

EXAMINATION AND CONSERVATION TREATMENT Of Raden Saleh's *Ship In Distress*

By

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INTRODUCTION

In 2000, the Singapore Art Museum purchased *Ship in Distress*, a painting in oil on canvas by Raden Saleh Syarief Bustaman, who is considered one of the best known 19th-century Indonesian painters and one of Southeast Asia's most recognised artists. The painting had presented deterioration such as severe varnish discolouration, cupping paint and isolated canvas undulation. In preparation for its display at the National Gallery Singapore in 2015 when the museum opens, complex conservation treatments to improve the painting's aesthetic values and technical condition were carried out in 2013.

The conservation activity also provided the opportunity to carry out technical examination on the painting, which has led to greater understanding of the artist's techniques and materials. Besides discussing the painting's technical condition and its conservation treatment, this paper also describes the results of its near-infrared examination and the stylistic comparisons with the artist's other similar works.

LIFE HISTORY

Raden Saleh was born in 1811 in Semarang, Central Java, Indonesia, to a family of the ruling elite. Widely regarded as the first modern painter in Indonesia (then known as the Dutch East Indies), he is known for his historical paintings such as *Capture of Prince Diponegoro*

(1857) and *Flood on Java* (1865–1876), and scenes of animal fights and oriental hunting. Over his lifetime, he developed many multidisciplinary interests including ethnography, archaeology, architecture, palaeontology and gardening.

Raden Saleh spent 25 years in Europe and became a part of European art history.¹ He arrived in the Netherlands in 1829, where he studied drawing and oil painting under portrait painter Cornelis Kruseman and landscape painter Andreas Schelfhout. He quickly gained the Dutch king's patronage and soon began to receive portrait commissions.² In 1839, he travelled to Dusseldorf, Germany, home at that time to the German Romantic painting movement.³ Then, he visited Frankfurt and Berlin, and finally moved to Dresden, where he initially planned to train his artistic eye on the pictures in the Gemäldegalerie, the city's famous art gallery which had Germany's leading collection of art. Dresden proved to be more than a stopover in his European educational journey. He stayed in Dresden for four years, which were among the happiest in his life.⁴ There, he experienced the new cultural peak of the Romantic period and acquired a new social status, quickly noticed by Dresden society, which expressed great interest and curiosity towards this talented artist from the Far East. On Raden Saleh's part, he was impressed by Dresden's intellectual and cultural life.⁵

It was in Dresden that Raden Saleh decided to make animal fights and oriental hunting leitmotifs in his art. He believed that as an Asian, he was better capable of capturing the emotional qualities of such scenes than Europeans. It was also there that he produced many of his maritime paintings. Scenes of hunting and sea storms became characteristic of his paintings and were enthusiastically received at the 1840 Academy Exhibition in Dresden.⁶ In 1844, Raden Saleh left Dresden and moved to Paris. He returned to Java in 1851. His second stay in Europe was from 1875 to 1878. He died in Java in 1880.

ICONOGRAPHY

During the Romantic era of the 19th century, shipwrecks and distressed vessels in seascapes were key motifs in art. They alluded to a distressed humanity isolated in a menacing or malignant universe. Paintings became the platforms to show the conflicts between human will, elemental forces of nature and fate symbolically through these motifs.⁷ Artists continued to use the imagery of the drifting boat—sometimes helplessly becalmed, sometimes thrown about by tremendous waves—until the end of the century to carry moral or religious messages concerning the fate of man.⁸

Seascapes are rooted in 17th-century Dutch marine art. Dutch artists painted seascapes just as the Dutch Republic was expanding into a world power dominating maritime trade and holding

vast cultural influence.⁹ English and later American artists adopted seascapes in their paintings. In the 19th century, such works contained a variety of subjects, ranging from maritime events and political relations to the private emotions of individual artists.¹⁰ When describing the Romantic fascination with the ship and storm at sea, we observe a characteristic difference between these two dramatic subjects: the shipwreck emphasises the occupants' plight; the storm, the frightfulness of the elements.¹¹ It is however unlikely that all 19th-century artists consciously intended their shipwreck pictures to be symbolic. Some interpreted them to be so; others appeared to have been drawn to the subjects spontaneously. Either consciously or intuitively, the artists chose these subjects because they gave visual form to feelings otherwise vague and inexpressible, and to feelings that were part of the general emotional climate at the time.¹²

During his four years in Dresden, Raden Saleh produced many seascape paintings and eventually developed an individualistic style of expressing the Romantic fascination with forces of nature. Among these seascape paintings is *Ship in Distress*, which depicts a single-

mast vessel amidst violent storm waters (Figure 1). In the central plane of the painting is a powerless vessel that has lost its sails but still flies a British flag. A closer look reveals a few helpless crew members struggling for survival. The figures are so small and sketchy that they are almost insignificant. In the third plane, another ship is battling raging waves, trying to escape. Both ships are at nature's mercy, tossed around in the vast ocean. A prominent barrel is floating in the right foreground, probably thrown off the ship to distract whales and dangerous marine creatures from the ship and its crew.

