1

Saint Jerome at Prayer

RESEARCH REPORT 2

Hieronymus Bosch
c. 1485–95

Oil (not analysed) on oak (analysed) panel, 80.0 × 60.7 cm
Museum voor Schone Kunsten, Ghent, 1908-H

The painting was restored in 2015–16, thus after the 2010 BRCP technical examination on which this report is largely based.
BRCP, *Catalogue Raisonné*, cat. 1; www.boschproject.org no.1.

Inscriptions and labels
Reverse: two wax seals, three labels. The wax seals were removed from the original reverse when this was thinned, and adhered to the thinned reverse after the cradling treatment. Some of the original wood is still attached to the back of these seals.[1]
On frame, top centre on built-up reverse: *BOSCH 1908-H*

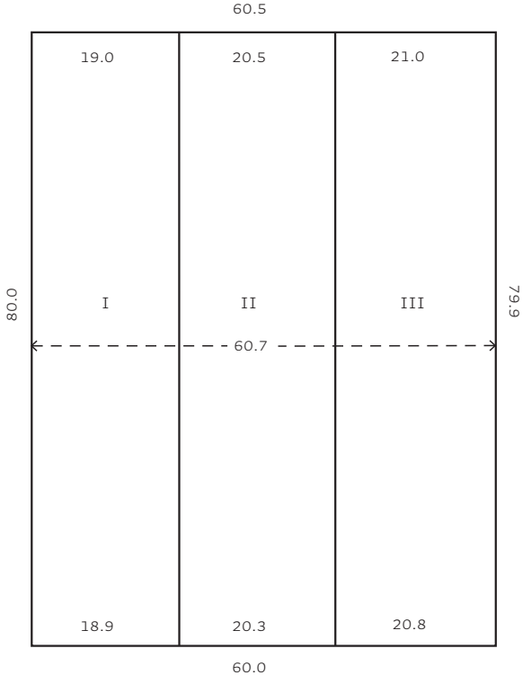
SUMMARY OF CONCLUSIONS

The technical evidence is in full agreement with the attribution of the Saint Jerome *to Hieronymus Bosch. The painting technique, style and material of the underdrawing, and traces of a creative process in all stages of its production place the panel in the core oeuvre, without indications of any workshop involvement.*
The work was originally housed in an engaged frame, now lost. The panel was slightly cropped at the top and bottom. Dendrochronology indicates that it could have been painted from 1476 onwards, although a date after 1478 is statistically more probable. As further explained in BRCP, Catalogue Raisonné, *cat. 1, we date this work to around 1485–95.*

EXAMINATION DATA

22–24 November 2010 (Luuk Hoogstede, Matthijs Ilsink, Jos Koldeweij, Ron Spronk).[2]

The painting was examined out of its frame, both upright on an easel and flat on a table, under strong illumination. Both front and cradled reverse were easily accessible.



1.1 Construction diagram (seen from the front)

- ***Previous research and additional documentation available*** The Ghent Museum holds several files with information on the painting, including a technical research report from 1950. A cross-section was taken then and XR was done. IRR was conducted by Molly Faries in 1999 and by Arie Wallert in 2009. Photography and IRR (OSIRIS camera) was also done by Ghent University's Interdisciplinary Centre for Art and Science (2010).
- ***Previous treatments*** The painting was acquired in 1908 and might have been treated around that time. From pictures taken during the 1950 examination, it appears that the panel has not been treated between then and the 2015–16 treatment.

SUPPORT

- ***Panel*** Dimensions: see construction diagram (fig. 1.1). The painting was cropped at the top and bottom. The wood species, Baltic oak, was confirmed by dendrochronological analysis. The panel consists of three quarter-sawn planks, vertical in grain, laid vertically.

  The planks are glued and butt-joined; no dowels are visible on the thinned reverse or in the XR.

  The reverse is not in its original state, having been thinned and cradled. Two small areas of the original panel's reverse, underneath the transferred wax seals, have survived. The seals were affixed to the current thinned reverse.
- ***Dendrochronology*** The youngest growth ring dates from 1465, which, with the minimum of nine sapwood rings for Baltic oak, implies an earliest possible felling date of 1474 for the tree that provided the wood for that plank.[3] A felling date after 1476 is statistically more probable, however, since 93 per cent of the possibly missing sapwood rings would be covered by this range. Assuming an additional minimum of two years for drying and transportation, the panel could have been produced from 1476 onwards, although a production date from 1478 onwards is statistically more probable.

