserved but neglected. Anecdotes suggest dust, soot and damp were pervasive, as were Turner's cats, and the roof allegedly leaked. With its three campaigns of painting, *Regulus* was especially susceptible to these poor environmental conditions. Exactly which works were displayed at this time is not certain, but during 1842–43 the young John Ruskin (1819–1900) was a regular visitor while preparing the first volume of his defence of Turner: *Modern Painters* (1843). Ruskin evidently saw many pictures from all periods, and although he was disproportionate in his praise for some aspects of Turner's work, he was unimpressed by classical works such as *Regulus*. He called these 'nonsense pictures', alleging that they were simply 'preposterous accumulations ... the worst possible examples of Turner's colour are found in pictures of this class'.<sup>55</sup>

### ***Regulus* joins the national collection, 1856**

Turner died in 1851 but it was not until 1856 that his estate was settled and the transfer of paintings he had bequeathed to the National Gallery was under way.<sup>56</sup> As a work exhibited in Turner's lifetime, *Regulus* was among the first 100 canvases prioritised for display, and assigned the accession number N00519 (many of the 200 or so others were not accessioned until the mid-20th century). Given the lack of space in the National Gallery building (then still shared with the Royal Academy), Turner's pictures were first displayed at Marlborough House from 24 November 1856, initially on the



**Fig. 8** Details showing the lower right of the composition: (a) as depicted by Bradshaw; (b) as depicted by Wilson; (c) *Regulus*. (Photos © Tate.)

ground floor. Six months later, in June 1857, they were moved upstairs where they remained until 20 September 1859.

During these years Ruskin rushed out his *Notes on the Turner Gallery at Marlborough House* (1857). Given Ruskin's prominence as 'the avowed champion of Turner', a critic<sup>57</sup> was surprised to find him offering trenchant objections to pictures such as *Regulus* (and apparently unaware of his previously published opinions). Ruskin described it as 'very disgraceful to Turner ... [a] wicked relapse into the old rivalry with Claude', and even proposed that it, and those like it, should be 'placed in a condemned cell, or chamber of humiliation ... however in good light, so that people who wished to see the sins of Turner, might examine them to their entire satisfaction – but not exhibited where they only serve to prompt and attract ridicule, suggest doubts of real excellence, and mingle pain with enjoyment, and regret with admiration'.<sup>58</sup>



Because Ruskin had declined the offer of acting as one of Turner's executors, he was not in a position to influence the presentation of the paintings. That job fell to Ralph Nicholson Wornum (1812–1877) as Keeper at the National Gallery, who oversaw in October 1859 a further transfer of the paintings to three rooms at the South Kensington Museum (now the Victoria and Albert Museum). *Regulus* was examined at this time for the collection catalogue, which records 'Wide cracks not bituminous, slight changes of pigment round sun.'<sup>59</sup> Wornum also supervised the engraving and publication of many of Turner's pictures in his care, the plates afterwards issued singly or in widely available collected editions, accompanied by his text. The engraver of *Regulus Leaving Carthage* was Samuel Bradshaw, whose condensed image was only about a quarter of the dimensions of the plate on which Wilson had worked (Fig. 7). Comparisons between the two reproductions, made 20 years apart, could indicate there had been a darkening of colours in some parts of the canvas (Fig. 8a and b). The left foreground, for instance, seems murkier in Bradshaw's version. Some other differences, such as a lack of the same overall precision, are more likely to be the result of the differences in scale and the means of reproduction: Bradshaw's was produced much more quickly, without the benefit of Turner's supervision, for a wider audience.

*Regulus's* sojourn at Kensington did not last long because legal pressures concerning the terms of Turner's bequest to the nation forced the authorities to find a way of accommodating a 'Turner Room' at the National Gallery. Now numbered Room 8, Wornum somehow hung 82 oil paintings on the walls and a further 18 works on freestanding screens.<sup>60</sup> The room opened in October 1861, just a few months before the publication of Walter Thornbury's sensational biography of the artist (1862):<sup>61</sup> the first attempt to probe beyond Turner's art into unknown aspects of his life. Among the shocking revelations were illegitimate daughters, at least two mistresses, and the implication that Turner frequented brothels. During the Victorian era, these details cast a long shadow over the artist's reputation, especially coupled with allegations of his over-astute business practices. Cumulatively, the sordid portrait that emerged upset Ruskin's five-volume attempt to present Turner as a hero. This damage would soon become physically palpable.

### ***Regulus* attacked (1863): iconoclasm and repair ...**

On 16 December 1863, during a quiet Wednesday afternoon in the National Gallery, *Regulus* was singled out by 'a tall man of shabby genteel appearance', who spent a couple of hours contemplating it hanging on one of the screens. What happened next is documented in the gallery's own records and, more sensationally, the national press and the accounts of the ensuing Middlesex and Clerkenwell Sessions.<sup>62</sup> As in any criminal case, different witnesses provided evidence that did not always coincide, but (as will be seen) the fundamentals of the attack can actually be corroborated in the canvas itself.

According to Inspector Eleazer Denning, one of the National Gallery's assigned policemen, the would-be iconoclast was first spotted acting suspiciously near the picture at two o'clock by the curator, Edmund Paine. The latter passed the matter on to Denning, who continued to watch until the man, aware of this surveillance, sat down in the gallery. Around four o'clock, Paine returned to the gallery, where very few visitors remained following the onset of twilight. The stranger was shortly afterwards intercepted when it seemed he had repeatedly stabbed the picture with a knife. Oddly, he appeared at first to have no knife, although the picture was found to be damaged with 'eight minute stabs in the sky'. Later these were defined more precisely as four canvas-piercing stabs, four pricks or spots that damaged only the paint surface, and a cut about an inch and a quarter long. The knife was located in due course, its blade still coated with a small quantity of paint (other tiny fragments were later found on the floor), and the man then admitted his actions. He gave his name as Walter Stephenson but unusually the records do not specify his age; moreover the rest of the information about him is shadowy, describing him as 'destitute' with 'no home', friends or relatives, although he seems to have had some connection with Newcastle. His occupation was given variously as 'an author', a 'clerk' or a 'lithographic writer'. Each of these suggests that he was an educated man with skills in penmanship, but his working life had presumably taken place in better times. When quizzed about why he had attacked *Regulus*, he replied: 'I was very much excited; the misty state of the picture and the dislike I had for the man made me do it. If I had not been detected I should have given myself up to you before I left the gallery'. He was then arrested and taken to the local police station.

The following day Stephenson appeared at Great Marlborough Street court, charged with wilfully damaging Turner's *Regulus*. The press accounts of the hearing on 17 December provide much of the foregoing information, but the National Gallery's archive now includes Wornum's personal diary, in which he noted that the incident proved 'the disadvantage of screens' as a means of providing additional hanging space because they created blind spots so that 'the rooms cannot be overlooked'. In giving evidence, Wornum had reassured the hearing that *Regulus* could be repaired. Stephenson was quoted as saying 'I have to express my regret that I did it ... I was in a state of excitement at the time.' He was then committed for trial on 4 January 1864. During the following days, Wornum wrote to the Treasury to submit notification of the damage, simultaneously setting in motion steps for the prosecution of Stephenson. An official note was, of course, entered into the minutes of the National Gallery's December board meeting, and practical security measures were reviewed at the start of 1864.

Meanwhile, at the Clerkenwell Sessions on 4 January, the charges against Stephenson were presented once more. He was described as a: 'crazy fellow who ... damaged one of the pictures in the Turner collection',<sup>63</sup> but little additional information was unearthed except that he was aged 52 and that he described himself as an 'accountant'. We know nothing more about the causes of his resentment of Turner – perhaps some ill-favoured financial transaction connected them, given

Turner's extensive sources of revenue through his published work or his investments. It is possible that Stephenson was aware of the squalid impression of Turner's private life evoked in Thornbury's new biography, which would have fanned the flame of any existing dislike of the artist. Stephenson specifically mentioned his aversion to the 'misty state' of *Regulus*, pinpointing the controversial quality of Turner's later style as the trigger for his actions. Famously, Turner had been misquoted in Thornbury's book as having said 'indistinctness is my forte', when he had actually said 'fault'.<sup>64</sup> The apparent arrogance of the comment may have acted like a red rag to a bull in Stephenson's case. Ironically, the stylistic mistiness in *Regulus* had been exaggerated by its successive reworkings and two linings, and so each of the calamities affecting the picture is connected to the next. The Clerkenwell hearing also learned that the likely cost of repairing the damage to the picture was thought to be merely 3 guineas which, of course, proved to be too little. Although Stephenson pleaded guilty, he was remanded for judgment at the next session.

When he next appeared at the Middlesex Session at Great Marlborough Street on 18 January, nothing more was offered by way of background or explanation of his actions. Representing the Trustees of the National Gallery, Mr Cooper stated that they 'would have been failing in their duty to the public had they not prosecuted this man for really one of the most wicked acts of spoliation that could well be conceived'.<sup>65</sup> He continued: 'The trustees had no object but to protect the national property, consisting as it did of works of art of almost inestimable value, and this man had injured the picture because he disliked the painter.' The charges met with no opposition and it was ruled that 'The property of the public in museums must be protected from such outrages, and the sentence upon the prisoner was that he be kept to hard labour for six calendar months'.<sup>66</sup>

Back at the National Gallery, on 28 January Wornum summoned the picture restorer George Morrill (c.1812–1865), known as 'Morrill the liner', who had taken over Francis Leedham's business in 1857.<sup>67</sup> His work was completed and the relined canvas returned less than a fortnight later on 9 February. Ten days later *Regulus* left the gallery again, this time to be repaired by Charles Buttery (1812–1878), then based on Old Bond Street. His restoration was extremely expeditious by today's standards, taking less than a month. Even by 3 March, after a spot check at Buttery's, Wornum noted that he expected to have the picture back 'within three weeks'; in fact, it was returned on 16 March, the work charged at 8 guineas. This meant that it was possible to rehang the picture once again in the Turner Room on 1 April, less than four months after the attack.

### ... and the technical evidence

The surface of *Regulus* is cracked, cupped and marred by numerous campaigns of retouching in different paint media and therefore difficult to read. Only one lining is present today. This is marked 'Morrill', from which it can be inferred

that the first lining of c.1829, mending the large tear in the sky, was removed by Morrill. Until knowledge of the 1863 attack came to light, the Morrill stamp of the second lining (necessarily post-1857 and therefore after Turner's death) had seemed at odds with the history of the painting. Regrettably, the second lining somewhat softened Turner's wax-based reworking of 1837, yet left it with more texture than the paint along the two sides, which had by then been lined twice. The contrast in texture between the sides and the yellow sunlit area now made complete sense.

The second lining slightly softened the thick wax-based paint that Turner had used in c.1829 to disguise the mended tear. Whether it affected the underlying paint that he applied in Rome is impossible to discern. The treatment further disguised and blurred what may have been a more precise rendering of the seaport when it was first exhibited in Rome, which we also know to have been very brightly coloured. Only glimpses of the original bold tones can now be seen at the edges.

What evidence is there of damage from the stabbing? The UV image (Fig. 1d) shows numerous spots of retouching, some of them recent and in synthetic, non-fluorescent materials, but no indication of one tear or eight puncture marks. The X-radiograph did however reveal all of these because the holes had been filled with a less dense material than the lead white in Turner's own paint. Rather than concentrating on the sun's orb, the attack addressed the centre of the canvas, which was punctured four times and cut once; there were four other stab marks over a wider area (Fig. 1c). The number of damages tallies with contemporary accounts. Given that the canvas was only some 35 years old, and therefore still quite robust, and thickly painted, it would have taken considerable strength to pierce it. This suggests that the attack must have been quite frenzied, much more so than any eyewitness reported. The assailant made diagonal strokes rising from right to left (coincidentally, the same direction as Turner's brushstrokes), implying that he was right-handed.

### A late 20th-century incident

For over 100 years, the paint continued to crack and flake, and it has been consolidated and retouched on numerous occasions, just like many other Turner oils. Tate conservation records note four interventions since 1960 for such treatments. Even in recent decades, the painting's accident-prone history continued. In 1984 there was a less disastrous incident that created an impact near the centre of the canvas. Since it was not witnessed, it is not clear whether this was simply a mishap (perhaps involving a visitor pointing too closely at the picture surface) or a deliberate attack. Intentional or malicious damage in the 1970s and 80s tended to be much more obvious.<sup>68</sup> Nevertheless, paint fragments several millimetres wide were retrieved from the floor and were reattached and retouched. Ironically, when the damage occurred, the picture was installed in Gallery 9 of the Tate's Millbank building, where partition screens obscured some artworks and visitors from security staff, thereby mirroring what had happened in 1863.