Another painting, *Storm on Sea*, is a dramatic painting in oil on canvas, measuring 41 x 57.5cm (Figure 2). It is signed and dated 1840, and depicts two ships trapped among crashing waves, lost in the turbulent sea. The main vessel is in the central plane, heading left towards a brighter scene where there may be some hope of rescue; another ship is in the third plane, close to the painting's right edge, trying to escape its fate. The main ship flies the American flag that was in official use between 14 June 1777 and 1 May 1795; it was no longer used when Raden Saleh created this painting.¹³ A barrel is floating in the bottom right foreground.

¹ Werner Kraus and Irina Vogelsang, *Raden Saleh: The Beginning of Modern Indonesian Painting* (Jakarta: Goethe Institute, 2012), 26.

² *Ibid.*, 34.

³ *Ibid.*, 40.

⁴ *Ibid.*, 41.

⁵ *Ibid.*, 42.

⁶ *Ibid.*, 49–50.

⁷ Eitner Lorenz, "The Open Window and the Storm-Tossed Boat: An Essay on the Iconography of Romanticism", *The Art Bulletin* 37, no. 4 (1955): 287–88.

⁸ *Ibid.*, 287.

⁹ Victor Domin, "Rough Seas—Shipwrecks of the Romantic Era: The Evolution of the Dutch Tradition", 2, accessed February 10, 2014, https://www.academia.edu/4086992/Rough_Seas--Shipwrecks_of_the_Romantic_Era_the_Evolution_of_the_Dutch_Tradition.

¹⁰ *Ibid.*

¹¹ Gerald Eager, "The Iconography of the Boat in the 19th-Century American Painting", *Art Journal* 35, no. 3, (1976): 224.

¹² Lorenz, "The Open Window", 290.

¹³ Kraus and Vogelsang, *Raden Saleh*, 254.



Figure 1. *Ship in Distress before conservation*
Collection of National Gallery Singapore. Image courtesy of National Heritage Board



Figure 2. *Storm on Sea*, private collection, Indonesia
Image courtesy of Dr. Werner Kraus, Centre for Southeast Asian Art

The positions of the three main compositional elements (two ships and a barrel) are similar in both *Ship in Distress* and *Storm on Sea*. But the composition of the latter painting relies on the stark contrast between the two sides of the sky, light on the left and dark on the right. The ships are depicted to be in the midst of a receding storm, and a clear and bright patch of sunlight is breaking through the clouds. The light illuminates the main ship, metaphorically representing man's salvation and deliverance, primarily by God, while the second vessel is still engulfed in darkness symbolising inevitable fate.¹⁴

We find a similar scene in *Shipwreck in Storm* (Figure 3). The oil painting on canvas measures 40 x 50cm and is signed and dated 1840. In its first plane a Dutch vessel is heading towards the right, while a second ship is engulfed by waves. A barrel is again present, near the bottom left of the canvas. The positions of these three main compositional elements appear to mirror those in the aforementioned works. The main ship is trying to escape the stormy weather. We can see the crew struggling with ropes and torn sails, but not their individual reactions, from where we are.

An increase in drama is evident in the fourth painting entitled *Shipwreck in Storm* (Figure 4). This 1840 work in oil on canvas measuring 50 x 65.5cm is also dominated by a turbulent sea and a dark sky. But it is more dramatic and foreboding than the other paintings because there is more contrast between its compositional elements. The ship in the foreground is already shattered on the rocky coast and is being thrown about by merciless giant waves. In contrast, the fate of the second vessel on the left is hanging in the balance as strong winds stretch its sails till they are nearly bursting. Nonetheless, it has a small chance of survival, demonstrated by the little piece of blue sky in the painting's top left corner.

Coastal Landscape is another of Raden Saleh's shipwreck scenes. It

was painted in Indonesia in 1854 with oils on a panel and measures 27 x 37.5cm (Figure 5). In the painting the wrecked ship lies on the beach with the recurrent motif of a barrel; the storm has died down and the wind has dropped. The drama of the battle against the wind and the waves has come to an end.¹⁵

This short overview of selected seascapes demonstrates that Raden Saleh chose to represent in his paintings the struggles with the elements rather than the occupants of the ships. Distinct human figures are absent from his paintings; viewers are left to confront nature's power on their own terms. The sea and the sky—not people—dominate the works. To Raden Saleh, who travelled across the Indian and Atlantic Oceans on a sailing ship from Java to Europe in 1829, such images were not merely complacent depictions of disasters; instead, they were derived from his personal experiences of being caught in storms at sea on several occasions. He was well able to reproduce the specific conditions of air and light.¹⁶ We can assume then that Raden Saleh believed that he was capable of capturing the emotional qualities of such scenes. This

short analysis also proves that the artist could indeed effortlessly manipulate the dramatic tension in his paintings.

TECHNICAL EXAMINATION

The conservation treatments of *Ship in Distress* provided an opportunity to carry out technical examination of the painting, which would help identify the artist's techniques and materials used.

