# Whose story to tell? The many masters of Bernt Notke's altarpiece in Tallinn

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## Hilkka Hiiop, Anneli Randla, Hannes Vinnal and Kristina Aas

**ABSTRACT** This paper delves into the conservation and research aspects surrounding the carved retable with painted wings of Tallinn's Church of the Holy Spirit's main altar, crafted in 1483 at Bernt Notke's workshop. It is based on a large-scale project that launched in 2019, encompassing precise documentation of the altar's condition, historical and material studies as well as conservation efforts. The main intrigue revolves around the extensive overpaintings on the original 15th-century layer, which occurred on two separate occasions. The incomplete conservation works during the 1960s–80s have only contributed to the inconsistency, resulting in numerous questions and issues. Each historical layer encapsulates the values and information of its respective time. The question at hand is what to preserve and what to remove, and how to cope with earlier conservation decisions. This paper explores the tensions and synergies between modern conservation and documentation practices on the one hand and archival research on the other. It also examines how significant historical losses may occur when these aspects do not coexist effectively.

**KEYWORDS** Bernt Notke, medieval wooden sculpture, technical research of artworks, conservation of polychromy, conservation narratives, archival research, early modern craft guilds

# Bridging the gap between historical archives and the conservation studio

This paper deals with the conservation and research issues concerning the carved and painted altarpiece of Tallinn's Church of the Holy Spirit, which was made at Bernt Notke's workshop in 1483. It is based on a project launched in 2019 to study the historical background of one of Estonia's best-known works of medieval art in preparation for carrying out its conservation. A major controversy arises from the fact that the altarpiece has been extensively overpainted on several occasions over the centuries, and conservation work has been repeatedly started but left unfinished. What are the values of these layers of history and how should we deal with earlier conservation decisions? The tensions and synergy of modern conservation and documentation practices are examined on the one hand and archival research on the other.

The paper first introduces the art historical context and conservation history of the altarpiece, as well as some results of technical investigations carried out thus far. Secondly, it unfolds the story of the 1625 overpainting of the altarpiece: at the same time as conservation work was proceeding at full speed, and millimetre by millimetre the overpainted layers were being removed, challenging new information about these so-called secondary intervening hands came to light. A third topic covers the 'three faces' of the Virgin Mary, in other words the set of problems associated with removing overpainting from the altar's central sculpture – the Virgin Mary. Consequently, the main focus of this paper concentrates on issues concerning historical overpainting. The original techniques used in Notke's workshop are discussed only briefly as part of the wider context.

### Bernt Notke's altarpiece in Tallinn

A magnificent work of art stands at the high altar of the Church of the Holy Spirit in Tallinn: an altarpiece with carved and painted wings, completed in 1483 at Bernt Notke's workshop (Fig. 1).<sup>1</sup> It is one of the few works which undoubtedly originates from the workshop of the renowned master craftsman from Lübeck: two letters addressed to the town council of Tallinn have been preserved in which the master asks for an overdue fee for the completed and delivered work (*tafele*).<sup>2</sup> Written sources verify that the Calvary on the Lübeck Cathedral chancel arch and the high altar retable at Aarhus Cathedral are also

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**Figure 1** Bernt Notke's altarpiece (1483) in the Church of the Holy Spirit in Tallinn: open position before conservation in 2021. (Photo: Andres Uueni.)

works by the same master (Petermann 2000: 45–65, 70–93). The best-known works associated with Notke's name – the paintings of Danse Macabre at St Nicholas' church in Tallinn and St Mary's church in Lübeck (the latter work has not survived), and the St George group in Stockholm – have been attributed to him solely on stylistic grounds. Many other works are likewise attributed to Notke's workshop stylistically (Eimer 1985; Petermann 2000; Tångeberg 2009; Vogeler *et al.* 2010; Hoffmann 2014: 144–96).