GROUND

- ***Visibility*** The off-white coloured ground (not analysed) is present overall and visible in VIS and XR. It is almost completely covered by the paint layers, but shimmers through in specific locations (e.g., in depictions of water [see fig. 1.2], sky and architecture). Partially, this appears to be a deliberate result of the painter's working method. In other areas, however, it seems unintended and caused by the ageing and increased transparency of paint layers. The ground is also visible in cracks and where the paint layers are damaged.
- ***Barb and edges*** Barbs and ungrounded, unpainted edges are present on the left and the right and indicate that the painting originally had an engaged frame. The barb on both sides is slightly damaged and not distinctly raised. The unpainted, ungrounded edge is c. 1.0 cm wide



RR 2 (photo courtesy KIK-IRPA, Brussels)



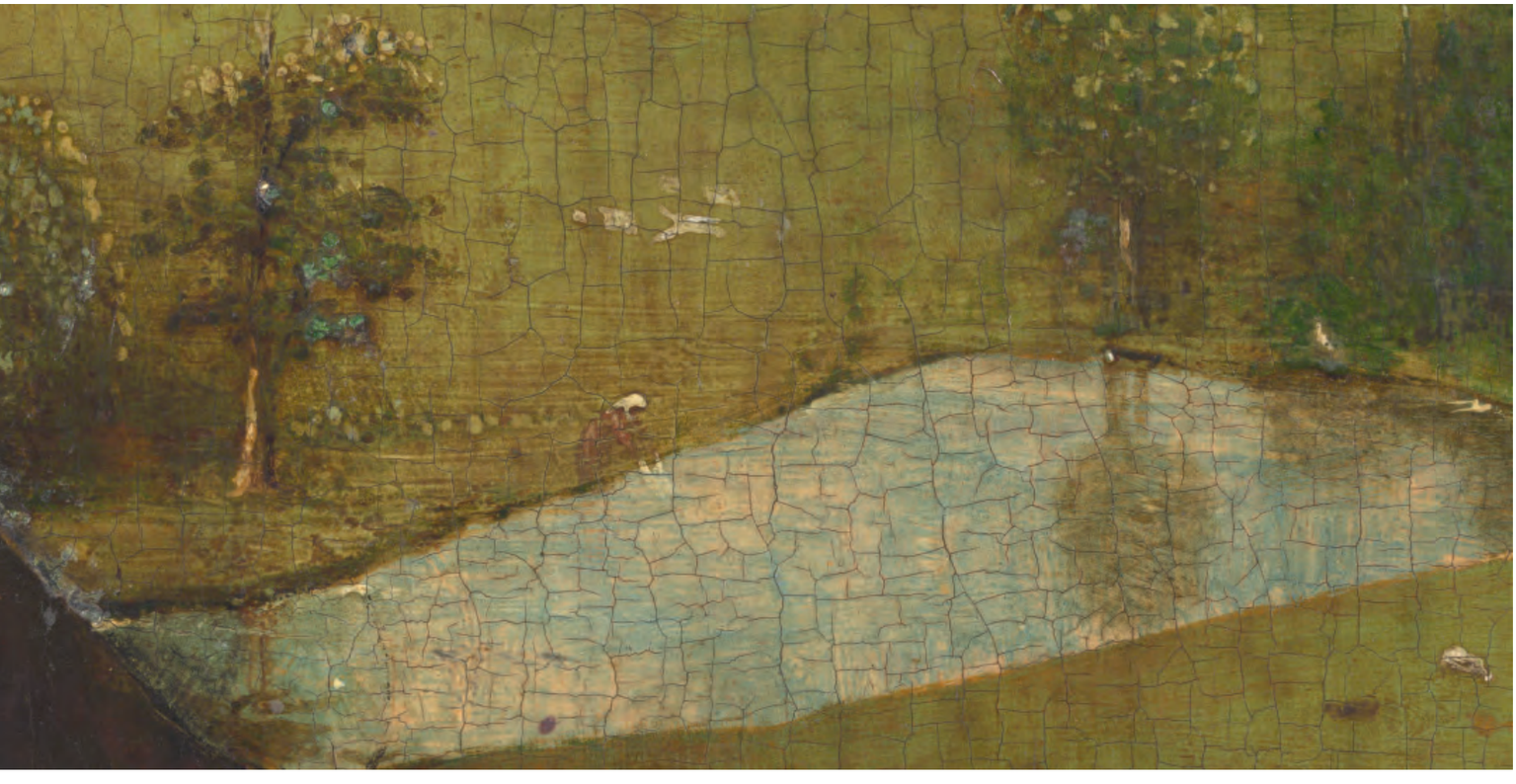
RR 2, **reverse** (photo courtesy KIK-IRPA, Brussels)

on the left and measures 0.8–0.9 cm on the right, from top to bottom. The absence of barbs and unpainted edges at the top and bottom implies that the panel was cropped there (see also *Altered dimensions*).

- ***Application*** The ground is evenly and thinly applied by brush and worked into a smooth finish, with brush marks slightly visible in VIS, IR and XR. The surface texture of the wood support is not apparent.

