Painting Pairs 2024-2025: Art Historical and Technical Study Report

By Sam Byfield and Ana-Sofia Petrović

CIA No: 3002
Artist: Unknown
Title: *Allegory of May and June*
Date: c. 16th century
Owner: Private collection
Dimensions: 37 x 47 cm
Media: Oil on panel
Paintings Conservator: Sam Byfield
Art Historian: Ana-Sofia Petrović

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About

The Courtauld Institute of Art's "Painting Pairs: Art History and Technical Study" is an annual programme supported by the Research Forum, the Gallery, and the Department of Conservation and Technology. It explores the relationship between art history and technical examination in the heritage sector by pairing select art history or curation students with 2nd year conservation students. The project examines a painting from private or public collection to reveal more about its context, condition, materials, techniques.

Sam Byfield is the MA Conservation of Easel Paintings student; they completed a History of Art BA Honours at the University of Warwick prior to studying at the Courtauld. Ana-Sofia Petrović is the MA History of Art student; she previously completed a History of Art BA at the University of Sydney.

This report presents the new scholarship on *Allegory of May and June* resulting from Painting Pairs 2024-2025. The Research Questions and Results presentations can be viewed on the Research Forum's YouTube channel.

Acknowledgements

We would like to express our gratitude to Professor Aviva Burnstock, Pippa Balch, Dr. Karen Serres, and the Courtauld Research Forum for organising this annual programme.

We would also like to recognise Professor Burnstock, Nathan Daley, and King's College London for supporting the technical analysis, and Aguttes auction house for supplying comparative images.

Finally, our thanks go to the painting's owner for their support and enthusiasm for both the process and results of this project.

Introduction

This report summarises the results of the technical study of *Allegory of May and June* (*Allegory*), a small oil on panel painting from a private collection. It was sold to the current owner from another private collection in Paris, via the Swedish auction house Halmstads Auktionskammare.[1] The listing described it as an early 17th century Dutch panel, but no further provenance could be provided.

The painting depicts two figures representing the months of May and June, indicated by the Latin inscriptions for each month and the zodiac symbols for Gemini and Cancer. This imagery places it within the context of calendar-making, an artistic tradition dating back to antiquity and continuing into modern day.

Given the strikingly similar imagery found in two 16th century Flemish calendar series, the origins of *Allegory* were called into question: is it contemporary to the comparable works, or is it a later copy? This study seeks to characterise the painting's materials, techniques, condition, and physical history in order to identify its potential origins and contextualise it within the artistic tradition of calendar-making.

This report brings together the art historical and scientific aspects of painting conservation for a wider audience. Please see Appendix IV: Glossary for definitions, including a list of analytical techniques and their applications, and terms used in artistic practice and painting conservation. Certain key images have been embedded into the text; please see the Appendices for more details.

[1] Halmstads Auktionskammare, "2523996: Unknown artist, Oil on wooden panel, Dutch master early 17th century," Auctionet, November 16th, 2022, https://auctionet.com/en/2523996-okand-konstnar-oil-on-wooden-panel-dutch-master-early-17th-century.

List of Illustrations: Main Body

Condition Report

Alongside this project, *Allegory* is undergoing treatment at the Courtauld Department of Conservation and Technology. Some technical imagery was performed after surface cleaning to improve visibility. The following has been summarised from Sam Byfield's condition assessment and treatment proposal, performed in November 2024.[2]

The primary support is a wood panel made up of two boards with a horizontal grain. It appears to be oak, which is supported by visible medullary rays. The join runs horizontally through the upper half of the painting's composition, with corresponding historic retouching on the front. It appears to be a lap (or "lip") join, although it is somewhat hidden by historic yellowed adhesive residue. There are multiple tool marks visible on the verso, including kerf marks, planing, and various bevelling. There are historic woodworm channels. There is a pencil inscription in French near the top and the faint remnants of a white chalk inscription.

There are minor losses in the wood along both ends of the join. There are two horizontal splits near the bottom edge, one of which has thin, irregularly shaped piece of wood glued on top. Both splits correspond with overpaint on the front; the unrepaired split shows some movement. There are two small circular repairs, one which appears historic near the top and once which appears newer near the join.

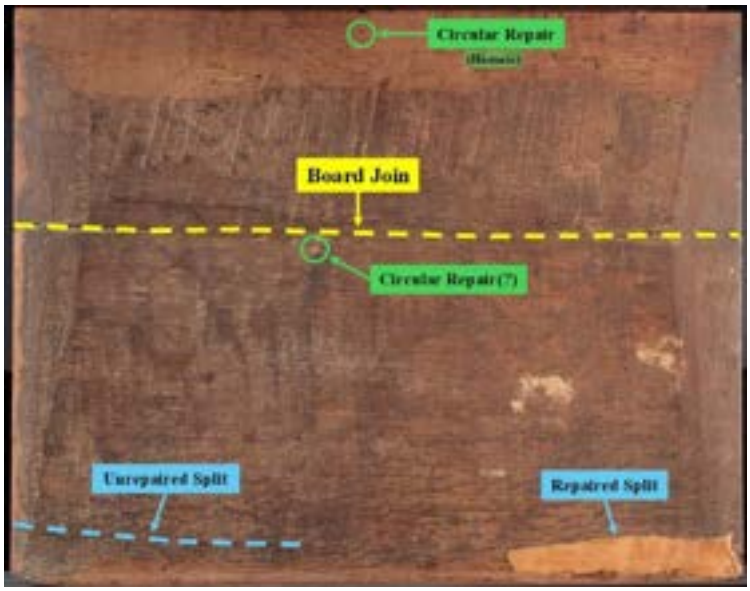

Figure 1. Diagram of join, splits, and repairs (before treatment, verso).

Turning to the recto, there is a white ground layer. The paint layers are thinly applied and the wood grain is visible in lighter passages. There is a very fine age craquelure. There are minor but widespread damages across the picture plane, including abrasion, scratches, and loss of paint and ground. There are also small black protrusions, likely metal soaps. Most of the small damages show corresponding fill and/or historic retouching, of which there seem to be several campaigns. They are discoloured and visually disturbing, especially across the join and splits. There also appears to be some minor overpaint which reinforces or adds to compositional elements. Many of the earlier campaigns

[2] Sam Byfield, *CIA3002 Report* (Unpublished report, The Courtauld Institute of Art, 2025).

Figure 2. Ultraviolet fluorescence; previous retouching appears dark (during treatment, recto, UV light).

are likely in oil paint. Some areas are visible in ultraviolet (UV) light, but others are not as they are beneath layers of aged varnish. The varnish layers are discoloured and yellow. It appears mildly glossy beneath ingrained surface dirt and dust, which makes the painting initially appear matte.

The treatment plan includes varnish and overpaint removal to improve aesthetic clarity and minor structural work to stabilise the split and join as necessary.

Art Historical Context

The Latin inscription "MAIVS" designates the female figure on the left as the month of May; the zodiac symbol shows two figures walking, representing the twins of Gemini.[3] She appears richly dressed and holds a flower in one hand and a pennant in the other. "IVNIVS" designates the male figure on the right as the month of June, with the symbol of the crab representing Cancer. He is dressed in simple garb and holds a pair of shears, with a sheep or lamb in his arms, representing the labour of sheep-shearing.

Development of Calendar Illustrations

During antiquity, representing the months by pure or divine personification gradually developed to include characteristics of the seasons and attributes of human activities.[4] The earliest extant example is a Hellenistic frieze personifying the months and festivals of the lunar year alongside the zodiac symbols of the solar year, which has now been transferred onto the façade of the church of Hagios Eleutherios in Athens.[5] It has been argued that examples in antiquity can be interpreted as illustrations of monthly activities rather than true personifications, foreshadowing the active depictions of monthly labours common to the medieval period.[6]

Representations of the labours of the months are evident from the 9th century onwards and became a common artistic tradition in the 12th century, being particularly popular in Italy, France, England, and Flanders in a variety of media.[7] While details may vary, calendar illustrations generally followed the agricultural cycle and linked to each corresponding zodiac.[8]

Examples of cycles from the late medieval period might be more accurately described as depicting occupations rather than labours, as they also included depictions of leisure activities.[9] Calendar illustrations are commonly seen in books of hours (Christian devotional manuscripts), many of which were made in Flanders in the early 16th century.[10] The manuscripts were made for the international market and for the private use of the wealthy.[11] The changing audience has been linked to the expanding imagery.[12]

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[3] The Latin inscriptions use the classical epigraphic convention of rendering "U" as "V", as was common in Latin inscriptions used in 16th century Flanders.
[4] James Carson Webster, *The Labors of the Months in Antique and Mediaeval Art to the End of the Twelfth Century*, Repr. ed. 1938, Northwestern University Studies in the Humanities, (AMS Press, 1970), 36.
[5] Olga Palagia, "The Date and Iconography of the Calendar Frieze on the Little Metropolis, Athens," *Jahrbuch Des Deutschen Archäologischen Instituts* 123 (2008): 215, Academia.
[6] Webster, *The Labors of the Months*, 36.
[7] Bridget Ann Henisch, *The Medieval Calendar Year*, (Pennsylvania State University Press, 1999), 5.
[8] Bridget Ann Henisch, *The Medieval Calendar Year*, 86.
[9] Bridget Ann Henisch, *The Medieval Calendar Year*, 8.
[10] Bridget Ann Henisch, *The Medieval Calendar Year*, 5.
[11] Bridget Ann Henisch, *The Medieval Calendar Year*, 104.
[12] Bridget Ann Henisch, *The Medieval Calendar Year*, 104.

