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**Abstract**

In 2021, the museum Palais Lascaris, located in Nice (French Riviera) decided to conserve five exceptional panels in gilt, painted and punched leather. These pieces, created in the mannerist style of the end of the Renaissance, depict five figures from the Old Testament; all appear in full length on an abundantly punched background. This homogeneous ensemble was probably part of a larger décor that adorned the old synagogue of the city of Nice. The original and unusual story of the panels raised many questions. In addition to their scientific analysis, the aim of the conservation was to learn more about them.

# Five biblical figures on gilt leather: Study, conservation and dating

## INTRODUCTION

Included in the collection of the museum Palais Lascaris in Nice, France, are five exceptional panels (height: 1.70, width: 0.51 m), in gilt, painted and punched leather that depict five figures from the Old Testament. The three women and two men are represented from the front or in three-quarter profile and were created in the mannerist style characteristic of the end of the Renaissance. The backgrounds of the panels are animated by prominent punch work with various imprints. Each of the panels is made up of three superimposed skins sewn together. The painted decoration on the panels was still clearly legible but had deteriorated over time and showed gaps. A previous intervention had involved attaching them to plywood panels with adhesive and adding frames.

In 2021, the leather panels were scheduled for conservation prior to their inclusion in a new permanent exhibition. While these rare figurative gilt leathers had an iconography that was relatively easy to analyse, many questions remained concerning their dating, their origin and above all their history. By taking these questions into account, it was our hope that our conservation efforts would provide clues and possibly even answers to those questions.

## HISTORICAL BACKGROUND

The Palais Lascaris is located in the old part of Nice. Baroque in style, the building houses an important collection of musical instruments as well as collections of decorative arts and fine arts from the 17th and 18th centuries. The panels were bequeathed to the museum of the town of Nice in 1903 (Trachel legacy), after the construction of the new synagogue, and then passed into the collection of the Massena Museum before finally being transferred to the Palais Lascaris.

The names of the five Old Testament figures painted on gilt leather<sup>1</sup> are inscribed at the top of each panel: *Iezabel*, *Etan*, *Efer*, *Asalel* and *Raquel* (Fournet 2004, 671–689; Fournet 2019, 72, 104–105) (Figure 1). Queen *Jezebel* is well-known,<sup>2</sup> *Etan* is perhaps the author of Psalm 89; the name *Asalel* exists, but as a warrior, not as a woman; *Raquel*, Jacob's wife, is also well known, whereas there is no mention of *Efer* in the Bible.

Although the panels once adorned the old synagogue in Nice, that they were really a Jewish decoration seems unlikely for both religious and cultural reasons. The choice of Jezebel is incomprehensible because she is

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Figure 1. The five biblical figures before conservation. Inv. PL-05-18-1 to 4, Palais Lascaris, Nice. © M. Graniou

the archetype of Israel’s enemies. Above all, the Jewish religion formally rejects animated figures (Serouya 1933, 65–66, 69, 72, 76–77), especially human ones and especially in synagogues.

The presence of these figures in the old synagogue can instead be explained by the local history of the Jews (Blumenkranz 1972, 212–215; Decourcelle 1923, 309; Emanuel 1905, 164; Hildesheimer 1976, 1–11; Meiss 1923, 90; Serouya 1993, 65–84) and the Jesuits (Burnichon 1955, 864–884; Ghiraldi n.d., 1–13) in the 18th century. At that time, Nice was a possession of the Duchy of Savoy and was part of the Kingdom of Piedmont-Sardinia. Since 1607, the Jesuits had been active in teaching, with classrooms in houses in the old part of Nice in addition to an oratory nearby. In the 1720s, the royal authorities decided to reform education and in 1729 closed the Jesuit school. The premises became unoccupied and the Jesuits’ financial situation precarious. In 1733, the king forced the Jews to reside in a cramped ghetto in Old Nice (Figure 2). Their synagogue was set up in a vacant house

