

## PAINTINGS

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### Keywords

Rembrandt, painting techniques, eyes, infrared examination

### Abstract

Methods of painting faces and eyes in portraits or *tronies* rely on different techniques of pigment mixing. Infrared imaging examination of several heads painted by Rembrandt and his contemporaries has shown that, during the 1630s and 1640s, Rembrandt favoured mixing a small amount of black pigment with the white paint used for the eyeballs. Only two of Rembrandt's contemporaries did the same. However, in the 1650s, Rembrandt appears to have abandoned this practice. While two contemporary English sources, from 1634 and ca. 1650, describe the method in some detail, the eye-painting technique referred to in those works likely evolved independently of that employed in Rembrandt's workshop.

## INTRODUCTION

In this comparative study, infrared (IR) imaging (range: NIR to SWIR) was used to investigate the degree to which Rembrandt and his close contemporaries, during the period from 1629 through to the 1650s, added black pigment to the white paint used for the eyeballs when depicting eyes in portraits, or in the more informal representations of faces often referred to as *tronies* (Hirschfelder 2008). Complementary to IR mapping of painting techniques, which in certain cases can support authenticity studies, the investigation examined contemporary recipes and other sources for relevant references.

## RESEARCH METHODOLOGY

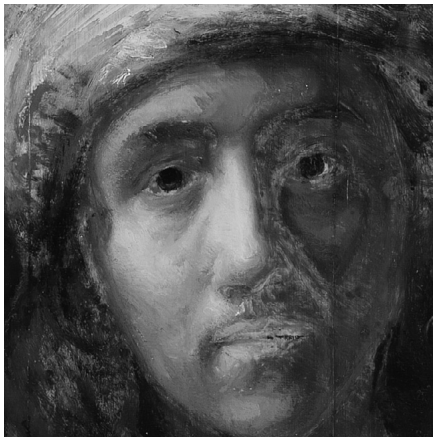
With IR, the best results are obtained when a reflecting white ground layer is present, as in most panel paintings. In the case of a canvas support, the ground layer may be coloured, which will negatively influence the IR image. Many of Rembrandt's early canvases have a double ground consisting of a red layer covered by a thinner grey layer (Wetering 2005, 318–334). In these cases, definitively interpreting the nuances of the IR image becomes complicated. Our analysis builds on IR documentation collected during the past two decades and complemented by the IR images of works by Rembrandt and his contemporaries stored in the Rembrandt Database.<sup>1</sup> Further practical support came from a technique developed by the 19th-century physician and art collector Giovanni Morelli (1816–1891). The Morellian technique of scholarship relies on finding the characteristic 'hand' of a painter, by searching for minor details that reveal an artist's scarcely conscious shorthand and the use of specific conventions to portray, for example, eyes. The brush handling and the creation of certain forms presumably remain consistent throughout an artist's career, even as his or her style evolves (Ginzburg 1980). In our study, the Morellian method was applied to map the characteristic use of certain paint/pigment mixtures in the rendering of the eyeballs as seen in IR images.

## FACIAL COMPLEXIONS BY REMBRANDT AND HIS CONTEMPORARIES

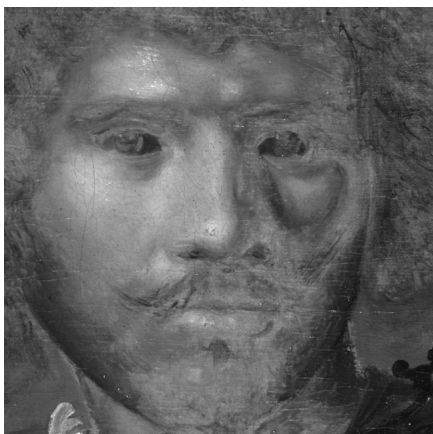
The use of IR revealed Rembrandt's 'hand' in his portraits, such as in shadow areas of a face, where he applied a very economical approach. Under IR, this is seen as a patchy appearance in contrast to the lit part



