

seen in abraded areas along the tacking edges. Probably Mignon started with a double ground, much the same as the ground on De Heem's *Festoon with Fruits and Flowers*. Presumably dissatisfied with the result he applied a third layer to obtain an even smoother surface.

The cross-sections, taken mainly from the flowers, reveal a thin grey layer with fine lead white and a fine black pigment. Before being restored, this grey layer was visible, with some variation of the grey tone, in lacunae in the upper paint layers, as in the yellow fox rose (*Rosa fortida*) and the pink Province rose (*Rosa x provincialis* L.). Mignon appears to have applied an underpainting in grey hues which was sometimes used, as the pink Province rose reveals, to achieve a delicate bluish effect, creating the translucent petals characteristic of this flower. He subsequently applied the basic colours of the flowers, before blocking in the background, apparently a common practice. This is mentioned in several sources, including the Memorandum Book in which Jacob Bogdani's method is described: 'He designs the loose manner of his Flowers with a Chalk on the Cloth out of his Head then he paints all his Roses and Guiflowers and Tulips on the Cloth with Stalks one by one leaving the Ground of the Cloth.' This order was also recommended by Willem Beurs: 'A flower painter may well paint his flowers and leaves, the ones in the sun light and then the ones in the shade; then the bottle or pot; after which one can start with the table and [back] ground [...], as the *welstand* of his flowers (or also fruits), which is his first priority, will permit.'

A paint sample from the orange marigold (*Calendula officinalis* L.) in the centre of the composition reveals a remarkable structure (figs. 1a and b). Over the triple ground and thin grey underpainting, is a blue layer containing indigo covered by a layer consisting of lead white, and some yellow lake followed by a layer identified as realgar (fig. 2). Lights were executed with a yellow pigment. The blue layer seems odd as a base for an orange flower. However, the flower may have been painted over a planned leaf. Gerard de Lairese describes the so-called *tuschenbloemen* in his *Groot Schilderboek* (1707) in the chapter on flower still lifes. These are the small flowers added to balance the strong colours of the main composition: 'The *tuschenbloemen* [flowers-in-between]

[...] are added on top of the green or the background in the working-up stage'. The marigold in Mignon's painting may well be a *tuschenbloem*, painted over an existing leaf.



fig. 1a and b  
Paint cross-section of sample (R 50/2) from orange coloured marigold; bright field, incident light (a) magnification 320 x, and SEM backscattered electron image (b), scale bar is 100 nm.

1. Ground layer; calcite, earth pigments.
2. Second ground; agglomerates of lead white, carbon black, earth pigments.
3. Grey underpaint; lead white carbon black.
4. Bluish underpaint; lead white, indigo.
5. Yellow and white paint layer; lead white, orpiment, realgar.

The layer structure encountered in the cross-sections of the red and yellow flamed tulip, the pink Province rose and the blue convulvulus (*Convulvulus tricolor* L.) is rather straightforward, demonstrating the work of an experienced artist who knew how to obtain an optimal effect with a simple technique. The paint sample of the yellow and red flamed tulip shows this, since Mignon simply covers the triple ground and the grey underpainting with a thin bright red layer composed of red lake

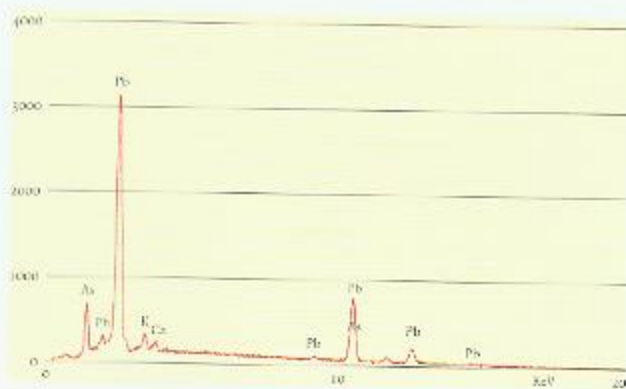


Fig. 2  
EDX spectrum of the orange top layer in cross section from marigold; the presence of arsenic (As) and sulphur (S) indicate an arsenic sulphide pigment like realgar or orpiment; calcium (Ca) and potassium (K) refer to the substrate of the yellow lake.

