FNG RESEARCH

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Eagle Owls on the Hunt – Technical Analysis of Two Paintings by Ferdinand von Wright

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Helsinki: Finnish National Gallery / Ateneum Art Museum 2017, 149–56. Transl. Wif Stenger

Rarely does one have the chance to study two almost identical paintings. Ferdinand von Wright's pair of paintings *An Eagle Owl Seizes a Hare* (Finnish National Gallery, inventory No. A I 58) and *Eagle Owl Attacking a Hare* (Lahti Art Museum, inventory No. LTM D 45) offer an opportunity to compare the works using technical analysis of the materials. Both works were painted in 1860. We know that the work belonging to the Finnish National Gallery (FNG) was bought directly from the artist for the Finnish Art Society collection in 1864. Lahti Art Museum's painting originally passed from a private owner to the Viipuri-säätiö (Vyborg Foundation) and then on to the Lahti Art Museum. We also know that one of the paintings was taken to Germany, apparently with the aim of selling it, soon after its completion.[1]

The pictures are like those in a children's puzzle where the viewer has to spot 10 mistakes. Close inspection reveals minor differences: a missing blade of grass, or grass bent in different ways, or some variation in the form of the rocky outcrop. The FNG's eagle owl painting is slightly larger, with a more spacious feeling. The painting style in the Lahti work has more sharp contrasts, and rougher details. Was it a draft for the FNG's painting or a later repetition? Was it painted more quickly? Why were two such similar works painted? Is it possible to use technical art-historical methods to obtain more information about the sequence in which they were painted?

1 Magnus von Wright's journal entry 16 June 1860: 'B. A. Thunberg and family undertook their trip abroad tonight. – Took with them Ferdinand's eagle owl and hare.' Wright, Magnus von, 2001. *Dagbok 1850–1862*. Eds. Anto Leikola, Juhani Lokki, Torsten Stjernberg & Johan Ulfvens. Skrifter utgivna av Svenska litteratursällskapet i Finland, nr 600:4. Konstnärsbröderna von Wrights dagböcker 4. Helsingfors: Svenska litteratursällskapet i Finland, 16 June 1860 (401). It is assumed that Thunberg took one eagle owl work to Germany, but it is unclear which one. Information from Jukka Ervamaa, 9 Dec. 2016.

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Ferdinand von Wright,
***An Eagle Owl Seizes a Hare*, 1860**
oil on canvas, 105cm x 119cm
Finnish National Gallery /
Ateneum Art Museum
Photo: Finnish National Gallery /
Hannu Aaltonen

Ferdinand von Wright,
***Eagle Owl Attacking a Hare*, 1860**
oil on canvas, 101cm x 111.5cm
Lahti Art Museum
Photo: Finnish National Gallery /
Hannu Aaltonen

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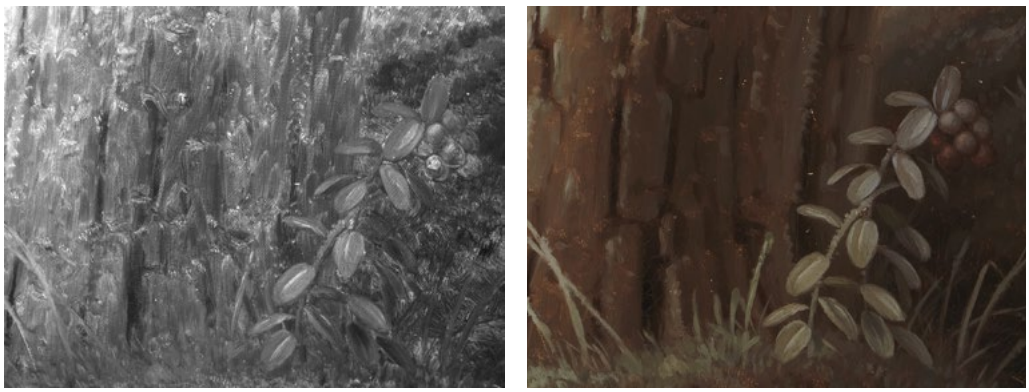
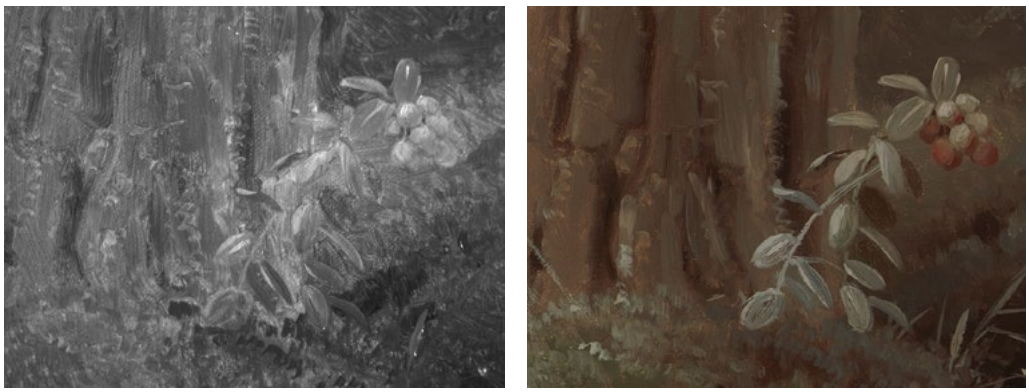


