TECHNICAL EXAMINATION AND CONSERVATION OF THE PAINTING "THE DEATH OF SAPPHIRA" BY AMBROSIUS FRANCKEN II: CONTRIBUTION TO THE ARTIST TECHNIQUE

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ABSTRACT

This paper focuses on a technical examination and structural treatment of the 17th century Flemish panel painting "The Death of Sapphira" by Ambrosius Francken II. The panel belongs to the Office of Public Works and is displayed in Dublin Castle, Ireland. The technical and stylistic examination and conservation of the painting were carried out in 2012 by the author. According to the author's current information there is no similar technical study of other paintings by Ambrosius Francken II so that this paper may be a contribution to the artist technique. The results of the research work were compared to the current knowledge of the 17th century panel paintings. A significant result of the examination process was the discovery of the Antwerp brand on the back of the panel that clearly defines that panel was created after 1617. The panel's damage problems concerned the open joins caused by a contraction of the planks and extreme concave warping of the surface caused by the later addition of two glued crossbeams. The main aim of the challenging conservation process was to eliminate warping and this was conducted by the removal of the crossbeams, further gentle moisture treatment of the painting to correct the deformations and rejoining.

1. Introduction

The panel painting "The Death of Sapphira" (Figure 1) belongs to the Office of Public Works (OPW) and is part of the collection of Dublin Castle. The OPW is responsible for the management of the State art collection, which now comprises almost 7,000 works by over 1,250 artists, located in Government buildings and public spaces throughout Ireland and in some of the Irish embassies. Dublin Castle is one of the most popular tourist attractions in Ireland and houses an impressive collection of paintings and sculpture, particularly from the 18th and 19th centuries. Before the treatments, the painting was on display at Dublin Castle but the exacerbated instability and distortions of the panel caused by the past treatments were disturbing to the viewer and made it unacceptable for display purposes. The conservation project, started in May 2012 and completed four months later, presented complex conservation problems due to natural deterioration of the panel and its subsequent restoration. Discussion with the owner showed that no technical analysis of the painting had been carried out to his knowledge. Hence, the conservation intervention was a great opportunity to gather technical information of the painting and of the artist. The initial technical examination was prompted by the painting's conservation issues but its study gradually progressed when a survey of technical literature revealed two similar panel paintings painted around the same time.

Figure 1. State before intervention of "The death of Sapphira" by Ambrosius Francken II, Dublin Castle, Ireland.

Figure 2. "The Death of Sapphira" by unknown Antwerp painter from the circle of Ambrosius Francken I, National Museum in Krakow, Poland.

2. Iconography

The painting represents a biblical scene from the Acts of the Apostles (Acts 5: 1-11) depicting Ananias and his wife Sapphira, who were members of the early Christian community in Jerusalem. At the time, it was a custom to contribute charity for the poorest people. According to the 'Acts of the Apostles', Ananias sold a possession and lied to the Apostles about the proportion of wealth he was presenting to the Church. Ananias was struck down by God for his dishonesty and Sapphire, three hours later, suffered the same fate, she too lied to the apostles about her husband's gift. In the foreground, a group of figures are gathered around the dead body of Sapphire. Three men lift it up, as in an entombment or lamentation scene, while the others look on in surprise and horror. According to the Acts of the Apostles, after Sapphira's death "great fear came upon all the church and upon all who heard these things". The figures of Peter and the Christ-like John are in the background of the painting accepting gifts for the church from the assembled crowd.

The work combines Northern Realism with a familiarity with current Italian art and with classicism in general. The elongated figures of Peter and the woman in the left foreground corner are stock Mannerist figures, elegant and self-conscious. They are set-pieces showing off the artist's sense of style and knowledge of classical art. The costumes are a strange combination of contemporary and classical dress, with an emphasis on sumptuous fabrics and colours. Another feature of this style is the claustrophobic sense of space which the figures occupy [1].