## Conclusions

Turner's depiction of a savage historical incident has had an exceptional existence, punctuated (and quite literally punctured) by both accident and deliberate violence; a clear case of life imitating art. The combination of three well-documented incidents is unprecedented, which perhaps explains why successive interventions had not previously been recognised and separated out by Tate conservators. X-radiography provided the best visual information for the physical history of the painting (Fig. 1c). Had the paint surface been in better condition today, the UV image might have been expected to be more useful, but it registers principally recent interventions while obscuring earlier campaigns (Fig. 1d). It took a combination of the standard methods of technical examination to show that every aspect of the painting's known history of violence and accident could be pinpointed and comprehended within its stratigraphy.

Neither X-radiography nor other imaging techniques can reveal much about the original appearance of the sky when first shown in Rome. The testimony of contemporary viewers regarding its dramatic qualities remains critical here. In repairing the canvas, Turner covered his tracks very thoroughly with thick, X-ray-opaque lead white-based paint. It is therefore now impossible to determine whether the depiction of dazzling light was an intrinsic feature, or greatly augmented when Turner was obliged to disguise the large tear in the sky.

The painting also provides an excellent insight into the complexity of Turner's methods, with clear evidence for three different painting sessions over a period of nearly a decade: first in Rome in 1828, subsequently in his own London studio to repair the torn canvas and reintegrate the damaged image, and again during the varnishing days at the British Institution in 1837. The study has uncovered some of his motivations for its exhibition at that time and venue, eight years after it had first been displayed.

It was these phases of repainting and reworking that led to the painting's fairly rapid alteration, compounded by two early linings to mitigate damage sustained through accident, attack or neglect. The majority of the oil paintings in the Turner bequest have been lined only once. These treatments were necessitated by the intermittent physical build-up of the thick paint seen in the sky in particular, and therefore contribute to the indistinctness perceptible today. In *Regulus*, this quality provoked the iconoclastic rage of Walter Stephenson, who reacted against it as forcefully as later opponents of more overt manifestations of avant-garde developments.

Some of the documentary evidence that has survived, such as the varnishing day portraits and the engravings based on the painting, provided only partially reliable information. The two artists who sketched Turner at work and the third artist who described his work all recorded elements of his process, but their combined testimonies present a very misleading whole. It took a combination of documentary research together with standard methods of technical examination to demonstrate that every aspect of the painting's known history of violence and accident could be identified and comprehended within its build-up. This blending of perspectives and interdisciplinary

work has further spotlighted how Turner's reputation for speedy and exceptional amounts of activity during varnishing days has to be carefully questioned on a case-by-case basis, and that myths, such as the notion that Turner could transform a 'few dabs of several colours' into a fully resolved picture on these days, are often exaggerated misconceptions.

Two further lessons are apparent: screens should be avoided for hanging pictures where there is insufficient invigilation. Just as importantly, extraordinarily rich histories can still be revealed in apparently familiar works. We should continue to look hard and thoroughly at the paintings in our care!

## Notes

1. E. Shanes, *Young Mr Turner: The First Forty Years 1775–1815*, New Haven and London, Yale University Press for the Paul Mellon Centre for Studies in British Art, 2016, p. 266.
2. R. Hellen, "'Three days or more ...': Turner's varnishing day practice and the physical evidence", *British Art Journal* XV(2), 2014, pp. 47–53.
3. D.H. Solkin (ed.), *Art on the Line: The Royal Academy Exhibitions at Somerset House 1780–1836*, New Haven and London, Yale University Press for the Paul Mellon Centre for Studies in British Art and the Courtauld Institute Gallery, 2001.
4. For example by J. Gage, *Colour in Turner: Poetry and Truth*, London, Studio Vista, 1969; M. Rosenthal, 'Turner fires a gun', in Solkin 2001 (cited in note 3), pp. 145–155; M. Butlin, 'Varnishing day', in E. Joll, M. Butlin and L. Herrmann (eds), *Oxford Companion to Turner*, Oxford, Oxford University Press, 2001, pp. 354–358; and L. Costello, "'This cross-fire of colours': J.M.W. Turner and the varnishing days reconsidered", *British Art Journal* X(3), 2009, pp. 56–68.
5. Hellen 2014 (cited in note 2), and R. Hellen, "'Unfinished productions": history and process in Turner's 1820s port scenes of Dieppe, Cologne and Brest', in S.G. Galassi, I. Warrell and J.S. Seidenstein, *Turner's Modern and Ancient Ports: Passages through Time*, New York, The Frick Collection and New Haven and London, Yale University Press, 2017, pp. 110–119.
6. I. Warrell, 'Turner paints himself into history', in D. Solkin (ed.), *Turner and the Masters*, London, Tate, 2009, pp. 207–213, esp. p. 212.
7. P. Matyszak, *Chronicle of the Roman Republic*, London, Thames & Hudson, 2003, pp. 78–82. Previous discussions of Turner's *Regulus* can be found in M. Butlin and E. Joll, *The Paintings of J.M.W. Turner*, rev. edn, New Haven and London, Yale University Press for the Paul Mellon Centre for Studies in British Art and the Tate Gallery, 1984, pp. 172–173, no. 294; C. Powell, *Turner in the South: Rome, Naples, Florence*, New Haven and London, Yale University Press for the Paul Mellon Centre for Studies in British Art, 1987, pp. 141ff.; K. Nicholson, *Turner Classical Landscapes: Myth and Meaning*, Princeton NJ, Princeton University Press, 1990, pp. 111–115; G. Finley, *Angel in the Sun: Turner's Vision of History*, Montreal, Kingston and Ithaca, McGill-Queen's University Press, 1999, pp. 96–98; P. Wat, 'Portrait de l'artiste en Regulus', in *Turner menteur magnifique*, Paris, Editions Hazan, 2010, pp. 57–68. The first of these is the standard catalogue raisonné of Turner's oil paintings, generally referred to as 'B&J' accompanied by a catalogue number. It is now supplemented by entries on the *Art and Artists* page of the Tate website, which includes the database *Turner World Wide* (see [www.tate.org.uk/search](http://www.tate.org.uk/search)). For discussions of Turner's

- paintings of seaports, including *Regulus*, see S.G. Galassi, I. Warrell and J.S. Seidenstein, *Turner's Modern and Ancient Ports: Passages through Time*, New York, The Frick Collection and New Haven and London, Yale University Press, 2017, esp. pp. 1–67.
8. A. Wilton and R.M. Turner, *Painting and Poetry: Turner's 'Verse book' and his Work of 1804–12*, London, Tate, 1990, p. 80.
  9. Powell 1987 (cited in note 7), p. 97.
  10. *Ibid.*, pp. 141ff.
  11. *Regulus*, 895 × 1238 mm (Tate, N00519; B&J294); *View of Orvieto*, 914 × 1232 mm (Tate, N00511; B&J292); *Vision of Medea*, 1737 × 2489 mm (Tate, N00513; B&J293); *Palestrina – Composition*, 1403 × 2489 mm (Tate, N06283; B&J295). A fifth picture appears to be *Rome, from Mount Aventine* (B&J366); see J. Ridge, 'The Rosebery Turners', in J. Hamilton (ed.), *Turner and Italy*, Edinburgh, National Galleries of Scotland, 2009, pp. 129–134.
  12. For Turner's canvases, see J.H. Townsend, 'The materials of J.M.W. Turner: primings and supports', *Studies in Conservation* 39, 1994, pp. 145–153. The group consists of *Reclining Venus*, 1753 × 2489 mm (Tate, N05498; B&J296); *Two Recumbent Nude Figures*, 1746 × 2491 mm (Tate, N05517; B&J297); *Outline of a Venus Pudica*, 1356 × 981 mm (Tate, N05509; B&J298); *Southern Landscape*, 1765 × 2718 mm (Tate, N05510; B&J299).
  13. See T. Filtenborg and C.K. Andersen, 'Canvas supports and grounds in paintings by C.W. Eckersberg', in this volume, pp. 43–54. Renate Poggendorf, Doerner Institut (personal communication) has observed the same canvases, primed on the stretcher, used by German artists when in Rome.
  14. *Southern Landscape with an Aqueduct and Waterfall*, 1502 × 2492 mm (Tate, N05506; B&J300) and *Italian Landscape, probably Civita di Bagnoregio*, 1499 × 2496 mm (Tate, N05473; B&J 301). The topography of the latter was recently suggested to be Tivoli; see N. Moorby, 'The "peculiar charms" of Tivoli: a Turner painting re-identified', *Turner Society News* 119, Spring 2013, pp. 4–6.
  15. J. Gage (ed.), *Collected Correspondence of J.M.W. Turner, [with an early diary] and a Memoir by George Jones*, Oxford, Clarendon Press, 1980, p. 118.
  16. See note 11.
  17. Tate, N01875; B&J433: 1473 × 2388 mm. The canvas has a duty stamp, implying that it was supplied already primed, but not necessarily that it was exported. The image is dominated in much the same way as *Palestrina*, around a clump of trees. Turner borrowed this structure from a picture by Claude at Petworth House (*A River Landscape with Jacob and Laban and his Daughters*), for which he intended his new painting to act as a pendant. Although *Palestrina* offered a vibrant contemporary response to the Claude, Turner's alternative canvas is more obviously connected thematically, either as a depiction of Jacob meeting Rachel by the well (Genesis 29) or as the fulfilment of that narrative in Christ's encounter at Sychar in Samaria, where the well was connected with Jacob (John 4).
  18. See A. Wilton, *Turner in his Time*, London, Thames & Hudson, 1987, p. 158, for a satirical manifestation of this sentiment.
  19. Powell 1987 (cited in note 7), pp. 141, 151, colour plate 28.
  20. Gage 1980 (cited in note 15), pp. 120–121.
  21. Powell 1987 (cited in note 7), p. 142.
  22. *Ibid.*
  23. See the *Morning Post*, 31 January 1837.
  24. *Dido Directing the Equipment of the Fleet, or The Morning of the Carthaginian Empire*, 1828, 1473 × 2261 mm (Tate, N00506; B&J241).
  25. See the *Literary Gazette*, 3 May 1828.
  26. Sir Daniel Wilson's account of his collaboration with Turner is found in his journal (B65-0014) in the University of Toronto, reprinted in Finley 1999 (cited in note 7), pp. 211–214. The identification of the small figure was first made by A. Wilton, *Turner and the Sublime*, Toronto, Art Gallery of Ontario, 1980, pp. 101, 142–143.
  27. Gage 1969 (cited in note 4), p. 143.
  28. J. Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century*, Cambridge MA, MIT Press, 1992, pp. 137–147.
  29. A key resource is A. Bertolotti, 'Esportazione di oggetti di belle arti da Roma nel secolo XVIII', *Archivio Storico Artistico Archeologico e Letterario della Città e Provincia di Roma*, 1878 and 1880. See also I. Bignamini, and C. Hornsby, *Digging and Dealing in Eighteenth-Century Rome*, London, Paul Mellon Centre for Studies in British Art, 2010.
  30. M.B. Sánchez-Jáuregui and S. Wilcox (eds), *The English Prize: The Capture of the 'Westmorland', An Episode of the Grand Tour*, New Haven, Yale Center for British Art, 2012.
  31. See <http://discovery.nationalarchives.gov.uk/details/rd/e4024133-f616-4db7-b45b-d5b0d0ead32c>.
  32. We are grateful to Jonathan Yarker for sharing this insight and for the link cited in the note above.
  33. Powell 1987 (cited in note 7), p. 141.
  34. Gage 1980 (cited in note 15), p. 125.
  35. *Ibid.*, p. 132.
  36. *Reclining Venus and Two Recumbent Nude Figures* (cited in note 12).
  37. See [www.npg.org.uk/research](http://www.npg.org.uk/research), *British Picture Restorers 1600–1950*, entry for W.R. Bigg.
  38. Ridge's observations of 2009 (cited in note 11) were developed further by I. Warrell in the Sotheby's London sale catalogue for the picture (3 December 2014, pp. 46–49).
  39. The spelling of the picture's title here follows Turner's own on the canvas itself. For the controversies surrounding the 1814 painting, see the B&J128 entry; Nicholson 1990 (cited in note 7), p. 179; Shanes 2016 (cited in note 1), pp. 436–439.
  40. See the *Morning Post*, 31 January 1837.
  41. Hellen 2014 (cited in note 2), note 8.
  42. A. Sumner and G. Smith, *In Front of Nature: The European Landscapes of Thomas Fearnley*, London, D. Giles Ltd, 2012; B. Reissland, T.G. Poulsson, H. van Keulen and I. Joosten, 'Thomas Fearnley en route: a 19th-century artist's choice of drawing and fixing materials', in this volume, pp. 82–93.
  43. The sketch has traditionally been dated to 1828 based on a letter in the National Portrait Gallery, London, given by Cope's son, which claimed it recorded Turner at work in the Royal Academy Schools. Cope Snr had been a student there in 1828. However, its relationship to the Fearnley image, which can only date from the incident in the British Institution in 1837, caused Warrell to redate and retitling the image; see Solkin 2009 (cited in note 6), p. 15, fig. 1. This new thinking has not yet been updated on the National Portrait Gallery website.
  44. 30 January 1837.
  45. Gage 1969 (cited in note 4), pp. 264–265, n. 152.
  46. L. Cust, 'The portraits of J.M.W. Turner', *Magazine of Art*, 1895, pp. 248–249.
  47. Gage 1969 (cited in note 4), pp. 264–265, which corrects Scharf's mistaken belief that the description related to *Queen Mab's Cave* (Tate, N00548; B&J420), which was shown at the British Institution in 1846.
  48. J.H. Townsend, 'Turner's materials and processes', in I. Warrell (ed.), *Turner from the Tate: The Making of a Master*, London, Tate, 2013, pp. 42–50.
  49. The *View of Orvieto* was similarly reworked before it was exhibited in London in 1830, introducing a yellow morning light, shining through a tree and glancing off foreground details, as well as numerous light-catching dots of impasto to



