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Christ Carrying the Cross / Christ Child

RESEARCH REPORT 9–10[1]

Hieronymus Bosch
c. 1490–1510

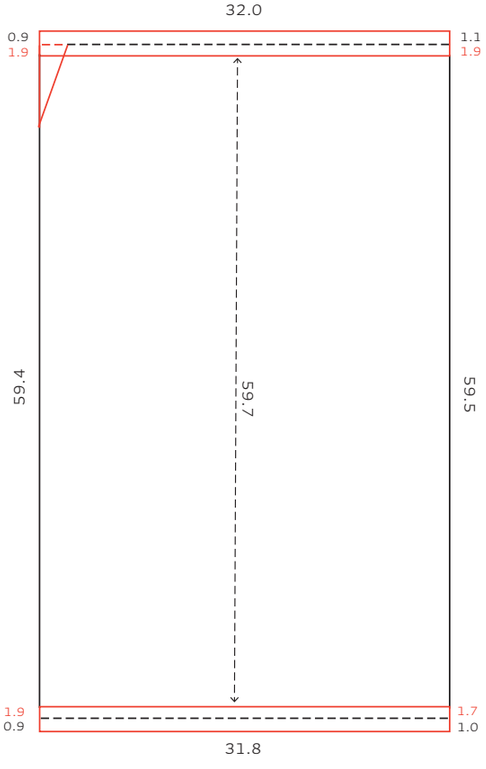
Oil (not analysed) on oak (not analysed) panel, painted on both sides, 59.7 × 32.0 cm. At some point, the rounded top of the panel was cropped and a wooden insert was added to the top right corner of no.10 (being the top left corner of RR 9), as well as strips on the top and bottom edges.

Kunsthistorisches Museum, Vienna, GG-6429

The painting was restored in 2014–15, thus after the 2011 BRCP examination of the painting on which this text is largely based. BRCP, *Catalogue Raisonné*, cat. 12; www.boschproject.org no. 12.

SUMMARY OF CONCLUSIONS

This double-sided panel can be placed within Bosch's oeuvre. The phased underdrawing in the Carrying of the Cross *fits with that found in other works, and traces of a creative process in different stages of its production can also be observed. The slightly less refined finish here may point to some workshop involvement. Very little underdrawing was revealed in the* Christ Child, *but the quality of the paint application is high. For the* Carrying of the Cross, *in which ample underdrawing was revealed, more opaque paint was used.*
The panel originally functioned as the left wing of a triptych. The Christ Child *was visible when the triptych was closed, and the* Carrying of the Cross *was displayed when the ensemble was opened. The triptych's central panel and right wing are presumed lost. The panel was originally housed in an engaged frame. The barb at the top right edge of the* Carrying of the Cross *curves inward, implying that the wing initially had a rounded top that closed over the arched top of the lost centre section. The uppermost part of the left wing was at some point cropped, and the panel was made into a rectangle with a small insert at the top right corner. This intervention apparently triggered extensive overpainting of the landscape in the background. The image of the Christ Child was completely overpainted with a dark brown, presumably around the same time, perhaps to make the fragmented nature of the panel less evident. The overpaintings were largely removed in the course of subsequent restoration treatments.*
Dendrochronology has not yet been possible because strips of wood were added to the panel's top and bottom edges after it was cropped, obstructing access to the end grain. As further explained in BRCP, Catalogue Raisonné, *cat. 12, we date this work to around 1490–1510.*



12.1 Construction diagram (seen from RR 9, *Christ Child*). Non-original additions are in red; the dotted lines represent the edges of the remaining original panel on RR 10, the *Carrying of the Cross*.



12.2 Reconstruction of the triptych



RR 10



RR 9

RELATED WORK

This panel must have originally formed the left wing of a small triptych, the central panel of which was arched at the top (see fig. 12.2). The other panels of this ensemble are presumably lost.

EXAMINATION DATA

16–17 June 2011 (Luuk Hoogstede, Matthijs Ilsink, Rik Klein Gotink, Jos Koldeweij, Ron Spronk).[2]

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

- ***Previous research and additional documentation available*** The Gemäldegalerie's conservation department holds a file with information on the painting, including previous treatments and condition reports for loans.
- ***Previous treatments*** The conservation files hold information on three documented restorations, in 1923–25, 1929 and 1935. Discussing RR 9, in 1925: 'Restorer: Ms. Sykora and Bruder. Condition of the picture: The back completely overpainted with thick, brown colour. Work carried out: This uncovered, exposed the original picture, losses restored.'[3] Additionally, in 1929: 'Restorer: Karl Kolar. Condition of the picture: Blisters left and right at bottom edge, top centre. Work carried out: Laid down.'[4] Discussing RR 10, in 1935: 'Restorer:

