ROGIER VAN DER WEYDEN IN CONTEXT

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Painting Skin and Water

Towards a Material Iconography of Translucent Motifs in Early Netherlandish Painting

Marjolijn Bol and Ann-Sophie Lehmann

ABSTRACT: The present article examines the development of oil painting techniques for human skin and water in a number of paintings by Rogier van der Weyden and Jan van Eyck and several pre-Eyckian and early Italian works. The paper shows that the visual realism of skin and water depends largely on the affordance of the oil medium to render (semi-) transparent materials convincingly as both medium and motifs are translucent. When artists learn to simultaneously exploit all properties of the medium, the illusion of transparency is also achieved with opaque colours. By focussing on painterly procedures related to the development of the use of oil in specific motifs, this paper can be considered a first attempt at a material iconography of binding media, joining iconographical methods with those of technical art history. We propose that such a material iconography can help to better understand the evolution and dissemination of the pictorial vocabulary of Early Netherlandish painting.

Introduction

The extremely realistic depiction of transparent and semi-transparent substances and materials such as water, glass, jewels, veils, smoke, marble and human skin is one of the great achievements of Early Netherlandish painting. This paper investigates the painterly procedures for the depiction of two such motifs – skin and water. We focus on Rogier van der Weyden and Jan van Eyck because they are considered the prime exponents of the new technical and iconographical developments of the first half of the fifteenth century. Contrary to traditional approaches, the motifs from their works are not juxtaposed on the level of iconography or style; instead the painterly procedures used to depict them will be compared and contrasted.[1] We have chosen skin and water because the visual realism of these motifs is directly related to essential properties of the oil medium: translucency, viscosity, and slow-drying time. These properties afford seamless blending and semi-transparent layers and consequently enable the mimetic depiction of skin and water, which are likewise characterized by seamless colour-changes and translucency. This connection between pictorial motif and painting medium provides an interesting starting point for the analysis of painterly techniques and will yield information about the ways in which Early Netherlandish painters developed the oil medium step by step, or motif by motif, towards a mimetic depiction of the visual world.

Concerning its method, the present article can be considered a contribution to the study of material iconography.[2] While iconography traditionally traces motifs across different artistic media and genres, the iconography of materials is interested in how works of arts gain significance from the substances they are created from.[3] Studies in this field have analyzed the meaning of marble, porphyry, gold, silver, glass, enamel, clay, different sorts of stone or wood, as well as modern materials like concrete and plastic.[4] Also pigments, due to their intriguing and often exotic histories, have been the subject of inquiries into the meaning of their specific materiality.[5] In these cases the works of art

display their materials, often precious, in order to enhance or define their meaning. Until now, binding media have not been considered in the investigation into the significance of materials. This is not surprising as their function in early modern art is to vanish as much as possible behind the things they have been used to depict, rather than to be displayed and acquire an independent meaning themselves. In the case of oil, it is precisely this literal ability to blend in that accounts for what Early Netherlandish panel painting is famous for: the detailed depiction of the world with an incredible visual and tactile exactitude. Rather than equalling invisibility with meaninglessness therefore, it can be argued that the material qualities of oil are meaningful because they afford a mimetic representation of reality. In other words, the material meaning of the oil medium lies in its inconspicuous presence. The mimetic potential of oil is partly due to the material correspondences between the properties of oil and the material qualities of the world: a link that other binding media did not possess to such a degree.

However, it is not the material properties alone that are responsible for what oil can do in painting. Only the painterly procedures developed on the basis of these material properties yield the desired result. To reconstruct the transformation of material into pictorial motifs, we propose to use the concept of the 'paint system', which Christoph Schölzel recently revived from Ernst Berger's *Malsystem*.[6] The paint system allows us to investigate how artists combine layer buildup, pigments and binder systems to create a certain visual effect, rather than studying these elements separately. Also style and special effect of handling have to be considered as part of the paint system.[7] The concept of the paint system enables a structured approach to the multitude of individual techniques employed to render different motifs.[8] It should be noted that although it is the aim to synthesize as much information about a particular paint system as possible, it can rarely be investigated exhaustively as new examination or new techniques for analysis will often yield new results.