PREPARATORY LAYERS

- ***Underdrawing*** Present throughout the composition (fig. 1.3). The underdrawing, most elaborate in the figure of Saint Jerome, is visible in VIS and in IRR/IRP, although it is obscured or partly obscured by dark paint in several larger areas (mainly in the centre left and lower left, but also in some linear elements such as the lower contours of Jerome's left arm, chest, and left leg). Underdrawing was also observed in the background, where it was used to indicate the planes in the landscape as well as several individual trees. The contours of the main compositional elements and some smaller details, such as the cardinal's hat in the lower right, are underdrawn. Some modelling was also prepared in Jerome's garment and his cloak. The function of the parallel diagonal lines on Jerome's lower legs is difficult to establish, since the composition was corrected here and these lines might well relate to an earlier position of the white undergarment (see below, *Revisions …*). Many other elements in the foreground (the crucifix, the owl, the fox and the chicken, the lizards, and the bible) were not prepared in the underdrawing. The underdrawing is visible with the naked eye in places, but it was probably not intended as such, since it often deviates from the painted contours. Therefore, the current visibility of the underdrawing is most likely caused by changes in refractive index due to the ageing of the paint film.
- ***Medium and application*** The detectable underdrawing is applied with a relatively broad brush in an aqueous medium (not analysed), possibly a diluted ink or a finely ground carbon black in a watery



1.2 **VIS**

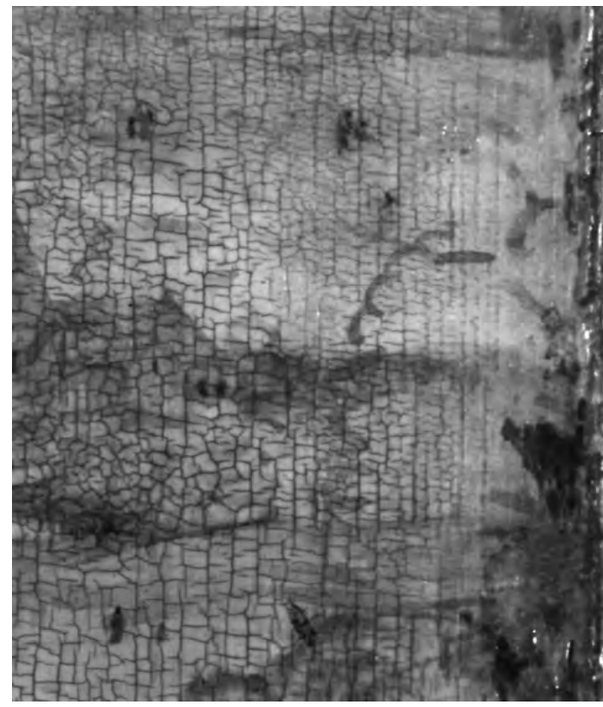


1.3 IRR





1.4–5 IRP and VIS



1.6 IRP

medium. A first-stage underdrawing in a dry medium has not been observed. It is possible that the brush underdrawing here was applied in multiple stages, with the main contour lines being applied first, followed by some modelling.

- ***Style*** The underdrawing was freely applied in a sketchlike manner, and the liquid medium gives the relatively broad strokes a painterly feel. Longer contours are often drawn in multiple shorter lines that are sometimes broken up, or 'stitched' – for example, in the drawn upper contour of the far peninsula in the lake (figs. 1.4–5). Preparation of shading through hatching is mostly absent, with the exception of areas in the saint's red cloak and on his body, and possibly also in his white undergarment. In one part of the cloak, a small area of shading was prepared with parallel diagonal lines (see fig. 1.7, top left), while in other parts shade is indicated by broad wash-like underdrawing in the watery medium (fig. 1.7, centre right). The underdrawing here is easily confused with black paint mixed in the (now partly faded) red lake in its heavier contours and folds as well as in the darkest areas recognizable by a duller, purple-red colour. Dense parallel hatching was observed extending down from Jerome's waist, but this could also be related to the possible preparation of longer folds extending downward from the waist (fig. 1.8). The underdrawing is generally not worked out to a high degree, but in some areas it is surprisingly detailed, especially in the figure and the garment of Saint Jerome. His tonsure seems to be indicated with some short, thick lines, and the onset of his left arm and the folds of his garment are elaborately prepared.

  The underdrawn line ends are usually blunt or tipped, without hooks or loops. The contour of the foliage of a tree in the right middleground, which was omitted at the painting stage, was indicated with short, curved lines (fig. 1.6). The lines themselves may be curved, depending on the feature drawn (e.g., in foliage and in the scales on the skin of the large red fruit to the left of the saint). Occasionally a 'puddle' of ink is distinguishable at the end of a line.