Sebastian Isepp. Condition of the picture: Background overpainted (sky and terrain). Work carried out: Stripping the overpainting, losses restored.'[5] This treatment is reported in the annual report of 1935: 'Restorer Mr. Isepp has … removed the overpainting on the *Crucifixion* by Hieronymus Bosch, …'[6] The files concerning the purchase in 1923 do not contain information on condition or treatment.[7] An image of the *Carrying of the Cross* with the previously overpainted top section is at the Netherlands Institute for Art History (RKD) in The Hague (Archief Frederik Muller & Co).[8]

SUPPORT

- ***Panel*** Dimensions: see construction diagram (fig. 12.1). Thickness (top) 5–9.2 mm. The dimensions include the added wooden strips at the top and bottom of the painting. The currently remaining dimensions of the original painting are 1.8–2.1 cm smaller for RR 10, and 3.6–3.8 cm smaller for RR 9. The thickness of the top half of the panel has been measured very precisely.[9] It varies between 5 and 9.2 mm, the thickness decreasing towards the edges but less towards the top left. Since the painting was reduced in size in the past, the thickness of the original edges would have been even less (see below, *Altered dimensions*).

  The panel, made of Baltic oak (not analysed), consists of one quarter-sawn plank, vertical in grain, laid vertically, with added wooden strips at top and bottom. RR 9 was damaged at the edges by bevelling (see below, *Altered dimensions*).

- ***Bevelled or half-lap edges*** Bevelling can be seen on all sides of RR 9. The bevels are incomplete and not original.

- ***Dendrochronology*** A dendrochronological dating is not available. The end grain is inaccessible because of the added strips. Peter Klein tried to analyse the panel from the XR, but that did not result in a measurement.

GROUND

- ***Visibility*** The off-white ground, which seems to consist of chalk (calcium carbonate – $CaCO_3$) bound in animal glue (not analysed), is present overall. The ground present on the bevelled edges on RR 9 is not original. The ground is evident in VIS and XR. On RR 10, the ground is almost completely covered by the paint layers but visible at the outer edges. On RR 9, the ground is mostly covered by paint layers but is discernible at contours (in the circle), in losses, and shimmering through paint layers. Visibility of the ground was perhaps intended as part of the composition (for example, in the face of the Christ Child), but was further increased by ageing effects of the paint layers.

- ***Barb and edges*** On RR 9, the original barb has not been preserved and the ungrounded edges are not original. On RR 10, remains of the barb are detectable at the left and right sides, with ungrounded edges roughly 2 mm wide. (These edges were reduced in size in the past.) At the top right of RR 10, the original barb arches to the left but has been severely abraded in this location. At top left, a small amount of blue paint is visible over the barb (10MICGBM001), indicating that the applied ground shrank a bit before painting, thus creating a small gap between the panel and the engaged frame, into which paint dripped. As the presence of barbs and ungrounded edges indicates, the painting originally had an engaged frame.

- ***Application*** The ground seems to have been applied with a large brush and worked into a fairly smooth finish, with brush marks that are slightly visible (in VIS on side RR 9, at the top left of the circle and in red above). The surface texture of the wooden support is somewhat apparent.

PREPARATORY LAYERS

- ***Underdrawing*** In RR 9, underdrawing appears to have been used only sparsely. It is visible in a few locations in VIS (using a stereomicroscope) and in IRR/IRP, but not clearly (fig. 12.6). The drawing seems only to indicate contours (as in the roundel and the figure) and to pinpoint the placement of certain facial features (e.g., the eyes and upper lip).

  In RR 10, underdrawing was used throughout and is visible in VIS (shimmering through the paint) and in IRR/IRP (fig. 12.7). Its function was not only to determine the composition, but also to serve in modelling, mostly through parallel hatching to indicate shadowed areas. It was used noticeably more in certain areas – for example, in the red-glazed robe of the tormentor in the centre, where it indicated where no underpainting with lead white was to be applied (see figs. 12.3–4).