Infrared reflection photograph (IRR) and detail of the Finnish National Gallery's painting *An Eagle Owl Seizes a Hare*.
IRR image: Finnish National Gallery / Conservation Unit, Kirsi Hiltunen



Infrared reflection photograph (IRR) and detail of the Lahti Art Museum's painting *Eagle Owl Attacking a Hare*.
IRR image: Finnish National Gallery / Conservation Unit, Kirsi Hiltunen

Below the surface

Ferdinand von Wright studied painting in Dresden in 1858. There he delved into the *alla prima* technique[2], whereby one paints directly onto a prepared canvas without preliminary drawings. His travel journal includes the following entry from 27 February 1858: 'It is exceedingly pleasant to paint it all at once, "*alla prima*", as Dahl[3] calls it (…) It indeed makes a big difference to paint in this new way and besides being extremely pleasant, it goes much more quickly, and at the same time one avoids the troubles that have often tended to happen to me at least…'[4]

2 The *alla prima* technique is a method whereby the painting is done directly on the primer without underdrawings. It is achieved in a single application of paint. The technique is also referred to as 'wet-on-wet' or 'direct painting'. The method was practised in the 17th century, but gained popularity in the mid-19th century with the availability of commercial oil paints. Chilvers, Ian & Osborne, Harold (eds.), 1988. *The Oxford Dictionary of Art*. Oxford and New York: Oxford University Press, 11.

3 Siegwald Dahl (1827–1902) was a Norwegian-German artist who focused on painting portraits and animal subjects. Ferdinand von Wright's painting method was influenced by that of Dahl.

4 Wright, Wilhelm & Ferdinand von, 2008. *Dagböcker*. Eds. Anto Leikola, Juhani Lokki, Torsten Stjernberg & Johan Ulfvens. Skrifter utgivna av Svenska litteratursällskapet i Finland, nr 600:6. Konstnärsbröderna von Wrights dagböcker 6. Helsingfors: Svenska litteratursällskapet i Finland, 27 July and 8 August 1858 (507 and 510).

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Comparing the two hunting owls, one can state that the artist had adopted this painting technique that he had found. By examining the works using infrared reflection (IRR)[5] photography, one can see whether there are underdrawings or paintings beneath the layers of paint. Neither of the works is underlaid by a sketch, in other words they were painted in 'one fell swoop'. Studying the IRR photographs reveals the freeness of the brushwork in an exceptional manner.

Although the works are extremely realistic, the movements of the artist's hand strokes that are visible on the canvas reveal an unforced, natural manner of painting. It is indeed amazing how similar the works are, considering that they were not precisely sketched, and that the location of the details were not specified with the help of drawings or painted sketches. With the help of IRR photographs, one can say that the works are on the one hand very similar, yet on the other quite different. By comparing the details, one can conclude that the artist had switched to using different materials or decided on a different painting technique while constructing the small details of the painting. In general though, the similarity between the painting techniques is the primary observation.