The scene is attributed in the collection catalogue to an unknown painter from the circle or follower of Flemish artist Ambrosius Francken I (1544–1618) [1, p. 69] while a comprehensive study of the Francken family conducted by Natasja Peeters attributes the work to Ambrosius Francken II (after 1590-1632) and dates it to 1615-1620. She points out that the artist was active from 1610 onwards [2].

The painted scene seems to have been very popular around 1620s as two similar versions still exist. One is exhibited in the National Museum in Krakow, Poland (inventory number MNK XII-A-873) (Figure 2). According to the museum's online catalogue [3], the artwork is attributed to the unknown

Figure 3. "The Death of Sapphira" by Ambrosius Francken. Saint-Jean cathedral in Besancon, France. Photo by Yves Sancey, Franche-Comté region, Inventory and Heritage, ADAGP, 1998.

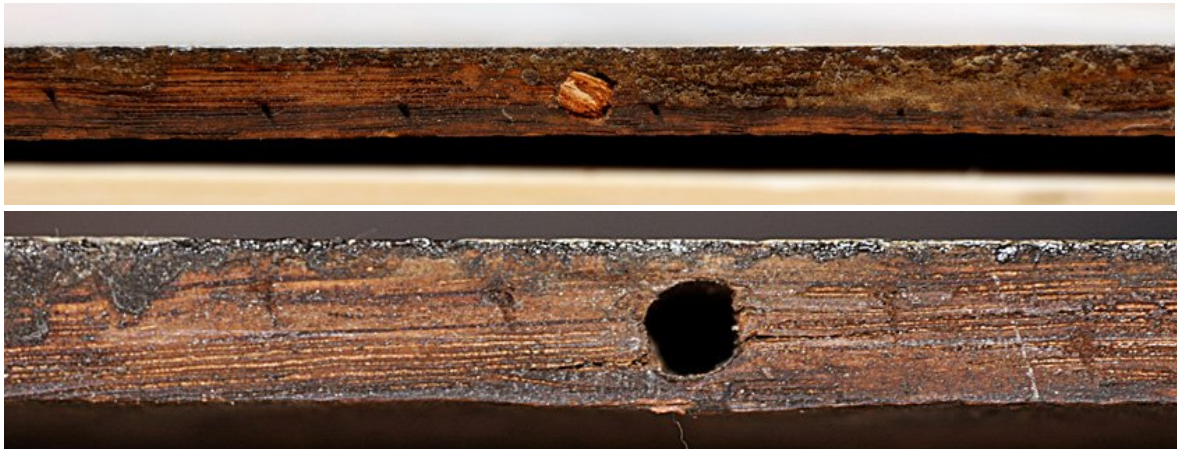
Figure 4. Back of the painting and frame before intervention.

Antwerp painter from the circle of Ambrosius Francken I and was created around 1600. The panel consists of single board and measures 48 x 64 cm and it was executed in grisaille technique with oil paints. The other painting whose iconography is very similar is displayed in the Saint-Jean cathedral in Besançon, France (Figure 3). According to the General Inventory of Cultural Heritage [4], the painting was first attributed to Tintoretto, then to Jacob de Backer and finally to Ambrosius Francken. Unfortunately the catalogue doesn't specify if the painting is attributed to Ambrosius Francken I or II. This panel painting executed in oil technique is much bigger than the two others and measures 212 x 255 cm.

It is evident from the design of these three paintings that the artists were looking at or taking an inspiration from an unknown engraving source. It is difficult to speculate how closely the preparatory drawings follow the source but some comparison can be made among the paintings to trace similarities and differences. The paintings from Krakow and Dublin have a vertical format while the French painting is almost square. The scene takes place in a monumental architectural framework which fills the right side of the composition. The foreground group of people tightly surrounds a dead Sapphira. Some of them are frightened or curious. The number of crowd participants differs but three figures always support the dead body of Sapphira in all three paintings. The position of her legs and the twist of her left hand are similar in the paintings from Dublin and Krakow while the very characteristic tilt of her head can be found in the paintings from Krakow and Besançon. In all three paintings, the foreground crowd is separated from the group assembled around St Peter and John standing on the steps. The architectural background is indistinct and flat in the scenes from Krakow and Dublin while the artist of the French panel painted the arches giving more depth to the three dimensional illusion of the scene. In the last panel, a view of the far mountainous landscape was created behind the architecture.