CANVAS

The canvas structure was analysed according to Bogumila Rouba's model.¹⁷ *Ship in Distress*, measuring 39 x 45cm, is executed on fine plain-weave linen fabric with a thread count of 13 threads for the weft and 16 threads for the warp in 1cm².¹⁸ Even though there are no selvages¹⁹, it was possible to differentiate the weft and the warp, and determine the warp's direction, because the number of warp threads is always greater than the number of weft threads.²⁰ The warp's direction corresponds to the painting's vertical orientation. Both the weft and warp threads have irregular but similar widths (from 0.3 to 0.8mm; mean 0.55mm) and weak "Z" twists (more than 45°). The degree of the combined weft and warp filling is high (88.97%), but the

Figure 3. *Shipwreck in Storm*, private collection, Indonesia

Image courtesy of Dr. Werner Kraus, Centre for Southeast Asian Art



Figure 4. *Shipwreck in Storm*, collection of the National Gallery, Indonesia
Image courtesy of Dr. Werner Kraus, Centre for Southeast Asian Art

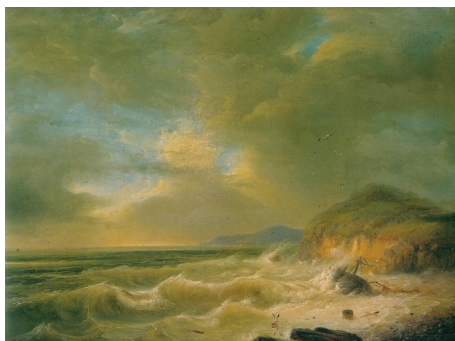


Figure 5. *Coastal Landscape*, private collection, Indonesia
Image courtesy of Dr. Werner Kraus, Centre for Southeast Asian Art

Figure 6. Back of the painting *Ship in Distress* before conservation. A paper label was attached with natural glue to the backing board

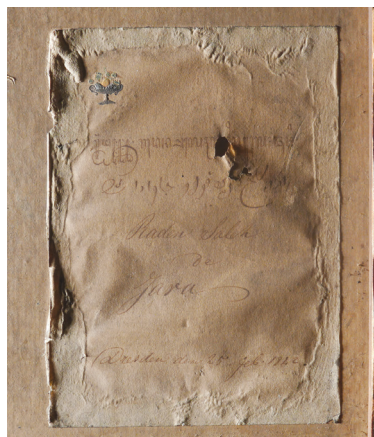


Figure 7. Detail from *Ship in Distress*. The label features handwritten inscriptions in four languages

canvas structure is considered to be very irregular, characterised by a difference of 19.3% between the weft filling (55.9%) and the warp filling (75.2%).

The painting's left and right margins are covered in paint that continues from the main composition. The top and bottom tacking margins are covered with a white paint and have a second set of nail holes. This suggests that the painting had originally been stretched over a temporary, slightly wider structure; when it was finished it had been transferred to the strainer. The strainer was visually identified to be made of pine, and its four 12mm thick members were half-lap-joined. The width of the top and bottom members was 3.8cm and the width of the left and right members was 2.5cm. The strainer had a 4mm thick paper board at the top probably to provide additional support for the canvas, which had been

glued and nailed to the strainer. Upon transfer, the painting had been first glued to the board and then mounted with iron nails along the sides. The left and right margins had been folded over the strainer and then cut, which explains why they are covered in paint. The nail holes in the left and right margins corresponded to the nail holes in the strainer.

A paper label measuring 12.5 x 9.5cm was attached with natural glue to the bottom right of the backing board (Figure 6). The label has handwritten inscriptions in four languages, likely written by artist himself (Figure 7). The first three inscriptions from the top convey the same information—"Raden Saleh from Java"—in three languages: old Javanese (Raden Saleh's native language), Arabic and Latin.²¹ The bottommost script is in German and indicates that the painting was created

¹⁴ Domin, "Rough Seas—Shipwrecks", 2.

¹⁵ Kraus and Vogelsang, *Raden Saleh*, 260.

¹⁶ Ibid, 256.

¹⁷ Bogumila Rouba, "Płótna jako podobrazia malarskie [Canvases as painting supports]", *Ochrona Zabytków* 38, (1985): 222–45.

¹⁸ Linen fibres were identified by nodes present at intervals along fibre length in the form of X.

¹⁹ A selvedge is a self-finished edge of fabric that runs parallel to the warp (the longitudinal threads that run the entire length of the fabric); it keeps the fabric from fraying.

²⁰ Rouba, "Płótna jako podobrazia malarskie", 225.

²¹ Werner Kraus, Centre for South Asian Art, Passau, Germany, email message to author, January 23, 2014.

²² The examination was conducted by the author.

in Dresden on 25 February 1842. The label is decorated in the top right corner with a small painted image of a blue patera with fruits.

PAINT LAYER

The paint layer was analysed with the help of non-invasive multispectral imaging on the full-spectrum Nikon D90 with a set of filters for visible light, ultraviolet and near-infrared photography.²² To analyse the paint layer in the cross section, samples of the paint were embedded in self-curing acrylic resin Estetic S (supplied by Wiedent) and polished with abrasives down to grade 3000. Optical microscopy was then carried out in visible and ultraviolet reflected light on the Leica DMRX polarising microscope at magnifications of x40, x100 and x200.