Shepherds & Sheep-Shearing

Sheep-shearing is evident in cycles from antiquity, however it was not commonly represented in illuminated manuscripts until the 13th century.[13] In the 14th century, an idealised country-life aesthetic, particularly the pastoral, became fashionable in courtly life.[14] As calendar cycles developed into self-contained landscapes, shepherding was represented in background details across the year; however, the shepherd only appeared as the central figure in early spring (released for winter) or high summer (shearing).[15] By late-15th to early-16th century, sheep-shearers appear more regularly as an alternative to the traditional haymaking or harvest in June or July.[16]

Throughout the 16th century in Antwerp, paintings of peasant scenes proliferated, among other new pictorial genres including landscape and tavern scenes.[17] Many contemporary representations of peasant life depict peasants in brightly coloured and vivid clothing, reflecting the growing prosperity of Flanders during this period.[18] Peasantry and rural labour was recognised as highly important for economic development. This sentiment extended beyond visual culture and can also be observed, for example, in certain songs from the *Antwerp Songbook* published in 1544, which celebrate the peasantry and encourage gratitude for peasant labour.[19]

In this context, the straw hat of the June figure is emblematised as a symbol of the peasant's noble labour beneath the harsh summer sun. The artist of this work has taken care to represent the very active labour of sheep shearing within the small space afforded by the double portrait, placing a lamb in the figure's arms to create a natural pose that reveals the shearers at work.

The Flower-Bearer

May holds a budding flower in her hand and is backed by a flower bush. These are likely roses, as indicated by the round, open petals and pointed foliage. In earlier imagery, April traditionally represented renewal of nature through a single figure, usually a man, holding up a sprouting branch or flower.[20] Over time, this evolved into representations of human renewal through couples and courtship; in later calendar cycles, both April and May are commonly depicted in this way.[21] The association of courtship with the month of May may have also been influenced by the Gemini symbol, who were traditionally represented by a pair of male

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[13] Bridget Ann Henisch, *The Medieval Calendar Year*, 92-93.
[14] Bridget Ann Henisch, *The Medieval Calendar Year*, 97-99.
[15] Bridget Ann Henisch, The Medieval Calendar Year, 88.
[16] Bridget Ann Henisch, *The Medieval Calendar Year*, 2, 93.
[17] Larry Silver, *Peasant Scenes and Landscapes: The Rise of Pictorial Genres in the Antwerp Art Market* (Philadelphia: University of Pennsylvania Press, 2012), 55, ProQuest Ebook Central.
[18] For a discussion of the relationship between peasant scenes and the Flemish economy of the late-16th century, see Larry Silver, "Pieter Bruegel in the Capital of Capitalism," *Nederlands Kunsthistorisch Jaarboek (NKJ) / Netherlands Yearbook for History of Art* 47 (1996): 130-133.
[19] See Matt Kavaler, "Pieter Bruegel's *Fall of Icarus* and the Noble Peasant," *Jaarboek Koninklijk Museum voor Schone Kunsten, Antwerpen* (1986): 83–98.
[20] Bridget Ann Henisch, *The Medieval Calendar Year*, 156.
[21] Bridget Ann Henisch, *The Medieval Calendar Year*, 156.

twins, but in the Middle Ages were occasionally represented as lovers embracing one another.[22] In the late medieval period, May calendar painting often depicted the festivity of May Day, which in larger scenes might combine the theme of renewal and courtship with courtly activities.

The spring months are thus represented with a garden scene from the late fifteenth century. [23] As Bridget Ann Henisch has shown, this marks a shift from depicting peasant labour solely as essential for survival (like harvesting) to portraying it as work that supports leisurely, pleasurable settings like the garden.[24] In fact, research demonstrates that the focus on leisurely garden scenes in the earlier spring months first emerged in calendar cycles produced in Flemish studios or under Flemish influence.[25] Indeed, in *Allegory*, the rose held by May is ornamental, in contrast to the practical and necessary sheep held by June, further linking the noble and pastoral peasant aesthetic.

As the double portrait format requires a return to a single figure to represent each month, May is represented by a single flower-bearer. As discussed, earlier imagery commonly depicts a man bearing a flower to represent April. However, by the 16th century cycles had developed to represent renewal in across both April and May through scenes of courtship and, increasingly, courtly festival activities. The pennant in May's other hand has not been identified, but it appears to be a simplified representation of heraldry and likely relates to the portrait's commissioner. Portraying the flower-bearer as a noblewoman links this representation to the courtly festivity of May Day, thus returning to traditional imagery, whilst integrating contemporary motifs.

Figure 3. Detail of May (before treatment, recto, normal light).

May's dress shows a decorated black vest with patterned yellow sleeves, and her white cuffs compliment her ruff and the attifet (cap) pinned behind her ears. Her dress reflects 16th century attire represented in contemporary portraiture, which reveals the possible structure, textures, and materials represented.

[22] Bridget Ann Henisch, *The Medieval Calendar Year*, 156
[23] Bridget Ann Henisch, *The Medieval Calendar Year*, 52-62.
[24] Bridget Ann Henisch, *The Medieval Calendar Year*, 52.
[25] Bridget Ann Henisch, *The Medieval Calendar Year*, 59.

Figure 4. Frans I Pourbus, Portrait of a Young Woman*, 1581, oil on panel, 40.5 x 33.6 cm, Museum of Fine Arts Ghent.*

Frans Pourbus the Elder's *Portrait of a Young Woman* depicts a similar dress and attifet, though here the figure wears a full ruff. The painting reveals the fineness of the silk used in Flemish attifets, as well as the wire structure which holds it in place. The painting shows a hairstyle possibly worn with the attifet, where the hair is intricately curled away from the face at the hairline. The colouring of her dress is also similar to that in *Allegory*, with a black bodice and yellow sleeves.

The open ruff of *Allegory* is reflected in portraits such as Antonis Mor's *Portrait of Margaret of Parma*; a portrait which also bares significant sartorial similarities to *Allegory*. In the late-16th century, the open ruff is consistently smaller than the closed ruff. However, the large scale of the open ruff in *Allegory* appears to be stylistic, as many of the figure's features are disproportionately large when compared to her torso.

Figure 5. Antonis Mor, Portrait of Margaret of Parma, 1559, oil on panel transferred to canvas, 97.8 x 71.7 cm, Philadelphia Museum of Art, Philadelphia.

Painting in 16th Century Antwerp

During the late-15th and early-16th century Antwerp emerged as a leading art centre and an economic capital of Northern Europe.[26] The city's prosperity, bolstered by rich maritime trade and financial networks, attracted crowds of foreign merchants as well as artists from across the Netherlands and beyond.[27] The Antwerp Guild of Saint Luke had seen a largely steady rise of incoming artists from the 1460s to 1550s, who established large workshops to supply the expanding market for the production and export of art. [28]

Historically, guilds had two primary functions: to keep crafts profitable and to provide social benefits.[29] In large guilds including several crafts, painters often also organised themselves into confraternities of St. Luke, their patron saint, like in Antwerp.[30] Surviving

[26] See, for example, Filip Vermeylen, "Exporting Art across the Globe: The Antwerp Art Market in the Sixteenth Century," *Nederlands Kunsthistorisch Jaarboek (NKJ) / Netherlands Yearbook for History of Art* 50 (1999): 13-29.
[27] Vermeylen, "Exporting Art across the Globe", 14.
[28] Vermeylen, "Exporting Art across the Globe", 14-15. As Vermeylen notes, this steady rise was interrupted in the 1530s due to the Peasant's Revolt in Germany.
[29] Jill Dunkerton, et al., *Giotto to Dürer: Early Renaissance Painting in the National Gallery* (National Gallery Publications Ltd., 1991), 126.
[30] Dunkerton, et al., *Giotto to Dürer*, 126.

documentation shows the regulations maintained by the guilds. For example, stipulations for training; approved or forbidden techniques and materials; the boundaries between painters and other crafts and within categories of painters.[31] A master's workshop might include apprentices, assistants, and even other masters, although apprentices were likely the most numerous members.[32] Workshops created pattern books which compiled designs and could mass produce imagery; the use of patterns continued in Netherlandish painting in the 16th century.[33] Workshop members would assist in the preparatory stages and their involvement in the painting stages could vary greatly.[34] Even with technical analysis, the potential for a production line style of working can make it difficult to distinguish between different members.

Peeter Baltens

There are two other calendar series with very similar compositional parallels to *Allegory*, both of which have been attributed to 16th century Flemish artist Peeter Baltens (c. 1527-1584).[35] Baltens was a 16th century painter, draughtsman, engraver, publisher, and merchant; he painted genre, history, and landscape scenes.[36] Baltens was a master of the Antwerp Guild of Saint Luke and dean in 1569 and 1571.[37] While he has been thought a follower of Pieter Bruegel the Elder, documentation has shown that between 1550-1551, Bruegel worked as an assistant of Baltens.[38] Records of Bruegel's earliest documented work, an altarpiece for the

Figure 7. Attr. Pieter Balten, 'May' & 'June', c. 1580, oil on oak panels, 28.2 x 21.3 cm, Miranda do Douro Cathedral, Portugal. © Museu da Terra de Miranda.