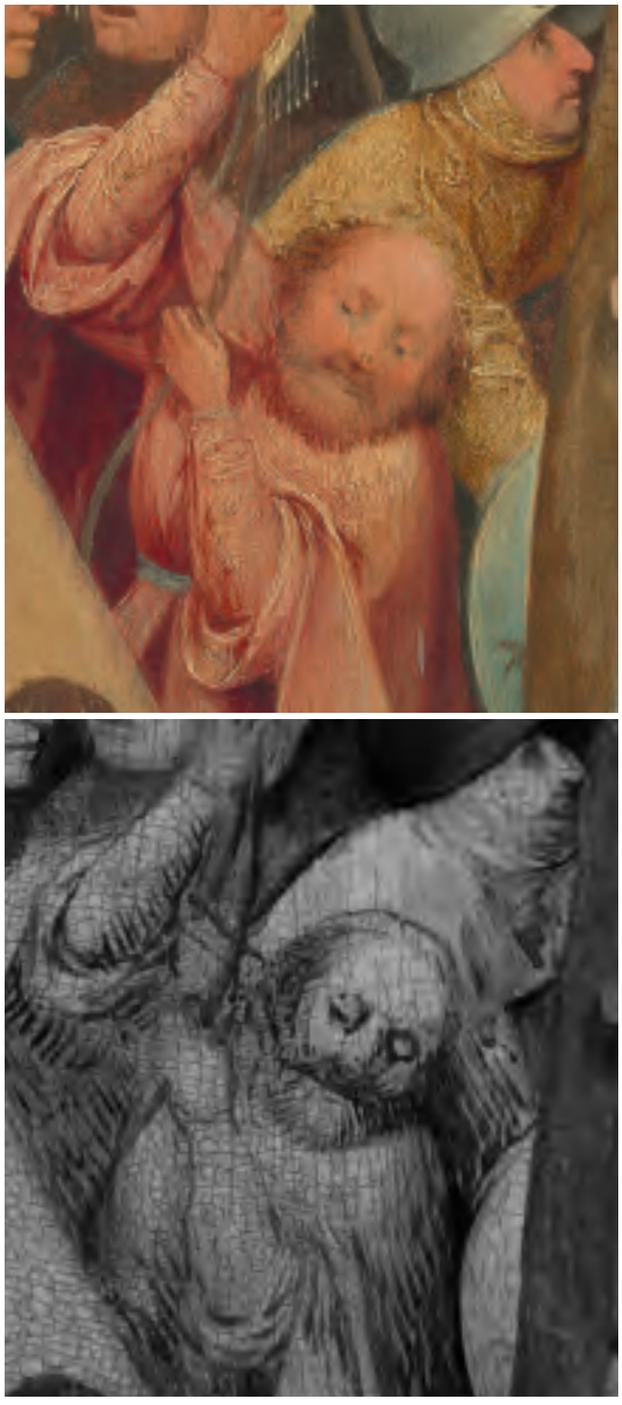
- ***Medium and application*** The detectable underdrawing in RR 9 was applied using a brush in a somewhat liquid medium, possibly a diluted, dark brown paint, which under the microscope appears to contain some red lake and carbon black, among other pigment particles, as was observed in the area of the forehead of the Christ Child (fig. 12.11). There seems to have been only one quick application stage. In the centre of the roundel, a compass mark is identifiable (09MICGBM004).

  The detectable underdrawing of RR 10 seems to have been applied using a brush in a more liquid medium, probably ink, that was used in two to three stages. Most contours were apparently drawn first, along with detailing and facial features, using what was probably a diluted ink. It appears that some of the underdrawing was subsequently altered or reinforced with a less diluted ink. In what seems to be a final stage, local modelling was then carried out using parallel hatching to indicate shadowed areas, which was more thickly applied in darker areas. Strong reinforcements and modelling are more apparent in the figures of Christ and others directly around him, especially the tormentor with the rope to his right, as well as in the cleric taking a confession from the repentant thief.

- ***Style*** The underdrawing in RR 9 was applied in a very rough and basic manner. This effect was also a result of the medium used, which gave the strokes a painterly feel. A few hatched lines are visible on the forehead of the Christ Child (09MICGBM003).

  Underdrawing on RR 10 was applied much more elaborately, and its medium allows for much finer detail. The initial drawing was done in a somewhat sketchlike manner, with long and short lines that are neither very straight (and sometimes even jittery, with the exception of some contour lines in the cross), nor always continuous. Small changes and reinforcements can locally be observed in an assumed second state, which was followed by a final modelling with mostly short, hatched lines. Hatching was typically done diagonally, predominantly (but not exclusively) from top left to bottom right. The lines run parallel, but were drawn freely and more closely together or overlapping in darker areas where more shadow was intended. In the figure with the yellowish robe and a helmet, the broad, underdrawn lines at his chest seem to converge in a wash resembling a watercolour technique (fig. 12.4). Line ends are usually straight (often tipped), without hooks or loops. The lines themselves can be curved, sometimes strongly (e.g., for facial features, and on the back of the figure carrying the shield at far right).