5. M. Rajna, 'Jacob Bogdani's working practices, his own account, 1691', *Acta Historiae Artium, Academiae Scientiarum Hungaricae*, 36 (1983), p. 89.  
6. W. Beurs, *De Groote Waereld in 't Klein geschiedt, of schilderzigt tafereel van s'werelds schilderyen, kortelijc versat in ses boeken: verklarende de boufswesen, haare ver-schelde mengelingen in olj, en dezelvever geboort*, Amsterdam (1692), p. 72.  
7. Identification of realgar is based on peaks for arsenic and sulphur in SEM/EDS measurements and a good match of the XRD pattern with JCPDS file 4-22-77. The yellow pigment is not identified. SEM/EDS spectra did not show peaks for tin, this would indicate the expected lead tin yellow.

8. G. de Lairese, *op. cit.*, p. 164-65.

Abraham Mignon (1640-1679)  
**Still Life with Flowers and Watch**

Signed: A. Mignon *fr*

Oil on canvas, 75 x 60 cm

INV. NO. SK-A-268

Then paint a green festoon, or bouquet made up with foliage on a panel or cardboard. On this foliage you can place these flowers, arranging and re-arranging them according to your concept.

The attention is clearly focused on an appropriate arrangement of colours, rather than the depiction of the volume in space of a bouquet. The composition is held together by the free-flowing movement of branches, stems and tendrils.

It is the manipulation of the effects of bright light over stems and petals that give Mignon's flowers a near metallic crispness that discerns them from the more subtle play of shadow and light by De Heem. Although Houbraken avows that Mignon worked after nature, the artist frequently reused motifs in other paintings. He also painted variations and multiple versions of his most successful works. The combination of flowers in *Still Life with Flowers and Watch* is reminiscent of some of Jan Davidsz. De Heem's flower compositions, suggesting that Mignon may have been familiar with De Heem's studio.

The support, a fine plain weave canvas, has a wax-resin lining and is in good condition. The tacking margins show cusping along all the edges, indicating that the original dimensions have been retained. From the paint samples a triple ground layer can be deduced. The first layer is of a red brown colour and is composed of finely ground pigments: red ochre, a little lead white, some big splinter charcoal particles and a little ground glass, added as a dryer. SEM/EDS analyses showed that this layer contained large amounts of calcium. Light microscopy confirmed this and indicated substantial amounts of chalk in this reddish ground. The second layer and the third are mixtures of lead white, some dark earth pigments like amber or a dark ochre, yellow ochre and only a little bit of chalk. The second layer shows a stronger fluorescence in ultra-violet light, suggesting a higher oil content, whereas the third layer contains more earth pigments, giving it the pale brown colour that can be

Abraham Mignon was born in 1640 into a Calvinist family in Frankfurt. At the age of seven he was placed under the care and artistic tutelage of the still-life painter Jacob Marrell, who left Frankfurt for Holland in 1664. Marrell took the young Mignon with him and settled in Utrecht where '[...] because of the affection and love he felt for the boy, [he] apprenticed him to the renowned Joan de Heem in Utrecht.' Mignon lived for several years in Utrecht with De Heem, who was apparently wont to retouch and polish the works of his sons 'with his artistic brush as he did with Mignon's pieces.' In 1669 Mignon became a member of the St Luke's Guild in Utrecht, the town where he remained until his death in 1679.

Mignon's paintings are best known for his luxuriant compositions of flowers and fruit. They clearly reflect the influence of De Heem since the works of both painters are characterised by the use of bright colours, confident drawing and increasingly elaborate compositions. Mignon's paintings 'with all kinds of flowers and fruits, painted after nature' were in great demand.

With the *Still Life with Flowers and Watch*, Mignon has created a decorative flower piece, placed in a niche with individually depicted flowers strewn over the picture plane. This creates an evenly distributed carpet-like pattern of spots of colour. Overlapping of different flowers has carefully been avoided, as De Laitesse had advised:

Paint all kinds of flowers on cardboard or thick paper, as curious as you wish, even only a plain colour. Make five or six of each colour, or as many colours as there are, red, blue, purple, yellow, violet, but six of each. These will serve for the most important flowers. You should, for making arrangements, also make smaller ones, of red blue, yellow and white, as beautiful as you can. Then, you cut them all out, and keep the flowers, of each colour separately, in small boxes.