- its landscape. The latter may be a response to the notorious flickering ‘whitewash’ of Constable’s later paintings, which was something Turner had mockingly detected in his rival’s picture of Hadleigh Castle (1829; Yale Centre for British Art, New Haven).
50. See the *Literary Gazette*, 4 February 1837.
  51. See the *Spectator*, 11 February 1837.
  52. See the *Morning Chronicle*, 2 May 1837.
  53. See note 26.
  54. *Ibid.*
  55. E.T. Cook and A. Wedderburn, *The Works of John Ruskin 1819–1900*, 39 vols. London, George Allen, 1903–12, vol. XIII, p. 151.
  56. A. Crookham, ‘The Turner Bequest at the National Gallery’, in I. Warrell (ed.), *Turner Inspired: In the Light of Claude*, National Gallery, London, 2012, pp. 51–65.
  57. See the *Monthly Review*, February 1857, p. 87.
  58. Cook and Wedderburn 1903–12 (cited in note 55), vol. XIII, pp. 151, 157.
  59. National Gallery archive: 10/Vol. 3-359-663.
  60. Crookham 2012 (cited in note 56), figs 39 and 40.
  61. W. Thornbury, *The Life of J.M.W. Turner, R.A.: Founded on Letters and Papers Furnished by his Friends and Fellow Academicians*, London, Hurst and Blackett, 1862.
  62. The following account draws widely on Wornum’s personal diary for the period 1855–77 in the National Gallery archive (NGA2/3/2/13), as well as the following documents (NG6/3/157, NG5/149/6, NG). The court case was extensively reported in the press on the following days: 18 December 1863 (*The Times*, *Morning Post*, *Daily News*, *Birmingham Daily Post*, *Sheffield & Rotherham Independent*, *Standard*); 26 December 1863 (*Illustrated London News*); 5 January 1864 (*The Times*, *Morning Post*, *Daily News*); 19 January 1864 (*The Times*, *Daily News*, *Standard*); 23 January 1863 (*Illustrated London News*, *North Wales Chronicle*, *Examiner*, *Leeds Mercury*).
  63. See the *Illustrated London News*, 9 January 1864.
  64. Thornbury 1862 (cited in note 61), p. 243.
  65. See the *Daily News*, 19 January 1864.
  66. See *The Times*, 19 January 1864.
  67. The following discussion is based on entries for George Morrill, Francis Leedham and Charles Buttery at [www.npg.org.uk/research](http://www.npg.org.uk/research), British Picture Restorers 1600–1950. On a previous occasion, in April 1859, when Turner’s *View of Orvieto* and *Richmond Hill* were found to be damaged (the first with two digs of a knife and the latter with a round hole) the repairs had been undertaken by John Bentley (1820–1867).
  68. Roy Perry, retired Head of Conservation, Tate, personal communication, 2 August 2016.

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# ROMANTIC ICONS: A TECHNICAL STUDY OF THE UNDERDRAWING FOR CASPAR DAVID FRIEDRICH'S *MONK BY THE SEA* AND *ABBNEY IN THE OAKWOOD*

Kristina Mösl and Francesca Schneider

**ABSTRACT** The Nationalgalerie in Berlin is the custodian of German Romanticism's most famous pair of paintings: *Monk by the Sea* and *Abbey in the Oakwood* by Caspar David Friedrich. His idiosyncratic painting technique, decades of neglect and historical restorations had led to changes and material losses, resulting in a considerable falsification of the original image. Between 2013 and 2016, technical research and conservation work was carried out on both paintings in the Alte Nationalgalerie, Berlin. These unearthed significant findings and provided new insight into Friedrich's painting techniques. X-radiography indicated that the two paintings had been planned as companion pieces and that Friedrich used commercially produced pre-primed canvases. Cross-sections revealed Friedrich's layer structure and the application of his favourite blue pigment, smalt, which by the 19th century was barely still in use. The underdrawing, which was detected with infrared reflectography, showed remarkable changes in composition for the *Monk*. Friedrich drew three huge sailing ships but did not execute them in paint, thus emptying the seascape radically. In the underdrawing of the *Abbey*, the church architecture becomes clearer, revealing the nave as well as a cross and crucifix in the portal of the church. This study marks the beginning of further technical research into Friedrich's underdrawing and painting techniques.

## The paintings

*Monk by the Sea* (1808–10) (Fig. 1) and *Abbey in the Oakwood* (1809–10) (Fig. 2) by Caspar David Friedrich (1774–1840) are the two most significant examples of German Romanticism. The artist addresses the relationships between knowledge and belief, this world and the next, life and death with a singularly radical composition and technique. Friedrich creates two pictorial formulae, as simple as they are profound, which speak to people today as much as when they were painted.

The description of the painting by contemporaries Clemens Brentano and Heinrich von Kleist has become legendary: 'when viewing it, it's as though one's eyelids had been cut away'.<sup>1</sup> To this day the works have been the subject of numerous interpretations and discussion, ranging from art through literature to psychology and press photography. However, soon after his death in 1840 Friedrich slipped into oblivion and was not rediscovered until the turn of the 20th

century. The Nationalgalerie, Berlin, played an important role in this revival of interest when it displayed 35 of Friedrich's paintings in the 1906 *Centenary Exhibition of German Art 1775–1875*, thereby bringing the artist once more to the attention of a wider public.

## The conservation project

Friedrich's idiosyncratic painting technique, decades of neglect and historical restorations to *Monk by the Sea* and *Abbey in the Oakwood* had led to the poor condition of the paintings, with changes and material losses resulting in a considerable falsification of the original images. Conservation work on both paintings was carried out in the Alte Nationalgalerie by Francesca Schneider and Kristina Mösl from 2013 to 2016.





**Fig. 1** Caspar David Friedrich, *Monk by the Sea*, 1808–10, 110.6 × 171.4 cm, NG 9/85: before treatment. (Image: Kilger 2013, Staatliche Museen zu Berlin, Nationalgalerie.)



**Fig. 2** Caspar David Friedrich, *Abbey in the Oakwood*, 1809–10, 110.4 × 171.0 cm, NG 8/85: before treatment. (Image: Kilger 2013, Staatliche Museen zu Berlin, Nationalgalerie.)

## Painting technique

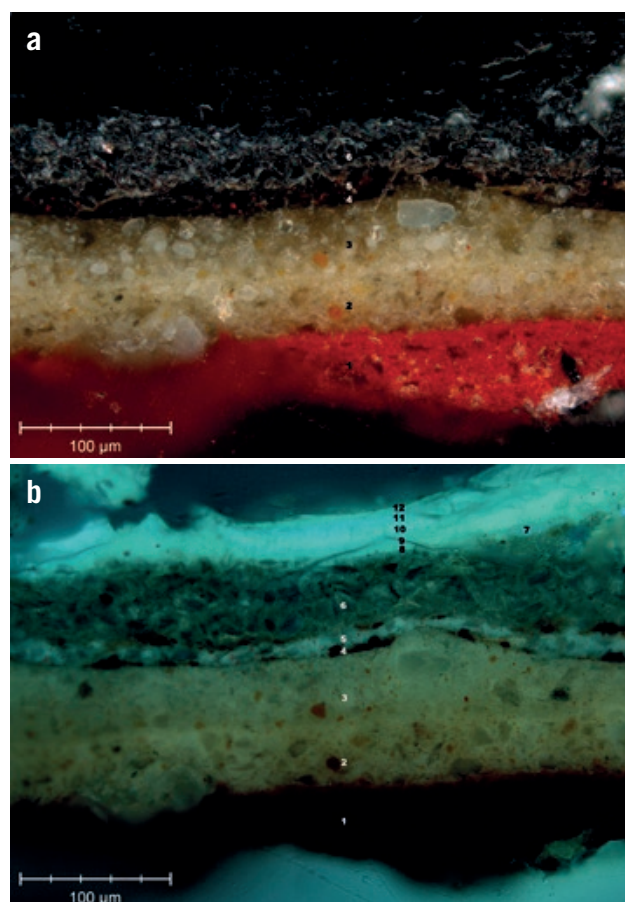
Caspar David Friedrich used a support made from a fine linen canvas. Latest investigations revealed that the canvases of both pictures came from one and the same roll of fabric and were adjoining sections.<sup>2</sup> The contemporaneous acquisition of the canvases is a clear indication that from the very beginning the paintings were intended as a pair. The canvases came ready-prepared with three layers of priming: the first ground is bright red, followed by two light brown layers (Fig. 3). Whereas the initial two primings were applied with a spatula, the third appears to have been applied with a roller: it has a finely textured structure, which Friedrich knew how to use to particular effect. The artist drew the composition with graphite pencil onto this priming and these underdrawings were detected with infrared reflectography (IRR) during the conservation project.<sup>3</sup> They are rich in detail, play a major role in the composition, and provide the focus of this paper.

The execution of both pictures over the underdrawing began with a very thin underpainting. In *Abbey*, this is covered simply by a single, thin layer of paint (Fig. 3), as opposed to *Monk*, which has two layers of paint, the first a dark blue. Friedrich later applied a second layer of light blue, pink and white paint to the central sky area. In both works he used lead white, a few ochre, green, brown and black pigments as well as the blue pigment smalt;<sup>4</sup> the latter on account of its semi-transparent property. Using a characteristic painting technique, a gossamer-thin film of colour accumulated in the depths of the textured ground layers, resulting in the finest dots of colour. The artist managed to avoid visible brushstrokes thereby creating almost continuous gradations of colour.

Shortly after completion of the paintings, an egg-white varnish was applied, the remains of which were detected in the course of the current project (Fig. 3).<sup>5</sup> It is unclear whether this varnish was applied by the artist himself in his studio in Dresden or by another hand in Berlin, where the paintings were exhibited and purchased by the Prussian king. In 19th-century literature, temporary egg-white varnishes were recommended for freshly completed oil paintings.<sup>6</sup>

## Underdrawing materials

A brief explanation of the function, materials and possible options for analysis of the underdrawings<sup>7</sup> and their relevance for Friedrich's oeuvre is necessary. The term 'underdrawing' describes the layout of a composition drawn directly onto the ground layer of a painting to fix the artist's initial pictorial conception. It is a centuries-old stage in the painting process, the earliest evidence for which stretches far back into pre-Christian times, and comprised a core part of the training in art schools until the beginning of the 20th century. To define the range of possible materials used for underdrawing in the paintings of Friedrich, it is necessary to determine which drawing materials were available and prevalent in the 19th century and then compare them with Friedrich's graphic



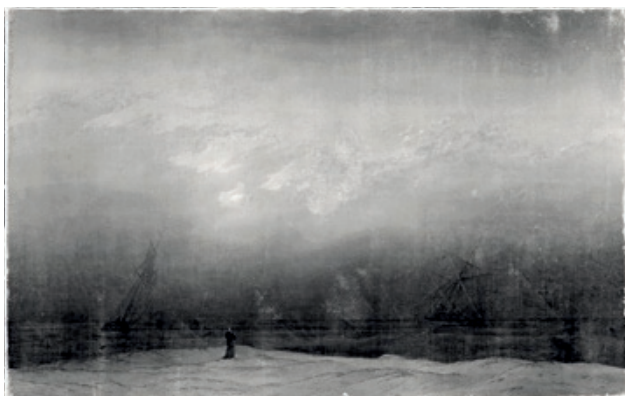
**Fig. 3** Cross-section of sample P7 from *Abbey in the Oakwood*, taken from the snow-covered ground area (original magnification  $\times 200$ ). (a) Dark field, (b) ultraviolet (UV), showing layers: 1–3 primings; 4 underdrawing; 5 underpaint; 6 paint layer with smalt; 7 egg-white varnish; 8–12 later varnishes. (Images: Schneider and Mösl 2013, Staatliche Museen zu Berlin, Nationalgalerie.)

oeuvre and the materials used therein. A limiting factor in using IRR for the visualisation and identification of underdrawing materials is the fact that this method primarily registers carbon-based drawing materials.