3. Materials and Technique

The painted panel measures 94 x 124 cm and it is made of four oak planks cut radially (Figure 4). They have solid and relatively straight grain oriented in a horizontal direction. The oak was the



Figures 5 and 6. Close-up of the face of the join. The images show incisions made on the face in order to improve the bond of the natural skin glue. The floating dowel was inserted in the carved housing without glue.

most common support used by painters of the Northern school. The planks vary in width and are 22-27.5 cm wide which was common in the Northern countries [5]. The thickness of the planks is 7-10 mm. No knots or defects nor cut-marks were found on the panel which suggests that the panel's planks were carefully sourced, and after assembly their surface was planed until completely smooth. The assembly of the planks was achieved by horizontal butt-joining and accurate planing of the faces to be united and then making incisions to improve the bond of the natural skin glue what appears to correspond to the traditional preparation found in Cennino Cennini's *Treatise on Painting* [6]. To assure an accurate alignment, dowels made of hardwood were used (Figures 5, 6). A visual examination of the joins faces revealed three carved housings at regular intervals inside the thickness of each plank. The floating dowels were inserted in these housings without glue with the grain across to that of the support in order to maintain the position of the planks until the glue applied on the edges had hardened. This method was a standard for joining the planks for large panels. The larger panels of standard size (75 x 110 cm) made of three planks would have had three dowels in each join. As panels produced in the northern countries became thinner toward the end of the 16th century (8-30 mm thick) dowels replaced the butterfly keys for stabilizing and aligning the joins during gluing [5, p. 155]. Therefore, the butterfly keys on the back of the panel painting "The Death of Sapphira" can be a later addition. Probably early in its history the original butt joins broke and the oak butterfly keys were inserted into the boards as deep as one-half of the board thickness, with their grain running crosswise to the board's grain, to hold the adjacent boards tightly together (Figure 7). Then, at the end of 20th century, an attempt was made to stabilize the panel by gluing two oak crossbeams, each 80 mm wide. They were glued on the reverse of the panel across the grain of the boards (Figure 4). The role of the crossbeams was to stabilize and hold the four planks together as some butterfly keys and joins had become loose. Unfortunately, they had a negative effect because they caused an extreme concave warp of the panel's surface.

On the back of the panel, in the top-left corner there is a black painted inscription (...*ii*^{c} *49*•), which may be a former inventory number (Figure 8). The inscription was revealed during the dirt

Figure 7 (top). Close-up of the non-original butterfly key photographed in raking light.
Figure 8 (center). Detail of the remains of the black painted inscription, which may be a former inventory number. The inscription was revealed during a dirt removal treatment. It is only partially legible probably due to the planing of the back of the support for the crossbeams.
Figure 9 (bottom). The Antwerp brand, discovered on the back of the panel.

removal treatment of the back of the panel. It is only partially legible probably due to the planing of the support back for the crossbeams. Recent conservation treatments carried out by the author also revealed the brand mark on the back of the panel at the centre of the panel (Figure 9). The brand is worn and very shallow so that it was barely visible through the layers of accumulated dirt and dust. Nevertheless the cleaning process revealed more characteristic features like open hands and tower. The identification process was supported by the comprehensive study of the Flemish brand marks published by M. Schuster-Gawlowska [7]. In her book, the author presented an evolution of the Antwerp coats of arms through the centuries so that the comparison and identification were easier and it could be said that the brand on the panel consists of two open hands above a castle with three towers and thus corresponds to the Antwerp's coat of arms. The panel-maker's personal mark has not been found in combination with the Antwerp brand on the back of the panel.

