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Series editor **Ashok Roy**

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Editor Diana Davies
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Picture research Karolina Majewska
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Paul Cézanne, *Bathers*, (NG 6359), detail of plate 5, page 5
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Ways of Making: Practice and Innovation in Cézanne's Paintings in the National Gallery

ELISABETH REISSNER

Cézanne wrote to the artist Emile Bernard on 26 May 1904 that 'The litterateur expresses himself in abstractions while the painter gives concrete expression to his sensory experiences, his perceptions, by means of drawing and colour. One cannot be too scrupulous, too sincere or too submissive to nature; but one is more or less master of one's model, and especially of one's means of expression.'[1]

There are scattered references in Cézanne's letters to the purchase of brushes, tubes of paint and canvases, but very few references to 'his means of expression' in the sense of his methods of painting. Those interested have had to rely primarily on information gleaned from their own viewing of Cézanne's paintings and on second-hand contemporary accounts of his palette, aims and working practices.[2]

This article will present the findings of investigations into the materials of eight paintings by Cézanne in the National Gallery: *The Stove in the Studio* (NG 6509), *c.*1865, *Self Portrait* (NG 4135), *c.*1881, *Landscape with Poplars* (NG 6457), *c.*1885–7, *Avenue at Chantilly* (NG 6525), *c.*1888, *Hillside in Provence* (NG 4136), *c.*1890–2,

PLATE 1 Paul Cézanne, *The Stove in the Studio* (NG 6509), *c.*1865. Oil on canvas, 41 × 30 cm.

PLATE 2 Paul Cézanne, *Self Portrait* (NG 4135), *c.*1880–1. Oil on canvas, 34.7 × 27 cm.

IN MEMORY OF CAROLINE VILLERS

PLATE 3 Paul Cézanne, *Landscape with Poplars* (NG 6457), *c.*1885–7. Oil on canvas, 71 × 58 cm.

PLATE 4 Paul Cézanne, *Avenue at Chantilly* (NG 6525), 1888. Oil on canvas, 82 × 66 cm.

PLATE 5 Paul Cézanne, *Bathers* (*Les Grandes Baigneuses*) (NG 6359), *c.*1894–1905. Oil on canvas, 127.2 × 196.1 cm.

PLATE 6 Paul Cézanne, *Hillside in Provence* (NG 4136), *c.*1890–2. Oil on canvas, 63.5 × 79.4 cm.

An Old Woman with a Rosary (NG 6195), *c.*1895–6 (probably), *The Grounds of the Château Noir* (NG 6342), *c.*1900–4, *Bathers (Les Grandes Baigneuses)* (NG 6359), *c.*1894–1905 (see PLATES 1–8).[3] It will then examine the way in which Cézanne chose to use his materials between 1880 and his death in 1906. This will inform our understanding of his conception of the nature of painting and our assessment of his originality.

Colour merchants

Cézanne's letters provide evidence that he used Julian Tanguy as a colour merchant.[4] Tanguy traded paints for works of art for many years and his shop in the rue Clauzel in Paris was the only place where Cézanne's paintings could be seen. 'Père Tanguy', as he was known, ground pigments in the back of the shop.[5] There is no evidence to date that Tanguy stamped the reverse of canvases that he supplied. According to Pissarro they were of inferior quality.[6] However, in a recent study it was found that although Tanguy charged ten per cent less than major suppliers, there was nothing to differentiate his materials.[7] Correspondence in 1878 and 1885 reveals that Cézanne owed money to Tanguy for painting supplies and was in debt to him for many years.[8] Tanguy died in 1894 but there is material evidence to suggest that Cézanne used other colour merchants, or at least other suppliers of canvas supports, before that date.

Of the National Gallery Cézannes only one, *An Old Woman with a Rosary*, is unlined. It is therefore possible to see the canvas stamp of the colour merchant Chabod on its reverse. It reads, 'Rue Jacob, M Chabod, Md de Couleurs, Extra Fines, Toiles et Tableaux, Rue Jacob', indicating that he supplied colours and canvases. Cézanne's *Route Tournante*, *c.*1905, has an identical stamp and Seurat's *Woman powdering her Nose* of 1886[9] has a stamp with the same address but different wording and format.[10] A Chabod stamp, this time with a different address, was found on the reverse of Cézanne's *Dr Gachet's House at Auvers* (Paris, Musée d'Orsay) painted in 1872–5. It read 'fournisseur Chabod, successeur de Bovard, marchand de couleurs et de toiles et tableaux, rue de Bucy 15'.[11] Chabod appears in the commercial

PLATE 7 Paul Cézanne, *The Grounds of the Château Noir* (NG 6342), *c.*1900-4. Oil on canvas, 90.7 × 71.4 cm.

PLATE 8 Paul Cézanne, *An Old Woman with a Rosary* (NG 6195), *c.*1895-6. Oil on canvas, 80.6 × 65.5 cm.

almanacs for the years 1870–2 and then also for the years 1888–90 at 20 rue Jacob. Cézanne also mentions him in his sketchbooks.[12] Among the sums of money he owed for sundry items is 4 – no unit of currency given – to Chabod. In a letter dated after 1900 (the exact year in the text is unclear) Cézanne writes to a 'monsieur' asking for burnt lake pigment from 'maison Chabod'.[13]

There are a number of other references to colour merchants in Cézanne's letters. In October 1866 he wrote to Pissarro from Aix-en-Provence saying that the paints were hard to come by and very expensive. While at Vernon in 1885 Cézanne asked his friend Zola to accept delivery of some canvases. In 1894 he wrote to 'a dealer in art supplies in Melun' about some canvases and in two letters of 1905 and 1906 he wrote from Aix and Fontainebleau to 'art supply dealers' regarding the delivery of canvases, paints and a palette. Finally on 28 September 1906 he wrote to his son that he had sent five tubes of paint back to 'Vignol'.[14] (The reference to Vignol is unclear but he may have been an art supply dealer.) There is also evidence in the form of invoices and a letter that Cézanne used pigments and canvases supplied by Sennelier, Lefranc et Cie and also Bourgeois Aîné.[15] In fact, it seems that Cézanne used paints from a variety of manufacturers, sometimes purchased through a single dealer and sometimes directly from the manufacturer.

Canvases

There is both documentary and physical evidence that it was Cézanne's practice to use standard-sized canvases.[16] In his letters he mentions canvases sizes 20, 25 and 40. Cézanne most regularly used the 'figure' sizes 30 (92 x 73 cm), 25 (81 x 65 cm), 20 (73 x 60 cm) and 8 (46 x 38 cm), and his large-format paintings were executed on canvases ranging from no. 40 to no. 120.[17] Among the National Gallery Cézannes there is a figure 5 (35 x 27 cm), a figure 20, three figure 25s and a figure 30. These sizes support the idea that Cézanne tended to work on larger canvases later in his career.[18] *Bathers* and the other two versions of the subject painted in the last years of his life are Cézanne's largest paintings on canvas. Only *The Stove in the Studio* and *Bathers* have non-standard dimensions.[19] It is probable that *Bathers* was the version inventoried after the artist's death when found off its stretcher in the studio at the rue Boulegon.[20] Photographs such as the one taken in his studio in Paris in 1894 show Cézanne working on stretched canvases (FIG. 1).[21] Where Cézanne depicts his own paintings they are also seen on stretchers.[22] However, Bernard does recall seeing canvases (which in his view had been abandoned) drying in the studio off their stretchers and tacked to the wall.[23]

Cézanne mainly uses the commercial *étude* canvas before his financial situation improved in the 1880s, but he does not stop using them completely later in

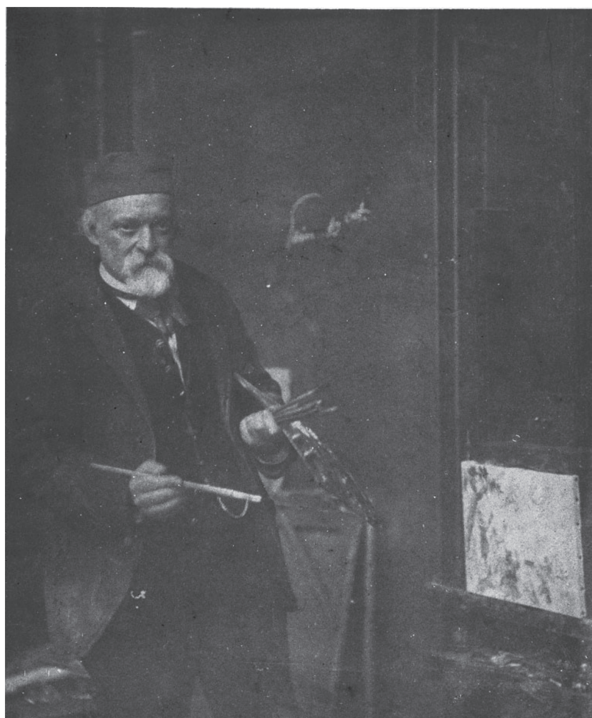

FIG. 1 Cézanne in his studio in Paris, 1894. Photograph taken by Emile Bernard. Paris, Musée d'Orsay, Vollard Archives.

his career.[24] The *étude* canvas is medium weight, with a loose, open weave giving a fairly bland texture. It is comprised of fine, thin and irregular threads of linen. Of the National Gallery paintings only *An Old Woman with a Rosary* and *Bathers* have more finely woven canvas. Cézanne does not appear to have favoured strongly textured supports.[25]

There is evidence that the canvases that Cézanne bought from Chabod had been commercially primed on a large bolt prior to stretching, either by Chabod himself or by another manufacturer.[26] The Chabod canvas stamp on *An Old Woman with a Rosary* is placed in the bottom left-hand corner, and is partly obscured by the stretcher bar, indicating that it was put on by the colour merchant before he attached it to the stretcher. It is also possible that Cézanne bought the stretcher and a roll of pre-primed canvas separately and assembled them himself. The ground extends into the tacking margins on all sides of the canvas except the top, showing that it was not primed after stretching. It is likely that the unprimed upper edge was also the edge of the large bolt from which this canvas was cut.

Scallop-shaped deformation of the canvas, related to the way it is secured at the time of priming, is another indicator of the point at which a canvas is primed. Cusping on all four edges of a canvas is visible only on *Hillside in Provence* and *Landscape with Poplars*, evidence that they were primed after the canvas had been attached to the stretcher. Cusping visible on only one side can indicate that this edge was close to the frame used to stretch large bolts of canvas that were being commercially primed. *Avenue at Chantilly* is an example of this. The absence of cusping can be due to the canvas being cut from the centre of a large bolt, before attachment to a stretcher or strainer, or to the fact that it was removed from its initial stretcher or strainer and reduced in size. A third possibility is a practice that Cézanne's dealer Vollard attributes to Cézanne.[27] He recounts how Cézanne occasionally painted a number of small studies on a large canvas which he then gave to Tanguy to cut up and sell to buyers who could not afford to pay very much.[28] The non-standard-sized *Stove in the Studio* has been cut down. There is no cusping and the fact that the horizontal weave of the canvas is not lined up with the stretcher edge is clearly visible on the X-radiograph (FIG. 2). It is not possible to know if this was because of the practice Vollard describes, or the result of an alteration in size after completion. However, it is interesting to note that the signature aligns both vertically and horizontally with the current stretcher bars, indicating that the painting was signed in its current dimensions.

Ground

The National Gallery paintings have predominantly one layer of mainly lead white priming, slightly warmed up with small amounts of yellow ochre. Barium sulphate, quartz and chalk extenders have also been identified.[29] Exceptions are *Avenue at Chantilly*, which has a grey ground, comprising lead white and a black charcoal,[30] and the two double grounds found in *An Old Woman with a Rosary* and *Bathers*, comprising a mostly lead white layer on top of a thin chalk layer.[31]

The binding media of the grounds for *Hillside in Provence* and *Self Portrait* have been identified as heat-bodied or partially heat-bodied linseed oil.[32] Although the mainly lead white layer of *Bathers* is mixed with a partially heat-bodied linseed oil medium, the organic binder with the chalk underlayer was not analysed. It is possible that this is proteinaceous as is the case in the lower of two ground layers in *Tall Trees at the Jas de Bouffan* (*c.*1883) (London, Courtauld Institute Galleries). However, no protein was found in the chalk underlayer in *An Old Woman with a Rosary.*[33] Cézanne does not appear therefore to be choosing absorbent or semi-absorbent grounds. But the fact that he used *étude* supports, even when he could afford better, does suggest a preference for matt primings. The *étude* canvases often had an initial layer of chalk in glue because it was cheaper and dried quicker than lead white in oil grounds.[34] The thin, lean preparation on *étude* canvases

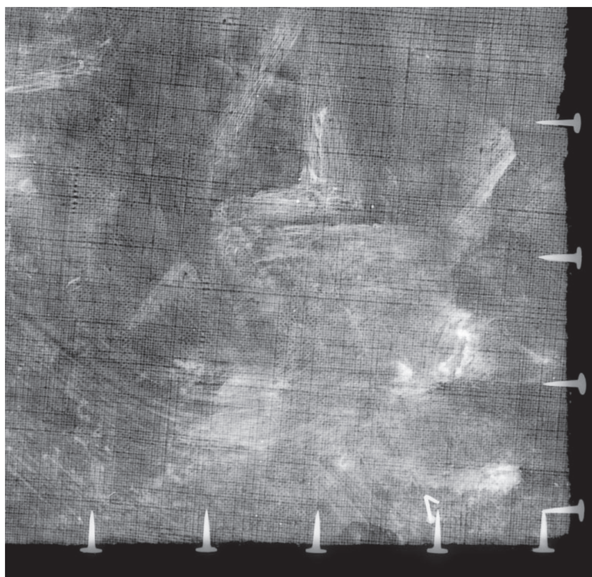

FIG. 2 An X-radiograph detail of *The Stove in the Studio* (NG 6509) showing misalignment of the canvas weave and stretcher edge.