For pigment identification, X-ray fluorescence spectroscopy (XRF) and

Figures 8. Paint cross section of the sky taken from the margin of the painting *Ship in Distress* showing the structure of the ground and paint layers – 1) brown ground; 2) white imprimatura; 3) blue paint – at microscopy magnification of 100x

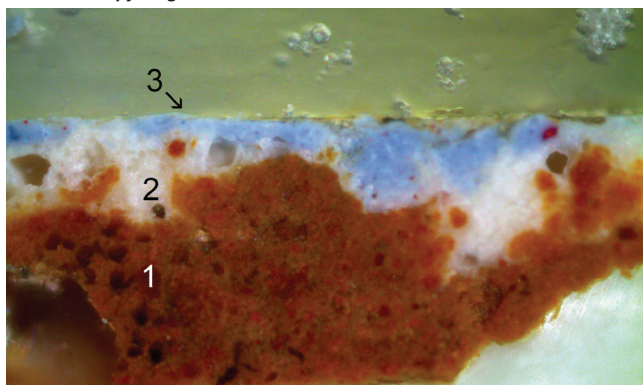
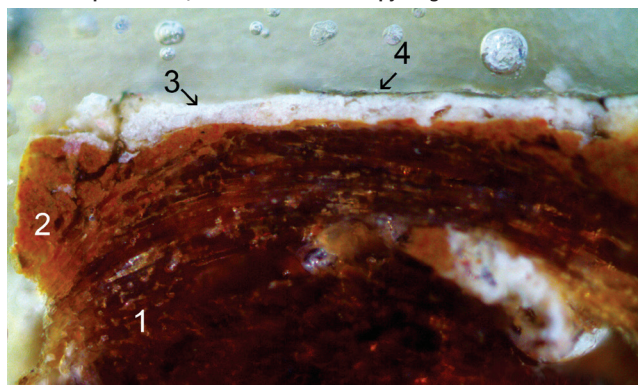


Figure 9. Paint cross section of the white imprimatura taken from the top margin of the painting *Ship in Distress* showing the structure of the ground and paint layers – 1) textile fibres; 2) brown ground; 3) white imprimatur; 4) varnish – at microscopy magnification of 100x



polarised light microscopy (PLM) were used.²³ XRF was conducted with a Thermo Scientific Niton XL3T EDXRF, and PLM was carried out by means of the same Leica DMRX polarising microscope.²⁴ Samples for the cross-section analysis and pigment identification were taken only from the margins.

The paint layer cross section indicated that a thin layer of brown ground had been applied on the canvas (Figures 8 and 9). XRF analysis taken from the back of the painting as well as from the margin detected the presence of iron in the ground. Further PLM observation identified yellow ochre as isotropic particles with $n > 1.66$. An amido black staining test confirmed the presence of proteins in the ground.²⁵

The next layer is a coat of lead white imprimatura.²⁶ XRF detected lead on a white margin. Spot tests with 5% sodium sulphide on the imprimatura layer in cross section taken from the margin also revealed the presence of lead white. The application of a white or grey imprimatura layer on top of brown or red ground was a common technique during the seventeenth and eighteenth centuries not only in southern and northern Netherlands but also France and Italy. It is possible that such a layer build-up was dictated by economic reasons. The first layer, consisting of cheap earth pigment, was used to fill the interstices in the canvas weave, whereas the grey

ground, containing the more expensive lead white, was applied to provide an even surface and a base colour for the painting.²⁷ The final paint layer had been applied thinly over the white imprimatura but impasto was evident for the clouds and waves.²⁸ XRF confirmed that lead white is a major component of the white paint used for the clouds. XRF also detected the presence of lead in high intensity and that of cobalt in low intensity in the blue sky area. The high intensity of lead in the measurement was due to its presence in the imprimatura lying beneath.²⁹ PLM observations of the pigment particles taken from the blue sky area identified the cobalt blue as isotropic particles with $n > 1.66$. Spot tests with 5% sodium sulphide on the paint layer in cross section from the same area also revealed the presence of lead white; this further proved that the blue paint is a mixture of cobalt blue and lead white.

Mercury, detected by XRF in the warm reddish tone of the clouds, is attributed

to vermilion pigment. The artist had signed his full name in red, at the bottom left of the painting (Figure 10), as he characteristically did in bold colours on most of his paintings.³⁰ Additional XRF testing of the red paint of the signature revealed a concentration of mercury, along with a high level of lead relating to the imprimatura. It was thus concluded that the red paint must be vermilion pigment. The Sudan black test, Rhodamine B staining test and saponification test with 10% sodium hydroxide determined that the imprimatura and final paint layers are bound in oil.³¹ The paint surface was covered with a very thick, yellowed varnish, probably composed of natural resin; it was revealed under ultraviolet examination as a strong and characteristically yellow-green fluorescence (Figure 11). The varnish was most likely original, although there was no definite proof.

