

Art History and Visual Studies in Europe

Transnational Discourses and National Frameworks

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TECHNICAL ART HISTORY:
THE SYNERGY OF ART, CONSERVATION AND SCIENCE

Erma Hermens

Introduction

Researching the material history of an artefact is the objective of what is presently called technical art history, a relatively young field of research involving art historians, conservators and scientists but also reaching out to other disciplines such as economic and social history, anthropology and aesthetics. The interdisciplinary character of technical art history combines a variety of expertise into a holistic research approach that concerns the creative process from idea to artwork, at any one time and place, and from any culture.

In the conservation field, the introduction of scientific research on artworks in the 1930s initiated the development of new analytical methodologies, which especially in the last decades has resulted in highly sophisticated applications that have provided revealing insights into the material composition of artworks and their deterioration processes, and have led to new approaches in conservation treatments. The new data thus gained are imperative for understanding the present condition of the artwork including the traces of the history of the object through ageing, through changes inherent to the materials and techniques used, and through conservation treatments or other external impact. The original voice of the artist found in diaries, correspondence, treatises, and other contemporary writings on techniques is crucial for an insightful interpretation of these experimental data.

Is technical art history therefore a quest for the authentic artwork? Or does it examine plural authenticities, namely 'the state of the object in which it exists' at various moments in the artwork's history, accepting contextual impact as part of the objects 'life' and thus of its authenticity?¹ Is it a method for understanding these authenticities through the examination

¹ Salvador Muñoz-Viñas, 'Beyond authenticity', in *Art Conservation and Authenticities: Material, Concept, Context*, ed. Erma Hermens and Tina Fiske (London, 2009) 33–9 (here 36).

of the creative process from idea to artwork, using a holistic approach when addressing the material object that includes internal and external evidence obtained by interdisciplinary research?

This chapter discusses the development of technical art history, which goes hand in hand with an increasingly scientific approach in conservation research and methodology, rapidly developing scientific analytical applications, and a growing interest in documentary sources on techniques and materials past and present.

Dark Pictures

A ubiquitous but very apt illustration of the eighteenth-century debate that marked the beginning of discussion of the effects of time on paintings is represented by William Hogarth's print *Time Smoking a Picture* from his *Analysis of Beauty*, published in 1753. Hogarth ridicules and attacks connoisseurs and art dealers who support a trade in old masters of dubious quality and encourage a taste for 'dark pictures', thus disadvantaging contemporary British artists through a misplaced emphasis on the past. A continuing veneration of classical sources, rooted in a rule of thumb naturalism that ignored what was happening elsewhere in Europe, came at the expense of the development of a modern British art. Hogarth's critique also addresses the debate on aesthetics in which either the harmonizing or mellowing effect of ageing—darkening of oils, yellowing of varnish—that characterizes the old masters are praised, or the distortion of the artist's original intent is deliberated on. Hogarth takes a stand against this so-called beneficial effect of time and the aesthetic theories based on it, opposing what is so adequately explained by the essayist and critic Joseph Addison's text 'A Dream of Painters'.² Addison describes how he dreams of a gallery with new and old pictures where, on the side of the old masters, an old man is retouching many 'fine pieces', with a pencil that worked 'imperceptibly'. However, after incessant and repeated 'touch after touch' it seemed that 'he wore off insensibly every little disagreeable Gloss that hung upon a Figure. He also added such a beautiful brown to the shades, and Mellowness to the colours, that he made every picture appear more

² Joseph Addison, 'A Dream of Painters' (1711) in Addison, *Essays by Joseph Addison* I, ed., Sir James Frazer (London, 1915) 291–5. For a comprehensive discussion of patina see Randolph Starn, "Three Ages of 'Patina' in Painting", *Representations* 78 (2002) 86–115.

perfect than when it came fresh from the Master's Pencil'. Addison identifies the old man as Time.