**Figure 1.** Rembrandt van Rijn, *Self-portrait*, ca. 1629, Nuremberg, Germanisches Nationalmuseum: IR (detail)



**Figure 2.** Follower of Rembrandt van Rijn (van Hoogstraten?), *Young Man in a Turban*, ca. 1650, Chicago, The Art Institute: IR (detail)



**Figure 3.** Formerly Albert Eckhout, *Mulatto Man*, ca. 1647–50, Copenhagen, National Museum of Denmark: IR (detail)

of the face, which is painted opaquely (Figure 1) (Wadum 2000). While this feature of patchy under-modelling is present in many of Rembrandt's heads, elsewhere it has so far been recorded only in a small number of heads painted by unidentified artists. One is by a painter in Rembrandt's immediate circle, and another possibly a more remote colleague (Table 1). The undated and unsigned *tronie* of a *Young Man in a Turban* (ca. 1650), previously thought to be by Rembrandt, is now considered to be the work of a follower or perhaps of his student Samuel van Hoogstraten (1627–1678).<sup>2</sup> Under IR examination, the shadow area of the face appears partly transparent, with bright, patchy reflections of the ground layer seen around a triangular-shaped painted cheekbone (Figure 2). While the paint application is in many ways comparable to that of Rembrandt, the *Young Man in a Turban* also strongly shares features with three large paintings depicting Brazilian native inhabitants and formerly attributed to Albert Eckhout (1610–1665) (Wadum 2022). The paint layers defining the heads of the *Tupi*, *Mulatto* and *African* men were applied as a combination of an opaque treatment in the lit areas and a loose, economical technique in the shadow areas of their faces (Figure 3).<sup>3</sup> The shadow areas of the heads in the remaining five equally large paintings of Brazilian inhabitants and in the *Tarairiu Dancers* were rendered in opaquely applied paint, different from that in the three aforementioned men, suggesting that two differently trained artists, possibly members of the Randenbroek workshop of Jacob van Campen (1596–1657) (Roscam Abbing 2021, Wadum 2022), were involved in the creation of the nine paintings. In the following, this hypothesis is further substantiated by our focus on what turned out to be a significant detail, the inclusion of which enabled a convincing impression of the eyes of the people in the painting. But first we return to Rembrandt's eyes.

### REMBRANDT'S EYES, 1630–1650

A pertinent question for understanding an artist's creative development is whether there is a continuity of choice in the use of pigments and their blending; that is, the extent to which the artist repeats his or her recipe when painting specific details—such as eyes, and especially the eyeballs—throughout his or her career. This was investigated by re-assessing the many IR images obtained of portraits/*tronies* painted by Rembrandt and his contemporaries. In several of the paintings from the 1630s onwards, the expected bright reflection from the white paint of the eyeballs was not identified in the IR images. On the contrary, the white in the eyes appeared as dark patches or brushstrokes, thus revealing that, for the whites of the eyes, Rembrandt added (lamp?) black pigment to the white paint.

This phenomenon appears in 11 out of 17 of Rembrandt's early portraits/self-portraits (1629–1650). Significant Rembrandt portraits created with this black-white technique for the eyeballs are *Self-portrait with a Gorget* (ca. 1629);<sup>4</sup> *Self-portrait Bare Headed* (dated 1633);<sup>5</sup> *Portrait of a Man Wearing a Black Hat* (dated 1634) (Figure 4);<sup>6</sup> *Self-portrait with a Velvet Beret* (dated 1634);<sup>7</sup> *Portrait of Dirk Jansz Pesser* (dated 1634);<sup>8</sup> and, most significantly, his *Portrait of Haesje Jacobsdr van Cleyburg* (dated 1634) (Figure 5);<sup>9</sup> and his late *Head of Christ* (ca. 1650).<sup>10</sup>

Most of Rembrandt's faces from the 1630s and 1640s were probably painted using this method of mixing white paint with black for the eyeballs. However, in 4 out of the 17 paintings, black admixture to the white was not used (Table 2). IR imaging also showed that, some time in the 1640s, Rembrandt seems to have changed his recipe for painting eyes and later in his career entirely refrained from adding black pigment to the lead white paint to paint eyeballs. His increased use of canvases with toned grounds would account for this change, as the admixture of black for tempering the white in the eyeballs would no longer be crucial with a less reflecting ground. To determine whether the black-white paint mixture was used only during a brief intermezzo in Rembrandt's career, the eyes painted by his students, workshop colleagues and other contemporary artists were examined.

