



REMBRANDT AS A PAINTER: NEW TECHNICAL RESEARCH. INTRODUCTION

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ABSTRACT This article provides an introduction to this special issue of *ArtMatters* presenting essays developed from the online international symposium *New Technical Research on Rembrandt: Paintings, Drawings, Prints* organised by the Städel Museum, Frankfurt, in January 2022. Focusing on paintings, seven papers report on recent technical investigations of works by Rembrandt and his studio in the collections of the Städel Museum; the Agnes Etherington Art Centre, Queen's University, Kingston, Canada; the Ashmolean Museum, Oxford; the Gemäldegalerie Alte Meister, Hessen Kassel Heritage; the Gemäldegalerie, Staatliche Museen zu Berlin; the Hessisches Landesmuseum, Darmstadt; the Mauritshuis, The Hague; and the National Gallery of Art, Washington, DC. Co-authored by art historians, conservators and scientists, these essays explore how current technologies and methods can shed new light on Rembrandt's painting techniques and workshop practice while pointing the way to future research. This introduction summarises key themes and discoveries that tie these studies together.

To touch a Rembrandt, does one know what one is touching? Does one know how it is made? It is a mystery.

Edgar Degas¹

On the occasion of the exhibition *Rembrandt in Amsterdam: Creativity and Competition* (October 2021–January 2022), the Städel Museum in Frankfurt organised an online international conference on current art-technological research on Rembrandt's paintings and works on paper: *New Technical Research on Rembrandt: Paintings, Drawings, Prints*. This article provides an introduction to this special issue of *ArtMatters* presenting essays developed from this symposium.² From his own lifetime until today, Rembrandt van Rijn (1606–1669) has been known for challenging the boundaries of conventional painting techniques. In the 18th century, Arnold Houbraken wondered if his paint had been smeared on with a bricklayer's trowel, and Gerard de Lairese described it as dripping like dung down the surface of the canvas.³ A century later, even as Impressionists such as Degas looked to Rembrandt (and his contemporary Frans Hals) for validation of their expressive brushwork, artists continued to be mystified by his process.

Paradoxically, Rembrandt was an exceptional teacher: in his first workshop in Leiden, where he began his career around 1624, and later in Amsterdam, where he lived from 1632 until his death in 1669, he trained dozens of younger artists to emulate his idiosyncratic methods so closely that connoisseurs from his own time until today have had trouble telling their work apart. Imitators outside his studio followed suit. Today, the stakes in this contest are both aesthetic and financial, since Rembrandt's fame ensures that paintings securely attributed to him bring far higher prices.⁴

Observers from Houbraken to Degas remained mystified in part because their knowledge of Rembrandt's technique was limited to surface effects: they lacked understanding of, and access to, the underlying structure of ground, *imprimatura*, and multiple textured paint layers through which Rembrandt created landscapes of paint so tactile they have often been compared to sculpture. In recent decades, however, modern technology has offered new avenues for understanding the appearance of paintings.⁵ The research published in this issue employs a variety of advanced imaging methods to look beneath the surface, most importantly the rapidly developing technology of scanning X-ray fluorescence spectroscopy (XRF), commonly referred to as

either macro-XRF (MA-XRF) or micro-XRF imaging. In 2011, an arbitrary limit of 100 µm was established to make a distinction between micro-XRF and MA-XRF.⁶ However, as the capabilities of common instrumentation have been further explored since then, this distinction is fading: the XRF scanning devices used for the research discussed in this issue predominantly allow a spatial resolution below approximately 50 µm. The editors have thus left the choice of terminology to the authors of the essays.

A crucial turning point in Rembrandt studies was the founding of the Rembrandt Research Project (RRP) in 1968. With funding from the Dutch government, this group of esteemed Dutch art historians sought to bring scientific methods to bear on questions of attribution and facture.⁷ As a catalogue raisonné informed by technical investigation, the RRP's *A Corpus of Rembrandt Paintings* offered a transformative model.⁸ However, connoisseurship by committee did not produce the definitive results the team hoped for: after three decades of research, punctuated by reversals of opinion and a major shift (from chronological to thematic cataloguing) halfway through, several original team members had retired or passed away, and the RRP disbanded without formally completing its work. Yet, the research they compiled, now archived online by the Netherlands Institute for Art History (RKD) in The Hague, contains a treasure trove of data, much of it still to be digested.⁹

As the project developed, the youngest original member, Ernst van de Wetering, took an increasingly important role; until his death in 2021, he remained one of the most respected voices in the chorus of Rembrandt experts worldwide. In his numerous publications, Van de Wetering examined Rembrandt's methods in light of both scientific analysis and art theoretical ideas about painting practices recorded in historical sources and documents. Researchers, including authors in this issue, now frequently consult historical sources, such as the De Mayerne Manuscript and the treatise written in 1678 by Rembrandt's former pupil Samuel van Hoogstraten, for insights into how 17th-century artists conceived of their craft.¹⁰ For instance, Van Hoogstraten may be recalling Rembrandt's tendency to leave passages of the ground layer exposed when he writes, 'It can happen that the priming of your canvas or panel helps in the coloration, and, assisted by a few little touches, eases your labour.'¹¹ Several studies in this issue confirm that the colour of the ground was expressively deployed in paintings both by Rembrandt and by members of his workshop.¹²