PLATE 9 Detail showing fine cracking in the ground in *Hillside in Provence* (NG 4136).

PLATE 10 Ground probably applied locally by Cézanne to canvas at the right-hand edge of *Bathers* (NG 6359).

is evidenced by hairline cracks visible along the lines of thread. These are found on many of Cézanne's grounds (PLATE 9).

There is nothing to indicate that the grounds of *Hillside in Provence* or *Landscape with Poplars* were applied by Cézanne after the canvas had been stretched, rather than by a manufacturer or colour merchant. The only instance where it seems very likely that Cézanne applied the priming himself is the very thin, uneven ground visible on the right-hand edge reclaimed from the tacking margin in *Bathers* (PLATE 10).

Pigments

Cézanne only mentions specific pigments in four letters in 1905–6.[35] They are cinnabar green,[36] Prussian blue, burnt lake, fine lake, cobalt and chrome paints. Eight pages in Cézanne's sketchbooks of the 1870s, 1880s, and one in the 1890s, have lists of pigments written in them. Whether they are oil or watercolours is not specified. The colours mentioned are lead white, peach black, Naples yellow, brilliant yellow, bright or light chrome, Prussian blue, cobalt blue, ultramarine, emerald green (named as *verte Veronese*), viridian (named as *vert émeraude*), green earth, vermilion, dark or deep madder lake, fine lake, burnt lake, rose madder, yellow ochre, natural sienna, natural umber, Saturn red (term for red lead).[37]

Emile Bernard first visited Cézanne in February 1904. On his second and final visit in March 1905 he described the pigments that made up Cézanne's palette.[38]

Yellows: brilliant yellow, Naples yellow, chrome yellow, yellow ochre, raw sienna
Reds: vermilion, red earth, burnt sienna, madder lake, fine carmine lake,[39] burnt crimson lake[40]
Greens: viridian, emerald green, green earth
Blues: cobalt blue, ultramarine blue, Prussian blue, peach black

The pigments identified in the six National Gallery paintings analysed (NG 6509, 4135, 6457, 4136, 6195 and 6359) correspond closely with those in Bernard's list.[41]

Yellows: chrome yellow, yellow ochre/earth, yellow lake
Reds: vermilion, red earth, cochineal and madder lakes
Greens: viridian, emerald green, green earth
Blues: cobalt blue, ultramarine, Prussian blue

The only discrepancies occur with respect to the yellows. No Naples yellow was identified.[42] There is a possibility, however, that there was some confusion in the nomenclature.[43] Brilliant yellow, which is also mentioned by Bernard, was, according to the 'Composition of Pigments' list given in a Winsor & Newton

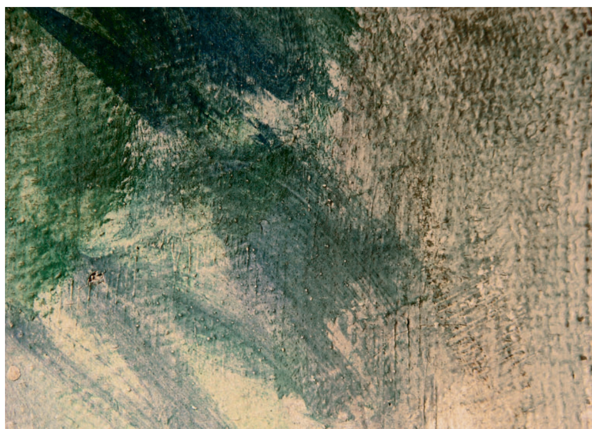

PLATE 11 Later toning in the right-hand corner of *Landscape with Poplars* (NG 6457).

catalogue of 1896, 'a variety of Naples yellow prepared from Chrome Yellow and White Lead'.[44] Naples yellow is only found around 1873 in the sketchbook lists, but brilliant yellow appears several times between 1875 and 1887. Yellow lake, not mentioned by Bernard, was found in *Hillside in Provence*.[45] Chrome yellow was found in three of the paintings dating from 1880, including *Bathers*.

Lead white and carbon black were found in all the paintings studied, zinc white only in *Self Portrait*. Emerald green, vermilion and yellow ochre were often used. Red earth was less common, although present in *The Stove in the Studio*, *Self Portrait* and *An Old Woman with a Rosary*. Viridian was also frequently found. The black charcoal identified in *The Stove in the Studio* is very possibly the peach black that Bernard mentions.[46]

When he became more financially secure after 1886 Cézanne increasingly used cobalt blue for works painted outside, or depicting the outside, such as *Bathers*.[47] Both cobalt and cobalt blue are listed in a page of the sketchbooks dated 1875–8; if these references are to oil paint, this shows that he did use cobalt blue prior to 1886. It was identified in *An Old Woman with a Rosary* and *Bathers*. Although Prussian blue was found only in *The Stove in the Studio*, Cézanne ordered five tubes of it in a letter to an art supply dealer in March 1905 and it has been found in five of his paintings in the Courtauld Institute Galleries painted between 1875 and 1896.

Cézanne appears to have used a variety of red lakes, as Bernard's list and the lists in the sketchbooks suggest. A cochineal lake on a tin substrate was identified in *An Old Woman with a Rosary* and *Bathers* and in both cases starch was also present.[48] Madder high in pseudopurpurin with some purpurin and a little alizarin has also been identified in *Man with Pipe*, 1892–5 (London, Courtauld Institute Galleries).[49] A trace of red lake was also found in *Hillside in Provence*.[50]

Paint medium

Medium analysis of the National Gallery Cézannes has shown the use of drying oils. Partially heat-bodied linseed oil was identified in several samples, while partially heat-bodied poppy-seed oil was also found in the white highlight in *Bathers*. In the remaining samples, an intermediate palmitate / stearate ratio was observed, most probably due to the presence of a linseed / poppy oil mix (suggesting, for example, that the pigment in the tube was ground in one oil, while the artist added the other as a diluent while working), although the use of walnut oil cannot be entirely discounted.

Siccative and diluent

Cézanne ordered Haarlem siccative from an art supply dealer in a letter of 23 March 1905. The exact recipe for this siccative is not known but essentially it comprises varnish (probably copal) heated and mixed with oil plus a diluent (such as turpentine).[51] Once mixed with pigments on the palette, with possibly the further addition of turpentine, it would have hardened quite rapidly by evaporation of the solvent, thus appearing to aid drying but not speeding up actual chemical drying of oil paint. None has been identified to date either in the medium analysis, or in examining the surfaces of the paintings. In practice it is not possible to identify the presence of turpentine as a diluent – used with or without the Haarlem siccative. However, the appearance of Cézanne's paint, particularly in the early stages of the execution of a painting, points to its use. The painter and writer Maurice Denis, who visited Cézanne in 1906, wrote that Cézanne's paintings were 'overlaid with turpentine-thinned pentimenti'.[52]

Painting tools

There is documentary evidence that Cézanne used rounded sable or marten hair brushes. These were commonly used by artists with diluted paint for fluid outlines. On 15 October 1906 in a letter to his son Cézanne mentions '*emeloncile*' brushes. These are probably the sable brushes called 'de Melloncillo, which come from Russia'.[53] In his sketchbook, around 1879–82, he adds two dozen '*pinceaux putois*', numbers 8, 9 and 10, to a list of pigments.[54]

The 1894 photograph (FIG. 1), in which Cézanne holds four brushes, also indicates that he used flat-tipped brushes. In other photographs of Cézanne at work there is a tin hanging off the easel, presumably containing a diluent for cleaning the brushes. Straight-edged accumulations of paint in *The Stove in the Studio* and in the background of *Bathers* suggest the localised use of a palette knife. We also know that Cézanne used some sort of portable painting box. He wrote to an art

supply dealer on 6 July 1905 about a 'box that I had asked you to fix for me by adding a palette with a hole large enough to accommodate my thumb'.

Varnish

All of the National Gallery Cézannes are varnished. There is no documentary evidence concerning Cézanne's attitude to this traditional practice,[55] although there is evidence that his principal dealer, Vollard, routinely had pictures 'prepared' for sale. It is likely that this involved both the varnishing[56] and the lining of paintings.[57] The right-hand strip of *Landscape with Poplars*, towards the bottom, might be an example of an area being loosely filled in by a later hand because it appeared 'unfinished' (PLATE 11).

Frames

Judging by comments made in his letters, Cézanne did not pay much attention to the framing of his works. On 21 December 1889 he wrote about one of his paintings to Octave Maus who was organising a show, 'If you should have some old frame to put on it, you would ease my mind.' And in a letter of 2 April 1902 he hands over responsibility to Vollard for both choosing and framing a painting for a forthcoming show in Aix-en-Provence.

Summary of materials

Study of Cézanne's materials has shown that from the 1880s onwards only subtle shifts or changes can be detected. Towards the end of his life he appears to have favoured larger-scale works[58] painted on finer woven canvas with whiter grounds. The pigments he uses remain remarkably constant from the 1880s until the end of his life. With the exception of a notable increase in the use of cobalt blue in outdoor scenes or pictures-depicting the outdoors, his choices do not appear to be affected by the genre – landscape, still-life or imaginary pieces – or by whether the painting was made in the studio or outside.

Comparison of Cézanne's materials with those of his predecessors and contemporaries suggests that his choices are not particularly innovative. But Cézanne and his fellow artists were able to challenge the definitions of painting practice set out by the academy and to operate outside it. This was partly due to the development of an art market newly independent of the state. The way that their paintings looked proclaimed their independence and their modernity. The nineteenth century saw a shift among the Impressionist avant-garde artists from a tonal to a prismic or 'spectral' palette. This was a rejection of the academic *clair/obscur* method of painting, which used a more tonal palette. Painting alongside Camille Pissarro in the 1870s was of fundamental significance for Cézanne as it initiated his adoption of the new palette, which he was to continue using for the remainder of his life. Camille's son Lucien reports that Cézanne copied a Pissarro around 1872 in order to understand the palette.[59] Comparison of the rather dull, earthy colours of *The Stove in the Studio*, the only work in this study painted before 1872, with those painted after, which consist of a palette based primarily on bright reds, yellows, greens and blues, mixed with white, with the addition of small quantities of earths and black, provides evidence for this shift.[60]

Cézanne wrote in a letter to Bernard in September 1906 that theories are always easy and 'it is only having to prove what one thinks that presents serious obstacles'.[61] Explanations in his letters for what he is trying to achieve obfuscate as well as elucidate. The secondary accounts written by those who visited Cézanne in the last years of his life are of variable reliability.[62] The certitude which imbued nineteenth-century century academic painting was replaced by anxiety and doubt about how to make a painting in relation to the observed world. Cézanne was very aware that it was only by means of drawing and colour that the painter 'gives concrete expression to his sensory experiences'[63] and that the 'proof' is to be found in the painting itself. Technical study of his works in the National Gallery, with reference to contemporary science and physiology, can help elucidate philosophies about painting underpinning the work.