- ***Revisions in underdrawing and differences from painting stage(s)*** The underdrawing in RR 9 was only used as a general indication for placement and was only roughly followed in the paint application phase. The limited visibility in IRR of the underdrawing material and the carbon-containing paint mixtures makes it difficult to distinguish between underdrawing and paint layers. Nevertheless,



12.3–4 RR 10, VIS and IRR

it seems that the eyes, nose and mouth were positioned somewhat higher in the underdrawing. The current visibility of the underdrawing in the figure has been increased by changes in refractive index from ageing of the paint film. The drawing's partial visibility at the edge of the roundel (e.g., at upper left) did not seem to be of concern to the artist.

In RR 10, the underdrawing was generally but not precisely followed in the paint application phase, and numerous smaller changes are detectable. The weapon held by the figure with the green robe was positioned at a lower angle, for example, and the position of his hand was changed as well. The lower part of his white headpiece was initially longer, too, and his ear was positioned lower. The underdrawing of the cross at the left edge is slightly different from what we see now. At bottom right, the lower contour of the robe and the foot of the monk who is hearing the confession of the repentant thief were positioned a bit lower. The legs of that thief were also shifted: his proper right leg was initially placed lower and further to the left, and the left knee was also lower. At the centre of the panel, three long, diagonal lines that bring to mind a beam of the cross were underdrawn in the landscape, but the form was abandoned in the final composition. Instead, a small hill was painted there. The underdrawing's current level of visibility in several areas was probably not intended and was probably caused by changes in refractive index due to ageing of the paint film.

- ***Intermediate layers*** In RR 9, a cream-coloured layer is visible under the paint. It is exposed at paint contours, in damages, and it shimmers through all over the panel surface. This pigmented isolating layer was thinly applied over the entire surface. Visibility of this layer was undoubtedly meant by the painter as part of the composition. In the figure, however, it has become increasingly apparent, since the paint film that contains lead white has become more transparent with age. This has resulted in a somewhat different and unintended appearance, especially in the head of the Child. No such isolating layer was detected in RR 10.

PAINT LAYERS

- ***Paint application and painting technique*** The oil paint (not analysed) was applied using a brush. In RR 9, where it covers the entire original panel surface, it was applied in two stages, mostly wet-in-wet (in the roundel), but also wet-on-dry (in the background). In RR 10, the paint extends onto the barb and was applied in several stages, mostly wet-on-dry, but also, to a lesser extent, wet-in-wet. Incisions were noted on both panel sides (see below).

  Paint application was both thick and thin, and the mostly fluid, glossy paints were applied in both opaque and semi-transparent layers. Lead white was applied with a stiff brush for the undermodelling of several red lake areas in RR 10, following the indications of the underdrawing. In general, RR 9 was painted in a more sketchlike fashion that was quick and suggestive, whereas RR 10 was worked out to a higher degree of finish, and in more opaque paint layers. The paint in RR 10 was generally built up in a maximum of two layers, except for highlights and shadows, and additions such as ropes and spears.