The altarpiece consists of a carved corpus and two pairs of folding wings. The central scene of the corpus depicts the descent of the Holy Spirit, in other words the Miracle of the Pentecost. Twelve apostles surround the Virgin Mary sitting on a throne at the centre of the sculpture group. Several saints who were revered in Tallinn are placed on the carved wings. When the first pair of wings is closed, paintings come into view depicting four scenes from the Passion of Christ and four from the Legend of St Elizabeth. The images of Christ as the Man of Sorrows and St Elizabeth assisting the poor and the sick on the second pair of wings were intended to console the inhabitants of the medieval hospital of the Holy Spirit (Ehasalu and Vahur 2013; Mänd 2019: 180–97).

# Notke's project in overview: previous research, new goals and first results

The altarpiece in the Church of the Holy Spirit is well preserved, although it has been repaired and

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**Figure 2** The twice overpainted and partially uncovered book in the hands of St Peter's sculpture. The dates of the two 'renovations' of the altarpiece are visible. The upper left part shows the 19th-century overpainting; in the upper right part the 17th-century overpainting is revealed. The original medieval polychromy is displayed in the lower parts. (Photo: Martin Siplane.)



**Figure 3** Three paint layers corresponding to the dates 1483, 1625 and 1815 as seen under the microscope (Leica DM2500 M): (*left*) the sample from the Virgin Mary's hand and (*right*) the sample from Philip the Apostle's red cloak. The dark layers between the paint layers show the areas of uncleaned dirt or varnish. (Cross-sections prepared and photographed by Kristina Aas.)

repainted repeatedly over the centuries. Only a few of the smaller original features are missing, most notably the dove of the Holy Spirit from the central scene. The first contemporary conservation was undertaken between 1964 and 1986 under the guidance of specialists from restoration centres in Moscow (Bregmann and Leleklova 1976). The main aim of the work was to reveal the original, exceptionally well-preserved 15th-century appearance of the altarpiece by removing later layers of overpaint. This work was not completed for political reasons (Estonia regained independence in 1991 and contacts with Russian conservation institutions were disrupted), resulting in the altarpiece's current overall grimy and uneven appearance. Minor conservation efforts were undertaken in 2001 and 2009 (Ehasalu 2010).

As this is one of the most important works of art in Estonia, not to mention internationally, researchers have been drawn to it over the course of the entire 20th century. Technical examinations on the

altarpiece have been conducted continuously since the time when conservators from Moscow worked on the retable. Data have also been published in various articles and books, but the information therein is fragmentary and primary source materials are often not available from the archives (Moltke 1970; Bregmann and Lelekova 1976; Birstein *et al.* 1978; HaymoBa *et al.* 1981; Ehasalu *et al.* 2009; Ehasalu 2010).

In 2019, preparations began on a large-scale project aiming to even out and complete the conservation work on the altarpiece, which had previously been launched at different times using differing methodologies but left unfinished. At the same time, comprehensive technical examination is under way to gain further insight into the materials and techniques used for creating this work, as well as the later alterations of the altarpiece.<sup>3</sup> In particular, it was decided to carry out an in-depth investigation into the details which could only be accessed during the course of the conservation work. Within the ongoing project the methods used include different imaging techniques,<sup>4</sup> pigment and binder analyses,<sup>5</sup> dendrochronology and geography.<sup>6</sup> Only results relevant to the context of this paper are discussed below.

# Emergence of the so-called second master craftsman of the altarpiece

One objective of the project, besides studying the altarpiece's original state linked with Bernt Notke's workshop in Lübeck, was to shed more light on the relatively lesser-known later life of the altarpiece the so-called post-Notke interventions. Here, the starting point of the investigation lies literally in the hands of St Peter whose sculpture holds a book inscribed with the dates 1625 and 1815 (Fig. 2). Stratigraphic examination of the paint from most of the sculptures and architectural elements revealed two layers of overpaint, which likely correspond to 1625 and 1815. Furthermore, three different blue pigments were detected by means of instrumental analyses. Azurite was found in the first layer (1483), smalt in the second (1625) and Prussian blue in the top layer (1815), which accords with the historical use of these pigments (Fig. 3). As such, the altarpiece offers an interesting insight into the changes in artists' techniques and materials over time.