Drawing materials were divided broadly into fine stroke and broad stroke, as well as by the medium and the instrument used to apply them. Fine-stroke drawing instruments include silverpoint and styli made of lead, lead/tin alloys or other metals, which for the 19th century are hardly relevant. More important is the appearance from around 1800 of the broad-stroke drawing materials – graphite pencil,<sup>8</sup> black chalk,<sup>9</sup> charcoal and red chalk – which were used for sketching as well as underdrawing. For both his sketches and the underdrawings of his paintings, Friedrich preferred the broad-stroke drawing materials, graphite and black chalk; red chalk and charcoal have not been found anywhere in his graphic oeuvre. Due to the ease with which it smudges, charcoal may not have been well suited to underdrawing.

The most popular instruments of the 19th century for drawing and underdrawing were quill pens and pointed brushes. The typical graphic media were carbon-based black soot inks and sepia. Friedrich's preferred drawing and underdrawing medium was ink applied with a pen or a brush. Sepia, on the other hand, took on a special role in Friedrich's





**Fig. 4** *Monk by the Sea*: IRR image. (Image: Schneider and Mösl 2016, Staatliche Museen zu Berlin, Nationalgalerie.)



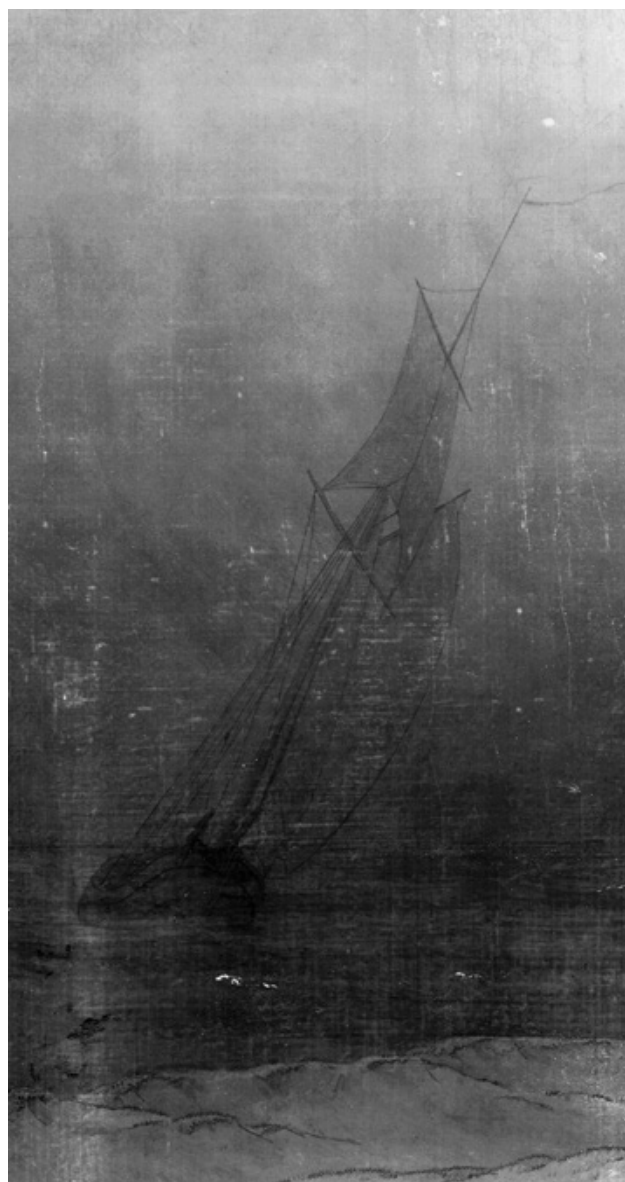
**Fig. 5** *Monk by the Sea*: IRR image, indicated with outlines. (Image: Schneider and Mösl 2016, Staatliche Museen zu Berlin, Nationalgalerie.)

graphic work. He discovered this fluid medium early on and he knew how to use it to masterly effect, particularly in his finished drawings. Theoretically, sepia could have been used for underdrawing but, being an organic material (the secretion of a squid), it cannot be detected by IRR.

In summary, the underdrawing materials that remain relevant for Friedrich's paintings and which can be detected using IRR are graphite and black chalk as well as carbon-based ink, applied with a brush or a quill pen. The underdrawings in both works are of great significance for the understanding of Friedrich's method of composition and his artistic process, albeit in different ways.

### Underdrawing for the *Monk by the Sea*

The underdrawing of the painting *Monk by the Sea* (Fig. 4) was executed entirely with broad-stroke drawing instruments. The widths of the strokes and the pattern of rubbing are indicative of black chalk or graphite pencils with varying grades of hardness. Several motifs show double underdrawings with a very thin stroke – only faintly imaged in IRR and probably just the first outline – and a somewhat more boldly executed secondary outline, observed clearly in the area of the dunes. The straight lines, for example in the ship's rigging or in the horizon, may have been achieved with the use of a ruler.



**Fig. 6** *Monk by the Sea*: IRR detail of the ship on the left. (Image: Schneider and Mösl 2016, Staatliche Museen zu Berlin, Nationalgalerie.)

The extreme divergences between the underdrawing and execution are striking. The most noticeable are the fishing nets and three imposing sailing ships: compositional elements present in the underdrawing, but none of which the artist chose to execute in paint (Fig. 5). The existence of the two larger ships has been known since the 1960s.<sup>10</sup> A third ship on the right-hand edge of the picture was rendered visible in IRR after the overpaint was removed. Common to all three ships are the great accuracy and exactness of detail with which the artist invested these motifs. The sailing ship to the left of the monk (Fig. 6) seems to be close to the shore, with all sails set and leaning close to the wind as it heads towards the open sea. The stern is facing the viewer, and an anchor – always a symbol of hope for Friedrich – projects from the ship's side. To the right of the monk, a sailing ship of similar size and distance from the shore is depicted (Fig. 7), this time parallel to the coastline and engaged in a turning manoeuvre. This ship also appears to be close to the





**Fig. 7** *Monk by the Sea*: IRR detail of the ships on the right. (Image: Schneider and Mösl 2016, Staatliche Museen zu Berlin, Nationalgalerie.)



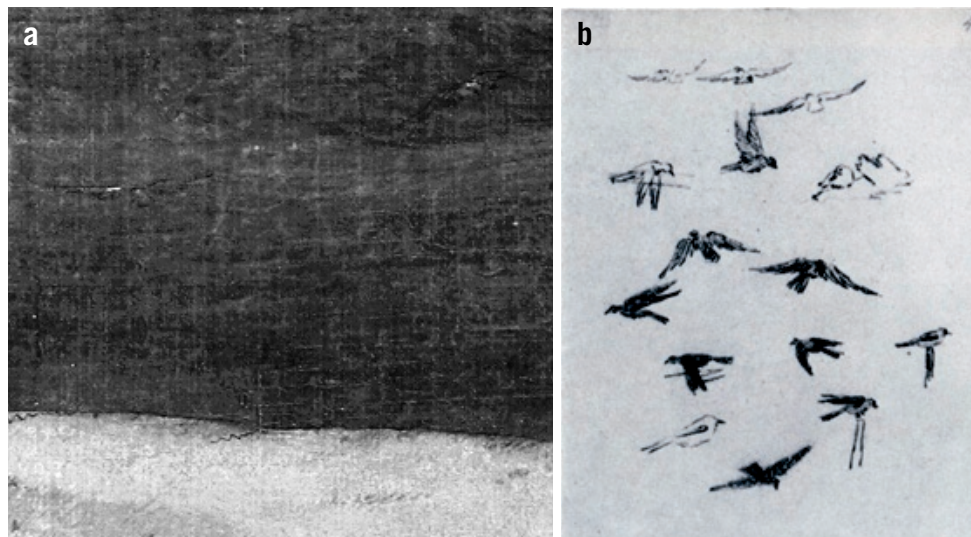
**Fig. 8** (a) *Monk by the Sea*: IRR detail of ships on the right, indicated with outlines. (Image: Schneider and Mösl 2016, Staatliche Museen zu Berlin, Nationalgalerie.) (b) Caspar David Friedrich, *Rocky Shore*, undated, sepia applied with a brush, inv. no. 37/598, catalogue BSJ 481, Kupferstichkabinett, Kunsthalle Bremen/ Der Kunstverein in Bremen, destroyed in World War 2. (Image: Stickelmann.)

wind with all its sails set, one of which bears a flag inscribed with a cross. To the right of this is the newly discovered third ship (Fig. 8a). As far as can be discerned from the poor condition of the work today, it depicts a larger type of ship, proportionately smaller as it sails at a greater distance from the shore towards the horizon, upright on a calmer sea with



**Fig. 9** *Monk by the Sea*: IRR details of (a) the full figure of the monk and (b) his head. (Images: Schneider and Mösl 2016, Staatliche Museen zu Berlin, Nationalgalerie.)





**Fig. 10** (a) *Monk by the Sea*: IRR detail of seagulls (Image: Schneider and Mösl 2016, Staatliche Museen zu Berlin, Nationalgalerie.) (b) Caspar David Friedrich, *Bird Studies*, 1804, private collection, Karlsruhe. (Illustrated in H. Börsch-Supan and K. W. Jähnig, *Caspar David Friedrich. Gemälde, Druckgraphik und bildmäßige Zeichnungen*, Munich: Prestel, 1973, p. 496 and reproduced with permission. Image: Helms 2016.)



**Fig. 11** *Abbey in the Oakwood*: IRR image. (Image: Schmidt 2014, Staatliche Museen zu Berlin, Gemäldegalerie.)

a slacker wind. Interestingly, a sepia drawing by Friedrich (Fig. 8b) portrays these exact same ships (the newly discovered ship and the already known neighbouring one): both are identical in execution and proportion. The dating of this sepia ranges from 1818<sup>11</sup> to 1835–37.<sup>12</sup> The underdrawing confirms that an original rendering of this motif existed as early as 1808–9.

The pose of the monk is also significant (Fig. 9a). Because of the poor condition of the work, the current IRR images only reveal the walking posture of the figure. In the area of the head, the IRR details show several phases of underdrawing (Fig. 9b). There could be a *pentimento* of the head shape, or even a head covering, which the artist later chose not to paint. Two larger gulls were drawn in the sea, between the monk

and the middle ship (Fig. 10a). Comparison with an 1804 bird study by Friedrich (Fig. 10b) reveals close correlations. He added a further 20 smaller seagulls, which he placed directly on the completed painting in the formation that can be seen following the recent conservation treatment: flapping around the figure of the monk. There are more interesting details in the underdrawing, for example, the summarily drawn cloud borders in the sky area, and likewise the dune ridges and grasses with rather loosely applied zigzag lines, which still shimmer, perhaps deliberately, through the finished painting. All told, Friedrich noticeably emptied the seascape and so emphasised ‘the infinite solitude’ in that ‘boundless watery waste’ that his contemporaries Clemens Brentano and Heinrich von Kleist described so powerfully.<sup>13</sup>



**Fig. 12** *Abbey in the Oakwood*: details of the architecture. (a) IRR image. (Image: Schmidt 2014, Staatliche Museen zu Berlin, Gemäldegalerie.) (b) In visible light after treatment. (Image: Mösl and Schneider 2016, Staatliche Museen zu Berlin, Nationalgalerie.)



**Fig. 13** *Abbey in the Oakwood*: details of the portal and cross. (a) IRR image. (Image: Schmidt 2014, Staatliche Museen zu Berlin, Gemäldegalerie.) (b) In visible light after treatment. (Image: Mösl and Schneider 2016, Staatliche Museen zu Berlin, Nationalgalerie.)

### Underdrawing for the *Abbey in the Oakwood*

The underdrawing of the *Abbey in the Oakwood* was also executed entirely in pencil (Fig. 11). IRR suggests the use of graphite pencils of varying grades of hardness, as well as black chalk. Indications of a double underdrawing can clearly be seen in the faces of the monks. Friedrich may have used a ruler for the church architecture as well as for

the vertical central axis, which reaches the entire height of the picture.

In the *Abbey* Friedrich executed the underdrawn composition to the smallest detail. Today substance losses and ageing processes considerably obscure its legibility, particularly in the area of the church ruins where the underdrawing clarifies the understanding of the architectural context: a row of columns can be clearly made out stretching into the depth of



the picture (Fig. 12). The subject is the perspective of a ruined church with the remains of the west façade and the entrance portal in the foreground and the ruins of the choir in the background with the nave stretching between them. In the IRR details, the central motif of the cross in the entrance portal shows the figure of Christ drawn in detail (Fig. 13). Christ on the cross wears a crown of thorns and his gaze is directed at the coffin being carried by monks through the portal. The lid of the coffin is decorated with a crucifix. In the background of the church interior a monk makes preparations for the funeral ceremony and sets candles on the altar. In the painting only the cross at the portal and the candlelight can be discerned.