Skin

The accurate representation of human skin has been a key objective from the earliest history of painting onwards because a convincing depiction of skin lends lifelikeness to the human figure. From the polychromy of antique sculpture, to Titian's sensual nudes, all the way to Willem de Kooning's credo that 'oil painting was invented to paint flesh', the history of art can be studied in terms of flesh colour.[9] Flesh colour however would have never become the 'crux of painting', as Friedrich Hegel called it, if it was not so difficult to paint. The difficulties arise from the physical properties of real human skin: while it appears uniform from a distance, it is actually characterized by smooth and subtle transitions between different zones of colour and texture. Also, it is neither opaque nor entirely see-through, but semi-translucent; a characteristic is share with very few other natural materials, like milk and marble.[10] Prior to the structural use of oil in panel painting, these effects had to be simulated with protein and water-based paint media, which are opaque and/or dry quickly. Both properties are opposite to those of actual skin. To depict skin accurately therefore, intricate yet surprisingly similar paint systems evolved in Italian, French, German, and Netherlandish painting. These entailed a complex layer buildup on a dark, often greenish under layer for a turbid medium effect, and very fine strokes or dots on the surface to suggest fluent transitions. These techniques are documented in a long tradition of flesh colour recipes, which are typically more complex than recipes for other motifs as they include a wider range of pigments, combined mixtures, and paint layers.[11] The introduction of oil allowed for a radical change in this technique because the medium possessed the same qualities sought for in representation. Oil not only allowed for translucent layers and smooth transitions. When drying it forms an actual flexible skin, which enhances the mimetic relation between the medium and actual human skin.[12] Cathy Metzger and Griet Steyaert have shown how this last property is employed in Rogier van der Weyden's

portrait of *Antony of Burgundy* (*c*. 1461, Royal Museums of Fine Art, Brussels) were the paint to depict the hands of the sitter 'was dragged and pulled as though it were the skin itself, with incisions through wet paint to articulate wrinkles.'[13] The ability to create smooth transitions was employed for all kinds of motifs and would develop into the specific technique of *verdrijven* ('smoothing out'), which became explicitly associated with flesh-painting from the early sixteenth century onwards.[14] The translucent property of oil however enabled the depiction of semi-transparency, which probably contributed the most to the realistic appearance of skin and had been the least convincing in other media.

Given the advantages of oil when it comes to the depiction of flesh tones, one would expect an immediate impact. This is not necessarily the case; on the contrary, of all pictorial elements, flesh tones were painted with protein-based media longer than most other areas.[15] It is thus characteristic to Early Netherlandish painting that oil is used for *all* elements in a painting, including flesh. The different techniques used for flesh colour in works by Jan van Eyck and Rogier van der Weyden show that oil effected established paint systems in different ways and that comparable visual effects could be created while exploiting different properties of the medium.

Jan van Eyck's method differs significantly from the complex layer structure of protein binding media in pre-Eyckian panel painting. All published paint samples of Eyckian flesh colours show one, or at most two, layers of flesh colour, mostly applied on a light, whitish ground, this way exploiting the translucent qualities of the medium.[16] The recent restoration of *Margaretha van Eyck* at the National Gallery, London and a close visual inspection of the flesh colours of the *Adam* of the Ghent Altarpiece confirm Van Eyck's thin application of paint in the flesh areas.[17] This simplified technique already existed in another genre – polychromed sculpture – where, from the fourteenth century onwards, flesh colour was painted by applying thin

layers of pigments mixed with oil directly onto a light ground. It is therefore likely that Van Eyck, who was experienced in polychromy, transferred an established paint system from its original 3D context to a two dimensional one.[18]

While Jan van Eyck's paint system indicates a rupture with earlier techniques, works of the Campin/Flemalle group and by Rogier van der Weyden show a different approach. Here, the protein-based paint system is gradually translated into an oil-based one. A number of examples, for instance the *Saint Veronica* and the *Bad Thief* (Städel Museum, Frankfurt) and *The Virgin and the Child before a Firescreen* (National Gallery, London) show an underlayer darker than the layer of flesh paint, a large variety of pigments, and a complex paint system with up to four layers.[19] Rogier's *Portrait of a Lady* (National Gallery, Washington) likewise, shows a multi-layered buildup on top of a darker ground.[20] Other portraits by Rogier, recently studied by Catherine Metzger and Michael Palmer, yield comparable results.[21] According to Metzger and Palmer, the flesh in Rogier's earlier portraits is painted on a fawn coloured underlayer with opaque paint layers on top in what the authors describe as an 'expressively plastic technique'.[22]

Although their paint systems differ, Jan and Rogier both achieved very life-like skin, as the latter's *Portrait of a Young Woman* (ill. 17.1) and Van Eyck's Portrait of his wife *Margaretha* (ill. 17.2) illustrate. The paintings are so similar in composition – both women gaze directly at the viewer, both display their hands in a similar fashion – that nineteenth-century scholars assumed the Berlin woman must be Rogier's wife.[23] The flesh colour however is different: while Margaretha's skin is painted with thin layers, exploiting the reflectance of the whitish underlayer, the anonymous woman's skin is modelled in a far more plastic style. In later works by Rogier, the technique changes and becomes similar to that of Jan van Eyck.[24] By the early sixteenth-century, the application of a thin layer of flesh colour on a light ground can be frequently encountered in Netherlandish panel painting. It

