The Flood

A *After the Flood* B *After the Last Judgement*

Workshop of Hieronymus Bosch
c. 1510–20

Oil (not analysed) on oak (analysed) panels: RR 3/4: 70.0 × 39.2 cm, RR 5/6: 70.5 × 37.4 cm. Both panels were cropped on all sides.
Museum Boijmans Van Beuningen, Rotterdam, St. 27 and St. 28

BRCP, *Catalogue Raisonné*, cat. 22; www.boschproject.org no. 22.

SUMMARY OF CONCLUSIONS

The two double-sided panels in Rotterdam can be firmly placed within the Bosch workshop, although the fronts and the backs of the works were produced by different hands. The more direct paint application in After the Flood *and* After the Last Judgement, *as well as their generally higher quality, suggests more personal involvement of Hieronymus in the production of these two paint surfaces. The underdrawings there are also easier to link to the core of the oeuvre than the underdrawings of the roundels. All four sides show phased underdrawings and traces of a creative process in subsequent stages of production.*
The barbs and unpainted edges are partly preserved, which indicates that these wing panels were originally housed in engaged frames, now lost.

RR 4 (reverse of RR 3)



RR 6 (reverse of RR 5)



The slight cropping of the edges did not influence the outcome of the dendrochronological measurements, which indicates that they could have been painted from 1508 onwards, although a date after 1510 is statistically more probable. As further explained in BRCP, Catalogue Raisonné, *cat. 22, we date this work to around 1510–20. The 1982–85 restoration treatment has left the paint surfaces with disturbingly uneven levels of finish.*

EXAMINATION DATA

23–26 May 2011 (Luuk Hoogstede, Matthijs Ilsink, Rik Klein Gotink, Jos Koldeweij, Ron Spronk).[1]

The paintings were examined 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 museum holds several files with photographs and information on the painting, which were studied. They include IRRS by J.R.J. van Asperen de Boer (AB 399/19–AB 402/33, and AB 651–AB 653/12) and stereo XRS made in 1975. Earlier IRRS by Van Asperen de Boer and J.P. Filedt Kok, made in 1971–72, were published by Filedt Kok in 1972–73. Reports on paint samples (A36/1–8 and A37/1–3) taken by Van Asperen de Boer in 1984 are also on file. No instrumental analyses were done. Jeroen Giltaij's catalogue entry in Lammertse 1994 (96–105) also holds ample technical information.
- ***Previous treatments*** The paintings were restored between 1982 and 1985, using a rather archaeological approach and variable manners of reintegration. The restoration was carried out by P.F.J.M. Hermesdorf, who published an article on the treatment in 1990.[2] Information on the steps taken between 1979 and 1986 in research, treatment and documentation, with photographs (mainly black-and-white) is also available in the Hermesdorf archive,

RR 3, *After the Flood*



RR 5, *After the Last Judgement*



folders 22–29, kept at the RKD, The Hague. Reports describe the poor condition of the panels, with severe flaking paint issues, extensive filling and discoloured overpainting, and a poor legibility of the paint surfaces. The committee reports also reveal the amount of discussion on these topics; for example, on whether or not to replace the five metal dowels at the insert with wooden ones.[3]

SUPPORT

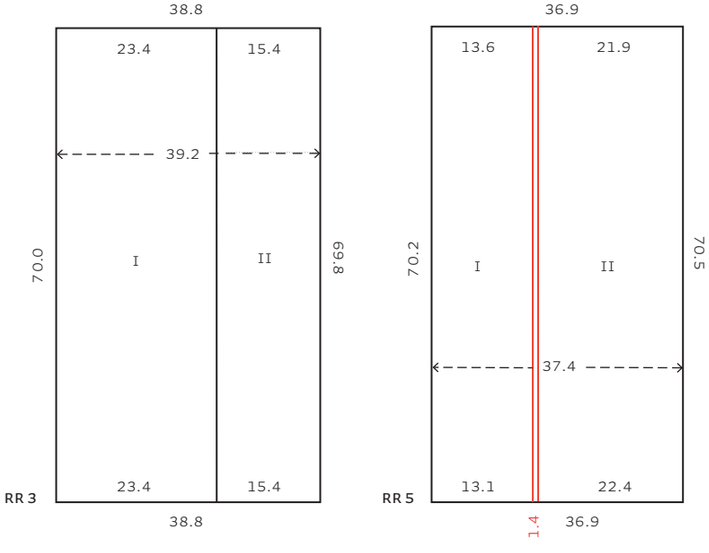
- ***Panel*** Dimensions: see construction diagram (fig. 22.1). Both panels are c. 1.2 cm thick in the centre and c. 0.5 cm at some of the edges. They were cropped on all sides.

