The article describes the examination and conservation process of a panel painting which had ended up in private ownership in Estonia. These processes revealed an artwork of an unexpectedly high level of mastery hidden beneath layers of overpaint. Furthermore, it made for an intriguing back story for the painting, as well as expanding our arsenal of investigation methods.

The small panel painting (49 × 41 cm) of a barely visible image (Fig. 1) was given to conservators with the aim of revealing the original layers of the painting that had been extensively restored at some point and, with the help of the simplest possible (optimal) methods, to find an answer to the question in which spatial and value contexts the painting could be placed. It is a classical still life with traditional elements: grapes and other fruit in a basket, a walnut, a bird’s nest with eggs, a little feather. The painting was sold at an internet auction as a work by Jan Davidsz Dé Heem (1606–1684) but there was every reason to doubt its provenance, which is unknown.

Although a few still lifes are known from Classical Antiquity, the genre actually came into its own with the rising popularity of optical illusion in the 14th century. The 17th century is considered the golden age of still life with the Dutch and Flemish painters excelling in the refined rendering of tactile qualities of objects. The DOI: https://doi.org/10.12697/BJAH.2020.20.08
demand for these oil paintings and the emerging art market led to the creation of hundreds of still lifes to decorate both the walls of grand palaces and modest artisans’ homes. The seemingly simple still lifes depicted an abundance of fruit, flowers, vegetables, fish, game, poultry, tableware, etc. Painters aimed at depicting three-dimensional objects on a flat surface to such a degree of realism that the viewers would not be able to tell the difference. However, still lifes could and usually did express deeper symbolic and allegorical meanings as well.

The genre became popular all over Europe and even in the 17th-century inventories of the merchants and artisans of Tallinn, still lifes are mentioned. The ever growing popularity of the still lifes of the Dutch Golden Age led to a proliferation of copies and new paintings in the style of the Dutch and Flemish masters in the 19th
A first glance at the back of the panel, composed of narrow parquet-strip like slats, gave no reason to expect that the painting should represent an early painting tradition (Fig. 3). However, a closer examination made it clear that the painting had undergone an extensive, skilful and expensive, but still brutal previous conservation. There must have been good reasons for this kind of treatment and this made us pay more attention to the painting.

**EARLIER CONSERVATION TREATMENT**

The back of the painting that had first looked like a structure of narrow strips, turned out to be an oak panel of two joint planks. Most probably the painting had been badly warped and the conservator tried to mechanically straighten it. Grooves were cut into the wooden surface to help to straighten it. The resulting cracks were later filled with perfectly fitting wooden pieces and the whole back of the panel was supported with crossbars – or at least that’s how we can imagine the process. The painting has also been disassembled along its original joint line of planks and it has been cut narrower by a couple of millimetres. It is visible on the front where a visual shift develops in the composition of the junction of the paint layer. We do not know whether the panel was thinned in the course of this complex process but the panel is extraordinarily thin. If the usual thickness of wooden panels is 8–30 mm, then the panel of this painting is just ca 4–5 mm.

This rather drastic straightening method had also led to some cracks on the front. However, it is surprising how little the process had damaged the paint layer and thus provides us with an indication of an excellent quality of painting technique.

It is likely that the paint layer had been cleaned with historically traditional, strong solvents which caused the fragmentation or total loss of the background paint. On the other hand, the much more impasto technique modelled paint layer had survived almost undamaged under the thick layers of overpaintings. It looks as if after cleaning, the damaged surface had been covered in a thick layer of varnish with shots of pigment of variable amounts and colour applied here and there. The use of coloured glazes was most probably aimed at harmonizing the painting after cleaning, hiding the damage and also providing the painting with an authentic period look (the century, both in Europe and in America. This trend has continued ever since and the 20th century added the mechanical and later digital reproductions to this mass of paintings.

Therefore, a still life depicting grapes and other fruit in a basket and a bird’s nest with three eggs in the manner of Dutch 17th-century paintings, could actually date from the 19th or 20th century and originate from anywhere from Russia to the USA.
so-called gallery tone). However, these observations do not enable us to determine the time of conservation, whether it took place in the 18th, 19th or the 20th century.