**Table 1.** Paintings by circle of Rembrandt employing black pigment (X) or not (O) for the eyeballs

artist	title	date	support	ground	black	no-black	place
Lievens	<i>Portrait of Constantijn Huygens</i>	1628–29	panel	white		O	Amsterdam
Lievens	<i>Portrait of Rembrandt van Rijn</i>	ca. 1629	panel	white		O	Amsterdam
Jouderville	<i>A Laughing Man with Gorget</i>	1628–48	panel	white		O	The Hague
Anonymous	<i>Portrait with Gorget</i>	ca. 1629	panel	white		O	The Hague
Studio Rembrandt	<i>Self-portrait' with Gorget and Beret</i>	ca. 1629	panel	white			MOA Japan
Circle Rembrandt	<i>Bust of a Laughing Man</i>	ca. 1630	panel	white	X		Amsterdam
Dou	<i>Portrait of an Old Man in a Feathered Beret</i>	ca. 1630	panel	white		O	Kassel
Dou	<i>Portrait of an Old Lady, Wearing a Fur Collar</i>	ca. 1630	panel	white		O	Kassel
Jouderville	<i>'Self-portrait' of Rembrandt in Oriental Costume</i>	1631–32	panel	white		(?)	Leiden NYC
Rembrandt circle	<i>Bust of an Old Man Wearing a Golden Chain</i>	1632	panel	white		(?)	Berlin
Rembrandt circle	<i>Bust of a young woman</i>	1632	panel	white		O	Allentown
Rembrandt studio	<i>Self-portrait with a Velvet Beret and Gold Chain</i>	1633–36	panel	white	X		Berlin
Flinck circle	<i>Bust of a Young Woman</i>	1634	panel	white		(?)	Indianapolis
Rembrandt studio	<i>Portrait of a Woman Wearing a Gold Chain</i>	1634	panel	white			MFA-Boston
Rembrandt studio	<i>Self-portrait with Helmet</i>	1634	panel	white	(?)		Berlin
Rembrandt studio	<i>Portrait of Petronella Buys</i>	1635	panel	white	X		Leiden NYC
Beckx	<i>Portrait of Don Miguel de Castro</i>	1643	panel	white		O	Copenhagen
Beckx	<i>Portrait of a Man from Congo with a Tusk</i>	1643	panel	white		O	Copenhagen
Beckx	<i>Portrait of a Man from Congo in European Dress</i>	1643	panel	white		O	Copenhagen
Circle Rembrandt	<i>Figure of a Woman with a Beret</i>	1643	panel	white	(?)		Berlin
v Hoogstraten	<i>Self-portrait in Fantasy Costume</i>	1644	panel	white	X		The Hague
v Hoogstraten (?)	<i>Young Woman at an Open Half-door</i>	ca. 1645	canvas			O	AI Chicago
Circle Rembrandt	<i>An Old Man with a Beard and Beret</i>	1645	canvas	quartz		O	Berlin
v Hoogstraten (?)	<i>Young Man in a Turban</i>	1645–55	panel	white	X		AI Chicago
Eckhout circle	<i>Mulatto Man</i>	1647–50	canvas	ochre	X		Copenhagen
Eckhout circle	<i>Tupi Man</i>	1647–50	canvas	ochre	X		Copenhagen
Eckhout circle	<i>Black Man</i>	1647–50	canvas	ochre	X		Copenhagen
Eckhout	<i>Tarairiu Man</i>	1647–50	canvas	ochre		O	Copenhagen
Eckhout	<i>Tarairiu Woman</i>	1647–50	canvas	ochre		O	Copenhagen
Eckhout	<i>Tupi Woman</i>	1647–50	canvas	ochre		O	Copenhagen
Eckhout	<i>Mestizo Woman</i>	1647–50	canvas	ochre		O	Copenhagen
Eckhout	<i>Black Woman</i>	1647–50	canvas	ochre		O	Copenhagen
Rembrandt circle	<i>Head of Christ</i>	1648–61	panel	white		O	Detroit
Fabritius circle	<i>Study of an Old Man</i>	1654	panel	white	X		The Hague
Circle Rembrandt	<i>Bust of a Man</i>	ca. 1657	canvas	grey-pink		O	Berlin
Circle Rembrandt	<i>Man with Red Baret</i>	1660s	canvas	quartz		O	Rotterdam