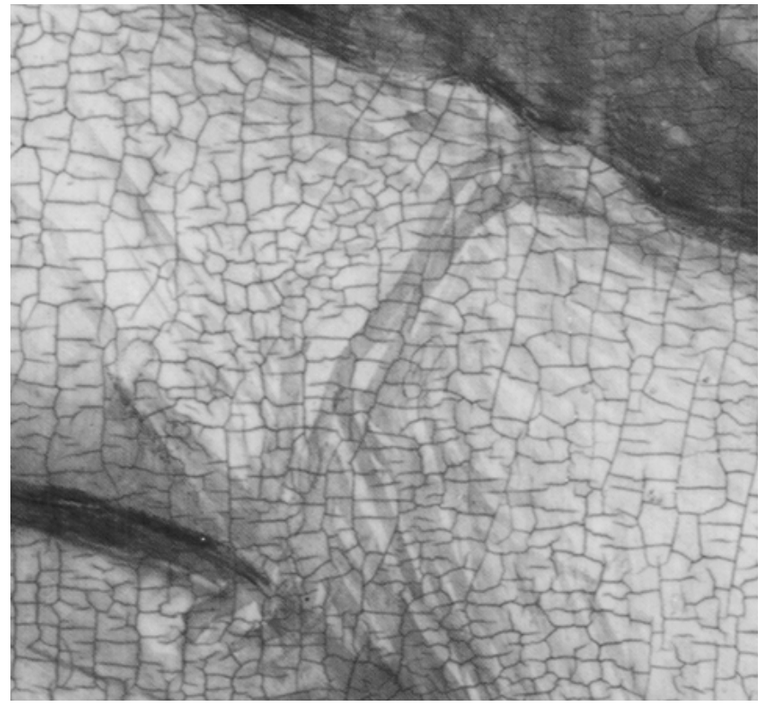
- ***Revisions in underdrawing and differences from painting stage(s)*** The underdrawing was not followed closely in the paint application phase. Several elements were not underdrawn but only executed in paint, while others were underdrawn but not painted, or painted differently. Examples of elements that were not prepared in the underdrawing are the large tree at the top left (figs. 1.4–5) and the crucifix between Jerome's arms, both of which were added in a later phase of painting. To the right of Jerome's waist, two rounded lines are discernible in the background, probably indicating that the red robe was planned to extend farther to the left. In the underdrawing, the white robe extends quite a bit farther towards the foreground, perhaps also partly covering his left leg, but it was not carried out that way in the paint phase.

  In addition to these larger changes, there were also numerous smaller changes relating to slightly shifted contours and features that were enlarged or made smaller. Jerome's red cardinal's hat was underdrawn slightly smaller. The curious shelter with the elements on top was largely planned, although numerous smaller details were altered, such as the thick, arched stone slab, which was drawn smaller. The rock to the left with the rectangular hole was more detailed in the underdrawing, and had a clearer front. Instead of the rectangular hole, only a round hole was prepared higher and smaller, and without the thorny branch. The scales in the skin of the large red fruit to Jerome's left were scalloped in the underdrawing, but were not painted that way.

  Similar changes can be observed in the middleground and the background landscapes. To the right of the church, which was not underdrawn, several large trees were planned. A road leading up to the church in the same area was perhaps drawn more to the left. Underdrawn lines can be seen to the left of the church, possibly indicating its initial position. Similarly, underdrawn lines can be seen in the water above the farmhouse, perhaps indicating the initial position of that structure, since it was not underdrawn.



1.7 IRP



1.8 IRR macro

PAINT LAYERS

- ***Paint application and painting technique*** The oil paint (not analysed) was applied using a brush and extends onto the edges and on to the barb. It was applied in several stages, mostly wet-on-dry, but sometimes wet-in-wet (e.g., in the thorny 'branches' atop the floating red object at the lower left and in Saint Jerome's toes).

  The wet and glossy paints were applied in both opaque and transparent layers. Glazes were done in red (in the round object floating in the water, the large fruit to the left of the saint, the robe, and the hat), green (in lizards and parts of the landscape – mostly discoloured except for some remains covered by the frame's rabbet), and brownish hues. The artist painted in both a fine and a rougher manner, mostly in a few thin layers, although thicker paints created more impasto. The paint application was hardly sketchlike; almost everything is covered and detailed.

- ***Texture*** Most passages have a relatively smooth finish, but in some areas the modelling and texture created impasto (e.g., in the thicker layers of vegetation and Saint Jerome's hands and ear, fig. 1.10). Brushstrokes are often visible and generally follow the underdrawn contours (e.g., in the lion), even when they are painted in a less linear manner (as on the larger red fruit to the saint's left). In the water of the background, textured vertical brushstrokes of a lead white-containing underlayer are visible in the XR and VIS.[4]

- ***Build-up and palette*** The paint layers were mostly built up from light to dark and painted from back to front. Glazes and highlights were painted last, and finally some contour lines were locally reinforced, sometimes also in black paint, as in Jerome's chest and knee. Ample black paint was used to mix with the colours for the darker, shadowed zones, such as the cave opening and the water below it; the hollow tree trunk; and the small, arched opening to the right of the thick, arched stone slab. With the exception of a narrow, darker zone in the mound behind the shelter, very little black paint was used in the landscape.