Further examination of the brand was facilitated by the study of Antwerp brands on the panel paintings by J. Wadum [8]. The author classifies all known types of the Antwerp brands and explains the circumstances of their use. The branding iron with Antwerp's coat of arms was usually carried by the dean to the panel-maker's workshop where, if the quality of the panels was approved, it would be heated enough to burn its image in the oak. A major role of the craft guilds was to maintain the quality of the work of their members. To do so, on 13th of November 1617 the Antwerp Joiners' Guild drew up new regulations to ensure the quality of the panels leaving a joiner's workshop. These regulations were sanctioned one month later, on December 11th, and the new set of regulations was given to the joiners and to the panel makers as well as to the Guild of St. Luke [9].

The Antwerp brands show a large variety of shapes of the towers and hands indicating that many different irons were used. It is unknown how many branding irons the guild would actually have had in circulation at one time but to date 18 different brands used on panels dating from 1600 to 1650 have been recorded. The comparison study of the Antwerp brands examined by Wadum [8], with the brand found on the panel, suggests that, according to Wadum's individual classification of the brands [8, p. 197], probably branding iron "number 1" was used for branding the panel for the painting "The Death of Sapphira". Brand "number 1" was in use from 1617 to 1626 [8, p. 184-185] and this indicates the approximate period of production of the panel. Because of the great demand for panels it can be supposed that the painting was probably painted shortly after the preparation of the panel.

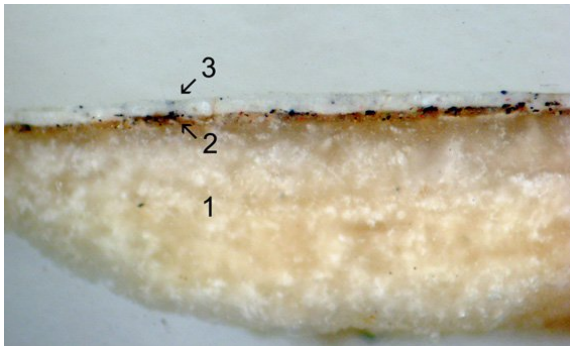
Identification of the ground material was carried out by polarized light microscopy (PLM) on the Olympus CX31-P at magnification x40 – x100 – x400. The mounting medium for pigment dispersions was Cargille Meltmount nD=1.662. The visual observation confirmed the presence of chalk (calcium carbonate). Small circular structures of coccoliths showed irregular dark cross on a bright circular background.

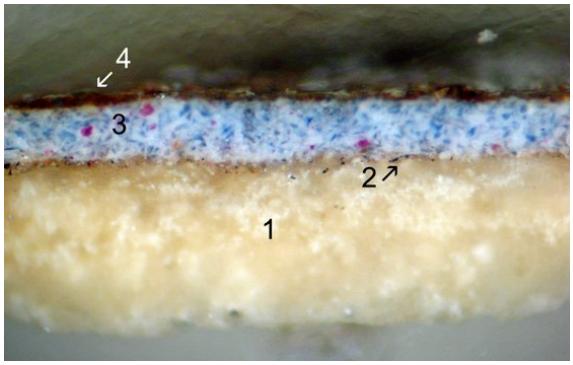
For binding media identification, samples of the paint layer were embedded in self-curing acrylic resin "Estetic S", supplied by Wident (Poland), and then polished with abrasives down to grade 2000. Amido black staining test confirmed the presence of proteins in the ground. The protein stains, were prepared and applied according to the instruction compiled by M. Johnson and, E. Packard [10].

Based on the observation of the joins' faces and cross-sections on the microscope, it was confirmed that a cloth was not used as a preparation for the ground, although this material was traditionally the crucial element of the panel painting construction that isolated the wooden support movement from the preparatory layer [6, p. 69]. The ground layer is relatively thin, and consists of two successive layers. During the evolution of painting techniques from the 15th century onwards, chalk grounds became less polished and thinner than their predecessors. The simplification of this priming technique may have its source in the observation of the old, thickly primed paintings on panels which have shown cracks or worse signs of deterioration in the 17th century [11].

