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ORIGINAL RESEARCH OR TREATMENT PAPER

Italian Influence in a Portuguese Mannerist Painting (Part II): A Matter of Image or a Matter of Technique?

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ABSTRACT

The panel depicting *The Descent from the Cross*, painted in 1620 by the Portuguese artist Pedro Nunes (1586-1637), shows a clear Italian formal influence. The painter's colour palette was identified in another paper. The panel is now investigated from a technical perspective, discussing aspects related to the support, preparatory system, and paint layer build-up. The research is based on the visual inspection of the painting's surface with complementary imaging techniques and on the analysis of the materials from the preparatory layers with microscopic and spectroscopic techniques. The characterisation of the painting technique revealed an ingenious use of colour that is based on the understanding of the optical and handling properties of oil paint. This knowledge is illustrated by the painter's ability to exploit and combine a range of different oil painting techniques, such as glazing, scumbling, wet-in-wet, or wet-in-dry painting; by his formulation of a wide variety of pigment mixtures; and by his use of diverse and often complex layering systems - some quite unconventional for Portuguese painting practice. The material and technical originality of this painting clearly reflects Nunes' international Roman experience and his desire to update the Portuguese mainstream practice of his time.

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Seventeenth century; Portugal; Italy; painting technique; *cambiante*

Introduction

On display in its original altarpiece, in a side chapel of Évora's cathedral, the large panel depicting *The Descent from the Cross* (460 × 304 cm) was painted in 1620 by the Portuguese painter Pedro Nunes (1586-1637). The composition is inspired by the classical painting of Raphael (1483-1520), disseminated in Europe through an engraving by Marcantonio Raimondi (c. 1470/82 - c. 1534) and therefore shows a clear Italian influence in terms of aesthetic and formal values (Serrão 1988-93) (Figure 1). Previous analysis of paint materials revealed that Nunes introduced two new pigments to the conventional Portuguese colour palette: green earth and an artificial arsenic sulphide pigment, both selected for large passages of his composition (see Melo et al. 2009). Other pigments include lead white, lead-tin yellow, ochres, vermilion, verdigris, smalt, azurite, vegetable carbon black, and a red lake made of brazilwood and cochineal, all bound in an oil-based medium (Melo et al. 2009).

Born in Évora, Pedro Nunes is one of the few Portuguese painters to have had formal training in Rome (1607-1614) (Serrão 1988-93). He succeeded a Mannerist generation of local painters, active between 1550-1600, who, despite adopting an Italian style, remained under the influence of the Flemish painting practice that shaped the birth of Portuguese painting and under which the first generation of Portuguese painters was trained (Serrão 2002).

Although published analytical studies are still limited, workshop practices such as the use of oak panels and white preparatory layers; the planning of the composition frequently leaving areas of reserve in order to avoid overlapping of motifs; and modelling with opaque paints glazed with translucent layers, are comparable to the Flemish tradition (Mello, Matos, and Ribeiro 1998; Instituto José de Figueiredo 1999; Mendes 2004; Redol, Seruya, and Pereira 2004; Melo and Cruz 2009; Conde et al. 2010; Serrão and Antunes 2013; Antunes et al. 2016; Melo et al. 2020; Melo et al. 2022). In regard to the painting technique, a simplification of the Flemish refinement and paint handling, especially in terms of layer build-up, is apparent in the Portuguese paintings analysed so far. Considering the Mannerist period, however, this simplification was becoming a characteristic of painting practice throughout all of Europe (Campbell, Foister, and Roy 1997).

The Italian artistic influences of the painters before Nunes had mainly been comprehended indirectly through Nordic and Spanish 'Italianized' painters working in the Iberian Peninsula and also through the work of a few major Portuguese painters that had