Figure 10. Detail from *Ship in Distress*. The artist's signature in vermilion pigment at the bottom left of the painting



Figure 11. The paint surface of the painting *Ship in Distress* was covered with a very thick, yellowed varnish, probably composed of natural resin, revealed under ultraviolet as a strong yellow-green fluorescence

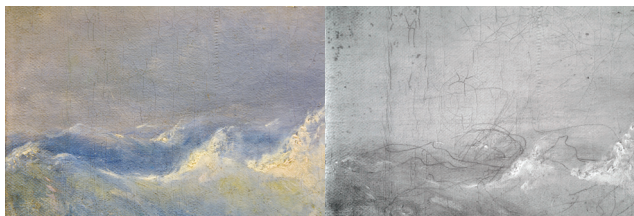


UNDERDRAWING

Near-infrared examination of the paint layer confirmed that the artist had made a compositional underdrawing before painting.³² The sketch, mainly of the waves and the central ship, is free and fairly expressive, but literal in some places. The artist had drawn it linearly, most likely with a sharp graphite pencil, whose marks absorbed the infrared radiation and were therefore clearly visible in near-infrared. The near-infrared examination also uncovered an initial double-mast main ship (Figures 12 and 13) and a silhouette of a second ship close to the painting's right edge (Figures 14 and 15). In the final painting the artist had painted this second ship on the other side; the compositional arrangement had changed during the painting process (Figures 16 and 17). Waves expressively outlined with fluent lines had not been repeated literally during painting. The entire underdrawing had been made freely at one go and its function was to determine the contours of the whole scene. The examination also revealed compositional development and new insights into artist's working style and practice.



Figures 12 & 13. Detail from *Ship in Distress*. The near-infrared examination uncovered an initial double-mast main ship



Figures 14 & 15. Detail from *Ship in Distress*. The near-infrared examination uncovered the silhouette of a second ship close to the painting's right edge



Figures 16 & 17. Detail from *Ship in Distress*. The artist painted the second ship on the other side in the final painting

²³ The XRF analyses were conducted by Lynn Chua Hui Ru from the Heritage Conservation Centre, Singapore. Polarised light microscopy of pigment dispersions was carried out by author.

²⁴ The Thermo Scientific Niton XL3T EDXRF contains an X-ray tube of silver anode running at 6–50kV and 0–200µA. A small spot of 3mm or 8mm internal collimation was used, depending on the test area of interest. The measurements were taken in 8 points and a time of spectre accumulation was 100 seconds; PLM was carried out using the methodology developed by Peter and Ann Mactaggart. See Peter Mactaggart and Ann Mactaggart, *A Pigment Microscopist's Notebook*, 7th rev. (Somerset: Published by authors, 1998); The mounting medium for pigment dispersions was Cargille Meltmount nD=1.662.

²⁵ The protein stains were prepared and applied according to Elisabeth Martin's methods. See Elisabeth Martin, "Some Improvements in Techniques of Analysis of Paint Media", *Studies in Conservation* 22 (1977): 63–67.

²⁶ Imprimatura is a semi-transparent coloured insulation layer placed directly on the ground before painting, in whatever tone desired. It provides an overall tonal optical unity in a painting and helps the painter establish value relations from dark to light in the initial stages of the work.

²⁷ Jim Dimond and Christina Young, "Reducing Cupping Without Lining" in *Alternatives to Lining: The Structural Treatment of Paintings on Canvas Without Lining*, ed. Mary Bustin and Tom Caley (London: United Kingdom Institute for

Conservation of Historic and Artistic Works, 2003), 29–30; Maartje Witlox, "Many Hands Make Light Work: The Seventeenth-Century Antwerp Interior with Figures Before a Picture Collection", in *Art Matters, Netherlands Technical Studies in Art 3* (2005): 87.

²⁸ Impasto is a thick and opaque textured area resulting from the application of heavily bodied paint where brush or painting-knife strokes are visible.

²⁹ XRF analysis typically probes paint layers in totality, making it sometimes difficult to discern the exact layers from which emissions for different elements are detected.

³⁰ Kraus and Vogelsang, *Raden Saleh*, 64.

³¹ The lipid stains were prepared and applied according to the methods of Meryl Johnson, Elizabeth Packard and Richard Wolbers, and the saponification test was conducted according to the methods of Elzbieta Mirowska, Maria Pokinska and Irena Wisniewska. See Meryl Johnson and Elizabeth Packard, "Methods Used for the Identification of Binding Media in Italian Paintings of the 15th and 16th Centuries", *Studies in Conservation* 16 (1971): 145–64; Richard Wolbers, *Cleaning Painted Surface: Aqueous Methods* (London: Archetype Publications, 2000), 177; Elzbieta Mirowska, Maria Pokinska and Irena Wisniewska, *Identyfikacja podobraz i spoiw malarskich w zabytkowych dziełach sztuki* [Identification of painting supports and binding media in works of art] (Torun: Uniwersytet Mikołaja Kopernika, 1986), 150.

³² For infrared examination, a Heliopan RG 1000 filter with visible light cut-off point around 1000 nm was attached to the camera lens.