1. A. Houbraken, *De groote Schouwburg der Meesterschilders Koninghuden en Schilderijen*, The

1. Houbraken, op. cit., vol. III, p. 212.  
 2. Houbraken, op. cit., vol. I, p. 212.  
 3. Houbraken, op. cit., vol. III, p. 83.

4. De Laitesse, *Lesons de peinture*, pour le dessin de fleurs, dans le chapitre de la fleur, traduit de l'italien par le sieur de Laitesse, chez la Citoyenne, 1740, p. 179.



The stunning beauty and diversity of 17th-century Dutch still-life painting raises many questions about developments in style and technique.

What materials did artists use to produce these works? How were they made? Did all the still-life painters of this period use the same methods and materials? If they did, why are there so many striking differences? And if they used different materials, or the same materials in different ways, can we relate this to differences in style?

These questions have been explored by conservators and curators of the Amsterdam

Rijksmuseum and scientists attached to the Molart project (Molecular aspect of ageing in art) in an examination of a score of paintings from the museum collection. This clear and accessible presentation of their results provides an insight into the techniques of famous masters such as Jan Brueghel, Balthasar van der Ast, Jan Davidsz de Heem,

Willem Kalf, Rachel Ruysch and Jan van Huysum.

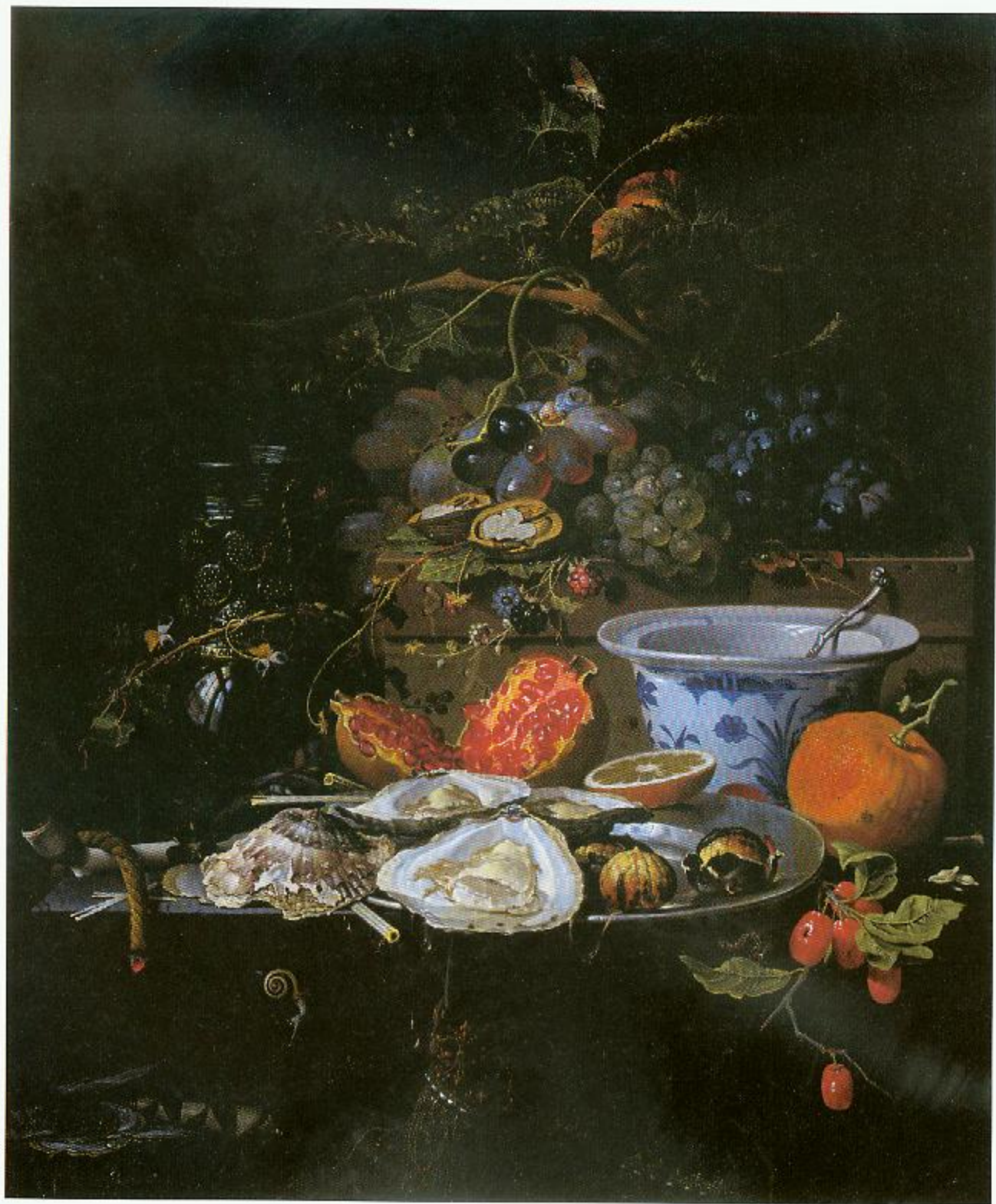
Artie Wallert is curator of paintings at the Rijksmuseum Amsterdam and participant in the Molart project.