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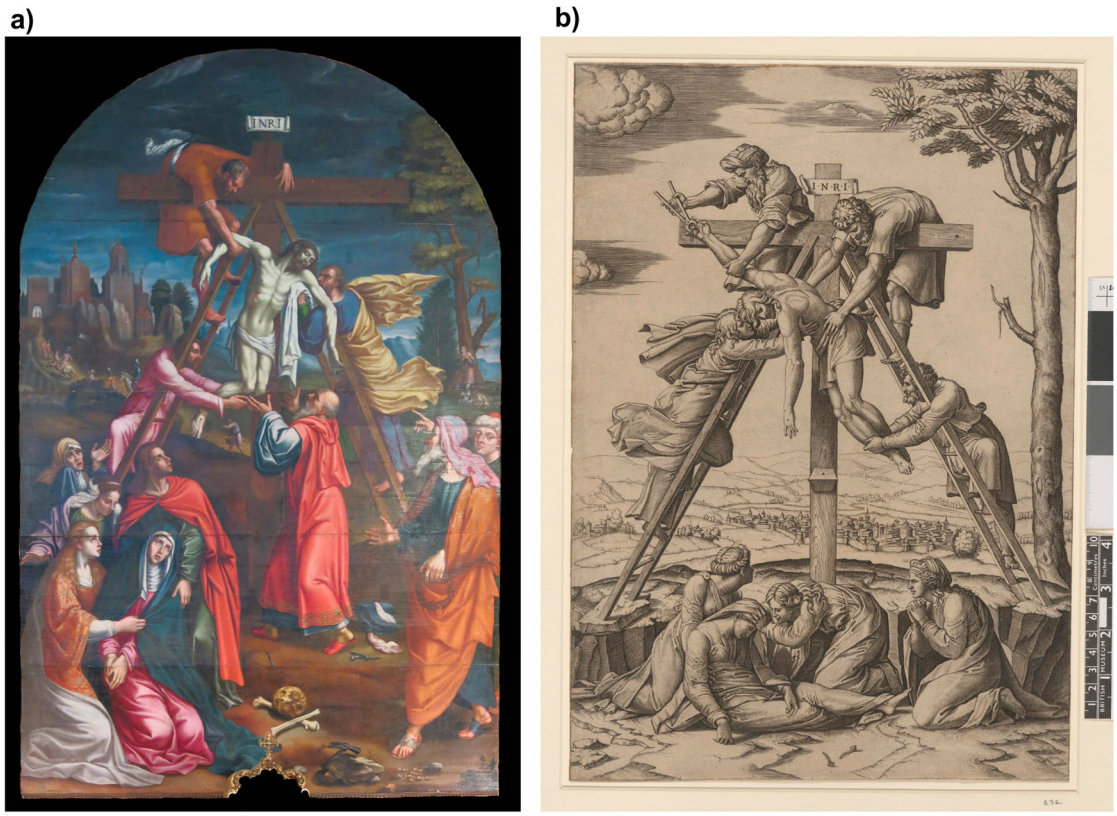

Figure 1. *The Descent from the Cross* by Pedro Nunes, 1620 (460 × 304 cm, oil on panel), Esporão Chapel, Évora's Cathedral, Portugal: (a) print from the British Museum of The *Descent from the Cross, after Raphael* (40.6 × 28.4 cm), by Marcantonio Raimondi, c. 1520-25; (b) Print © The Trustees of the British Museum. All rights reserved.

been sent to Rome in the 1560s (Serrão 2002). Unlike formal and stylistic influences – which can be rapidly disseminated through the circulation of engravings and works of art – material and technical features often attest to a more direct contact between painters and workshops. As such, their study can bring invaluable knowledge regarding the direct source of particular aspects of Portuguese painting and contribute to a more precise understanding of the artistic relations between European artists within a given artistic period. Since there is little material and technical data regarding the painting production of the few Portuguese painters with an Italian training (Conde et al. 2010), it is not yet possible to estimate Italy's material and technical impact, if any, in Portuguese painting.

Making use of the knowledge of the pigments and pigment mixtures used by Pedro Nunes in this painting (Melo et al. 2009), this investigation aims to characterise *The Descent from the Cross* from a technical perspective that includes the support, the preparatory system, and the build-up of the paint layers. Research combines the painting's examination under visible, ultraviolet and infrared radiation. Investigation on the preparatory layers is based on the collection of paint samples and their analysis with microscopic and spectroscopic techniques. Visual and analytical results were interpreted within the frame of contemporary painting practice in Europe.

Experimental

The painting was subject to a thorough visual inspection of the paint surface *in situ*, under incident and raking light.

Infrared reflectography (IRR) was recorded using a high-resolution Osiris camera, equipped with an InGaAs sensor sensitive to infrared radiation between 900 and 1700nm and an internal Schott RG850 filter that blocks radiation below 850 nm. For the identification of the materials from preparatory layers and the characterisation of techniques, 29 samples of the main colours were collected. Their analysis was performed according to the sampling procedures and analytical techniques described in Melo et al. (2009). The present research included results obtained by optical microscopy under incident light (OM-Vis) and ultraviolet radiation (OM-UV), scanning electron microscopy with energy dispersive X-ray spectrometry (SEM-EDX) and Fourier transform infrared micro-spectroscopy (μ-FTIR).