Before painting, the artist made a compositional sketch which is visible in normal light and was further confirmed through the near infrared examination based on infrared capable Nikon D90 SLR with attached infrared filter B+W 093 with visible light cut-off point around 900 nm. Dark, bold lines applied with a brush were found in the faces of the figures surrounding Sapphira. The observation of the paint cross-sections could not reveal if the preparatory sketch was made directly on the white ground or on the imprimatura. In the Northern countries the preparatory drawings were traditionally made directly onto the thin white ground, on top of which a translucent insulating layer of imprimatura would be placed. The microscopy cross-section observation of the samples combined with the macroscopic observation of the painting layer revealed that the imprimatura is light brown and contains some brown and black particles (Figures 10-12). Additionally, the visual observation revealed that the imprimatura has a brushed character. The parallel lines are visible in the neutral "middle" tones between highlights and shadows (Figures 13, 14). The staining tests showed the presence of oil in the imprimatura.

Cross-sections revealed a rather simple paint stratigraphy (Figures 10-12). Sudan black staining





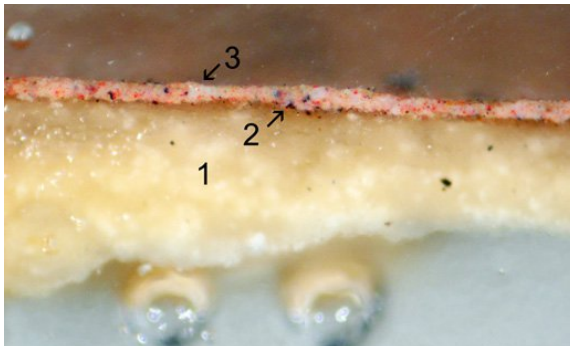


Figure 10 (top). Paint cross-section from Saphira's neck, showing ground and paint layer structure: 1- ground; 2- imprimatura; 3- white paint.
Figure 11 (center). Paint cross-section from foliage over blue sky, showing ground and paint layer structure: 1-ground; 2- imprimatura; 3-light blue paint; 4-brown paint.
Figure 12 (bottom). Paint cross-section from forehead of man, showing ground and paint layer structure: 1- ground; 2- imprimatura; 3-light red paint.

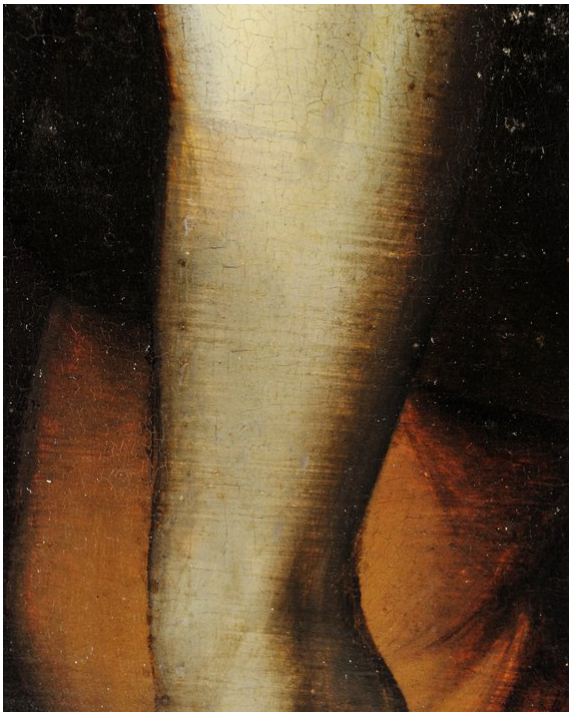
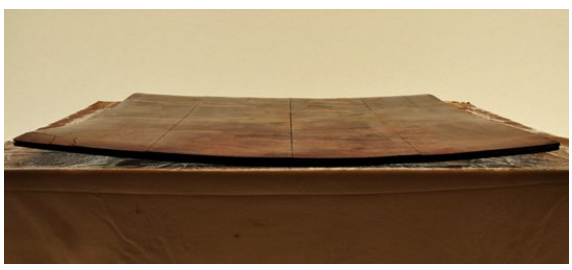