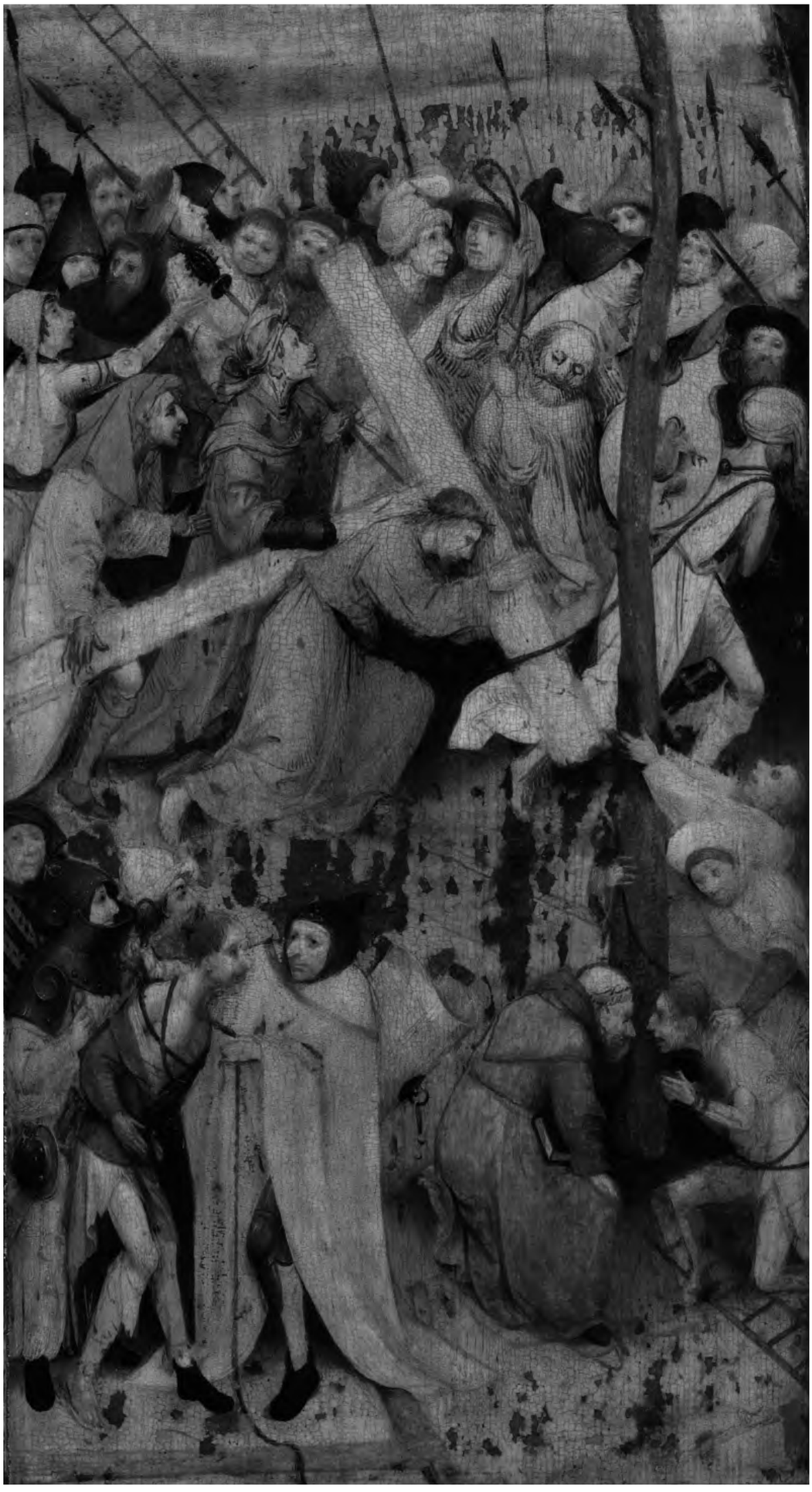
  In RR 9, some of the midtones in the Child were created by painting thinly, purposely allowing the underlying layer to shimmer through. On the opaque red background a few remnants of a red glaze are still identifiable. In the roundel, the entire composition was painted wet-in-wet (e.g., the face, fingers and hair of the Child; see fig. 12.10). The artist also used the backs of his brushes (or other pointed objects) and a ruler to incise the lines along the whirligig. It is possible to distinguish at least three differently sized incisions, the broadest one being the short groove immediately to the left of the hand holding



12.5–6 RR 9, VIS and IRR



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12.7–9 RR 10, IRR, VIS and XR





the toy (see fig. 12.12). Another incised line seems to represent a string hanging between the left two legs of the child's walker, although this was partially filled with residues of the old brown overpaint. The red background was painted in the second phase, as it overlapped the roundel in certain areas.

In RR 10, paint was applied fairly precisely with vivid brushstrokes, covering almost everything, although the detailing is not very refined. Some thicker paints were used for impasto, but only locally (e.g., lead-tin yellow dots in the shield and hats, fig. 12.13). Glazes were added in red (for red and purple areas) and in green (as in the copper-green robe). For most red lake areas, a lead-white underpaint was laid on with a stiff brush, creating a sharp and impastoed texture that, after setting of the paint, was covered with the red lake. Abrasion has caused the textured underlayer to become more visible. The red hat at the top centre was painted wet-in-wet, with the red lake applied over the still-wet lead-white paint below, which also has a more fluid character. Brushstrokes render contour and volume with apparent ease throughout the painting. The ropes in front of the repentant thief's hips were partially incised.

- ***Texture*** Most passages do not have a smooth finish, as textured brushstrokes are often visible. Texture was used for modelling as well as impastoed highlights. In RR 10, for example, lead-white brushstrokes appear in the first layer of the shield below Christ. In RR 9, the ample textured strokes in the Christ Child are currently more apparent due to brown residues in the interstices of the paint (see below, *Filling …*). The paints on both sides frequently have a slight coarseness, and many lighter (abraded) particles can be observed as well, especially in the grey ground on which the Christ Child stands.[10]

- ***Build-up and palette*** The paint was applied mostly from light to dark. In RR 9, the figure was painted wet-in-wet, followed by the dark background, and then the red background, which was subsequently glazed over with a red lake (some of which remains; see below, *Abrasion*). RR 10, on the other hand, was largely executed wet-on-dry, using both pure and mixed paints, succeeded by highlights.