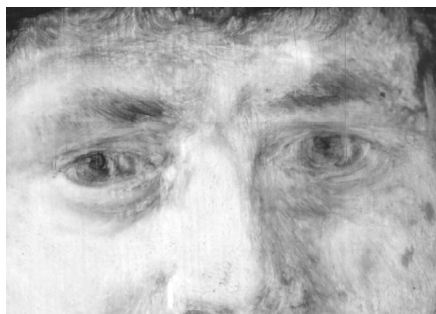


Figure 4. Rembrandt van Rijn, *Portrait of a Man Wearing a Black Hat*, 1634, Boston, Museum of Fine Art: IR (detail). Courtesy of the Museum of Fine Arts Boston

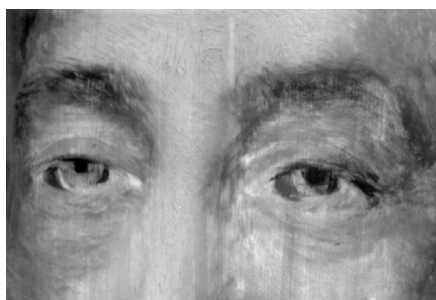


Figure 5. Rembrandt van Rijn, *Portrait of Haesje Jacobsdr van Cleyburg*, 1633, Amsterdam, Rijksmuseum: IR (detail)

## EYES BY REMBRANDT'S CIRCLE AND BEYOND

Heads painted by Jan Lievens (1607–1674), Gerrit Dou (1613–1675) (Wadum 2002) and Isaac de Jouderville (1612–1645) were re-examined. Despite the proximity of these artists to Rembrandt or their collaboration with him, there was no evidence that they used a black pigment admixture to paint the whites of the eyes. However, this technique was employed in the *Young Man in a Turban* (Figure 2) and the three paintings formerly attributed to Eckhout (Figure 3), mentioned above. If the painter of the *Young Man in a Turban* was Van Hoogstraten, Rembrandt's pupil in the early 1640s, then the painter of the three Eckhouts was active at Van Campen's workshop in Randenbroek during the late 1640s. The striking similarity of the handling of the *Young Man in a Turban* and the heads of the three Brazilians suggests that a former Rembrandt apprentice collaborated with Van Campen's team, which included at least 12 painters active in the Oranjezaal (1648–51) (Speleers 2021, 233–235).

Among the IR images of 36 portraits or heads by artists working in the vicinity of Rembrandt, only nine, including the four mentioned above, applied black to the whites of the eyeballs. Three of these works had been previously attributed to Rembrandt but the attributions were later retracted and re-assigned to the category 'Rembrandt and/or studio' (Table 1). The earliest of these three paintings is the Berlin *Self-portrait with a Velvet Beret and a Gold Chain*, dated between 1633 and 1636.<sup>11</sup> In addition to the darkness of the eyeballs as seen on IR, the somewhat open and patchy paint application in the shadow area of the face is compatible with that by Rembrandt (Figure 6). Another work in which the painting of the eyes corresponds to Rembrandt's technique is the *Portrait of Petronella Buys*.<sup>12</sup> This painting was rejected by the Rembrandt Research Project (RRP) in 1989 (Bruyn et al. 1989, C 111) but Ernst van de Wetering (2014, 132b) listed the painting as 'by Rembrandt and workshop'. The companion piece, the *Portrait of Philips Lucasz*, is in

