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A 'Winter Landscape' by Caspar David Friedrich

John Leighton, Anthony Reeve and Aviva Burnstock

Introduction

John Leighton

The first major exhibition in Great Britain of the work of Caspar David Friedrich was held in London in 1972 [1]. This exhibition heralded a renewed interest in Northern Romanticism and in the work of Friedrich, arguably the most important German painter of the early nineteenth century. Since then it has become increasingly apparent that German painting after 1800 is inadequately represented in this country and when the National Gallery purchased the *Winter Landscape* (No.6517; Plate 7, p.39 and Fig.1) it was the first oil painting by Friedrich to enter a British public collection.

The *Winter Landscape* has an unusual history: it was only recently rediscovered and attributed to Friedrich and it lacks a complete provenance. The attribution is further complicated by the existence of a very similar version of the composition which has hung in the museum in Dortmund for over forty years (Fig.2) [2]. The relation between these two paintings raises interesting art-historical questions, yet the attribution of the National Gallery painting is secure. Its outstanding quality was fully revealed after cleaning in the Gallery's conservation studios and in the following sections of this article, Anthony Reeve and Aviva Burnstock describe the treatment and technical analysis. This introduction provides a brief history of the painting and its variants and outlines the context of this work in Friedrich's art.

The *Winter Landscape* was probably painted in 1811 and therefore belongs to the first phase of Friedrich's mature work. In 1798, after completing his training in Copenhagen, Friedrich moved to Dresden where he gradually established a reputation for his landscape drawings and sepias. He was known primarily as an accomplished draughtsman and although he may have experimented with oil painting as a student, he did not use the medium regularly until about 1807. His first major oil painting, *The Cross in the Mountains* (Fig.3), provoked considerable debate in artistic circles [3]. His critics were offended by the unusual composition and by his use of a landscape image for an altarpiece. In a famous attack on the picture the connoisseur, Friedrich von Ramdohr, questioned whether it was 'a happy idea to use landscape for the allegorizing of a particular religious idea, or even for the purpose of awakening devotional feelings' [4].

Over the following years Friedrich continued to develop his innovative approach to landscape painting, blending images of nature with religious symbolism. A few recurring subjects began to dominate his art; themes of death and renewal, the cycles of nature, or the ages of man and his search for religion. By the end of 1810

Friedrich's reputation was at its height. His largest works to date, *Abbey in the Oakwood* and *Monk by the Sea*, had been purchased by the Crown Prince, later Friedrich Wilhelm IV of Prussia, and a further five paintings had been acquired by Karl August, Duke of Saxe-Weimar [5]. Although his works continued to excite controversy, these successes culminated in his election to the Berlin Academy in the same year.

In contrast to the ambitious dimensions of the major exhibition pictures of this period, the *Winter Landscape* is a small, intimate work, on a scale that was perhaps intended to appeal to a modest private collector. The composition seems to have been conceived as a pendant to a painting of the same date and dimensions that is now in the Staatliches Museum, Schwerin (Fig.4) [6]. In the Schwerin painting, a figure on crutches stares out across a bleak, snow-covered landscape. He is framed by the twisted trunks of two dead oak trees and by rows of tree stumps stretching towards the horizon. A cripple again appears in the National Gallery painting, but his crutches now lie abandoned in the foreground and he sits against a rock with his hands raised in prayer before a shining crucifix. On the horizon, the façade of a Gothic cathedral appears like a vision out of a bank of mist.

Friedrich's works are often open to a variety of interpretations but in the two *Winter Landscapes* his religious and artistic ideas are expressed with unusual clarity. If the Schwerin painting may be read as an image of despair and impending death then the National Gallery picture evokes the promise of salvation through the Christian faith. The symbolic content is conveyed through the contrasting forms of the two works. The tangled, disordered limbs of the dead oaks are compared to the erect forms of the young fir trees: chaos is replaced by order, hopelessness is overtaken by faith.

The composition of the *Winter Landscape* serves to underline the iconography. In the foreground the clearly defined objects are arranged in a narrow, stage-like space and are silhouetted against a misty backdrop. The 'real' space of the foreground is contrasted with the intangible, mysterious quality of the background vision, creating an opposition between near and far, between the natural and the supernatural. The symmetry of the composition, with the form of the distant cathedral, echoing the shape of the foreground trees, enhances the emblematic character of the picture. As the infra-red photographs (see Figs. 10 and 11) show, this was not a casual effect. Close examination of the underdrawing indicates that Friedrich took great care to establish the internal symmetry of the cathedral and by setting the tower slightly back from the central façade he created a silhouette which mirrors the grouping of the trees.

The *Winter Landscape* is first documented in the correspondence of two visitors to Friedrich's studio in



Figure 1 C. D. Friedrich, *Winter Landscape* (No. 6517), oil on canvas, 33 × 45 cm. After cleaning and restoration.



Figure 2 C. D. Friedrich, *Winter Landscape with a Church* (*Winterlandschaft mit Kirche*), oil on canvas, 33 × 45 cm. Museum für Kunst und Kulturgeschichte, Dortmund.

1811 [7]. The painting was exhibited in Weimar later that year [8] and by 1813 it had entered the collection of Dr Ludwig Puttrich in Leipzig [9]. Puttrich acquired several works by Friedrich, but curiously it seems that he did not own the pendant to this composition which is now in Schwerin.

An aquatint copy of the *Winter Landscape* was produced by Johann Jacob Wagner around 1820 (Fig.5) [10] but an exhibition in Leipzig in 1814 is the last record of the whereabouts of the painting in the nineteenth century [11]. Friedrich's reputation was in decline long before his death and for much of the last century he was a forgotten figure. A great number of his works disappeared during this long period of obscurity, although many of these have come to light again in this century.

The Schwerin *Winter Landscape* was rediscovered in 1941. By coincidence, a painting that seemed to be the lost pendant was identified by a Dresden art dealer in the same year. It matched the nineteenth-century descriptions of the composition and Friedrich's name was inscribed on the back of the stretcher. This work was subsequently acquired by the Dortmund Museum and until the discovery of the National Gallery painting, was accepted as the composition painted by Friedrich in 1811.

The National Gallery's *Winter Landscape* was discovered recently in a private collection in Paris. It is possible that Friedrich painted two versions of the same composition but only one is recorded in the contemporary literature and it is important, therefore, to establish whether the London or Dortmund painting is the prime version of the subject. At first glance the compositions seem to be identical yet there are important differences. Several details in the London picture do not appear in the Dortmund version, including the gateway beneath the cathedral and the blades of grass in the foreground. Perhaps the most important variation is in the architecture of the cathedral. In the Dortmund picture the church is an indistinct silhouette with few discernible architectural features, whereas in the National Gallery painting it is drawn in great detail. This precise delineation is consistent with Friedrich's approach and the details of the cathedral may be compared with similar buildings in his other paintings. The design of the window motifs and the minor spires, for example, is very similar to the architecture of the church in the Düsseldorf *Cross in the Mountains* (Fig.6) [12]. These motifs probably share a common source for although the visionary Gothic cathedrals in Friedrich's paintings were usually imaginary structures they were often based on his studies of actual buildings. The details of the London and Düsseldorf pictures may derive from the Marienkirche in Neubrandenburg, a building that appears in many of the artist's studies and paintings.

Some of the variations between the London and Dortmund versions of the *Winter Landscape* are reflected in two contemporary copies of the composition. The earliest of these is a fairly crude copy in pencil and watercolour which was painted in 1812 by Friedrich's pupil, Carl Lieber (Fig.7) [13]. Unfortunately this is not a reliable document since Lieber painted his own interpretation of the subject. This pastiche of his master's composition provoked a dispute between Friedrich and



Figure 3 C.D.Friedrich, *The Cross in the Mountains* (*Das Kreuz im Gebirge*), 1808, oil on canvas, 115 × 110.5 cm. Staatliche Kunstsammlungen, Gemäldegalerie Neue Meister, Dresden.

his pupil that apparently ended in Lieber's dismissal from the studio [14].

The aquatint by J.J. Wagner (Fig.5) is a more faithful copy and it seems to have been based on the National Gallery picture rather than the Dortmund painting. The cathedral in the aquatint closely resembles the building in the National Gallery *Winter Landscape* and includes some of the architectural details. Wagner has also copied the foreground grass which appears only in the London picture. However, this evidence is not conclusive since Wagner has omitted the gateway which is absent also in the Dortmund painting.