Figure 7. Attr. Pieter Balten, 'May' & 'June', c. 16th century, oil on oak panel, 26.5 x 38.5 cm, private collection, Paris. © Aguttes.

[31] Jilleen Nadolny et al., "Documentary sources on European painting to the twentieth century, with Appendices I– VII," in *Conservation of Easel Paintings*, 2nd Edition, eds. Joyce Hill Stoner and Rebecca Rushfield (Routledge, 2021), 85, 10.4324/9780429399916-6.
[32] Dunkerton, et al., *Giotto to Dürer*, 137.
[33] Dunkerton, et al., *Giotto to Dürer*, 143.
[34] Dunkerton, et al., *Giotto to Dürer*, 136.
[35] There are variations on his name, most commonly Pieter Balten, Peeter Balten Custodis, Pieter Custodis; for a full list please see RKD-Nederlands Instituut voor Kunstgeschiedenis, "Peeter Baltens," RKD Research, 2025, https://rkd.nl/artists/4117.
[36] RKD-Nederlands Instituut voor Kunstgeschiedenis, "Peeter Baltens."
[37] RKD-Nederlands Instituut voor Kunstgeschiedenis, "Peeter Baltens."
[38] RKD-Nederlands Instituut voor Kunstgeschiedenis, "Peeter Baltens."

cathedral of Saint Rombout, Mechelen, reflect that he painted the outer wings in grisaille, while Baltens worked on the main panel.[39]

Comparable Series

The first comparable series is located in the Miranda do Douro Cathedral in Portugal, while the other is in a private collection in Paris.[40] The Portugal series was attributed by Professor Vítor Serrão, after comparing it to the Paris series.[41] Serrão identifies the Portugal series as not a copy but a second version by the same artist (or workshop).[42] The Portuguese series was likely acquired or commissioned between 1581-1592 by the Cathedral's bishop.[43] This series is comprised of 12 panels, a single portrait for each month. The Paris series shows the same figures, but there are only 6 panels, each showing 2 portraits compositionally divided by a painted column. Serrão has credited the attribution of the Paris series to Stephen J. Kostyshyn.[44]

Figure Comparison

All three versions share similar pose, dress, and inscription. *Allegory* appears more delicately painted, especially in the figures' faces, which are more closely related in the Portugal and Paris portraits. Even so, compositionally, *Allegory* is more similar to the Paris version. Both are double portraits, however the Paris panel is divided by the painted column while

Figure 8. Comparison of May (left to right: Portugal, Allegory*, Paris). © to the respective owners.*

[39] Nadine M. Orenstein, "The Elusive Life of Pieter Bruegel the Elder," in *Pieter Bruegel the Elder: Drawings and Prints*, ed. Nadine M. Orenstein (Metropolitan Museum of Art; Yale University Press, 2001), 5.
[40] The two series will henceforth be referred to by their location for clarity's sake, given the similar titles.
[41] Vítor Serrão, *Os retratos dos Meses da Sé de Miranda do Douro: uma Rara Alegoria Pintada em Antuérpia por Pieter Balten*, exh. cat. (Museu da Terra de Miranda, 2020), 10.
[42] Serrão, *Os retratos dos Meses da Sé de Miranda do Douro*, 14.
[43] Museu Nacional de Arte Antiga, *Peeter Balten*, exh. cat. (MNAA, 2020), 1, http://museudearteantiga.pt/exhibitions/peeter-balten.
[44] Serrão, *Os retratos dos Meses da Sé de Miranda do Douro*, 13-14; Stephen J. Kostyshyn, "'Door Tsoecken Men Vindt': A Reintroduction to the Life and Work of Peeter Baltens Alias Custodis of Antwerp (1527–1584)" (PhD diss., Case Western Reserve University, 1994), ProQuest Dissertations & Theses.

composition in *Allegory* is integrated. Though the placement slightly differs, they both include the zodiac symbols, while the Portugal series does not.

Serrão has identified the flower held by May in the Portugal series as a rose.[45] In the Portugal and Paris series, both May figures hold a double rosebud, whereas in *Allegory*, she holds a singular rosebud. Rosebuds are also depicted in the foliage in the background of the three paintings, however, they are rendered with greater detail and are more visible in *Allegory* and the Paris series. All three pennants are different, but like *Allegory*, the others appear to represent heraldry, in varying degrees of detail. None have been identified, but both the specific heraldry represented and the level of detail are likely determined by patronage.[46] Both *Allegory* and the Paris painting also have finer lace passementerie trim and matching white detailing on May's bodice and sleeves. All three paintings share the sleeves' greyish-brown pattern.

Figure 9. Comparison of June (left to right: Portugal, Allegory*, Paris). © to the respective owners.*

[45] Serrão, *Os retratos dos Meses da Sé de Miranda do Douro*, 77.
[46] Serrão, *Os retratos dos Meses da Sé de Miranda do Douro*, 17.

Technical Analysis: Materials & Techniques

Wood

Despite the inscription, the panel appears to be made of oak. Medullary rays are "ribbons" of tissue formed across the growth rings of trees; in most woods they require magnification to be seen.[47] However, these rays can be easily visible in oak, producing its characteristic silver grain.[48] Their presence indicates the panel is good quality because it was radially cut from the trunk, which shrinks significantly less than tangentially cut wood.

Artists tended to use wood native to the region they were working in; pine, spruce, fir, lime, and beech were frequently used across northern Europe.[49] However, the most popular support was Baltic oak, which is dense and straight-grained with less tendency to warp than locally-grown oak or wood.[50] There is a wealth of research on the Baltic oak trade, which dominated from the 13th-17th centuries.[51] While dendrochronology was not within the scope of this project, future analysis could provide confirmation of the panel's felling date.

Panel Making

The oldest existing documentation from the Antwerp guild of St. Luke dates to the late-14th century; the early regulations have been found from 1442.[52] These documents introduced quality-control for panel-makers.

There are multiple tool marks visible in raking light. Timber was split until the rediscovery of the saw in the 14th century and it was primarily used from the 15th century onwards.[53] The saw kerf marks are relatively regular but have a slight curve in places. This suggests the boards were cut with a handsaw rather than a sawmill, which produces perfectly parallel marks,

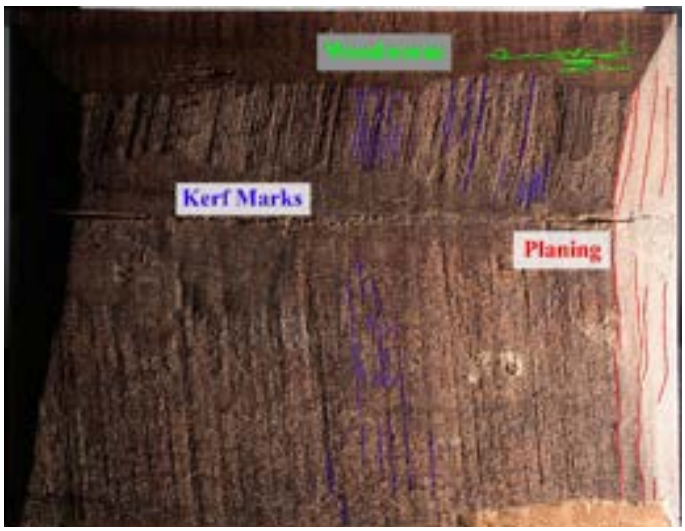

Figure 10. Overlay of tool marks and woodworm channels (before treatment, verso, raking light right).

[47] Thomas Corkhill, *The Complete Dictionary of Wood*, 1st Scarborough Books Edition (Stein and Day/Scarborough House, 1982), 444-45.
[48] Corkhill, *The Complete Dictionary of Wood*, 445.
[49] Jørgen Wadum, "Historical Overview of Panel-Making Techniques in the Northern Countries," in *The Structural Conservation of Panel Paintings*, edited by Kathleen Dardes and Andrea Roth (The Getty, 1998), 150.
[50] Jørgen Wadum and Noelle Streeton, "History and use of panels or other rigid supports for easel paintings," in *Conservation of Easel Paintings*, 2nd Edition, eds. Joyce Hill Stoner and Rebecca Rushfield (Routledge, 2021), 85, 10.4324/9780429399916-6.
[51] Wadum and Streeton, "History and use of panels," 85.
[52] Wadum, "Historical Overview," 149.
[53] Wadum, "Historical Overview," 152.

perpendicular to the grain.[54] In the 16th century, sawmills became the standard for Dutch and German artisans.[55] However, imported saw-cut or ready-made wood was prohibited in Flanders; there were no sawmills in Antwerp until the 17th century.[56] This can aid distinguishing between panels from the different Low Countries. There is no visible panel mark; however, this was not a widespread practice until after Antwerp's 1617 guild regulations.[57]

The plane marks cross the joins, indicating the sides were bevelled after the boards were joined; this is very common in 16th-17th century panels.[58] Bevelling at the edges make panels easier to frame, although this seems quite a wide bevel in relation to the panel size. At some point the panel was planed down on the top and a little at the bottom, although this was done later in its history, as it has opened up woodworm channels.