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ses in the painter's studio. Alternatively, only the first, iron oxide, earth pigment layer may have been a standard layer. The second, *imprimatura* layer, may then have been applied in the painter's studio according to the requirements of the subject matter.

## UNDERDRAWING

Once the ground was applied, the panel or canvas was ready for the studio. There, the process would start with an underdrawing. The design would be drawn, more or less precisely, in silverpoint, black chalk or ink on the white chalk ground. This served as the basis for the final painting. A wide variety of underdrawing existed. Occasionally, volumes or shadowed areas on the painting were indicated by curved, parallel or cross hatching, or shown in washes of diluted black ink. Sometimes just

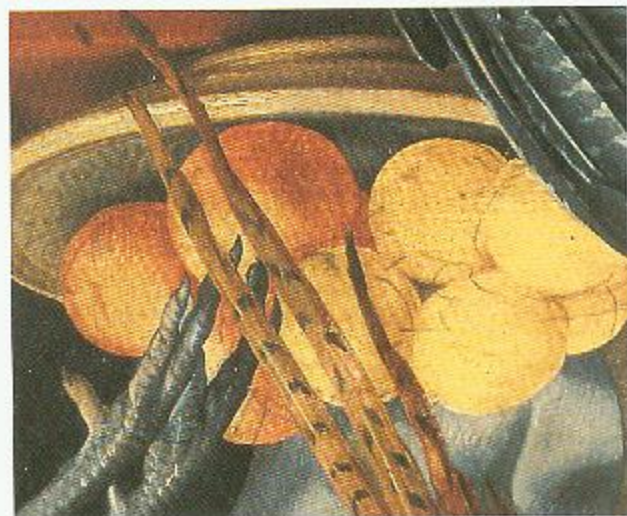


Fig. 8  
Detail of *The Well-Stocked Kitchen* by Joachim Beuckelaer (cat. no. 1); underdrawing in black chalk lines

the outlines of the forms are drawn in rapid, sketch lines, Joachin Beuckelaer's *Well-Stocked Kitchen* (cat. no. 1) has a beautiful underdrawing, which is visible in places with the naked eye. The fruit on the dish for example, was clearly underdrawn in concise, vivid and powerful strokes of black chalk (figs. 8 and 9). In other cases, the contours of the forms were precisely drawn; all that remained was to fill the areas with paint. The underdrawing might serve as an aid for the painter searching for the final composition, or as a tool for assistants in the workshop. It might also provide guidelines for the apprentices to paint in a composition. With its cons-trained, mechanical and rigid lines, the underdrawing on Baltusaz van der Aest's *Still Life with Flowers* (cat. no. 5)

appears to have been transferred onto the ground of the panel from a studio drawing (fig. 10). By following these outlines, little individual initiative was required to finish the painting. In fact, it seems likely that this underdrawing had a similar function in Van der Aest's studio as the familiar 'painting-by-numbers' sets available in today's shops.