Figure 13 (top). Detail of the sky. The light-brown colour of the imprimatura is very well visible through the layer of blue paint.
Figure 14 (bottom). Detail of Saphira's forearm. The parallel lines of the streaky imprimatura are visible through the layer of white.

tests on the paint layer cross-sections detected oil. The stains, were prepared and applied according to the instruction compiled by E. Martin [12]. The paint was applied thinly so that the preparatory sketch and imprimatura are visible with the naked eye (Figures 13, 14). The palette of colours has not been fully identified as there was no such need but dispersed samples of some materials were analysed with polarized light microscopy and revealed lead white, vermillion and smalt. These findings could be compared with the other works by Ambrosius Francken II but unfortunately the author did not have an access to those paintings or examination reports.



4. Condition Assessment of the Painting Before Conservation Treatment

The panel's damage problems concerned the wooden support and consisted of gaps in the joins caused by a contraction of the planks and of extreme concave warping of the surface caused by

Figure 15 (top left). The painting photographed in back light shows the extent of the concave warping of the panel before intervention.
Figure 16 (center left). Back of the painting with frame photographed in raking light. This photography technique reveals surface irregularities and planks deformations along the joins. State before conservation.
Figure 17 (bottom left). Painting laid face up. The image shows the surface concave deformation of the panel before conser-vation.
Figure 18 (top right). Close-up of the painting photographed in raking light reveals separation of the planks at joins and their local deformation. State before conservation.
Figure 19 (lower right). Detail of Sapphira's face. The image shows separation of the planks at joins before conservation.

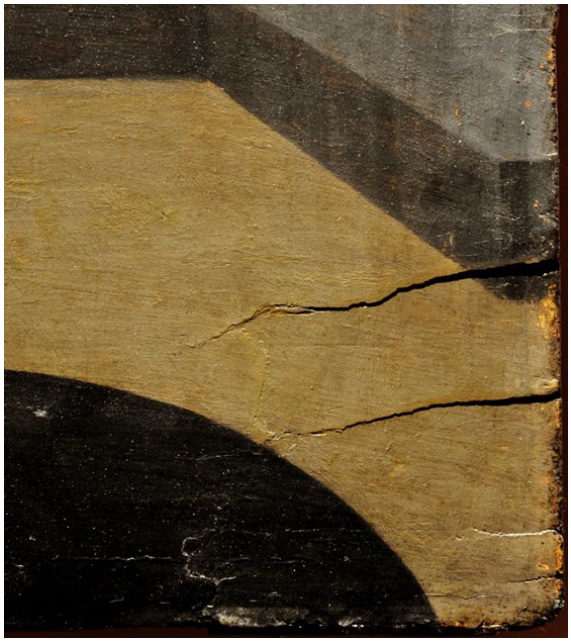


Figure 20 (top). Close-up of the bottom-left corner of the painting photographed in raking light. The image shows a damage to the support. The area of damage was previously rejoined with natural glue but probably further poor handling and/or unstable environmental conditions weakened the repairs. State before conservation.
Figure 21 (center). Close-up of the painting showing discoloured retouchings (marked with white arrows). State before conservation.
Figure 22 (bottom). Close-up of the same area photographed in UV light. The image reveals retouchings visible as dark spots against fluorescent original paint. State before conservation.

the later addition of two crossbeams (Figures 15-19). The panel was separated at the joins and the entire structure remained united only by the butterfly keys and glued crossbeams. The bottom-left corner of the painting had two breaks and the wooden pieces of the support were unstable regardless of the fact that the area had been previously rejoined with natural glue but probably further poor handling and/or unstable environmental conditions weakened the area of repair (Figure 20). Although oak has a mechanical strength, durability and resistance to wood-boring insects, several woodworm holes were noticed in the panel, as one would expect in an object of this age. The stability of the painting layer was good although the absence of cloth between the panel and the ground resulted in a wood movement that affected the paint layer. Cracks were observed exclusively along the joints, breaks of the support mostly running along the grain. There were also two very deep scratches observed on the bottom part of the panel, on the yellow dress of the woman.