Examination of the surfaces of the paintings does show that a certain amount of planning was a consistent part of Cézanne's painting practice. Occasionally he made drawings or watercolours which seem to prepare the way for a painting, but they do not function directly as preliminary studies that are synthesised in the final work. For instance, while in Chantilly Cézanne painted several watercolours depicting tunnel-like alley ways lined with trees, as well as *Avenue at Chantilly*. It is possible that these were done as he searched for a motif, or as a means of developing a compositional idea, but they do not record exactly the same location and viewpoint. There are no preparatory studies that relate directly to *Bathers*, although Cézanne is thought to have used life drawings made while at the Atelier Suisse in Paris and possibly drawings made from a model who posed for him around 1888–9.[64]

Underdrawing

Underdrawing is carried out with a conté crayon or soft pencil in *Avenue at Chantilly* (PLATE 12; FIG. 3),[65] *Hillside in Provence* (PLATE 13; FIG. 4) and *Self Portrait* (PLATE 14). It is clearly visible on the surface of *Avenue at Chantilly*

PLATE 12 Detail of *Avenue at Chantilly* corresponding to the infrared reflectogram.

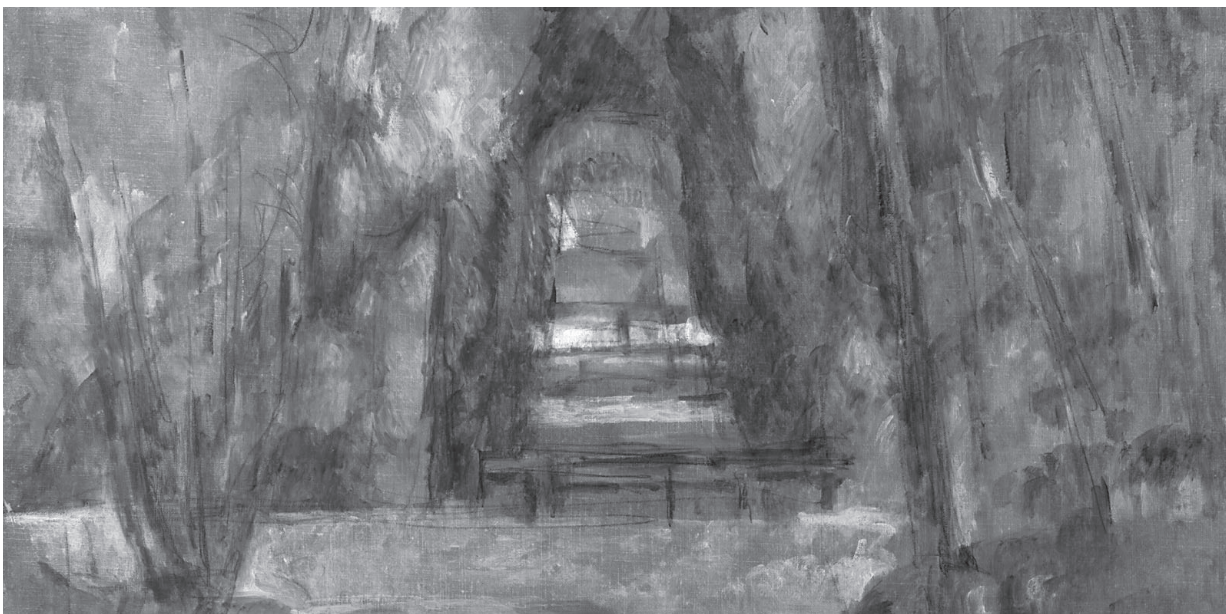

FIG. 3 Infrared reflectogram detail of *Avenue at Chantilly* (NG 6525).

(PLATE 15) and *Hillside in Provence*, contributing to the final effect. Dry drawing was not found on any of the other National Gallery Cézannes,[66] which points to a less than systematic use of preparatory underdrawing. However, other studies[67] suggest that Cézanne often, although not always, started his paintings – whether still lifes, landscapes or portraits – with loose pencil or conté sketches. The amount of drawing and where it occurs seems to vary, but its function – an indication of location of parts within a rough composition – remains consistent. Cézanne painted a number of watercolours at the Château Noir, so the fact that there appears to be no dry drawing in *The Grounds of the Château Noir* might indicate Cézanne's familiarity with the motif.

In *Hillside in Provence* Cézanne sketched out the position of the two trees on the left and the edges and main internal shapes of the rocks. He did not draw the horizon. A number of lines frequently indicate a contour. They are mainly linear, with only a couple of instances of zigzags or loops indicating masses. In *Avenue at Chantilly* a series of repeated lines, intended as rough indications of placement, sketch in the bush-

PLATE 13 Detail of *Hillside in Provence* corresponding to the infrared reflectogram.

FIG. 4 Infrared reflectogram detail of *Hillside in Provence.*

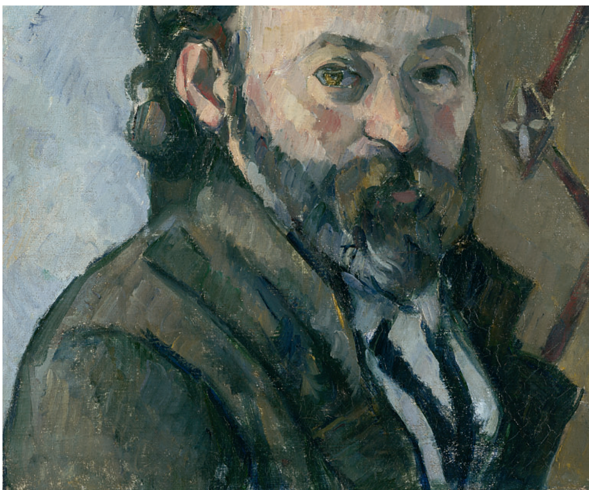

PLATE 14 Detail of *Self Portrait* corresponding to infrared reflectogram.

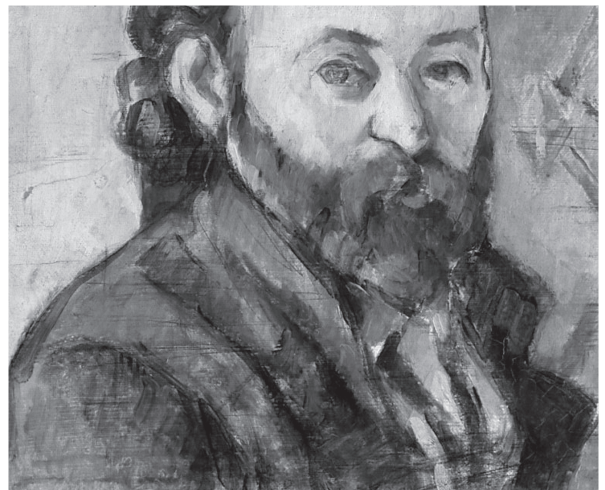

FIG. 5 Infrared reflectogram detail of *Self Portrait*.

like tree on the left and the main trees on the left and right, the horizontal edge of the path in the middle distance, the edges of the central arch and the wide path in the foreground. Cézanne very loosely indicates the mass of foliage with looping, curved lines. In *Self Portrait* fairly extensive drawing establishes the dome of Cézanne's head, the position of his eyes, ear and lip. It clearly delineates the vertical intersection between the area of patterned wallpaper and the pale blue background behind the head.

Discrepancies between the underdrawing and the finished paintings indicate that Cézanne's ideas were not fixed at the drawing stage: fundamental compositional ideas were developed throughout the painting process. In *Hillside in Provence* the most significant adjustment in position is the painted edge of the road on the right (PLATE 13; FIG. 4). It has been raised above the drawn line and creates a more triangular shape in

PLATE 15 Conté crayon or soft pencil visible on the surface of *Avenue at Chantilly.*

PLATE 16 Detail of the right-hand tree base as it was painted in *Avenue of Chantilly.*

FIG. 6 Infrared reflectogram detail of the right-hand tree base in *Avenue at Chantilly* showing its earlier position in the underdrawing.

the bottom right-hand corner. During the painting of *Avenue at Chantilly* Cézanne lowered the base of the right-hand tree in relation to the drawn base (PLATE 16; FIG. 6) and created an almost continuous line between the foreground tree on the left and the trees behind, thereby emphasising the compositional idea of arching shapes. In *Self Portrait*, horizontal, curving and diagonal lines that bear no relationship to the finished painting run through the shoulder and chest (FIG. 5). Behind the head horizontal lines may indicate panelling on a wall. The lozenge patterns on the wallpaper do not appear in the drawing stage – their compositional importance was developed in the process of painting. Arguably there would have been little point for Cézanne to draw them in, because it is through the relationship between the lozenges and the head that he constructs, *in paint*, the space between the head and the background wall.

Underpainted drawing and washes

Cézanne roughly establishes the composition of the National Gallery paintings using a dilute blue or blue/grey paint, whether or not they have dry drawing. This 'painted underdrawing', applied in a very linear manner, was carried out either in conjunction with, or prior to, the application of dilute underwashes of mainly blue or green paint. These washes provide some underlying unity but do not cover the surface in a uniform way. Although a distinct stage in the painting process, they cannot be described as a layer.[68] Both the painted drawing and the washes are visible in parts of the surfaces of the finished paintings, except in the case of *An Old Woman with a Rosary* (PLATE 17). It is possible that the subsequent heavy working on this painting has concealed it.[69] Occasionally, as in *Avenue at Chantilly*, slightly more pigment-dense areas of paint, applied in

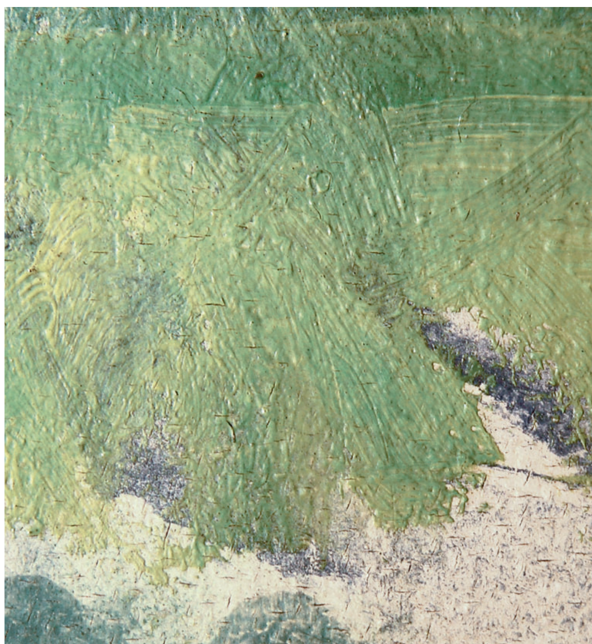

PLATE 17 Detail of underpainted drawing in *Landscape with Poplars.*

PLATE 18 *Still Life with Water Jug*, *c.*1893. Oil on canvas, 53 × 71.1 cm. London, Tate.

a fairly rough loose manner, are also visible. These may have been applied at the same time as the dilute washes or directly after them. Generally the washes do not obscure the luminosity of the ground.

The leaving of reserves in the preparatory stages of a painting can indicate that an artist has considered the finished composition at an early stage in the painting process. Cézanne establishes reserves with his initial washy underlayers but, as in the case of the dry drawing, these are not strictly followed in the later placement of paint.

These washy underlayers and slightly more pigment-rich scumbles of paint, although indicative of, for instance, a local foliage colour (and not therefore simply tonal), do not establish definitive colour relationships. The colour in the upper paint layers is subject to continual re-evaluation and adjustment, largely independently of the initial lay-in. There is a dilute yellow wash in *Hillside in Provence*, but in general this lay-in comprises a limited range of fairly dull colours. This correlates well with the advice given to Bernard by Cézanne: 'He recommended that I begin lightly with near-neutral tones. Next I should proceed up through the colour scale keeping the saturation as close as possible.'[70]

Evolution of the painting

It is difficult to be certain of the precise sequence of the evolution of the National Gallery paintings after the initial washes and painted underdrawing. Cézanne's advice to Bernard is again potentially helpful: 'Drawing and colour are in no way separate; as one paints, one draws; the more the colour harmonises, the more precise the drawing becomes. The form is at its fullest when the colour is at its richest. Contrasts and rapports of colours – that is the secret of drawing and modelling.' It emphasises the gradual building of colour relationships, but it does not specify whether these relationships were local or were established across the whole picture surface or indeed what the point of departure might have been.[71] Bernard's earlier suggestion in a letter to his mother of 1904[72] that Cézanne worked, like Ingres, by 'progressing detail by detail and finishing discrete areas before bringing them together', is not borne out by close examination of Cézanne's paintings.[73] As Crary writes, Cézanne is not 'putting together a mosaic of individual views by the fixed eye, patching them together into a single, integrated surface.'[74] Cézanne's assertion to his friend Joachim Gasquet, reported in Gasquet's *Cézanne* (1921), that 'I guide my entire painting together all the time. I bring together all the scattered elements with the same energy and the same faith',[75] is more in keeping with the idea of gradually building relationships.