Figure 18. The painting *Ship in Distress* before conservation had suffered severe cupping. The painting was photographed in raking light to reveal the cupping



Figure 19. Varnish removal treatment significantly improved the colours and clarity of the underlying paint layer of the painting *Ship in Distress*

CONDITION ASSESSMENT

The painting's main problems were severe cupping of the paint layers (Figure 18) and varnish discolouration; these were detrimental to the painting's visual appearance. Cupping formation is a complex process called stress alignment and describes differential shrinkage of various layers. The cupping in *Ship in Distress* had occurred due to contact with moisture during the aqueous gluing of the canvas to the cardboard. The moisture had caused the development of stress, which had resulted in shrinkage and stiffening along poorly filled weft arrangement.³³ Additional stress had developed when the glue size contracted during drying. The trapped moisture between the canvas and backing could evaporate only through the aging cracks and the newly developed cracks caused by shrinkage of the canvas. Subsequently, as the paint layer contracted during drying, the edges of the cracks had become raised, leading to cupping. All these factors had resulted in pulling the canvas upwards and lifting the paint and ground layers.

The irregular canvas structure (19.3% difference between weft and warp fillings) had also contributed to the scale and orientation of the cupping. The warp's vertical arrangement (75.2% warp filling) dominates the weft's horizontal arrangement (55.9% weft filling); therefore, the canvas had shrunk along the poorly filled weft arrangement, and hence the lines of cracks and cupping formation were vertical. However, the cupping had been mitigated probably by the almost equal width of the weft and warp threads and their weak "Z" twists. There were also a few planar deformations along the edges and air pockets between the painting and the paper board.

A yellowed and irregularly glossy natural resin coating covered the paint surface. There were also some minor faded retouchings over the varnish in the sky area. This suggests that the painting had been retouched in preparation for its auction sale in 2000. The painting was mounted on an unstable original strainer that exhibited splits and loose joints, and was framed in a non-original contemporary frame with a highly reflective glazing.

CONSERVATION TREATMENT

The goals for the conservation treatment were to stop the deterioration of the original materials, improve the painting's appearance and stabilise its structural condition.

First, the yellowed varnish was removed in order to re-establish the composition's legibility. A solvent solution of isopropanol and Stoddard (2:1 ratio) removed the varnish along with the retouchings on the surface. The treatment significantly improved the colours and clarity of the underlying paint layer (Figure 19).

Next, with the painting taken off from the strainer, the paper label was removed from the backing board using a sharp scalpel. This was relatively easy to do as the natural adhesive was brittle. After the label was cleaned with a soft sponge and the excess adhesive scraped off with a scalpel, it was encapsulated in a Melinex envelope.

The next stage was separating the painting from the paper backing board. The paint layer was protected by facing a Japanese tissue adhered with 3%

methylcellulose, laid face down and secured with two clamps to prevent any movement. The paper board was locally wetted with water and removed with a chisel and a scalpel (Figure 20). In order to prevent moisture from causing any local distortions of the original canvas, blotting paper was placed on the cleaned areas and pressed with glass plates and weights.

After the paper board was removed, the back of the canvas could be fully seen (Figure 21). Next, the problem of cupping paint had to be addressed. Cupped paint may not be successfully brought into the plane by lining; conservation literature has documented multiple failures.³⁴ Moisture treatment combined with pre-stretching on the adjustable working frame and local consolidation of the affected areas was opted for as a suitable technique. The Japanese tissue facing was first removed with wet cotton swabs. The painting was then temporarily strip-lined with 2.5µm thick Beva film and linen canvas, and fixed face down to a Lascaux adjustable working frame. The work area was then covered with polyethylene foil, on top of which a piece of wet fabric with dimensions similar to the frame's internal dimensions was placed. Four foam blocks were placed on the fabric's corners. The frame, along with the painting's paint layer facing up, was suspended on the four foam blocks over the source of moisture. The whole

structure was covered with polyethylene foil to create a climate envelope. The aim was to plasticise the paint layers and canvas with moisture so that the painting could be tensioned by expanding the adjustable frame. The pressure was increased gradually every 30 minutes by precisely adjusting the screws. This process was repeated four times until sufficient tension was achieved. The canvas planar deformations were completely eliminated.

Then, the frame with the painting was removed from the climate envelope and the paint layer was put face up on a working surface. Consolidation tests were carried out with 5% weight per volume (w/v) solution of Aquazol 500 in isopropanol and 5% weight per volume (w/v) solution of Plexisol P550 in xylene. Consolidants were applied by brush to the localised areas of cupped paint. The affected areas were pressed and heated with a tacking iron through a layer of Melinex. However, most of the cupped paint was only minimally reduced.

Another treatment was thus considered: consolidation through impregnation of the painting.³⁵ Current research has found the impregnation method to be effective in the long term whereas less invasive treatments have been unsuccessful.³⁶ The deep penetration of the adhesive during impregnation enables contact between the canvas

³³ The analysis was based on the Mecklenburg model for the generation of cupping in canvas paintings. See Paul Ackroyd, "The Structural Conservation of Canvas Paintings: Changes in Attitude and Practice Since the Early 1970s", *Reviews in Conservation*, no. 3 (2002): 9.