In order to discover more information about those intervening masters of Notke's altarpiece in

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the 17th and 19th centuries, we consulted the historical accounts of relevant institutions. Although the accounts of the Church of the Holy Spirit are somewhat lacking in detail, we located a small booklet covering the years 1624 to 1626 which contains an entry in 1625 for a Pawell Blome, who was paid 284 marks for 'renovation' (the term used in the source) of the altar (Fig. 4).<sup>7</sup> On closer examination of the Tallinn City Archives, the name of a painter, Pawel Blome (or Paul Blum/Blom), is frequently mentioned. For example, he was paid for painting the tombstone of Dr Johannes Balliv and the weathervanes and gargoyles of the town hall but no, or very little, original polychromy is preserved from Blome's time (Ehasalu 2007: 322–3).

One of Pawel Blome's commissions was especially outstanding: in 1627 he was asked to paint fulllength portraits of six Swedish kings on the facade of Tallinn's town hall, facing the main market.8 Interestingly, the technique is even mentioned in the accounts: oil paint on a lead white ground was prescribed in the contract. There is a hint in the source that reveals the planned location of those paintings - they were to be placed between the wall anchors. Nowadays, there are five such anchors on the upper part of the wall, meaning that exactly six paintings would fit on the facade. There is no evidence of these monumental murals ever having been executed (and nothing has been preserved *in situ*), but it is known that 25 talers from a total of 150 (c.600 marks) were paid in advance and a certain amount of good quality linseed oil was also given to the painter.9 This undoubtedly prestigious commission evidences that Pawel Blome was a master of some standing, but is the overpaint on Notke's altarpiece the only preserved work by him?

Interestingly, a painter with the same name was active at approximately the same time in northern Germany: a man also called Pawel Blome or Paul Blom, who worked in the region of Schleswig, is listed in the comprehensive lexicon of German artists (Allgemeines Künstlerlexikon) (Saur 1995: 565; Ehasalu 2007: 323). Moreover, in some local accounts he is mentioned together with the woodcarver and gilder Jürgen Blome, and a man with the same name cooperated with Pawel, also in Tallinn. Pawel Blome is last mentioned in northern Germany in 1624, the year when the same name first appears in Tallinn. Therefore, it seems plausible (although this needs further archival investigation) that it was the same Pawel Blome who moved from northern Germany to Tallinn around 1624 (Table 1).

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**Figure 4** Account book of the Church of the Holy Spirit, which mentions the renovation of the altar in 1625 by master Pawell Blome, Tallinn City Archives. (Photo: Hannes Vinnal.)

Table 1 Two artists merging into one person: Pawei Biome/Paul Bium in German sources ( <i>left</i> ) and in Talinin ( <i>right</i> ).	
Pawel Blome / Paul Blom in Schleswig 1599–1624	Pawel(l) Blome / Paul Blom in Tallinn 1624–1640
1599 First mentioned in the town of Tönning	1624 Painted the door of St Nicholas' church and the
<b>1606</b> In the workshop of the painter Johan Enum in	tombstone of Dr Balliv
Flensburg	1625 'Renovation' of the altar of the Holy Spirit
1608 Painting of the organ panels of Garding church	1625 Member of the Brotherhood of Blackheads, donated
1613 Paintings for the town hall in Tönning	one watercolour painting to the brotherhood; became a
1615 Choir and nave paintings in Oldenswort church	citizen of Tallinn
1615 Paintings on the organ panels of the Schwabstedt	<b>1627</b> Painting of the gargoyles of St Nicholas' church
church, preserved	<b>1627</b> Gilded and painted the weathervanes of the town
1618 Mentioned working in Gottorf	hall
<b>1621</b> Worked in the Tönning town hall together with the	1628 Contracted to paint portraits of six Swedish kings
carver Jürgen Blome	on the main facade of the town hall
1624 Paid for paintings in the choir of Garding church	<b>1633</b> Painting of the ball for the Viru gate's weathervane
	1638 Decoration works in the gymnasium
	1640 Died, buried in St Olaf's church

Table 1 Two artists merging into one person: Pawel Blome/Paul Blum in German sources (*left*) and in Tallinn (*right*).