Table 2. Paintings by Rembrandt employing black pigment (X) or not (O) for the eyeballs

artist	Title	date	support	ground	black	no-black	place
Rembrandt	<i>Self-portrait with Gorget</i>	ca. 1629	panel	white	X		Nuremberg
Rembrandt	<i>Self-portrait with Gorget and Beret</i>	ca. 1629	panel	white	(?)		Indianapolis
Rembrandt	<i>Self-portrait with a Plumed Beret</i>	[162]9	panel	white		O	ISGM Boston
Rembrandt	<i>An Old Man in a Gorget and Black Cap</i>	ca. 1631	panel	white	(?)		AI Chicago
Rembrandt	<i>Portrait of Maertgen van Bilderbeecq</i>	1633	panel	white		O	Frankfurt
Rembrandt	<i>Haesje Jacobsdr van Cleyburg</i>	163[3]	panel	white	X		Amsterdam
Rembrandt	<i>Self-portrait Bare Headed</i>	1633	panel	white	X		Louvre
Rembrandt	<i>Portrait of a man in a red coat</i>	1633	panel	white	(?)		Leiden NYC
Rembrandt	<i>Self-portrait</i>	1634	panel	white		(?)	Leiden NYC
Rembrandt	<i>Portrait of a Man Wearing a Black Hat</i>	1634	panel	white	X		MFA-Boston
Rembrandt	<i>Self-portrait with a Velvet Beret</i>	1634	panel	white	X		Berlin
Rembrandt	<i>Portrait of Dirk Jansz Pesser</i>	1634	panel	white	X		LA County
Rembrandt	<i>'Tronie' of a Man with a Feathered Beret</i>	1634–40	panel	white	X		The Hague
Rembrandt	<i>Portrait of Andries de Graeff</i>	1639	canvas	grey-pink		O	Kassel
Rembrandt	<i>Portrait of Nicolaes van Bambeeck</i>	1641	canvas	grey-pink	(?)		Brussels
Rembrandt	<i>Portrait of Agatha Bas</i>	1641	canvas	grey-pink		(?)	London
Rembrandt	<i>Saskia van Uylenburgh as Flora</i>	1641	panel	white		O	Dresden
Rembrandt	<i>Head of Christ</i>	1645–50	panel	white	X		Berlin



**Figure 6.** Rembrandt van Rijn, *Self-portrait with a Velvet Beret and a Gold Chain*, 1633–36. License under CC BY-NC-SA by copyright: Gemäldegalerie (Staatliche Museen zu Berlin). IR (detail)



**Figure 7.** Rembrandt van Rijn, *Portrait of Maertgen van Bilderbeecq*, 1633. License under CC BY-NC-SA by copyright: Städel Museum, Frankfurt am Main

the National Gallery, London<sup>13</sup> and was in the past described as mostly by Rembrandt (Bruyn et al. 1989, A115). According to the National Gallery, the different execution of the collar etc. reflects, not the work of an assistant, but the speed with which Rembrandt had to work. In this view, both portraits are completely autograph works by Rembrandt (Bomford et al. 2006, no. 5), a conclusion our IR investigation seems to support. A painting revealing a Rembrandt-like paint handling, including the addition of black to the whites of the eyeballs, is the Mauritshuis' *Study of an Old Man*, from as late as 1654.<sup>14</sup> While this small painting is labelled 'Circle of Rembrandt', another small panel with the same figure and presumably by the same hand, housed in the Walker Art Gallery, is described as 'Circle of Carel Fabritius'.<sup>15</sup> According to Van Hoogstraten, Fabritius was a 'fellow pupil' in Rembrandt's workshop, where he was active from ca. 1635 through 1649 (Selig 2006). Nonetheless, none of the IR images of Fabritius' acknowledged portraits confirm his use of Rembrandt's black-white technique.