Ill. 17.2 Jan van Eyck, *Portrait of Margaretha van Eyck,* *c.* 1439, oil on panel, 32.6 × 25.8 cm. Bruges, Groeningemuseum, inv. 0.162.l.

seems that the affordance of the oil medium to mimic the semi-transparency of skin was given priority over the plasticity of flesh paint for a short while, until painters like Frans Floris, Hendrik Goltzius, and above all Rubens further developed the motif and combined transparent layering and plastic modelling. That the depiction of translucent skin was considered an important achievement is supported by Marcus van Vaernewijck's famous description of the Ghent Altarpiece of 1566 in which he praises the *Adam* for his 'duerluchtigh' (translucent), and therefore realistic flesh colour.[25]

Water
Water, like skin, yet much more so, is defined by the fact that it is transparent. While skin was one of the last domains to be conquered by oil, water, as will be shown here, was one of the first. This is probably due to the nature of the material at hand: when something had to depicted submerged in

water, artists were simply forced to depict the effect of seeing-through.

Water is essential to many biblical and mythological stories and in some, such as the Baptism of Christ, water and its transparency are a central theme. Because the Baptism was a subject in high demand, painters have been challenged to render the transparency of water since the earliest days of the craft. In medieval depictions of the Baptism we find that the general iconography was for Christ to be shown immersed in the water of the river Jordan up to his waist; the river shown in cross-section. This compelled artists to represent water as a transparent medium, a problem that they initially solved by rendering small, schematic wavelets across the body of Christ. Regardless of the material the artist worked with, be it paint, stone or bronze, this formula enabled the visual representation of the subject (ill. 17.3). In this schematic indication of water, the wavelets are taken as either the most telling feature of water and/or as the easiest way to depict the effect of transparency, but we cannot yet speak of a pictorially accurate translation of the properties water has in the real world.

A change is apparent in the work of Giotto. The *Baptism of Christ* in the fresco cycle in the Capella Scrovegni (ca. 1305) partly still uses the above-mentioned conventions, but the schematic wavelets are gone and replaced by a transparent, uniformly coloured filter, covering the body of Christ

Ill. 17.3 French Miniaturist, *Baptism of Christ, c.* 1160, illuminiation on parchment. Berlin, Staatliche Museen.

Ill. 17.4 Giotto, *Baptism of Christ,* 1303-1305, fresco.
Padua, The Scrovegni Chapel.

and a few fish (ill. 17.4).[26] Almost a century later, in the earliest recipe for the depiction of water, Cennino Cennini, advises this filter as the way to depict water:

> Whenever you want to do a stream, a river, or any body of water you please, either with fish or without, on wall or on panel; on a wall, take that same verdaccio which you used for shading the faces on the mortar; to do the fish, shading with this verdaccio the shadows always on their backs [...]. Then when you have shaded with verdaccio, put on lights underneath, with lime white on the wall; and with white lead on panel. And make a few shadows over the fish, and all over the background, with the same verdaccio. And if you care to make any outstanding fish, lace it with a few spines of gold. Then, in secco, lay verdigris in oil uniformly over the whole ground; and work this way also on panel. And if you do not want to work in oil, take some terre-verte, or malachite, and cover evenly all over; but not so much that the fish and waves of water do not still show through; and if they need it, put a few lights on the waves, with lime white on the wall, and tempered with white lead on the panel.[27]

In the context of this paper, this recipe is significant and will be examined in detail.[28] To paint the suggestion of a transparent body of water, either in secco or on panel, Cennini advises to apply oil mixed with verdigris uniformly over an underlayer of verdaccio, painted fishes, and wavelets. Cennini's recommendation makes sense, because verdigris is most suitable for the use in oil glazes due to its poor hiding power and saturated colour.[29] In early German Italian and Netherlandish painting it was almost exclusively used to produce intense green tones for both, landscape and drapery, because neither mixtures of blue and yellow pigments nor alternative green pigments such as malachite and green earth, possessed such strong colour.[30] Moreover, and this we learn from Cennini as well, verdigris could be used as a dryer in the oil medium.[31] Cennini sophisticated knowledge of the beneficial properties of verdigris is not surprising, given the fact that the pigment played an important role in the early days of oil painting in Italy and verdigris bound in oil is found in many early Italian panels that where otherwise painted in tempera.[32] Cennini's preference for verdigris to be bound in an oil medium is emphasized even more by his remark that in case the painter does not want to work in oil he should use other pigments, such as malachite ('verde azurro') or green earth ('verdeterre').[33] Indeed, both malachite and green earth are known not to be at their best when immersed in an oil medium.[34] Malachite in oil has a dark and dull colour due to its moderately low refractive index and green earth with its poor tinting strength and hiding power in oil, is not very suitable for glazing, because despite its relative translucency, its tone would be rather pale.[35] It has even been suggested that the lack of the use of green earth in the North might have been due to Northern artists' preference for the oil medium.[36]