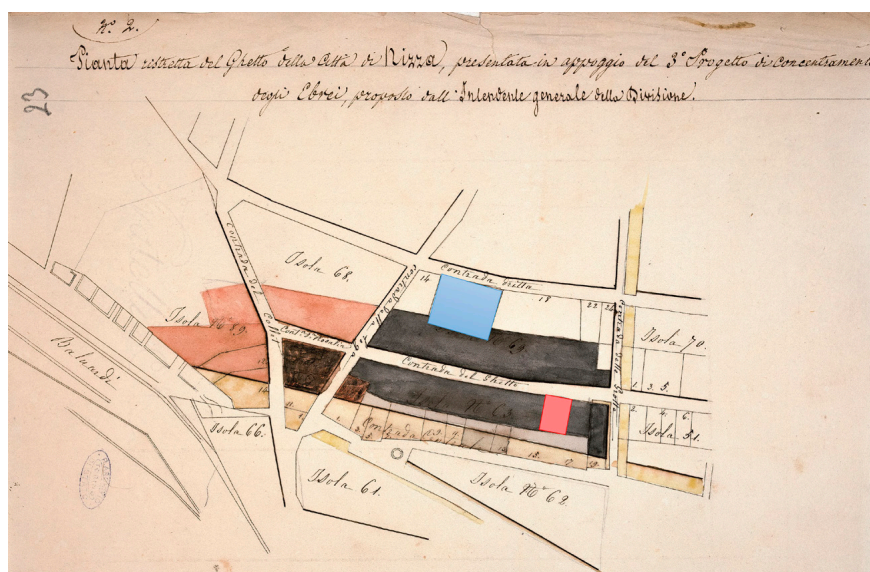


Figure 2. Location of the ghetto in Old Nice. Map of 1836. Materie ecclesiastiche, Ebrei, Archivio di Stato, Torino. In blue: Palais Lascaris; in red: the old synagogue in the Contrada del Ghetto (today Bunico street)

belonging to the Jesuits, with whom relations were difficult (Emanuel 1905, 34; Decourcelle 1923, 283). It is therefore likely that the synagogue established in Nice in the early 1730s was located in the former Jesuit oratory and that the Jesuits, who were not very accommodating, opposed its modification. Although not mentioned in archive documents, the gilt leather panels were probably installed in the oratory in the 17th century by the Jesuits and remained there, on the insistence of the owners, when the building became a synagogue.

### DESCRIPTION AND CONDITION

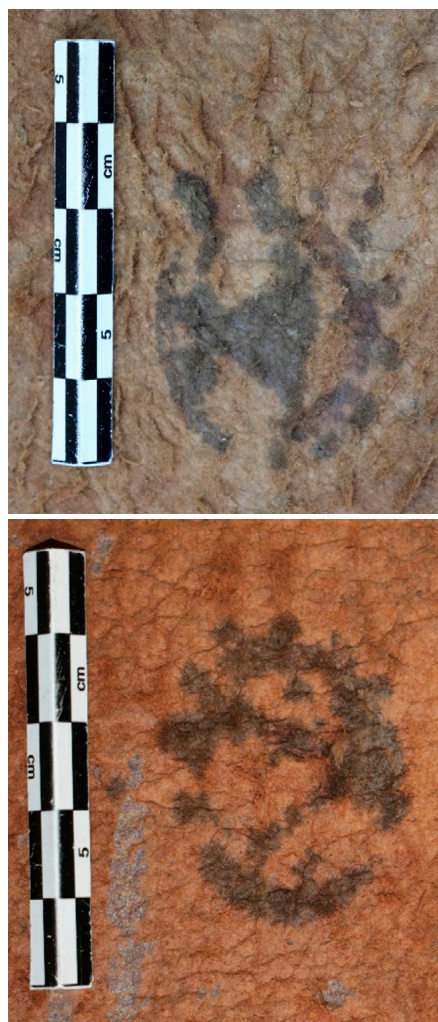
As traditionally encountered, the leather is covered entirely with silver leaf. A ‘gold’ varnish was applied to the entire surface before the figures were oil painted. The slight relief of the leather was obtained by punching. The skins are sewn together (Bonnot-Diconne 2021).

The pieces of silver leaf used to cover the entire surface are square and measure 7 cm on each side. The edges are often clearly visible against the gold backgrounds (Figure 3) and reveal a reddish-brown leather. Surprisingly, on the outer edges of the panels, the silver leaf was cut back considerably, resulting in a great deal of loss when the skins were cut to size. The craftsmen did not make any special effort to optimise the use of the silver leaf, which suggests that the final dimensions of the panels were not known at the time the leather was silvered. Each panel is covered with 216 silver leaves.