Figure 11. Brushstrokes in the sheep-shearer's thumb (photomicrograph).

Painting Technique

The paint layers have been applied in very thin layers using a wet-in-wet technique. The mixing and overlap of some brushstrokes and passages suggest it was applied quickly, although the faces are rendered with more detail and care. There is minor impasto in the white lace cuffs and the flag. Although the Latin inscriptions have been reinforced with a brown retouching, they do appear to be original.

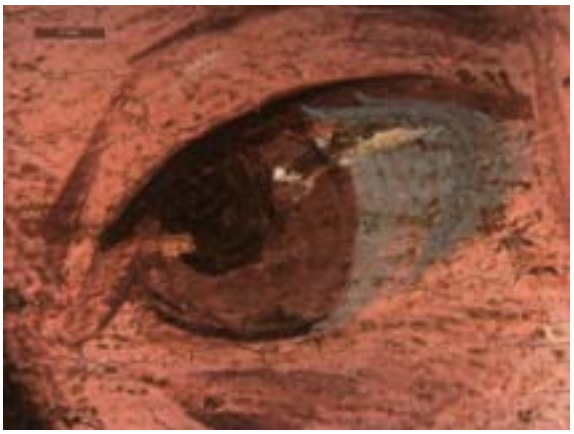

Figure 12. Sheep-shearer's eye (photomicrograph).

X-Radiograph

Butt joins were most common in Northern panels, with the addition of dowels as panels became thinner in the late-16th century; lap/lip joins were not as common but do occur.[59] There are no signs of dowels or dowel holes in the x-ray. Dark patches across the picture plane indicate where there has been a loss in the

[54] Wadum, Jørgen, and Noelle Streeton. "History and use of panels or other rigid supports for easel paintings." In Conservation of Easel Paintings. 2nd Edition, edited by Joyce Hill Stoner and Rebecca Rushfield, 49-116. Routledge, 2021. 10.4324/9780429399916-6.
[55] Wadum, "Historical Overview," 152.
[56] Wadum and Streeton, "History and use of panels," 90.
[57] Wadum, "Historical Overview," 165.
[58] Wadum, "Historical Overview," 153.
[59] Wadum, "Historical Overview," 155.

ground. This can be seen along the panel join; there are also parallel lines of loss clustered around the join in May's face. Combined with the wood loss seen from this back, this suggests instability in thinner sections of a lap join. The areas of bright white along the join indicate it has been repaired with a lead-white based fill. Corresponding with the historic circular repair seen from the back, it appears a knot may have been removed. At some point a lead-white based fill was also applied.

Preparatory Layers

To better understand the materials and layer structure, a cross section was taken from a pre-existing damage in May's yellow sleeve, including part of the brownish-grey decoration and layers from previous restoration campaigns. This sample was analysed using optical microscopy and scanning electron microscopy with energy dispersive x-ray spectroscopy (SEM/EDX).

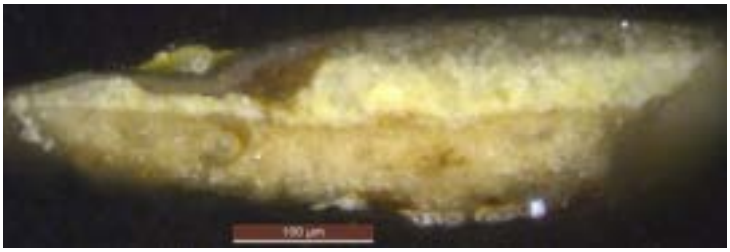

Figure 13.Cross section A, normal light (photomicrograph).

There is a single white ground layer. SEM/EDX shows this is primarily calcium-containing. It can be identified as calcium carbonate, or chalk, by the presence of prehistoric marine nannofossils, like the calispheres and coccoliths visible in the SEM image. The more nannofossils, the finer the chalk; these grounds were traditionally used in 14th-17th century Flemish panel painting as they could lend luminosity to the paint layers.[60]

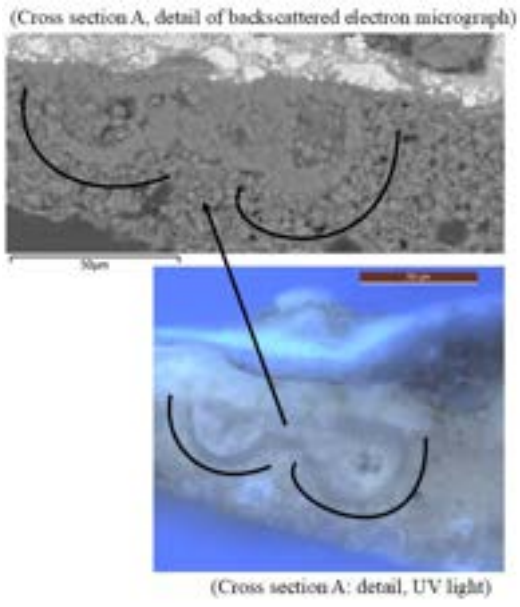

Figure 14. Calispheres identified in cross section A.

There does not appear to be any carbon-containing underdrawing in infrared reflectography (IRR). However, the cross section shows fine coloured particles between the ground and the first paint layer, although they do not appear to form a discrete layer themselves. SEM/EDX detects iron in these pigments, suggesting an iron-containing earth. This could potentially be an underdrawing in sanguine, a natural red chalk (red ochre). Some form of planning or outline would be expected in a workshop series using a common scheme.

[60] Christina Currie and Dominique Allart, *The Brueg(H)el Phenomenon*, vol. I (KIK-IRPA, 2012), 249, https://www.kikirpa.be/en/publications/the-brueghel-phenomenon.

Pigments

Based on SEM/EDX and handheld x-ray fluorescence (XRF), a potential palette can be identified. All pigments are consistent with 16th century practice.[61]

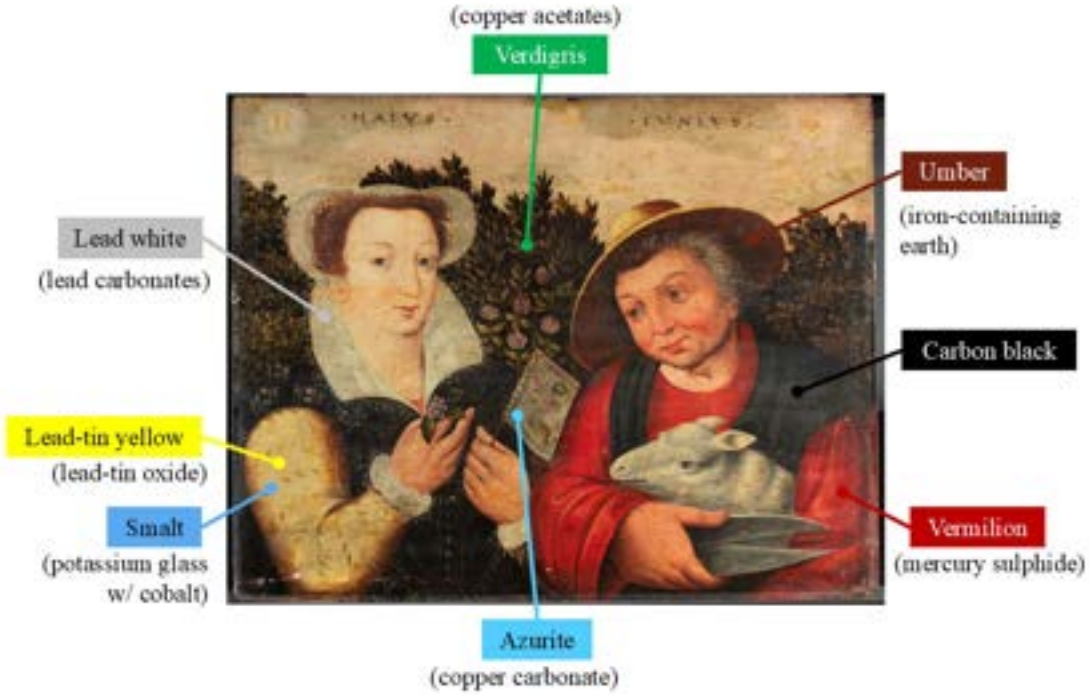

Figure 15. Suggested palette based on elemental analysis.

The brownish-grey decorations on May's sleeve could be identified as smalt, a cobalt-containing potassium glass. The particles are have a distinctive angular shape identifiable in UV light and SEM/EDX analysis was consistent. This indicates that the patterning on May's sleeve would have been blue; the tendency of smalt to discolour like this over time is well documented. The lead-tin yellow is likely Type I as silicon was not detected, although Type II cannot be excluded.