When Cennini recommends malachite and green earth for the painter not working with oil, he also warns him that he should 'cover evenly all over; but not so much that the fish and waves of water do not still show through'.[37] Cennini's

warning makes sense, because with opaque paint the artist stands a higher risk to obscure his subject. There is another passage in Cennini's treatise where he warns the painter against covering an underlying layer of paint completely and this is in his instruction on how to paint faces. Here Cennini stresses twice that the green (verdaccio underneath the fleshcolors) should always show through a little.[38] Accordingly, Jill Dunkerton has argued that the only place where Italian paintings show optical complexity in layer buildup is the skin.[39] The close reading of Cennini's recipes shows that this is also true for water. In relation to the impact of oil moreover, this recipe is significant because it recommends the translucent properties of the medium to render a specific visual effect of a distinct motif, and this way surpasses the earlier, schematic approach

In addition to the visual similarities to Cennini's recipe, there is also a remarkable technical correspondence with Giotto's *Baptism*, the water of which was painted using copper green, as recent technical analysis of the frescoes in the Scrovegni Chapel show.[40] Giotto first applied a layer of green earth 'ad affresco' after which he glazed (*secco*) the layer of green earth and the body of Christ with the copper green, giving it a transparent look.[41] Although the samples from the water of the *Baptism* have not been analyzed for their binding medium, lipid binders where found in other places.[42] We may well suspect that where Giotto glazed the water with the copper green, a lipid binder is also present.[43] It can be concluded that Cennini, who through Agnolo and Taddeo Gaddi places himself in the line of painters who trained in the workshop tradition of Giotto himself, explains comprehensively what Giotto seems to have been practicing.[44]

This selective use of oil to depict the transparency of water was not only typical for Italian art, but also prominent in the North. A telling example, dated to the exact time that Cennini was writing his treatise, are two panels from the Antwerp-Baltimore Quadriptych, depicting the *Baptism of Christ* (ill. 17.5) and *Saint Christopher carrying the Christ Child*. The water in both panels has a gilded

Ill. 17.5 Anonymous, *Baptism of Christ, c.* 1400, oil and tempera (?) with gold leaf on panel, 37.2 × 26.5 cm. Baltimore, Walters Art Museum, inv. 37.1683.

underlayer in which the figure of Saint Christopher has been left in reserve.[45] On top of this layer and covering the legs of the saint lies a transparent green glaze in which small brushstrokes suggest wavelets. Then the fish, and in the case of *Saint Christopher* even a mermaid, were drawn in black.[46] Recent identification of the paint medium of the Baltimore panels, points towards linseed oil with traces of pine resin, instead of a proteinaceous emulsion, as earlier analysis of the Antwerp panels suggested.[47] Nevertheless, the authors argue that the painter of the Baltimore panels seems to have used the transparent properties of the medium rather sporadically; most areas of the painting appear rather opaque and unsaturated.[48] The green glaze for the water is the only place where transparency is fully exploited. The pigments of the glaze have not been identified, but are probably of

the same copper green type that was identified in the foliage.[49]

The previous examples show a direct application of the transparent qualities of the medium to depict a transparent motif. The next step entails the use of the medium in a more systematic way throughout every paint layer. Not surprisingly, when this happens, the effects of the oil medium are not taken up so literally anymore but rather exploit other affordances of the medium such as its blending properties, slow drying time and/or its transparency throughout every paint layer. In other words: the visual effect of the transparency of water is suggested using opaque colours.