The leather used by the craftsmen was dark brown in colour. The skins that make up the panels are 49–50 cm in width and 55–57 tall. They were not supplemented with leather pieces and still retain their original edges (except in the panels depicting *Raquel* and *Efer*). In each case, three skins were sewn together to form one panel. Most of the original seams have been preserved and are single-needle stitched, with 1 stitch every 5 mm. The presence in all of the panels of traces of old stitching on the outer periphery of the skins implies that they were originally joined either to



**Figure 3.** The name *Etan* written on the gold background, where silver leaves show clear delimitation. *Etan*'s panel. Inv. PL-05-18-2, Palais Lascaris, Nice. © C. Bonnot-Diconne



**Figure 4.** Stamps found on the reverse of the panels *Iezabel* and *Etan*. Inv. PL-05-18- 1 and 2, Palais Lascais, Nice. © C. Bonnot-Diconne

each other (but it has not been possible to demonstrate this) or to other types of panels (such as decorative borders?).

The craftsmen used nine different tools to punch the surface of the leather. However, the punches differ in number from one panel to another and the punch work is very elaborate. The gilt backgrounds were completely covered with a succession of horizontal lines of juxtaposed punches (Figure 3). The clothing of the figures is beautifully highlighted by complex assemblies of punches, intended to artificially recreate the printed patterns on textiles. Although the punch pattern is rectilinear, in some cases a punch was used to create curved forms. This work was carried out after painting but its effect may have been intensified by a few subsequent brush strokes.

In addition, sgraffito technique was used repeatedly on each of the panels. On the women's veils and more generally for the clothes, the painter 'scraped' the fresh paint (probably using the handle of his brush) to create the desired effects.

As noted above, the figures are clearly identified by their names, which were inscribed using a brush and black ink in reserved areas around their heads (Figure 3). The women's names are split in two because of their length.

The paint layer on all of the panels was still clearly legible but had deteriorated over time, forming a dense network of cracks. An earlier intervention had consisted of gluing the panels on plywood panels, followed by their framing and extensive waxing.

As part of the conservation effort, the leathers were removed from their plywood supports, revealing stamps and inscriptions on the reverse side. Unfortunately, they had been badly damaged by previous restoration, which had ignored their presence. The stamp used on the panels was ovoid and had sometimes been applied several times on the same panel. On the *Iezabel* panel it was used once per skin. The stamp is very incomplete and could not be reconstructed in its entirety (Figure 4). No equivalent has been found elsewhere on similar works. The handwritten inscriptions present on the *Raquel* and *Etan* panels were almost illegible. Observation under infrared light suggested that the ink was carbon-based.

All technical details relating to the manufacture of the decorations, or their subsequent modifications, were carefully documented by the conservator. Conservation treatments were accompanied by physico-chemical analyses and <sup>14</sup>C dating.

## SCIENTIFIC ANALYSES

A few leather fibres were sampled (~10 µg) from the flesh side of each gilt leather panel to identify the animal species by proteomic analysis (Kirby et al. 2013). The samples were prepared by trypsin enzyme digestion and then purified on a C18 ZipTip column, before analysis by matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) mass spectrometry. Three leather samples of 1 mg were collected from each panel to assess the conservation state using the methodology developed by Heu-Thao et al. (2020). For each sample the shrinkage temperature (Ts) and enthalpy

**Table 1.** Results of the proteomic, DSC and pH analyses of the leather (NA: data not available)

Panel	Animal species	Ts (°C)	ΔH (J/g)	pH
<i>Etan</i>	Sheep	52.0 ± 0.9	30	4.3
<i>Efer</i>	Sheep	56.2 ± 0.3	31	NA
<i>lezabel</i>	Sheep	56.1 ± 1.0	24	4.5
<i>Asalel</i>	Sheep	54.3 ± 0.5	26	NA
<i>Raquel</i>	Sheep	50.8 ± 0.7	23	4.2

(ΔH) were measured using a Perkin Elmer DSC 8000 after immersion of the sample for 2 h in 20 μL of water; the values were averaged for each panel. For the pH measurement, water extracts obtained from the immersed samples were combined for each panel and measured using a Mettler Toledo pH meter and a microelectrode. The same water extract was then deposited onto a glass slide and the dried residue was analysed by attenuated total reflectance–Fourier transform infrared spectroscopy (ATR–FTIR) over a spectral range of 450–4000 cm<sup>-1</sup> using a Thermo Nicolet 5700 spectrometer.