Paintings on which Cézanne stopped working at a fairly early stage in the painting process, such as *Still Life with Water Jug*[76] (London, Tate, PLATE 18), also suggest an approach that encompasses the whole painting surface. Using more pigment-dense paint than seen in the washes, Cézanne appears to be establishing relationships between groups of juxtaposed colours which are also related to colour marks or groupings elsewhere, in very disparate parts of the canvas. The point at which the juxtaposed colours resolve themselves into forms is variable and not inevitable.[77] At the outset, the barest of indications might be all that was needed to establish a relationship. Sometimes the bare priming might serve as the colour value. It becomes possible to imagine Cézanne making visual then physical journeys in

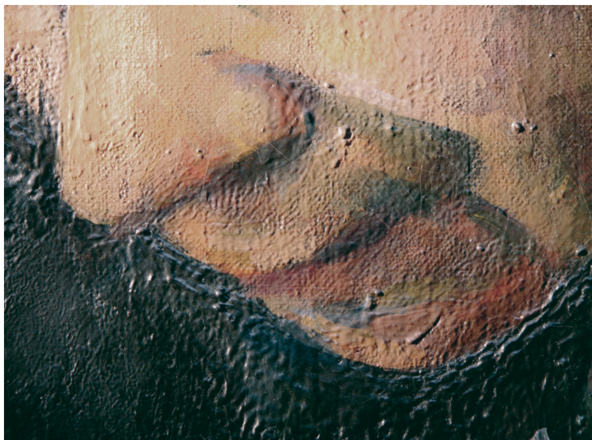

PLATE 19 Detail showing thick and wrinkled paint on the contour of the face in *An Old Woman with a Rosary* (NG 6195).

PLATE 20 A change to the shape of the post in the foreground of *Avenue at Chantilly* that Cézanne has not completely concealed.

paint, ranging across both the motif and the surface of the canvas, from foreground to middle and background, object and surrounding space, some short, others longer, much as a spider might construct a web, conscious all the time of the whole. Initially the relationships might be fairly broad, but as the painting developed they would become increasingly subtle.[78]

The starting point for the network of relationships that Cézanne constructs, or the moment at which key relationships are established, is not possible to determine by close looking. Bernard's description of Cézanne beginning a watercolour in 1904 with 'the shadow and with a touch that he covered with a second broader touch, and then a third, until all these colours, creating screens, modelled and at the same coloured the object'[79] cannot be extended to Cézanne's wider practice. Neither can Benesch's contention that the colour scheme or even the entire motif in a number of Cézanne's paintings 'is developed from the centre, the elements of form and colour brought into relation to each other as the painting grows outwards'.[80] Although it is likely that Cézanne attempted to establish key colour ideas at the outset and that in some instances these might have been retained, it is also the case that many decisions would intervene before the painting was finished, making it likely that initial relationships were provisional.

Cezanne's application of paint after the first partial lay-in of dilute washes is local, gradually building up to a complex network of colour relationships with strokes or patches of paint. These might overlay previous strokes and patches completely but more often only partially. Bernard's account of the painting of *Three Skulls on a Patterned Carpet* (now in Switzerland)[81] can be misleading if it is taken to mean that Cézanne's practice generally involved wholesale repainting rather than gradual accumulation: 'The colours and shapes in this painting changed almost every day, and each day when I arrived in his studio, it could have been taken from the easel and considered a finished work of art.'[82] Vollard's famous account of Cézanne painting his portrait not only illustrates the increased difficulty in maintaining numerous local and global relationships towards the end of the painting process, but also shows that Cézanne's preference was to leave an area unpainted, rather than to add a colour that he did not think would work.[83]

Generally Cézanne avoided applying paint thickly or in broad areas, thereby reducing the likelihood that density of paint would prevent further work. Any revisions needed would therefore be local and not general. *An Old Woman with a Rosary* is an exception to this. It has been extensively reworked in large areas. There are major alterations and repositionings in the old woman's shoulder and hat. The paint contouring her face is thick, due to the accumulation of layers, and has developed pronounced wrinkling (PLATE 19). Where Cézanne makes more minor changes in pictorial organisation or the shapes of things, he often chooses not to conceal completely the previous idea. Some examples are the post in the foreground of *Avenue at Chantilly* (PLATE 20), the left-hand bather's head in *Bathers* (PLATE 21) and the tops of the trees in *Landscape with Poplars*. There is also no evidence in the National Gallery paintings for the scraping away of unwanted paint. Much of the pleasure from looking at a Cézanne can be derived from an awareness of the processes and possibly even the struggle

PLATE 21 A pentimento in the standing left-hand woman's head in *Bathers*.

PLATE 22 A detail in the arm of the seated woman on the right in *Bathers*, showing a gap in the paint along the contour.

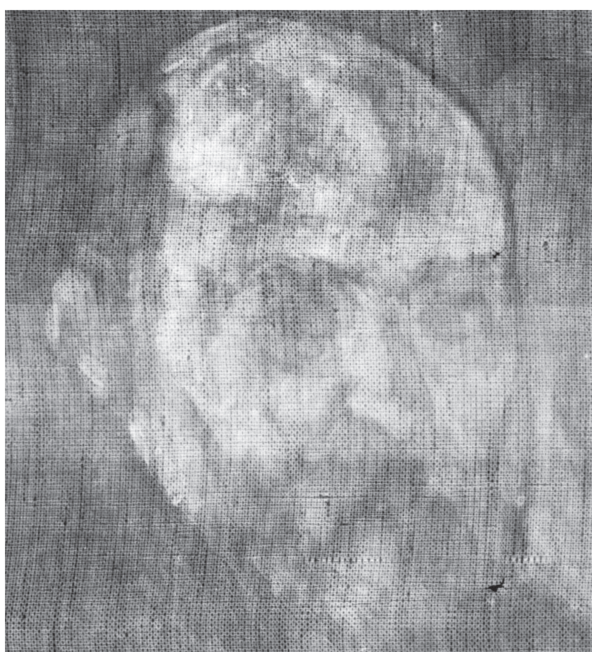

FIG. 7 An X-radiograph detail of *Self Portrait* showing a dark line where there is a gap between thicker paint along the contour of the head.

involved in its making. Cézanne was not concerned to conceal his workings. His technique lays bear the work involved in creating a painting. He wrote to Gasquet on 8 July 1902: 'I am pursuing success through labour. I despise all living painters save for Monet and Renoir, and I will succeed through work.' [84]

The areas of a painting where the paint is most thickly applied draw attention to where Cézanne has struggled most. In *Bathers*, *Self Portrait* and *The Grounds of the Château Noir* there are examples of the tendency in Cézanne's paintings for the thickest paint to be found along contours. It is here that colour relationships, crucial to establishing form and space, are sought. Sometimes areas of paint either side of a contour do not abut, but rather there is a gap of a millimetre or so between them, which, depending upon the thickness of the paint either side, becomes a furrow. In this gap it is often possible to see the dry drawing and initial washes or painted underdrawing that lie underneath. An example of this in *Bathers* is the arm of the seated figure on the right (PLATE 22). This practice has been described as painting the contours of objects 'in reserve' and its development tentatively attributed to both Pissarro and Cézanne in the 1870s.[85] Such a line of non-paint or certainly considerably less paint is visible as a dark contour to the head in the X-radiograph of *Self Portrait* (FIG. 7). This 'reserve drawing' means that the way in which the painting has been built up is visible on the finished surface, and it also challenges a neat definition of drawing. Here drawing can be characterised as 'finding an edge' through the application of paint, rather than as fixing a contour with line.

Later painted drawing lines

The initial underpainted drawing does not represent a contour to which Cézanne is committed, but is instead a first proposition for the edge of something, which will be repeatedly adjusted as the painting process proceeds. His process is not constrained by decisions made at the early stages. Lines painted after the application of thicker areas of paint are visible in all of the National Gallery paintings, although they are less extensive in *Landscape with Poplars*. The diluted paint he uses, often blue or greyish in colour, can sometimes be hard to differentiate from the underpainted lines. In *Bathers* some of these lines comprise several thin layers containing cobalt blue, lead white and red lake with small additions of carbon black.[86] In *Hillside in Provence* blue painted

PLATE 23 A detail of the multiple painted lines on the edges of the foreground rock in *Grounds of the Château Noir* (NG 6342).

PLATE 24 A detail of the numerous very freely applied dark painted lines in the proper right arm of *An Old Woman with a Rosary*.

PLATE 25 A detail of the diluted blue painted lines redrawing the arm of one of the women seated on the left of *Bathers*.

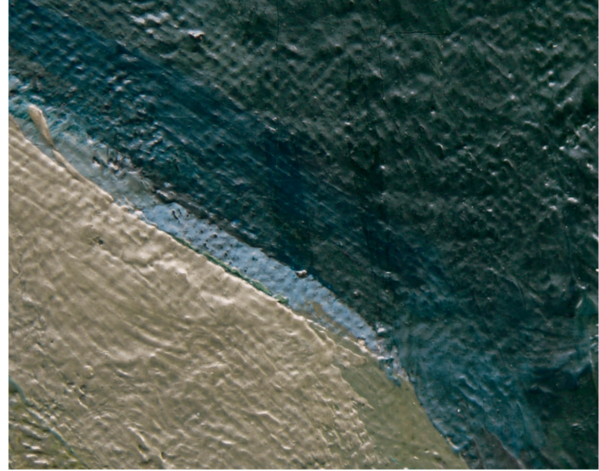

PLATE 26 Detail of a vivid blue underlayer in the rocks of *Grounds of the Château Noir*.

PLATE 27 Detail showing the selective exposure of earlier patches and strokes of colour in *Château Noir*.

PLATE 28 The complex multi-layered structure in a detail of *Landscape with Poplars*.

lines lie both under and on top of the paint layer on the hillside contour. In *The Grounds of the Château Noir* multiple lines are visible in the branches and the edge of the foreground rock (PLATE 23). There are numerous very freely applied dark painted lines in *An Old Woman with a Rosary* (PLATE 24) and dilute blue lines applied on top of opaque layers in *Bathers* (PLATE 25).

Experimental practice

Part of Cézanne's legacy, in common with the Impressionists, was the realisation that an artist could problematise, through the practice of painting, the nature of picture making and its relationship to reality. The act of painting, for Cézanne, becomes a site of rigorous analysis. His engagement with reality, his open-mindedness about how a painting might look, and his acceptance of failure within the working process,[87] produced paintings that make explicit a state of becoming, of emerging or of being formed. Perhaps the fairly limited and unchanging nature of his palette was one way of deliberately restricting variables and establishing boundaries in which he could efficiently carry out what he referred to in letters as his 'experiments'.[88]

Through the practice of painting and familiarity with paintings he studied in the Louvre, Cézanne learned a profound understanding of the chromatic effects that can be achieved by the layering of oil paint. Joachim Gasquet records Cézanne's appreciation of Veronese's grey underpainting.[89] The use of a grey ground in *Avenue at Chantilly* is an example of a premeditated choice, designed to exploit colour relationships between ground and upper paint layers. For the most part, however, Cézanne's exploitation of the layering of oil is not premeditated. Unlike earlier generations of painters who applied opaque underlayers knowing that the glazes they would apply in later layers would achieve a particular visual effect, Cézanne was sensitive to the possible contribution that all stages of his painting process could make, whether they were to be partially overlaid by later paint, or left without further layers. The role is not defined in advance and the degree of visibility of underlayers on the surface of his completed paintings is not consistent. *The Grounds of the Château Noir* provides a vivid example of the selective exposure of earlier patches and strokes of colour (PLATES 26 and 27).

The fact that Cézanne did not apply uniform covering layers as he developed his paintings enabled him to respond directly to the visual potential offered by underlayers of paint, ground or drawing. The surfaces of finished paintings reveal, for instance, the juxtaposition of heavily painted areas with bare or scarcely painted areas of ground. Often the result is a complex multi-layered surface, such as the orange underlayer, strokes of blue paint and dilute green followed by a more opaque yellow in the left-hand tree of *Landscape with Poplars* (PLATE 28). This method of painting gives Cézanne the possibility to recognise locally when he has 'done enough', rather than knowing in advance when that point would be. In *Hillside in Provence* the moss at the base of the rocks is suggested in places by a green washy underlayer which is allowed to show through (PLATE 29). Elsewhere an upper layer of green paint represents the moss. Cézanne sometimes leaves patches of the ground bare in order for its luminosity to represent either the lightest lights or the point of a depicted object closest to the viewer's eye. The thigh of the reclining woman in *Bathers* is a good example of this (PLATE 30). These areas of bare ground strongly suggest the potential for the application of more paint and also make it possible. There is usually space available for more painting to happen. His painting practice thus puts into question what constitutes a finished painting.