Among the first artists to perfect the suggestion of a transparent volume of water without the use of Cennini's 'filter' is Jan van Eyck. At the heart of the central panel of the *Ghent Altarpiece*, in the canal surrounding the so-called 'Fountain of Life', Van Eyck has painted transparent water (ill. 17.6).[50] From the mouth of a small, sculpted creature at the base of the fountain, it streams into the canal. The gushing water causes the formation of wavelets that are painted by setting off brown, curved brushstrokes against white ones.[51] The water not only causes wavelets in the surface of the water, it is also dashing upwards in countless white dots. Van Eyck even depicts the air bubbles that are created when a stream falls into a body of water using brown circles that are again contrasted by white lines, their volume suggested by two carefully placed highlights. It is a bit further down the canal, where the water is placid that we can appreciate how Van Eyck's suggests the transparency of water. Van Eyck paints a thin, white line alongside the basin and sets it off with a brown line placed directly underneath it. Transparency is here suggested by rendering carefully observed optical effects rather then by literally mimicking their material properties. Van Eyck emphasizes the transparency of the water by scattering sparkling precious stones in the bedding of the canal. A transparent effect that again did not skip Marcus van Vaernewijck's attention, who observes that the water that flows from the

Ill. 17.6 Jan van Eyck, *Fountain of the Ghent Altarpiece* (detail), 1432, oil on panel. Gent, Saint Bavo Cathedral, inv. 426.

fountain is so clear that one can see the small stones on the ground.[52]

Van Eyck's way of painting water can also be observed in Rogier's *St John Tryptich* (ill. 17.7). It also shows that what has been sketched as an evolutionary system so far, is in fact non-linear. Rogier uses 'older' and 'newer' approaches to water and combines them. In the *St John Tryptich* we encounter literal transparency, optical reflections, and schematic wavelets. Around Christ's legs for instance, Rogier paints rippled waves, here using the transparency of his paint to show that the legs continue underneath the water. The same effect is employed where the water hits the shore near the foot of St John (ill. 17.8). To suggest moving water in the form of wavelets, Rogier paints triangular shapes that are modelled into the wet green paint with the occasional highlight to accentuate their form. Due to its slow drying time and viscosity, oil is the medium par excellence for such a technique, also used to depict the stunning reflection of the
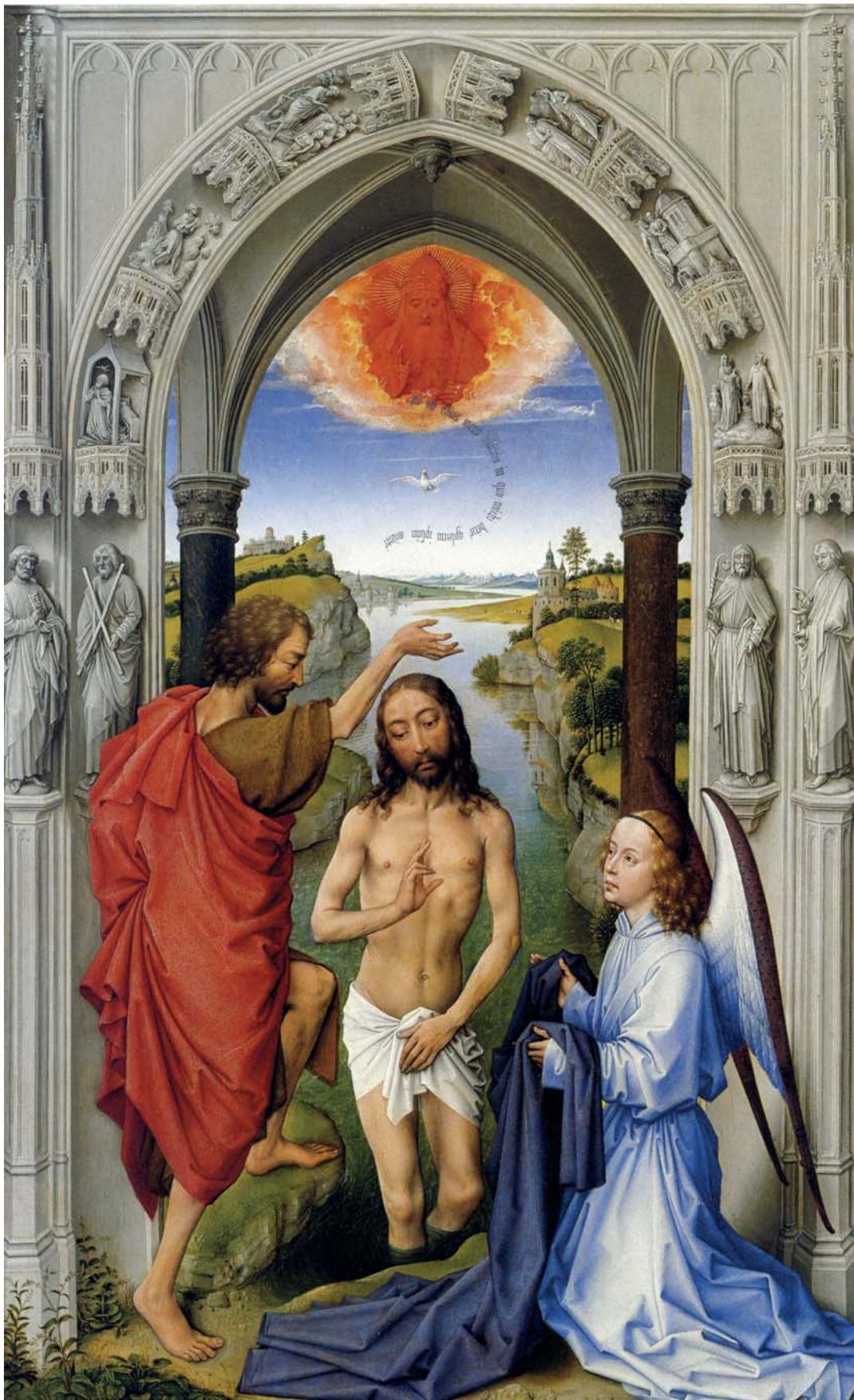
Ill. 17.7 Studio of Rogier van der Weyden, *The Baptism of Christ, c.* 1455, oil on panel.
Berlin, Staatliche Museen zu Berlin, Gemäldegalerie, cat. 534в.