³⁴ Jim Dimond and Christina Young, "Reducing Cupping Without Lining" in *Alternatives to Lining: The Structural Treatment of Paintings on Canvas Without Lining*, ed. Mary Bustin and Tom Caley (London: United Kingdom Institute for Conservation of Historic and Artistic Works, 2003), 29–30.

³⁵ Gustav Berger, "Lining of a Torn Painting with Beva 371", in *Lining Paintings: Papers from the Greenwich Conference on Comparative Lining Techniques*, ed. Caroline Villers (London: Archetype Publications, 2003), 56; Michael von der Goltz, et al., "Consolidation of Flaking Paint and Ground", in *Conservation of Easel Paintings*, ed. Joyce Hill Stoner and Rebeca Rushfield (London: Routledge, 2012), 377.

³⁶ Dariusz Markowski, "Nowe, bezpieczne sposoby ochrony impastowej warstwy malarskiej obrazów olejnych na płótnie podczas zabiegów konsolidacji i dublazu na stole próznowym [New safe methods of protecting the impasto paint layers of oil paintings on canvas during the consolidation and relining on a vacuum table]", in *Problemy dublowania obrazów na płótnie*, ed. Maria Roznerska and Joanna Arszynska (Torun: Uniwersytet Mikołaja Kopernika, 2005), 21, 24, 33; Jadwiga Wyszynska, *Metody dublowania w procesie konserwacji malowideł sztalugowych na płótnie [Lining methods in the restoration of easel paintings on canvas]* (Krakow: Akademia Sztuk Pięknych, 2003), 66.

Figure 20. The paper material of the cardboard of the painting *Ship in Distress* was locally wetted with water and removed with a chisel and a scalpel

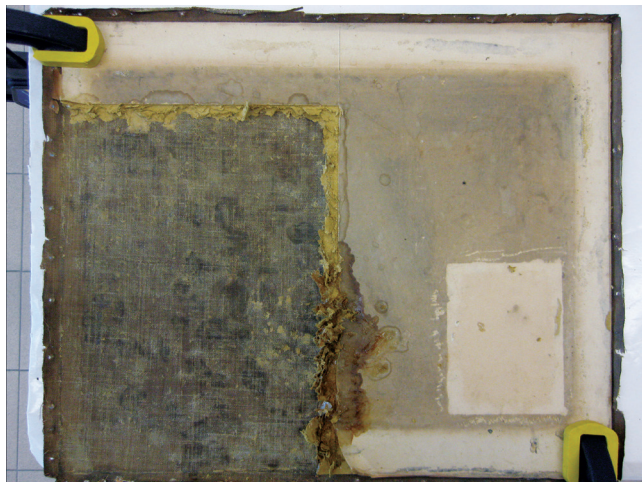


Figure 21. The back of the canvas was fully visible after the paper board was removed

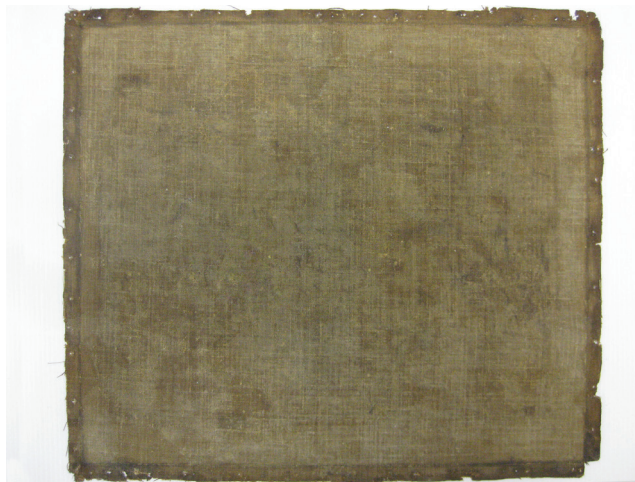




Figure 22. *Portrait of Raden Saleh* by Friedrich Carl Albert Schreuel, collection of the Rijksmuseum, Holland

and the paint layer to be re-established. Therefore, if the consolidant could be introduced from the painting's front and back, firm adhesion could be achieved.³⁷ Hence, the painting was taken off from the frame, the strip-lining was removed, and a warm 12% Beva 371 solution in Stoddard was applied by brush on the painting's front and back. The application was repeated. After the Beva had dried, the painting was put face up on a vacuum hot-table under uniform heat and treated for 15 minutes at 65°C and a pressure of 300mb. This treatment was successful and the cupping was thoroughly eliminated.

The tacking margins had rust damage and were unequal in width, so a strip-lining was added to the margins. Losses to the paint surface were filled using white putty prepared by hand (12% weight ratio of calcium carbonate and polyvinyl alcohol). The painting was stretched on a new strainer and brush-varnished with Larapol A81 at 12% in turpentine. Retouchings were executed with gouache colours combined with MAIMERI ketonic resin colours. Finally, a protective coat of semi-glossy varnish (Larapol A81 at 12% in xylene with Cosmolloid 80H microcrystalline wax added in the ratio of 10 parts of resin to 1 part of wax) sprayed over the painting's surface. As a preventive conservation measure, the painting's back was supported with a foam core backing board. The encapsulated label was attached to the backboard with double-side tape.