  A thin underpainting in a few basic tones seems to have been used to prepare the composition. Under the landscape, an ochre-coloured layer is distinguishable (fig. 1.16). The red hat and robe, for example, were apparently left in reserve during the application of this layer. That also appears to be the case with the lake depicted in the background. A thin, bluish underpaint was used to indicate the shrubbery in the left background and at the horizon (fig. 1.5). The underpaint shimmers through by design, but is also visible where the paint surface is abraded. Furthermore, the blue is noticeable through the later-painted tree at top left.

  The figure of Saint Jerome was possibly underpainted in an ochre colour before the basic fleshtones were applied. Then the white robe was painted followed by a thin semi-transparent light brown paint. In the final phase flesh-coloured paint mixed with red lake was used for important facial features (fig. 1.17). This mixture was also used very thinly in certain areas of the white robe to give the impression of fleshtones shimmering through. Finally, brown-black contour lines were added, which were also used to sketch physiognomic details. In the lighter areas of the red robe, the first modelling seems to have been done in a lead-white-based paint with medium impasto, the strokes of the stiff brush being clearly visible. It appears that the underdrawing also functioned to indicate where this lead-white underpainting was not to be applied. This was followed by a thin layer of red lake and subsequently a thicker red lake, mixed with some black for the darkest parts and some outlines. Some final contours were painted in black on top of the red lake while this was still wet locally.

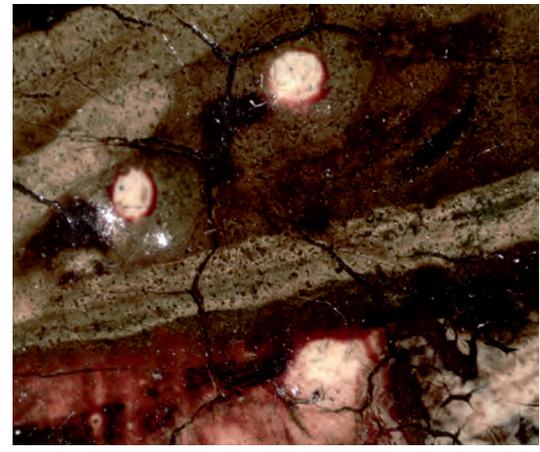
  The white dots on the large red-skinned fruit to the left of the saint's hands were made with an impastoed white paint (containing some blue pigment particles), and afterwards glazed with a red lake. Then this fruit's green 'crown' was painted, with light green highlights and a white accent in between two 'leaves', and finally, black outlines and shadows were applied (see fig. 1.11). The red lake became unintentionally abraded at a later stage, exposing the topmost parts of the white impasto. For some cool-toned surfaces (e.g., the plant that seems to rest on the red-skinned object and the vertical stone left of it; fig. 1.14), the painter applied short dabs or dots of blue paint atop or next to textured white highlights. Some



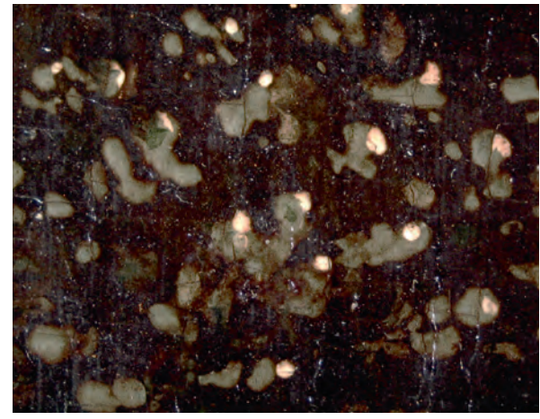
1.9 Mapping of micrographs reproduced here (1.10–15)