Results and discussion

Panel support

Visual inspection of areas of exposed wood enabled the identification of oak (*Quercus* spp.) as the wood used in the construction of the panel and its altarpiece.

Oak trees are not native to southern Portugal and therefore the wood had to be brought either from the north of the country or abroad. Although Portuguese painting has a history of extended use of Baltic wood (Esteves and Klein 1999; Klein and Esteves 2001; Esteves 2003; Lauw, Esteves, and Teles 2013; Cruz et al. 2020), the presence of a few large wood flaws on the boards, visible in raking light, suggests the use of twisted or eccentric trees. The panel is made of 22 rows of horizontal planks, the majority built with two end-joined oak boards making a total of at least 38 boards, aligned perpendicularly to the largest side (height) of the panel. The horizontal union between adjacent boards was secured with butterfly keys inserted into the thickness of the wood from the front of the panel (Figure 2). Marks of a carpenter's plane used to level the wood surface are evident under raking light (Figure 2).

Although using the typical oak wood preferred by Portuguese panel makers, the construction system is unusual for Portuguese painting practice. When using heavy oak wood, Portuguese panel makers would rather align the boards parallel to the largest side of the panel (Costa 2000; Redol, Seruya, and Pereira 2004; Melo 2012), an option that reduced the number of joints necessary to build a panel while promoting a better weight distribution inside the panel. On the other hand, butterfly keys inserted from the back and not from the front, as is the case here, were at the time only found in a few panels of mannerist production, some for painters with Roman experience (Cordeiro 2005; Conde et al. 2010).