The lack of consistent documentation for either version of the *Winter Landscape* inevitably places great importance on a stylistic and technical comparison of the two works. Before describing the style of the two paintings it is worth considering some of the general characteristics of Friedrich's technique.

From the accounts of Friedrich's contemporaries it is possible to build up some picture of the artist at work. Several of his friends and acquaintances left descriptions of his studio and most were struck by its unusual plainness and simplicity. Wilhelm von Kügelgen recalled that 'there was nothing in it except an easel, a stool and a table above which a single T-square hung as the only decoration and nobody could understand why it



Figure 4 C.D.Friedrich, *Winter Landscape (Winterlandschaft)*, c.1811, oil on canvas, 33 × 46 cm. Staatliches Museum, Schwerin.



Figure 5 J.J. Wagner (after Friedrich), *Winter Landscape*, coloured aquatint. Kupferstichkabinett, Berlin (West).



Figure 6
C. D. Friedrich,
*Cross in the Mountains (Das Kreuz
im Gebirge)*,
c.1812, oil on canvas,
44.5 × 37.4 cm.
Kunstmuseum, Düsseldorf.



Figure 7
K. W. Lieber (after Friedrich),
Winter Landscape,
1812, crayon and watercolour,
40.9 × 50 cm.
Goethe Wohnhaus, Weimar.

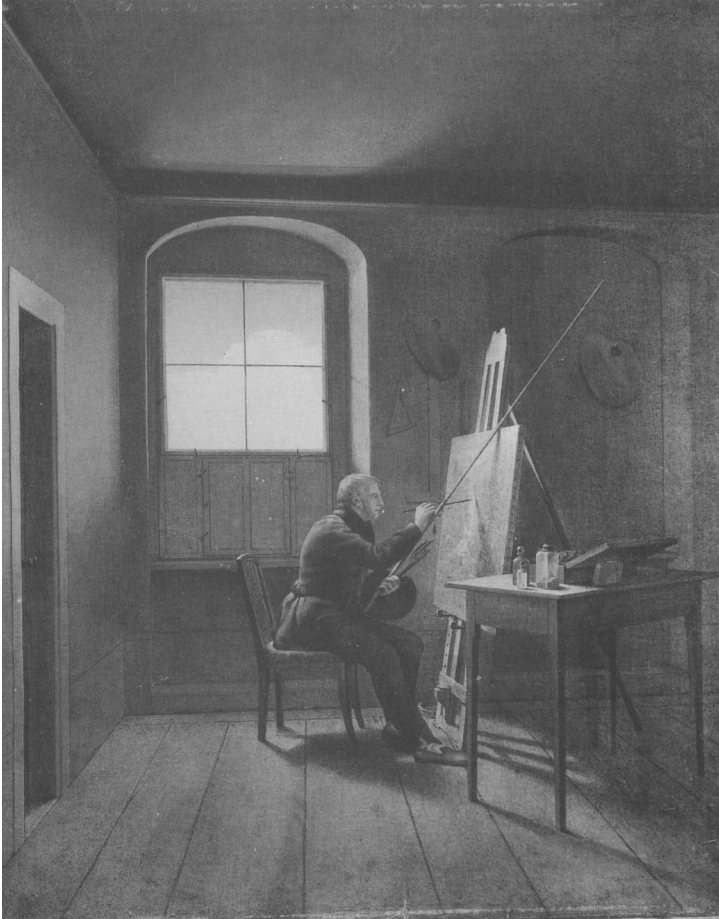


Figure 8
G.F. Kersting,
*Caspar David
Friedrich in his
Studio, c.1811*,
oil on canvas,
54 × 42 cm.
Kunsthalle,
Hamburg.

had been paid this honour' [15]. It is this austere image that Friedrich's friend G.F. Kersting presents in his portrait of the artist (Fig.8). Friedrich contemplates the work on his easel in a studio that is devoid of the usual cluttered accessories and, as von Kügelgen observed, the solitary T-square hangs in a prominent position.

These images of Friedrich's monastic workroom reflect his belief that painting should be an introspective process. In his few recorded statements he emphasized that a work of art is the expression of an inner vision and that its realization is something akin to a religious experience: 'Despite what many artists appear to believe, art is not and should not be merely a skill. It should actually be completely and utterly the language of our feelings, our frame of mind; indeed, even of our devotion and our prayers' [16]. For Friedrich, the creative process was shrouded in mystery and it is hardly surprising that he left no detailed account of his techniques. To the Russian poet, V.A. Zhukovsky, he spoke of the inspiration that comes in dreams: 'I am startled, open my eyes, and what my mind was looking for stands before me like an apparition — at once I seize my pencil and draw; the main thing has been done' [17].

The most useful description of Friedrich's technical procedure was supplied by his friend and follower, C.G. Carus:

It was of great importance to me to find out something about Friedrich's method when planning his pictures. He never made sketches, cartoons or colour studies for his paintings, because he claimed (and certainly not without reason) that imagination tends to cool down through such aids. He never began a

painting until it stood lifelike before his mind, then he drew on to the neatly stretched canvas, first lightly with chalk and pencil, then the whole of it properly and definitely with a quill pen and Indian ink, and soon proceeded to lay on the underpainting. Therefore his pictures in every phase of their development gave a definite, well ordered impression of his personality and of the mood which had originally inspired them. [18]

Recent research has shown that the suggestion that Friedrich never used studies for his pictures is misleading. From a study of his drawings it is clear that a number were made specifically in preparation for paintings [19]. It is also apparent that Friedrich relied heavily on his sketches and drawings to provide the raw material for his landscape paintings. Throughout his career he made numerous studies of the individual elements of nature and often this information was faithfully incorporated into the paintings that he executed in the studio. In the case of the *Winter Landscape*, the central group of trees is based on an earlier detailed pencil study now in the National Gallery in Oslo [20].

Carus may have exaggerated the simplicity of Friedrich's approach but he was correct to emphasize his rigorous technique and the clarity of his execution. This began, as Carus suggests, with a detailed underdrawing. The underdrawing may be studied in a number of unfinished works but in many completed pictures it is still visible with the naked eye and often plays an important part in the final appearance of the picture. Because he used a combination of light grounds and black ink it shows up particularly well in infra-red photographs and reflectograms.

It is often observed that Friedrich's paintings retain the basic character of his drawings and this is especially true of his earlier period. It seems unlikely that Friedrich ever received much formal training in oil painting and when he took up this medium around 1807, he adapted the methods that he had perfected as a draughtsman. In his sepias, for example, a careful linear underdrawing is overlaid with delicate washes of tone and a similar technique is often apparent in his early oils; the paint surface is built up with thin transparent layers and often the range of colour is restricted as if Friedrich preferred to exploit subtle variations in tone. At this stage in his career he rarely exploited the freedom and breadth of oil painting; the brushwork tends to be painstaking and deliberate, sometimes with small strokes of paint placed side by side like a closely woven textile.

Many of the general stylistic traits described above may be observed in the National Gallery's *Winter Landscape*. The underdrawing is clearly revealed in the infra-red photograph and the cathedral in particular is defined with great attention to detail. Using the infra-red vidicon camera it is possible to detect two distinct layers of underdrawing. The basic structure of the cathedral is defined with faint ruled lines, possibly in pencil, and this is worked over with thicker, darker lines which are almost certainly in pen and ink. An underdrawing for the rocks and trees is also visible.

The painted layers obey the outlines of the underdrawing and only a few *pentimenti* are visible, for example at the left and right-hand edge of the largest fir tree. In general the paint surface is thin although

Friedrich is able to evoke a range of different effects through subtle variations in handling. The most textured areas are in the foreground where a slight impasto recreates the appearance of melting snow. The fir trees are thinly painted with short, hatched strokes while for the sky Friedrich adopts an unusual stippling technique which evokes the hazy quality of the mist. Throughout the picture the handling of paint is marked by precision and care.