  In RR 9, all parts but the far left slat of the Child's walker were created by painting white and black lines with a narrow open strip in between. The grey background was used as a midtone, simultaneously suggesting a three-dimensional effect. This is an excellent example of the speed and facility with which this painting was conceived and made. The layering is visible in and around the Child's proper right leg, where the ground was followed by the pigmented isolating layer, the light paint layers of the figure, the black, and then the grey background.

  For the background of RR 10, the sky was underpainted with lead white and the landscape with a mixture containing lead-tin yellow. A blue paint layer was applied over both areas, very thinly in some parts of the landscape, after which a thin greenish paint covered the landscape area.

  The hair and hats of several figures were partially painted over the background, but most of the larger forms were left in reserve, roughly in accord with the underdrawing. While painting, however, the artist often expanded these areas over previously applied paint layers, as in the light cuff of the sleeve of the man behind the repentant thief. The cross was left in reserve, and although it looks enlarged, it was painted in a single application that was bigger than the underdrawing, hence covering other painted areas around it. The tall, thin tree trunk at right was also left in reserve, but the spears, ladder and noose were painted over the completed background.

  Glazes of copper green and two types of red (possibly kermes and madder – not analysed) were then applied, followed by final details and highlights. The bright copper-green glaze of the robe was painted over the undermodelling, which was done with a mixture containing lead-tin yellow. The grey-purple clothes of the hooded figure at top left were painted with a blue underlayer, and red lake was mixed with carbon-black pigments for the darkest shadows. Extraordinarily, a yellowish lake was used as well for the figure in the upper right.

  For the faces of several figures (e.g., the bearded figure top right), a flesh tone was applied, after which the eyes were executed. The paint was built up skilfully and only minor drying cracks have been observed (e.g., in the face and beard of the purple-robed figure at top left). The dotted helmet at centre left was painted by first applying a grey mixture, then lead-tin yellow dots, and finally a blue paint, partly muting these dots at the top of the helmet. Black was used both in blends (as for dark red or grey) and pure (for reinforcements, contours and pupils of the eyes). The hair of Christ was first painted in a reddish brown, then detailed with darker brown brushstrokes. This second layer seems to overlap the red lake of the blood. The crown of thorns has a copper-green glaze, lead-tin yellow highlights and some shadows in black.

  In the cross, the underlying layer shimmers through. This underlayer is also detectable in several faces, sometimes followed by pinkish highlights and semi-transparent brownish and red accents and shadows. Flesh tones range from a brownish pink (e.g., the figure at the lower left edge, looking at the beholder) to a cool greyish pink (as in the repentant thief), and can have a fairly monochrome appearance.

- ***Changes*** No alterations have been observed in RR 9. In RR 10, several small changes are visible with the naked eye, with IRR and in the XR (figs. 12.7–9). The top of the red hat at top centre was reduced in size, using background paint. The white headpiece of the man with the green robe was modified quite a bit. The underdrawing phase was not followed exactly, as the headpiece was much decreased in size at the neck. The top of the hat was also made smaller at the left, using a dark purple-red glaze. This section was then changed again with a bluish white paint and topped with a red glaze. The helmet at centre left first extended a bit further and was pointed (as seen in XR). The mouth of the unrepentant thief seems initially to have been closed. The arms and legs of the 'bad thief' were positioned lower (visible in IRR and XR). It is uncertain whether the trees in the background were planned or not.

FRAME

The original engaged frame has been lost. The current, rectangular wooden frame (max. 67.6 × 41 × 3.8 cm),[11] with wood finish on one side and black paint and gilding on the other, is modern.

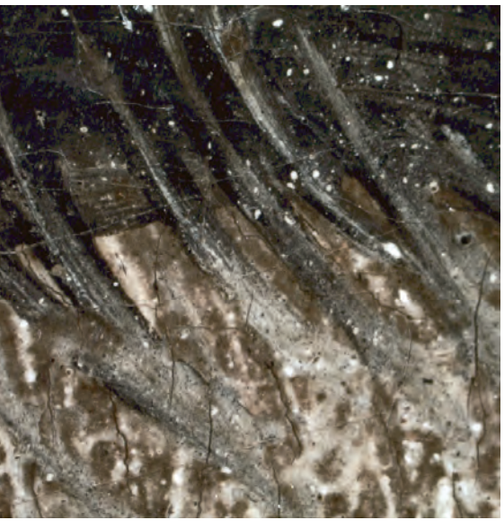
CONDITION

The painting was restored in 2014–15, thus after the 2011 BRCP examination of the painting on which this text is largely based.