Significantly, the RRP showed a relative lack of interest in Rembrandt's many followers. Some problematic paintings that had once borne Rembrandt attributions did appear in the 'B' and 'C' categories of the *Corpus* volumes I–III, but many simply disappeared from the canon. Some were later reattributed to Rembrandt in volumes IV, V and VI.¹³ The central question of the RRP was, 'Is it by Rembrandt?'. To take the second step, 'If not Rembrandt, then who?', understandably fell beyond the scope of the project. Today, museums, academic researchers and the

art market are increasingly turning their attention to this question and to defining the work of talented associates such as Gerrit Dou, Govert Flinck, Ferdinand Bol, Nicolaes Maes, Samuel van Hoogstraten and Abraham van Dijk, but much more remains to be done. Even followers whose names may always remain unknown could be inspired to produce masterpieces. For instance, two technical studies have shown that the portrait of a youthful Rembrandt in the Mauritshuis is a workshop variant of an autograph self-portrait in the Germanisches National Museum, Nuremberg. It has not been convincingly attributed to any of Rembrandt's known pupils, but it is still a strikingly accomplished painting.¹⁴

RRP researchers were also reluctant to accept that Rembrandt might have worked collaboratively with journeymen and students. Yet, this was standard practice in large workshops, such as those of Michiel van Mierevelt and Gerrit van Honthorst; most famously, the Flemish master Peter Paul Rubens approached large commissions more as an impresario than a craftsman. In their essay on the Städel's *Portrait of Maertgen van Bilderbeecq* (1633), Friederike Schütt and Mareike Gerken take a close look at methods for painting lace-trimmed collars, a requisite component of most Dutch portraits that was often assigned to assistants. It seems likely that Rembrandt, too, relied on help for such costume details, especially during the early 1630s, when demand for his portraits peaked while he was employed in Hendrick Uylenburgh's studio.

Justus Lange, Christiane Ehrenforth and Thomas Krämer discuss three paintings from the Gemäldegalerie in Kassel that date from the pivotal year 1632, when Rembrandt is first documented lodging with Uylenburgh in Amsterdam. Intriguingly, it begins to appear that even as he built his career in the metropolis, Rembrandt may have kept his Leiden workshop open until as late as 1635, perhaps under the direction of his first student, Gerrit Dou. By 1636 there is evidence that Rembrandt had left Uylenburgh's atelier to set up his own studio, while Dou began to sign paintings as an independent master. This begs the question of where certain works of the early 1630s were completed. For instance, Maertgen van Bilderbeecq was a patron from Leiden. Did she sit for her portrait in Rembrandt's Amsterdam atelier, or might Rembrandt have travelled to Leiden for her convenience? Schütt and Gerken consider how such dislocation might have affected the painting's construction. Current assumptions are that Rembrandt only began to paint portraits, to paint on canvas, and to paint on a large scale after moving to Amsterdam, but so far, neither material nor archival evidence has been found to divide the two workshops.

At the Städel Museum, closure of the galleries during the Covid pandemic enabled researchers to examine one of Rembrandt's most ambitious history paintings, *The Blinding of Samson* (1636), without removing the huge canvas from its location. As reported by Mareike Gerken and Jochen Sander, micro-XRF scanning revealed that Rembrandt deleted at least one figure and changed several meaningful details while composing this dramatic scene,

providing insight into the difficulties he sometimes had in arranging figure groups. In Berlin, analysis of 27 paintings with methods such as X-radiography, microscopy, infrared reflectography, and neutron activation autoradiography, synthesised here for the first time by Katja Kleinert and Claudia Laurenze-Landsberg, has illuminated four key pictorial strategies: using paint as a three-dimensional substance to build up fleshtones, scratching and scraping into wet paint, twirling the brush to mix wet pigments directly on the painting for a marbled effect, and, perhaps most surprising, embellishing signatures with multiple colours. While these techniques have been detected in paintings from several periods in Rembrandt's career, it is remarkable how much of this inventive artistry is already present in *The Money Changer*, completed in Leiden in 1627 when Rembrandt was just 21 years old. While historical responses to Rembrandt's manipulation of paint, such as those by Houbraken and Degas cited above, refer mainly to his broadly brushed late canvases, technical research reveals that the complex layering of paint and expressive mark-making were integral to his method from the start.