Ill. 17.8 Studio of Rogier van der Weyden, *The Baptism of Christ* (ill. 17.7), detail.

shore, which is dragged loosely to render it 'less sharp'. Blue opaque lines on top of the reflection indicate that the substance represented is water. Rogier also depicted the water pouring from the hand of St John onto the head of Christ. Here, however, he is less successful. Whereas the droplets seem real, reminiscent of the tears we so often see in Early Netherlandish painting, the white lines that are supposed to represent the water running from the hands of St John do not. The thin streams have been 'drawn' in white paint with curving lines, thus appearing more like white strains of hair than water, which does not 'waver' when it falls from a certain height. The water spraying from the jets in Van Eyck's fountain are also white but rendered as a regular curve, which makes them a lot more convincing. Moreover, In the *Baptism*, the conflict of two pictorial systems – the rays of the halo executed with real gold and the rays of water painted in white – contributes to the unsuccessful effect.[53] It can be concluded that the potential of the oil medium to mimic the transparency of water was discovered early on and carefully developed into distinct paint systems. In the works of Rogier and Van Eyck we find that these older systems are expanded on a technical as well as a pictorial level.

Conclusion

More than thirty years ago, Ernst Gombrich in his article *Light, Form, and Texture in Fifteenth-Century*

Painting North and South of the Alps suggested that art historians also investigate the making and matching of motifs of Early Netherlandish painting on a technical level.[54] With this attempt at a material iconography of skin and water painted with oil, we hope to contribute to such an investigation. We have shown that for skin and water the use of the oil medium plays an important part in the development of these motifs, both visually and technically. The findings show that the conquest of the oil medium in the workshop might have started with a pictorial conquest of individual motifs, before it 'won over' the entire surface and most layers of the paintings.[55] It has become apparent that artists used the transparent qualities of oil from at least the fourteenth century onwards to depict water. It took painters considerably longer to employ oil for the semi-translucency of skin. The visual realism of both motifs however, is not solely due to a literal interpretation of the transparency of oil, but achieved by combining all its affordances. Slow-drying time, viscosity and transparency are each exploited to render different aspects of skin and water.

Notes

1 Alfred Acres pointedly describes how Rogier van der Weyden and Jan van Eyck have traditionally been compared: 'Rogier is repeatedly deemed to be less concerned with microscopic detail, less interested in embedded symbols, more flat in pictorial structure, more dramatically expressive, and occasionally more 'gothic' in spirit. We think for example that Friedlander's observation that Rogier's cheerless and abstract art prevailed over the sumptuous temptations of Jan van Eyck, [representing] a counter-current, a turn from the secular, the sensuous, the artistic toward the spiritual, the clerical, the ascetic, a relapse into ecclestial art; or of Panofsky's that "Roger's world is at once physically barer and spiritually richer than van Eyck's".' (Acres 1997: 24).

2 This research is part of the project *The Impact of Oil. A History of Oil Painting in the Low Countries and its Consequences for the Visual Arts, 1350-1550*, funded by the Netherlandish Organization of Scientific Research, partners: Utrecht University, University of Amsterdam, Rijksmuseum Amsterdam (www.impactofoil.org). We would like to thank all project members and especially Jeroen Stumpel, for the critical and constructive commentaries.