  The wood species, Baltic oak, was identified through dendrochronology. Each of the two panels consists of two quarter-sawn planks, vertical in grain, laid vertically.

  The planks are butt-joined and glued; two dowel holes are visible in the XRS of RR 3 (at 16 and 58 cm from the top, respectively), and four (partial) dowel holes are visible in RR 5 (at c. 4, 16, 43 and 59 cm from the top, respectively). It remains unclear whether the dowels in RR 5 are original or belong to the old, narrow vertical insert.

- ***Bevelled or half-lap edges*** In *After the Flood* (RR 3), gradual, seemingly original bevelling is present on the left and right sides. In *After the Last Judgement* (RR 5), similarly gradual, apparently original bevelling appears on the bottom and left side. The sides of the roundels (RR 4 and 6) are almost flat.

- ***Dendrochronology*** Boards RR 3 (I) and RR 5 (II) came from the same tree, while boards RR 3 (II) and RR 5 (I) came from another single tree. The youngest heartwood ring dates from 1497, which, with the added minimum of nine sapwood rings for Baltic oak, implies an earliest possible felling date of 1506 for the tree that supplied the wood for that plank.[4] An earliest felling date of 1508 is statistically more probable, however, since that would cover 93 per cent of the range of possibly missing sapwood rings. Assuming at least two more years for drying and transportation, the panel could have been produced from 1508 onwards, but a production date from 1510 onwards is statistically more probable.



22.1 Construction diagram for panels *After the Flood* [CAT 22A, RR 3] and *After the Last Judgement* [22B, RR 5]. The double red line in RR 5 indicates a narrow non-original insert.



22.2–3 RR 5, VIS and IRR

GROUND

- ***Visibility*** The off-white to cream-coloured ground, which seems to consist of chalk bound in animal glue (not analysed), is present overall.[5] It does not appear to be pigmented.

  The ground is visible in VIS. It is not completely covered by the paint layers, being discernible at contours and outer edges. The ground is also observable in losses. Visibility of the ground (or preparatory layer) was partly intentional, as it was meant to shimmer through in areas as part of the composition. However, the ageing of the paint has further increased the transparency.

- ***Barb and edges*** Ungrounded and unpainted edges of equal width are present on the *After the Flood* panel (RR 3, right side; RR 4, left side). Similarly, ungrounded and unpainted edges of equal width are present on the *After the Last Judgement* panel (RR 5, left side; RR 6, right side). The barbs on both panels, especially those on *After the Last Judgement*, are damaged. There seem to be traces of ground in the wood pores at the bottom right of the unpainted edge of RR 6, but these could be remains of previous treatments. As the presence of barbs and ungrounded edges indicates, the panels originally had engaged frames.

- ***Application*** The ground seems to have been applied using a brush and worked into a smooth finish. Brushmarks are not clearly discernible. The texture of the wood support is somewhat apparent, caused by responses of the wood to climate changes.



PREPARATORY LAYERS

- ***Underdrawing*** Extensive underdrawing is present overall and observable in IRR and VIS. The drawing was used to design and indicate the composition. It was also used for modelling of the larger figures in the roundels (as in the Christ figure, where parallel hatching indicates shadowed areas). The carbon-containing grisaille-like paint layers and underpainting affect the appearance of the underdrawing relatively strongly, since these paint layers also absorb infrared.