In technique, the National Gallery *Winter Landscape* corresponds with comparable works from Friedrich's early career. As Aviva Burnstock illustrates below, a similar underdrawing in pen and ink has been detected in a significant number of Friedrich's works [21]. The handling is similar to the pendant *Winter Landscape* in Schwerin which has the same impasto in the foreground snow and similar brushwork in the sky. The Düsseldorf *Cross in the Mountains* provides another close comparison. In size, technique and subject it is closely related to the *Winter Landscape*; a crucifix dominates the centre of the picture, in front of the façade of a Gothic cathedral. As in the National Gallery picture the underdrawing of the cathedral is partly visible through the final paint layer and the background mist is carefully stippled. The more fluid and textured areas of paint in the foreground contrast with these precise, graphic techniques, emphasizing the division between the earthly zone and the triumphant vision in the background.

The *Winter Landscape* in Dortmund does not fit so readily into the pattern of Friedrich's work around 1811. No underdrawing is visible in an infra-red photograph of the Dortmund painting, a fact that immediately sets it apart from the other works by Friedrich which have been subject to technical photography. The style is also quite different from the National Gallery picture. It has a more even paint surface and in some areas, for example the bank of snow in the background on the right, the paint appears to have been rapidly applied. In general, it is more freely painted than the London picture and there is less evidence of the deliberation and care that is characteristic of Friedrich's early work.

In conclusion, there can be little doubt that the National Gallery *Winter Landscape* is an early work by Caspar David Friedrich. The technical data, including the details of the materials used in the painting, add significant weight to the visual and historical evidence that supports the attribution. It is perhaps too early to reach a definite conclusion about the relative status of the Dortmund picture. It may be a copy by one of Friedrich's pupils or followers, although it is possible that it is a version by the artist himself. Several other compositions by Friedrich exist in more than one version and the attribution of these variants is still the subject of debate [22]. A full scientific analysis of the Dortmund picture has yet to be carried out and as more information becomes available about Friedrich's materials and techniques such an examination would certainly provide important information. Other questions remain unanswered, for example concerning the authorship of the inscription inserted into the back of the stretcher of the Dortmund painting [23]. It is also possible that further research will yield more details about the provenance of the two versions of the *Winter*

Landscape. Both pictures are to be included in an exhibition at the National Gallery in 1990. This will not only provide an opportunity to see the paintings side-by-side but will also provide a forum for further debate about Friedrich and his working methods.

Notes and references

General

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SUMOWSKI, W., *Caspar David Friedrich-Studien* (Wiesbaden 1970).

For a full list of references to the Dortmund painting see BÖRSCH-SUPAN, *op. cit.*, no.194, p.319 (illus).

Text

1. See VAUGHAN, W., *Caspar David Friedrich 1774–1840: Romantic Landscape Painting in Dresden*, Tate Gallery (London 1972).

2. 'Winterlandschaft mit Kirche', 33 × 46 cm, Museum für Kunst und Kulturgeschichte, Dortmund, Inv. no.C.4737.

3. 'The Cross in the Mountains (Das Kreuz im Gebirge)', 115 × 110.5 cm, Dresden, Staatliche Kunstsammlungen.

4. VON RAMDOHR, F.W.B., 'Über ein zum Altarblatte bestimmtes Landschaftsgemälde von Herrn Friedrich in Dresden, und über Landschaftsmalerei, Allegorie und Mystizismus überhaupt', *Zeitung für die elegante Welt* (1809), pp.89–119. Ramdohr's criticisms are reprinted in HINZ, *op. cit.*, pp. 138–59.

5. 'Monk by the Sea (Der Mönch am Meer)' 110 × 171.5 cm and 'Abbey in the Oakwood (Abtei im Eichwald)' 110 × 171 cm, Berlin, Verwaltung der Staatlichen Schlösser und Gärten, Schloss Charlottenburg.

6. 'Winterlandschaft', 33 × 46 cm, Staatliches Museum, Schwerin, Inv. no.3321. See BÖRSCH-SUPAN, H., *op. cit.*, no.193, p.316. The Schwerin painting is described in detail in RAVE, P.O., 'Zwei Winterlandschaften C.D.Friedrichs', *Zeitschrift für Kunstwissenschaft*, **V** (1951), pp.229ff.

7. Letter from Gustav Heinrich Naecke to Dr Ludwig Puttrich, 9 June 1811, cited in BÖRSCH-SUPAN, H., *op. cit.*, pp. 212–13; letter from Friedrich Volkmann to Dr Christian August Heinroth, 22 June 1811, cited in VOLKMANN, L., *Die Jugendfreunde des 'Alten Mannes' Johann Wilhelm und Friederike Tugendreich Volkmann, nach Briefe und Tagebüchern* (Leipzig 1925). See also BÖRSCH-SUPAN, H., *op. cit.*, p.176.

8. The painting is described in an exhibition review in the *Journal des Luxus und der Moden*, 2 January (1812), p.118, cited in BÖRSCH-SUPAN, H., *op. cit.*, p.79.

9. See 'Über einige Gemäldesammlungen von Privatpersonen in Leipzig', *Journal des Luxus und der Moden* (1813), p.101, cited in BÖRSCH-SUPAN, H., *op. cit.*, p.82.

10. Coloured aquatint by Johann Jacob Wagner (1766–1834); exhibited in Weimar and Dresden in 1820 and in Leipzig in 1828 and 1915. An impression of this print is in the Kupferstichkabinett, West Berlin.

11. *Journal des Luxus und der Moden* (1814), p.535, cited in BÖRSCH-SUPAN, H., *op. cit.*, p.82.
12. 'Cross in the Mountains (Kreuz im Gebirge)', 44.5 × 37.4 cm, Kunstmuseum Düsseldorf.
13. 'Winterlandschaft' by Carl Lieber (1791–1861), Weimar, Goethehaus, Inv. no.430.
14. See EBERLEIN, K.K., 'C.D.Friedrich, Lieber und Goethe. Mit einem wiedergefundenen Winterbild Friedrichs', *Kunst-Rundschau* (1941), p.5ff.
15. Wilhelm von Kügelgen was the son of Gerhard von Kügelgen, a portraitist and history painter who was a friend of Friedrich from about 1805. Passages from Wilhelm von Kügelgen's memoirs, *Jugenderinnerungen eines alten Mannes* (1870) are reprinted in BÖRSCH-SUPAN, *op. cit.*, pp.156–7.
16. HINZ, S., *op. cit.*, p.129.
17. Cited in VAUGHAN, W., *op. cit.*, p.108.
18. CARUS, G.C., *Lebenserinnerungen und Denkwürdigkeiten* (Leipzig 1865–1866), p.207. See BÖRSCH-SUPAN, H., *op. cit.*, pp.152–3.
19. See for example the essay by HINZ, S., 'Caspar David Friedrich als Zeichner' in *Caspar David Friedrich und sein Kreis*, exhibition catalogue, Gemäldegalerie Neue Meister (Dresden 1974).
20. The drawing is in a sketchbook of 1807, p.8r, pencil, 24 × 36.6 mm, Nasjonalgalleriet, Oslo, Inv. no.B.16070.
21. For infra-red photographs of other compositions by Friedrich, see SANDNER, I., 'Besonderheiten der Unterzeichnung auf Gemälden der Romantik' in H. Althöfer (ed.), *Das 19. Jahrhundert und die Restaurierung. Beiträge zur Malerei, Maltechnik und Konservierung* (Munich 1987), pp.164–75.
22. Other compositions which exist in more than one version include: 'Cross on the Baltic' (BÖRSCH-SUPAN, H., *op. cit.*, nos.215, XXV and XXXIV); 'The Sailing Ship' (BÖRSCH-SUPAN, H., *op. cit.*, nos.216 and 217); 'Two Men gazing at the Moon' (BÖRSCH-SUPAN, H., *op. cit.*, nos.216, 366 and XLIII).
23. The inscription appears on a piece of wood which has been inserted into the back of a new stretcher and reads: 'Friederich Dresden den 20. Juli 1811'. According to SUMOWSKI, W., *op. cit.*, p.70 and BÖRSCH-SUPAN, H., *op. cit.*, p.319, the inscription is not in Friedrich's hand.