## Conclusions

Over the course of this project, the underdrawings of all the Friedrich paintings in the Nationalgalerie, Berlin, were investigated by technical examination. It can be concluded that in Friedrich's painting oeuvre, underdrawing constituted an important step in his working procedure and is of great significance for the understanding of his creative process. It also often plays a major role in the composition of the final versions of the paintings. The lines still partly shimmer through and remain an important and visible element of the composition. Friedrich's underdrawings are both accurate and rich in detail. Regardless of its significance, each individual motif is executed with the utmost precision; there is no gradation of detail according to significance, as one finds, for example, in the underdrawings of Karl Friedrich Schinkel.<sup>14</sup> Technically the underdrawing materials are comparable with the artist's graphic oeuvre. Friedrich used mainly graphite pencil and black chalk as well as soot ink applied with pen or brush. It is possible, if not probable, that sepia was also used as an underdrawing material but this cannot be determined using the currently available methods. Carl Gustav Carus aptly described his friend and colleague Friedrich's manner of painting:

He did not begin to paint an image until it stood, living, in the presence of his soul. Then he would draw on a neatly stretched canvas, at first sketchily with chalk and graphite pencil, clearly and thoroughly cover this with quill-pen and ink, and thereafter shortly proceed to underpainting.<sup>15</sup>

However, there is no other known example in which Friedrich diverged so radically from his original concept as he did with this icon of German Romanticism, produced between 1808 and 1810: *Monk by the Sea*.

## Acknowledgements

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und Halbach-Stiftung**

## Notes

1. H. von Kleist, 'Empfindungen vor Friedrichs Seelandschaft', *Berliner Abendblätter* 12, 13 October 1810, p. 47.
2. The thread count automation project (TCAP) was carried out by Don Johnson, Rice University, Houston, USA. Details can be found in D.H. Johnson, E. Hendriks and C.R. Johnson Jr., 'Interpreting canvas weave matches', *ArtMatters* 5, 2013, pp. 52–61.
3. Infrared camera Osiris, Opus Instruments Ltd, Norwich; sensor: InGaAs array; lens: standard lens; operation wavelength: 900–1700 nm; IR light source: 2 × 500 W.
4. Analysis using environmental scanning electron microscopy (ESEM) was carried out by Sabine Schwerdtfeger, Rathgen Forschungslabor (RF), Staatliche Museen zu Berlin (SMB).
5. Staining of cross-section P2 for protein, using Fast Green, was carried out by Kristina Mösl, Alte Nationalgalerie (ANG), SMB. Fourier transform infrared (FTIR) spectroscopy was performed by Regine-Ricarda Pausewein, RF, SMB.
6. M.P.L. Bouvier, *Vollständige Anweisung zur Öhlmalerei für Künstler und Kunstfreunde. Aus dem Französischen übersetzt von Dr. C. F. Prange*, Halle, Hemmerde und Schwetschke, 1828, pp. 433–437; C. Gürtler Subal, 'Eiklarüberzüge in der Staffeilmalerei', *Zeitschrift für Kunsttechnologie und Konservierung* 1, 1993, pp. 219–245.
7. See A. Siejek, 'Identifikation und Rekonstruktion graphischer Mittel auf dem Malgrund', *Kölner Beiträge zur Restaurierung und Konservierung von Kunst- und Kulturgut* 11, 2004, pp. 13–145; K. Mösl, 'Unsichtbar-sichtbar: Infrarotuntersuchungen zu Schinkels Gemälden und ihren Unterzeichnungen', in H.T. Schulze Altcapenberg and R.H. Johannsen (eds), *Karl Friedrich Schinkel. Geschichte und Poesie: Das Studienbuch*, Berlin, Deutscher Kunstverlag, 2012, pp. 143–155.
8. Hereafter the terms 'graphite' and 'graphite pencil' are used instead of the contemporary colloquial expression 'pencil'. In the 19th century, natural graphite sticks as well as artificial graphite pencils of various degrees of hardness were in use. Having a high carbon content, graphite is readily detected with IRR. The visibility of artificial graphite in IRR is dependent on its degree of hardness: the greater the hardness, the less the carbon content and the weaker the rendering in IRR (Georg Dietz, Head of Conservation, Kupferstichkabinett (KK), SMB, personal communication, 30 May 2016).
9. Artificial chalks were more common in the 19th century and are more easily detected by IRR as opposed to natural graphite

- sticks (Georg Dietz, KK, SMB, personal communication, 30 May 2016).
10. See H. Börsch-Supan, 'Bemerkungen zu Caspar David Friedrichs *Mönch am Meer*', *Zeitschrift des deutschen Vereins für Kunstwissenschaft* XIX(1/2), 1965, pp. 63–76.
  11. See S. Hinz, *Caspar David Friedrich als Zeichner. Ein Beitrag zur stilistischen Entwicklung und ihrer Bedeutung für die Datierung der Gemälde*, unpublished PhD dissertation, Department of Art History, University of Greifswald, Germany, 1966, no. 687.
  12. See H. Börsch-Supan and K.W. Jähnig, *Caspar David Friedrich. Gemälde, Druckgraphik und bildmäßige Zeichnungen*, Munich, Prestel, 1973, p. 471; C. Grummt, *Caspar David Friedrich, Die Zeichnungen: Das gesamte Werk* (2 vols), vol. 2, Munich, Beck, 2011, p. 880.
  13. See Kleist 1810 (cited in note 1), p. 47.
  14. See K. Mösl, 'Unsichtbar-sichtbar: Infrarotuntersuchungen zu Schinkels Gemälden und ihren Unterzeichnungen', in H.T. Schulze Altcapenberg and R.H. Johannsen (eds), *Karl Friedrich Schinkel. Geschichte und Poesie: Das Studienbuch*, Berlin, Deutscher Kunstverlag, 2012, pp. 143–155.
  15. K.K. Eberlein, *Caspar David Friedrich. Bekenntnisse*, Leipzig, 1924, p. 239.

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# IN SEARCH OF THE ULTIMATE PAINTING TECHNIQUE: MUNICH IN THE 1820s–1840s

Renate Poggendorf

**ABSTRACT** During the reign of Ludwig I, who occupied the throne of what was still the young kingdom of Bavaria from 1825 to 1848, his capital Munich underwent extensive redevelopment. The king had the new buildings ornamentally decorated and provided with monumental murals depicting mostly historical or literary themes. The techniques not only had to be practicable, durable and capable of meeting his artistic requirements but in addition, a particular status was afforded by references to the art of antiquity or of the old masters. For fresco painting, Ludwig obtained the services of Peter von Cornelius, who brought the relevant experience from Rome and passed it on to his pupils. Out of a veneration for the art of antiquity, there grew a desire to revive the technique of encaustic painting which, although forgotten in practice, had been reported in ancient sources. The court architect Leo von Klenze was involved in a lively debate with artists and paint technicians as to the best techniques; however, problems resulting from the manageability of the recipes led once again to the decline of this short-lived phenomenon. While oils were avoided because of the danger of darkening, the painter Carl Rottmann enjoyed great success, first with frescoes and later with inexperienced wax-resin techniques.

## Munich in the 1820s–1840s

For the old princely capital of Munich, the raising of Bavaria to the status of a kingdom under Maximilian I Joseph (1756–1825) in 1806 involved a major redevelopment and many changes to the cityscape. The urban area grew rapidly, far beyond its old historic centre. Even as crown prince, Maximilian's son, Ludwig I (1786–1868), who reigned from 1825 to 1848, had been significantly involved in commissioning buildings and this continued after his abdication. An enthusiast for neoclassicism and a great lover of ancient Greece, he had magnificent streets and squares laid out with buildings that were no less splendid. They dominate the appearance of the city to this day: Ludwigstrasse with the Feldherrnhalle, University, State Library and the arch known as the Siegestor; Königsplatz with the Glyptothek and Propyläen; extensions to the Residenz along with the Alte Pinakothek and the (no longer extant) Neue Pinakothek. Ludwig was an important collector of ancient sculpture and paintings by the old masters, but he also collected works by his contemporaries. He promoted artists and craftsmen and awarded numerous major commissions for the furnishing and decoration of his newly erected buildings.

In the early 19th century, the neoclassical notion that the sculptures and buildings of antiquity had been white and unpainted was challenged. Evidence of colourfully painted rooms changed people's ideas of how the new buildings should be decorated. On his trips to Italy, Ludwig discovered the art of the mural and decided this was the way to adorn his building projects. He decreed that monumental paintings would illustrate historical or literary themes in order to educate and edify his subjects, something that Ludwig saw as a great public duty. Munich became a centre of architecture, painting and decorative art that attracted many artists (Fig. 1).

A gradual change took place in the search for practicable and durable methods to meet the artistic requirements for monumental mural projects. Initially from the late 1810s onwards, fresco painting was favoured, followed about a decade later by the idea of the revival of antique encaustic processes. However, the encaustic principle of burning in the paint layers apparently led to technical setbacks and artistic difficulties in its execution. Enthusiasm for the encaustic process only lasted for about a decade and was gradually superseded by paint recipes more appropriate to the artist's intentions, containing mostly wax and different resins and, finally, drying oils. Other wall painting





**Fig. 1** Wilhelm von Kaulbach, *Painters Execute Frescoes and Easel Paintings Commissioned by King Ludwig I*, 1849, Bayer. Staatsgemäldesammlungen, inv. WAF 410. (Image: Bayer. Staatsgemäldesammlungen.)

techniques such as tempera or the later-used stereochromy are mentioned only briefly in this article. Artistic protagonists of the time such as Leo von Klenze (1784–1864), Peter von Cornelius (1783–1867), Julius Schnorr von Carolsfeld (1794–1872) and Carl Rottmann (1797–1850) played a key role in the competition for the ideal technique. The influence of Jacques-Nicolas Paillot de Montabert (1771–1849), Franz Xaver Fernbach (1793–1851) and Friedrich Knirim (1808–1875), known for their treatises, is described in more detail.

Many of the murals dating from the time of Ludwig I were destroyed or severely damaged in the Second World War or fell into decay afterwards. Among the surviving works, Rottmann's comparatively well-preserved, documented and studied cycle of Greek landscapes plays a key role in understanding the technical developments of this period.

## Revival of the fresco

While in Rome in 1818, the crown prince became acquainted with works by the artists of the Lukasbund. This group of German painters, also known as the Nazarenes, pursued an ideal of renewal motivated by their Christian beliefs. They developed an artistic direction of their own, influenced by medieval German painting and their embracing of religious and romantic themes. The group was joined by other German painters, including Peter von Cornelius,<sup>1</sup> who gave it a new focus by extending the subject matter to classical mythology as the precursor of Christianity. The Nazarene breakthrough came when they won two major commissions: the fresco cycles for the Casa Bartholdy<sup>2</sup> and the Casino Massimo. For artists used to working on easels, painting *al fresco* was a technical challenge which they could only overcome with the aid

of skilled Roman craftsmen and the growing experience that came from mutual exchange.<sup>3</sup>

Much impressed by these works, Ludwig I invited Peter von Cornelius to Munich to accept the commission to paint the state rooms in the Glyptothek.<sup>4</sup> Greek mythology provided the pictorial programme for the building which was designed, on the model of a Greek temple, by court architect Leo von Klenze as a home for the royal collection of ancient sculpture. Ludwig shared von Cornelius's conviction that the reintroduction of fresco painting – with its simplified, large areas of colour – would give German art a new foundation for renewal and development.<sup>5</sup>

Numerous monumental mural cycles were designed by von Cornelius and executed with the help of pupils. In the process, some of these pupils, such as Schnorr von Carolsfeld and Moritz von Schwind (1804–1871), created an oeuvre of their own as mural painters. Among the works in question are those in the Allerheiligen-Hofkirche (the court's church of All Saints), the Ludwigskirche, Sankt Bonifaz, rooms in the Königsbau (King's building) and Festsaalbau (banqueting hall wing) of the royal Residenz, and the loggias of the Alte Pinakothek (Fig. 2).

Although a 'revival' of painting *al fresco* is celebrated with the works of Peter von Cornelius in Munich, we should not think in terms of the precise process of *buon fresco* (true fresco). In the *buon fresco* technique, the pigments, mixed only with water, are applied to still-wet lime plaster and bound by this alone. On the contrary, the painters employed the technique of first creating a true fresco underpainting and then finishing the picture by painting over the underpainting when it was dry. This was the only way they could achieve a painterly effect that satisfied their artistic aspirations.<sup>6</sup> Moreover, the terms for different painting techniques were not used with great precision, and to this day the term 'fresco' is often applied, wrongly, to any such mural, regardless of how it was painted.



**Fig. 2** Peter von Cornelius, *Leonardo Paints the Portrait of Mona Lisa*, decoration of a loggia in the Alte Pinakothek, 1836–37, destroyed 1944. (Image: Bayer. Staatsgemäldesammlungen.)