Fig. 9  
Paint cross-section from  
*The Well-Stocked Kitchen*  
by Joachin Beuckelaer  
(cat. no. 1)



Fig. 10  
TRG reflectogram computer assembly, a detail of the underdrawing of Van der Aest's *Still Life with Flowers* (cat. no. 5)

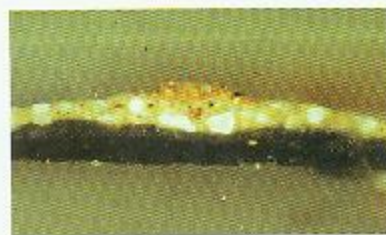


Fig. 11  
Paint cross-section (K 9/2)  
from Willem Kalf's *Still Life with Silver Jug* (cat. no. 10).  
The first dark layer, directly on top of the imprimatura is the initial sketch in black paint.

The still lifes in the first group, i.e. those of Beuckelaer (cat. no. 1), Brueghel (cat. no. 2), Bosschaert (cat. no. 3) and Van der Aest (cat. nos. 4 and 5) are all based on smooth, bright white grounds, on rigid and inflexible supports. This allowed for a precise, descriptive and meticulous underdrawing. In other cases, instead of a



precise underdrawing, the painting was based on a loose sketch in a dark, almost black, paint under a dark imprimatur, as in Willem Kalf's *Still Life with Silver Jug* (cat. no. 10; fig. 11).

### IMPRIMATURA

If oil paints were used directly on the chalk ground of a panel, the absorbent ground would soak up the binding medium of the paint. This would result in poor adhesion of subsequent paint layers. The ground and underdrawing were therefore covered with a thin, insulating layer of lead white bound in oil - thin enough to show the underdrawing. The lead white provided a bright reflective surface for the subsequent paint layers. This primuersel or imprimatura was often given a little tone with the same function as the second ground layer on canvases. Since this insulation layer was required to dry rapidly, pigments containing cobalt, copper, lead or manganese were often added. A toned ground also offers the advantage of providing a middle or dark tone to serve as a basis for the highlights. This would be particularly useful for painters with a more quick and painterly approach, rather than descriptive and linear. In other words, Kalf (cat. no. 10) and Van Beyeren (cat. no. 8) would have profited more from such a layer than Bosschaert (cat. no. 3), Mignon (cat. nos. 11 and 12) or Van Huysum (cat. no. 18).

Examination of imprimaturas occasionally reveals mixtures of several different pigments. This suggests that remnants of paint, the dredges from the pot used to clean the brushes for example, or the scrapings of palettes, were re-used for this purpose. The seventeenth-century painter Charles le Brun offered an explanation of this practice:

The pinceliere is a vase in which the brushes are cleaned with oil. And of the mixture is made a grey colour, for certain purposes, such as to lay on the first coats, or to prime the canvas.<sup>17</sup>

Retaining the visibility of this dark underlayer affected the tone of the following paint layers. When, for instance a light ochre or lead white is brushed, or scumbled over the canvas so that the lighter paint only takes the tops of the canvas weave, the dark underpaint shimmers through in those areas where the light paint has not caught. In this way, the painting builds up from dark to light. To achieve this, dabs or strokes would be applied

in a relatively dry, 'short' paint, giving the texture of the paint an open, broken appearance. The dark tone of the imprimatur thus contributed to the transition of the shadow and so to the overall impression.

### BINDING MEDIUM

In each painting examined here, the binding medium of the upper layers seems to have been a drying oil, its primary function being to bind the individual pigment particles thereby enabling the pigment to adhere to the surface. This oil would be obtained by pressing plant seeds. The most common sorts were linseed, walnut and poppyseed, which produced drying oils containing various triglycerides. The principal (unsaturated) fatty acids among these triglycerides are linolenic acid and linoleic acid. When drying, these relatively small units grow into larger networks by oxidative polymerisation processes.<sup>18</sup> These networks are therefore able to bind the pigment particles. The oxidative processes are accelerated by certain metal ions from the pigments. Copper, cobalt, lead, and manganese ions affect the drying of oils in particular. They may also play a role as centres for coordination complexes,<sup>19</sup> eventually developing into a completely hardened paint film.