Hogarth responded in print, portraying Chronos (Time) seated in front of an easel and holding a scythe which cuts through the canvas, while blowing black smoke onto the picture with next to him a big pot of varnish. Both time and varnish are clearly held responsible for the almost unrecognizably obscured landscape on the easel. Chronos sits on a broken antique sculpture, indicating a misplaced reverence for the 'old'. Hogarth added the rather ironic inscription: 'as statues moulder into worth', satirizing contemporary connoisseurs' taste for 'dark' pictures, and in his *Analysis of Beauty* he sneers at the toning down of colours and harmonies with tinted varnishes, calling it absurd and stating that 'colours cannot be too brilliant if properly disposed'.³ He relates how the passage of time 'untunes' a painting, not just by an increasingly yellow varnish so appreciated by the art establishment, but more so by irreversible changes that take place through the characteristic ageing of the materials used:

for as they are made some of metal, some of earth, some of stone, and others of more perishable materials, time cannot operate on them otherwise than as by daily experience we find it doth, which is, that one changes darker, another lighter, one quite a different colour, whilst another, as ultramarine, will keep its natural brightness. ... Therefore how is it possible that such different materials, ever variously changing should coincidentally coincide with the artist's intentions?⁴

Hogarth emphasizes the inherent instability of painting materials and thus 'the impossibility of genuine restoration'.⁵

The growing interest in the original appearance of artworks and the fascination with the mysteries around the technical ingenuity of artists such as Titian and other High Renaissance masters, led the American painter Benjamin West, then president of the Royal Academy, and various other Royal Academicians, to be persuaded by a Thomas Provis and his daughter Ann Jemima, of the existence of an 'authentic' old manuscript that would unveil the 'Venetian Secret'. The text survives in Joseph Farington's diaries and presents as key elements the use of linseed oil,

³ William Hogarth, *The Analysis of Beauty* (1753), ed. Joseph Burke (Oxford, 1955) 132–3.

⁴ Hogarth, *The Analysis of Beauty*, 130.

⁵ See for a historic discussion of toned varnishes: Ernst Gombrich, 'Dark Varnishes: Variations on a Theme by Pliny', *Burlington Magazine* 104.707 (1962) 51–5, reprinted in David Bomford and Mark Leonard, eds., *Issues in the Conservation of Paintings* (Los Angeles, 2005) 505–18.

dark absorbent grounds, and what was called ‘Titian Shade’—a mixture of red lake, indigo, ivory black and Prussian blue. The latter was an early eighteenth-century invention, and therefore its inclusion should have made anyone suspicious.⁶ Yet, the Provises collected a handsome sum for a copyright agreement made with Farington’s help. It took two years for the hoax to be exposed, during which many Royal Academy members ‘tried’ the recipes they had purchased from the Provises.⁷ To the embarrassment of West and his colleagues, they were hugely ridiculed in the press and in artistic circles. Yet, the whole unfortunate episode laid the foundation for further research into artists’ materials and techniques, as well as for an assessment of the restorer’s role as already addressed by Hogarth and his contemporaries.

The worsening condition of paintings by Reynolds and Turner, amongst others, advanced an interest in the chemistry of painting materials. In 1871 a professorship in Chemistry was established at the Royal Academy and experiments by colourmen such as George Field, led to a greater understanding of the behaviour of materials; knowledge that had been largely lost in eighteenth-century academic teaching.⁸

In this context historic examples of the public perception of aged artworks, leading to so-called cleaning controversies in the nineteenth century are very telling indeed. The controversies took place in a period where conservation was performed by artist-restorers and no clear definition of the restoration profession existed. Taste for the golden glow of the old masters overruled concern for the artist’s original intent, and the removal of darkened varnish layers from the old masters in the National Gallery in 1847 sparked a fierce public debate on aesthetics and restoration. In this context the art critic John Ruskin, in a rant against public galleries and ‘foolish or careless curators’, named museums ‘places of execution’, stating that ‘over their doors you only want the Dantesque inscription, *Lasciate ogni speranza, voi che entrate*’.⁹ Significantly, this public debate led to an evaluation of restoration methods, the profession of the restorer,

⁶ Kathryn Cave, ed., *The Diary of Joseph Farington*, 16 vols. (London and New Haven, CT, 1978–84), 18 January 1797.

⁷ See also for a detailed description John Gage, *Colour and Meaning: Art, Science and Symbolism* (London, 2000) 153–61.

⁸ Gage, *Colour and Meaning*, 153.

⁹ John Ruskin, ‘The Accumulation and Distribution of Art’, II, (Manchester, 1867), in Ruskin, *A Joy Forever* (London, 1904) 101.

and to a growing interest in scientific research into painting materials and techniques.¹⁰

Interdisciplinary Research

At a round table meeting with conservators, curators and scientists at the Getty Conservation Institute held in 2004 David Bomford described the role of the modern conservator as follows:

By examining paintings and interpreting physical evidence, we are able to suggest narratives on the making of works of art by virtue of the understanding of materials and structures that our practical experience gives us. The narrative continues with cumulative events in the subsequent history of the work—ageing, deterioration, accident, repair, intervention, adaptation, reinterpretation—positive and negative events, as the restorer, art historian and critic Cesare Brandi classified them, some valued, some regretted.