PLATE 29 A washy green underlayer suggesting moss at the base of the rocks in *Hillside in Provence*.

PLATE 30 A patch of bare ground in the thigh of the reclining woman in *Bathers* representing the area that is closest to the viewer's eye.

PLATE 31 A detail of the top of the head in *Self Portrait*, showing how Cézanne disrupts and questions the contour.

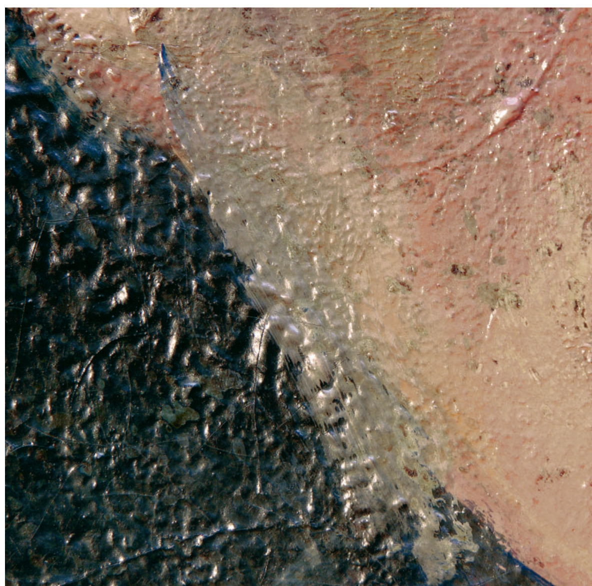

PLATE 32 A detail of the bold stroke of paint which disrupts the contour of the left hand in *An Old Woman with a Rosary*.

Other characteristics of Cézanne's practice challenge a notion of completion and it is tempting to view them in terms of strategy. The late painted lines in *Bathers* radically redraw the arm of the figure above the cat and those in *An Old Woman with a Rosary* appear to be searching for form at the moment when Cézanne chooses to stop working. The head in *Self Portrait* (PLATE 31) and the left hand in *An Old Woman with a Rosary* (PLATE 32) are instances where he places a bold stroke of paint across a contour in a way that disrupts and questions it. The fact that Cézanne asked Gasquet in a letter of May 1902 to lend the portrait of the old woman, which he then owned, for a forthcoming show in Aix-en-Provence[90] supports the idea that Cézanne was happy for paintings to be seen in a state of questionable finish.

Finishing a painting

Cézanne did not feel constrained to 'finish' his paintings. He was more concerned to question the process of painting than to complete a painting in an 'academic sense'.[91] His preparatory stages do not ensure that the painting will progress to a definable end point, but equally his 'experiments' were not intended to be without end. An active engagement with the real, or with nature, and the problems that this generated, became a major preoccupation for Cézanne. What was it to make something 'real'? Cézanne never relinquished his goal to finish or '*realise*' a painting on his own terms, but exactly what those terms were from painting to painting is extremely difficult, if not impossible, to say.

There has been much debate over whether or not a given work was finished, or abandoned, or whether Cézanne had simply stopped working on it. In a letter of April 1904 Cézanne's son asked Vollard to hold on to some still lifes that he had on consignment, because his father was not at all sure that he wanted to part with them at that time.[92] This uncertainty, however, only occasionally led to thickly layered paintings, resulting from paint accumulated over months or years. Two such paintings are *An Old Woman with a Rosary* and *Bathers*. There is documentary and physical evidence to suggest that Cézanne worked on *Bathers* over a long period.[93] He apparently worked on *An Old Woman with a Rosary* for eighteen months before abandoning it in the corner of his studio under a leaking pipe.[94] Tiny pieces of dried paint, caught in the surface of both *Bathers* (see PLATE 21) and *An Old Woman with a Rosary*, point to an extended working time. They could be the result of the surface partially drying and then the skin being picked up by later paint application.

Repeated reworking should not be regarded as the norm in Cézanne's oeuvre nor seen as an indication of a painting being closer to 'completion'. The National Gallery *Bathers* is one of three versions of the subject all painted in the last years of Cézanne's life. In contrast to the London and Barnes Foundation *Large Bather* paintings, the paint in the Philadelphia *Large Bathers* of 1906 (PLATE 33) is applied more thinly, and more openly and evenly and there is more bare ground showing. T.J. Clark describes very eloquently why he believes this version to be the most complete: 'in all senses that matter this picture is the most definitive of the three. Its unfinishedness is its definitiveness; and it is unfinish that comes out of forty years of meditating on what a conclusion in painting could be. This is a conclusion. It states what the conditions of depicting the body in the world now amount to, and it does so with utter completeness.'[95]

The absence of a signature in a work by Cézanne cannot be taken as an indication that it is unfinished. Some critics may come to believe that a particular painting has or has not achieved a 'unity', 'harmony'

PLATE 33 *The Large Bathers c.*1904–6. Oil on canvas, 208.3 × 251.5 cm. Philadelphia Museum of Art.

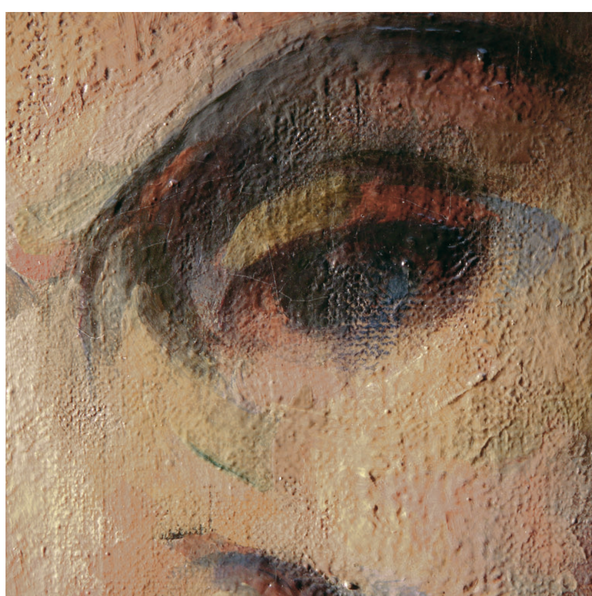

PLATE 34 A detail showing the subtle complementary colours and strong contrasts in the face of *An Old Woman with a Rosary*.

or 'wholeness', but these opinions remain subjective interpretations, even if informed by knowledge about Cézanne's painting process and contemporary accounts of what such terms meant at the end of the nineteenth century. Certain characteristics in the use of colour or handling of paint might, however, be suggestive of the later stages in the execution of Cézanne's paintings: for example the extent of subtle or strong complementary, near complementary or warm/cool colour juxtapositions and relationships; strokes of almost pure vermilion paint, often slightly subdued with a greyish overlayer, and particularly strong tonal contrasts, are other examples. Subtle complementaries and strong contrasts are to be found in the face of *An Old Woman with a Rosary* (PLATE 34).

Areas of paintings where the strokes of paint appear more organised because the brushstrokes are more differentiated or smaller can indicate an area that has been given sustained attention. In *Avenue at Chantilly*, for instance, there is a marked difference in both the

PLATE 35 Detail of the strip of canvas that Cézanne folded over the back of the stretcher showing the less intensely coloured and organised brushstrokes of this earlier stage in painting *Bathers.*

PLATE 36 A detail of sequential but not systematic application of paint in *Landscape with Poplars*.

type of brushstroke and the size of brush when the more loosely painted upper corners are compared with the central arched area. The brushstrokes in the strip at the top of *Bathers* that Cézanne folded over the back of the stretcher during the painting process, as well as being less intensely coloured, have not been diagonally organised to the same degree as those on the main body of the painting (PLATE 35). However, it would be incorrect to presume that a completed painting was one where all or even the majority of the strokes are flat edged, diagonally orientated and organised parallel to one another irrespective of the subject being depicted. Such brushstrokes were described by Theodore Reff as 'the constructive stroke',[96] but it was only in the late 1870s and 1880s that Cézanne employed this unifying type of stroke in anything approaching a systematic fashion. Cézanne's facture, although sometimes sequential in the National Gallery paintings, is not systematic (PLATE 36). *The Château de Medan* in Glasgow[97] is often offered as a key example of Cézanne's 'all over' constructive stroke, but even in this painting diagonal strokes are not used exclusively (PLATE 37).

The shape of the marks in the paintings by Cézanne in the National Gallery is very varied. In *Hillside in Provence*, for instance, the range is broad and wavy, curving, linear, tapering and flat-edged. There is a tendency for the marks to be differentiated though not discrete. Cézanne does not abandon completely the wet-in-wet mixing of brushstrokes that he used in *The Stove in the Studio* (PLATE 40). It is evident for instance in the bonnet in *An Old Woman with a Rosary*. In *Avenue at Chantilly* and *Landscape with Poplars* he creates larger patches or blocks of colour with a zigzag movement of the brush (PLATE 38). Reff states that 'the variability of Cézanne's touch depends on the scale and relative completeness of the work as well as its subject, mood and other factors not easily assimilated to a strict chronology.'[98] And Rewald notes that 'even when pictures date from the same period and treat the same subject, Cézanne's handling is not always identical.'[99]

Just as there is no clearly defined layering in the overall way that the National Gallery paintings are constructed, so Cézanne did not follow traditional practice whereby a glaze or thin layer of transparent oil colour (comprising a glazing pigment such as ultramarine, red or yellow lake in a medium-rich mixture) would be applied by an artist in the uppermost paint layer, on top of more opaque paint, and he did not rely on glazes to modify colour towards the end of a painting's execution. In his paintings there is no guarantee that the final stroke will be the more medium-rich one. Effects of transparency are created in the later painted lines and occasionally, where one stroke or patch of paint overlays another, modifying rather than concealing its colour, such as in the path in *Avenue at Chantilly* (PLATE 41). This is an example, however, of paint mixtures comprising non-traditional glazing pigments such as yellow ochre, sometimes even including white, which have been rendered translucent through the addition of oil medium or diluent. Another example is the thinly applied earth pigment in *Landscape with Poplars* (PLATE 39). Very occasionally and unsystematically Cézanne

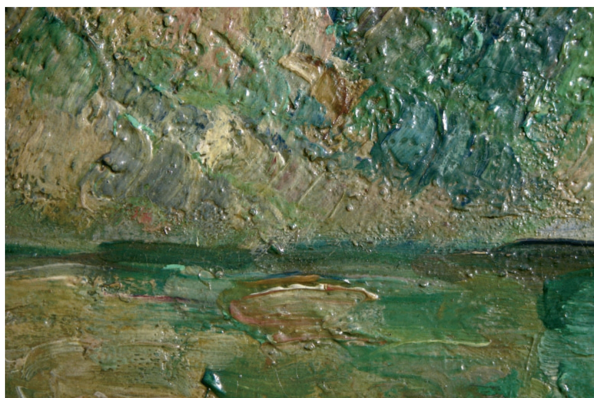

PLATE 37 A detail from *The Château de Médan* (*c.*1880, Glasgow Museums; The Burrell Collection) showing inconsistencies in Cézanne's use of the diagonal 'constructive stroke'.

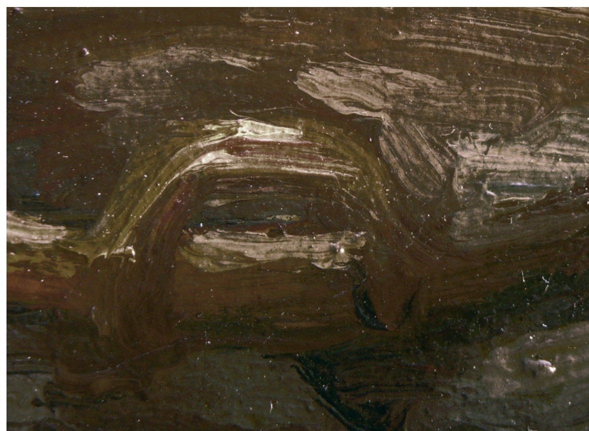

PLATE 40 A detail showing wet-in-wet mixing of brushstrokes in *The Stove in the Studio*.

PLATE 38 A detail of the patches of colour that Cézanne creates with a zigzag movement of the brush in *Landscape with Poplars*.