Craquelure

The factors in textural ageing cracks are complex and describing the patterns is subjective.[62] However, there are "typical" patterns observed in certain periods and regions which appear to relate to the materials and methods traditionally used.[63] While not definitive proof alone, a comparison can support the technical evidence. 16th century Flemish

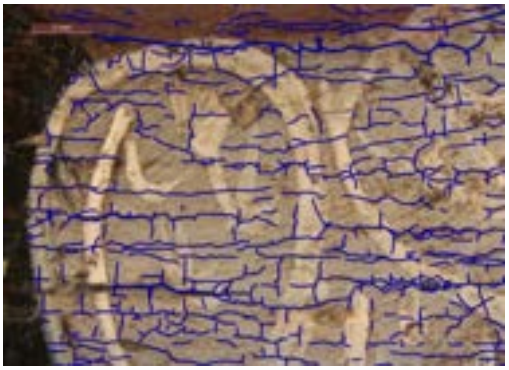

Figure 16. Overlay of craquelure pattern on May's cuff (photomicrograph).

[61] Full analytical data in Sam Byfield, *CIA3002 Report* (Unpublished report, The Courtauld Institute of Art, 2025).
[62] Spike Bucklow, "The Classification of Craquelure Patterns," in *Conservation of Easel Paintings* 2nd Edition, eds. Joyce Hill Stoner and Rebecca Rushfield.(Routledge, 2021), 298, 10.4324/9780429399916-6.
[63] Bucklow, "The Classification of Craquelure Patterns," 298-299.

craquelure is generally "small, orderly, of uniform width, and parallel to the wood grain."[64] The pattern seen on *Allegory* is visually comparable to typical examples.[65]

Past Restoration Campaigns

Combining technical analysis and observations made during varnish removal, 3 varnish layers, at least 4 overpaint layers, and some unknown coatings could be identified.

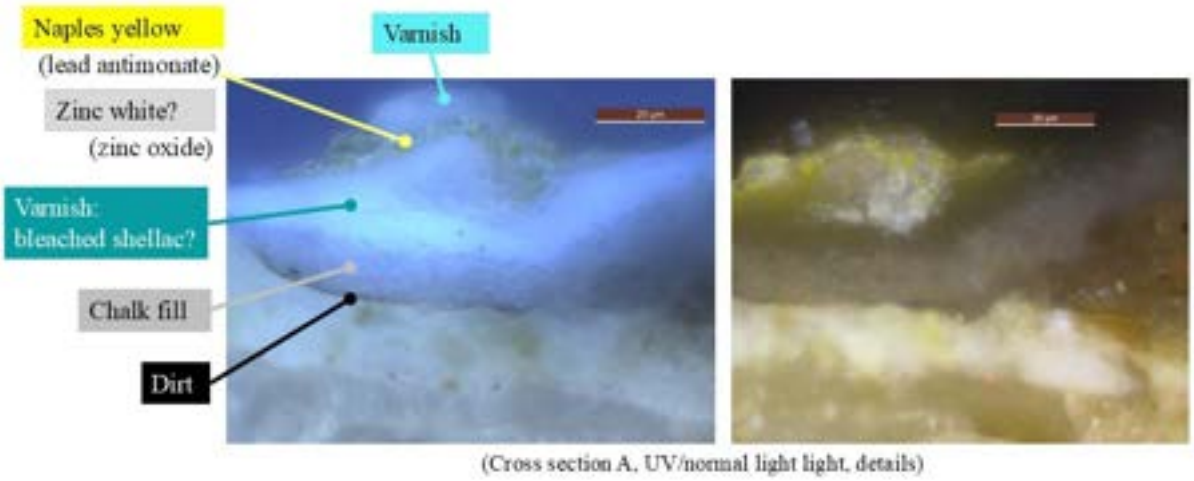

Figure 17. Past restoration: suggested materials & layer structure (cross section A).

The lower varnish corresponds with a varnish with blue fluorescence found beneath the upper varnish with a yellow-green fluorescence. The SEM/EDX analysis shows a concentration of chlorine in this lower varnish layer, potentially indicating a bleached shellac.[66] Shellac, a diterpenoid tree resin, is not traditionally associated with picture varnishing due to its orange-brown tint.[67] However, several methods for decolourising shellac were introduced in the early 19th century, resulting in its promotion as a picture varnish.[68] Treatment with chlorine-based bleaching agents can be used to produce bleached shellac, also known as white lac.[69] Although the frequency of its use is not well-known, a Paris-based company developed a 'retouching varnish' which has now been chemically identified as bleached shellac and it's thought to have been popular from late-19th into the 20th century.[70]

The retouching in the yellow sleeve can be identified as Naples yellow (lead antimonate), zinc white (zinc oxide), and potentially chrome yellow. There are tiny blue particles in this layer, which appears to be synthetic ultramarine. Both the underlying varnish and the pigments in this overpaint layer are consistent with the early to mid-19th century.

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[64] Bucklow, "The Classification of Craquelure Patterns," 298.
[65] For a publicly available example of typical craquelure patterns, please see https://www.hki.fitzmuseum.cam.ac.uk/projects/cracks2.
[66] Ken Sutherland, "Bleached Shellac Picture Varnishes: Characterization and Case Studies," *Journal of the Institute of Conservation* 33, no. 2 (2010): 140, doi:10.1080/19455224.2010.495242.
[67] Sutherland, "Bleached Shellac Picture Varnishes," 129.
[68] Sutherland, "Bleached Shellac Picture Varnishes," 129.
[69] Sutherland, "Bleached Shellac Picture Varnishes," 137.
[70] Sutherland, "Bleached Shellac Picture Varnishes," 141-42.

	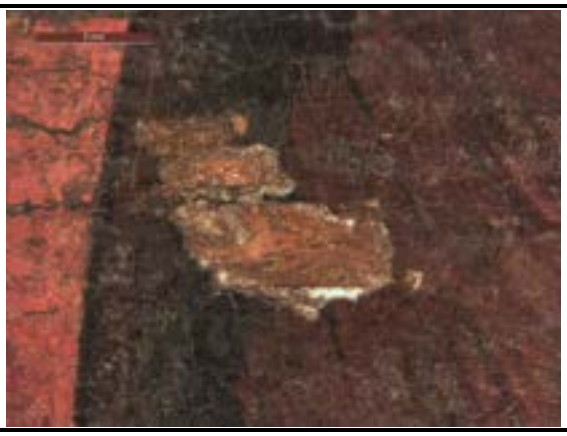
Before overpaint/fill removal (photomicrograph)	After overpaint/fill removal (photomicrograph)

Figure 18. Before & after: overpaint & fill covering a small damage & original paint.

Most of the historic retouching covers small damages or lead soap protrusions; it tends to be brushy and also conceals some intact original paint. There is also overpaint which reinforces or adds to some minor elements. The red “squiggle” pattern was difficult to characterise because it’s semi-translucent and there was another unoriginal red wash added on top, but cleaning process provided more clarity. Microscopy shows these lines cover cracks and small damages in the original vermilion layer, meaning they were added after the painting underwent these changes.

Technical Comparison

Panel Dimensions

None of the three comparable series appear to have the same measurements, even when considering the individual Portugal portraits as doubles.

Regarding the Paris series, Serrão describes "visible cuts in the original compositions, certainly made when they were joined in pairs", describing them as 12 paintings which were reordered into the current conformation (3 rows, 2 pairs), in the single frame. Characterising them this way allows for a direct comparison the individual panels of the Portugal series.

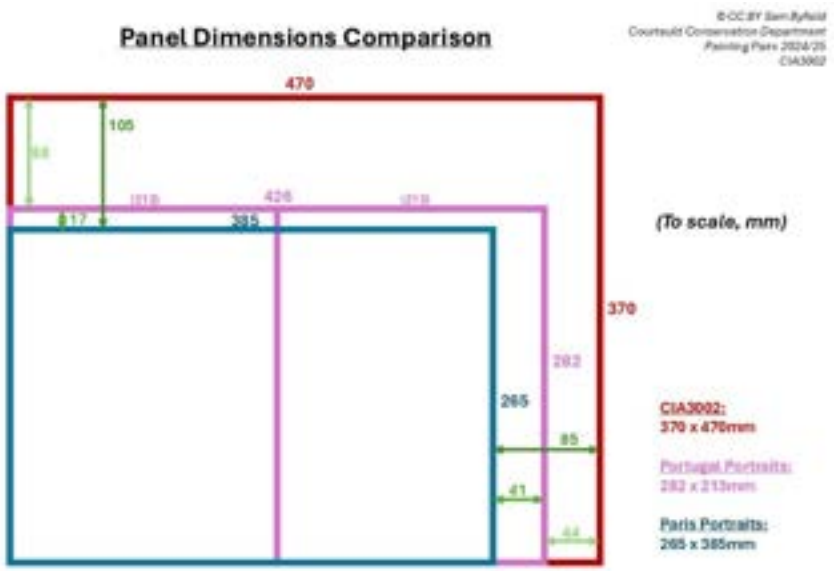

Figure 19. Scaled panel dimensions comparison chart: Allegory, *Portugal portraits, Paris portraits (mm).*

However, the Paris series appears to simply be a set of 6 panels. While they are *compositionally* divided by the painted columns in the centres, the pairs have not been joined from 2 separate pieces but were painted on the same panel. This is evidenced by the perfect continuation of the horizontal wood grain across those columns. Additionally, in the panels of September/October and November/December, there are horizontal splits in the board which cross the central columns. They appear to be splits rather than board joins as they are not straight, following the slight curves in the wood grain.