Bomford went on to emphasize the decision-making process that takes place on the questions which elements of the history of the work are to be preserved and which concealed, stating that ‘the conservator as narrator inevitably both interprets and intervenes in the narrative’.¹¹

Conservation as an act of critical interpretation is today supported by technical art history, which Maryan Ainsworth describes as ‘an enhanced and more scientific connoisseurship—(that) provides the foundation for our appreciation and understanding of human artistic endeavour’.¹² The establishment by Edward Forbes of the first conservation research centre in the United States at the Fogg Art Museum at Harvard University, in 1928 (now the Strauss Centre for Conservation and Technical Studies), followed by its publication of *Technical Studies in the Fine Arts*, from 1932 onwards, was pivotal for the development of a science-based conservation practice and new methods of studying techniques and materials. The first X-radiography research was undertaken on a large group of paintings in American museums in the 1940s, led by Alan Burroughs, who in the

¹⁰ For an overview of eighteenth- and nineteenth-century scientific research see Jilleen Nadolny, ‘The First Century of Published Scientific Analyses of the Materials of Historical Painting and Polychromy, circa 1780–1880’, *Reviews in Conservation* 4 (2003) 39–51.

¹¹ David Bomford, ‘The Conservator as Narrator: Changing Perspectives in the Conservation of Paintings’, in *Personal Viewpoints: Thoughts about Paintings Conservation*, ed. Mark Leonard (Los Angeles, 2004) 12.

¹² Maryan W. Ainsworth, ‘From Connoisseurship to Technical History: The Evolution of the Interdisciplinary Study of Art’, *Getty Newsletter* 20.1 (2005) 4–10.

1920s pioneered the use of X-radiography on artworks, building on previous experiments in scientific laboratories in Europe.¹³ In the late 1960s infrared reflectography was developed by J.R.J. van Asperen de Boer, a physicist at Groningen University in the Netherlands, which made possible the exploration of underdrawings.¹⁴ Dendrochronology, a method for dating wood panels based on year ring patterns, was introduced in the 1980s by Peter Klein, a wood biologist at the University of Hamburg. The microscopic and chemical analyses of paint cross-sections for identifying pigments and layer build-up began in the 1950s with Joyce Plesters, a scientist from the scientific department of the National Gallery London, one of the specialists in this new research method, which was soon taken up by many major museums.¹⁵ These new techniques opened up a wide range of applications for a more scientifically oriented research method in support of conservation, but also of art-historical research, hence the term 'technical art history'.

The importance of understanding the material composition of art was even recognized by the art historian and connoisseur Bernard Berenson, who had emphasized the importance of intuition for traditional connoisseurship (1902): 'when I see a picture, in most cases I recognize it at once as being or not being by the master it is ascribed to; the rest is merely a question of how to try to fish out the evidence that will make the conviction as plain to others as it is to me.' Interestingly, he agreed to write a foreword to Daniel V. Thompson's *The Materials and Techniques of Medieval Painting*, in which he showed a willingness to consider the study of techniques as an 'ancillary aid' to art-historical studies: 'I regard all questions of technique as ancillary to the aesthetic experience. Human energy is limited, or at least mine is; but if I had greatly more, there is nothing about all the ancillary aids to the understanding of the work of art that I should not try to master.'¹⁶ Little did he know that Thompson's work

¹³ For an overview see Alan Burroughs, *Art Criticism from a Laboratory* (Boston, MA, 1938).

¹⁴ Johann R.J. van Asperen de Boer, 'Infrared Reflectography: a Method for the Examination of Paintings', *Applied Optics* 7 (1968) 1711–14.

¹⁵ See Joyce Plesters, 'The Preparation and Study of Paint Cross-Sections', *The Museums Journal* 54.4 (1954) 97–101; Plesters, 'Cross-Sections and Chemical Analysis of Paint Samples', *Studies in Conservation* 2.3 (1956) 110–57, is still a key text.