- ***Medium and application*** The detectable underdrawing appears applied in more than one stage. In the *After the Flood* (RR 3) and *After the Last Judgement* (RR 5), underdrawing was applied with a broad brush and a highly liquid medium, possibly ink, in generally intense black strokes. Other lines, possibly belonging to a second-stage underdrawing, are slightly narrower and less intensely black. These lines, which are visible only locally because dark paints often overlap them, should perhaps be considered a different compositional phase. Large sections of the first layout were abandoned, and in some areas the underdrawing of the first stage appears to have been reused or altered, for example in the figure sitting on the creature at the centre of *After the Last Judgement* (see figs. 22.2–3).

  In the underdrawings of the roundels (RR 4 and 6), on the other hand, no use was made of a large brush and intensely black ink. There are still two distinct compositional stages, but these seem to have been executed with a more similar medium and application technique. Brush and ink were used there as well, but the strokes resemble those of the second stage on the fronts (RR 3 and 5). The hatching was possibly applied in yet another, additional underdrawing stage.

  In the centres of the roundels, small compass marks are identifiable.

- ***Style*** In *After the Flood* and *After the Last Judgement*, the first stage of underdrawing consists of broad, irregular and fairly short lines. These rough, expressive strokes depict or indicate the shapes of figures in the first composition. The main contours were drawn, in some instances with a few strokes added to indicate main folds. The second stage of the composition was executed in a distinctly different style, which might indicate production by another hand. More continuous lines are discernible that are slightly narrower, smoother and more definitive, often having tipped line endings. The style of both stages of the underdrawings in the roundels is quite similar to this, but here the underdrawing is more elaborate and detailed, just as the overall compositions in the roundels are more detailed than in the *After the Flood* and *After the Last Judgement*.

  Besides the larger alterations in composition, small changes were made as well, but reinforcements have not been observed. Some minor hatching was used in the initial drawing of the ark, but ample hatching that was used for modelling can be observed in the roundels. In the lower roundel of RR 4, folds in the robe of Christ were prepared with parallel hatching in short diagonal lines. In the roundel above that, hatching can be found in the legs of the man being beaten and in the large demon in the underdrawing at right. These all seem to relate to the first compositional stage. Hatching was done in several directions, but more often diagonally, from top right to bottom left, with relatively short lines, running roughly parallel. Line ends are usually straight, without hooks or loops, although the lines themselves can curve.

- ***Revisions in underdrawing and differences from painting stage(s)*** There are extensive changes in the underdrawings of these panels, many of which have already been observed and published earlier.[6] In addition, our examination has revealed more alterations, some of which are iconographically significant. In the *After the Flood* (RR 3), immediately below the painted and currently visible ark, a much larger ark was painted and in the same position a smaller ark was underdrawn.[7]

  In the initial composition the underdrawn ark floats in the water and the Flood was still in full swing. The monk-like figure in the lower left was also part of this first stage. He was underdrawn and left in reserve but never painted, and only shimmers through the paint surface. In the underdrawing he is crouching on something, where an animal was later painted drowned and belly up (see figs. 22.12–13). Just to the right of this figure, we see the head (also left in reserve) of a partially visible human being with an arm held high. To the right of this figure and behind him (where currently there is a hill) are at least five more underdrawn figures with their heads above the water, swimming, and perhaps waving their hands to be rescued. In the first underdrawing stage, at the foreground and the left edge there is a landmass. The man to the left of the monk-like figure makes more sense then, as he is not kneeling but attempting to reach higher ground. This figure was also partly left in reserve and another figure, just to his right, tries to do the same. At lower right, two adults are distinguishable, followed by a child with its hands held high, fleeing from the rising waters. The difference in underdrawing style makes this first composition quite readily separable from the later ones. In the second composition the Flood has receded and the ark stranded. It was painted larger on top of the underdrawn ark. From the open hatch, a ramp with animals disembarking as well as the whole foreground was painted. These animals are still visible in the final painting, but there they precede the group of beasts from