PLATE 39 A detail showing a thinly applied earth pigment in the wall in *Landscape with Poplars.*

PLATE 41 An example of a patch of colour modifying rather than concealing a patch below in the pathway of *Avenue at Chantilly*.

employs 'true glazes'. There is a yellow lake in *Hillside in Provence*.[100]

An analogy between Cézanne's handling of oil paint and the use of translucent layers of colour in his watercolours, encouraged by Vollard's description of Cézanne applying 'one layer of paint as thin as watercolour over another',[101] should not be overplayed. In general he applied paint fairly thinly and opaquely. It is likely that as well as diluting his paint in the lay-in stage, and in the glazes and semi-glazes and the later painted drawing, Cézanne added turpentine to his paint mixtures more generally. However, the fact that the National Gallery Cézannes are varnished precludes an assessment of relative areas of matt and glossy paint, which might have resulted from the selective addition of diluent or medium to the paint. The way the surface of Cézanne's paintings look in terms of mattness and gloss cannot be used in any argument about relative completion or indeed Cézanne's aesthetic choice.

Painting parallel to nature

Cézanne tells Bernard in a letter of December 1904 that 'an optical experience takes place in our visual organ which makes us classify as highlight, half-tone and quarter tone the planes represented by coloured sensory experiences. Thus light itself does not exist for

PLATE 42 Blue and yellow strokes of paint juxtaposed in the right-hand tree trunk in *Avenue at Chantilly.*

the painter.'[102] This suggests familiarity with contemporary debates about the nature of vision. It is probable that Cézanne knew the following passage in Helmholtz's book *Optics and Painting* (1878): 'What the artist must give us is not a simple copy of the object, but a translation of his impression into another scale of sensation.'[103] According to Cézanne, 'To read nature is to see it through the veil of an interpretation in terms of coloured touches that follow each other according to a law of harmony. These principal colours are thus analysed through modulations. Painting is classifying one's coloured *sensations.*'[104] This appears related to Hippolyte Taine's belief that the artist could work simply by representing 'patches of colour'.[105]

It seems that Cézanne understood that when painting he was not copying or reproducing nature, but, rather, representing, interpreting, or finding material equivalents for his sensory experiences. Although he wrote in a letter to Gasquet in September 1897 that 'Art is a harmony parallel to nature',[106] study of his late work indicates a realisation that intense looking does not automatically resolve itself into a harmonious painting with spatial unity. Indeed Jonathan Crary suggests that the opposite happens and writes that for Cézanne, 'looking at any one thing intently did not lead to a fuller and more inclusive grasp of its presence, its rich immediacy. Rather, it led to its perceptual disintegration and loss, its breakdown as intelligible form; and that breakdown was one of the conditions for the invention and discovery of previously unknown relations and organizations of forces.'[107] It is here that Cézanne's innovation lies.

Modulating rather than modelling

When Cézanne referred to coloured patches representing light he was referring to relationships of colour rather than simply the pigments he used and the way he mixed them. A shift towards a prismic palette from a tonal one alone would not have sufficed. Traditionally the look of a particular object under illumination had been reproduced by applying blended tones, reliant on the addition of black and white (*clair/obscur*). This can be described as modelling. Cézanne used 'relations' such as the simultaneous contrast of complementary colours and the juxtaposition of warm and cool colours to represent light and create form and space in a practice that he described to Bernard as 'modulating' rather than 'modelling'.[108] Examples are the blue and yellow juxtaposed in the right-hand trunk in *Avenue at Chantilly* (PLATE 42). He does not sacrifice form or a sense of solidity in favour of light effects and nor does he try to reproduce shifting effects of light. He was concerned with volume as he wrote: 'In order to make progress, there is only nature, and the eye educates itself by contact with nature. It becomes concentric by looking and working. What I mean is that, in an orange, an apple, a ball, a head, there is a culminating point; and this point is always the closest to our eye; the edges of objects recede towards a centre placed on our eye level.'[109] Volume in this sense is not created using perspective. 'Our eye level' is the observer's eye and body rather than an abstract plane behind the painting.

Cézanne's term 'modulation' has been interpreted as implying a way of painting that is highly systematic and premeditated. Such a view of Cézanne's practice has been encouraged by Bernard's account, quoted above, of Cézanne painting the watercolour of Mont Sainte-Victoire. Bernard continues, 'I then understood that the laws of harmony guided his work and that all these modulations had a goal, determined in advance in his mind. He worked, in fact, the way early tapestry makers must have worked, arranging related colours in a sequence until they met their contrasting colour opposites.'[110] Lawrence Gowing for instance devel-

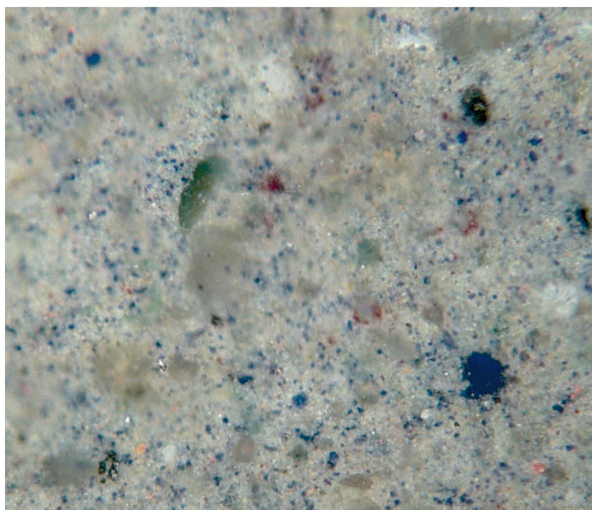

PLATE 43 Top surface of an unmounted fragment showing mixtures of pigment in the background colour of *Self Portrait*. Original magnification 220×; actual magnification 195×.

oped a theory of Cézanne's 'culminating point'. He described a system in which the sphericity of objects is modulated by sequences of hues running in spectrum order.[111] The present study suggests that Cézanne did not consider a priori the layer structure of his oil paintings, but that he was very aware of the possible effects that could be achieved and painted in a way that allowed him to improvise. Likewise his exploitation of the simultaneous contrast of complementary colours and the juxtaposition of warm and cool hues, visible in all the National Gallery paintings, demonstrates an awareness of the power they can have to represent light and form, but their use is never systematic.

Cézanne's mixing of colour and juxtaposition of patches of colour appear to be driven by intuition grounded in learned experience and familiarity with his materials, rather than formula. As this study has shown he worked with a fairly limited range of pigments which he did not significantly change for thirty years. Cézanne wrote to Louis Aurenche in January 1904 that 'a knowledge of the means of expressing our emotion' is essential, although it 'can only be gained through long experience'.[112] It seems clear that through his practice he strove to avoid habitual patterns of both perception and execution. Cézanne may have persevered in 'expressing (himself) as logically as possible',[113] but this was not achieved through a schematised system.

Mixed colours

Following Cézanne's criticism of his palette (which consisted of four colours plus white) Bernard wrote: 'I understood then that Cézanne, instead of mixing many colours, had a set array for his palette, every gradation of colour, and that he applied them directly.'[114] He went on to describe the layout of Cézanne's palette, noting that: 'Such a palette has the advantage of not involving too much mixing. It creates relief in the painting because it allows for distinctions of light and dark, that is to say, strong contrasts.'[115] It is unclear whether Bernard was referring to the arrangement on the palette of multiple colours, meaning mixtures of individual pigments made at the outset of the painting process, or to individual pigments straight from the tube. This account has led to speculation that Cézanne worked according to a predetermined system in his oil paints and that he did not mix colours. Contradicting this are photographic images of Cézanne's palette while he is working and the one self portrait in which Cézanne displays his palette.[116] They suggest a practice that involves the mixing of colours during the painting process. This does not preclude the possibility that Cézanne established provisional key colour relationships on his palette at the beginning of his painting sessions – something that is likely but almost impossible to prove.

Individual strokes of paint examined in cross-sections are generally composed of some three to five pigments in a matrix of white. His strokes of colour rarely comprise unmixed or pure pigments straight from the tube – even allowing for the fact that tube paints available at the time sometimes contained mixtures of pigments.[117] The mixed colours primarily comprise reds, blues and greens. Yellow ochre and black are added to mixtures throughout his career. For instance, in *Self Portrait* the background mixtures contain white, a green, blue, red and sometimes a yellow (PLATE 43). The colour harmonies that he achieves are the result of the subtle variation in the proportions of pigments in each mix. There are instances, such as in *Self Portrait*, of brushstrokes in which the individual pigments in a mixture have not been fully integrated before application, suggesting mixing that is spontaneous and done in response to something seen (PLATE 44).

Drawing with colour

The organisation of colour and line is a fundamental part of an artist's 'means of expression'. Cézanne's theory of modulating with colour, as it is presented in certain of the 'opinions' that Bernard attributes to Cézanne, appears to exclude the use of line in creating form: 'There is no line; there is no modelling; there are only contrasts. It is not black and white that create these contrasts, but the coloured *sensation*'[118] and 'Drawing and colour are not distinct from one another'.[119] However, his use of coloured painted lines both before modulating with strokes or patches of colour and afterwards, and his 'reserve drawing', have the effect of blurring distinctions visually, functionally and in terms

PLATE 44 An example in *Self Portrait* of a brushstroke in which the constituent colours have not been fully mixed before application.

PLATE 45 Detail of Cézanne's right eye in *Self Portrait*.

of hierarchy between colour and line. Cézanne's often rhythmic use of line, visible on the finished surface and frequently applied late in the painting process, is hard to understand if one believes that he aimed to eliminate line.[120]

Non-descriptive mark-making and colour

In making a painting that is 'parallel to nature', Cézanne constructs colour relationships with strokes or patches of colour. Both the colour and shape of these marks diverge radically from an idea of 'reproducing' or 'copying' nature. Cézanne's selective use of the simplified and standardised painted mark or 'constructive stroke', or his later development of larger patches of colour, such as those seen in the bottom left-hand corner of *The Grounds of the Château Noir* (PLATE 46), run counter to an idea of there being a direct link between an area of paint and separate elements within the subject represented. However, in the earlier *Self Portrait* Cézanne incorporates descriptive handling in the hair and beard with strokes of paint that resemble strands of hair and more constructive (although form following) strokes in the forehead. His use of colour extends beyond anything that might be considered 'local colour', or colour that identifies a specific object. He is not 'unduly subservient to nature',[121] but, and this is more important, he is also not willing (as later generations of artists would be) to sever the connection between a painting and observed nature, so that coloured marks relate only to each other and the edges of the canvas.

Formal design, 'distortion' and the directly observed

Cézanne's incorporation of formal design – or sometimes even classical composition and the directly observed (PLATE 45) – can be seen in infrared reflectograms of his paintings in the National Gallery. The changes between the underdrawing and the paint layers in *Self Portrait*, *Avenue at Chantilly* and *Hillside in Provence* point to invention in the service of composition and idea rather than simply a perceptual adjustment. The patches of bright vermilion, seen frequently in the upper layers of Cézanne's paintings, attest to the work of picture making where the internal organisation of a painting, or the pursuit of pictorial harmony, dictates the placement of colour. In *The Grounds of the Château Noir* the red patch of paint in the lower centre has been allowed to remain visible as more paint has been added around it (PLATE 47). The composition is arranged around this spot.[122] The diagonal green-painted line in the bottom right-hand corner of *The Grounds of the Château Noir* (PLATE 48) functions as a pictorial device emphasising the diagonal movement into the painting.

It is not a coloured mark relating directly to something observed. *An Old Woman with a Rosary* is composed of a 'network of intersecting diagonals'.[123]

The debate about 'distortion' or awkwardness in Cézanne's paintings has generated much controversy. Some have argued that the distortions are the result of the artist trying to faithfully portray the world as it appeared to him – responding immediately and innocently to his *sensation* – without recourse to traditional solutions for pictorial organisation, such as linear or aerial perspective. However, formalist interpretations, that include seeing Cézanne's paintings in terms of abstract geometric shapes, suggest that the distortions occur in the service of picture making and are the result of pictorial sensibility or the designing of a painting within the rectilinear canvas. Roger Fry, who was the first to write about Cézanne in this way, describes a painting of bathers and writes: 'At any moment the demand of the total construction for some vehement assertion of a rectilinear direction may do violence to anatomy.'[124] Paul Smith points out the dangers of over-interpreting Cézanne's much-quoted advice to Bernard to 'treat nature in terms of the cylinder, the sphere and the cone, everything placed in perspective, so that each side of an object, of a plane, leads to a central point',[125] arguing that this was an instruction to a painter whose work he considered incompetent and flat.[126] Robert Ratcliffe argues that as well as intentional 'distortion' in figures,[127] Cézanne's concentration on and repeated reworking of relationships of colour and form lead to unintentional distortion, such as a tendency for vertical lines to lean to the left.[128]

By all accounts Cézanne rigorously observed nature. A letter to his son of September 1906 attests to an acute awareness, developed through intense looking, of the complexity and richness of visual perception: 'Here, on the river bank, there are so many motifs, the same object seen from another angle offers a subject of the most compelling interest, and so varied that I believe I could work away for months without changing position but just by leaning a little to the right and then a little to the left.'[129] Cézanne's work engages with the problems arising from moving his eye from one fixed position to another. Not only would there be an oscillation between focus and out of focus, but the object of his attention would also alter chromatically and the spatial relations between subsequent points of focus would be in continual flux. Cézanne's paintings make manifest this complexity in a way that was startlingly novel at the end of the nineteenth century. Crary writes of Cézanne's 'particular sensitivity to and observation of perceptual experiences that had been ignored, marginalized, or been incompatible (and hence unarticulated)

PLATE 46 A detail from the bottom left-hand corner of *The Grounds of the Château Noir* showing fairly large patches of colour.