A somewhat odd reference from the city magistrate's archives may shed further light on Pawel Blome's origin. In 1638, Pawel Blome accused Lüdert Heistmann (Heissmann), a woodcarver in Tallinn, of insulting him by openly calling him a 'French dog' during a wedding party which got out of hand.<sup>10</sup> This may refer to his roots in French-speaking Netherlands or from the French Huguenots. It could place him in the context of the greater migration of artists and craftsmen to the north and Baltic Sea region, from west to east, particularly in the second half of the 16th and early 17th century due to the Eighty Years' War (North 2021; Ancane 2022). If the assumption holds true that the German Pawel Blome is the same person who overpainted Notke's altarpiece, we might even have four preserved paintings by him. In 1615 he was paid for painting the panels flanking the new organ in the parish church of Schwabstedt in Schleswig. These panels, depicting four Muses of Music (Saur 1995: 565), still exist in their original location in the village of Schwabstedt.

There might be another addition to Blome's oeuvre: the paintings on the pulpit of St Nicholas' church in Tallinn, previously attributed to an otherwise unknown master Daniel Blome (Kangropool 1994: 126), were probably also works by Pawel Blome.<sup>11</sup> The mistake possibly derives from the misspelling of the visually very similar names in old German fonts – Daniel and Pawel. Pawel Blome worked in St Nicolas' church in 1624 together with Jürgen Blome, the contract for this work being listed in the latter's inventory in 1626 (*Contract wegen d Cantzell zu S. Nicolaus*), so it is possible that this commission brought Pawel Blome to Tallinn in the first place.<sup>12</sup> Unfortunately this richly carved and painted artwork was destroyed during the bombing of Tallinn in 1944.

From the viewpoint of local history, Pawel Blome initiated an important change in the organisation of craft guilds in Tallinn. Notably, he raised the claim against Tallinn's woodcarvers, accusing them - especially the well-known woodcarver Tobias Heinze (Heintze; c.1593-1653) - of painting their own carvings. In his complaint to the town council, Blome declares that they do it poorly and 'grab the bread out of the painter's mouth'.<sup>13</sup> We know that Heinze's woodcarving workshop did indeed have a 'bad habit' of painting his own works. For example, he completed the 'renovation' of another medieval altarpiece, the so-called 'Brussels altarpiece' and signed it similarly to Blome in the carved book in St Paul's hands (Tigane 2000: 129). As a result of this quarrel, the painters' guild separated from that of the woodcarvers in order to protect their profession more effectively. The long-lasting argument between Pawel Blome and Tobias Heinze is a textbook example of the so-called Nahrungsschutzkonflikt - a term from the older German historiographical discussion - typical for organisations of crafts in the early modern period (Cilleßen and Tacke 2020).

Now we know that for a newcomer in Tallinn, Pawel Blome achieved remarkable success in his career as a painter and leading guild member. From the inventory of the possessions of his widow, we learn that the family owned a big stone house in Tallinn (Lai Street 33). Lawyer Johann Friedrich Blome, an heir to her possessions, was probably Pawel's son,<sup>14</sup> allowing him to send at least one of his sons to university. Interestingly, both of his great commissions (the pulpit of St Nicholas' church and the paintings on the town hall walls) were bestowed by the renowned nobleman Bogislaus von Rosen (1572–1659), which probably suggests some kind of close relationship between the artist and his wealthy patron.