Conservation treatment

Anthony Reeve

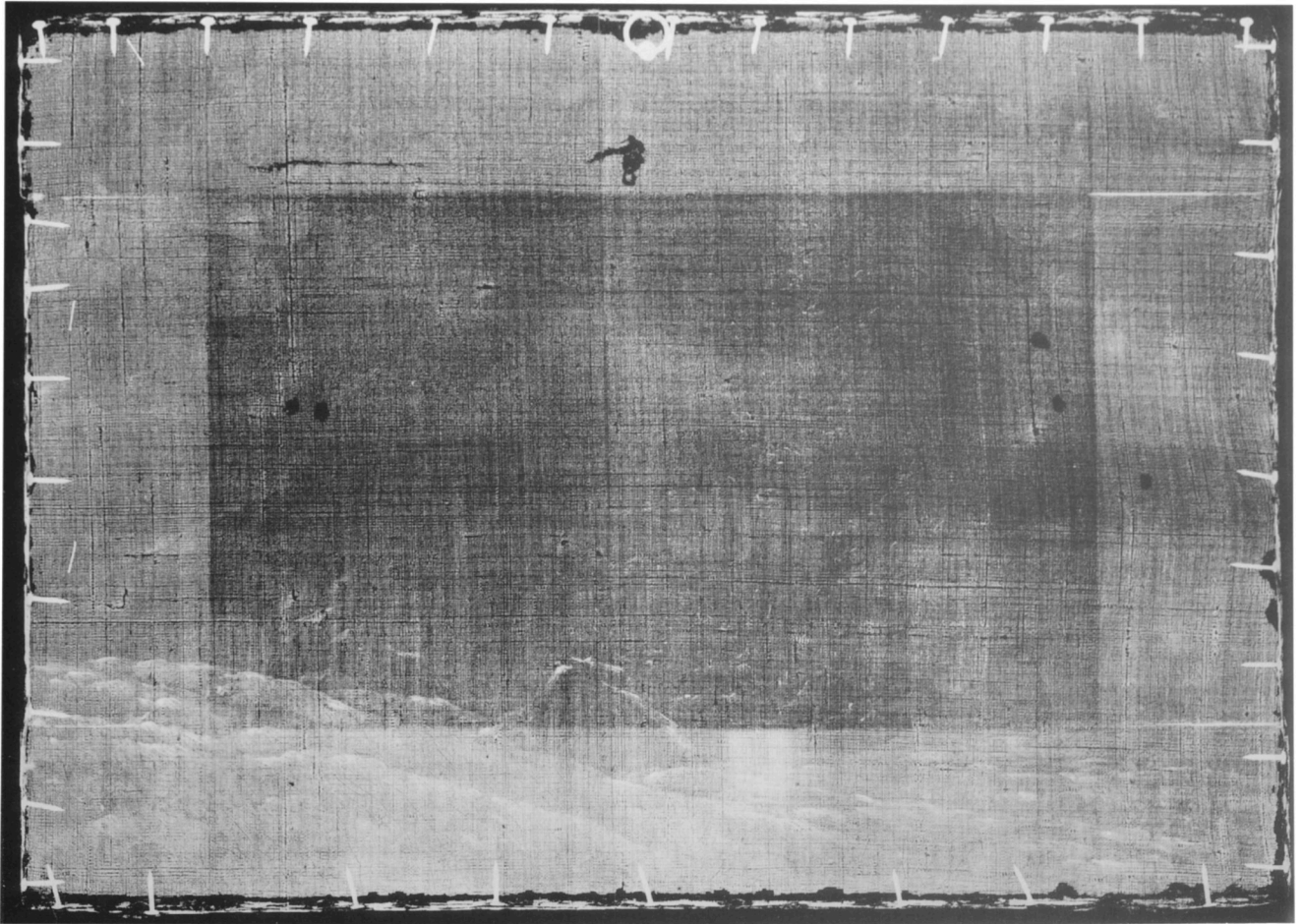
Examination prior to conservation

To enable an assessment of the structure, condition and technique of the painting it was examined with a low-powered stereoscopic microscope and by making the usual technical photographs: black-and-white, colour, raking light, X-ray, infra-red, and ultra-violet.

The X-radiograph (Fig.9) revealed the construction of the painting as quite straightforward, with no unusual ground layers or obvious alterations to the composition. The foreground snow shows clearly because of its high content of lead white. There are slight pull marks in the canvas on the right side alone, suggesting that this piece of canvas may have come from a larger piece already primed before it was applied to the stretcher for painting. This probably accounts for a second priming layer found during examination of samples as cross-sections (see below).

The radiograph also showed five small losses about 0.5 cm across: three to the right of the trees, two to the left of the church, as well as one 2.5 cm in size centred at the top of the sky, and an old tear 7 cm long in the sky to the upper left. There were a few losses on the edges next to the turnovers. The infra-red photograph (Fig.10) further clarified the losses and reveals the extent of retouching over them. It also shows the underdrawing; a great aid in establishing the technique of the picture. Further examination was undertaken with the more sensitive infra-red vidicon system to reveal the underdrawing in greater detail than can be seen in the infra-red photograph. Details photographed from the monitor screen were assembled to make a mosaic of the whole painting (Fig.11). The lines in the middle-distance snow, depicting recession, were first thought to be lines of drawing, but from the vidicon image and samples from the edge they were found to be thicker lines of paint. There is a dark line running vertically some 5 cm to the right of the fir trees' centre, which does not appear to be part of the composition or a change in it, but just an unexplained line of dark paint under the top layer. The surface coating of the picture was a very yellow and discoloured varnish of more than one layer, possibly tinted in the area of the two larger damages in the sky (Plate 8, p.39). The whole colour composition of the painting had been obscured and changed by this layer, as is apparent from the photograph taken during cleaning (Plate 8, p.39).

The picture, painted on a fine linen canvas, had been double-lined using glue. The second lining was a very fine gauze while that on the back of the original was a closely-woven linen. Both linings had become brittle and needed to be removed. The stretcher was thought to have been replaced at the time of lining, as the old stretcher marks visible on the painting were narrower than those of the present stretcher. There was some loose paint and some losses along the edges.