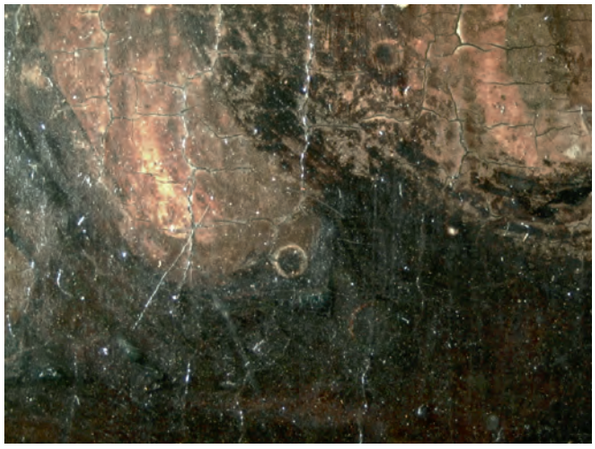
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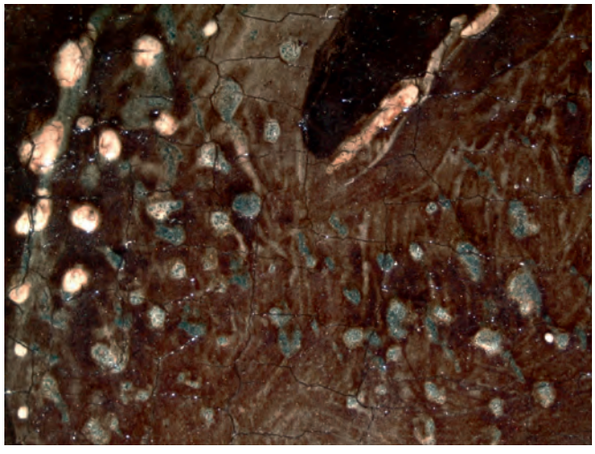
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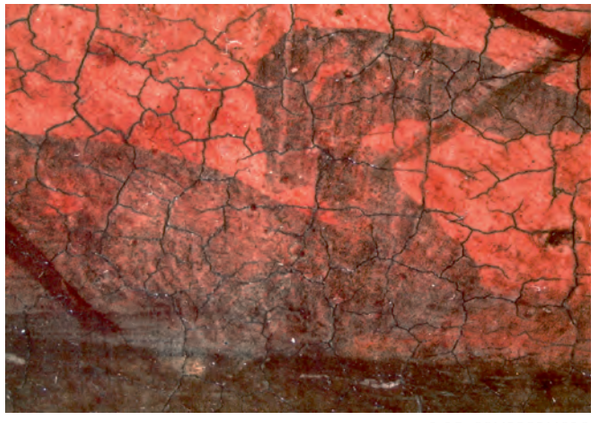
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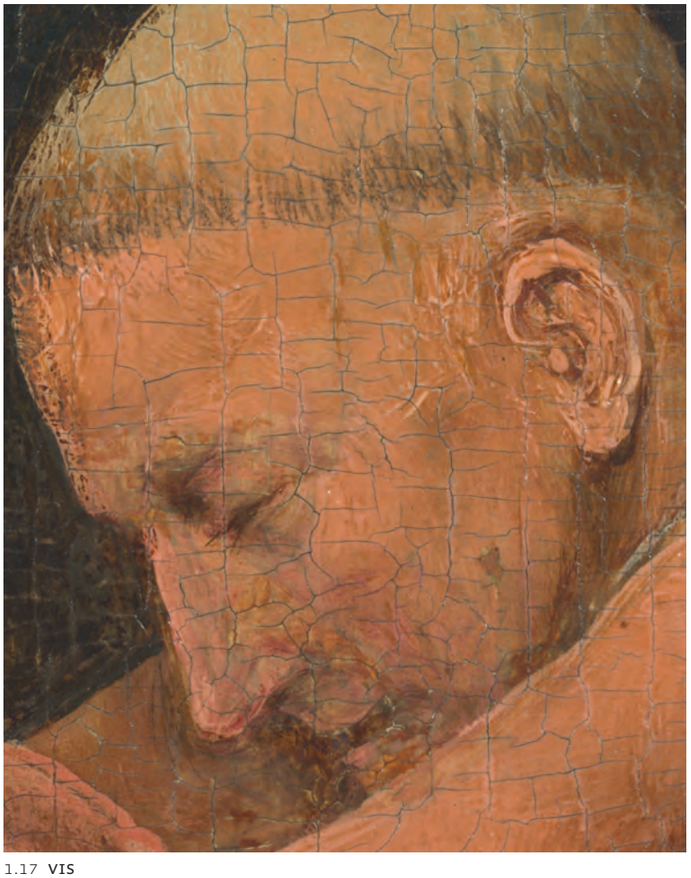
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1.16 VIS