3 See for example Bandmann 1969: 75-100; Raff 1994; Rübel, Wagner & Wolff 2005.

4 For an overview of materials in modern and contemporary art, see the database of the research project *Materialikonographie*: http://www.uni-hamburg.de/Materialarchiv/home.htm

5 See for example: DeLancey 2003: 141-150.

6 Schölzel 2005: 35.

7   Acres 2000; Steyaert & Metzger 2009: 168.

8   See also Gifford et al. 2003: 107: 'the analysis of an artist's choice of painting materials can supplement studies that focus on the appropriation of visual motifs to trace links between paintings and artists'.

9   Lehmann 2007; Lehmann 2002

10   About the physical effects of translucency in skin, see: De Mey 2008; Lehmann 2009.

11   See Lehmann 2008: 108-131.

12   Wallert & Van Oosterhout 1998: 42. Eventually, the skin-like structure is disrupted by craquelure.

13   A technique that can be found in several other works by Rogier van der Weyden as well, such as the Antwerp *Seven Sacraments Altarpiece*, the New York *Francesco d'Este* and the Escorial *Crucifixion*, cf. Steyaert & Metzger 2009: 168-170.

14   Lehmann 2008: 94-96.

15   For examples of pre-Eyckian Northern European and later Italian panel paintings in which protein based binding media are employed for flesh, see Lehmann 2007.

16   Paint samples have been taken from one of the feet of the Adam of the *Ghent Alterpiece* and *Margaretha van Eyck*'s hands, see: Kockaert & Verrier 1978-1979: 122-127. The flesh colour buildup in all Van Eyck paintings at the National Gallery London has been described by Campbell 1998. Flesh samples have also been taken from the *Portrait of a Man in a Blue Chaperon* (*c.* 1429, Muzeul National de Arta al Romaniei, Bucharest) and the *Virgin and Child at the Fountain* (1439, Koninklijk Museum voor Schone Kunsten, Antwerp), see respectively Van Asperen de Boer, Ridderbos & Zeldenrust 1991 and Vandenbroek & Depuydt-Elbaum 2002: esp. 19-20.

17   The results of the restoration of Margaretha are available at http://www.vlaamsekunstcollectie.be/nl/de_restauratie_van_margaretha_van_eyck.aspx. The visual inspection of *Adam* took place during the general inspection of the *Ghent Altarpiece* (June-September 2010, with many thanks to Anne van Grevenstein and Ron Spronk who made a visit of the *Impact of Oil*-team possible.

18   For a detailed comparison between technical analysis of flesh samples from Van Eyck paintings with analysis of flesh samples from polychromed sculpture, as well as source material from guild regulations and recipe literature, see Lehmann 2007.

19   The flesh of the bad thief is underpainted in black because he is dead. A macro-photograph of the face of *Saint Veronica* shows a grey underlayer (Van Asperen de Boer 1996). The flesh of *The Virgin and Child before a Firescreen* consists of a light grey underlayer, a second, brown layer tone and two layers of flesh colour (Roy & White 1996).

20   The flesh has a buildup consisting of four layers with each up to four different pigments, see: Metzger & Palmer 1998: 94-97.

21   Metzger & Palmer 2008: 65-85.

22   Metzger & Palmer 2008: 69.

23   Kemperdick & Sander 2009: 277-280.

24   Metzger & Palmer 2008: 76. Especially a number of portraits given to the workshop show a thinner application of flesh paint, like the *Portrait of a Man in Prayer* (The Metropolitan Museum of Art, New York) and the *Portrait of a Stout Man*, (Gemäldegalerie, Berlin), see Kemperdick & Sander 2009: cat. 19, 16.

25   Van Vaernewyck 1872-1881: i, 143.

26   It appears that Giotto, with this uniformly colored filter, was reviving Greco-Roman traditions of which reflections were to be found in for instance the mosaic representing the *Baptism of Christ* in the Baptistery of Neon in Ravenna. Cennini possibly pointed towards this very fact when he remarked: 'it was Giotto who transferred the art of painting from Greek into Latin and made it new', see Gombrich 1976: 22-28.

27   Cennini 1960: cl, and for the latest edition of the Italian text: Cennini 2004: cl: 'Quando volesse fare un'acqua, un fiume, o ·cche actua tu volessi, o con pescie o sanza, in muro overo in tavola, in muro togli quell medesimo verdaccio che aombri I visi in sulla calcina; fa' I pesci, aombrando con questo verdaccio pur sempre l'ombre in su' dossi; avisandoti ch'e' pesci, gieneralmente ogni anikale inrazionale, vuole

avere il suo schuro di sopra e 'l lume di sotto. Poi, quando ài aombrato di verdaccio, biancheggia di sotto di biancho sangiovanni, in muro; e in tavola con biaccha. E va' faciendo sopra I pesci alchuna ombra del medesimo verdaccio, e per tutto il campo. E ·sse volessi fare alchuno disvariato pescie, cardalo d'alchune spine d'oro. In secho dare poi a distesa per tutto il campo verderame ad olio; e per questo modo ancora in tavola. E se non volessi fare ad olio, togli verdeterra o verde azurro, e chuopri per tutto ughualmente, ma non tanto che non traspai sempre pesci e onde d'acqua; e ·sse bisognia le dette onde biancheggiarle un pocho, in muro con biancho e in tavola con biacha temperata. E questo ti basti al fatto del colorire; e pervegniamo all'arte dell'adornare.'