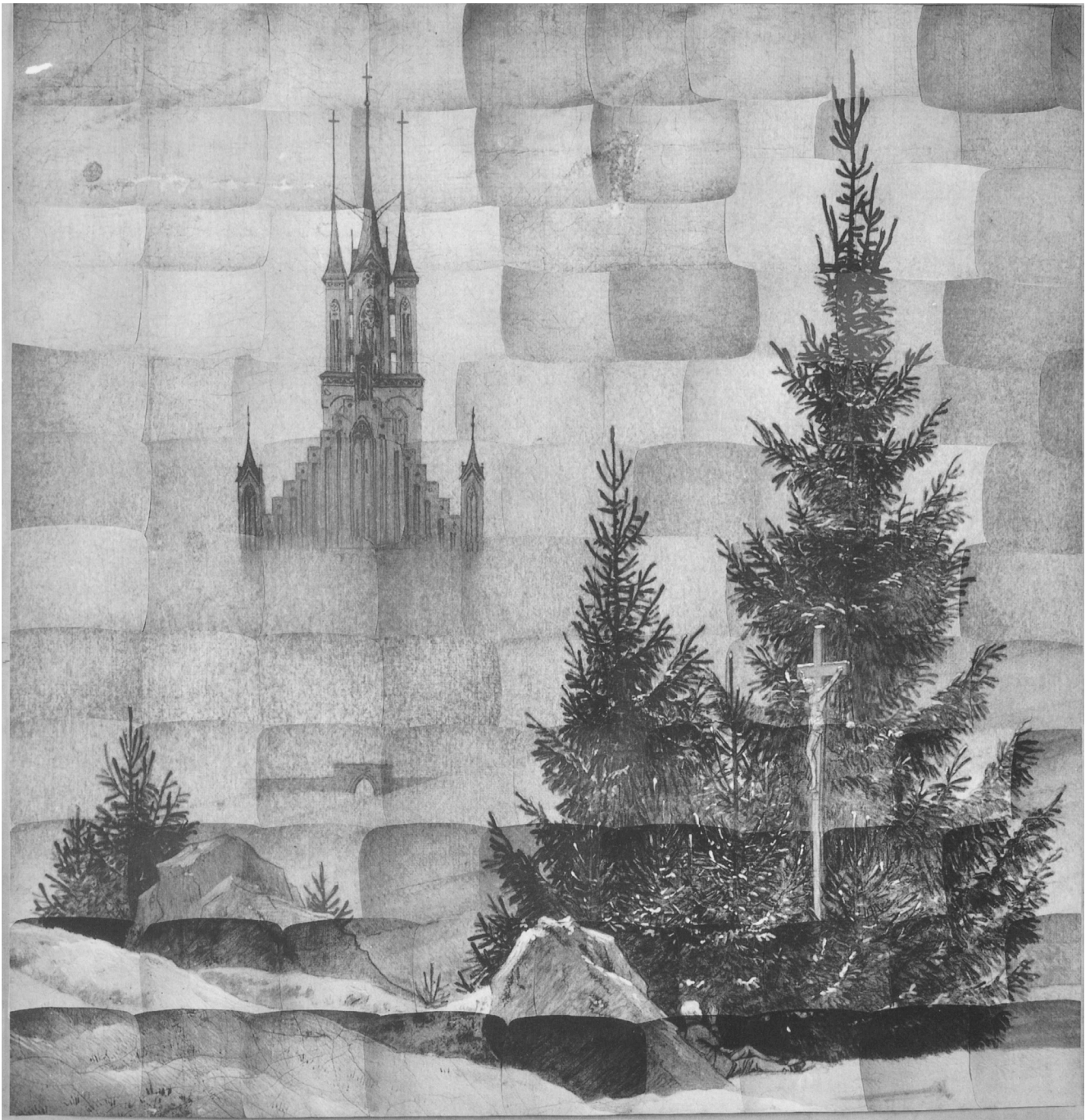


Figure 11 (Above) Infra-red reflectogram mosaic of the whole of No.6517.

Figure 9 (Left, top) C.D.Friedrich, *Winter Landscape* (No.6517), X-radiograph of the whole.

Figure 10 (Left) C.D.Friedrich, *Winter Landscape* (No.6517). Infra-red photograph detail of the areas of loss in the sky. The underdrawing for the cathedral is visible, but is more clearly seen in infra-red reflectograms (see Fig.11).



Figure 12 C. D. Friedrich, *Winter Landscape* (No.6517), after cleaning, before restoration.

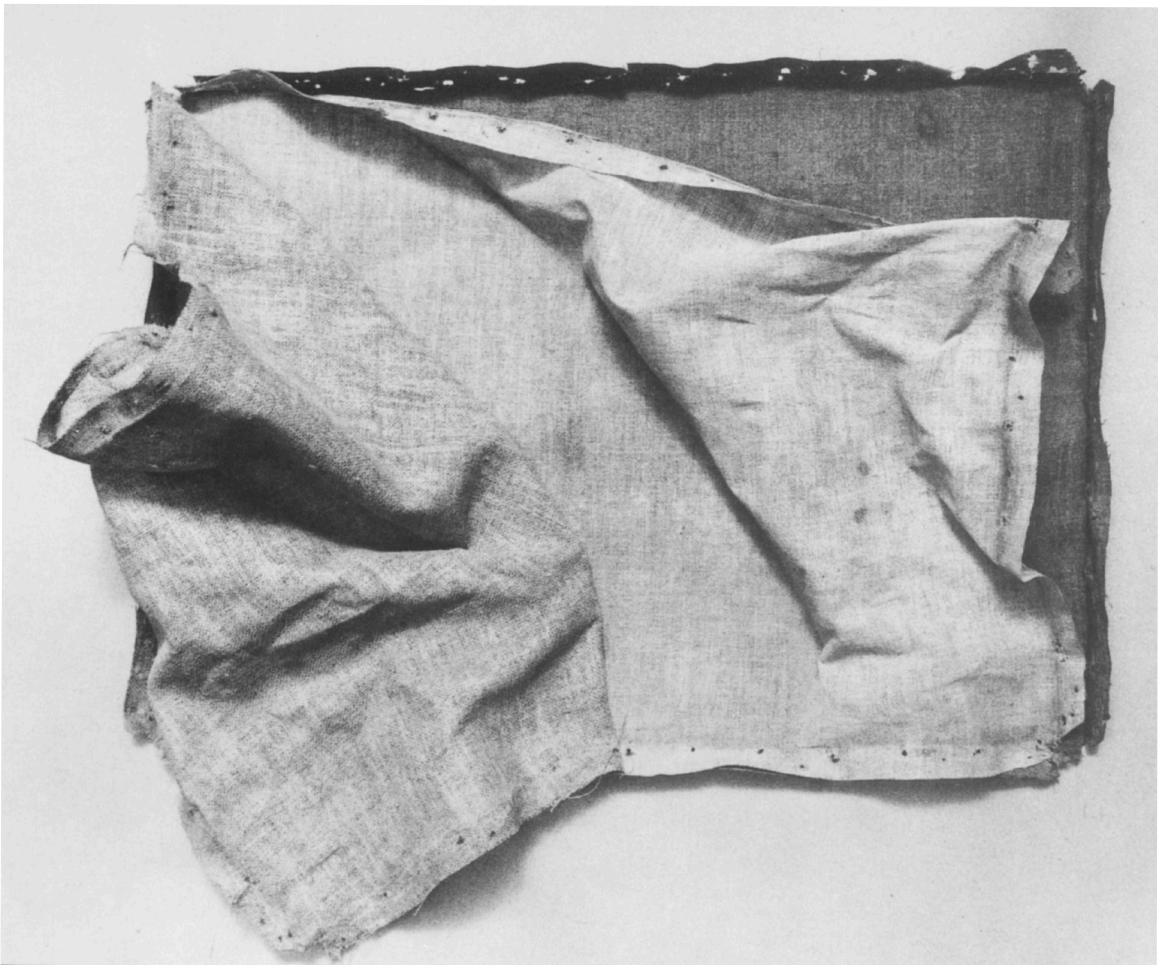


Figure 13 Back of the National Gallery *Winter Landscape* during removal of the lining canvases.

Treatment

Whenever possible, new acquisitions go on show immediately: however, this picture first needed consolidation, lining, cleaning and restoration to ensure its safety and to reveal it in its true condition. After the full examination and documentation described above, the treatment was begun.

The loose paint was secured to enable cleaning to be carried out before lining, so as to obtain the best penetration of the adhesives and to allow relaxation without the restraint of the old varnish and retouchings.

The varnish layer was very uneven: some partial cleaning may have been done before. Small cleaning tests were carried out using conventional solvents to test the solubility of old varnish and retouchings. The varnish softened very easily and was slowly removed. Analysis of the cleaning swabs showed it to be dammar resin. There was also some evidence for the presence of copaiba balsam [1] which could be a residue left on the surface from a previous cleaning, having been used with a solvent to delay evaporation.

During cleaning the overpainted sun was discovered to the left of the church. Although it was visible in the X-ray photograph and also, under an old retouching, in the infra-red image, it was not until the retouchings were removed that its existence could be confirmed. The previous restoration rested on a misunderstanding of the composition and/or an attempt to make the old damage less obvious by excessive retouching. This was also the case with the other retouchings, all of which were rather larger than the losses. The rest of the varnish was readily removed and the paint found to be in good condition (Fig.12).

In view of the deterioration of the double lining and the losses and tears in the original canvas it was considered necessary to line the painting again for lasting consolidation and support. The picture was protected from the front with a thin facing of Eltoline tissue and facing mixture. The double lining canvases were only lightly attached and could be removed very easily (Fig.13). The remains of old glue were scraped away and the picture paste-lined on to a fine linen canvas. Ordinary beeswax was ironed into the back of the new linen to reduce the effect of possible changes in the environment and to extend the life of the adhesive. The picture was placed on a new stretcher and was then ready for restoration.

After varnishing with Ketone-N, losses in ground and paint layer were filled. Retouching was carried out in a medium of Paraloid B72 and the final varnish was again Ketone-N. For the most part, restoration was straightforward although damages in the sky were more difficult to match due to the translucency of the shade of smalt pigment used, as well as the artist's stippled painting technique.

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1. MILLS, J. and WHITE, R., 'Analyses of Paint Media', *National Gallery Technical Bulletin*, 12 (1988), pp.78-9.

Technical examination of Friedrich's 'Winter Landscape'

Aviva Burnstock

The *Winter Landscape* by Caspar David Friedrich is the first nineteenth-century German painting to enter the National Gallery Collection and the only painting by Friedrich on display to the public in Britain. Its acquisition and subsequent cleaning has provided an opportunity to examine the materials and technique of an important early work by Friedrich.