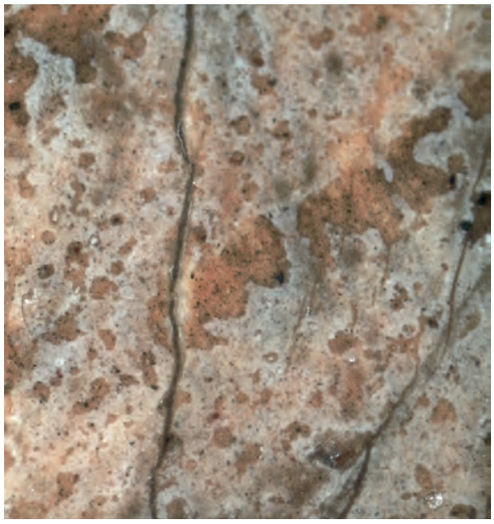
Support

- ***Altered dimensions*** Originally the panel had a quarter-round arched top and formed the left wing of a triptych (see fig. 12.2). This is indicated by the remains of an original arched barb at the top right of RR 10. A reconstruction, based on the curvature of the original barb, yields a reduction in size of approximately 23–25 cm at the top.[12] The original panel was also cropped at the bottom and, to a lesser extent, on the left and right sides. Approximately 2 mm of the original ungrounded panel edges still remain on the sides of RR 10. The panel was made into a rectangle with a small wooden addition at the top right of RR 10, and the arched barb was locally abraded there (see below, *Abrasion*).

  RR 9 was bevelled, presumably to mimic original edges and reinforce the suggestion that this was the panel's initial format. Original wood, ground and paint were removed in the process, and the edges of the picture were partially repainted directly on the exposed wood and remaining ground. On the left and right sides, a vertical scratch mark



12.10 09MICGBM001



12.11 09MICGBM002



12.12 RR 9, VIS

was made about 1.1 cm from the panel edge, and that part was cleared of paint. The unpainted and ungrounded edges of RR 9, with the exception of some remains of ground, are therefore not original. In the edges of this side of the panel, nail marks from framing can also be found, clearly indicating that this side was made into the reverse. (Possibly at that time, this side was entirely overpainted with a brown paint.) Wooden strips (1.9 cm wide on RR 9 and about 1 cm wide on RR 10) were added to the top and bottom in half-lap joins, resulting in further losses on RR 9. These strips, however, allowed more of RR 10 to be visible when framed (see also below, *Filling …*).

- ***Additions*** A wooden insert was added to the top corner, and two wooden strips were added to the top and bottom sides. These strips were applied in half-lap joins, the widest sections of which are on side RR 9.
- ***Deformations*** Probably because the panel was painted on both sides, there are only minor deformations. RR 9 is generally very slightly convex, and RR 10 accordingly marginally concave. The panel is not entirely in plane, the bottom being slightly more concave. The stability of the wooden panel itself is reasonably good, again thanks at least in part to the panel's having been 'sealed' on both sides with paint.

Ground and paint layers

- ***Stability*** There are only a few spots with old and stable paint blisters on RR 9. There remain some areas of old, raised paint, which were consolidated in the past, spread over the surface of RR 10. No recent paint losses or issues with raised paint have been observed. Overall, the ground and paint layers seem relatively stable.
- ***Losses*** In RR 10 there are several larger losses, mostly contained in the landscape.
- ***Abrasion*** The paint surfaces on both sides are somewhat abraded overall, with frequent damage to the highest points of the paint. A few of the impastoed highlights have been abraded a bit (e.g., some nose tips in RR 10). There are only a few remains of red lake on the red background, so it is uncertain whether a red glaze covered the entire side of RR 9, although it is likely. The original arched barb in RR 10 has mostly been abraded or removed, presumably to conceal the insert (10MICGBM002).
- ***Discoloration and increased transparency*** In RR 9, noticeable changes have occurred at the surface of what would originally have been an entirely deep red background, which has now partially darkened (09MICGBM006). Since the red glaze was lost, the bright vermilion has darkened owing to natural, light-induced degradation. Also, the lead-white content of the paint in the figure of the Child has become more transparent over time, causing increased visibility of the darker underlayer, and thus an unintended change of appearance.

  In RR 10, the copper-green paints (lakes or glazes) were applied relatively thickly, so despite some discoloration they are still green. The red lakes have faded somewhat, both on light and dark underlayers (reds and purples, respectively). A general increase in transparency is evident in the lighter paints that contain lead white, causing the increased visibility of underdrawing.