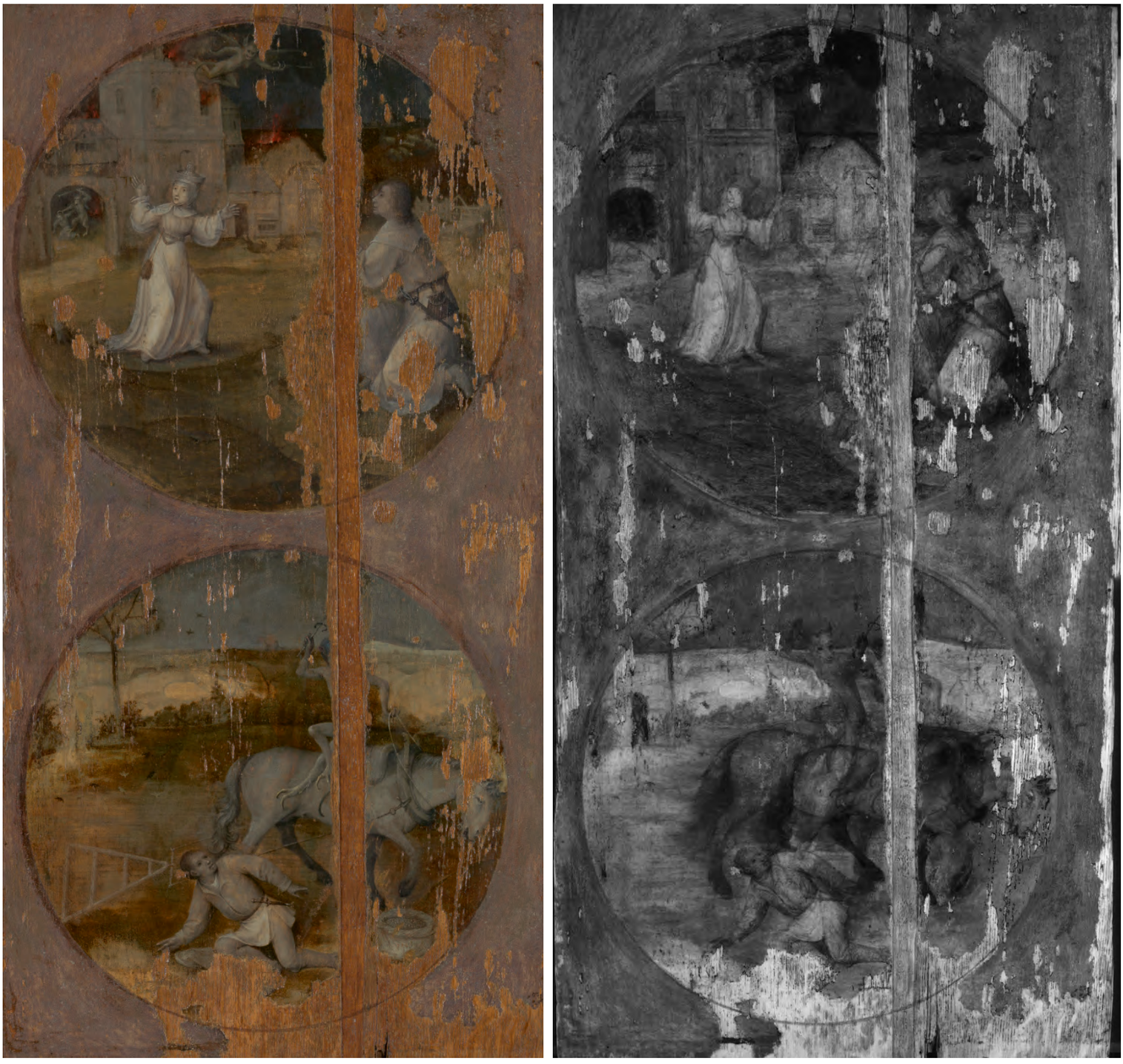


22.4–5 RR 4, VIS and IRR

the upper ark. The artist has thus reused them and added a hilltop where previously the ramp was painted. This device results in a more convincing continuation in the procession of animals towards dry land, which is littered with bodies of drowned people and animals after the Flood.