28   Stumpel 1999: 12-21 has been the first to bring attention to Cennini's recipe on painting water and its contextualization in the art of painting.

29   Kühn 1997: 132.

30   Kühn 1997: 132.

31   Cennini mentions a cement for faience made from linseed oil to which white lead and verdigris were added as drying agents and a mordant for gold leaf, containing the same drying agents, see Cennini 2004: cvii, cli. For this subject see also: Bomford et al. 1990: 43-47; Dunkerton 1991: 193-194.

32   For various examples see: Thompson 1956: 165; Bomford et al. 1990: 42, 150, 162; Dunkerton 1991: 185 and Dunkerton 1997: 29-34.

33   Cennini 2004: cl.

34   Thompson 1956: 161, Dunkerton 1991: 184. Cennini 1960: cl.

35   For green earth see Grissom 1986: 144, and for malachite Gettens & Fitzhugh 1997: 184.

36   Grissom 1986:144. In Italy green earth was mostly used to underpaint flesh colours. In the fifteenth century, when it was not used for this purpose anymore, the pigment fell into disuse, Dunkerton 1991: 184.

37   Cennini 1960: cl.

38   'Sechondo che·llavori et colorisci in muro, per quell medesimo modo fatte tre maniere d'incarnazioni, più chiara l'una che ·ll'altre, mettendo ciaschuna incarnazion nel suo luogho degli spazii del viso, non però apressandoti tanto all'ombre del verdaccio che in tutto le richuopra, ma a darle con la carnazion più schura, allequidandole e amorbidandole sì chome un fummo […] E abi che lla tavola richiede essere volte campeggiata che in muro; ma non però tanto, ch'io non voglia che il verde che è sotto le incarnazioni sempre un pocho [non] traspaia', Cennini 2004: 171.

39   Dunkerton 1991: 191-192.

40   Marabelli 2005: 21. The authors of the *Bolletino* speak of 'copper resinates'. However, as Kühn contests 'copper resinates' are a problematic notion and therefore in this article we use the more generally accepted term 'copper green' to describe green, transparent, copper containing glazes: Kühn 1997: 148-158

41   Marabelli et al. 2005: 53.

42   The green decorations of a halo where painted using a pine resin (associated with copper green) most likely applied with a lipid binder and a number of samples indicated the use of lead white mixed with oil: Marabelli et al. 2005: 21 and Guglielmi & Francesca Capanna 2005: 54, 81.

43   Copper green glazes are not uncommon in early Italian painting, see for instance Bomford et al.1990: 42 and Kühn 1997: 149.

44   Also in the case of Giotto's technique for painting skin Marabelli et al. remark that there are obvious parallels with Cennini: Marabelli et al. 2005: 33-34.

45   Nieuwdorp, Guislain-Witterman & Kockaert 1984-1985: 90.

46   Mund, Stroo & Goetghebeur 2003: 272.

47   Gifford et al. 2003: 110; Nieuwdorp, Guislain-Witterman & Kockaert 1984-1985: 96.

48   Gifford et al. 2003: 110, 114.

49   Gifford et al. 2003: 111.

50   The inscription at edge of the basin tells us HIC EST FONDS AQUE VITE PROCEDENS DE SEDE DEI + AGNI (This is the fountain of

the water of life proceeding out of the throne of God and the Lamb). Dhanens 1965: 50.

51   This is what the colours appear to be to the eye, unfortunately there are no paint samples of the fountain. However, the greens that have been researched by Brinkman *et al* 1988: 29-34, are found to be a copper green, not malachite as was first suggested in *L'Agneau mystique au Laboratoire*. The authors suspect this green to be either verdigris or a resinate, but as of yet the exact identification of the green is impossible.

52   Van Vaernewijck 1872-1881: I, 144: '(…) up een fonteijne waer af dwater schijnt te vloeijen, ende zo clear dat men die cleene steenkins in den gront ziet'.

53   Baert 2009: 16-17.

54   Gombrich 1976: 19-35.

55   See also Dunkerton 1991: 194.