Pigments, ground and paint layer structure

The painting technique utilizes only a few pigments. Colour is less important than are variations in tone. The simplicity of the composition and smooth paint surface are more akin to graphic works on paper than to the painterly quality frequently exploited using an oil medium.

Paint samples from the edges of the painting included most of the tonal gradations in the background and sky. The only other colours used in the painting are the green and brown of the grass in the foreground, which were also examined.

The ground

Like many of his contemporaries in Germany, Friedrich often used a light-coloured ground [1]. An admiration for late Gothic art by the Romantic painters led to their preference for light grounds with the aim to achieve a similar luminosity in their work [2].

The ground of the *Winter Landscape* has two layers. Both consist of a mixture of chalk and lead white with a little umber and ochre. The upper layer contains a higher proportion of lead white and is therefore lighter and cooler in tone than the underlayer. The same combination of materials has been identified in the grounds of three other paintings by Friedrich and in one painting a pink ground has been used [3].

The X-radiograph of the painting shows cusping along one edge of the original canvas (Fig.9). This indicates that the canvas was stretched and then primed. As part of an earlier restoration, the painting support was trimmed, which may have removed the other cusped edges.

Evidence of cusping does not necessarily indicate that the ground was applied by Friedrich himself. Commercial preparation is likely to have involved stretching a large piece of canvas on a frame using nails or thread, before priming [4]. On a large scale, this would produce similar cusped edges to those resulting from stretching and priming a canvas on the stretcher intended for the painting. The canvas of the *Winter Landscape* may have been cut from one side of this larger piece, whether bought or primed in the studio, thereby losing three of the cusped edges. Although there is little information available about the practices of commercial priming, it is known to have been done in Vienna as early as 1765 [5].

The presence of a double ground suggests one further possibility: that a roll of canvas primed with a single layer of ground was bought by Friedrich, who added the

second layer. This could explain the difference in composition of the two ground layers. Johan Christian Dahl [6], who worked with Friedrich after 1818, often bought commercially primed canvas and added further ground layers before beginning the compositional stage of painting.

The binder for the ground is the same as that used for the paint medium: walnut oil [7]. It seems logical that Friedrich applied both the paint and ground using the same binder. However, several colour suppliers' references from 1773 to 1857 report the use of nut oil for commercial preparation of grounds [8]. It would therefore appear that walnut oil was widely used and not characteristic of Friedrich's ground alone.

The use of commercially prepared grounds in the first quarter of the nineteenth century is strongly suggested by the results of pigment analysis of the grounds from paintings by Friedrich's contemporaries Wilhelm von Kobell, Johann Georg von Dillis, Joseph Rebell, Peter von Hess, Johan Christian Dahl, Johan Christian Klengel and Traugott Faber [9]. The composition of the grounds is too consistent, in terms of materials and their proportions, to allow for idiosyncratic additions which are usual in grounds applied by artists themselves. Pictures by Klengel, Faber and Friedrich, who worked in Dresden, show a similar ground composed of lead white, chalk and ochre alone, whilst the grounds of painters elsewhere in Germany often include a little barium sulphate. This suggests that primed canvas was used, obtained from a local source.

Paint layer structure and pigments

The variation in tone and texture of the surface of the *Winter Landscape* is achieved in a single thin layer using remarkably few pigments. The subtle shades of cool white, grey and pink are made using smalt of different grades from pale grey to deep blue. Smalt is used alone or mixed with lead white. A few particles of iron oxide red have been added to greyish smalt and white to make the pale mauve of the sky (Plate 9a, p.39).

In details such as the clumps of grass, each blade is painted using a characteristically fine upturning brushstroke, applied as a final touch on top of the snow layer (Plate 9b, p.39). The green and brownish areas of grass contain a more complicated mixture of pigments than is found elsewhere in the painting, including smalt, Naples yellow, bone black, ochre and possibly Prussian blue in varying proportions [10].

A great deal of work has been done at the Doerner Institute in Munich on the occurrence of pigments in nineteenth-century German painting. Included in this study are analytical results from four paintings by Friedrich [11]. The large number of works investigated provides statistical information about the date when pigments were first used by artists and when others ceased to be used. What emerges of particular relevance to Friedrich is that in the first quarter of the nineteenth century in Germany, smalt is used less often and cobalt blue is more frequently found in easel paintings [12].

In the first decades of the nineteenth century several new pigments were introduced. Cobalt blue came into use as an artists' pigment soon after its discovery by Thénard in 1802. The earliest known occurrence of

cobalt blue in a National Gallery painting is in the sky of *The Portrait of Dr Forlenze* (No.2288) painted in 1807 by Jaques-Antoine Vallin. Cobalt blue almost entirely replaced smalt in Friedrich's palette after about 1820 [13]. Similarly, Naples yellow, used in some early works, was superseded by chrome yellow, which was in commercial production by 1818.

It is clear that Friedrich was painting during a critical period of expansion in the variety of artists' pigments available, which makes pigment identification particularly useful in the dating and attribution of his works.

Friedrich's use of several different grades of smalt in the *Winter Landscape* is unusual since several other blue pigments were available at the time. However, his choice was clearly deliberate; the low refractive index of smalt bound in an oil medium produces translucent paint and appears in several of his paintings which contain mystical or religious images [14]. The same effect could not be achieved using either cobalt or Prussian blue which have higher refractive indices when bound in oil and appear comparatively opaque, especially when mixed with white [15].

The physical characteristics of smalt in oil and the use of stippled brushstrokes, especially in the hills and sky, enhance the transparency and light scattering of the paint surface. This technique effectively creates the texture of a shimmering, bleak misty landscape, in which hills and sky merge into the space beyond the church. Stippled paint appears in paintings throughout Friedrich's career, for example in *The Cross in the Mountains* in the Kunstmuseum, Düsseldorf (Fig.6) painted in about 1811 and the later and much larger *Riesengebirge* (1830–35) now in Berlin [16]. Stippling is used in translucent parts of the painting, especially in the skies and grey-blue parts of the landscape. The paint in these areas may contain smalt, although no analysis is known to have been done. Friedrich is likely to have adopted the technique of stippling in order to achieve effects which would be similar to his early sepias.

Smalt was used as an artists' pigment in Germany much later than in France. It has been found in fourteen paintings by German artists from the first quarter of the nineteenth century, used on its own or mixed with other pigments [17]. Regular use of smalt seems especially common in Dresden where Friedrich worked; it has been identified in paintings by two other Dresden based artists — Klengel and Faber. At the same time, it was also used by their contemporaries, Dillis and Kobell, working in Munich and in paintings by Johan Christian Dahl.

The latest occurrences of smalt found so far have been in two paintings from the Schack Collection in Munich, one by Lenbach dated 1868, who worked in Munich, and another by August Wolf, of 1874 [18]. Wolf came to Dresden in 1868 to copy paintings from museums there and therefore he may have used the blue available locally [19].

Smalt was manufactured in Germany well before Friedrich's time. It was used in porcelain production as an enamel and underglaze [20]. One of the most famous china factories was established in 1710 at Meissen, about twelve miles from Dresden and was at peak production in 1800. In the same town a smalt factory is known to

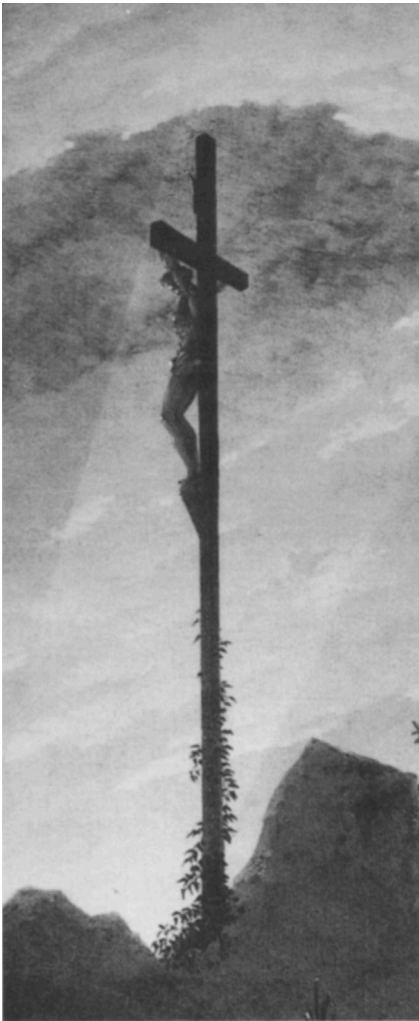


Figure 14 Detail from C.D.Friedrich, *The Cross in the Mountains* (see Fig.3), Dresden.