The proteomic analysis indicated that all of the leathers were prepared from sheep skins. The profiles obtained from the infrared spectra of the dried residues were similar and contained the characteristic bands of hydrolysable tannins of vegetable origin in the spectral region of 700–2000 cm<sup>-1</sup>, possibly gallotannins (Falcão and Araújo 2014). The leather from each panel was in a moderate state of degradation, with shrinkage temperatures between 51 and 56°C and enthalpies ranging from 23 to 30 J/g (Table 1). In all samples, the pH measurements indicated the absence of harmful acidity or strong acids in the leather.

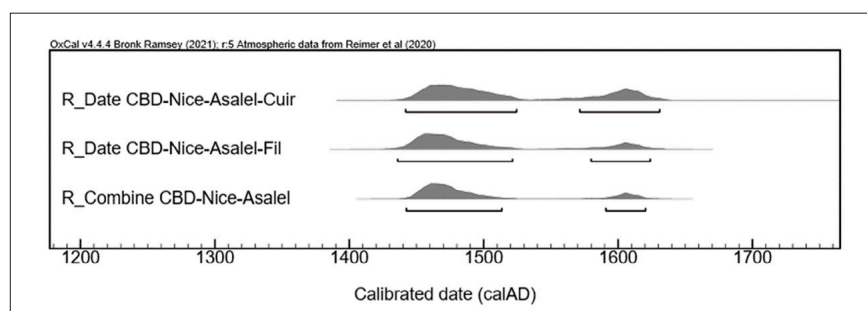
Micro-FTIR analyses (Thermo Fisher Scientific IS50 FTIR spectrophotometer coupled with a Continuum infrared microscope) were carried out in transmission mode on micro-fragments of red, green and blue pictorial layers. The results suggested that the painting technique combined oil painting and egg tempera, with egg yolk used for the reds and the other colours applied in a linseed oil base (degraded by oxidation). Tempera was largely replaced by the development of oil painting, towards the end of the Middle Ages. However, its use continued until 1500, mainly in religious paintings but also as an undercoat covered by a translucent or transparent oil varnish. This transitional mixed technique was followed by pure oil painting, which by the 16th century had almost completely replaced tempera painting.<sup>3</sup> Green shades were likely obtained using synthetic copper-based compounds (copper resinate or verdigris), red shades using mineral pigments of the aluminosilicate type (i.e. red ochres, loaded with gypsum) and flesh tones and blue shades using lead carbonate, such as ceruse (lead white), mixed with red and a blue colouring agent that could not be detected by the analysis. The gold varnish was made from an oil-resin varnish, likely prepared from a mixture of a siccative oil and a natural resin (e.g. pine, dammar, mastic). Some of the samples (flesh and green) seem to have been covered with a varnish of the same composition as the gold varnish. This suggested the occasional application of glaze to enhance the paint layer.

The samples collected for radiocarbon dating were subjected to a series of acidic and basic solutions (HCl–NaOH–HCl) to eliminate potential contaminants and then burned in the presence of copper oxide and silver at 835°C for 5 h to produce CO<sub>2</sub> (Dumoulin et al. 2017). The CO<sub>2</sub> gas was converted to graphite. Carbon isotopes were measured at the AMS LMC14/ARTEMIS facility (Saclay, France) (Moreau et al. 2020). The <sup>14</sup>C contents were converted into calendar years with the OxCal v4.2 calibration programme (Bronk Ramsey and Lee 2013) and the Incal20 atmospheric curve (Reimer et al. 2020) (Bonnot-Diconne et al. 2021a).

Radiocarbon dates of  $390 \pm 30$  BP and  $405 \pm 30$  BP were determined for the leather and sewing thread respectively. After calibration, two intervals were obtained for each sample (Table 2 and Figure 5) due to the natural fluctuations of the Incal20 calibration curve (Reimer et al. 2020). The probability suggested ages for the samples.<sup>4</sup> As the dates were fully coherent, the results could be statistically combined to derive relative likelihood intervals of 1442–1513 (81.1%) and 1591–1620 (14.3%). Thus, the panels were dated with 95% certainty to the period cal AD 1442–1513 or to the period cal AD 1591–1620.