In *After the Last Judgement* (RR 5), a bird-like creature (not painted) is present in the centre, just left of the insert. In the lower right, a figure that was later changed into the one sitting on a dead monster was initially seated on a large barrel that had feet and a face. Around the back and head of the altered figure, a larger underdrawn shape is discernible.

Major changes are also notable in the roundels. In RR 4 (upper roundel), instead of the two demons on the right, initially just one much larger demon was underdrawn, with claw-like feet and a long tail. To the left of the man, who was slightly larger as well, the demon was underdrawn with a round hat and a snout rather than the currently visible beak. In the centre background, a large farmhouse was underdrawn, and further back, another building. In the lower roundel there were only smaller changes; for example, in Christ's hands, the positions of which were both changed. His right hand was further to the right (with two fingers that were left in reserve shimmering through) and the left hand was lower, the finger pointing downwards not underdrawn. Also, his right foot was drawn below the robe, which extended further down. The kneeling figure was directed more towards Christ, looking towards him with arms and head further extended. Christ was underdrawn facing more downwards – thus, initially there was more contact between the two.



22.6–7 RR 6, VIS and IRR

In RR 6 (upper roundel), the arc of the archway in the left background was prepared significantly higher, and a figure initially lay on the ground in front of the smaller, painted figures. The head of the woman was shifted a little, and she was wearing slightly different clothing. The man's head extended forward somewhat, and he may have been altered entirely or accompanied by another figure to his left, as underdrawing is visible to the left of the insert as well. In the lower roundel, more striking alterations are evident. Both the demon and the horse were shifted to the right in the final painting (see figs. 22.14–15). This was done at a later stage, since both horse and hellish rider were already underpainted. The underpainted demon's head, which resembles that of a fox, shimmers through the paint surface; the full figure is better visible in IRR/IRP. The shift to the right made it possible to include the harrow. It appears that this was already the second shift of this figure towards the right. A large shape resembling his outline was underdrawn and left in reserve to the left of the first painted position (06MCRIRP004). In the right background, the underdrawing of some buildings is discernible as well.

- ***Intermediate layers*** In some areas in the roundels, a thin, light layer containing lead white and carbon black was observed (04MICGBM001 and 06MICGBM005). This layer might be a pigmented isolating layer that was applied overall, but it could not be identified with certainty in the *After the Flood* and *After the Last Judgement*. The XRS do show broad brushstrokes in a layer that contains lead white and is not related to the final composition. The sample reports by J.R.J. van Asperen de Boer (see above, *Previous research …*) also indicate that on top of the ground there is a thin, white layer containing black and/



22.8–9 RR 3, VIS and IRR

or brownish pigments. The underdrawing was continued with some form of underpainting as well, blocking in parts of the composition and leaving other forms in reserve (see below, *Build-up and palette*).

PAINT LAYERS

- ***Paint application and painting technique*** The brush-applied oil paint (not analysed) extends onto the remaining barb. It was often applied in one or two stages for *After the Last Judgement* and *After the Flood*, whereas for the roundels, several paint stages were identified. Details, highlights, reinforcements and dark areas were applied in additional stages. Wet-in-wet paint application was used for many of the grisaille-like figures in both panels.

  Paint application was quite thin, often utilizing the background colour, both of the underpainting and especially where figures were left in reserve. This is mostly the case for the midtones, which were followed by shading and highlights. The predominantly wet and glossy paints were applied in both opaque and semi-transparent layers. The latter was usually achieved with semi-transparent pigments rather than an actual glaze layer, which is only visible in a few instances. In general, the panels are painted in a somewhat sketchlike manner, which relates to the quick wet-in-wet execution of most grisaille figures in both panels and the backgrounds. The demons in the sky of *After the Last Judgement* were first modelled using a thin, dark brown paint,



22.10–11 RR 5, VIS and IRR

sometimes followed by a few touches of a greyish paint for final modelling.