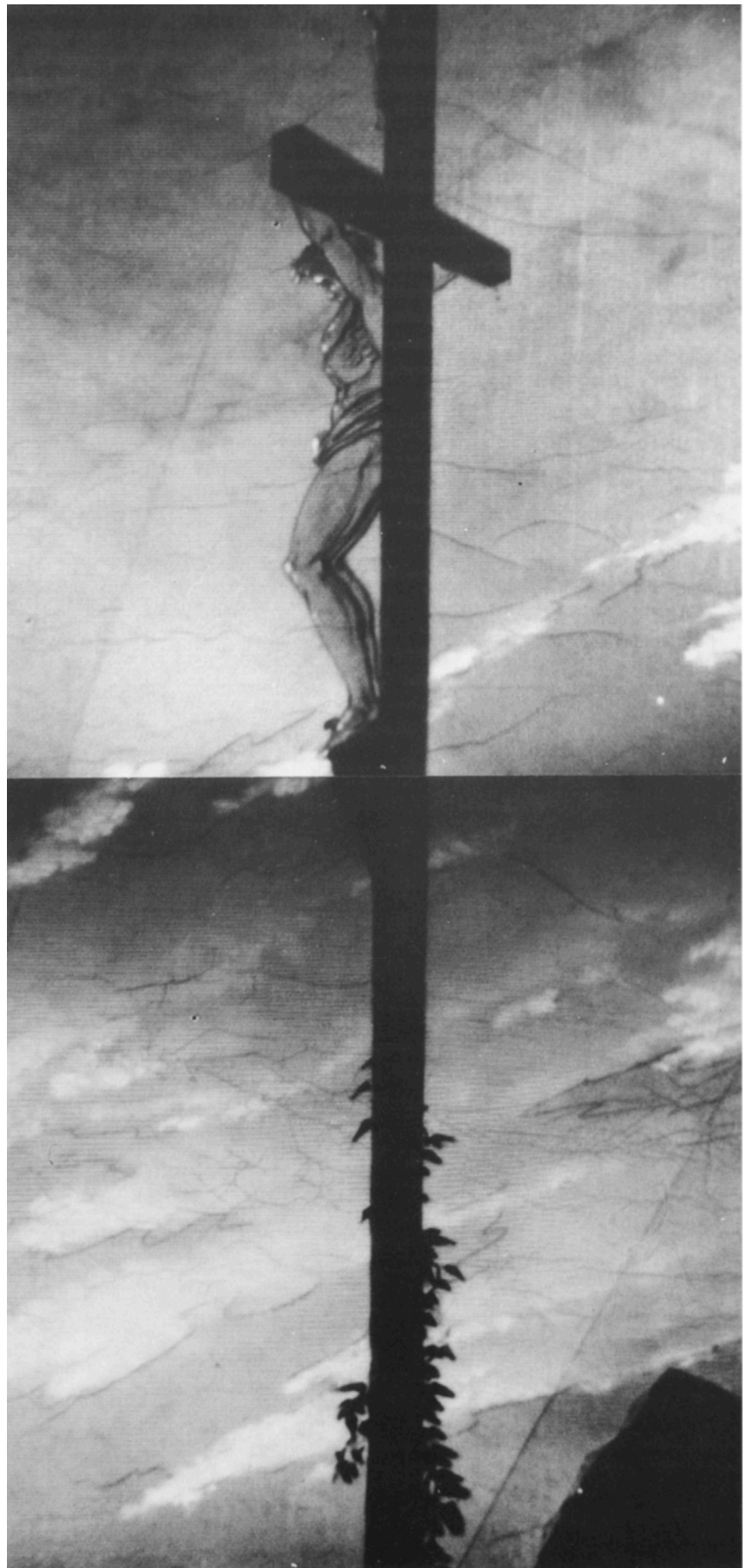


Figure 15 Infra-red reflectogram detail of the Dresden *Cross in the Mountains* (See Fig.14). Courtesy of Dr I. Sandner.

have been working at the end of the eighteenth century. The oldest manufactory known was built in the Erzgebirge in the sixteenth century and a works in the Black Forest which opened in 1517 produced smalt until 1835. There were others in Baden, Schlesien and Thüringen [21]. In the production process, cobalt ore such as cobaltite or smaltite was roasted to form cobalt oxide, sometimes called 'zaffer'. This was heated together with quartz and potash and then poured into cold water, which caused the blue melt to disintegrate into particles. These were then coarsely ground to make the pigment called smalt. The colour produced varies with cobalt content and the particle size: the deepest blue smalt contains more cobalt and has the largest particle size. A recipe for smalt which was used between 1768 and 1771 in the Black Forest factory mentions the use of cobalt ores from English and Bohemian sources as an alternative to the local Black Forest ore [22].

Underdrawing

Perhaps the most characteristic feature of Friedrich's technique is his use of extensive underdrawing. Almost without exception, paintings by Friedrich examined in reflected infra-red light reveal drawing beneath the paint layer which is strikingly detailed [23]. The underdrawing is executed with a unique precision and is clearly visible in the infra-red vidicon mosaic (Fig.11) of the National Gallery *Winter Landscape*. Details of the underdrawing of the church in *Cross in the Mountains* in the Kunstmuseum, Düsseldorf and the figure of Christ on the cross in the Dresden painting of the same title (Figs.14 and 15) are closely similar to the underdrawing found in the *Winter Landscape*.

The material used for the underdrawing in the *Winter Landscape* could not be identified as it was not possible to take a sample. The pigment presumably contains carbon black which contrasts with the white ground in infra-red light. For the same reason, it was not possible to identify the binding medium, if any were present. A sample of underdrawing from a painting by Dahl of 1826 has been found to be 'China ink', which contains lamp black [24]. At that time, Dahl and Friedrich are likely to have used similar painting materials. In this painting, the underdrawing is executed in detail, in the manner of Friedrich, and the painting stage closely follows the drawing.

Two kinds of underdrawing seem to exist beneath the paint of the *Winter Landscape*. The rocks, figures and parts of the church are drawn using a line of varying thickness which has the fluid quality of an ink. In other areas, such as the outlines of the church and crucifix, the line is very fine and appears in some places to have been ruled rather than applied freehand. Faint fine lines are just visible in the infra-red vidicon image bisecting the church and the bridge, which were drawn as a guide to the symmetry of the composition and partly rubbed off before painting. This would imply the use of a medium-free material such as graphite or charcoal, which would smudge less easily than an ink or paint when used against a ruler and could be removed easily by brushing. It is also possible that the whole composition was first drawn using fine graphite and parts were subsequently worked over using ink, obscuring the fine lines beneath.

Infra-red photographs from several other paintings by

Friedrich show the same combination of fine and ink-like lines in the underdrawing. An infra-red detail of the foreground of a later unfinished work by Friedrich, *Entrance to a Graveyard*, in the Gemäldegalerie Neue Meister, Dresden (Figs.16 and 17), shows the fluid drawing of foliage [25]. The broken line produced when a pen moves over a slightly uneven surface and the accumulation of material at the point where the pen is taken off the surface is typical of pen-and-ink technique. The ruled lines of a well (that was never painted) are visible, but in contrast to the foliage, they are fine and linear. At the top left, a padlock has been added and some of the edges of the well have been reinforced in ink. This suggests that Friedrich may have first drawn out the entire composition in pencil and then systematically overlaid the entire composition, including fine details such as the grass and delicate leaf structure [26]. In the striking infra-red detail of the crucified Christ in the Dresden *Cross in the Mountains* (Fig.15), the figure appears to be drawn freehand using ink. Ruled guide-lines which mark the rays of the setting sun are clearly visible in the same detail, at an angle to the cross.