In conclusion, the newly uncovered secondary master of Notke's altarpiece – Pawel Blome – played

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an important role in Tallinn's history. His story represents the cultural exchange in the Baltic Sea region as well as tensions and cooperation in the institutional framework of the early modern craft guilds. However, the date of 1815 in the book of St Peter remains an enigma, at least for the time being, as no archival material could be found about this overpainting. This situation illustrates the importance of written sources for the understanding and evaluation of artworks as well as for conservation decisions. How do these findings influence ongoing conservation and documentation practices? Should we consider layers of these greater and lesser artists of different times as equally important from the conservation point of view? Can we do it without compromising the visual integrity of the artwork?

# Dilemmas arise: conservation decisions and practice in between the two masters

The altarpiece and its sculptures were restored by Russian conservators during the Soviet period in 1964-1986. As previously mentioned, the conservation projects at that time came to a very sudden halt therefore three sculptures and some parts of the altarpiece remained unfinished. Unfortunately, no complete documentation of the works was made available to Estonia, and given the current poor bilateral relations, there is little hope of receiving any in the near future. Researchers have had to rely on the fragments of information in a few published articles (Bregmann and Lelekova 1976; Birstein et al. 1978; Наумова et al. 1981) on similar projects conducted around the same time, and memories of colleagues active at that time. Piecing together this puzzle presented only a vague notion of the materials and techniques that Russian conservators might have used.

Therefore, it is the visual observation and documentation of the altarpiece itself that provides a more complete picture of the works undertaken previously. An extensive on-site survey was carried out on the altarpiece and the sculptures in the autumn of 2021 (Aas 2021). Importantly, all parties – conservators, art historians, heritage authorities and the church community – were directly involved in the research. Not only was this highly advantageous to understanding the material and the problems involved, it also provided the opportunity to hold immediate discussions and devise solutions. The conservation



**Figure 5** Three faces of the Virgin Mary (*left to right*) from the 15th, 17th and 19th century (after, during and before conservation treatment). (Photos: Martin Siplane.)

concept and methodology was developed in synergy during the on-site survey.

Visual observation was supported by various studies: the altarpiece and the entire chancel of the church were measured and georeferenced using laser scanning and a three-dimensional photogrammetric model of the altarpiece was produced. These are all of immense value in documenting the condition of the object as well as for the future presentation of the altarpiece and its sculptures to the public.<sup>15</sup> To study the sculptures' structure, the mechanisms for fixing them to the corpus and later repairs, X-ray examinations were conducted in cooperation with Estonian Tax and Customs Board specialists. In addition to the X-ray images taken on-site, we succeeded in transporting the figure of the Virgin Mary to the Estonian Forensic Science Institute where experiments to X-ray medieval wooden sculptures using computer tomography were conducted for the first time in Estonia. The result was an excellently captured three-dimensional X-ray image in which the metal elements within the sculpture, the distinctive features of the figure, and the use of pigments containing metals on the sculpture's surface became discernible. Examination of paint layers and determination of pigments, conducted in cooperation with the Estonian Centre for Environmental Studies and the Institute of Analytical Chemistry, University of Tartu, provided preliminary insights into the materials used in the original work and the later restoration layers.

In the spring of 2022, conservation work began on the first sculpture, the Virgin Mary. During previous, unfinished restoration efforts in the 1980s, which aimed at the full uncovering of the initial 15th-century polychromy, this sculpture was not cleaned and later paint layers were not removed. The sculpture of the Virgin was extremely grimy: cleaning samples and preventive facings in various areas disrupted its already uneven appearance. For example, there was an extensive overpaint removal sample on the right side of the Virgin's face which clearly showed three different paint layers: the original from the 15th century, the Pawel Blome layer from the 17th century, and the 19th-century layer.

Following thorough documentation of the sculpture's condition, a concept for the conservation work was formulated: to uncover the first (Notke's) layer. The near excellent condition of the original layer on the other sculptures gave hope and confidence that the Notke layer on the Virgin Mary would also be well preserved. Therefore, the first and very timeconsuming stage of conservation involved removal of the secondary paint layers, which could only be done mechanically with a scalpel under a microscope with multiple magnifications.