An Eagle Owl Seizes a Hare, Finnish National Gallery

An X-ray image of the von Wright painting in the FNG collection reveals a work that is typical of its time, in which thick layers of white paint are most prominent. With X-ray (also known as Röntgen radiation), we can penetrate the structure of the painting and study its painting technique, condition, conservation history and possible layers under the surface of the paint, such as sketches or earlier compositions. The X-ray does not harm the work and can provide information about the painting that is not obtainable by any other research method.[6]

The picture does, however, have some unusual features. Visible here and there are white spots, which cannot be explained by looking at the image. In other words, they are not later corrections; the paint surface is unbroken in these areas, but at the same time some of these areas are visible from the back of the canvas. Another unusual element is a dark-edged vertical strip in the middle of the painting. It is a remnant of an earlier stretcher frame, which had a supporting crossbar in the centre. The current stretcher frame of the artwork does not feature a crossbar.

The trace of the crossbar could be explained by damage to or wearing of the paint surface and primer at the point where the crossbar was located, but the surface in the area is intact and in good condition. Another explanation could be that, when the canvas was being prepared, the crossbar made it difficult to spread the primer coat evenly. The canvas used for this painting was however a pre-primed commercial product. Possibly the artist refined the ready-made primer, at which point the area of the crossbar, and particularly its edges, could readily have become thinner than the other areas. There were also small holes or thinner

5 Infrared (IR) radiation is radiation with longer wavelengths than those of visible light, so it can be used to penetrate layers that are opaque to the naked eye. Because of this characteristic, IR research can reveal underdrawings used by an artist to sketch the subject onto the painting surface. Charcoal-based drawings show up best. Changes made by the artist during the painting process can also be brought into view through this method. The imaging device used was an Artist multispectral imaging system with an IR range of 900–1100nm.

6 During the imaging, the painting is subjected to low-voltage X-rays (20–30 kV). The X-rays penetrate the materials used in the painting in different ways. The thicker or denser the material, the less radiation passes through it. The pigments used in the primer and paint that contain heavier elements, such as white lead, absorb the radiation, while hardly allowing it through at all. These areas show up in the X-ray image as white or light areas, depending on the thickness of the layer. The radiation more easily penetrates pigments composed of lighter elements such as carbon black, as well as organic materials such as canvas. They appear in the image as darker or black areas. The X-ray image, which is recorded onto a phosphor plate placed at the back of the painting, is then scanned into digital form. The X-ray device was a Solus-Schall Limited No. 49920; the radiography scanner was a General Electric CRxFlex Type 5176/100.

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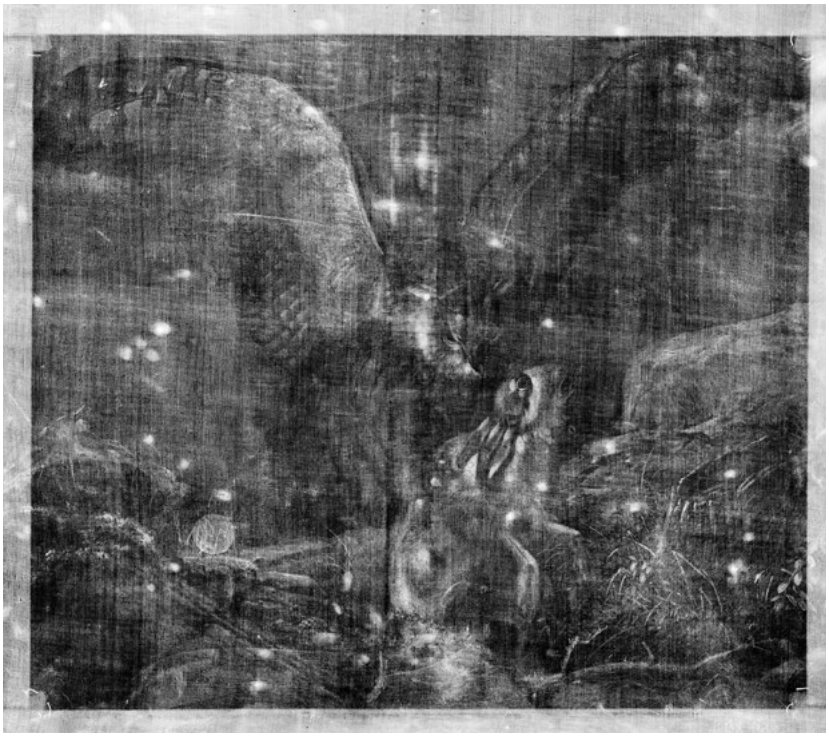

X-ray image of the Finnish National Gallery's painting
***An Eagle Owl Seizes a Hare*.**
Photo: Finnish National Gallery / Conservation Unit, Katariina Johde

X-ray image of the Lahti Art Museum's painting
***Eagle Owl Attacking a Hare*.**
Photo: Finnish National Gallery / Conservation Unit, Katariina Johde

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parts of the canvas, which the artist has repaired using filler containing lead white pigment. These patches are now visible as white spots on the X-ray image.