## Murals for the arcades in the Hofgarten

Among the structures decorated with murals at Peter von Cornelius's instigation were the arcades in the Munich Hofgarten. This garden, adjacent to the Residenz, had been open to the public since the 18th century, which made it the ideal place to provide the general public with a cultural experience in the form of murals. As the city was redeveloped, the surrounding buildings were given a uniform appearance on the basis of plans drawn up by Leo von Klenze. The painting began in 1826 with a cycle of narrative paintings relating to Bavarian history executed by von Cornelius's pupils. After disputes resulting from depictions referring too closely to the royal family, a completely new programme was drawn up by von Klenze for the extension. A series of views of Italy was intended to allow visitors to experience significant sites in that country, as if they themselves were cultural tourists in Italy.

The commission for this cycle was awarded to the young landscape artist Carl Rottmann. Although he had only arrived in the city in 1821, he had soon acquired a high reputation in Munich. In 1825, Alpine landscapes in oil by Rottmann were purchased not only by the recently crowned Ludwig I, but also by von Klenze. In addition to holding the position of court architect, he also acted as artistic advisor to the king, and was himself a painter and art collector. The Italian landscapes, which were to be executed *al fresco*, were painted between 1830 and 1833.<sup>7</sup> Rottmann had problems both with the new technique and with the tiresome working conditions; he had to work beneath the arcade, protected and constrained at the same time by a wooden screen. Despite these issues, the completed frescoes met with general admiration and provided a foundation for the next major commission, the cycle of Greek landscapes (Fig. 3).

## Reinvention of an encaustic technique in Munich

After his initial enthusiasm for fresco painting, even before the end of the 1820s the king was starting to favour a new ideal: encaustic. Following the 18th-century rediscovery of the Roman towns of Pompeii, Herculaneum and Stabiae, which had been buried in ash following the eruption of Vesuvius in AD 79, excavations had exposed wall paintings. This caused great excitement on account not only of their artistry, but also their fresh, strong colours and their good state of preservation. This gave rise to a debate among art scholars and scientists on historic techniques. One hypothesis, which in the end turned out to be erroneous, was that they had been painted in encaustic. Attempts were made to reconstruct these historic techniques with the goal of reviving encaustic painting. These were based on descriptions by Pliny the Elder and Vitruvius – who mention the application of heat and the use of wax as a binder for the pigments without providing any recipes capable of replication – and on the basis of investigations of ancient painting.

There were numerous and wide-ranging debates surrounding the encaustic technique,<sup>8</sup> but in this paper only their influence on painting in Munich will be discussed. The most important player where encaustic was concerned was Leo von Klenze,<sup>9</sup> who proposed a theory according to which painting techniques developed in relation to artistic styles. At the highest level, he placed encaustic brush painting, which he claimed had the same qualities as oil painting: luminosity and transparency of the colours, and the possibility of very fine application. Moreover, it did not darken with time and was weather resistant, so that it was almost eternal.<sup>10</sup> Von Klenze thus downgraded the fresco technique.

Von Klenze convinced the king of this new technical ideal thereby strengthening his own position as the designer of





**Fig. 3** Leo von Klenze, unexecuted design for the decoration of the northern arcade of the court garden, 1838. Staatl. Graphische Sammlung München, inv. 1957:41 Z. (Image: E. Seehuber, Staatliche Graphische Sammlung München.)

monumental murals vis-à-vis von Cornelius, Schnorr von Carolsfeld and other exponents of fresco. On his advice, in 1829 the painter and scientist Franz Xaver Fernbach was commissioned 'to bring back encaustic painting'.<sup>11</sup> Fernbach had studied at the art academy in Munich, but he was more of an applied artist than a painter. Supported by Maximilian I, he had studied mineralogy, physics and chemistry, which may have suggested to Ludwig that he was capable of developing an encaustic painting technique. He was one of the first in a long line of scholars in Munich to utilise a knowledge of arts and crafts, science and history to research into, and develop, painting techniques.<sup>12</sup>

His recipe, which he modified over the years, was extremely complex, as evidenced by his first publication which appeared as late as 1845. The paint was to be applied in a number of layers, the composition of the binders varying from one to the next: these included beeswax, rectified turpentine oil, Venice turpentine, amber solution, boiled poppyseed oil and natural rubber. The amber was dissolved in a kiln specially constructed by Fernbach himself. If a good bond between the paint and the support was to be ensured, an important part of the process was the repeated fusing of the paint layers on the wall using a metal vessel filled with glowing charcoal.<sup>13</sup>

From the point of view of a modern conservator, it may seem extraordinary that Fernbach's first commission for a large-scale application of his encaustic technique was the restoration of important medieval murals (which he carried out between 1830 and 1832). But given that the newly discovered paintings were themselves interpreted as encaustic works,

doubtless under the influence of the *zeitgeist*, it is probably not that surprising. Recent investigations have revealed that the restoration at the time largely involved applying a coating followed by extensive overpainting.<sup>14</sup>

Fernbach was not the only one to occupy himself with the technical realisation of the encaustic ideal: in the winter of 1830–1831, three young artists, among them Johann Georg Hiltensperger (1806–1890), were sent to Italy by the king in order to study wall decorations and painting techniques where they met the painter Georg Kaufmann (1798–?), who was performing encaustic experiments. In 1831, Kaufmann was invited to Munich in order to continue his work; he was, however, unable to carry any conviction.<sup>15</sup> The prospect of a trip to Italy was held out to Fernbach too, but this never came about.

Independently of the king's commission to these artists, Leo von Klenze busied himself with a redevelopment of encaustic. On his travels, he had visited the excavations in Pompeii and studied the pictures there. In Paris he had come across mural painting and restoration projects, and may also have become acquainted with the multi-volume treatise on painting by Paillot de Montabert published in France in 1829.<sup>16</sup> Paillot de Montabert was also an encaustic enthusiast and devoted a long chapter to the technique. He recommended copal or elemi resins and beeswax mixed in varying proportions depending on the particular pigment and the desired transparency, glossiness and firmness. Accordingly, von Klenze's recipe is 'a mixture of pure wax, elemi resin or copal in purified lavender or turpentine oil dissolved using the



**Fig. 4** Fernbach (on right) assisting Schnorr von Carolsfeld with painting in encaustic. Eugen Napoleon Neureuther, *The Flowering of the Arts in Munich* (detail), 1861, Bayer, Staatsgemäldesammlungen, Sammlung Schack, inv. 11481. (Image: B. Hartinger, Bayer. Staatsgemäldesammlungen.)

gentle heat of a sand bath': the proportions would be modified as necessary.<sup>17</sup>

## The murals in the Königsbau of the Residenz

Begun in 1831, the first important commission in which encaustic was to be employed was the painting of the royal apartments in the Königsbau, which were built under Ludwig I as an extension of the Residenz and served largely for representation. Von Klenze was responsible not only for the architecture but also for the pictorial programme, and he designed the mural decoration on the model of Pompeii.<sup>18</sup> The execution of the numerous murals was preceded by a debate concerning the most suitable encaustic technique. Today, it is not easy to follow these arguments as the surviving documents are somewhat ambiguous. We have to rely partly on hints and cross-references. Some of the paintings were lost during the Second World War, while as a result of damage or subsequent restoration others are in such a condition that the technique cannot be readily evaluated.

To assess Fernbach's encaustic process, von Klenze asked for sample panels as well as a chemist's expert opinion on the materials and method.<sup>19</sup> Fernbach in turn, probably regarding this request as condescending, seems to have claimed financial compensation for revealing the method he had developed in preliminary experiments. As project manager, von Klenze considered this excessive. Whatever arguments finally tipped the balance, despite all his efforts Fernbach was unable to assert himself against von Klenze, whose technique was the one employed in the Königsbau. As a result, and in pursuance of his art theoretical ideas and his ambition, he was able to claim the sole credit for the reintroduction of the encaustic technique.

The question of the suitability of the technique was also a subject that engaged art critics in the years during which the work on the interior decoration of the Königsbau was in

progress.<sup>20</sup> There were complaints that the murals were too glossy, despite the premise that the gloss of the paints was supposed to be controllable if used properly, and fresco was used 'for all those paintings on vaulted ceilings where even the semi-gloss of the wax paint could detract from the effect.'<sup>21</sup> There were also doubts as to their durability. Technical difficulties that emerged when heat was applied were apparently circumvented by dispensing with the burning in of the paint layers altogether, notwithstanding that 'encaustic' literally means 'burning in', without which the technique cannot live up to its name. Von Klenze later conceded that the final wax layer was merely polished in the end.<sup>22</sup> This may explain why, in the sources relating to the Königsbau, such terms as 'wax paints' or 'wax painting' constantly crop up.

## Encaustic for the Festsaalbau

Leo von Klenze undertook a trip to Paris in 1836 from where he brought back new ideas on the encaustic technique. The decoration of a further new wing of the Residenz, the Festsaalbau or banqueting hall wing, was just beginning. On the initiative of Schnorr von Carolsfeld, who was to collaborate on the painting, Fernbach was consulted once again and given a second chance. The two rival encaustic methods promoted by Fernbach and von Klenze respectively were compared on 22 April 1837 by a commission set up for the purpose.<sup>23</sup> This commission was comprised of the art academy professors Schnorr von Carolsfeld and Joseph Schlotthauer (1789–1869), the court apothecary Franz Xaver Pettenkofer<sup>24</sup> (1783–1850), the chemist and mineralogist Johann Nepomuk von Fuchs (1774–1856), the mineralogist Franz von Kobell (1803–1882), and the chemist Kajetan Georg Kaiser (1803–1871). The comparison was carried out in the chemical laboratory of the Academy of Science, with a view to establishing whether the techniques satisfied the painters' requirements and if the results would be durable. The commission decided in favour of Fernbach's method, as a result of which Fernbach had to transfer the rights in his invention to the art academy without financial recompense, but in return was given the post of *Conservator*. This also meant that he could be called upon by the king to carry out restoration work.

In 1837, Schnorr von Carolsfeld began with the major commission for history paintings in the Festsaalbau, which honoured the emperors Rudolf II, Frederick Barbarossa and Charlemagne. He worked on these until well into the 1840s, probably using the same technique. In his memoirs, he described his close collaboration with Fernbach: the latter supervised all the technical work from the application and smoothing of the plaster, the preparation of the binder mixture, the warming of the walls and application of the ground layers to the final application of a hot coating (Fig. 4).<sup>25</sup> In spite of the complicated and laborious process, Schnorr von Carolsfeld remained a staunch supporter of Fernbach.

Fernbach's encaustic methods now came to be employed in other projects. Johann Georg Hiltensperger, who had been sent to Pompeii in 1830 to study Roman painting and





**Fig. 5** Carl Rottmann, *Olympia*, 1839, Bayer. Staatsgemäldesammlungen, inv. WAF 866. (Image: B. Hartinger, Bayer. Staatsgemäldesammlungen.)

had then collaborated on the Königsbau, was awarded the commission to execute scenes from the *Odyssey* on the ground floor of the Festsaalbau. The pediment fields of the Hoftheater, facing west and thus exposed to the weather, were to be painted using Fernbach's technique to designs by Ludwig Schwanthaler (1802–1848).

### Carl Rottmann's Greek landscape cycle

Carl Rottmann's cycle of Greek landscapes plays a key role in the further development of the debate on the ideal painting technique and their execution is well documented.<sup>26</sup> Unlike the other major mural projects, these paintings survived the Second World War relatively intact. After the successful completion of Rottmann's frescoes of Italian landscapes in the west arcade, attention now turned to the north side of the Hofgarten (Fig. 3). The programme was determined by the king's enthusiasm for ancient Greece. At the height of the euphoria at the start of a new era of artistic creativity using the encaustic technique, Ludwig I decided in 1832 to have the 38 planned Greek landscapes painted 'not *al fresco* like the Italian ones, but in encaustic'.<sup>27</sup> In 1834–35,

the king sent Rottmann to Greece to capture his impressions of the landscape in pencil drawings and watercolours. Back in Munich, Rottmann used these to develop the definitive compositions, which he executed between 1838 and 1850, not only as murals, but also in numerous smaller versions as easel paintings.

While the king's decision in favour of encaustic meant that Rottmann once again had to adjust to a new painting technique, it did offer favourable framework conditions. In view of the poor initial experiences, the paint was not to be applied directly to the plastered wall. Instead, it was applied to mobile mortar plates which would later be attached to the walls of the arcade in such a way to allow air to circulate behind them.<sup>28</sup> Rottmann was given an unfinished room in the Festsaalbau as a studio, next to the rooms which were just being painted by Schnorr von Carolsfeld and Hiltensperger. We must assume that Fernbach supported Rottmann's work as equally as Schnorr von Carolsfeld's, however, Rottmann seems to have been uncomfortable with the method, as he wrote to a friend, the painter Carl Ludwig Seeger:

After encaustic painting had become all the rage here in Munich, I thought for my part I would try to get out of it what would be to my best advantage; to start with





**Fig. 6** Carl Rottmann, *Sikyon with Mount Parnassus* (detail), 1839. Bayer. Staatsgemäldesammlungen, inv. WAF 863: detail of the sky painted in Knirim's resin painting technique. (Image: H. Koyupinar, Bayer. Staatsgemäldesammlungen.)