Probably early in its history, the original butt joins broke and the butterfly keys were inserted across the board joins. According to the information received from the owner of the painting (OPW), the painting was restored in the second half of the 20th century but it remains unclear as no record of that restoration was completed. The technical examination of the painting carried out with visible light (raking and diffused) and ultraviolet revealed that the restoration treatments included gluing the cracks, filling of losses, extensive retouching and varnishing. The majority of retouchings were in good condition. Discoloration of the retouchings occurred only in the area of a blue sky, Saphira's neck and the stone steps in the bottom-left corner (Figures 21, 22). Varnish presented a very good state of preservation. There were no signs of discolouration or any other optical distortion. The whole panel was reinforced on the reverse with two

Figures 23 and 24 (left). The crossbeams were removed by making the cross-grain cuts down to a few millimetres above the panel at very close intervals and snapping off thin wafers with a chisel without much pressure. The wooden material residue was locally wetted with IMS and removed with chisels and then scalpel blades. Figure 25 (top right). The panel boards were placed in the micro-climate box, where the humidity was gradually increased. The boards were then allowed to dry under the moderate pressure controlled by a system of screw clamps and padded restraining bars above the boards surface.

crossbeams. In order to facilitate the installation of the crossbeams, the restorer planed down the surfaces where the reinforcement should come. This very invasive procedure caused inevitable removal of the original material and damage to the historic inscription (Figure 8). Two oak cross-beams (950 x 80 x 14 mm) were positioned across the grain of the panel and attached with animal glue. The glued crossbeams and the adhesive had subsequently shrunk and caused an extreme concave warp of the panel's surface with a deflection of 33 mm. The planar distortions were disturbing to the viewer and made it impossible to frame and display the work (Figure 15).

5. Conservation Treatment

The primary aim of the conservation was to improve the stability and functionality of the wooden support through individually designed conservation methods with minimal invasiveness. It was understood that the oak crossbeams were responsible for the warping of the panel and therefore their removal was the priority task to relieve the accumulated stress between the planks. Before the structural work took place, the paint layer was protected by facing a Japanese tissue adhered with 3% hot rabbit skin glue. This adhesive was chosen because it enabled good conformation of the tissue to the picture surface and was compatible with the consolidants and fracture repair adhesives to be used.

The panel was laid face-down on the specially carved Plastazote cushions. The crossbeams were removed by making the cross-grain cuts down to a few millimetres above the panel at very close intervals and snapping off thin wafers with a chisel without much pressure. The wooden material residue was locally wetted with methylated spirit and removed with the chisels and then scalpel

blades (Figures 23, 24). Once the crossbeams were removed, the back of the panel could fully be seen. Some open cracks in the back of the panel became visible. The joins between the planks were loose and the decision was made to separate the planks by removal of all the already loose butterfly keys. Next, the boards of the panel were placed in the microclimate box, where the humidity was gradually increased (Figure 25). At 75% of relative humidity (RH), the boards relaxed. They showed some minor distortions but had gained good flexibility. Then, the boards were allowed to dry under the moderate pressure controlled by means of a system of screw clamps and padded restraining bars above the boards surface. The boards were kept flat in the studio for two weeks where the RH had been stabilized at 57%. After two weeks the pressure was released and the panel was allowed to adjust to the environmental conditions. It appeared stable, and its curvature had not altered significantly.

Cleaning of the reverse wooden surface was achieved using 10% Vulpex Liquid Soap in a white spirit. At the end of the treatment, the support was disinfected actively by a brush application of Constrain insecticide based on Permethrin. Once the facing was removed the painted surface was cleaned with 4% triammonium citrate. Next, a 15% solution of Paraloid B72 in toluene was injected into the wormholes. For filling the large open wormholes and lost areas, wood flour mixed with Paraloid B72 were used. Partial fractures and cracks were glued by introducing hot animal-hide glue and clamping pressure. For better wetting of the

Figure 26 (top). The painting after rejoining, filling the losses of the ground layer and varnishing.
Figures 27 and 28 (center). Close-up of the painting after gluing the cracks, filling the losses of the ground layer and varnishing.
Figure 29 (bottom). Painting after conservation and framing.