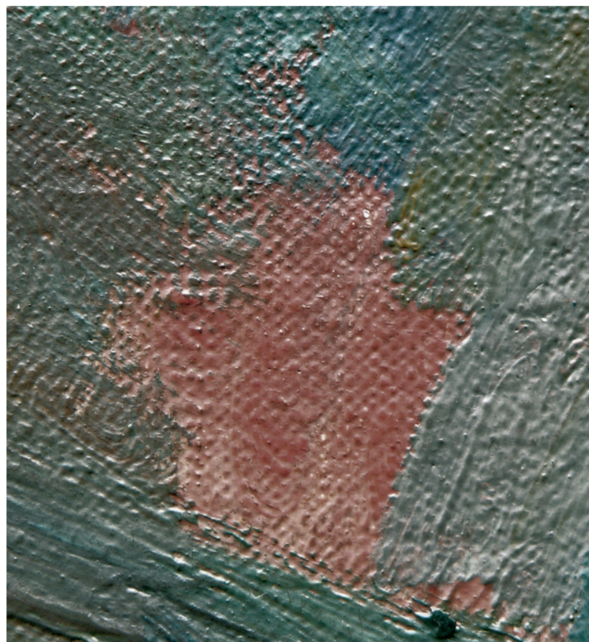

PLATE 47 The compositionally important red patch of paint in *The Grounds of the Château Noir*.

PLATE 48 Detail showing the green-painted line in the bottom right-hand corner of *The Grounds of the Château Noir*, reinforcing the diagonal movement into the painting.

within older (classical) organizations of knowledge about vision'. He argues that Cézanne makes the creative discovery in the 1990s that 'perception can take no other form than the process of its formation'.[130]

Gowing writes that when painting in the grounds of the Jas de Bouffan Cézanne often 'modulated the farmhouse wall as roundly as the tree trunks'.[131] This is offered as an example of Cézanne's awareness that the line of vision from the eye meets a flat surface at every point at a different angle and therefore results in it appearing cylindrical. Merleau-Ponty argues that Cézanne used modulated colours and indicated several outlines because, 'rebounding among these, one's glance captures a shape that emerges from among them all, just as it does in perception.'[132] It seems logical to suggest that the repeated redrawing and modulations seen in Cézanne's oeuvre are at least in part the result of the visual journeys he makes and then attempts to represent in paint. Discrepancies can occur where these pathways intersect and are partly dependent upon the starting point and direction of each journey. *Avenue at Chantilly*, with its loosely painted corners and highly organised centre, could be regarded as an engagement by Cézanne with peripheral vision – another of the previously marginalised perceptual experiences. But the painting could also exemplify, as already discussed, a carefully composed image.

Cézanne's National Gallery *Bathers* is a studio composition and the repeated painted contour lines cannot be attributed to direct perceptual experience, but can be linked to a notion of reality that is emergent rather than fixed. The *Bathers* series may be considered a condensation of a lifetime spent looking both at nature and the art of the past, whether or not one accepts the proposition that Cézanne worked on these studio paintings outside, sliding them through the specially constructed narrow slot in his studio wall at Les Lauves.[133] Famously, when trying to finish his portrait of Vollard, made from one hundred and fifteen sessions of direct observation, he says that he may be able to do so 'if the copy I am making at the Louvre turns out well'.[134]

Conclusion

Cézanne's National Gallery paintings attest to his sustained engagement with the question of what it is to 'represent' or to 'make an equivalent of a world' at a particular historical moment,[135] and the refinement of an experimental painting practice, which balances a control of means with a state of open-ended possibility and uncertainty. Cézanne's combination of rigorous observation and enquiry into the relationship of a painting to the visible world underlies his innovative and experimental approach to the construction and execution of a painting. The way his paintings look at the point when he stops working on them, destabilises what previously had constituted an 'image'.[136] The surfaces of Cézanne's paintings reveal much about his method, but more importantly they enable an engagement with the intellectual content of his practice and the struggle that this generated.

Acknowledgements

My thanks to the Caroline Villers Fellowship which made this research possible, to the National Gallery Scientific Department (Ashok Roy, David Peggie, Jo Kirby, Rachel Grout) and to Rachel Billinge for their help in gathering much of the technical data in this article and for allowing me to use it, and to Anne Robbins (assistant curator of French nineteenth-century painting at the National Gallery) for sharing her knowledge of Cézanne and the stimulating discussions we had in front of the paintings. Thanks are also due to Professor Richard Verdi for his comments on the manuscript

Elisabeth Reissner was the first Caroline Villers Research Fellow at the Courtauld Institute of Art, from 2006 to 2007. She is currently a visiting lecturer for the MA course 'Curating the Art Museum' and a participant in the 'Writing Art History' research forum seminar group, both at the Courtauld Institute of Art. She works as a freelance paintings conservator and is a practising artist.

Notes

1 John Rewald, ed., *Paul Cézanne Letters Revised and Augmented Edition*, New York 1984, pp. 297–8. The translation used here is by John House and is published in *The Courtauld Cézannes*, The Courtauld Institute Galleries, London 2008.

2 See for instance: Michael Doran, ed., *Conversations with Cézanne*, Berkeley, California, 2001; Ambroise Vollard (trans. by Harold L. Van Doren), *Paul Cézanne: His Life and Art*, London (Brentanos) 1924. (First published in Paris in 1914.)

3 Reference will be made to Marigene H. Butler's technical study of ten paintings by Cézanne in the Philadelphia Museum of Art, 'An Investigation of the Materials and Technique Used by Paul Cézanne', AIC Preprints, The American Institute for Conservation 12th Annual Meeting, Los Angeles 1984, and a concurrent study of the Courtauld Cézannes to be published in *The Courtauld Cézannes*, The Courtauld Institute Galleries, 2008. *The Grounds of the Château Noir* (NG 6342) has been on loan to Tate Modern since 1997.

4 For a description of colour-makers and colour merchants in the nineteenth century see D. Bomford, J. Kirby, J. Leighton and A. Roy, *Art in the Making: Impressionism*, New Haven and London 1990, pp. 34–7.

5 Noted by the Danish painter Johan Rhode on a visit to his shop, quoted in John Rewald, *The History of Impressionism*, London 1973, p. 557.

6 Bomford *et al.* 1990 (cited in note 4), p. 41.

7 Ella Hendriks and Louis van Tilborgh, *New Views on van Gogh's Development in Antwerp and Paris* (text in English and Dutch), University of Amsterdam 2006, p. 104.

8 Rewald 1984 (cited in note 1), pp. 61 and 221.

9 Both in the Courtauld Institute Galleries, London.

10 See the discussion of the Chabod stamp on the Seurat in Jo Kirby, Kate Stoner, Ashok Roy, Aviva Burnstock, Rachel Grout and Raymond White,

'Seurat's Painting Practice: Theory, Development and Technology', *National Gallery Technical Bulletin*, 24, 2003, p. 27, note 60.

11 Elisabeth Ravauld, 'The Use of X-Radiography to Study Paintings by Cézanne and Van Gogh in the Gachet Collection', in *Cezanne to Van Gogh The Collection of Doctor Gachet*, New York 1999, pp. 65–70.

12 Adrien Chapuis, *The Drawings of Paul Cézanne. A Catalogue Raisonné*, London 1973, cat. entry 963.

13 A transcription of this letter was sent to Clotilde Roth-Meyer from Claude Yvel and Clotilde kindly passed it on to me. Clotilde Roth-Meyer also informed me that Chabod still had a shop in 1914.

14 Rewald 1984 (cited in note 1), pp. 119, 219, 238, 309, 310, 326, 329. The 'art supply dealers' are not named in the letters – as they appear in Rewald's publication.

15 Dominique Sennelier of Sennelier Beaux-Arts Distribution has seen invoices for oil paints sold to Cézanne by his grandfather Gustave Sennelier, who became a colour merchant in 1887, according to a private communication with Faith Zieske published in Faith Zieske, *Paul Cézanne's Watercolours: His Choice of Pigments and Papers*, Broad Spectrum, London 2002, p. 91. In the letter mentioned in note 13 Cézanne also asks the art supply dealer for viridian and cobalt blue from Bourgeois. At this time Lefranc and Bourgeois were not associated. For more information on Sennelier see Clotilde Roth-Meyer's unpublished PhD, 'Les Marchands de Couleurs à Paris au XIX siècle', Paris IV-Sorbonne 2004.

16 For an outline of standard canvas sizes see Bomford *et al*. 1990 (cited in note 4), pp. 44–6.

17 Walter Feilchenfeld in John Rewald, with Walter Feilchenfeldt and Jayne Warman, *The Paintings of Paul Cézanne: A Catalogue Raisonné*, 2 vols, New York 1996, p. 16.

18 Robert Jenson, 'Vollard and Cézanne: An Anatomy of a Relationship', in *Cézanne to Picasso, Ambroise Vollard, Patron of the Avant-Garde*, ed. Rebecca A. Rabinow, New Haven and London 2006, p. 44. Jenson writes that between 1870 and 1884 less than eight per cent of Cézanne's production are figure 25, while between 1885 and the end of his life almost 45 per cent were this size or larger.

19 A full discussion of the ways in which Cézanne alters the size of *Bathers* is not possible in this article. During the painting's execution a 120 mm wide strip of canvas was added to the bottom edge and the height of the canvas was also reduced by 95 mm by folding the top over the back of the stretcher. Cézanne also extended the width by reclaiming approximately 50 mm from what must have been a rather copious tacking margin on the right-hand edge. The painting's dimensions appear to have been further altered in at least two restretchings.

20 Philip Conisbee, 'The Atelier des Lauves', in *Cézanne in Provence*, New Haven and London 2006, p. 233.

21 Photograph by Emile Bernard, Musée d'Orsay, Paris, Vollard Archives.

22 For example *Still Life with Cupid*, 1894, Courtauld Institute Galleries, London.

23 Bernard's published account of his visits to Cézanne appeared in 'Souvenirs' in *Mercure de France* on 1 and 16 October 1907. Reproduced in Doran ed. 2001 (cited in note 2), pp. 59 and 76.

24 Anthea Callen, *The Art of Impressionism*, New Haven and London 2000, p. 34 and p. 31. The translation for *étude* would be 'study'.

25 Late paintings such as *La Route Tournante*, *c*.1905 (London, Courtauld Institute Galleries), or *The Gardener Vallier*, 1905–6 (London, Tate), are also painted on much more finely woven canvas, that lacks strong texture.

26 For a description of the commercial preparation of canvas, see Ella Hendriks and Muriel Geldof, 'Van Gogh's Antwerp and Paris picture supports (1885–1888)', *Art Matters*, Vol. 2, Netherlands Technical Studies, Zwolle 2005, p. 43.

27 Vollard 1924 (cited in note 2), pp. 72–3.

28 Following a survey of Rewald's catalogue raisonné, Jenson proposes that less than five per cent of Cézanne's total work was damaged or cut from larger canvases. See Jenson 2006 (cited in note 18), note 26.

29 Samples were analysed using EDX by Rachel Grout at the National Gallery. In addition David Peggie identified two applications of ground comprising lead white and barites in NG 6509 using SEM.

30 Carbon-based black chars, including fruit stone chars, are described in Nicholas Eastaugh, Valentine Walsh, Ruth Siddall and Tracy Chaplin, *The Pigment Compendium, optical microscopy of historical pigments*, Vol. 2, Oxford 2004, pp. 230-1.

31 In Marigene H. Butler's 1984 study of ten Cézannes (cited in note 3), two grey grounds were found. In addition there was a grey layer applied to the face of *The Large Bathers* (1906) on top of a cream white ground. Of the nine Cézannes examined in the Courtauld Institute Galleries only *The Lac d'Annecy*, 1896, has a grey ground.

32 Media analysis of the ground and paint layers of the National Gallery paintings has been carried out by Raymond White, Catherine Higgitt and David Peggie using GC–MS and FTIR.

33 Callen 2000 (cited in note 24), pp. 52–7, provides a discussion of the range of absorbent and semi-absorbent grounds commercially available in nineteenth-century France.