INVESTIGATIONS CONDUCTED

First, the basic element analysis was carried out in order to find out fast and nondestructively, whether the contents of the applied pigments could be associated with a certain era. Mostly these are the pigments that were invented and used by artists during the 19th century and their identification might rule out the paintings dating from earlier eras. Pigments were tested by X-ray fluorescence (XRF) screening but the results gave no identification of any 19th century synthetic pigments being applied. However, this does not rule out a completion date later than the 17th century, as the earlier palette of pigment remained in use at the same time as more recent innovations.

MULTISPECTRAL ANALYSIS

Investigation continued with multispectral (MS) analysis, one of the most widely used methods in the examination of cultural heritage. This complex method is used in various spheres: for the study of landscapes, archaeological excavation sites, paintings and artefacts. Thanks to the availability of digital solutions, various solutions have been suggested in recent decades for rendering MS analyses.

Although a spectre gained in the course of an MS analysis can be fairly limited, the volume of the information received can be large and important, depending on a specific need or a technical solution. A high resolution quality image with a sufficient depth of field is essential for the analysis. The examined still life was photographed with an infrared camera at 820 nm wavelength which may give a hint about a possible underpainting or another painting under the visible layer of paint. No information was gained of either. This time the IRFC turned out to be interesting from the point of view of conservation, as it gave the first idea of the state of the original painting. Under the thick layer of overpainting glaze, massive

could be gained from dendrochronology by determining the age of the panel with the help of the tree rings. For various reasons, however, dendrochronology is not always able to provide a date.

**DENDROCHRONOLOGICAL INVESTIGATION**

The two vertical oak planks were glued together on their bark-side edges (Fig. 5). It is noteworthy that in the right plank rays are more or less parallel with the plank, while in the left plank, rays rather run diagonally. We did not notice any lighter sapwood in the bark-side ends of the planks.

As the top end of the panel was damaged in the right corner, we focused on the lower edge of the panel. The edge was carefully cut with razor blades, to make tree rings better visible. The widths of tree rings were measured, using an Eschenbach 115410 precision scale hand lens with 10x magnification. The ring width series were analysed in the TSAP-Win program.5 Later, the edges of the panel boards were macro-photographed6 and the tree-ring widths from the photos were re-measured, using the CooRecorder/CDendro program.7 Repeated measuring was carried out because of poorly

---


Comparing the average ring-width series of the panel 1eqvin02 with dozens of oak chronologies over Europe, there was not much similarity. Comparison with another oak chronology, South and Central German oak imports to the Netherlands (AD 1360–1837)\(^\text{12}\) was more successful. We synchronized our panel series with this chronology (denoted as 3NQSCG01) and found one similar position (Fig. 7). In this position the two tree ring series overlap 138 years and the last tree ring of the panel series corresponds to AD 1626. As there is one partial unmeasured ring in the end of series, the actual dendrochronological date of the panel is AD 1627.

Although the ring width series of the two planks of the painting panel were quite similar to each other (TBP = 7.8), the left plank distinguishes itself by its diagonal rays and narrower tree rings. Generally, planks with non-parallel rays (semi-radial planks) are considered to be of lower quality for painting panels.\(^\text{13}\) Alongside, the left plank contains more tree rings (138) than the right plank (127), with average ring widths 1.32 mm and 1.54 mm, respectively.

---

\(^{8}\) The difficulties in measuring tree rings in thin oak planks were described in detail by Māris Zunde (Māris Zunde, “The Use of Baltic Oak for the Panels of Paintings by Dutch and Flemish Old Masters: The First Attempt at Dendrochronological Identification in Latvia”, Baltijas ozoli/ Baltic oaks, ed. by Laura Okuldere (Riga: Latvian National Museum of Art, 2019), 53–87).


It cannot be confirmed conclusively that the planks for this panel were cut from the same tree trunk.

According to our observations there were no sapwood remains in the studied boards. Therefore, missing sapwood ring numbers can be added to AD 1627 to increase the precision of the dating. The oak sapwood amount varies geographically and has been widely investigated on modern trees from different regions of Europe. In Germany, as the origin of the reference chronology in this case, the number of oak sapwood rings ranges from 8.22 to 37.95 within 95% confidence limits (absolute range 7–66 with 19 as an average). Moreover, it is known that the wood for panel paintings was seasoned for two to eight years before use in the 16th and 17th centuries. Hence, based on these assumptions, the date AD 1627 of the panel under investigation can be extended by at least 10 years, i.e. the minimum sapwood amount of eight years plus minimal seasoning of two years, in other words, AD 1637 terminus post quem.