**Table 2.** <sup>14</sup>C results of the leather and sewing thread

AMS laboratory number	Sample reference	Material	Carbon mass (mg)	Age BP $\pm 30$ (year)	Calibrated dates
SacA66614	CBD-Nice-Asalel-Leather	Leather	1.13	390	1442–1524 (67.1%) 1571–1631 (28.4%)
SacA66615	CBD-Nice-Asalel-Thread	Textile fibre	0.89	405	1436–1521 (77.6%) 1580–1624 (17.8%)
	CBD-Nice-Asalel-Combine				1442–1513 (81.1%) 1591–1620 (14.3%)



**Figure 5.** Calibrated <sup>14</sup>C dates of the leather (cuir), sewing thread (fil) and their combination (leather + thread)

## CONSERVATION

The overall conservation approach consisted of the complete conservation of the panels. This involved removing the leather from the wooden support, cleaning, consolidating the décor, reintegrating the paint layer to make the figures easier to read and developing an innovative system for framing the panels that allows their combined or independent exhibition (Bonnot-Diconne et al. 2021b).

The gluing of the leathers on a wooden board had imposed a flatness that did not exist at the outset as well as constraints that were not adapted to the leather. The plywood had slightly deformed, causing the leather to split. However, removal of the leather from the wooden support was a delicate operation that required a determination of both the adhesive that had been used and the physical condition of the leather. Tests showed the use of a hide-based glue. This type of glue can be reactivated, but doing so will cause it to penetrate the leather to which it had been applied and to stiffen it. However, the panels had been created using a high-quality leather that was still mechanically sound and perfectly flexible. We therefore opted for a mechanical approach in which each of the panels was slowly and progressively lifted from the plywood using fine, non-sharp blades,



**Figure 6.** Mounting system using springs on a new aluminium frame. © C. Bonnot-Diconne

a method that also avoided their deformation. The result was a supple leather surface that was easy to handle.

After removal of the wooden support, the tears and holes in the panels were repaired from the reverse side using small pieces of Reemay, a non-woven fabric backed with a Beva film that adhered to the reverse side of the leather by reactivation using a heated spatula. The decorations had been abundantly waxed on the painted side, and the wax was deeply lodged in the hollows of each punch. Cleaning was therefore a long and delicate process carried out using rolled cotton in ligroin. Seams between tiles that had failed were restored to their original state, as the edges still existed. The original stitching holes were re-used after their consolidation by lining with a non-woven fabric. The new thread was polyester and is clearly identifiable.

*Raquel's* panel was smaller than the others because it had lost its lower part. It was decided that the panel should be restored to its original dimensions to obtain a suite of five panels of equal size. Restoration was carried out using undyed natural tanned sheepskin, with the pieces cut to size after precise calculation. The middle skin was completed with a narrow strip and the new lower skin was added by stitching (identical to the original). The surface of the modern leather was coloured with acrylics to match the old parts (but without restoring the punching).

The development of a method to hang the panels was an essential part of the conservation work. The previous fixed hanging had caused mechanical damage. Leather is very reactive to climatic variations, stretching and relaxing rapidly and thus causing significant surface movements. When the climate is very dry, over-stressing occurs, causing tears and rips in the seams and fastening systems. The method used to hang the panels will therefore influence their long-term conservation as well as their general appearance. The Centre de Conservation et de Restauration du Cuir (2CRC), Moirans, previously developed a solution, employed for many years, of hanging frames with a spring tension system on an aluminium frame. The leathers were mounted on custom-made frames by means of tensioning strips (100% polyester, 200 g/m<sup>2</sup>) applied to the reverse side of the leather by gluing with Beva 371 film (light heat application, contact gluing). These strips were used to tension the leather decoration by means of gussets, aluminium rods and custom-made stainless-steel springs (Figure 6). The new aluminium structures were then framed with mouldings specifically adapted to the stretcher frames.

Finally, retouching of the painting restored the legibility of the scenery, which had been severely altered by a network of cracks highly disturbing to the viewer's eye. Visualisation of the figures was improved by proceeding very gradually, by first retouching the faces and flesh (Figure 7) and then the costumes. The leather parts added later deliberately stand out from the rest of the Renaissance decorations, making them clearly distinguishable (Figure 8). The choice of retouching materials respected the leather and the gold varnish. The reintegration is easily reversible, without risk to the materials constituting the decorations (silver, leather, etc.), as natural pigments in a Regal varnish binder were used.