Also visible are several white lines in the area of the right-hand wing of the owl, which are unconnected to the final painting. On the lower-left edge, there is also a broad and uniform lighter area, and on the right edge, near the upper corner, light fan-like patterns, whose significance is not revealed by the examination of the X-ray images. The small light round shape near the lower left corner is the Finnish Art Society inventory marking.

Eagle Owl Attacking a Hare, Lahti Art Museum

The painting owned by the Lahti Art Museum looks very similar when examined by eye. The X-ray images reveal several differences: the Lahti work lacks the white spots and has a clearer range of hues. The crossbar of the stretcher frame is in place, although the vertical piece is, unusually, off to the side. Dark blotches and smaller, sharp-edged black damaged areas are visible on the hare's ears and legs, as well as on the lower part of the owl's body. The original primer and paint surface have become detached from these areas, and a damaged area has been repaired using lighter inorganic artists' materials as a filler. A text written on the reverse side of the Lahti work indicates that the painting was damaged during the Finnish Civil War of 1918[7].

The amount of time needed to make the X-ray images of the Lahti work was much shorter than that required for the FNG painting. The difference can be explained by the fact that the Lahti painting has a thinner layer of white lead in its primer, making it considerably easier for the X-rays to penetrate this painting. The canvas is of more uneven quality in the Lahti work; there are holes in it, as well as thinner and thicker parts. The stretching of the canvas onto the stretcher frame caused prominent wave-like patterns on the upper and lower edges, which also indicates weaknesses in the structure of the canvas.

Identification and comparison of the artist's pigments

Identification of the artist's pigments began by studying the two works' various colour areas with the help of a stereomicroscope and a UV light source. The original blue-grey, green, red, orange, black and white colour areas were selected as research areas, as these were of similar hue in both works.

The X-ray spectra from the areas with corresponding hues of colour were measured using an energy dispersive X-ray Fluorescence (EDXRF) spectrometer[8]. The inorganic artists' pigments in the colour areas and possibly the layers under them were identified, based on the characteristic X-radiation (X-ray peaks) observed in the spectra.[9] Most of the inorganic artists' pigments contained in the colour areas could be identified unambiguously based on their EDXRF spectra. Only the green of the moss below the hare turned out to be problematic.

The EDXRF spectra from this colour area were very similar in both works (spectra 1). The spectra did not show any element linked to green pigments used in the 19th century. On the other hand, both spectra clearly showed the presence of cadmium. This aroused the suspicion that the green is a mixture of cadmium yellow and some kind of blue pigment that could not be identified solely with an EDXRF spectrometer.

7 Written on the back of the Lahti work in Finnish and Swedish: 'Painting badly damaged during the uprising of 1918. Restored by Rurik Lindquist.'

8 The X-ray fluorescence spectrometer used was a Bruker S1 TITAN with a spot size of about 3mm. This analytical research method is completely non-destructive and can be used to identify elements in the area of examination. With the help of these elements, primarily inorganic artists' pigments can be identified. If necessary, further research can be carried out using other methods of analysis.

9 Artists' pigments are inorganic and organic pigments that artists have used in their works. They are not pigments used by the paint industry, although some congruence can be found.