The above findings suggest that in the 1630s and 1640s Rembrandt favoured a technique of rapid execution of his portraits and *tronies* and frequently added a black pigment to the white paint used for the eyeballs. This technique seems to have influenced at least two portrait/*tronie* painters, both of whom may have been pupils in his workshop in the 1640s, where they acquired the same economical and illusionistic technique of painting and paint mixing. However, no rule is without exceptions. Four undisputed paintings by Rembrandt do not display a patchiness of the face nor the admixture of black in the rendering of the eyeballs: *Self-portrait with a Plumed Beret*,<sup>16</sup> the *Portrait of Maertgen van Bilderbeecq* (Figure 7),<sup>17</sup> the large full-figure *Portrait of Andries de Graeff*,<sup>18</sup> and the *Saskia van Uylenburgh as Flora*.<sup>19</sup> A plausible explanation for the use of a different technique in these four paintings relies on past scholarly observations. According to the RRP on the *Self-portrait with a Plumed Beret*: 'This painting is a typical example of the small group of heads and busts that is extraordinarily difficult to either accept or reject as being the work of Rembrandt; this is because of the discrepancies that exist between them in respect of artistic approach and treatment, and because of the scanty points of contact there are between them and the figure compositions' (Bruyn et al. 1982, 221–222). The interpretation by the RRP explains our interpretation of the IR images: 'In this instance a judgment is made even more difficult by the wearing that has taken place in the shadow areas of the face, and by the fact that an underlying paint layer affects the surface paint (in particular, this cannot have encouraged the artist to use translucent paints)' (Bruyn et al. 1982, 222). This would justify the lack of any patchiness in the shadow areas of the face but not the absence of the technique used to paint eyeballs. In the *Portrait of Maertgen van Bilderbeecq* the technique of painting eyeballs may have been abandoned, for an unknown reason. Extensive advanced research of this painting in recent years points to some transparency in parts of the face; however, with the light falling onto the face from the left foreground, little shadow is seen at all, hence a denser paint application (Gerken et al. 2022). The same can be said of the charming depiction of *Saskia van Uylenburgh as Flora*, painted almost 10 years later. The RRP

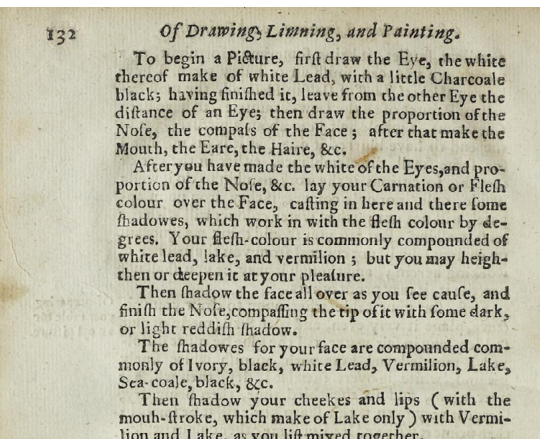


Figure 8. Henry Peacham, *The Compleat Gentleman*, 1661, 3rd ed., p. 132

wrote: 'New features in Rembrandt's style – in the colour-scheme and in the emphasis on contact with the viewer – are probably ascribable to the impression that early 16th-century Venetian paintings in Amsterdam collections at the time made on him' (Bruyn et al. 1989, A142, 402). This provides an explanation for the lack of opacity and admixture of black in the white paint of the eyeballs in the *Portrait of Andries de Graeff*. In this case the portrait was painted on a canvas prepared with a double ground of red earth, quartz and a small amount of umber followed by a layer of lead white, a small amount of umber and charcoal black, resulting in a base tonality that was light brownish yellow (Wetering 2005, 664–665). Rembrandt may therefore have been disinclined to add black to the white of the eyes of the face of the otherwise small head of the portrayed person.