More attention was paid to the main parts of the composition, but these still were not worked out to a high degree of finish, leaving some areas barely covered. A fleeing demon in the sky of the lower roundel (RR 4) was painted very subtly and thinly. The slightly visible brushstrokes follow the forms in the composition, rendering contour and volume throughout the painting. For larger areas, paint was applied with more random brushstrokes (although the imitation stone in the background follows the shape of the roundel). In *After the Last Judgement*, bright red paint dots (apparently original) are randomly spread over the entire paint surface (05MICGBM007–009). These could have been splattered on the surface purposely, perhaps to indicate glowing ash particles from the fire, but they could also have been applied accidentally.

- ***Texture*** Most passages have a smooth finish, and brushstrokes are hardly visible. There are some slightly impastoed highlights.
- ***Build-up and palette*** On top of the underdrawing and the pigmented isolating layer, underpainting was applied, blocking in parts of the composition. This was done in two ways: by leaving select areas in reserve, applying paint around them,[8] and by underpainting certain areas, leaving the background open. It seems that this approach was a result of multiple compositional stages and is exemplified by the demon on horseback. After the first underdrawing stage (with the demon in the upper centre of the panel, possibly without




22.12–13 RR 3, VIS and IRR




22.14–15 RR 6, VIS and IRR

horse), this area was left in reserve. In the second phase, the demon was positioned further to the right and both demon and horse were underpainted, leaving the background open. In a third phase, the demon and horse were moved even further to the right, to their current position, and were both underpainted and painted. The harrow was painted last and the previous two compositional phases were painted out.

Paint was primarily applied from dark to light and from background to foreground, while making use of background colour, whether a local underpainting or (in areas left in reserve) the pigmented isolating layer on the ground. Shading and highlights were applied afterwards. The generally muted colouring (mostly greyish, brownish and greenish paint mixtures, as in the two figures in the archway at centre left in *After the Last Judgement* and in its foreground landscape) is interrupted by more brightly coloured accents: bright reds for fires and blues for figures, both with lead-tin yellow highlights (see fig. 22.16 for the devilish figure in the archway in the top roundel). Additional muted blues were used quite extensively and subtly for the other figures in the roundels, but also for the partially remaining head of the demon on horseback (06MICGBM008). Warmer tones can be found on sides RR 4 and RR 6 in the imitation stone background, which was executed before the roundels. This was painted with a mixture of lead white, red lake, carbon black and small amounts of yellow ochre and blue pigments (06MICGBM006–007).



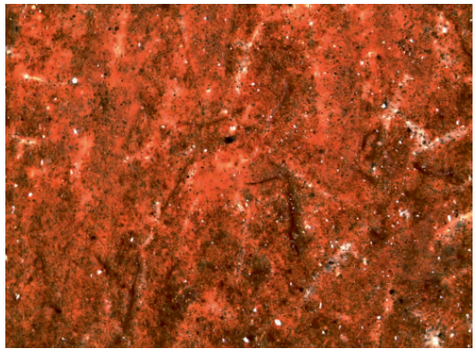
22.16 RR 6, VIS

The appearance of the sky in *After the Flood* was created by using an optical effect. An underlying dark layer, containing more black pigment closer to the top edge, was followed by a light grey layer containing mostly lead white and some black pigments (03MICGBM001). The dark paint shimmering through the thin, whitish layer creates a slightly bluish impression.

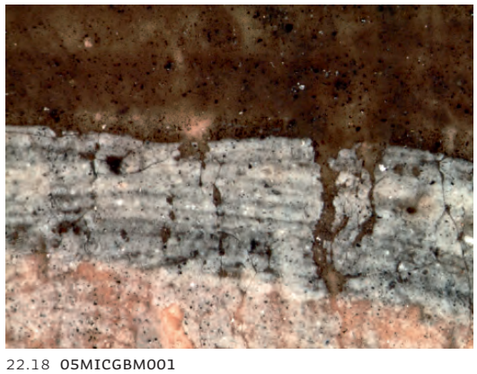
In *After the Last Judgement*, the bright vermilion (not analysed) of the fire was applied over a dark brown background, whereas higher up, it covers a lighter background colour. The reddish brown glow of the smoke above it contains many reddish fibres of wool shavings, revealing the origin of the red lake (see, e.g., fig. 22.17 and 05MICGBM003–004).[9] Also, the darker part below the fire seems to contain red lake but is otherwise left in reserve by the fire. The small, hooded figure in the centre, squatting on a branch, was painted over the darker background and water. The figure with the lute in the lower left is one of the few left in reserve. The lute itself is thinly painted in white (with black particles) over the ground and a pigmented isolating layer, and the lute overlaps the brown background colour (see fig. 22.18).