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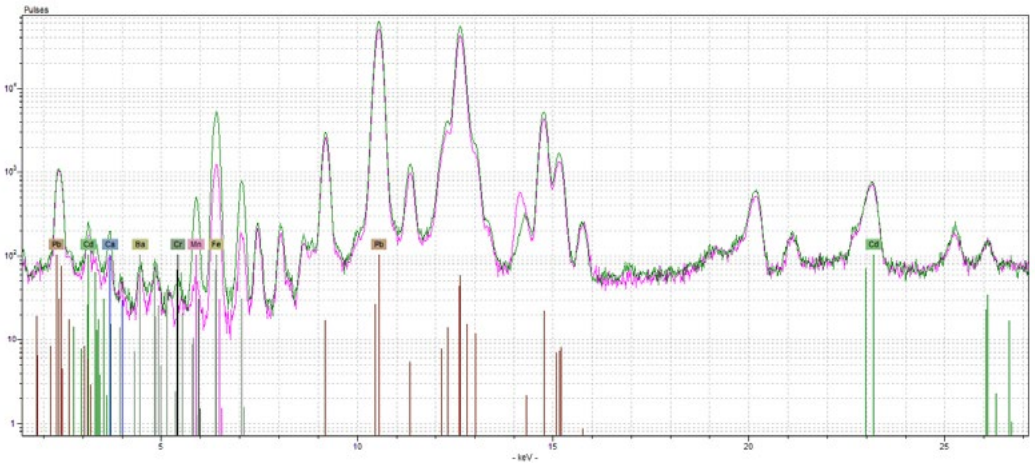
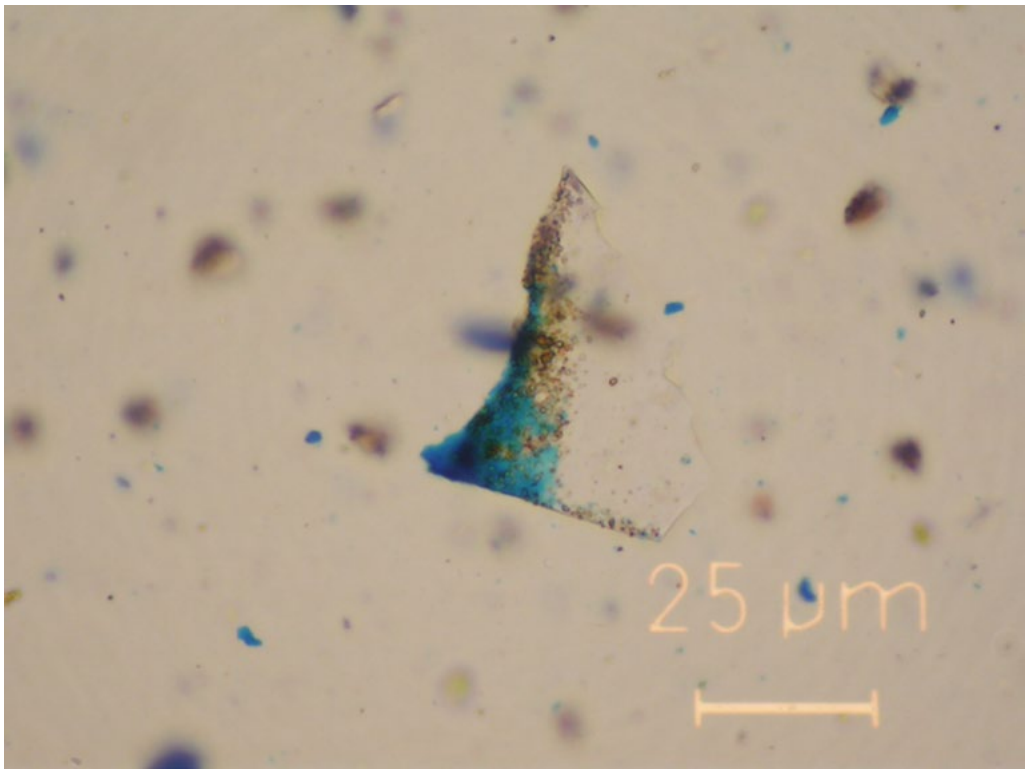


Green spectrum (Finnish National Gallery's painting); violet spectrum (Lahti Art Museum's painting). In both spectra X-ray peaks are visible from cadmium (Cd) due to the presence of cadmium yellow pigment. The other X-ray peaks in the spectra result from other pigments and fillers in the measured green area.
Photo: Finnish National Gallery / Conservation Unit, Seppo Hornytzkij



In the centre of the polarised light micrograph there is a large particle composed of binding medium and aggregated particles of Prussian blue and cadmium yellow. Around the particle there are scattered single Prussian blue pigment particles.
Photo: Finnish National Gallery / Conservation Unit, Seppo Hornytzkij

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The green moss area was examined with a stereomicroscope, after which it was necessary to take a small colour sample for further research. The sample was studied with a polarised light microscope[10], after which small blue particles in the sample were identified as Prussian blue. The cadmium yellow that had previously been identified using the EDXRF spectra was also clearly visible as small yellow particles. The particles of each pigment are typically so small that observing individual colour particles with a stereomicroscope is impossible. For this reason, the areas painted with this mixture of two pigments appear to be uniformly green both under a stereomicroscope and also when observed with the naked eye.