There are, however, additions to the panel of November and December at the top and bottom. These appear to be thin battens of a different wood, covered by thin overpaint. The top batten is an even width, but the bottom addition is a diagonally-slanted piece extending from the left corner to just across the centre. The bottom edge of September and October is covered by thicker, discoloured overpaint which extends into the original composition; it appears this is covering a split in the original, but could potentially be another batten. Given the prevalence of splits, the uneven shape of the bottom batten, and the fact that it is not a uniform addition across all 6 paintings, this seems more likely to be some kind of repair than a change to the panel size/composition.

Figure 27. Attributed to Pieter Balten, 'November' & 'December' from Allegory of Twelve Months of the Year*, c. 16th century, oil on oak panel, 26.5 x 38.5 cm, private collection, Paris. © Aguttes*

Small panels used for easel paintings were standardised in the Low Countries and specific regulations exist from 1617 in Antwerp.[71] However, standard sizes varied over the centuries and measurements varied between towns, making it difficult to place the panels within a category.[72] Even in the 17th century, it appears the sizes were a guide rather than the rule and there still existed accepted wider or narrower variations.[73]

Preparatory Layers

Early Netherlandish preparatory stages could be similar to Southern European: Italian painters would draw on top of a non-absorbent, coloured preparation layer, or *imprimatura*.[74] However, in the North in the 16th century, underdrawing could be made directly onto the white ground and a translucent insulating layer, or *primuersel*, might be added on top.[75] The production of pre-grounded panels by a *witter en peenelmaecker* (a grounder and panel maker) is confirmed in Antwerp in 1604 but could have begun slightly earlier, which makes it difficult to characterise a workshop's preparatory practice from late-16th century or after.[76] However, any *imprimatura* or *primuersel* layer might be one of the first layers applied by the artist, so can be indicative of workshop practice.[77]

While there may have been a red chalk underdrawing in *Allegory*, there does not appear to be a widespread priming layer visible in either of the cross sections taken. Serrão indicates that a red priming layer was found during the conservation of the Portugal series by Porto Restauro, although it is not quite clear whether this refers to a red-tinted ground or an added *imprimatura* layer. Without a deeper understanding of Baltens' workshop practice, conclusions cannot be drawn about the significance of this divergence in preparation between the series.

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[71] Wadum and Streeton, "History and use of panels," 94.
[72] Wadum and Streeton, "History and use of panels," 94.
[73] J. Bruyn, "Een Onderzoek Naar 17de-Eeuwse Schilderijformaten, Voornamelijk in Noord-Nederland [A study of 17th-century painting formats, mainly in the Northern Netherlands]," *Oud Holland* 93, no. 2 (1979): 102, 115, http://www.jstor.org/stable/42711016.
[74] Wadum and Streeton, "History and use of panels," 166.
[75] Wadum and Streeton, "History and use of panels," 167.
[76] Wadum and Streeton, "History and use of panels," 165.
[77] Wadum and Streeton, "History and use of panels," 165.

Conclusions

This report presents the collaborative study of *Allegory of May and June* through technical analysis and art historical research at the Courtauld Institute of Art. This unknown calendar portrait from a private collection had been labelled as a 17th century Dutch work, but questions were raised as to its connection to two strikingly similar calendar series attributed to 16th century Flemish artist Peeter Baltens. The aim of this investigation was to contextualise this calendar portrait within the artistic tradition depicting the labours of the months; characterise the artist's materials and techniques in relation to artistic traditions; identify the extent of previous restoration campaigns, and to explore the painting's relationship to the comparable series.

Technical examination indicates the materials and techniques in this painting are consistent with 16th century Flemish, or at minimum Northern European, panel painting. The wood, tool marks, and chalk ground layer are consistent with Flemish practice, although no dowels or commonly used *imprimatura* or *primuersel* layer have been identified. The pigments identified through elemental analysis are consistent with those in use in the 16th century. The fast, wet-in-wet painting technique but delicate rendering in the details of the figures' faces is consistent with a division of labour commonly found in workshop practice.

There are numerous layers of coatings including varnish, overpaint, and fill, suggesting several different campaigns of restoration. An underlayer of varnish, potentially identified as bleached shellac, indicates that this and subsequent campaigns occurred in the 19th century or later. Restoration history can be expected in an artwork of this age, but retouchings and even the minor additions are all local, meaning that none of the original composition has been substantially covered or changed.

The iconography, the figures' dress, and the allegorical representation of the months are characteristic of works produced by Flemish artists in the late-16th century. *Allegory of May and June* draws from a long history of personifying the months through agricultural labour and courtly leisure, reflecting the dual ideals of pastoral and courtly life. The painting belongs to a broader tradition of genre and calendar painting in Early Modern Antwerp, though it distinguishes itself from the more typical landscape representation by reviving the older convention of personifying the months while including contemporary iconography.

The shared details between Allegory and the Paris painting practically prevents *Allegory of May and June* from being a version or a copy based off the Portugal series. Rather, it is more likely to be related to the Paris series. However, without closer examination and comparative technical data from the two other series, it is not currently possible to draw conclusions whether *Allegory of May and June* is from before or after the Paris version, or indeed from the same workshop at all.

While we cannot conclusively determine if *Allegory of May and June* is an earlier or later version of the Paris series, or whether it is from the same workshop, the art historical and

technical evidence that we have gathered and integrated in this project provide a wonderful insight into the origins and physical history of the painting. If the technical evidence from the Portugal series or a study of the Paris series becomes available, our report will provide invaluable comparative data. Finally, if the other months that complete the calendar cycle with *Allegory of May and June* are discovered, we hope this report will allow them to be reunited and provide an avenue for further study.

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List of Illustrations: Appendices

Appendix I: Art Historical Images

Figure 1. Attributed to Pieter Balten, Portraits of the Months*, c. 1580, oil on oak panel, 21.3 x 28.2 cm, Miranda do Douro Cathedral, Portugal. © Museu da Terra de Miranda.*

Figure 2. Attributed to Pieter Balten, Allegory of Twelve Months of the Year*, oil on oak panel, 26.5 x 38.5 cm, private collection, Paris. © Aguttes.*

Figure 3. Attributed to Pieter Balten, 'May' *&* 'June' *from* Portraits of the Months*, c. 1580, oil on oak panel, 21.3 × 28.2 cm, Miranda do Douro Cathedral, Portugal. © Museu da Terra de Miranda.*

Figure 4. Attributed to Pieter Balten, 'May' *&* 'June' *from* Allegory of Twelve Months of the Year*, c. 16th century, oil on oak panel, 26.5 x 38.5 cm, private collection, Paris. © Aguttes.*

Figure 5. Figure comparison: May.

		
May from Portugal Series.	May from *Allegory*	May from Paris Series.

Figure 6. Figure comparison: June.

		
June from Portugal Series.	June from *Allegory*	June from Paris Series.

Appendix II: Technical Images

Figure 7. Before treatment, recto, normal light.

Figure 8. Before treatment, verso, normal light.

Figure 9. During treatment, recto, after surface cleaning, raking light right.

Figure 10. During treatment, recto, after surface cleaning, raking light top.

Figure 11. Before treatment, verso, raking light right.

Figure 12. During treatment, recto, after surface cleaning, UV light.

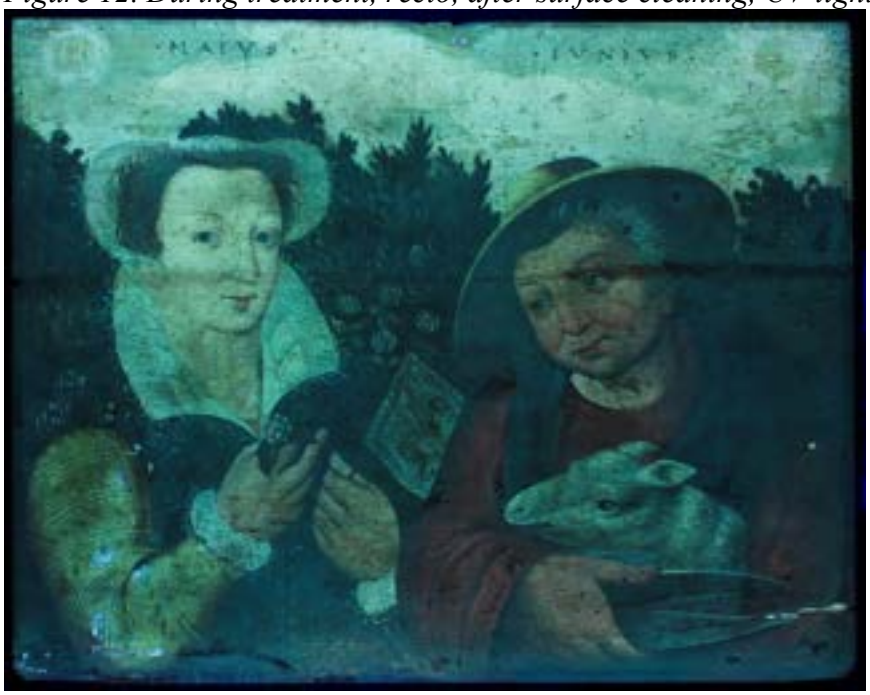
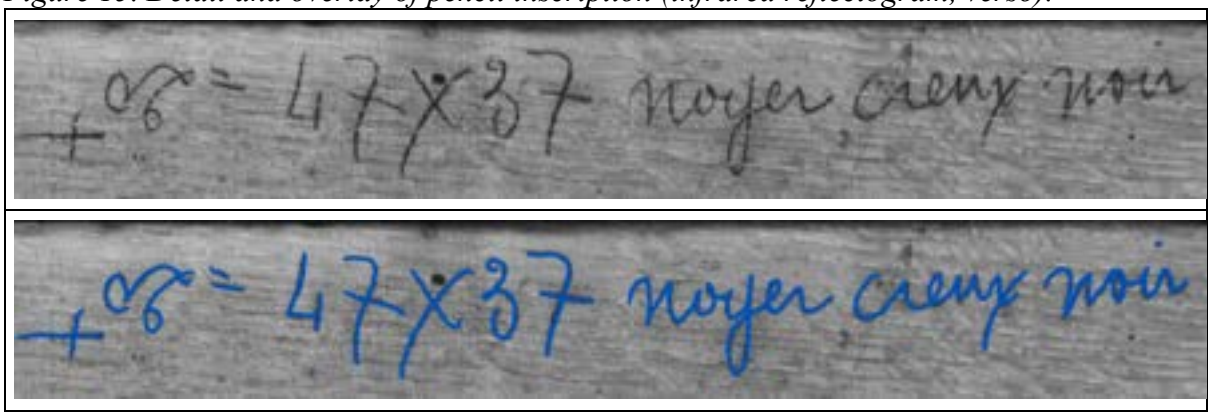