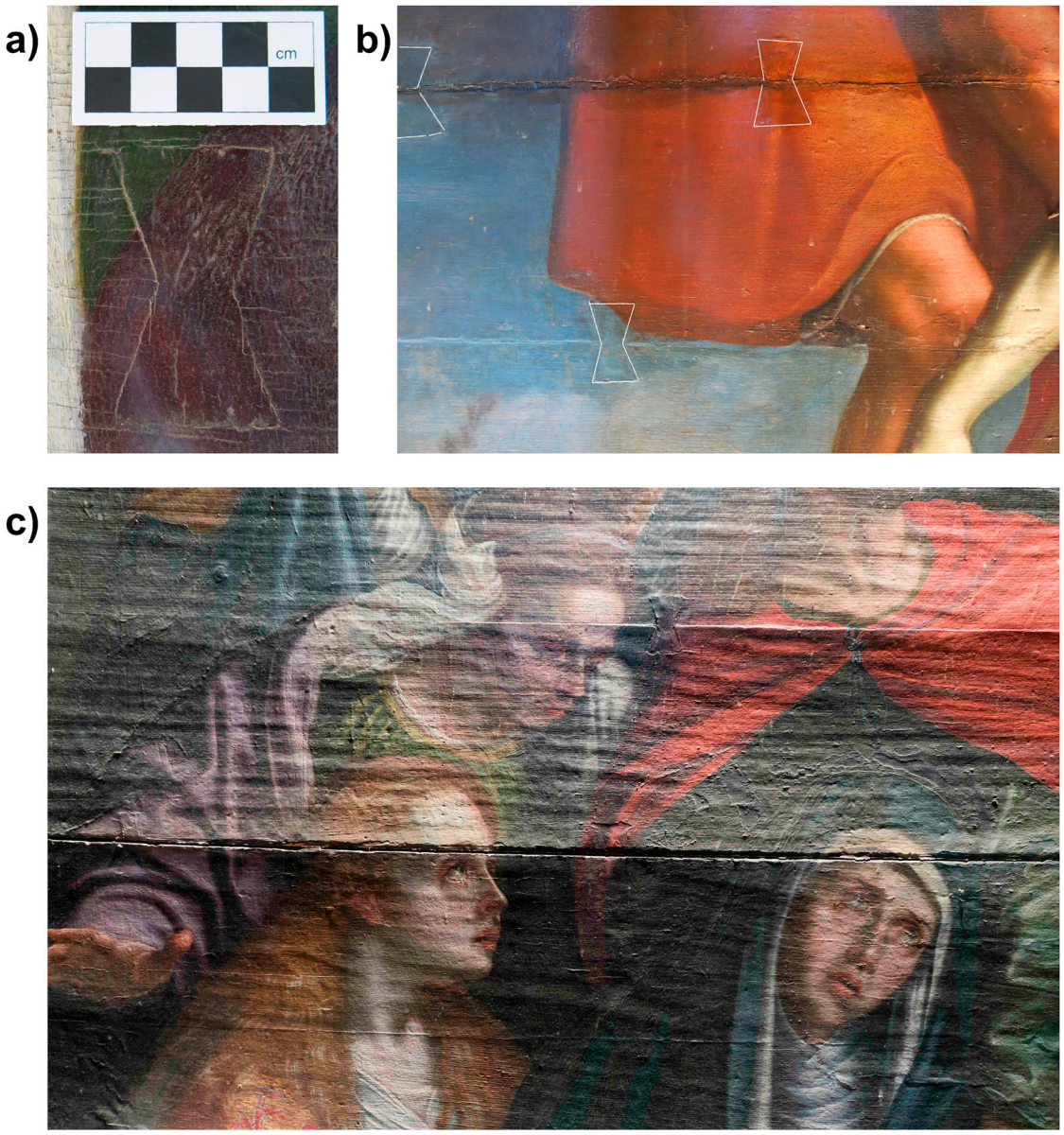

Figure 2. Support, with butterfly keys inserted from the front to secure the horizontal union between boards (a, b). The butterfly keys are highlighted digitally with a white line in (b). Detail under raking light (c) showing the marks of the plane used to level the surface of the panel.

Preparatory layers

The painting shows a raised barbe and a non-painted edge on all borders, indicating the panel was prepared inserted into the wooden altarpiece structure and thus preserves its original size. In raking light, the surface of the panel ground exhibits straight scratches with an almost vertical inclination that follow between adjacent boards (Figure 3a). These confirm the use of a straight edge tool, such as a metal scraper, to level and slightly polish the surface of the ground. Small imperfections, or dents, in the blade of the tool used for this purpose created indented parallel strikes in the ground surface that are perceivable in several areas of the panel (Figure 3b). An abundance of drops of ground material can be seen in raking light, covering the whole painting surface (Figure 3c, d). As these drops can be seen to lie over the scratches from a first polished ground surface (Figure 3a), it can be proposed that they could presumably result from brushing the ground material to prepare the altarpiece structure – and not the panel itself - while the prepared panel was kept in an upright position.

Under the optical microscope, the preparatory system consists of a white ground with a thickness > 330 µm, superimposed by a thin, 5-15 µm thick, medium-rich ochre *imprimatura*, whose binder impregnates the surface of the ground (Figure 4). SEM-EDX and µ-FTIR analysis revealed that the ground is made of a single white layer mainly composed of the anhydrous form of calcium sulphate, bound in animal glue (Figure 4). The coarse texture of the ground refers to the material known in Portuguese, as in Italian, as *gesso grosso* (Monteiro and Cruz 2010). In the micro-FTIR spectrum of the ground layer (Figure 4), anhydrite is identified by the very strong sulphate bands ν(S = O) at 1176 cm^{-1} and ν(S-O) at 676 cm^{-1} in combination with the absence of the hydroxyl δ(OH) bands at 1680 and 1620 cm^{-1} typical of the hydrated forms of calcium sulphate. The presence of the amide I (1651 cm^{-1}) and amide II (1548 cm^{-1}) bands, accompanied by the amide II overtone, also known as Amide B, at 3085 cm^{-1} confirms the presence of proteins. The carbonyl ν(C = O) band at 1709cm^{-1} along with two sharp bands at 2920 and 2851 cm^{-1}, due respectively to stretching CH_3 and CH_2 vibrations, identify an aged oil that most probably results from the binder of the layers applied on top of the ground. Carbonates, as found in the grounds of other sixteenth century Portuguese paintings (Melo et al. 2014), are detected by the double absorption band at 1447 cm^{-1}, accompanied by a weak absorption at 876 cm^{-1} corresponding to the C–O stretching vibrations of carbonates.