In general, cold pressed oils are of better quality than hot pressed oils, which are darker and sometimes turbid. Poppyseed oil has distinct advantages over linseed oil in that it darkens, and yellows less. It was therefore the preferred medium wherever it was important to avoid yellowing. Painters used it for the waxy white pearls of a Viceroy tulip, or the cool light blue of a hyacinth. Theodore Turquet de Mayerne noted that Dutch flower painters such as Jaques de Gheyn II, used poppyseed oil extensively:

Mancop oil is a very white oil which is used in the Netherlands by painters, such as Jaques de Ghein and his likes, who make very delicate works that require vivid colours, like vases with flowers.

This would explain the remarkable freshness of some of these early flower pieces. In the same note De Mayerne also mentions some of the disadvantages of poppyseed oil, it being a relatively poor drier. To get the ground to dry, lead-rich glass was added, accelerating the process:

17. M.P. Merrifield, *Original Treatises, dating from the XIIIth to the XVIIIth Centuries on the Art of Painting in Oil, Miniature, Mosaic, and on Glass, of Gilding, Tinting and the Preparation of Colours and Artificial Gems*, (London 1849), vol. II, p. 770-771.

18. J.J. Boen, S.L. Feaver, O.J. van den Brink, M.C. Douma, and D. Kainferd, 'Molecular aspects of mobile and stationary phases in ageing tempera and oil paint films', in T. Bakkenis, R. Hoppenbrouwers, H. Dubois (eds), *Early Italian Paintings: Techniques and Analysis*, symposium, Maastricht, 9-10 October 1995, (1997), p. 33-56.

19. I. Pokorny, 'Major factors affecting the autooxidation of lipids', in H.W.S. Chan (ed), *Autooxidation of Unsaturated Lipids*, (London 1987), p. 141-207.

# Still-Life Paintings: Techniques and Style

An Examination of Paintings from the Rijksmuseum

tures, differing in composition, style and use of colour, can be distinguished in these years. Beside stylistic changes, still-life painting also underwent significant technical changes: both in materials as well as working methods. What did an artist need to produce these works? Did seventeenth-century still-life painters use the same methods and materials? If so, why are there so many striking differences? If they used different materials, or the same materials in a different way, is this reflected in differences in style?

These questions are discussed in an introductory essay on the characteristics of the materials, the equipment, the working properties of pigments and related topics, exploring the tools and methods employed in the seventeenth-century painter's workshop.

Besides drawing information from the paintings themselves, a wide range of knowledge about material aspects and working practice can be gained from seventeenth-century technical documents. These contain recipes for the preparation of paints; sometimes commenting on the characteristics and uses of various colours, their working qualities, their ageing properties, and techniques for retinting; or they may focus on the proper arrangement and combinations of certain pigments. The essay on technical sources also deals with prescriptions for the rendering of shadow and highlights on round surfaces, the composition, and even the general organisation of the studio.

The paintings examined in the conservation studio are discussed in a series of technical entries describing how the paintings were made, problems relating to preservation and the relationship between the application of various materials and methods and the historical technical sources. These are issues which require an interdisciplinary approach and which have brought together the experience and expertise of the conservators, scientists, art historians and museum curators who collaborated on this programme. Staff, conservators and curators of Amsterdam's Rijksmuseum joined with participants of the NWO-funded Molart-project (Molecular aspect of ageing in art) to tackle all these questions. One of the areas on which Molart focuses is the comparison of the present chemical and physical condition of paintings

The loves still stationary things:  
Banquets, dishes and letters,  
Limes and lemons, and glass and bowl,  
Jewels, excess and luxury.

These verses from a poem by the Dutch playwright, Joost van den Vondel may actually refer to one of Willem Kalf's greatest masterpieces, the Still Life with Silver Jug (cat. no. 10), in an expression of the poet's deep admiration for that work. Still-life paintings were highly valued in the seventeenth and eighteenth centuries; during these years, well over a quarter of a million were probably painted in the Netherlands. A staggering amount if one considers that the market for those paintings was supported by a population of just four million. Still lifes were painted by the leading masters of the seventeenth century. They were so highly valued, in fact, that a Van Huysum still life could fetch more than a piece by Rembrandt.

Now at last, the genre has received the attention it deserves in a major exhibition organised by Amsterdam's Rijksmuseum and the Cleveland Museum of Art, featuring the finest still-life masterpieces from museums around the world.