34 Hendriks and Geldof 2005 (cited in note 26), p. 51.

35 Rewald 1984 (cited in note 1), pp. 309, 310, 326, 329.

36 It is difficult to be sure of the composition of cinnabar green as contemporary descriptions vary, but cinnabar green was used as a synonym for chrome green which was a mixture of lead chromate (chrome yellow) and Prussian blue. See Nicholas Eastaugh *et al.*, *The Pigment Compendium, a dictionary of historical pigments*, Vol. 1, Oxford 2004 (Vol. 2 cited in note 30), p. 174. *Cinabre vert* was also called *vert anglais*, see Callen 2000 (cited in note 24), p. 146.

37 Chapuis 1973 (cited in note 12), cat. entries 320, 345, 507, 564, 667, 805, 963 and 1172.

38 Emile Bernard's 'Souvenirs' was published in two parts in *Mercure de France*, October 1907, reproduced in Doran ed. 2001 (cited in note 2), p. 72.

39 The term was principally confined to the crimson and scarlet colours produced from cochineal by the agency of tin. See Nicholas Eastaugh *et al*. 2004 (cited in note 36), Vol. 1., p. 86.

40 In the nineteenth century crimson lake became a synonym for a cochineal lake. Fine lake and burnt lake were also traditionally cochineal lakes. See Eastaugh *et al*. (cited in note 36), p. 134.

41 Cross-sections were analysed using EDX and HPLC by Rachel Grout and Jo Kirby at the National Gallery.

42 It was also not found in the Philadelphia and Courtauld technical studies (cited in note 3). A receipt for pigments sold by Tanguy to Cézanne on 18 October 1888 has, however, recently been found by Clotilde Roth-Meyer in the Fondation Custodia, Paris. It includes Naples yellow, as well as other colours identified in the National Gallery paintings: Blanc d'argent, Ocre jaune, Outremer Guimet, terre verte, vert Veronèse, lacque fine and Jaune de Naples.

43 Callen 2000 (cited in note 24), p. 153. Callen suggests that the Naples yellow that Cézanne was using may have been a cadmium yellow. Cadmium yellow has been identified in *Tall Trees at the Jas de Bouffan* (*c*.1883) in the Courtauld study (cited in note 3).

44 Leslie Carlyle, *The Artist's Assistant, Oil Painting Instruction Manuals and Handbooks in Britain 1800–1900*, London 2001, p. 526.

45 Ashok Roy, 'The Palettes of Three Impressionist Paintings', *National Gallery Technical Bulletin*, 9, 1985, p. 19.

46 Black (possibly fruit stone) char is also found in the Courtauld study (particularly in the mid-1890s), and in the Philadelphia study (both cited in note 3). For information about black char see note 30 above.

47 This is supported by both the Philadelphia and Courtauld Institute findings. Although his father died in 1886, Cézanne received part of his inheritance in 1882. See Rewald 1984 (cited in note 1), pp. 205–6.

48 Jo Kirby, Marika Spring and Catherine Higgitt, 'The Technology of Eighteenth and Nineteenth-Century Red Lake Pigments', *National Gallery Technical Bulletin*, 28, 2007, p. 90. On the basis of fluorescence when a cross-section was viewed in ultraviolet light, madder lake was also identified by Rachel Grout in *An Old Woman with a Rosary*.

49 The identification was made by Jo Kirby using HPLC in an internal National Gallery report.

50 Roy 1985 (cited in note 45), p. 19.

51 Raymond White, Jenny Pilc and Jo Kirby, 'Analysis of Paint Media', *National Gallery Technical Bulletin*, 19, 1998, p. 82.

52 Maurice Denis in 'Cézanne' in *L'Occident*, September 1907, reproduced in Doran ed. 2001 (cited in note 2), p. 173.

53 A. Tabarant, 'Couleurs', in *Bulletin de la vie artistique*, 4, no. 14, 5 July 1923, p. 289, quoted in Callen 2000 (cited in note 24), p. 175. It is likely that Cézanne was also using marten brushes for his watercolours.

54 A *putois* is a polecat or a skunk. Vollard also recounts Cézanne using brushes of 'sable or pole-cat hair' see Vollard 1924 (cited in note 2), p. 128

55 It is generally accepted that the Impressionists were against varnishing their paintings. Callen attributes this view also to Cézanne, see Callen 2000 (cited in note 24), p. 210.

56 Possibly even the application of tinted varnishes, see Callen (cited in note 24), p. 211.

57 See *The Courtauld Cézannes* 2008 (cited in note 3) for a reference to Vollard's use of the picture restorer Chapuis for relining and stretching of canvases.

58 Feilchenfeld in Rewald *et al*. 1996 (cited in note 17), p. 17.

59 Richard Shiff, *Cézanne and the End of Impressionism*, Chicago 1984, note 23, p. 299.

60 For an outline of Pissarro's palette which technical analysis has shown also contains black and earth colours see Lydia Milsom, 'The Relationship of

Camille and Lucien Pissarro Considered through Technical Examination of their works from the Courtauld Collection', unpublished Courtauld Institute of Art Diploma dissertation, 2007, pp. 58–9.
61 Rewald 1984 (cited in note 1), p. 324. Translated here by John House.
62 Doran ed. 2001 (cited in note 2).
63 See note 1.
64 Rewald *et al.* 1996 (cited in note 17), p. 509.
65 The infrared images were captured by Rachel Billinge at the National Gallery.
66 Its absence in *An Old Woman with a Rosary* may be due to the heavily worked nature of the paint layer that contains infrared-absorbing pigments. It is possible also that there is dry drawing in *Bathers* – it was not looked at using infrared reflectography.
67 It was found on two of the ten paintings in the Philadelphia study and three of the nine Courtauld Cézannes examined.
68 This differs from Monet's description of his initial lay-in, which he says, 'should cover as much of the canvas as possible, so as to determine at the outset the tonality of the whole'. Quoted in Bomford *et al.* 1990 (cited in note 4), p. 97.
69 The Courtauld study also shows Cézanne's consistent use of bluish painted underdrawing in conjunction with dilute blue, green, grey washes or scumbles of paint.
70 Doran ed. 2001 (cited in note 2), p. 73.
71 Emile Bernard in 'Souvenirs', reproduced in Doran ed. 2001 (cited in note 2), p. 63. Translated here by John House.
72 Ibid., p. 27.
73 Paul Smith suggests that Cézanne's paintings of Gardanne are examples of a more piecemeal way of working, which Cézanne abandons. See Paul Smith, *Interpreting Cézanne*, London 1996, p. 58.
74 Jonathan Crary, *Suspensions of Perception*, Cambridge, Mass., and London 2000, p. 301.
75 Doran ed. 2001 (cited in note 2), p. 110.
76 *Still Life with Water Jug*, *c.*1893, oil on canvas, 53 x 71.1 cm, London, Tate.
77 Lawrence Gowing argues that, 'after 1900 separable, physical objects in Cézanne's work increasingly merge into the flux of colour,' in 'The Logic of Organized Sensations', William Rubin ed., *Cézanne: The Late Work*, New York, Museum of Modern Art, 1977, p. 55.
78 Gregory Ward, Senior Lecturer at Canterbury Christ Church University, put forward the idea of journeys in a discussion we had in front of *La Route Tournante*, *c.*1905 (London, Courtauld Institute Galleries).
79 Doran ed. 2001 (cited in note 2), p. 60. Translated here by John House.
80 Evelyn Benesch, 'From the Incomplete to the Unfinished', in Felix Baumann, Evelyn Benesch, Walter Feilchenfeldt, Klaus Albrecht Schroder eds, *Cézanne Finished, Unfinished*, Vienna 2000, p. 52.
81 1898-1905, oil on canvas, 54 x 64 cm, Kunstmuseum Solothurn.
82 Doran ed. 2001 (cited in note 2), p. 59.
83 Vollard 1924 (cited in note 2), p. 126, reproduced in Doran ed. op. cit., p. 10.
84 Rewald 1984 (cited in note 1), p. 284.
85 Joachim Pissarro, *Pioneering Modern Painting: Cézanne and Pissarro 1865–1885*, New York 2005, p. 52.
86 Cross-section analysed by Rachel Grout at the National Gallery.
87 Vollard gives accounts of Cézanne's wilful destruction of his own work in Vollard 1924 (cited in note 2).
88 Rewald 1984 (cited in note 1), pp. 283 and 322.
89 Doran ed. 2001 (cited in note 2), p. 133.
90 Rewald 1984 (cited in note 1), p. 283.
91 Due to his private income (albeit meagre at times) he was independent of a system of patronage.
92 Rewald 1984 (cited in note 1), p. 310.
93 Rewald *et al.* 1996 (cited in note 17), p. 509.
94 According to Gasquet; quoted in Anne Robbins, *Cézanne in Britain*, London 2006, p. 85.
95 T.J. Clark, *Farewell to an Idea*, New Haven and London 2001, p. 153.
96 Theodore Reff, 'Cézanne's Constructive Stroke', *Art Quarterly* 25, no. 3, Autumn 1962, pp. 214–17.
97 *c.*1880, oil on canvas, 59 x 72 cm, Glasgow Museums, The Burrell Collection.
98 Reff 1962 (cited in note 96), pp. 214–7.
99 Rewald *et al.* 1996 (cited in note 17), p. 11.
100 Roy 1985 (cited in note 45), p. 19. It is important to note that the identification of a yellow lake is extremely difficult, therefore it may have been used more frequently than this study suggests.
101 Vollard 1924 (cited in note 2), p. 129.
102 Rewald 1984 (cited in note 1), p. 305. Translated here by John House.
103 Paul Smith, *Impressionism Beneath the Surface,* London 1995, p. 156.
104 Emile Bernard, 'Paul Cézanne' in *L'Occident*, July 1904, pp.17–30, reproduced in Doran ed. 2001 (cited in note 2), p 38. Translated here by John House.
105 Paul Smith, *Interpreting Cézanne*, London 1996, p. 48.
106 Rewald 1984 (cited in note 1), p. 261.
107 Jonathan Crary 2000 (cited in note 74), p. 288.
108 Bernard in *L'Occident*, July 1904, reproduced in Doran ed. 2001 (cited in note 2), p. 39. This is one of the 'opinions' that Bernard attributes to Cézanne.
109 Rewald 1984 (cited in note 1), p. 299. Translated here by John House.
110 Doran ed. 2001 (cited in note 2), p. 60.
111 Gowing, 'The Logic of Organized Sensations', in *Cézanne: The Late Work* 1977 (cited in note 77), p. 58.
112 Rewald 1984 (cited in note 1), p. 294.
113 Ibid., pp. 297-8.
114 Doran ed. 2001 (cited in note 2), p. 62.
115 Ibid., p. 73.
116 *Portrait de l'Artiste à la Palette (Self Portrait with Palette)*, *c.*1890, 92 x 73 cm, Zurich, Stiftung Sammlung E.G. Buhrle Collection.
117 Bomford *et al.* 1990 (cited in note 4), p. 61.
118 Bernard, in *L'Occident*, July 1904, reproduced in Doran ed. 2001 (cited in note 2), p. 38. Translated here by John House.
119 Doran ed. 2001 (cited in note 2), p. 39.
120 For a more developed discussion see Elisabeth Reissner, 'Transparency of Means: "Drawing" and Colour in Cézanne's watercolours and oil paintings in the Courtauld Gallery', in *The Courtauld Cézannes* 2008 (cited in note 3).
121 See note 1.
122 Robbins 2006 (cited in note 94), p. 88.
123 Ibid., p. 85.
124 Quoted in Shiff 1984 (cited in note 59), p. 195.
125 Rewald 1984 (cited in note 1), p. 296. Translated here by John House.
126 Smith 1995 (cited in note 103), p. 146.
127 Robert Ratcliffe, 'Cézanne's working methods and their theoretical background', unpublished PhD, University of London (Courtauld Institute of Art), 1961, p. 172.
128 Ibid., pp. 134–54.
129 Rewald 1984 (cited in note 1), p. 322.
130 Crary 2000 (cited in note 74), pp. 287–8.
131 Gowing 1977 (cited in note 77), p. 57.
132 Maurice Merleau-Ponty, 'Cézanne's Doubt' in *Sense and Non-sense*, Evanston, Illinois, 1964, p. 15.
133 Conisbee 2006 (cited in note 20), p. 231.
134 Vollard 1924 (cited in note 2), p. 126, reproduced in Doran ed. 2001, p. 10.
135 Clark 2001 (cited in note 95), p. 165.
136 Crary 2000 (cited in note 74), p.34; here Crary refers particularly to Cézanne's work of the 1890s.