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Figure 7. Efer before and after retouching. Efer's panel. Inv. PL-05-18-4, Palais Lascaris, Nice. © C. Bonnot-Diconne



Figure 8. The five biblical figures after conservation. Inv. PL-05-18-1 to 4, Palais Lascaris, Nice. © C. Bonnot-Diconne

## CONCLUSION

Our experience with the panels and their conservation strongly suggested that there were other parts or even other panels, now lost. The figures on punched gilt leather show a high quality of execution. The two dates obtained by <sup>14</sup>C dating, 1442–1513 and 1591–1620, were fully coherent, but determination of the correct one required other considerations. The technical insights gained during the conservation work included the use of sgraffito, which was a very fashionable technique during the Renaissance, and the use of green ash and egg tempera. According to François Perego (2005, 509), the transition from egg tempera to oil painting was gradual. For a long time, egg tempera continued to be used as a glaze or for highlights (as in Flemish paintings of the 15th/16th century). Artificial basic copper carbonate green has been detected in several 15th-century Italian panels, such as Giovanni Bellini's *The Agony in the Garden*, from 1460 (London)

(Perego 2005, 172). This would suggest that the panels originated during the earlier interval, 1442–1513. Moreover, the letter patterns used to write the names resemble those of the humanist script developed in Italy by Poggio Bracciolini (1380–1459) (Figure 3) and representing a departure from Gothic script.<sup>5</sup>

Concerning the origin of the panels, the presence of the stamp on the reverse is quite common on Italian and Spanish leathers and is the mark of the manufacturer, either the tanner who supplied the hide or the gilt leather maker. The size of the silver leaf, the use of sheep skins and the mannerist style point to an Italian origin. If the Jesuits were involved in the origin of this decoration in their oratory, they may easily have purchased it in Italy, especially because their patron and protector was Pons Ceva, a businessman from Nice who lived in Rome in the second half of the 16th century.

These portraits are reminiscent of others made in Italy during the 16th century, with mannerist characteristics that resulted in expressions that are hardly naturalistic. It is difficult to determine the painter's origin: Liguria? Or even Piedmont?<sup>6</sup> The names suggest comparisons with Italian canvases sold in Paris in 1981<sup>7</sup> and with painted gilt leathers held in a private collection in The Netherlands.<sup>8</sup> Another possible comparison is the wall hangings depicting the *Roman Heroes*, preserved in the Renaissance Museum in Ecouen (France). Many of the technical details are similar to those of the panels of the Palais Lascaris: the figures are named by inscriptions placed on a golden background; the letters used are of a similar alphabet pattern; the silver leaf is the same size (7 cm square) and forms a mesh; the skins are from sheep; the figures are surrounded by an abundant chasing on the gilt backgrounds; the designs of the garments were created by punching, with a virtuoso combination of the various types of punches, some of which are very similar.<sup>9</sup>

In conclusion, conservation of the panels was an opportunity to improve our knowledge of this exceptional and unique ensemble in France, which will be part of an exhibition at the Palais Lascaris at the end of 2023.

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## NOTES

<sup>1</sup> Inv. PL-05-18-1 to 5.

<sup>2</sup> The Bible, *Kings I*, 16, 4–7, 23–26; Jean Racine, *Athalie*, act II, scene 5.

<sup>3</sup> <https://en.wikipedia.org/wiki/Tempera> (accessed 7 July 2023).

<sup>4</sup> <https://c14.arch.ox.ac.uk/calibration.html> (accessed 26 April 2023).

<sup>5</sup> [https://en.wikipedia.org/wiki/Humanist\\_minuscule](https://en.wikipedia.org/wiki/Humanist_minuscule) (accessed 7 July 2023).

<sup>6</sup> Jean Habert, General Curator, Louvre Museum, personal communication.

<sup>7</sup> Auction house: Hôtel Drouot, Paris, Etude Ader – Picard – Tajan, 19 June, no. 81; see Fournet (2004, 678).

<sup>8</sup> Eloy Koldeweij, Cultural Heritage Agency (RCE), Amersfoort, The Netherlands, personal communication, 18 June 2022. One equivalent gilt leather portrait is also conserved at the MAK – Museum of Applied Arts in Vienna (Austria), Inv. LE-87, 31 × 25 cm.

<sup>9</sup> See Fournet (2019, 359, note 89).

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