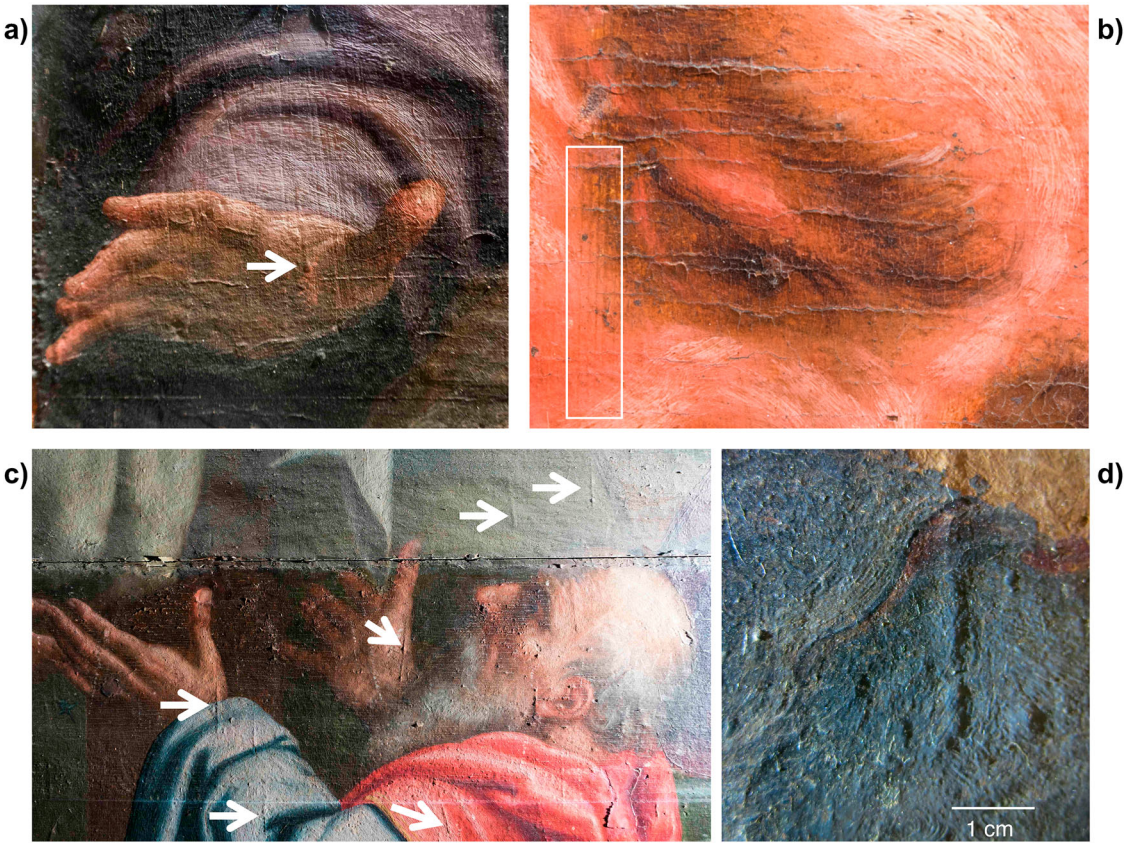

Figure 3. Preparatory layers – technique. Details in raking light showing scratches on the surface of the ground from the use of a straight edge tool to level the prepared panel surface (a, b) and drops of ground material (a, c, d), possibly falling over the prepared panel surface (white arrows) during the application of the ground to the altarpiece structure.