¹⁶ Bernard Berenson, *Rudiments of Connoisseurship: Study and Criticism of Italian Art* (New York, 1962, first published 1902); Berenson, Foreword to Daniel V. Thompson, *The Materials and Techniques of Medieval Painting* (London, 1956, first published 1936) 7.

and especially his interdisciplinary approach would develop into, as Ainsworth stated, 'an enhanced and more scientific connoisseurship.'

A good example of a similar process is the Rembrandt Research Project (RRP) which started in 1968 as a project based on traditional connoisseurship, as it was believed that Rembrandt's oeuvre was contaminated with many copies, later imitations and forgeries. Yet, as Ernst van de Wetering states while reflecting on the first three volumes of the Rembrandt Corpus: 'faith in connoisseurship had grown to such an extent that it sometimes overruled evidence of a more objective nature.'¹⁷ The project originally aimed at the establishment of categories of authenticity supporting connoisseurship with data from X-radiography and dendrochronology. Controversies on a number of paintings led the team to re-examine their reasoning behind the categories applied to paintings as being "right" or "wrong", or (sporadically) "don't know".¹⁸ This strict categorization was re-evaluated as the accumulation of scientific and visual data demonstrated the complexity of stylistic and technical characterizations. Van de Wetering describes how in the new RRP approach, the modern Rembrandt connoisseur should also try to understand the paintings 'as the result of thinking and working processes.' Otherwise he is simply 'another beholder with a little more art-historical baggage, a beholder who has merely assumed the authority of the "connoisseur".'¹⁹

In the United States, in the early 1980s, John Brealey (1925–2003), Head of the Paintings Conservation department at the Metropolitan Museum in New York and well known for his interest in interdisciplinary studies, organized a series of highly popular seminars for museum curators and directors, in which he taught conservation practice and historical materials and techniques in front of the actual paintings. He advocated a direct engagement with the making of art and its present appearance, opening up a route to improved communication between the various disciplines. In the only text representing his views 'Who Needs a Conservator?', written in 1983, Brealey states: 'Decisions made in the treatment of a work of art are an exercise in connoisseurship. Since one is dealing with

¹⁷ Ernst van de Wetering and Paul Broekhof, 'New directions in the Rembrandt Research Project, Part I: the 1642 self-portrait in the Royal Collection', *The Burlington Magazine* 138 (March 1996) 174. The article discusses the controversy surrounding attribution and re-attribution of the *Portrait of Rembrandt in a Flat Cap* (1642) in the Royal Collection.

¹⁸ Van de Wetering and Broekhof, 'New directions', 174.

¹⁹ Van de Wetering, 'Connoisseurship and Rembrandt's Paintings: New Directions in the Rembrandt Research Project II', *The Burlington Magazine* 150 (February 2008) 90.

visual values anything that affects the look of the work of art must affect the meaning. In fact, the look is the meaning.²⁰ He clearly refuted the purely clinical and forensic approaches most conservation students were trained in:

Although the buck will always stop with the conservator because he has the life or death of the painting in his hands, something more must be done to promote closer interdisciplinary collaboration in the future. The moment the art historian, conservator and scientist see the work of art as a mutual focal point, then the sensitivity and sophistication of the approach will be commensurate with the significance of the artist's work for society.²¹

Brealey promoted interdisciplinary research which resulted in amongst others an ambitious examination of all the Rembrandts in the Metropolitan's collection with neutron activation radiography.²²

This was only the start of many such projects and of the growing inclusion of technical descriptions and discussions of artists' practice in exhibition catalogues from major galleries such as the exemplary *Art in the Making* and *Making and Meaning* series of the National Gallery in London, with its strong focus not only on content but also on form.²³ In 1972, the first issue of the *National Gallery Technical Bulletin* was published in London, presenting articles resulting from collaborations between curatorial, conservation and scientific departments within the National Gallery.²⁴

Key, however, to the success of these endeavours is the communication between the various disciplines. As Lesley Carlyle very aptly states: 'For the art historian to ignore the material aspects of paintings is to leave out something of vital importance to the artist. And to be ignorant of changes

²⁰ John Brealey, 'Who Needs a Conservator?', in *Training in Conservation: A Symposium on the Occasion of the Dedication of the Stephen Chan House*, ed. Norbert S. Baer (New York, 1983), reproduced in David Bomford and Mark Leonard, eds., *Issues in the Conservation of Painting* (Los Angeles, 2004) 118.

²¹ Brealey, 'Who Needs a Conservator?', 123.