As the wood for the panel of the Still Life with Grapes and Nest is evidently of German origin, alternatively the German terms of sapwood width and seasoning of the wood, as defined by Esther Jansma and others can be applied. According to them, the minimum number of missing sapwood rings is 20 and the aging period of the wood is 4 years. Thus at least 24 years have to be added to the dendrochronological date of the German-origin panel: 1627 + 24 = 1651 terminus post quem.

When interpreting the date of the painted panel it is important to know that the so-called Baltic timber was used for panel making in the Netherlands until AD 1660. During ca. 1600 – 1660 there was an overlap with German timber, while after AD 1660 only German sourced timber was used for panel paintings. As a rule, local or imported oak timber from Germany was of lower quality than the Baltic oak. This, in turn, was related to forest management. The change in the timber provenance depended on the British Navigation Acts of 1651 and 1660 which restricted Baltic trade by the Dutch. As both versions of the date, AD 1637 terminus post quem and AD 1651 terminus post quem, fall into the transition period from Baltic timber to German timber, the German provenance of the panel timber is very likely. It may also explain the usage of a lower-quality semi-radial oak plank for this painting.

In conclusion, dendrochronological investigation of the panel showed that it was made of two vertical oak planks. The tree-ring series of 138+1 rings was dated to AD 1627. Taking into account the number of missing sapwood rings and minimal seasoning period of the wood, it means the earliest possible manufacturing year of the panel, according to different sapwood and seasoning estimates, is either AD 1637 terminus post quem or AD 1651 terminus post quem. The oak wood of the panel apparently originates from Central or South Germany.

However, the dendrochronological date gives the probable date of the panel, not the painting itself. Nevertheless, it is unlikely that the manufactured panels were stored for long years before painting on them. Also, the infra-red investigation of this panel did not reveal any signs of possible re-use of the panel for a new painting.


Hilkka Hiiop, Andres Uueni, Anneli Randla, Alar Läänelaid, Kristina Sohar: Still Life with Grapes and Nest

Keywords: still lifes; conservation of painting; multispectral analysis; dendrochronological investigation

SUMMARY
A complex conservation process revealed the layer of the painting in its original subtlety and delicate retouchings recreated the integral surface of the painting. As a result, we can confirm that it is a painting of high artistic quality dating most probably from the middle of the 17th century, painted on an oak panel of German origin. We remain doubtful about the Internet auction suggested authorship, as the painting does not reach the artistic quality of Jan Davidsz Dé Heem, a top rank artist from the Netherlands. It is possible to continue with the art-historical analysis (and other investigations) of the painting, to find further proof for the hypothetical dating and maybe even reach an attribution but we must not forget to ask the questions whether and to whom it would be necessary. What matters for the owner of the painting is the fact that an artwork which decorates the wall of his home has both aesthetic and historical value – even without knowing its exact date or the painter.

CV
Hilkka Hiiop, PhD (b. 1974) is a professor in the Department of Conservation at the Estonian Academy of Arts. She has studied and worked as a conservator in Berlin, Amsterdam, and Rome, supervised a number of conservation and technical investigation projects in Estonia, curated exhibitions, and conducted scientific research on conservation and technical art history.

Andres Uueni, (b. 1974) has worked in different memory institutions, designing and developing information systems and led several cultural heritage digitization and documentation projects. Andres is co-founder of Archaeovision LLC and Heritagest LLC and he is a Junior Researcher and PhD student in the Estonian Academy of Arts, focusing on cultural heritage 3D documentation and multispectral imaging.

Anneli Randla, PhD (b. 1970) is the Head of the Department of Cultural Heritage and Conservation at the Estonian Academy of Arts, Senior Research Fellow and Associate Professor. Her research interests span medieval art and architecture, technical art history and conservation history.

Alar Läänelaid, PhD (b. 1951) is Associate Professor in Landscape Ecology at the University of Tartu, Estonia. He has dendrochronologically dated a number of architectural objects, as well as painting panels and sculptures.

Kristina Sohar, PhD (b. 1983) is a research fellow in physical geography at the University of Tartu, Estonia. Her research focuses on dendrochronological dating as well as climate change from tree rings.