In both works von Wright has used the same pigments for the corresponding colour areas, with a few exceptions. The pigments used by the artist in both paintings and identified with the EDXRF spectrometer and the polarised light microscope proved to be Prussian blue, cadmium yellow, cinnabar, earth pigments and white lead. Zinc white, chromium hydroxide green and barium sulphate were also identified.

The works' primer has been made using white lead, which includes a small amount of barium sulphate, but more barium sulphate is used in the Lahti painting. The blood on the fur of the hare in the Lahti work is red ochre, whereas in the FNG work, the blood is composed of red ochre and cinnabar. Some colour areas in both pictures include zinc white as an impurity and barium sulphate as a filler. There is however more barium sulphate in the Lahti work. The FNG painting contains chromium hydroxide green as an impurity, but this is not found in the Lahti version.

Can the mystery be resolved?

Many new questions and issues arose during the research and discussions about the paintings. The assumption is that the FNG's *An Eagle Owl Seizes a Hare* is the first version, the so-called original work. Its materials are of higher quality and the painting style more polished. The materials used in the Lahti Art Museum's painting are slightly more modest, and the size differs from that of the FNG's work. The size deviation is as little as it should be, according the rules of good copying[11]. During the research, the question arose as to whether it might be a copy of Ferdinand von Wright's work by another artist, but this can be ruled out. The works are so close to each other in execution and materials that both can be designated as paintings by Ferdinand von Wright. Some conclusions could be reached about the sequence in which the works were painted, but this would require more research.

The route of the work that went to Germany, and its return to Finland remains open, though. The early years of the Lahti version remain shrouded in mystery. The work's history can only be traced back to when it was donated to the Vyborg city art museum in 1933.

10 A small pigment sample, measuring a few tenths of a millimetre, was taken from the work for examination with the polarised light microscope. For the sample, a conservator removed a layer of varnish from the surface of the painting, so that the varnish would not contaminate the pigment sample. With the polarised light microscope, the sample was examined, generally using a magnification of 100–400x in plane- and cross-polarised transmitted and/or reflected light. Thus observations can be made of various pigment particles' physical and optical characteristics. These are the pigment particles' size, shape, hue, relief from the medium, value of their refractive index compared to the immersion medium used, as well as light refraction in the particle, including birefringence and pleochroism. The microscope used in the research was a Leica DMRX polarised light microscope.

11 Ateneum Art Museum rules on copying (1941): a copy must be smaller or larger than the original work (e.g. original: 60cm x 78cm / copy 50cm x 68cm).

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The reverse side of the FNG painting has a German-language information tag,[12] which may support the conclusion that it was the FNG's work that was sent to Germany for an exhibition. It is possible that it was rolled up for transport to Germany, where its stretcher frame was replaced, which would explain the trace of a different kind of crossbar visible in the X-ray image of the canvas. The canvas's tacking edge also reveals that it was stretched three separate times. This supports the conclusion that the painting was removed from its original frame for transport, at the artist's home in Finland. When the work arrived in Germany, it was stretched onto a wedge frame for the show, and most likely at this point the wedge frame was switched for a new one. After the exhibition, the painting was again removed from the frame to facilitate its return to Finland. The wedge frame used in Germany was, however, sent with the work and was reused for its present stretching. After its return to Finland, the artist would have sold the work to the Finnish Art Society, and this would also explain why the work was not bought for the society until four years after it was completed.

12 A handwritten note on the back of the painting reads: *Eule mit Weissem Hasen Gemalt von Ferdinand von Wright in Finnland. Preis 25 Friedr.d'or* (= 141 2/3 Swedish riksdaler). According to information from the National Museum of Finland's Coin Cabinet, the price of the work is marked in gold coin, 25 Friedrich d'or. This was a Prussian gold coin that was minted in 1741–1855. These gold coins were a means of measuring value and could also be used in international trade. Although the work was not on sale in Germany until the early 1860s, presumably these gold coins were still in use as international currency. One Friedrich d'or was worth about 5 Swedish riksdaler. However the valuation was not always exact. Rather, there was generally a low premium on these gold coins. This was also true in this case, when the price in silver coins had apparently been 141 2/3 Swedish riksdaler. E-mail from Frida Ehrnsten, 21 December 2016.