FRAMING AND ETHICAL CONSIDERATIONS

The original frame was not preserved and was replaced with a contemporary frame likely to have been introduced when the painting was being prepared for its auction sale in 2000. From both historical and aesthetic perspectives, the contemporary frame is unsuitable for the painting. The search for an appropriate frame is a subject for separate study, but I would like to highlight the issue of the painting's original presentation here and initiate a thorough, systematic research in the future.

As Malgorzata Sawicki states, many factors should be taken into account when selecting an appropriate period frame or designing a reproduction frame. These include the artist's intentions, influences, year of production, circumstances associated with the creation, subject of the painting, as well as its palette and style.³⁸ Much of this information often remains undetermined; therefore, if there is little evidence on the original frame of a particular painting, a conservator often researches frames used by the same artist to find the most appropriate design. We can speculate that a comparable frame may exist in other collections, but we must take into account that picture frames have for a long time been seen as transitory, dispensable and subject to fashion and taste.

Looking for an appropriate design for the frame of *Ship in Distress*, I came across a painting entitled *Portrait of Raden Saleh* by Friedrich Carl Albert Schreuel.³⁹ This painting in oil on canvas, measuring 106.7 x 85.3cm, presents Raden Saleh painting one of his seascapes (Figure 22). The portrait was created in 1840, the year Raden Saleh was living in Dresden and produced many maritime paintings. Schreuel painted a very detailed seascape in this painting, showing the distressed ship with a prominent barrel floating in the sea, which is characteristic of Raden Saleh's maritime scenes. This suggests that Schreuel might have been equally accurate in his representation of the painting's frame.

The frame in Schreuel's painting has simple scrollwork corners and curved outer edges hinting at the Rococo influence. These features are typical of Biedermeier frames, used in Germany, Austria and Scandinavia from 1815 to 1849.⁴⁰ Thus, we can assume that the seascape that is portrayed together with Raden Saleh in *Portrait of Raden Saleh* was originally decorated with such a frame, available in Germany at the time.

Portrait of Raden Saleh is hence a source that should be considered

³⁷ Larisa Yashkina, "Adhesive Method of Consolidating Oil Paintings with Cuppings and Hard Craquelure", in *Lining Paintings: Papers from the Greenwich Conference on Comparative Lining Techniques*, ed. Caroline Villers, (London: Archetype Publications, 2003), 106.

³⁸ Malgorzata Sawicki, "From Lady in Black to Art Students: The Story Behind Changing a Frame", *AICCM Bulletin* 30 (2007), 45.

³⁹ Friedrich Carl Albert Schreuel, *Portrait of Raden Saleh*, 1840, oil on canvas, Rijksmuseum, Amsterdam, Painting, accessed February 2014, <http://hdl.handle.net/10934/RM0001.COLLECT.5363>.

⁴⁰ Paul Mitchell and Lynn Roberts, *A History of European Picture Frames* (London: Merrell Publishers, 1998), 97.



Figure 23. After conservation treatment, the painting *Ship in Distress* was framed back into its non-original, contemporary frame

when seeking a suitable frame for *Ship in Distress*. The Biedermeier frame seems to be a good choice as it was in use when the painting was created. Meanwhile, the painting, after its conservation treatment, was framed back in its non-original, contemporary frame, but with the frame's highly reflective glazing removed (Figure 23). I hope that the current frame will serve only as a temporary solution and that thorough research on a suitable period frame for the painting will be conducted in the near future.

CONCLUSION

To our knowledge, there has been no previous technical study of Raden Saleh's seascapes. Hopefully, this paper will help contribute to the research on the artist's techniques.

Comparing the artist's styles for *Ship in Distress* and other similar works, we can surmise that he chose his

representations of ships in storms consciously as he believed that he would be able to capture the emotional qualities of such scenes.

The technical examination of the painting helped further understanding of the artist's techniques and materials, while the non-invasive near-infrared examination revealed the characteristics of his preparatory drawing, which allowed for comparisons with the final paint layer. XRF and PLM analyses identified the major pigments used by the artist. For a more comprehensive study of the artist's techniques, further near-infrared examination combined with detailed material analysis of Raden Saleh's other seascapes will be required.

The technical examination also pinpointed the causes of the painting's deterioration. Although the conservation of the painting was a challenging project, the final result is satisfactory as the painting is now in

a presentable condition for display. The conservation treatment greatly improved the painting's appearance and stabilised its structural condition. To enhance the artwork and present it appropriately, further research on a suitable period frame will be needed. ■

ACKNOWLEDGEMENTS

I would like to thank Dr Werner Kraus, Director, Centre for South Asian Art, Passau, Germany, for his translation of the inscriptions and permission for the reproduction of the images in this publication, and to Lynn Chua, Assistant Conservator (Paintings), HCC, for conducting the XRF analyses.