Figures 30 and 31 (top). Close-up of the painting after conservation.
Figure 32 (bottom). The panel was closed on the back by means of the 5 mm clear acrylic sheet acting as a moisture barrier. The additional advantage of the clear backing is that it can allow monitoring of the back of the panel and also makes the Antwerp brand accessible for the further research and documentation.

cracks, more dilute glue was first applied, and then more concentrated. The glue was applied with a brush by allowing it to flow into the void under gravity and capillary action. In order to increase glue penetration a finger pressure and hot spatula were used. The adhesive was introduced from the both sides of the panel. A moderate pressure was applied locally to secure the equal level of the painted surfaces.

The next task was to rejoin the boards of the panel and secure an equal level to the painted edges between the boards. The procedure started with the thorough removal of the joint faces of old glue debris and dirt. The work on rejoining the panel was intended to start from the two central planks and then moving outwards. Because of minor curvature along the edges of the individual boards, they were supported by placing wooden shims which were cut to fill the gap between the panel back and restraining bars. Alignment was tested by passing of the finger tips across the joints and using the raking light cast across the joint from both sides. After dry rehearsal, the rejoining process could start. Hide glue was selected for the treatment. First, more dilute glue was applied by brush on both faces of the join. Then the two boards were aligned and more concentrated glue was applied with a brush and pressed into the join with fingers and hot spatula. A moderate pressure controlled by means of screw clamps and padded restraining bars was applied to secure the equal level of the painted surfaces. After the glue had dried, the pressure mechanism was released and the support appeared quite solid. The butterfly keys were placed to the original housings and hide glue was used as an adhesive.

The removal of discoloured retouchings was performed with acetone. The losses to the ground layer were filled with white putty prepared by hand (10% weight ratio of calcium carbonate and

rabbit skin glue). Next, a thin coat of Paraloid B72 at 8% in toluene was sprayed on the entire painting to unify the overall appearance and give maximum depth to the painting layer (Figures 26-28). Retouchings were carried out with gouache colours combined with MAIMERI ketonic resin colours. The task was completed with a protective coat of final varnish (an aldehyde resin Larapol A81 varnish at 10% in turpentine) sprayed over the painting's surface (Figures 29-31).

An important part of the conservation process was the development of the plan for the microclimate control of the back of the panel. The painting is to be returned to an environment that is not climate controlled and may need some form of moisture barrier (without complex construction). As the major warping of the panel before the treatment was caused by the wooden crossbeams it was assumed that the panel characterizes good stability. Non major tendencies to deform were observed before, during and after the treatment in the studio. Also, the good structural condition of the wooden material did not require complex methods. Therefore, the panel was closed on the back by means of a 5 mm clear acrylic sheet acting as a moisture barrier to reduce the reaction of the panel to environmental changes (Figure 32). The additional advantage of the clear backing is that it can allow monitoring of the back of the panel and also makes the Antwerp brand accessible for further research and documentation.

6. Conclusions

The conservation of the panel painting was an extensive project, taking four months to complete. However, the end result is satisfactory and the painting is now in a presentable condition for display. The conservation treatments have greatly improved the painting's appearance and stabilised its structural condition. A parallel technical examination of this painting gave an opportunity to learn more about the artist technique and compare this information with a current knowledge of the 17th century panel paintings. According to the author's current information there is no similar technical study of other paintings by Ambrosius Francken II so that this paper may be a contribution to the artist technique. The important result of a technical study was the discovery of the Antwerp brand that gives evidence that painting was created after 1617. Further technical research of two similar versions of this scene from Poland and France as well as a comparative technical study with other paintings by Ambrosius Francken II could provide a conclusive attribution.

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