²² See for example: Maryann W. Ainsworth, John Brealey, Egbert Haverkamp-Begeman, and Pieter Meyers, *Art and Autoradiograph: Insights into the Genesis of Paintings by Rembrandt, Van Dyck and Vermeer* (New York, 1982).

²³ See, for example, David Bomford, Jill Dunkerton, Dillian Gordon, Ashok Roy, and Jo Kirby, *Art in the Making: Italian Painting before 1400* (London, 1989); David Bomford, ed., Rachel Billinge, Lorne Campbell, Jill Dunkerton, Susan Foister, Jo Kirby, Carol Plazzotta, Ashok Roy, and Marika Sping, *Art in the Making: Underdrawings in Renaissance Paintings* (London, 2002); David Bomford, Jo Kirby, Ashok Roy, Axel Rüger, and Raymond White, *Art in the Making: Rembrandt* (London, 2nd edn., 2007); Christopher Brown, *Making and Meaning: Rubens' Landscapes* (London, 1998); Susan Foister, Ashok Roy, and Martin Wyld, *Making and Meaning: Holbein's Ambassadors* (London, 1998).

²⁴ Excerpts of the *Technical Bulletin* will be online from 2010, which will make their exemplary interdisciplinary approach even more accessible.

that are purely physical can lead to quite unnecessary misunderstanding.' However, the conservator should also take the theoretical context into account: 'For neither to benefit from the knowledge of the other is simply to remain stuck in the ruts formed by a centuries old debate.'²⁵ An increasing dissociation from this old debate is demonstrated, for example, by a series of international conferences addressing artists' practice, such as the symposium held at Leiden in 1995, *Historical Painting Techniques, Materials and Studio Practice*, the Dublin conference of the International Institute for Conservation (IIC) on *Painting Techniques: History, Materials, and Studio Practice* (1998), or the recent conference at the National Gallery London, *Studying Old Master Paintings: Practice and Technology* (2009), which highlight the growing interest in and importance of technical art history.

These developments should be set against the huge progress made by conservation science in the last two decades, refining conservation methods and adding significantly to a 'scientific connoisseurship' striving for a less subjective approach. Technical art history also changed character, with a stronger focus on material culture and the artwork as physical object; it 'developed a new concrete framework to answer art-historical questions'.²⁶ This requires ample research into primary source material on artistic practice from a wide range of textual and visual sources in the search for the artist's original voice.

The Artist's Voice

The study of both written and visual source material on artists' practices, such as workshop manuals, technical treatises, ledgers, inventories, diaries, depictions of the artist in the studio, artist's self-portraits, film, photography, or artists' interviews contributes significantly to an understanding of the material complexity of artworks, both in terms of their meaning and their production at a certain time and place.

²⁵ Lesley Carlyle, 'Design, Technique and Execution: The Dichotomy between Theory and Craft in Nineteenth Century British Instruction Manuals on Oil Painting', in *Looking through Paintings: The Study of Painting Techniques and Materials in Support of Art Historical Research*, ed. Erma Hermens, Annemiek Ouwerkerk, and Nicola Costaras (London and Baarn, 1998) 26.

²⁶ Mark Clarke, 'Asymptotically Approaching the Past: Historiography and Critical Use of Sources in Art Technological Source Research', in *Art Technology: Sources and Methods: Proceedings of the Second Symposium of Art Technological Source Research Study Group, Madrid 2007*, eds. Stefanos Kroustallis, Joyce H. Townsend, Elena Cenalmor Bruquetas, Ad Stijnman, and Margarita San Andres Moya (London, 2008) 20.

With its first occurrences well back in the eighteenth century, research into art technological sources has made a strong entry in the art-historical and conservation world over the last decades.²⁷ An interesting case study can be made of the mystery around Jan van Eyck's invention of oil painting as described by Vasari in his *Lives of the Painters*, which evoked early debate from its publication onwards.²⁸ For example, in England in the eighteenth century, a more substantiated approach based on experiments and documentary source research pursued a truthful rendering of Vasari's theory. The English antiquarian Horace Walpole (1717–1797) describes in his *Anecdotes of Painting in England* (1762) the mentioning of 'painters oil' in thirteenth- and fourteenth-century documents, thus challenging Vasari's account.²⁹ Gotthold Ephraim Lessing published the treatise *Vom Alter der Oelmalerey aus dem Theophilus Presbyter* (circa 1100), in Germany in 1774, followed by an English edition by Rudolf Erich Raspe in 1781. Raspe also published Heraclius's *De coloribus et artibus romanorum*, dated to between the tenth and thirteenth centuries. Both treatises predate Van Eyck and refer to the use of oil as a medium for painting.³⁰