Interest in the materials and techniques of German nineteenth-century painting has expanded recently, with the publication by Althöfer [27] and technical studies by Plahter and Plahter of works by Dahl [28]. A study devoted to Friedrich's painting methods will be carried out at the Hochschule für Bildende Kunst in Dresden. Technical examination will include pigment analysis in addition to infra-red reflectography and X-radiography. This research should lead to a fuller understanding of the evolution of Friedrich's painting methods.

Notes and references

1. Analysis of grounds of paintings by German artists from the first half of the nineteenth century has been carried out at the Doerner Institute, Munich. Access to the files on the paintings was kindly given by Dr Andreas Burmester. Pigment analysis was carried out using emission spectroscopy. The grounds of the following paintings by C.D. Friedrich in the Neue Pinakothek have been analysed. Inventory numbers are bracketed: 'The Summer' (no.9702), 1807; 'Riesengebirge Landscape with Rising Mist' (no.8858), 1819–20; 'Church Ruin in a Forest' (no.9872), 1831. See also, SANDNER, I., 'Besonderheiten der Untezeichnung auf Gemälden der Romantik' in H. Althöfer (ed.), *Das 19. Jahrhundert und Restaurierung. Beiträge zur Malerei, Maltechnik und Konservierung*, Verlag Callwey (Munich 1987), pp.164–75.
2. SANDNER, I., *op. cit.*, p.165.
3. 'The Summer' (no.9702), by C.D. Friedrich, 1807, Neue Pinakothek, Munich, has a red first ground layer. Personal communication by Dr Andreas Burmester.
4. The practice of stretching large pieces of canvas over a frame with nails or rope for commercial priming is mentioned by HERTEL, A. W., 'Die Oelmalerei in umfassender technischer Beziehung', B.F. Voigt (Weimar 1857), pp.87–8. The composition of a commercially applied ground is described by the same author on pp.98–9 as white with black and shades of ochre.



Figure 16 (Right)
C. D. Friedrich, *Entrance to a Graveyard*, c.1825, canvas,
143 × 110 cm. Staatliche
Kunstsammlungen, Gemäldegalerie
Neue Meister, Dresden.

Figure 17 (Below)
Infra-red detail of Friedrich, *Entrance
to a Graveyard* (see Fig.16). The ruled
drawing of the well in the
foreground was never painted.



MERRIMÉE, J.F.L., *Peinture à l'Huile*, Mme Huzard Libraire (Paris 1830), p.243 notes it was possible to buy both primed canvas and rolls of canvas (but not necessarily rolls of primed canvas) in 1830.

5. KOLLER, M., 'Das Staffeleibild der Neuzeit' in *Farbmittel Buchmalerei Tafel- und Leinwandmalerei*, H.Kühn, H.Roosen-Runge, R.E.Straub and M.Koller, *Reclams Handbuch der künstlerischen Techniken*, Band 1, Philipp Reclam jun. (Stuttgart 1984), p.346. A canvas primer named Johann Bayer was employed in Vienna-Schonbrunn for the series of large canvases of the coronation of Emperor Joseph II in 1765 for the workshop of the Swede, Martin Meytens. Communicated by Jo Kirby. HAFB, B. 'Industriell vorgrundierte Malleinen', *Zeitschrift für Kunst Technologie und Konservierung*, **12** (1987), p.55 says in this thorough review, that there is no information about the methods used for commercial priming of artists' canvases between the middle of the eighteenth and the mid-nineteenth centuries.

6. PLAHTER, L.E. and PLAHTER, U., 'J.C.Dahls Malerier — En Tecknisk Undersøkelse' in *Johan Christian Dahl 1788–1857*, Jubileumsutstilling, Nasjonalgalleriet, 21 February–1 May 1988, Oslo Nasjonalgalleriet (1988), pp.59–77.

7. MILLS, J. and WHITE, R., 'Analyses of Paint Media', *National Gallery Technical Bulletin*, **12** (1988), p.78–9.

8. WATIN, M., *L'Art du Peintre, Doreur et Vernisseur*, Chez Belin-Leprieur, Libraire (Paris 1773), pp. 143–4, mentions the use of nut oil, recommended for use in lead white (p.118), and brown (p.87) grounds. HERTEL, A.W., *op.cit.*, p.95, says that poppy or nut oil was used for any type of ground.

9. Spectrographic analysis of the grounds of eighteen paintings by Kobell, Dillis, Rebell, Klengel, Hess, Dahl and Faber in the Neue Pinakothek, Munich has been carried out at the Doerner Institute. Information on these works was kindly given by Dr Andreas Burmester.

10. Prussian blue is impossible to identify by elemental analysis using EDX where it occurs in small amounts in combination with other iron-containing pigments such as ochre.

11. Paintings by C.D.Friedrich which have been the subject of technical examination including elemental analysis of pigments and/or X-radiography and infrared reflectography carried out at the Doerner Institute, Munich, are listed below, inventory numbers bracketed: 'The Summer' (no.9702), 1807; 'Riesengebirge Landscape with Rising Mist' (no.8858), 1819–20; 'Church Ruin in a Forest' (no.9872), 1831; 'Pine Trees in Snow' (no.ESK 1), 1828.

12. Pigment statistics from the Doerner Institute on the occurrence of smalt were supplied by Dr Andreas Burmester. In the first quarter of the nineteenth century, 14% of blue samples investigated contain smalt (14 cases out of 100); second quarter, 2% (2 out of 89 cases) and 1% (2 out of 164 cases) in the third quarter.

13. Cobalt blue was found (without smalt) in two paintings by Friedrich painted after 1820 in the Neue Pinakothek (nos.8858 and 9872). The statistical survey of the occurrence of cobalt blue was not available; however, the forty reports examined from the Doerner Institute files on paintings from the second quarter of the

nineteenth century showed a trend toward the use of cobalt blue and away from smalt. Kühn found cobalt blue in eighteen works from the second quarter of the nineteenth century in the Schack collection. No smalt was found in the same period. See KÜHN, H., *Die Pigmente in den Gemälden der Schack-Galerie*, Bayerische Staatsgemäldesammlungen, Doerner Institute (Munich 1969), pp. 26–60.

14. Other paintings by Friedrich which contain religious or mystical images described in translucent paint in the same manner as the National Gallery 'Winter Landscape' include, for example, 'The Vision of a Christian Church', in the Schäfer Collection, on loan to the Neue Pinakothek (no.L.1830), 1812–20, and 'Cross in the Mountains', in the Kunstmuseum, Düsseldorf, 1812.

15. Refractive indices, of smalt: 1.49–1.52, cobalt blue: c.1.74, Prussian blue: c.1.56.

16. 'Riesengebirge', 72 × 102 cm, 1830–5 (no.AI1079, NG907), *Gemälde der Deutschen Romantik*, Nationalgalerie, West Berlin.

17. Doerner Institute statistics, courtesy of Dr Andreas Burmester.

18. KÜHN, H., *op.cit.* Frans von Lenbach (no.11686), smalt found in green paint, see p.70; and August Wolf (no.11691) smalt is mixed with yellow, see p.86.

19. Information about August Wolf is from an entry in *Thieme-Becker Künstler Lexicon*, Vol.XXXVI, E.A.Seemann (Leipzig 1947), p. 192.

20. Personal communication by Jo Darrah, Victoria & Albert Museum, and a member of staff in the ceramics department at Sotheby's, March 1989.

21. RIEDERER, J., 'Die Smalte', *Deutsche Farben-Zeitschrift*, Jahrg. Nr.9 (1968), pp. 386–95; see particularly pp.389–90.

22. *ibid.*, p.390. The addition of a melt of lead and cobalt ores is mentioned, presumably to adjust the hardness of the product. Arsenic or arsenic ore and an alkaline plant material ('Sumpfeschel') are also included in the recipe.

23. SANDNER, I., *op.cit.*, p.165.

24. Personal communication by Leif Plahter, March 1989. The painting from which the sample of under-drawing ink was obtained is titled 'Castellammare', 1826.

25. SANDNER, I., *op.cit.*, pp.165–6.

26. SANDNER, I., *ibid.*, pp.166–70.

27. ALTHÖFER, H. (ed.), *Das 19. Jahrhundert und die Restaurierung. Beiträge zur Malerei, Maltechnik und Konservierung*, Verlag Callwey (Munich 1987).

28. PLAHTER, L.E. and PLAHTER, U., *op.cit.*, pp.59–77.