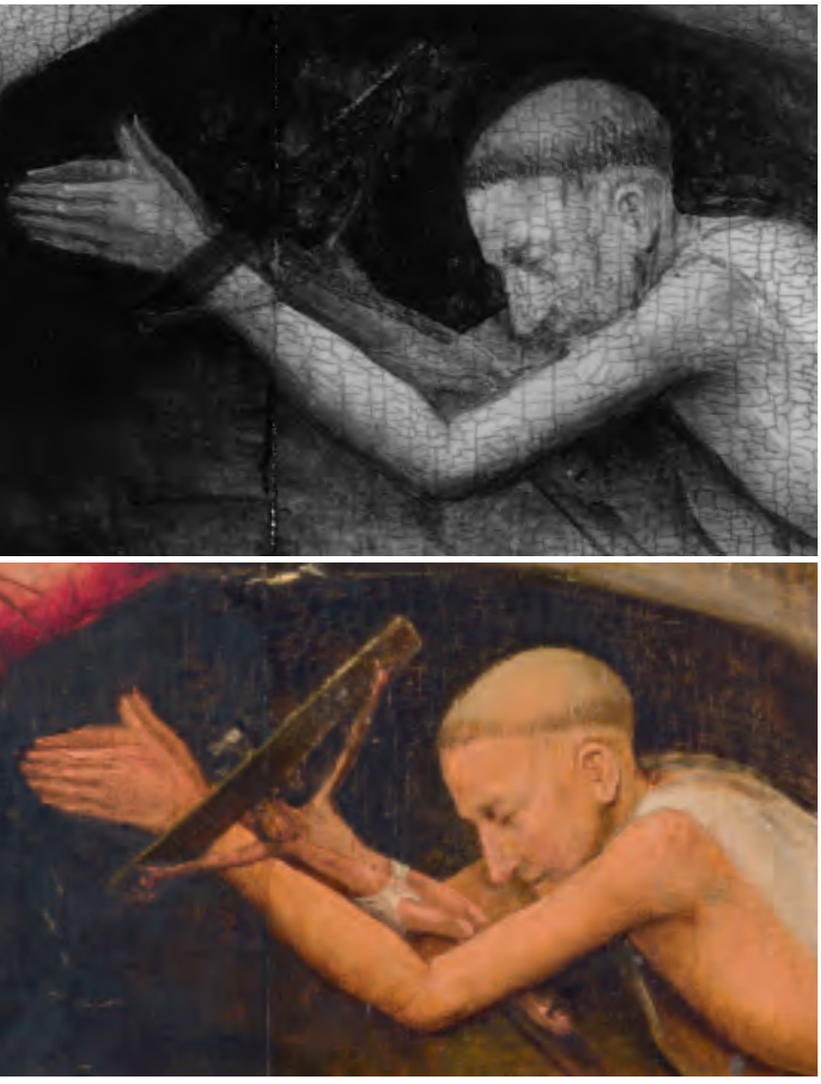


1.17 VIS

of the harder edges of these features were accentuated by additional white highlights, which in the plant were followed by the application of a green glaze that has discoloured to a brownish hue. The low brushes just under the lion (see fig. 1.12) were created by covering the underpainting with a brown layer, followed by green dabs and dots, white highlights, and green glaze, which again has discoloured to a brownish hue. For the trees at centre right, first a thin, dark green layer was applied, followed by white as well as green dots of paint, after which the white highlights and a green glaze (now discoloured) were applied. In the saint's crucifix a purple paint was used suggesting blood, which is most clearly discernible at Christ's left hand.

- ***Changes*** In the figure of Saint Jerome, the ample underdrawing was not closely followed. Some underdrawn features were abandoned at the paint stage, while other painted features were not prepared in the underdrawing. Jerome's crucifix was not planned in the underdrawing (figs. 1.18–19). It was added very late and painted over the already completed background and the saint's arms.[5] Jerome's head was made significantly smaller. His tonsure was painted lower than it was underdrawn, and his nose, and possibly also his mouth, were positioned a bit farther inward. His robe was also significantly changed, and the split exposing the left leg was initially painted in a higher position.

1.18–19 IRR and VIS



Other alterations are also discernible. The top edge of the rectangular stone slab with the lizard at the centre left was lowered, which is visible in raking light, in the XR, and in IRR. The opening of the hollow tree trunk to the right of the saint was extended to the left, the extension painted over the dark red lake of the cloak. Much of the background was also altered. The large tree to the left was painted only after the bluish underpaint had been applied. The foliage was then painted onto the tree trunk, which was made darker at the top, probably to contrast more with the light sky. Surrounding the farmhouse, much was altered as well (fig. 1.20). The very freely applied and roughly brushed-in white lead underpainting of the lake extends halfway through the lower tree line, which had initially been planned farther forwards, too, given the dark green paint shimmering through the field. The farm, in much the same manner as the church, was only added in a later phase.

FRAME

The original, engaged frame has been lost. The rectangular wooden frame (106.6 × 83.6 cm) is modern. It has a brown toning and a gilded inner edge of which the profile at the bottom (the *Wasserschlag*) is bevelled.

CONDITION

The painting was restored in 2015–16, thus after the 2010 BRCP technical examination on which this report is largely based.

Support

- ***Altered dimensions*** The panel has been cropped at the top and bottom. On the bottom to the right, the saw cut extends farther into the panel. The reverse of the panel has been thinned to about 0.5 cm to attach the cradle. At the bottom right of the reverse a deeper saw cut is present, possibly indicating where the wax seals were cut out.
- ***Additions*** A cradle was attached to the reverse of the painting. The vertical members were rigidly glued to the panel, in the direction of the wood grain. The horizontal members, which are supposed to slide, are jammed. The cradle members have a fairly regular spacing, with the exception of the rightmost (seen from the back) vertical members which are farther apart, perhaps to accommodate for the wax seals.
- ***Cracks*** At the front bottom centre, a vertical, slightly opened crack runs parallel to the wood grain, extending 9.5 cm from the bottom edge. This crack runs through the panel, ground, and paint layers and is still active. The crack was most likely caused by stress induced by the sliding members of the cradle being blocked, which inhibits the movement of the wooden panel. This build-up of stress could result in cracking of the wood adjacent to a glued vertical cradle member.
- ***Deformations*** The panel has a convex warp and undulates slightly. The left plank was reglued in an out-of-plane angle.
- ***Joins*** The joins between the planks are mostly closed but somewhat visible. From the damages along the joins (VIS, IRR and XR) it seems that the three planks of the panel have been separated in the past.
- ***Biological damage*** At the bottom, mostly to the right, some old woodworm damage is visible.