Extensive experiments on the use of oil in English medieval painting followed, as for example performed around 1802 by the medical doctor John Haslam (1764–1844) on samples from murals in the chapel of St Stephen, Westminster, commissioned by the historian and engraver John Thomas Smith (1766–1833). Haslam's positive results were later underpinned by Smith's discovery of documents listing payments for 'painter's oil' which he published in his *Antiquities of Westminster* in 1807, emphasizing the importance of combining experiments and documentary research.³¹ Although there was clearly ample proof for the refutation of Van Eyck's crucial role, both from experiments, albeit rudimentary, and from primary documentary sources, the debate continued, with attacks to

²⁷ Jo Kirby, 'Towards a new discipline?', in Kroustallis, Townsend, Bruquetas, Stijnman, and San Andres Moya, eds., *Art Technology*, 7–15.

²⁸ Giorgio Vasari, *Lives of the Painters, Sculptors, and Architects*, I, trans. Gaston du C. de Vere, (New York, 1996) 424–9.

²⁹ Jilleen Nadolny, 'A Problem of Methodology: Merrifield, Eastlake and the Use of Oil-based Media by Medieval English Painters', in *ICOM 14th Triennial Meeting, The Hague: 12–16 September 2005*, ed. Isabelle Verger (London, 2005) 1028.

³⁰ Rudolf E. Raspe, *A Critical Essay on Oil Painting, proving that the Art of Painting in Oil was known before the pretended Discovery of John and Hubert van Eyck; to which are added, Theophilus De Arte Pingendi* (London, 1781).

³¹ Quoted in Nadolny, 'A Problem of Methodology', 1029.

and fro between adversaries, and influenced by a rather selective memory as far as evidence was concerned.³²

Mrs Mary Philadelphia Merrifield (1804–1889), an amateur art historian and algologist, ignored these experimental results, which basically rejected Vasari's story. In her translation of 1844 of Cennino Cennini's *Il Libro dell'Arte*, named *Treatise on Painting*, 1844, and based on a transcription published in 1821 by the Italian antiquarian Giuseppe Tambroni, she supported Vasari's theory.³³ Tambroni, however, showed nationalistic leanings by stating in his introduction to his transcription that Van Eyck was not responsible nor deserved any fame for teaching the Italians what they already knew.³⁴ Merrifield's work earned her a grant from the Royal Commission on the Fine Arts to examine Italian manuscripts on painting techniques.³⁵ This resulted in the publication of *The Art of Fresco Painting* in 1846, and *Original Treatises on the Art of Painting* in 1849—major accomplishments, as she was pioneering the field of art technological source research that had been barely touched upon until then. The first scientific experiments were simultaneously carried out on some works from the National Gallery in London. Charles Locke Eastlake (1793–1865), the National Gallery's first director, and president of the Royal Academy, published the first English translation of Goethe's *Theory of Colour*, and *Materials for a History of Oil Painting* in 1847. Although he assigned some chemical analyses to the well-known chemist and physicist Michael Faraday, he does not refer to the results in his *Materials*; nor does he mention, for example, those of the analyses (experimental and textual) by Smith and Haslam, although he praises them for their work on the St Stephen's murals.

Although both Eastlake and Merrifield have been instrumental in the development of research into art-technological sources, they were selective and limited in their interpretation as they and their contemporaries did not have the comparative materials now available, making their achievements even more impressive. It was not until 1953, when Paul Coremans, the director of the Central Laboratory of the Belgian Museums, performed the first scientific analyses on a work by Jan van Eyck, namely the Ghent

³² More experiments are described in Nadolny, 'A Problem of Methodology'.

³³ Cennino Cennini, *A Treatise on Painting*, with an Introduction and Notes by Signor Tambroni, trans. Mary Philadelphia Merrifield (London, 1844).

³⁴ Cennini, *A Treatise on Painting*, xxvii ff.

³⁵ Mary M. Merrifield, *Original Treatises, Dating from the XIIth to the XVIIIth Centuries on the Arts of Painting* (New York, 1999, first published 1849) v.