One intention outlined in the conservation plan was to document the 1625 overpainting by Pawel Blome. At the time of this conservation, Pawel Blome's name was already known, but his significance in Estonian art history was not yet fully understood. Initially, it was planned to document Blome's overpainting using imaging techniques and paint analysis on a lesser scale. As the work progressed, however, it became apparent that the paint layers were separating relatively easily, leading to the decision to fully expose the 17th-century layer on Mary's face, enabling the layer's complete documentation (Fig. 5).

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Figure 6. Photogrammetric 3D model of the figure of Philip the Apostle after conservation. (Photos and model: Andres Uueni.)

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Despite the thorough analytical documentation and visual recording of the 17th-century paint layer, it was emotionally and mentally challenging for the conservator to start removing this historical layer. However, several arguments supported the removal of secondary paint layers. First, the initially formulated conservation concept - to reveal the 15th-century original layer - relied on the practice of the previous conservation works in the 1980s. More than 20 sculptures in the altarpiece had been treated in this way, therefore the conservation concept had essentially been decided decades ago. The Virgin Mary is central in the altarpiece's composition so within the context of a church with an active congregation, it would be challenging to find a justification for retaining the existing layers. In its present position, the sculpture is a sacred object in liturgical

use, not a museum piece. The congregation values the visual integrity of the altarpiece and does not wish to see Mary's face cut by paint removal samples. Secondly, the bond between the 17th-century paint layer and the lower layer was extremely poor in some places. An uneven and in some areas very thick layer of varnish and dirt had been left between the two paint layers, disrupting the contact surface between them (Fig. 3). As a result, during removal of the 19th-century layer, several losses occurred in the 17th-century paint layer: the top layer stuck firmly taking the lower layer with it. Thirdly, the original 15th-century layer has been extraordinarily well preserved, with minimal losses and damage. The second stage of conservation involved cleaning the gilded areas of the sculpture: unlike the face and hands these had never been overpainted. The

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conservation work was completed in the winter of 2022 and the Virgin Mary returned home just before Christmas.

In October 2023, conservation work began on the second sculpture, Philip the Apostle. By that time, the importance of Pawel Blome in Estonian art history had been recognised. This new knowledge has added even more emotional weight, increasing the difficulty of the conservator's task. Conservators, already overwhelmed with deadlines and the pressure of responsibility, face additional challenges with each new discovery, often dealing with complex ethical dilemmas such as deciding how much intervention is appropriate. In this particular case, the problem was how to remove the physical evidence of the only work definitively attributed to Pawel Blome in Estonia. Although decisions are made collaboratively - utilising the expertise of conservators, art historians and other stakeholders involved in the preservation of cultural heritage - the act of physical and irreversible intervention rests solely with the conservator. Consequently, even minor mistakes can engender significant impacts and decisions can lead to criticism. To deal with these emotional and mental challenges, conservators rely on strong support networks within their professional community. It is essential to have the opportunity to reflect and discuss the ethical and emotional dimensions of conservation work.16

For Philip the Apostle, taking into account all the points above, an alternative conservation approach was chosen and implemented. Philip is positioned sideways in the central shrine of the altarpiece, consequently only half of the sculpture's face is visible to the viewer. This enables us to keep the overpainted layers on the side not visible to the viewer with the secondary layers removed only from the visible side. This approach ensures the preservation of all the secondary layers, including the top oil paint layer dating back to the 19th century, and provides the opportunity to retain the physical evidence if and when the author or other information about the top paint layer is discovered (Fig. 6).