Ground and paint layers

- ***Stability*** The ground and paint layers are stable and in good condition, although there are several areas with slightly raised, tenting paint. Just above the tree stump, two patches can be observed with more pronounced but stable raised paint. Around the crack at the bottom centre the paint is less stable. Most craquelure is caused by natural



1.20 VIS

dimensional changes of the panels. The small, circular shapes visible in the lion (see fig. 1.13) and beneath Jerome's leg and appearing as small opaque points in XR are possibly related to lead soap aggregate formation. Expansion of the aggregates may cause them to protrude from the paint surface, resulting in minuscule raised spots and a more granular surface texture. Loss of such metal soap aggregates results in tiny, crater-like holes. A possibly related chemical reaction seems to be taking place between the oil binding medium and lead white pigments in the paint, for instance in the lighter areas of the red cloak, and sections of the sky, the water and the saint, especially his head and lower left leg and foot. The affected areas are opaque in the XR, and mostly follow the wood grain.[6]

- ***Losses*** Most losses are present along the joins and at the top and bottom edges of the panel, but some others can be found in other locations. They have mostly been filled and inpainted, except for the more recent ones around the crack. Larger scratches are present in the tree trunk in the left background and in Jerome's hat.
- ***Abrasion*** The paint surface is somewhat abraded overall, but especially at the highest points of the impastoed areas of skin tone and in the lead-white-underpainted areas of the red robe. The latter results in the presence of (unintended) lighter coloured lines where the red glaze has worn off. The black contour lines are abraded and the painted edges of the panel are slightly damaged. The area of the blue sky is more severely abraded, resulting in its current patchy appearance. The water and the landscape in the foreground appear to have lost some of their original finish. The unevenness in landscape and water seems to have been toned, but especially the landscape locally appears patchy, and the brown ground appears speckled.
- ***Discoloration and increased transparency*** The copper-green lakes and glazes have discoloured and turned brown. As a result, the lizards to the left and, presumably, large parts of the landscape look considerably browner than intended. The red lake, on the other hand, still seems to be in in good condition, although an underdrawn duck shimmers through the red lake paint at lower left (fig. 1.15).[7] An increase in transparency is especially evident in the paints containing lead white, which causes a greater local visibility of underdrawing and other underlying layers, for example in the large tree at upper left. In the light-green area surrounding the pond and extending up to the treeline at the church, many vertical darker lines can be observed along cracks, disrupting the plane of the green fields. In some cases this concerns discoloured retouches (visible in IRR), but more often no later materials seem to have been added.
- ***Filling, retouching, and overpainting*** In addition to a few smaller fills, numerous discoloured retouchings and smaller overpaintings are present throughout, many of which cover original paint, are easily discernible and are quite disturbing. The joins have been retouched almost completely. Two stages of overpainting were observed at the dark-green hills in the upper background, with the section at top right possibly being extended onto the damaged sky.[8] The upper part of the sky is not in very good condition.

Surface finish

- ***Varnish*** The glossy (much discoloured) varnish is modern. Residues of an older varnish are visible in lower areas of the surface and around impastos. The thick and uneven brush-applied varnish appears to be of a natural resin. The thickly applied varnish and older residues are much degraded. The varnish has a somewhat uneven appearance, and does not saturate every part of the paint surface properly.
- ***Surface dirt*** There is only a small amount of surface dirt on the painting, as the painting is displayed behind glass.
- ***Visibility of the original surface*** The combination of a thick, yellowed varnish and local loss of saturation causes a reduced legibility of the original paint surface, which now appears darker. The condition of the sky and the numerous discoloured retouchings further distract from an otherwise very good original paint surface.

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1 One seal bears the arms of the Colbert family, the other is of the city Merville (Meregem) in France. Notes by Georges Hulin de Loo, Révision du 'Catalogue du Musée des Beaux-Arts de Gand' de Louis Maeterlink, 1904, Ghent, University library, Hs.3231 folder 12.

2 Alexander Gabov, René Hoppenbrouwers (SRAL), and Luc Van Muylem also participated in the examination and documentation.

3 Klein 2001, 124.

4 The broad, diagonal lines perceptible in the sky around the bird in the tree (VIS) are probably a result of the ground application, since these do not register in the XR.

5 It is possible that the crucifix was added after the underlying paint layers had fully dried.

6 Similar effects were observed in the Escorial *Christ Carrying the Cross* (cat. 13, RR 89–90). See also BRCP, *Catalogue Raisonné*, Chapter IV.

7 The BRCP thanks Aline Genbrugge, paintings conservator at the Royal Institute for Cultural Heritage (KIK/IRPA), Brussels, for sharing this information (email, 24 June 2015).

8 The BRCP thanks Aline Genbrugge for sharing this information (oral communication, 28 August 2015).