Altarpiece, that a fuller understanding of Van Eyck's technical skills was achieved. Van Eyck's use of a drying oil was confirmed, but it was his meticulous build-up of paint layers from fast drying to slow drying, from opaque to transparent, that seems to be the real secret of Jan van Eyck.³⁶

In 1933, Daniel V. Thompson provided an authoritative translation of Cennino Cennini's *Il Libro dell'Arte*. This was followed by *The Materials and Techniques of Medieval Painting*, in 1936.³⁷ Thompson combined research into technological sources with reconstructions and scientific investigation, an approach that in essence is still followed today, and was at the root of the solution of the Van Eyck mystery.

As this example illustrates, research into technological sources plays a key role within the interdisciplinary approach of technical art history. It also shows how the interpretation of primary source material can be problematic; Vasari's story dominated art-historical theory for a long time. The Art Technological Source Research study group (ATSR), established in 2002 and accepted in 2006 as the 23rd working group of the International Council of Museums Conservation Committee (ICOM-CC), has created a new platform for research into any kind of testimony, written, visual, audio, of artistic practice. Research by ATSR members centres on the importance of reconstructions of historical recipes for a better understanding of the artistic process, the changes in appearance of the artwork, as well as for a correct interpretation of primary source material itself.³⁸ The increasingly significant role the art-technological source researcher plays within technical art history can be demonstrated by the often crucial place contemporary textual evidence occupies in the interpretation of scientific data obtained from analyses of artworks; indeed the data need a story.

Also, the textual and visual evidence needs thorough analyses of its factual truthfulness and accuracy when describing past practice or use

³⁶ Paul Coremans, Jacques Lavalleye, and Herman Bouchery, *Les Primitifs flamands, III. Contributions à l'étude des Primitifs flamands, 2. L'Agneau Mystique au laboratoire: Examen et traitement* (Antwerp, 1953).

³⁷ Daniel V. Thompson, *The Craftsman's Handbook: Il Libro dell'Arte by Cennino d'Andrea Cennini* (New Haven, CT, 1933). See also Mark Clarke, *The Art of All Colours: Mediaeval Recipe Books for Painters and Illuminators* (London, 2001) for an overview of medieval treatises.

³⁸ Three volumes of ATSR symposium proceedings have been published: Mark Clarke, Joyce H. Townsend, and Ad Stijnman, eds., *Art of the Past: Sources and Reconstruction. Proceedings of the First Symposium of the Art Technological Source Research Study Group, Amsterdam 2004* (London, 2005); Kroustallis, Townsend, Bruquetas, Stijnman, and San Andres Moya, *Art Technology*; Erma Hermens and Joyce H. Townsend, eds., *Sources and Serendipity: Testimonies of Artists' Practice: Proceedings of the Third Symposium of the Art Technological Source Research Working Group, Glasgow 2008* (London, 2009).

of materials. ‘Impossible recipes’ as for example found in Theophilus’s treatise (‘take a two- or three-year-old goat and bind its feet together and cut a hole between its breast and stomach, in the place where its heart is, and put the crystal in there, so that it lies in its blood until it is hot. At once take it out and engrave whatever you want on it, while this heat lasts’), although meant to make the crystal easier to cut, seem to be complete fantasy. However, Theophilus gives some clues, as the crystal is described as hardened ice and the goat as a ‘hot-tempered’ creature, which he also uses elsewhere to harden tools, and therefore, ‘although the procedure is presented mythically, it is logical’.³⁹

Approaches in Modern and Contemporary Art

Technical art history as well as art-technological source research attends not only to historic artistic practice but also, and increasingly, the modern artist at work. Carol Mancusi-Ungaro, director of conservation at the Whitney Museum of American Art in New York, describes how decisions needed to be made on the conservation of Mark Rothko’s ensemble of 18 paintings for the Rothko Chapel, in Houston, Texas. Rothko painted the works between 1964 and 1967, and in 1979 Mancusi-Ungaro was asked to examine the whitening which distorted the dark purple and black forms. With hardly any documentation available, she managed to find one of Rothko’s assistants, Ray Kelly, whose descriptions of Rothko’s methods were crucial for direct scientific analyses.⁴⁰ Next to such eyewitness accounts, artists’ writings and artists’ interviews, and documentation from, for example, paint manufacturers, can also provide important evidence for conservation research, and are central to technical art history.