Figure 13. Infrared reflectogram, recto (Osiris camera).

Figure 14. Infrared reflectogram, verso (modified Canon camera).

Figure 15. Detail and overlay of pencil inscription (infrared reflectogram, verso).



"Noyer creux noir" translates from French to "hollow black walnut", although the panel appears to be made of oak. 47 x 37 appears to relate to the dimensions in centimetres. The symbols are unidentified.

Figure 16. X-radiograph.

Appendix III: Analytical Data

Figure 17. Detail of join (before treatment, verso, normal light).

The bottom board appears to extend over a lip in the top board, suggesting a lap/lip join.

Figure 18. Diagram of a lap join.

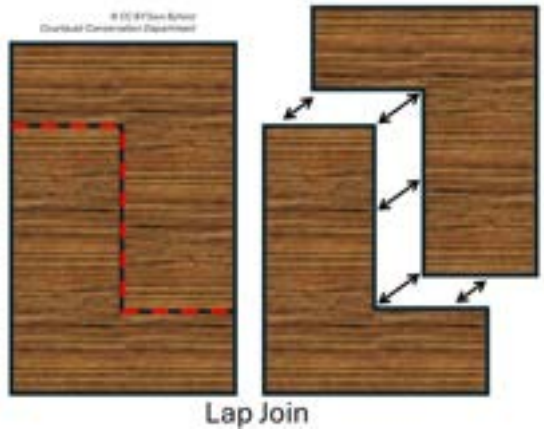
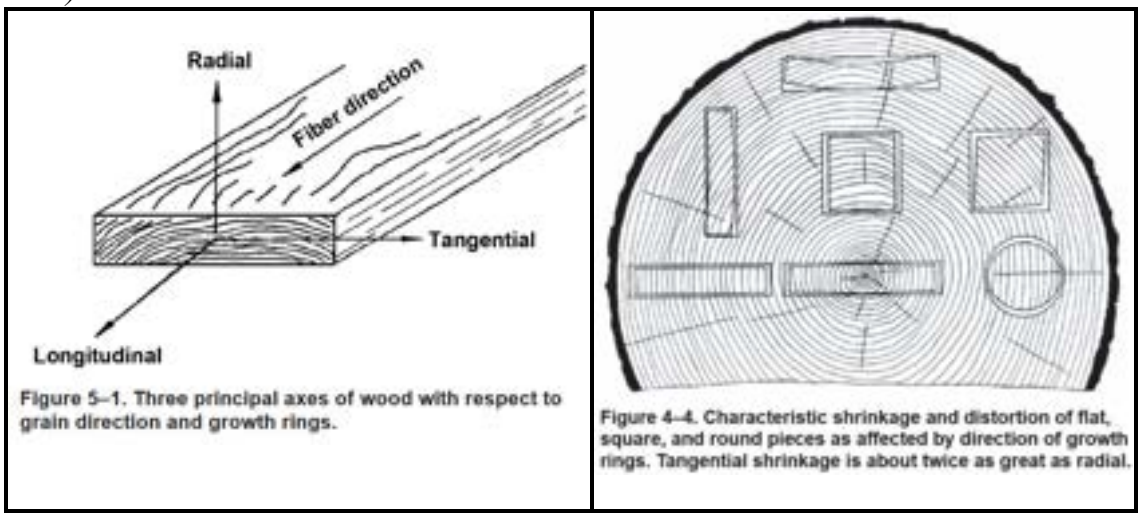


Figure 19. Types of wood cuts & characteristic shrinkage (Forest Products Laboratory 2021).[78]



[78] U.S. Department of Agriculture, Forest Products Laboratory, *Wood Handbook: Wood as an Engineering Material*, General Technical Report FPL-GTR-282 (Forest Products Laboratory, 2021), 5–2, 4–7.

Figure 20. "M" in "MAIVS" inscription (photomicrograph).

Figure 21. Cross section A, normal light.

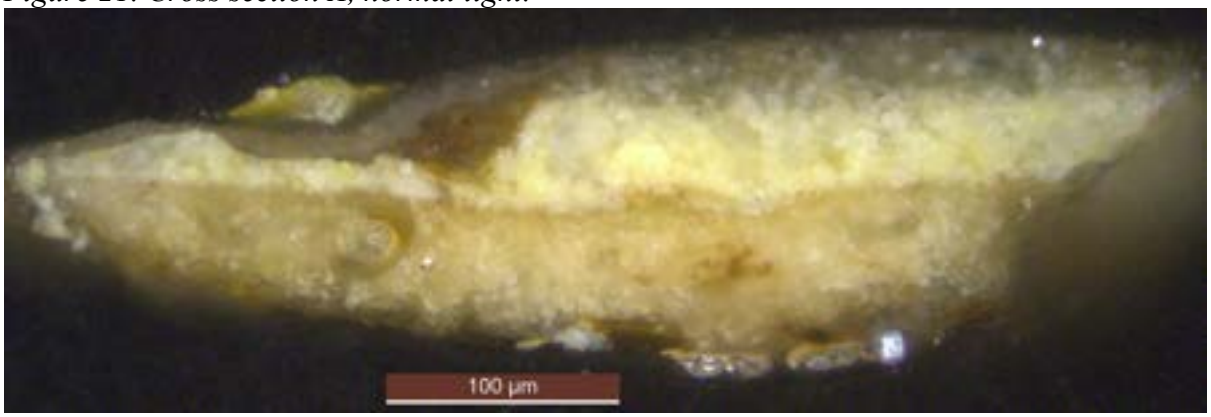


Figure 22. Cross section A, UV light.

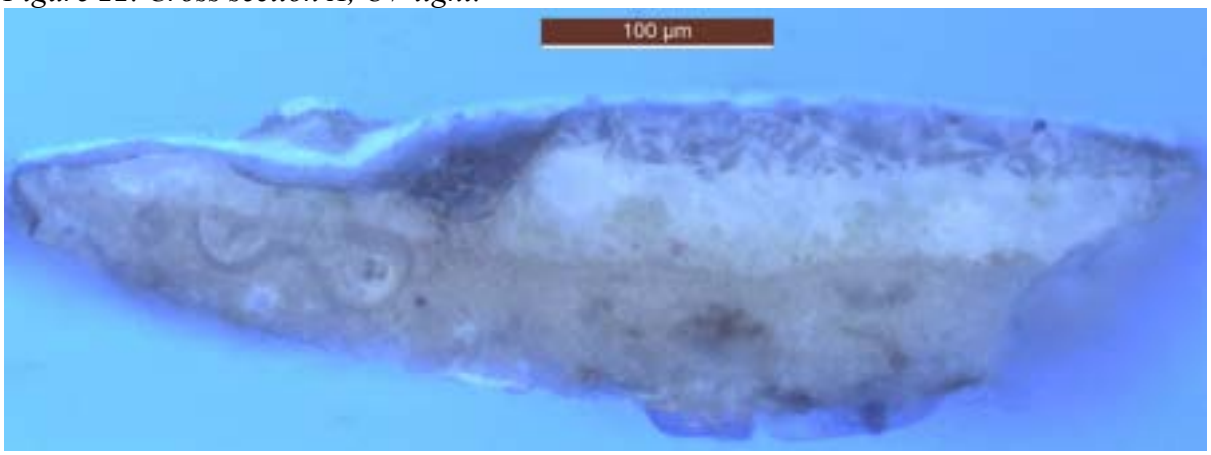


Figure 23. Detail smalt in cross section A, UV light.