**Fig. 7** Carl Rottmann, *Delos* (detail), 1840. Bayer. Staatsgemäldesammlungen, inv. WAF 866: detail of the sky painted in Rottmann's own technique. (Image: H. Koyupinar, Bayer. Staatsgemäldesammlungen.)

I used Fernbach's resin paint, applied with spirits of turpentine, which has the advantage that everything you paint flows easily from the brush but, when you paint skies, it's hard to get any further because the turpentine evaporates immediately and the paint sticks and won't flow cleanly. But the main reason why I've given up this painting is that experience has taught me that the binder, which consists mainly of amber, gets too hard, and with time there is all the more danger that the paint will crack and flake off.<sup>29</sup>

## Knirim's proposal for resin painting

In autumn 1838, a treatise appeared which propagated a new painting technique.<sup>30</sup> Its author, the little-known drawing instructor and scholar Friedrich Knirim, examined the previous interpretations of ancient painting technique in detail and developed a new thesis. The binders used by the painters of the ancient world were, he claimed, liquid resins or balsams with an addition of wax. Copaiba balsam had similar properties and had been recommended as a binder by the apothecary and restorer Friedrich Lucanus because it was as easy to use as painting in oils. For his resin painting, Knirim recommended a mixture consisting of 29 parts copaiba balsam to one part wax. In January 1839, Lucanus wrote a detailed review of Knirim's book.<sup>31</sup> Following this review, or possibly earlier, Hiltensperger and Rottmann became aware of Knirim's recipe and performed their first experiments. As early as March, von Klenze reported excitedly to the king: 'Not having been able to achieve satisfaction with the paints used hitherto, Rottmann has now overpainted the picture of *Olympia*, which I believe Your Majesty saw in its beginnings, with the paints used by Hiltensperger. The success has been extraordinary, and he himself admits (as I can unreservedly confirm) that he has never painted a more perfect picture in oils' (Fig. 5).<sup>32</sup> The king must have approved the change to the new method, and in the summer of the same year it was confirmed that the two artists should

execute their picture cycles using resin paint as proposed by Knirim.

After all the years of wrangling about the right way to paint in the idealised encaustic technique, and all the concerns regarding the durability of the great mural cycles, it is extraordinary that the painters were allowed to use an untried method. A number of factors may have played a role, however, one of them being that Fernbach had suffered another serious setback. Very soon after the 1838 completion of the upper pediment field of the Hoftheater, major damage became apparent. Fernbach had warned beforehand that even with the best possible execution, there was uncertainty as to durability in this exposed site, but nonetheless, he had to carry out his commission in adverse conditions. As a result, the following year the fresco technique was re-adopted for the lower field of the pediment.<sup>33</sup>

As Fernbach's rival, von Klenze knew how to exploit this situation for his own benefit. In the context of the praise accorded Rottmann's successful work using the Knirim resin painting technique, he complained to the king. He criticised the cost and the durability of Fernbach's method, and his continued secretiveness regarding the ingredients while at the same time praising the paintings in the Königsbau that had been executed using his own recipe.<sup>34</sup> It seems as if von Klenze was concerned above all to constrain the dissemination of Fernbach's ideas. It must be remembered, however, that the alternative for Hiltensperger and Rottmann was not von Klenze's recipe, but Knirim's new one. Had von Klenze distanced himself from his own art theoretical ideal of encaustic? Was the apothecary Lucanus, a regular contributor to *Kunstblatt*, credited in Munich with so much expertise on the question of binders that this could compensate for the lack of a track record for Knirim?

An important factor was probably a change in Ludwig's plans for the Greek landscape cycle that allowed Rottmann to use the painting technique of his choice. Both the king and von Klenze had concerns about exposing Rottmann's outstanding Greek landscapes in the Hofgarten arcade to the ravages of the weather and to rough treatment by visitors. Various alternatives were eventually rejected in favour of what became

the definitive solution: in the early 1840s, the king drew up a plan to build a new museum, the Neue Pinakothek, to house his collection of contemporary art. This plan included a large hall in which the Greek landscape cycle would be displayed. The problem posed by the special demands for durability of an outdoor site was thereby swept aside. The decisive point for the king was doubtless the painterly quality of Rottmann's latest pictures, alongside which theories regarding painting techniques were secondary.

## Rottmann's ideal painting technique

From 1839 to 1841, Rottmann reworked the first two Greek landscapes and painted five more using Knirim's technique (Fig. 6). Although he was praised widely and appointed court painter by the king for his services, he was still not satisfied with his material: he had no confidence in copaiba balsam.

Knirim, aware of the developments in Munich from many publications, felt under obligation to revise his first recipe. In 1845 he published a second, detailed treatise on the 'greatly improved Lucanus-Knirim resin painting technique', which he now called 'balsam wax painting'.<sup>35</sup> The former assumption that painters in antiquity had painted in liquid resin and wax had been erroneous: rather, their paints had been bound with a mixture of fig sap and egg yolk. However, he was still convinced that copaiba balsam and wax had similar properties to the ingredients used by the ancients. The only problem had been that the proportions of these components in his 'resin painting' had been out of balance. He now recommended a doubling of the wax content vis-à-vis the copaiba balsam, and the addition of turpentine.<sup>36</sup>

Rottmann, however, drew his own conclusions from doubts concerning the suitability of copaiba balsam: '*Apaga Satanas! Apaga copaiba!* I began once more to exorcize, and sought out the good old clear and mild dammar, which, when dissolved in spirits of turpentine, takes up a large part of the wax, can be mixed with oil so that it does not dry too fast, and remains constantly half hard and thus the most reliable'.<sup>37</sup> Rottmann appended the exact recipe<sup>38</sup> and explained the advantages of his system. While the sought-after clarity of the colours in varnished oil painting was always greater than those of his resin-and-oils, the crucial advantages of resin-and-wax painting were that the paint dried more quickly and the colours never darkened. The mixture of dammar gum, wax and oil was the softest, and therefore the best, binder system. He advised that the oil content should be kept low, but was crucial when it came to application quality. The proportions should be constant in all the paint layers or become softer towards the top in order to avoid cracking.

By 1850, Rottmann had completed another 16 paintings in the new technique (Fig. 7). The cycle of 23 Greek landscapes was displayed in the newly built Neue Pinakothek from 1853 and since that date has either been exhibited indoors or stored in a museum. Apart from damage sustained in the Second

World War and through subsequent restoration attempts, they have survived in good condition.

In the major mural painting projects, the production technique was a topic for debate between the client, the architect, artists and connoisseurs, and was also widely publicised. The manner of painting studio pictures has rarely been so well documented. From the sources we gather that for encaustic, and for the various wax-and-resin techniques, the possible use of mobile picture supports was also discussed. According to Rottmann, he used his paints not only on primed mortar slabs but also on canvas. As oils, by virtue of their capacity for mixing and blending, were always seen as the standard against which other techniques were to be judged, it is possible that many a painting today declared on visual inspection to be 'oil on canvas' might in fact be nothing of the sort.

## Stereochromy and tempera painting

A further innovation in mural painting that also originated in Munich was stereochromy, also described as 'fresco's little sister'. It was first developed in 1846 by the chemist Johann Nepomuk von Fuchs, who was the first to produce the binder known as waterglass, and tested by the painter Joseph Schlotthauer, both already named in connection with the commission set up to test the encaustic painting method. Following initial technical difficulties, stereochromy was not used for monumental murals in Munich until the reign of Ludwig I's successor Maximilian II Joseph.<sup>39</sup>

A very common painting technique that has not yet been mentioned is tempera: in the first half of the 19th century tempera played a subordinate role and was in no sense idealised.<sup>40</sup> The variety of binder systems subsumed under this term does not allow any succinct definition, but during this period it was understood to mean mixed binders, consisting largely of animal glues, gums or egg, which were thinned with water for use. Because the optical effect was similar to that of fresco, tempera paints were used for the detailed work on frescoes and *a secco* mural paintings, but they were of no importance for easel paintings intended for exhibition. Tempera paints were the essential material for purely decorative wall painting or for decoration where permanence was not an issue, such as stage sets and the like. Decorative painting was subordinate to history painting: the designs were made by architects or artists, but executed by craftsmen.

## The search for an ideal painting technique and did it exist?

Many of the murals dating from the time of Ludwig I were destroyed in the Second World War or fell into decay as a result of inadequate protection or conservation. It is therefore no longer possible to assess the wax-and-resin techniques of the 1830s and 40s, whether or not they are designated 'encaustic'. Rottmann's Greek landscape cycle is

an exception as we can compare the pictures executed using Knirim's resin painting with those in which Rottmann's own binder mixture was employed – and both have stood the test of time. In all the enthusiasm for the new media, what often seems to have been overlooked is the degree to which craft skills and experience played a part in the actual execution. Furthermore, from today's point of view, miracles seem to have been expected of the paintings' durability in outdoor locations. When exposed to the elements, such paintings were damaged or destroyed within a short space of time.<sup>41</sup> To this day, a special aura seems to adhere to the techniques favoured at that time, which may explain why the word 'fresco' has become synonymous with murals in general. The technique of Rottmann's Greek landscape cycle was, until recently, usually classified as 'encaustic,' although contemporary documentation makes it clear that this was not the case.

The search for the ideal painting technique was not limited to Munich – clients, architects, artists and scholars travelled to other centres of art in Europe and eager to learn from new developments elsewhere, they exchanged experiences. The insights gained were published and discussed, always with the ambition of demonstrating a pioneering role for the author or his country. The examination of the effects of these exchanges on the practical execution of the paintings remains a very wide and often unexplored field.

## Acknowledgements

I would like to express my cordial thanks to Michael Scuffil for translating this article.

## Notes

1. The prefix 'von' is used throughout for surnames, irrespective of the time of ennoblement of the individual, who then gained the right to use it thereafter.
2. The ground floor of the building, constructed as the Palazzo Zuccari, had already been decorated with frescoes by its builder Federico Zuccari (1542–1609). The frescoes of the legend of Joseph were removed from the walls in 1886–87 and sold to the Nationalgalerie, Berlin; see F. Büttner, *Peter Cornelius. Fresken und Freskenprojekte* (2 vols), vol. 1, Wiesbaden and Stuttgart, Franz Steiner, 1980, p. 80.
3. See F. Schnorr von Carolsfeld (ed.), *Julius Schnorr von Carolsfeld, Künstlerische Wege und Ziele. Schriftstücke aus der Feder des Malers Julius Schnorr von Carolsfeld*, Leipzig, Wigand, 1909, p. 12; Büttner 1980 (cited in note 2), p. 91; E. Reinkowski-Häfner, *Die Entdeckung der Temperamalerei im 19. Jahrhundert. Erforschung, Anwendung und Weiterentwicklung einer historischen Maltechnik*, Petersberg, Michael Imhof Verlag, 2014, pp. 84–86.
4. See Büttner 1980 (cited in note 2), pp. 130–134.
5. Ibid., pp. 72–75; Reinkowski-Häfner 2014 (cited in note 3), p. 84.
6. See Büttner 1980 (cited in note 2), p. 91; Reinkowski-Häfner 2014 (cited in note 3), p. 80.
7. In the 19th century the Italian landscapes suffered from

vandalism, the ravages of the elements and the resulting restoration measures. In 1944 they were removed from the wall in the face of Allied air raids. They are now exhibited in the Residenz, mounted on slabs.