In recent years research projects on modern artists’ materials and practice—often connected with the extremely complex materiality of modern artworks, which consist of composite materials of unstable or ephemeral character, or installations containing computers and other technical multimedia to name but a few—have considerably extended

³⁹ Spike Bucklow, ‘Impossible Recipes’, in Hermens and Townsend, eds., *Sources and Serendipity*, 18–22.

⁴⁰ Carol Mancusi-Ungaro, ‘Embracing Humility in the Shadow of the Artist’, in *Personal Viewpoints: Thoughts about Paintings Conservation*, ed. Mark Leonard (Los Angeles, 2003) 85.

the necessary impact of technical art history.⁴¹ The theme of authenticity is crucial here, with remaking, reinstalling and replicating as key issues for an ongoing and fascinating debate. The international symposium *Art, Conservation and Authenticities: Material, Concept, Context*, organized by the Art History Department of the University of Glasgow in 2007, indicated many layers of authenticity, hence the use of the plural in the title, and 'authenticity' as a composite term. The traditional identification of 'the authentic state of the object with its material constitution, linking its continued authenticity to the integrity of that physical fabric over time'⁴² is increasingly marginalized due, for example, to unconventional methods in contemporary art practice, and the inclusion of contextual aspects ranging from ceremonial, ethnographic, to site-specific. It was felt that the debate on issues of authenticity in which historical and modern/contemporary art practice and conservation are usually strictly divided, showed that there are many parallel lines of thought. Bringing the two approaches together in one conference enabled us to compare and contrast theory and practice from the two different areas.

Authenticity is often connected with the context of art production, the place the work was conceived in, but also, and equally important, the location it was made for. The latter is, for historical artworks, often unacknowledged and for modern artworks a crucial part of the work itself. In his keynote address at the Glasgow conference Christian Scheidemann, a contemporary art conservator, described the controversy around the relocation of Richard Serra's *Tilted Arc* (1981–88) from its original site at the Federal Plaza in New York City, to a government parking lot in Brooklyn. Serra stated that 'to remove *Tilted Arc* is . . . to destroy it'.⁴³ Scheidemann describes the conservator's responsibility 'towards the integrity of the work at hand, how sensitive we need to be to all its facets: its concept, physical materials and historical, cultural significance'.⁴⁴

⁴¹ See amongst others: Ijsbrand Hummelen and Dionne Sillé, *Modern Art: Who Cares* (Amsterdam 1999).

⁴² Foreword to *Art, Conservation and Authenticities*, ed. Erma Hermens and Tina Fiske (London 2010) ix.

⁴³ See Martha Buskirk and Clara Weyergraf-Serra, eds., *The Destruction of "Tilted Arc": Documents* (Cambridge, MA and London, 1990) 67.

⁴⁴ Christian Scheidemann, 'Authenticity: How to get there?', in Hermens and Fiske, eds., *Art, Conservation and Authenticities*, 3–12.

Conclusion

This chapter has discussed some of the key facets that constitute the field of technical art history, which aims at a thorough understanding of the physical object in terms of original intention, choice of materials and techniques, as well as the context in and for which the work was created, its meaning and its contemporary perception. At its least imaginative, technical art history becomes a taxonomic act of deconstruction: a material text analysed and fragmentized. However, at its most wide ranging it embraces every aspect of artistic production, from pigment trade and manufacturing to Rembrandt's idiosyncratic techniques and Duchamp's use of ready-mades: 'It acknowledges—celebrates—the artist at work and the act of making.'⁴⁵

In his introduction to *The Materials and Techniques of Medieval Painting* Daniel V. Thompson presented the notion that style and technique are closely connected, and pointed at the relevance of a thorough understanding of materials and techniques for an in-depth interpretation of art: 'I have developed... the thesis that style and technique are inseparable and that this inquiry into cookery, this sojourn in the kitchen, would be unwarranted if it did not lead to some slightly more keen or intelligent appreciation of the finished dishes.'⁴⁶ Indeed, there is a story of making and meaning in every artwork, the story of the materials and techniques used by the artist, and of the artwork's survival—more or less unharmed—through time. Technical art-historical research into the physical object and its surrounding material culture is therefore instrumental in establishing the storyline, and, aided by scientific analysis, art-historical and art-technological source research, the plot may be revealed and the 'finished dish' more intelligently appreciated.

⁴⁵ David Bomford, Introduction to Hermens, Ouwerkerk, and Costaras, eds., *Looking through Paintings*, 12.

⁴⁶ Thompson, *The Craftsman's Handbook*, 9.