- ***Filling, retouching and overpainting*** The artist seems to have covered the small compass hole in the centre of the roundel with paint, without filling it. The currently visible fill was apparently applied during a later restoration (09MICGBM004). There are many retouchings in the dark roundel background, and a vertical inpainting is visible at the cheek and chest of the Christ Child.[13]

  The entire surface of RR 9 was once covered by a thick, brownish overpaint, as mentioned in the 1923–25 conservation report. Although this was largely removed, there are still many remnants of that layer present on the surface. The residues are present in craquelure and can be seen most clearly (even with the naked eye) in the impastoed areas of the figure (fig. 12.12). They are also distinguishable in the red background, although less clearly so.

  In RR 10, the entire sky and landscape was once overpainted with a dull, bluish paint, which is darker at the top of the panel. The overpaint also covered the noose at the top edge of the panel and reduced the height of the tree, but the spears and ladder were left in reserve. This resulted in a much lower horizon which was likely the goal of this overpainting, since the sky was largely cropped off. During the 1935 restoration, much of this overpainting was removed again, but many of its residues are still apparent in the sky and elsewhere.

  An erroneous retouch is visible in the white wooden patten on the man's shoe at centre left, which currently has three 'heels' instead of two, the front one being a retouching. Damages to the original paint layer, especially in the landscape, have been filled and inpainted, but these retouchings have discoloured over time and are clearly discernible now.



12.13 RR 10, VIS

Surface finish

- ***Varnish*** The thick and glossy brush-applied modern varnish as well as older residues have yellowed considerably (e.g.10MICGBM003) and have an uneven appearance. RR 9 also has many horizontal drip lines in the varnish, most clearly near the bottom. The saturation of the paint surface is good, except for the retouches and the blanched varnish below the elbow of the man with the green robe.
- ***Surface dirt*** There is a small amount of surface dirt on the painting.
- ***Visibility of the original surface*** The highly yellowed varnish and many old varnish residues cause a reduced legibility of the original paint surface. This also makes the dark colours look brighter and less deep and the lighter parts appear darker, resulting in an imbalance when viewing the picture. The many not precisely colour-matching and/or discoloured retouches distract the viewer from the original paint surface. Furthermore, the large amounts of brown overpaint residue on RR 9 not only cover the original paint but result in an unintentionally different appearance, especially in the Child's figure.



[1] For this report, the exterior with the *Christ Child* is referred to as RR 9 and the interior with *Christ Carrying the Cross* as RR 10. This is in keeping with the BRCP numbering system for triptychs, which starts with the exterior surfaces.

[2] René Hoppenbrouwers of Stichting Restauratie Atelier Limburg (SRAL) also participated in the examinations.

[3] 'Post Nr. 342. Datum: 08.1923–10.1925. Restaurator: Frl. Sykora und Bruder. Zustand des Bildes: Die Rückseite ganz mit dicker brauner Farbe zugestrichen. Vorgenommene Arbeit: Diese abge(wisen?), dem Originalbild freigelegt, Fehlstellen ergänzt.'

[4] 'Post Nr. 497. Datum: 02.1929–25.03.1929. Restaurator: Karl Kolar. Zustand des Bildes: Blasen links und rechts unten am Rand, oben i. d. Mitte. Vorgenommene Arbeit: Niedergelegt.'

[5] 'Post Nr. 961. Datum: 13.05.1935–05.07.1935. Restaurator: Sebastian Isepp. Zustand des Bildes: Hintergrund zugestrichen (Himmel u. Terrain). Vorgenommene Arbeit: Abdeckung der Übermalungen, Fehlstellen ergänzt.'

[6] Report Zl 1 ex 1936, p. 5: 'Herr Restaurator Isepp hat …, die Übermalungen an der *Kreuztragung* von Hieronymus Bosch abgedeckt,…'

[7] Email communication with Elke Oberthaler, chief paintings conservator, Kunsthistorisches Museum.

[8] A newspaper article from 1923. See https://rkd.nl/en/explore/archives/file/110057033, no. 8 (last visited 24 January 2016). The BRCP is grateful to Anna Koldeweij for sharing this information.

[9] A Hacklinger thickness gauge (version C, range 1–12 mm) was used by Ingrid Hopfner and Ute Tüchler of the Kunsthistorisches Museum to measure all points in a grid with a horizontal separation of 3 cm and a vertical separation of 4 cm.

[10] This might be partly related to metal soap aggregate formation, but typical aggregate losses have not been noted.

[11] Measurements by Monika Strolz, paintings conservator, Kunsthistorisches Museum, Vienna.

[12] In 1968, Baldass and Heinz estimated a 20 cm reduction in size.

[13] These retouchings are also revealed in the UV radiation-induced fluorescence images (see 09PUVFLU and 10PUVFLU).



12.14–15 **VIS, after treatment** (photos courtesy Kunsthistorisches Museum, Vienna)