### RECIPES FOR PAINTING EYES

Although both Van Mander and van Hoogstraten extensively described how a person's origins and future can be read in his face, no mention of how to practically paint eyes is found. The closest Van Mander comes to describing how an eye should be crafted is when he discusses expressions due to emotions, where he suggests to 'paint eyes glaring as hotly as burning coals' to express anger or fury (Milton 2022, 273 (59)). Van Hoogstraten in his *Inleyding tot de hooge schoole der schilderconst* [...] (Introduction to the noble school of painting [...], 1678), openly deplores the relative absence of art literature in the Netherlands, which he seeks to remedy. He comments that he was inspired to write his book because 'the Art of Painting has come to be seen, in most people's eyes, as a common art or craft' (Weststeijn 2008, 15). The training of young artists relates to *imitatio*, and drawing was regarded as a fundamental skill (Bogh 2015). Van Hoogstraten advises aspiring painters to start with separate elements of the face: eyes, noses, mouths, ears, etc. (Van Hoogstraten 1678, 26). The theoretical descriptions of the art of painting are therefore not genuinely meant as manuals dealing literally with the depiction of eyes. For this reason, two English texts are of relevance here. In *The Compleat Gentleman*, Henry Peacham (1578–after 1644) describes briefly but clearly the necessity to mix white with black to paint the whites of the eyeballs. He advises: 'To begin a Picture, first draw the Eye, the white thereof make of white Lead with a little Charcoale black' (Peacham 1634, 132; Figure 8). Peacham's advice, published in the same period when Rembrandt worked in this manner, is strikingly clear and consistent with the IR images of heads. The recipe was repeated by Edward Norgate (1581–1650), a miniature painter himself, in his *Miniatura or the Art of Limning*: 'First you must begin with the whyte of the Eye, and for it you must temper Charcole Black with whyte lead. Then lay a Carnation or flesh colour over the Face' (Norgate ca. 1650, 96–97). In contrast to the more theoretical writings of Van Mander and Van Hoogstraten, the detailed descriptions given above are reminiscent of the shoptalk that must have taken place behind the easels in the painters' workshops in the early 17th century. Can it be that Rembrandt's advice to his students in Amsterdam was taken to heart and put into use in the independent career(s) of only one (or two?) of them?

## CONCLUSION

Methods of painting faces and eyes in portraits or *tronies* have, not surprisingly, proven to rely on different techniques of mixing pigments. An IR-based examination of many heads painted by Rembrandt and his contemporaries revealed that the authorship of a painting can be distinguished by comparing several aspects of the images. Our study shows that Rembrandt favoured a mixture of white and a small amount of black paint to produce the whites in the eyeballs during the 1630s and 1640s. In the 1650s, he appears to have adopted a different method. When this finding is documented in paintings associated with, or partly attributed to, Rembrandt, it suggests that the respective work materialised in a close collaboration with the master, or was maybe even done entirely by himself, as observed in the *Self-portrait with a Velvet Beret and Gold Chain* and in the *Portrait of Petronella Buys*. The exception to the rule seems to relate to paintings by Rembrandt that display a more frontal illumination and therefore a lack of shadow area on the faces, or alternatively those painted on a canvas with a subdued ground tonality that did not call for this technique.

This Morellian comparison of multiple elements of the paint handling, as seen in the IR images of heads, offers thoughts for a re-evaluation of the chronologies of some works by Rembrandt and his contemporaries and suggests intriguing dependencies in the sharing of knowledge between artists and workshops.

## ACKNOWLEDGEMENTS

For the realisation of the work presented in this paper, I am grateful to Allison Langley, Christopher Atkins, Christoph Schmidt and Claudia Laurenze-Landsberg, Christiane Haeseler, Adri Verburg and Edwin Buijsen. Further thanks to all the researchers and documentalists who, on behalf of their institutions, shared images through the Rembrandt Database at the RKD. Editing was accomplished by Michael Lomax.