In conjunction with this show, various key still-life paintings from the Rijksmuseum's own collection have been restored. This restoration programme presented an opportunity for a technical examination of the pictures. While the dirt, yellowed varnish and overpaint were being removed, the objects were meticulously examined and analysed, allowing a number of questions about the relationship between style and technique to be addressed. Dutch still-life painting went through some significant stylistic developments in the seventeenth- and early eighteenth-centuries. Various types of still-life pic-

1. The most substantial danger for restoration, disfigurement or theft, therefore, comes in the case of travel, as evident in the fact that several of the Vondel paintings were originally housed in the Netherlands. K. F. Bormann, 'Dutch still-life painting: a study of the collection from the Rijksmuseum, Amsterdam', in *Journal of the History of Art*, 12 (1979), pp. 1-21.  
2. Still-life paintings from the Netherlands, Rijksmuseum, Amsterdam (9 June 1999 - 19 September 1999), and The Cleveland Museum of Art, 1 October 1999 - 9 January 2000.  
3. Chong and M. Knebel, still-life painting from the Netherlands (1590-1720), Rijksmuseum, Amsterdam. The Cleveland Museum of Art, (Zwolle 1999).

with the original state. This involves a study of historic paint manufacturing and workshop practice that provides an insight into the nature of the materials and the original painting techniques.

The various contributors to this volume are identified by their initials below each text. Contributors from the Rijksmuseum include Martin Bijl [MB], Jolanda de Bruijn [JdB], Astrid van den Berg [AvdB], Michel van de Laar [MvdL], Willem de Ridder [WdR], Gwen Tauber [GT], and Manja Zeldencust [MZ]; and from Molart, Klaas-Jan van den Berg [KJvdB], Oskar van den Brink [OvdB], Margriet van Eikema Hommes [MvEH], Muriel Geldof [MG], and Erma Hermens [EH]. As a participant in both organisations, Arie Wallert [AW] kept the project on course. Joris Dik [JD] resident art-historian at the institute of crystallography of the University of Amsterdam, and Margreet Wolters [MW] from the Netherlands Institute for Art History (Rijksdienst voor Kunsthistorische Documentatie or RKD) contributed their own areas of specific expertise.

While most of the microscopy and micro-chemical tests were performed at the Rijksmuseum, Peter Hallebeck assisted with x-ray fluorescence and x-ray diffraction equipment at the Dutch Institute for Cultural Heritage (Instituut Collectie Nederland or ICN).

Chromatography for the identification of organic colourants also took place at ICN. Fluorescence spectrometry for the identification of these colourants was done at the Getty Conservation Institute's Museum Services Laboratory. Cees Mensch, of the Shell Research and Technology Centre in Amsterdam did the scanning electron microscopy, combined with the energy dispersive analyses. Jerre van der Horst, at the Institute for Atomic and Molecular Physics (Amolf), operated the mass spectrometers. Jaap van der Weert did the FTIR microscopy. The photography was, as usual, in the experienced hands of Peter Mookhoek and Henk Bekker. The corrections to, and comments on our English texts by Tim Bedford and Gwen Tauber greatly improved the arguments.

The restoration programme, the technical study, the presentation and the production of this publication were made possible with the generous support of SaraLee/DE.

[AW]

assembled boards would then be planed to obtain a level surface. The back edges were usually bevelled to allow the panel to fit into a frame. These bevels and other marks offer important clues about the origin of the panel (fig. 1).



fig. 1  
The bevelled edges of a  
seventeenth-century panel

Cabinetmakers made panels for painters in a range of

standard sizes, known by the names of coins and the amount they cost. They included *kaalder, guilder, 26-stuyver, 12-stuyver* and *8-stuyver* panels.<sup>9</sup> This remarkably advanced standardisation related to local units of measurement. The dimensions of a panel from Leiden were in Rhinish feet [31.3947 cm; comprising 12 duimen of 2.6162 cm],<sup>10</sup> whereas planks from Amsterdam were in Amsterdam feet (28.3133 cm; comprising 11 duimen of 2.574 cm). This standardisation based on local measures

continued well into the eighteenth century. Van Hუსsum's *Still Life with Flowers* (cat. no. 18), measuring 81 x 61 centimetres is consistent in size with almost all Van Hუსsum's other paintings. The relationship between problems of attribution and local units of measure is the subject of an ongoing investigation.<sup>11</sup>