While Rembrandt increasingly preferred canvas as a support, he continued to paint on panel, most often on oak but also other wood species, such as poplar and mahogany (both may have been used for transport crates). Many of his panels have been examined by dendrochronology,¹⁵ but due to developments in the technique and newly available oak tree-ring chronologies it is now clear that previous conclusions based on this well-established method cannot be taken for granted. Between 2018 and 2020, as Carol Pottasch and her co-authors report in this issue, the Ashmolean Museum commissioned three separate dendrochronologists to examine the support of *Head of a Bearded Man* (c.1630), a small *tronie* that had been rejected as being by Rembrandt by earlier cataloguers without the benefit of technical examination. Two studies produced results that agree with each other but differ from those of a leading authority in the field, Peter Klein. According to Klein, the support of this painting most likely came from the same tree as the securely attributed *Andromeda* from 1630 (The Hague, Mauritshuis) and a painting attributed to a follower of Jan Lievens, *Elderly Woman with a Coat*, c.1630 (Dresden, Staatliche Kunstsammlungen), with whom Rembrandt may have shared a studio in Leiden. Thus, given the sharing of supplies in a workshop, such results can situate a panel in Rembrandt's studio without solving its attribution. While this is a key limitation of materials analysis, current imaging methods such as high-resolution digital microscopy and high-resolution photography can bring scientific examination into dialogue with connoisseurship. For example, analyses reported here of figure studies in Kingston, Oxford, Kassel, Berlin and Frankfurt bring greater refinement to our understanding of how Rembrandt practised the technique of scratching into wet paint with a subtlety that his imitators could not match.

At his death, Rembrandt left behind more than 20 unfinished canvases,¹⁶ a statistic that may reflect an established workshop practice. Interpretation of XRF data reported in

this issue points to Rembrandt's hand in the underlying layers of three workshop paintings from the 1650s: *Study of an Old Man* (1650) in the Mauritshuis, *Apostle Paul* (c.1657) in the National Gallery of Art, Washington, DC, and *The Flagellation* (c.1658) in the Hessisches Landesmuseum, Darmstadt. Differences between the underlying composition and the finished product make clear that these paintings are not rote copies. The Darmstadt painting, greatly admired in the 19th century but overlooked since, is one of several variants of the composition, and visual evidence revealed by macro-XRF scanning lends support to the idea that it could be the prime version. In the case of the Washington painting, discussed by Marjorie E. Wieseman, John K. Delaney and Kathryn A. Dooley, macro-XRF scanning and infrared reflectance imaging spectroscopy (RIS) have clarified how the artist who completed the canvas also altered the subject, transforming Rembrandt's generic scholar at his desk into a biblical apostle. Abraham van Dijck recorded the underlying composition in a drawing shortly after he left Rembrandt's workshop, but whether the alterations occurred under Rembrandt's supervision remains unclear. These results suggest that further evidence may be found for compositions that were begun by Rembrandt and completed by associates.

The case studies discussed in this special issue of *ArtMatters* reflect productive collaborations among art historians, conservators and scientists at eight museums in five countries. They give equal attention to renowned masterpieces and to works that until recently have languished in storage. They reflect on the efficacy of diverse investigative methods while recording exciting discoveries made possible by new technologies. They remain judicious in pondering questions of attribution and workshop practice while also demonstrating that the underlying layers of a composition can provide illuminating evidence for its genesis and development. These aspects of our collective project pave the way for future investigations that will continue to advance our understanding of Rembrandt's intrepid artistry and of the community of artists who surrounded him.

Notes

1. Quoted in English translation by Mottin 2022: 11–12.
2. A recording of this symposium held online in January 2022 is available at: <https://www.youtube.com/playlist?list=PL2P7h0ecB-f-yHlMF-5t7-JyuGjWx9F8Z>.
3. Slive 1953: 163, 184–5.
4. Modern scholars have offered diverse interpretations of Rembrandt's painting practice and its historiography; see, among others, Alpers 1995; Van de Wetering 1997; Binstock 1999; Suthor 2018; Van Duijn and Noble 2021. Rembrandt's equally bold approach to printmaking, described by Filippo Baldinucci (1686) as *bizzarissima* (Slive 1953: 105–6), lies outside the scope of this publication.
5. Van Duijn and Noble 2021.
6. Alfeld et al. 2011: 900.
7. Bulckens 2014.
8. *Corpus* 1982–2015.

9. <https://rembrandtdatabase.org/>.
10. Fels 2001; Brusati 2021.
11. Brusati 2021: 343; Black and Hermens 2022: 102.
12. See also Van de Wetering 1997; Groen 2005.
13. The extent of Rembrandt's autograph oeuvre remains uncertain. Giltaij 2022 compiles the 684 paintings attributed to Rembrandt by cataloguers from Abraham Bredius (1935) to Christian Tümpel (2009). The most recent catalogue raisonné (Manuth et al. 2019) lists 329 paintings. Meanwhile, several previously unknown paintings have recently appeared on the art market, prompting fresh debates.
14. Sluijter 2000 argued that it could be a variant by Rembrandt himself, experimenting with an alternate style, but the 1998 examination with infrared reflectography that first deattributed the Mauritshuis painting, largely on the basis of its underdrawing, has recently been replicated and its conclusions confirmed. Results will be published in 2025. See further the essay by Pottasch et al. in this issue.
15. Bauch and Eckstein 1981; Klein 2005.
16. Strauss and Van der Meulen 1979: 586–9, doc. 1669/5.

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