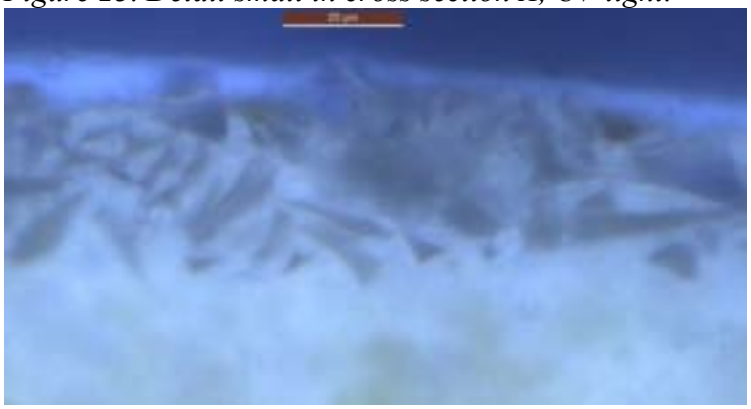
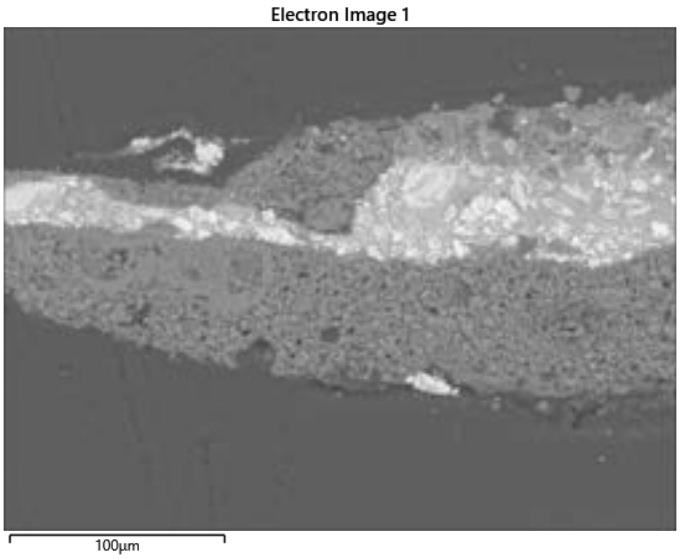
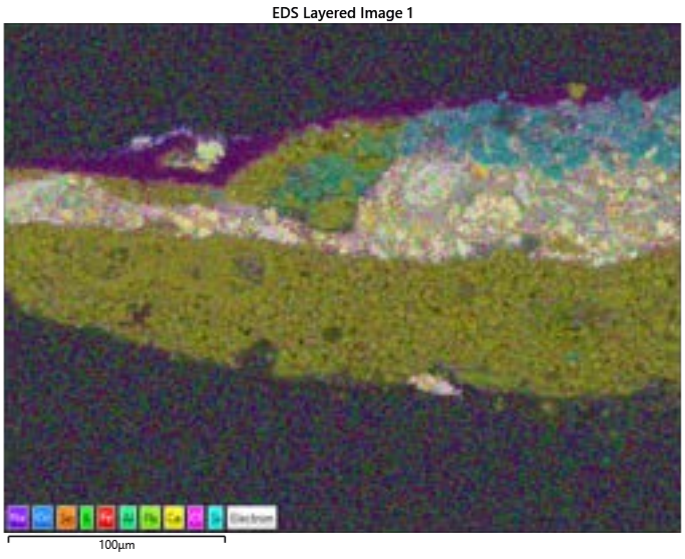


Figure 24. Backscattered electron micrograph & false colour mapping (cross section A).





Appendix IV: Glossary

Analytical Techniques

Cross section: a tiny sample embedded in resin, which is then ground away to reveal a "slice" of the material. This most often refers to a sample of the materials down to the painting support and can include preparatory, paint, varnish, and overpaint layers. This allows analysis of the materials and layer structure through techniques like optical microscopy, SEM-EDX, staining tests, and more.

Electromagnetic spectrum: the range of electromagnetic radiation; the heritage field may use x-rays, UV light, visible light, and infrared rays.

False colour map: in elemental mapping techniques [see XRF, SEM/EDX], colours can be assigned to each element to provide a visual representation of where they've been detected. These maps can be layered over each other, or over an image of the object being mapped, to show the elements' position in relation to each other and the materials. In conservation this can be used to identify pigments, characterise paint passages, and identify layer structure in samples.

Infrared Reflectography (IRR): carbon-containing materials absorb infrared wavelengths that pass through otherwise opaque paint layers; this can be used to reveal carbon-containing underdrawings and pentimenti, and sometimes help characterise certain pigments. The overall image produced is a "reflectogram".

Optical microscopy: a.k.a light microscopy; this uses visible light and a system of lenses to generate magnified images, to examine the surface of paintings. It can also be used to view mounted samples, like cross sections, in regular and UV light.

Scanning electron microscopy with energy-dispersive X-ray spectroscopy (SEM/EDX): sometimes written as SEM/EDS; in SEM, electrons are beamed onto a sample and their interaction with the surface is detected and analysed to create images of the surface topography. This can be performed in conjunction with EDX, which detects and analyses the characteristic x-rays produced to identify the elements present. Conservators can use this technique to characterise the pigments and layer structure in a cross section. For example, SEM images can be used to identify particle shapes and EDX can be used to identify the elements present in a specific area or generate false colour maps.

Ultraviolet fluorescence (UVF): when UV light is absorbed by certain materials, it is reflected back towards the eye at a longer wavelength, making it visible. This is called "UV-induced visible fluorescence" and can help identify materials with a distinctive fluorescence.

X-radiography: short wavelengths which; penetrate the entire painting structure; different materials absorb the x-rays in different amounts, essentially creating a radiological density map. They can help identify, panel construction, pentimenti, losses, and more. The image produced is a "radiograph".

X-ray Fluorescence Spectroscopy (XRF): analysis of the fluorescent x-rays produced by the interaction of x-rays and the painting materials; this allows for the identification of the elements present. The elements may aid pigment identification, although the location in the layer structure cannot be determined. This can be performed with handheld equipment or used in scanning form to generate false-colour maps.

Materials & Techniques

Bevelling: an angle along the edge of a panel or stretcher bar.

Craquelure: a network of cracks, generally referring to drying or ageing cracks.

Dendrochronology: the practice of dating wood via the growth rings.

Ground: layer(s) used to prepare a support for painting; this usually contains chalk (calcium carbonate) or gypsum (calcium sulphate), but the binder, number of layers, and colour can vary.

Metal Soaps: metal carboxylate salts; a common phenomenon which can result in protrusions; put simply, they form from interactions between fatty acids in the binding medium and metal ions in the pigments.

Netherlandish / Low Countries: a region in Northwestern Europe that includes Belgium, Luxembourg and the Netherlands and historically can include parts of Germany and France.

Overpaint: past retouching which also covers original paint passages; this may overcover a loss or add to/change the composition.

Pentimenti: (singular pentimento); changes made by the artist during the painting process.

Recto / Verso: front / back

Retouching: a.k.a inpainting; paint applied by a conservator to reintegrate a loss or damage to the picture plane that is visually disturbing to the viewer. Current guidelines specify that the materials used should be stable and reversible and not obscure original paint. Previous retouching may be referred to as overpaint.

Underdrawing: a drawing done before the paint is applied; it can be done in wet or dry media. It may be done freehand or transferred using pouncing or tracing from a cartoon.

Wet-in-wet: a technique whereby paint is applied to underlayers that have not fully dried; if a painting has been executed with only this method, usually in a single sitting, it is referred to as *alla prima*.

Wet-on-dry: a technique whereby paint is applied to underlayers that have dried

Appendix V: Equipment Specifications

Equipment	Use	Purpose	Specifications
Adapted Canon 600D Camera	Infrared reflectography	Assessing the presence of a carbon-based underdrawing; identify compositional changes; may aid pigment identification.	Sensitivity c.1.0 µm, filter 720 µm
Bruker Tracer III SD	XRF analysis	Elemental analysis to aid pigment/material identification	40KeV/11.90µA, Microsoft-based Bruker AXS proprietary software
Canon EOS R camera	Regular, raking, UV light photography	High quality technical imaging for condition assessment, treatment progress.	UV filter, digitally adjusted with Adobe Photoshop
Courtauld Conservation Dept.'s digital X-Ray unit	X-radiography	Reveals density of materials; to characterise structure, losses, compositional changes.	20 KeV, 4.3 mA for 30 second exposure; 2 plates; mosaiced with Adobe Photoshop.
Leica DM4000 M LED; Leica DFC450 C camera kit	Brightfield & darkfield UV light microscopy	Cross section & sample analysis; photomicrography	5x to 200x magnification, LAS software
Leica M165 C stereo microscope; Leica MC170 HD camera kit; Leica CLS 100 X light box	Reflected light microscopy	Magnification for visual analysis; photomicrography	7.3x to 120x magnification, Leica Application Suite (LAS) software
Osiris Camera (discontinued)	Infrared reflectography	Assessing the presence of a carbon-based underdrawing; identify compositional changes; may aid pigment identification; increased spectral sensitivity.	Sensitivity 0.9 – 1.7µm, InGaAs line array sensor, used with Windows™ 10
UV tube lights	UV light photography	UV light source	Free-standing, x2, 395-450 nm
Zeiss scanning electron microscope	SEM/EDX spectral imaging	Cross section & sample analysis; surface topography; elemental analysis to aid pigment/material identification	Performed at King's College London with Aztec software