8. See R. Beyer, 'Enkaustik', in *Reallexikon zur deutschen Kunstgeschichte* (10 vols), vol. 5, Stuttgart, Metzler, 1967, pp. 712–736; T. Hoppe, 'Eine kleine Geschichte über Enkaustik', *Zeitschrift für Kunsttechnologie und Konservierung* 5(2), 1991, pp. 263–288; A. Pietsch, *Material, Technik, Ästhetik und Wissenschaft der Farbe 1750–1850. Eine produktionsästhetische Studie zur 'Blüte' und zum 'Verfall' der Malerei in Deutschland am Beispiel Berlin*, Munich and Berlin, Deutscher Kunstverlag, 2014, pp. 330–365; B. Beckett, *Die gotischen Wandmalereien im Ostflügel der Forchheimer Burg. Bestand und Restaurierungsgeschichte*, unpublished PhD dissertation, Fakultät Geistes- und Kulturwissenschaften, Otto-Friedrich-Universität Bamberg, 2014. Available at: <https://opus4.kobv.de/opus4-bamberg/frontdoor/index/index/docId/6442> (accessed 1 October 2016), pp. 111–126.
9. In this regard, one should examine the role of Georg von Dillis (1759–1841), a painter who was professor at the art academy from 1808 to 1814, and in 1822 became director of the Royal Picture Gallery. An important adviser to Ludwig I, von Dillis had already performed experiments with wax paints by the 1790s. He recommended Fernbach for the restoration of the medieval murals in Forchheim.
10. See L. von Klenze, *Aphoristische Bemerkungen gesammelt auf seiner Reise nach Griechenland*, Berlin, G. Reimer, 1838, pp. 558–633; L. von Klenze, 'Ueber die Decorazion im Innern des Königsbaues zu München', *Allgemeine Bauzeitung*, vols 9–16, Vienna, L. Förster's Artistische Anstalt, 1839, p. 10.
11. See R. Marggraf, 'Über die neue enkaustische Malerei in München und deren Stellung zu anderen Ausübungsarten der Malerei in älterer und neuerer Zeit. Ein Beitrag zur Geschichte der Malertechnik unserer Tage', *Münchener Jahrbücher für Bildende Kunst* 1, 1840, pp. 225–265, esp. p. 244; F.X. Fernbach, *Die enkaustische Malerei*, Munich, Verlag der literarisch-artistischen Anstalt, 1845, pp. 80, 83.
12. See B.F. Miller, 'Painting materials research in Munich from 1825 to 1937', in A. Roy and P. Smith (eds), *Painting Techniques: History, Materials and Studio Practice*, London, IIC, pp. 246–248, esp. p. 248. I am currently working on a publication on Fernbach based on an extensive collection of materials.
13. See Fernbach 1845 (cited in note 11), pp. 120–272, and R. Poggendorf, 'Maltechnik und Bildträger', in H.W. Rott, R. Poggendorf and E. Stürmer, *Die Landschaften Griechenlands*, Ostfildern, Hatje Cantz, 2007, pp. 66–83, esp. pp. 67–70.
14. See G. Goldberg, 'Die Archivalien der Alten Pinakotheken zu den Wandgemälden der Forchheimer Kaiserpfalz', in *Bericht des Historischen Vereins für die Pflege der Geschichte des ehemaligen Fürstbistums Bamberg* 138, 2002, pp. 205–237; and Beckett 2014 (cited in note 8), pp. 109–113. Compare von Klenze's reference to the restoration of murals using encaustic paints in the manner of Paillot de Montabert in the Château de Fontainebleau; see von Klenze 1838 (cited in note 10), p. 632.
15. See H. Glaser (ed.), *König Ludwig I. von Bayern und Leo von Klenze – Der Briefwechsel. Teil II: Regierungszeit König Ludwigs I* (3 vols), vol. 3, Munich, Kommission für bayerische Landesgeschichte bei der Bayerischen Akademie der Wissenschaften, 2007, doc. 701, p. 91, doc. 702, p. 97, doc. 726, p. 164.
16. See J.N. Paillot de Montabert, *Traité complet de la peinture* (10 vols), vol. 8, Paris, Bossange, 1829, pp. 526–662. Paillot de Montabert's references to encaustic were known in Germany through extracts reproduced by the pharmacist Friedrich Lucanus in his widely disseminated text on the restoration of



- paintings; see F.G.H. Lucanus, *Gründliche und vollständige Anleitung zur Erhaltung, Reinigung und Wiederherstellung der Gemälde in Oel-, Tempera-, Leim-, Wasser-, Miniatur-, Pastell- und Wachsfarben...*, Halberstadt, Helm, 1832, pp. 161–162. This was also quoted in Fernbach 1845 (cited in note 11), pp. 68–70.
17. The original reads: 'eine Mischung von reinem Wachs, Elemiharz oder Kopal in gereinigtem Lavendel- oder Terpentinöl bei der gelinden Wärme des Sandbades aufgelöst'; see von Klenze 1839 (cited in note 10), p. 10.
  18. See E. Wasem, 'Die Münchener Residenz unter Ludwig I. Bildprogramme und Bildausstattungen in den Neubauten', in *Miscellanea Bavarica Monacensia*, vol. 101, Munich, Wöflle, 1981, pp. 7–163; and E. Stürmer, *Pompeji auf Bayerns Wänden. Ursprünge und Entwicklung eines dekorativen Stils im 19. Jahrhundert*, unpublished PhD dissertation, Fakultät für Geschichts- und Kunstwissenschaften, Ludwig-Maximilians-Universität, Munich, 2004, pp. 96–114. Available at: [https://edoc.ub.uni-muenchen.de/2329/1/Stuermer\\_Elisabeth.pdf](https://edoc.ub.uni-muenchen.de/2329/1/Stuermer_Elisabeth.pdf) (accessed 1 October 2016).
  19. Von Klenze to Fernbach, 17 April 1832, quoted in Goldberg 2002 (cited in note 14), p. 236.
  20. There were numerous reports on the building and decoration work ordered by Ludwig I in, for example, the specialist journals *Kunstblatt* (1816–1849), edited by the art historian Ludwig Schorn (1793–1842), and *Allgemeine Bauzeitung*, edited from 1836 by the architect Ludwig Förster (1797–1863) in Vienna.
  21. See von Klenze 1839 (cited in note 10), p. 11.
  22. *Ibid.*, p. 16.
  23. See Fernbach 1845 (cited in note 11), pp. 87–94; and Schnorr von Carolsfeld 1909 (cited in note 3), p. 119.
  24. Franz Xaver was the uncle of the chemist Max von Pettenkofer (1818–1901), who became famous worldwide for, among other things, his achievements in the field of hygiene and nutrition. In the context of conservation of paintings, Pettenkofer is best known today for his eponymous process for regenerating blanched varnish and paint.
  25. Schnorr von Carolsfeld 1909 (cited in note 3), pp. 57–155.
  26. The results of many years of study on the history of the Greek landscape cycle were presented in 2007 at the exhibition *Ten Tons Hellas: Carl Rottmann's Cycle of Greek Landscapes* at the Neue Pinakothek, and published as Rott *et al.* 2007 (cited in note 13). The painting technique is described by Poggendorf 2007 (cited in note 13), pp. 66–71, and in R. Poggendorf, 'Apage Satanas! Apage Copaiva' – Fort mit dir, Kopaiva-Balsam!', in Verband der Restauratoren (ed.), *Die Vergänglichkeit des Materials: Künstlerintention versus Restaurierbarkeit*, 2015, pp. 7–23, published online as ISBN 978-3-930015-70-2, PI: urn:nbn:de:101:1-2015021127502. Available at: <http://www.restauratoren.de/termine-details/1769-die-vergaenglichkeit-des-materials.html> (accessed 10 March 2017).
  27. Notes by Ludwig I, 4 November 1832, quoted in E. Bierhaus-Rödiger, *Carl Rottmann 1797–1850, Monographie und kritischer Werkkatalog*, Munich, Prestel, 1978, doc. 125, p. 147.
  28. The supports consist of a reinforced iron frame with a wire mesh. This was filled with mortar which was smoothed on the image side; see Poggendorf 2007 (cited in note 13), pp. 72–76.
  29. The original reads: 'Nachdem hier in München die enkaustische Malerey zur Loosung geworden war, dachte ich: meinetwegen - und suchte ihr das mich am meisten fördernde abzugewinnen; zuerst bediente ich mich der Fernbach'schen Harzmalerey welche mit Terpentinegeist aufgetragen wird, und für sich hat daß alles was man malt leicht aus dem Pinsel fließt bei Lüften ist aber schwer fortzukommen weil, die Farbe durch das augenblickliche Verflüchtigen des Terpentins stockt und nicht rein wird, die Hauptursache aber warum ich diese Malerey aufgegeben ist daß mir die Erfahrung lehrte daß das Bindemittel welches hauptsächlich aus Bernstein besteht zu hart wird und mit der Zeit um so leichter der Gefahr des Springens und Herabblätterns ausgesetzt ist.' Rottmann to Seeger, not dated, Nachlass B 18, in the Hessische Landesbibliothek, Darmstadt. This is probably the first part of a letter of 8 June 1841; see Bierhaus-Rödiger 1978 (cited in note 27), doc. 71, pp. 138–139.
  30. See F. Knirim, *Die Harzmalerei der Alten*, Leipzig, Fleischer, 1839, which was already being publicised in *Kunstblatt* in October 1838 as a new publication.
  31. *Kunstblatt* 8, 24 January 1839, pp. 29–30. Lucanus had already attempted to introduce copaiba balsam as an independent binding medium in Berlin in 1832, but had failed. He published his technical recommendation in 1833, which attracted Knirim's attention; see Pietsch 2014 (cited in note 8), pp. 351–359.
  32. The original reads: 'Rottmann hat das Bild von Olympia welches Ew. [Eure] Majestät ich glaube angefangen sahen, nun da er durchaus mit den bis jetzt verwendeten Farben sich nicht Genüge leisten konnte, mit denen übermalt welche Hiltensperger verwendet. Der Erfolg war außerordentlich, und er selbst gesteht (was ich vollkommen bestätigen kann) daß er nie in Öl ein vollkommeneres Bild gemalt hat.' Von Klenze to Ludwig I, 28 March 1839, quoted in Glaser 2007 (cited in note 15), doc. 902, pp. 15–16.
  33. See Marggraf 1840 (cited in note 11), p. 263; L. Trost, 'Zur Geschichte der Giebelfelder am Hof- und Nationaltheater in München', *Jahrbuch für Münchener Geschichte* 1, 1887, pp. 357–362; Glaser 2007 (cited in note 15), doc. 902, pp. 16–17, doc. 903, pp. 26–27, doc. 914, p. 72; and K. Kinseher, *Womit sollen wir malen? Farben-Streit und maltechnische Forschung in München. Ein Beitrag zum Wirken von Adolf Wilhelm Keim*, Munich, A. Siegl, 2014, p. 32.
  34. See Glaser 2007 (cited in note 15), doc. 902, p. 16.
  35. See F. Knirim, *Die endlich entdeckte wahre Maler-Technik des klassischen Alterthums und des Mittelalters, sowie die neuerfundene Balsamwachsmalerei oder wesentlich verbesserte Lucanus-Knirim'sche Harzmalerei, zur vortheilhaften Vertretung der besten älteren Mal-Arten bei Staffelei und Wandgemälden*, Leipzig, Fleischer, 1845.
  36. See Knirim 1845 (cited in note 35), p. 402.
  37. The original reads: 'Apage Satanas! Apage Copaiva, fing ich wieder an zu exorzieren, und suchte den guten ehrlichen klaren milden Dammar hervor, der in Terpentinegeist aufgelöst einen großen Theil Wachs aufnimmt, mit Öhl sich so mengen läßt daß er nicht zu geschwinde trocknet, und beständig halb hart bleibt und dadurch am zuverlässigsten,' as cited in note 29.
  38. 'Half a pound of crushed selected dammar resin and a quarter pound of finely flaked white wax are dissolved in one pound of rectified turpentine oil. To this mixture half as much bleached linseed oil is added. For the underpainting he uses thinned turpentine oil, which can, he says, even be used during the execution.' Rottmann to Seeger 8 June 1841, Nachlass B 18 in the Hessische Landesbibliothek, Darmstadt, letter, quoted in Bierhaus-Rödiger 1978 (cited in note 27), doc. 67, p. 136.
  39. See J. Pursche, 'Betrachtungen zur Malerei mit Alkalisilikaten. Geschichte, Maltechnik und Restaurierung', in ETH Zürich, Institut für Denkmalpflege (ed.), *Mineralfarben. Beiträge zur Geschichte von Fassadenmalereien und Anstrichen*, Zurich, vdf Hochschulverlag an der ETH Zürich, 1998, pp. 53–66; and Kinseher 2014 (cited in note 33), pp. 40–48.
  40. Several recent publications focus extensively on tempera painting, e.g. Reinkowski-Häfner 2014 (cited in note 3); W. Neugebauer, *Von Böcklin bis Kandinsky. Kunsttechnologische Forschungen zur Temperamalerei in München zwischen 1850 und 1914*, Berlin, Pro BUSINESS, 2016, pp. 63–68. Available at: <http://www.hfbk-dresden.de/studium/studiengaenge/>

fakultaet-2/restaurierung/wissenschaftliche-arbeiten-und-publikationen/dissertationen/neugebauer/ (accessed 1 October 2016); and K. Beltinger and J. Nadolny (eds), *Painting in Tempera c.1900*, London, Archetype Publications, 2016.

41. Apart from the frescoes in the Hofgarten and the pediment fields of the Hoftheater, we should mention here the frescoes executed to designs by Wilhelm von Kaulbach (1850–1854) on the building of the Neue Pinakothek which was later destroyed in the Second World War.

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