In the roundels, the dark grey-blue skies have an interesting build-up. In two separate steps, first a blue layer containing white pigment particles was applied, then a dark greyish layer, also containing white pigment particles (06MICGBM003–004). The superimposition of the dark layer on top of the blue results in the deep, dark grey-blue appearance of the sky. The landscape colour was applied more thickly to cover up the pentimenti (e.g. the lower arm of the attacked figure). There it retains more of its original greenish colour than the discoloured brownish tones we now see in many of the areas that were green.

- ***Changes*** Besides the changes in underdrawing already mentioned, there are several discernible pentimenti in the paint layer (see also *Revisions …* above). These are visible with the naked eye, with IRR/IRP and in the XRS. In *After the Flood*, the first underdrawing was followed by an underpainting (both of which shimmer through), but the first composition was completely abandoned in the final paint phase. The second composition, with a larger painted ark, appears to have been largely completed. In the final composition the ark was reduced in size and repositioned upwards. Painting additional animals disembarking from the relocated ark extended their procession (fig. 22.9). Also, some elements in the final painted composition do not seem to have an underdrawing. In part, this is also the case in *After the Last Judgement*. In addition to the change mentioned above in the figure on the barrel, just to its right, the head of the demon was reduced in size. Other minor pentimenti are detectable in the roundels – in the attacked figure in RR 4, and in the head of the kneeling figure in RR 6. The demon on horseback was greatly altered in both the underdrawing and underpainting phases (see above).



22.17 05MICGBM002



22.18 05MICGBM001

FRAME

The original, engaged frames have been lost. The panels are currently displayed without frame.

CONDITION

Support

- ***Altered dimensions*** The original panels were reduced in size on all four sides – *After the Flood* less on the right side, *After the Last Judgement* less on the left – damaging the edges of the paintings to a large extent. RR 5 is also missing a small piece in the bottom centre (flanked by two small holes on the reverse) and RR 3 has an incomplete top left corner. It had been suggested that, based on the deviation in thickness, the top third of the panel (an entire roundel) might be missing, but that does not seem to be the case.[10] Although a substantial strip on the top is missing (the top demons having been cropped from RR 5), the thickness seems to indicate a loss of roughly 5 cm or slightly more.[11] Nevertheless, the fact that the paintings were even taller is important for any discussion of their assumed original format as wings of a triptych or polyptych, since that would affect the dimensions of such a work's central panel.
- ***Additions*** In cat. 22B, RR 5–6, a 1.4 cm-wide wooden insert was added that runs the entire length and thickness of the panel. This was done during the 1982–85 treatment, replacing an earlier strip of plaster and twine that, together with iron and wooden plugs, was damaging the panel.[12]
- ***Cracks*** Two old cracks, extending about 10 and 6 cm, respectively, run from the wood loss at the bottom centre of *After the Last Judgement* and are slightly open on the reverse.
- ***Deformations*** The panels have a very slight angular deformation but are otherwise very stable, partly due to their having been 'sealed' on both sides with paint.
- ***Joins*** At the bottom centre of *After the Flood*, the join between the two planks is visible. On the reverse it extends about 12 cm from the bottom edge, with some adjacent paint losses.

Ground and paint layers

- ***Stability*** The ground and paint layers seem to be stable now, but many old losses are visible. It seems that the losses were caused by a poor adhesion of the ground to the panel. They may be related to the previous cracking or separation of part of the panel (see above). Currently there are some areas of slightly raised paint, caused by the expansion and contraction of the support.
- ***Losses*** Added to several smaller losses, there are large losses to ground and paint, leaving the oak panel bare: in RR 3 at the top edge; in RR 4 over the entire left plank and along the right side; in RR 5 at the top left and, to a large extent, in the bottom quarter; and in RR 6, along the left side, with greater concentration at the bottom, and in the entire right



22.19 RR3, VIS

plank. In RR 5/6 there is also the added and only partially retouched wooden insert. For the 1982–85 restoration, a rather archaeological approach was selected and variable manners of reintegration were applied. As a result, in the roundel panels the emphasis is shifted largely to the areas of loss rather than to original paint surfaces.