## Canvas

Canvases could be bought ready-made, but were also routinely stretched and prepared in the studio. Here too, the dimensions of canvases seem to have been based on local or regional standards since the size of the canvas was affected by the size of the looms on which the linen was woven. Linen was not specifically made for painting, but rather for bed-ticking or sailcloth. The late seventeenth-, early eighteenth-century Eikeleberg manuscript states that 'for painting, sailcloth or linen cloth is usually chosen, which is closely woven and is of equal quality in warp and weft and has few knots.'<sup>12</sup> Much of it was produced in the province of North Holland (sail-cloth) and in the provinces of Twente and Brabant.<sup>13</sup> The

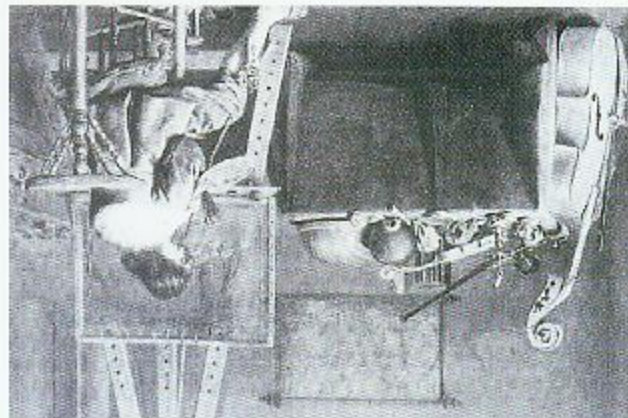
9. J. Brown, 'Deen ontdekk van 'eide'-weave schilderijformaten, vooral in Noord-Nederland', *oud Holland* 93 (1979), p. 66-113.  
10. J. Vermeer, *De oude Hollandse meet- en gewoonten*, T. J. Akerman-Instelling, (Amsterdam, 1987).  
11. Research is currently being carried out by Steven Elfrink, *Research in Twente and Brabant*, Museum Twente, Enschede, 2007. *De Noord-Nederlandse schilders van de zeventiende eeuw* (Amsterdam, Doornik & De Jong, 1979), p. 15. A. W. de Waard, *Over Twente en Brabant*, 1914, p. 15.  
12. E. van Leeuwen, *Over Twente en Brabant*, 1914, p. 15.  
13. E. van de Wetering, *Handboek der kunst en wetenschap van de schilderkunst* (Amsterdam, 1897), p. 104.

dimensions of these cloths were calculated in els - a standard fabric width - the length of an el varying regionally but on average being about 69 centimetres. These measurements relate to the width of the loom used to weave the cloth. This often corresponded with the width of an ordinary seventeenth-century bed sheet, i.e. 12 el, more or less 804 centimetres. Widths of two els (138 cm) or three els (207 cm) also occurred. Naturally, it would have made economic sense to avoid any loss of material and to use canvas that conformed to the commonly available widths. Many paintings' dimensions may therefore have been based on a multiple of els, although minus the selvages that were stretched around the frame. Thus there may have been a relationship between standard loom width and standard canvas size.<sup>14</sup> The late eighteenth-century flower painter Willem van Leeuwen stated that: '[...] Brabant primed canvas is commonly used, and can be had as required in different widths at the wall-papers'. It should be of tight canvas, even of thread, smooth, supple and definitely not stiff, or *gruut*.<sup>15</sup>

The linen was stretched onto a wooden frame with tacks or nails. Or alternatively, faced with cords inside a



fig. 2  
A seventeenth-century  
canvas, stretched in its  
original frame with cords.  
Painted in the studio,  
ca. 1670, Hendrick Pot,  
Museum Brechtus, The  
Hague.



14. J. A. Bouw, 'Het hincbedruif in Twente omstreeks 1700', *Traditionele Bijdragen*, 7, (1962), p. 21-64.  
15. E. van Leeuwen, *Handboek der kunst en wetenschap van de schilderkunst* (Amsterdam, Doornik & De Jong, 1979), p. 15. A. W. de Waard, *Over Twente en Brabant*, 1914, p. 15.