## NOTES

- <sup>1</sup> The Rembrandt Database: <https://rembrandtdatabase.org/>
- <sup>2</sup> Digital infrared photograph of Follower of Rembrandt van Rijn, *Young Man in a Turban*, ca. 1650, oil on panel, Art Institute of Chicago, Max and Leola Epstein Collection, 1954.297. The image was captured using a Fujifilm FinePix S5Pro, with Xnite 830 filter (830 nm cutoff at 50% 900 nm bandpass > 99%). <https://rkd.nl/en/explore/technical/5018119>
- <sup>3</sup> IR imaging with Artist VIR camera with a CCD progressive scan image sensor (1360 × 1036 pixels) and a Schneider Kreuznach Xenoplan 1.4/23 mm CCTV-lens in NI2 with a long wave pass filter 1000 nm.
- <sup>4</sup> Nuremberg, Germanisches Nationalmuseum, inv./cat. no. GM 391. The image was captured using a Hamamatsu C2400-07 camera equipped with an N2606 infrared vidicon, a Nikon Micro-Nikkor 1:2.8/55 mm lens, a Heliopan RG 850 (or RG 1000) filter, with a Lucius & Baer VM 1710 monitor (625 lines). Documentation was done with a Meteor RCB framegrabber, 768 × 574 pixels, colorvision toolkit (Visualbasic). <https://rkd.nl/en/explore/technical/985>
- <sup>5</sup> Musée du Louvre, inv./cat. no. 1744. <https://rkd.nl/en/explore/technical/5003553>
- <sup>6</sup> Museum of Fine Arts Boston, inv./cat. no. 93.1475. <https://rkd.nl/en/explore/technical/5005249>
- <sup>7</sup> Gemäldegalerie (Staatliche Museen zu Berlin), inv./cat. no. 810. <https://rkd.nl/en/explore/technical/5007209>
- <sup>8</sup> Los Angeles County Museum of Art, inv./cat. no. M. 69.16. <https://rkd.nl/en/explore/technical/5017912>

- <sup>9</sup> Rijksmuseum, inv./cat. no. SK-A-4833. Image capture: see note 3. <https://rkd.nl/en/explore/technical/5010346>
- <sup>10</sup> Gemäldegalerie (Staatliche Museen zu Berlin), inv./cat. no. 811C. <https://rkd.nl/en/explore/technical/5001665>
- <sup>11</sup> Gemäldegalerie (Staatliche Museen zu Berlin) inv./cat. no. 808. Image captured by a Xeva Large camera. <https://rkd.nl/en/explore/technical/5006354>
- <sup>12</sup> The Leiden Collection, inv./cat. no. RR-115. <https://rkd.nl/en/explore/technical/5017418>
- <sup>13</sup> National Gallery, London, inv./cat. no. NG850. <https://www.nationalgallery.org.uk/paintings/rembrandt-portrait-of-philips-lucasz>
- <sup>14</sup> Mauritshuis, inv. no. 828. <https://rkd.nl/en/explore/technical/2760>
- <sup>15</sup> Walker Art Gallery, Liverpool, inv. no. WAG 959. <https://www.liverpoolmuseums.org.uk/artifact/portrait-of-bearded-man>
- <sup>16</sup> Rembrandt, *Self-portrait with a Plumed Beret*, signed and dated *RHL [162]9*. Oil on panel, 89.7 × 73.5 cm. Isabella Stewart Gardner Museum, inv./cat. no. P21n6. <https://rkd.nl/en/explore/technical/5017988>
- <sup>17</sup> Rembrandt, *Portrait of Maertgen van Bilderbeecq*, signed and dated *Rembrandt. Ft: / 1633*. Oil on panel, 67.4 × 55.2 cm. Frankfurt am Main, Städel Museum, inv./cat. no. 912. <https://rkd.nl/en/explore/technical/5011421>
- <sup>18</sup> Rembrandt, *Portrait of Andries de Graeff*, signed and dated *Rembrandt f 1639*. Oil on canvas, 200 × 124.2 cm. Gemäldegalerie Alte Meister (Museumslandschaft Hessen Kassel), inv./cat. no. GK 239. <https://rkd.nl/en/explore/technical/5006248>
- <sup>19</sup> Rembrandt, *Saskia van Uylenburgh as Flora*, signed and dated *[...]randt. F 1641*. Oil on panel, 97.7 × 82.2 cm. Dresden, Staatliche Kunstsammlungen Dresden, inv. no. 1562. <https://rkd.nl/en/explore/technical/5005779>

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#### To cite this article:

Wadum, J. 2023. Rembrandt's eyes. In *Working Towards a Sustainable Past. ICOM-CC 20th Triennial Conference Preprints, Valencia, 18–22 September 2023*, ed. J. Bridgland. Paris: International Council of Museums.