However, it is inevitable that the approaches taken in every conservation project will raise new questions. In most cases, there is no single correct answer: several values (visual, physical, historical, etc.) have to be balanced simultaneously on the scales of decision-making. Can cleaning only half of the sculpture's face be justified? For example, how does it affect the aging of the paint layers in the future? Or does it already face different environmental forces and

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impacts, given the fact that half of the face is hidden from direct light anyway? Although methodologies have been developed to tackle such problems,<sup>17</sup> the final decision remains unavoidably subjective to a certain degree and may produce unintended consequences in the future.<sup>18</sup>

# Conclusion: conservation decisions in dialogue with archival research

The case of Bernt Notke's altarpiece in Tallinn raises many intriguing questions for both historians and conservators alike, such as how to deal with the situation when alongside the removal of secondary paint layers, archival research reveals historical significance and contextual information about 'undesirable' additions. The case of Notke's altarpiece exemplifies the importance of a written source - not only for (art) history but also for the practice of conservation. Bringing together historical archives and the conservation studio has proved to be illuminating and beneficial for both sides. In addition to Bernt Notke, an established name in art history, there is another signature attached to the altarpiece: that of the early 17th-century painter Pawel Blome. Whose story should be told through this magnificent historic artefact? Is it the story of a great medieval master and his workshop in Lübeck or that of artist migrations and the quarrel between painters' and woodcarvers' guilds in 17th-century Tallinn? Or can it be both?

In this case, the comprehensive documentation, technical analysis and visual recording of the 17thcentury paint layer provided the assurance the conservator needed to remove it and thereby reveal the original. However, the archival findings and reevaluation of this 17th-century painter did result in changes to the conservation concept. The initial plan was to document Pawel Blome's 17th-century overpainting using imaging techniques and paint analysis on a lesser scale, but this morphed into the decision to fully expose the 17th-century layer on the Virgin Mary's face and enable the layer's complete documentation. However, the conservator's ethical and emotional concerns over removal of historical material remained. Philip the Apostle's position made it possible to keep the overpainted layers on the side not visible to the viewer, the secondary layers being removed only from the visible side, an approach that ensures the preservation of all the secondary layers for further research.

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### Notes

- 1. The dimensions of the altarpiece with wings open are  $360 \times 364$  cm.
- 2. Tallinn City Archives, TLA.230.1.Bl, p. 1a; 44.
- 3. See the conservation and investigation reports: Aas 2021 and Estonian Academy of Arts 2022.
- 4. X-ray, near-infrared photography (NIR; 720–1060 nm), ultraviolet fluorescence (UV-A; 360–390 nm), documenting both in 2D and 3D.
- 5. Using polished cross-sections in incident and ultraviolet light, optical microscopy, portable X-ray fluorescence (pXRF), attenuated total reflection-Fourier transform infrared spectroscopy (ATR-FTIR), scanning electron microscopy-energy dispersive X-ray spectroscopy (SEM-EDS), pyrolysis-gas chromatography-mass spectrometry (py-GC-MS).
- 6. The initial results are published in Aas *et al.* 2023.
- 7. Tallinn City Archives, TLA.230.1.Bl 20, p. 35.
- 8. Tallinn City Archives, TLA.230.1.Ba 53, p. 60r.
- 9. *Ibid*.
- 10. Tallinn City Archives, TLA.230.4-I.6, folio 2, p. 109.
- 11. Sten Karling suggested in 1937 that Daniel and Paul (Pawel) Blome (Blume) were brothers and worked together on the pulpit (Karling 2006 [1937]: 130). However, he does not mention the source of his claim. See also Ehasalu 2007: 52.
- 12. Tallinn City Archives, TLA.230.1.Bt 9/III, p. 4.
- 13. Tallinn City Archives, TLA.230.1.Bf 33 III, p. 46.
- 14. Tallinn City Archives, TLA.230.1.Bt 11, p. 129.
- 15. See the project's webpage https://notke.eu/en/.
- 16. On the complexity of the ethical issues see Muñoz-Viñas 2020.
- 17. See for instance decision-making models based on value assessments in Appelbaum 2007 and Richmond and Bracker 2009.
- 18. Conservation works are presently in progress (March 2024).

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