- ***Abrasion*** The painted surfaces were abraded in the past, with *After the Flood* being the least damaged. Remaining original barbs are damaged as well.
- ***Discoloration and increased transparency*** Noticeable changes have occurred throughout the paintings. Mainly, the original greenish colours of the landscapes have discoloured to a more brownish tone. Changes in refractive index due to ageing of the paint films have led to a general increase in transparency, which is aggravated by the already thin paint layers. Many parts of the underlying layers currently shimmer through. An increase in transparency can be found in the lighter paints that contain lead white, which causes the increased visibility of underdrawing.
- ***Filling, retouching and overpainting*** There are many old losses that are only partially filled and/or inpainted. In *After the Flood* and *After the Last Judgement*, many retouchings can be found spread over the surface, and of course on the central insert. In and around the roundels, there is only minor inpainting. Aside from the toning of exposed ground and some other small retouchings, only the circle around the roundels was completed. It is quite curious and distracting to see several different approaches to inpainting on these two panels. Some losses are toned, some filled and retouched, some retouched to a high level, and some not filled and/or retouched at all. Many of the retouchings have also discoloured over time and are clearly discernible now.

Surface finish

- ***Varnish*** The modern varnish, which appears to be of a natural resin, is very glossy and somewhat yellowed, with embedded or attached pigments, gold leaf particles and some dirt. Minor residues of glue can also be found along some of the edges. There are, however, several older brownish residues that can be distinguished on the surfaces of the paintings. The appearance of the varnish is relatively even, although superficial scratches are visible. The saturation of the paint surface is quite good, except on *After the Last Judgement* and in some minor matte spots.
- ***Surface dirt*** There is hardly any surface dirt on the painting.
- ***Visibility of the original surface*** The glossy, somewhat yellowed varnish and brownish residues cause a slightly reduced legibility of the original paint surface. The irregular retouching (see above) results in contradictory experiences of the state of the paintings, and the discoloured retouches (mostly on *After the Last Judgement*) distract from the original.



[1] René Hoppenbrouwers of Stichting Restauratie Atelier Limburg (SRAL) also participated in the examination and documentation.

[2] Hermesdorf 1990, 134–47.

[3] The BRCP is very grateful to Stefanie Litjens for the thorough examination of the documents in the Hermesdorf archive.

[4] The youngest or last-preserved ring on each of the four planks, respectively, dates from 1491 (RR 3 I), 1404 (RR 3 II), 1393 (RR 5 I), and 1497 (RR 5 II) ; see Klein 2001, 126–27. Since board RR 3 I came from the same tree as board RR 5 II, the outcome of the latter is valid for both. Analysis done by Peter Klein, 29 December 1983. As a result of improvements to the reference chronology for Baltic oak in 1985, Klein revised the 1983 dates, which had each been stated as six years earlier. See Klein's report in the museum files. The slight cropping of the edges does not influence the outcome of the dendrochronological measurements, since the younger outsides of the boards are joined together.

[5] The ground-like material present on the side edges of the panel is not original (05MICGBM010).

[6] Lammertse 1994, 99–101.

[7] The conservation report by Hermesdorf also mentions another ark, which was seen in the stereo XRS.

[8] The IRRs reveal which areas were left in reserve (mostly light-coloured figures and light areas of landscape), but these were often modified during the paint application phase.

[9] For more information and literature on the production of red lakes, see Wallert 1991, 74–83; and Hofenk de Graaff, Roelofs and Van Bommel 2004, 344–52.

[10] Hermesdorf 1990, 137 and n. 23.

[11] Ascertained with Friso Lammertse, curator of Old Master Paintings, Museum Boijmans Van Beuningen.

[12] Hermesdorf 1990, 144.