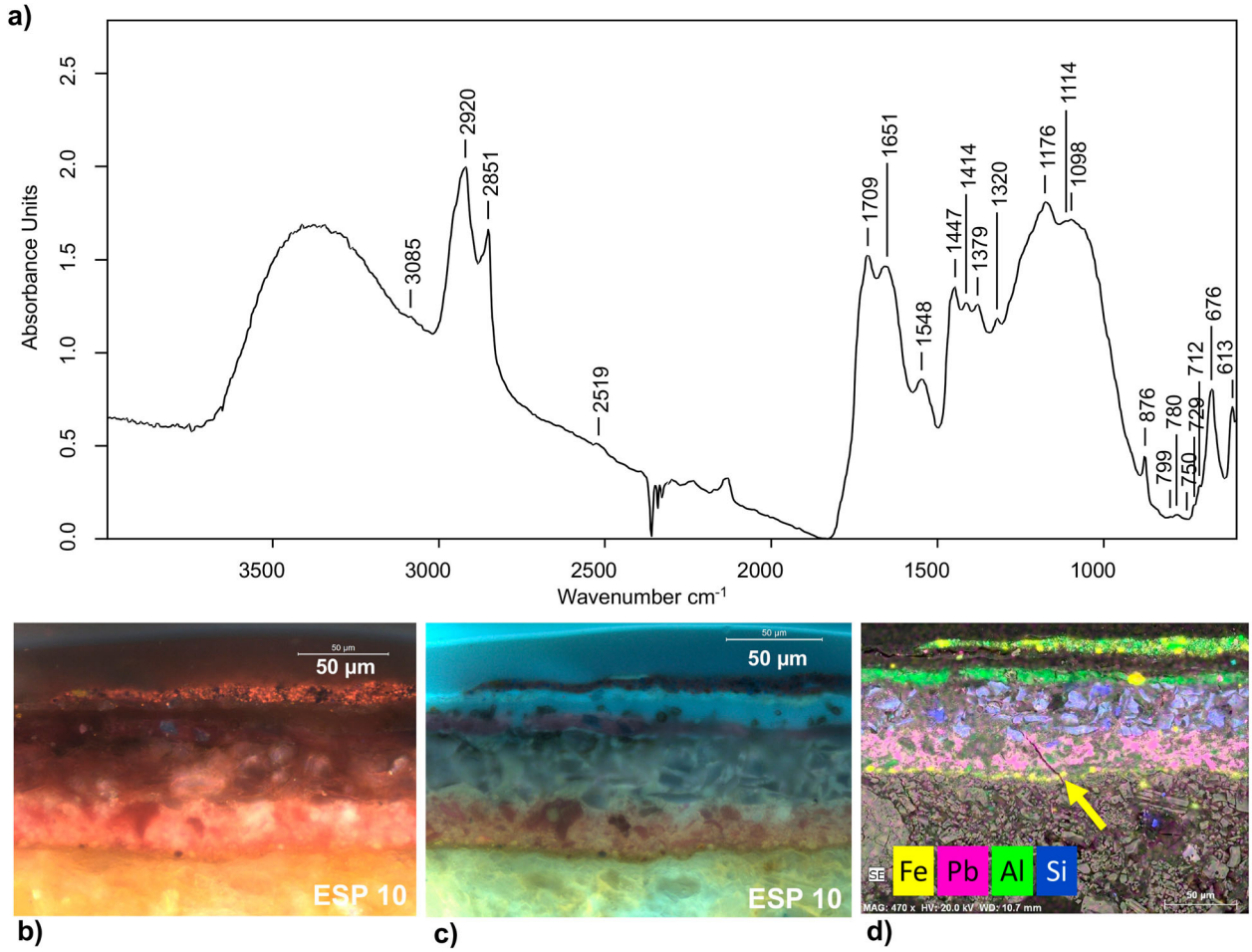

Figure 4. Preparatory layers – materials. Micro-FTIR spectrum of the ground of sample ESP13 (a); cross- section of sample ESP10 in OM under incident light (b); and UV radiation (c); and SEM mapping of combined elements (Fe, Pb, Al, Si) of sample ESP 10 with yellow arrow locating the *imprimadura* layer (d).

The *imprimatura*, known as *imprimadura* in Portuguese (Cruz 2006), has an ochre tint that derives from the use of iron-containing oxides, some containing a small amount of manganese (c. 2.5 wt.%), too low to ascertain the presence of umber (Helwig 2007).

Underdrawing

No underdrawing was rendered visible with infrared reflectography. Considering the huge dimensions of this painting and the fact that Pedro Nunes copied a well-identified composition, it can be assumed that he first went through a planning stage for his design, most probably in the form of preliminary sketches and drawings. The fact that underdrawing and/or transfer lines – whether by tracing, pouncing, or squaring - are not rendered visible with infrared reflectography indicates that a material without carbon and less visible under infrared radiation could have been used (Bomford 2002). The coloured *imprimadura* would also reduce the contrast between the surface and any underdrawing material, making it less visible in the IR images. Considering the ochre tonality of the *imprimadura*, a white underdrawing material could have been used. In the contemporary Portuguese treatise by an anonymous monk of the Order of Christ (before 1640), a recipe on how to make pencils to be used in drawing on painting (*comose fazem estillos com que se debuxão sobre a pintura*) suggests combining the same quantity of lead white and gesso with tempered glue (Monteiro and Cruz 2010, 43–44). For the same purpose, Francisco Pacheco (1564-1644) in his *Arte de la Pintura* (1649) advises the use of 'long slender-pointed pieces of hard *yeso mate*' (Veliz 1986, 69). In the faces and hands, a dark brown thin and translucent paint used to outline the eyes and fingers still remains visible in areas of shade (Figure 3b). This paint could correspond to a sketched underdrawing of the figures that would still be quite visible on the ochre *imprimadura* surface or else to the first layer of paint applied on top of a possible underdrawing and therefore hiding it.

Painting technique

Nunes' vibrantly coloured composition owes as much to his choice of pigment mixtures, where the black is mainly reserved for underpaints (see Melo et al.

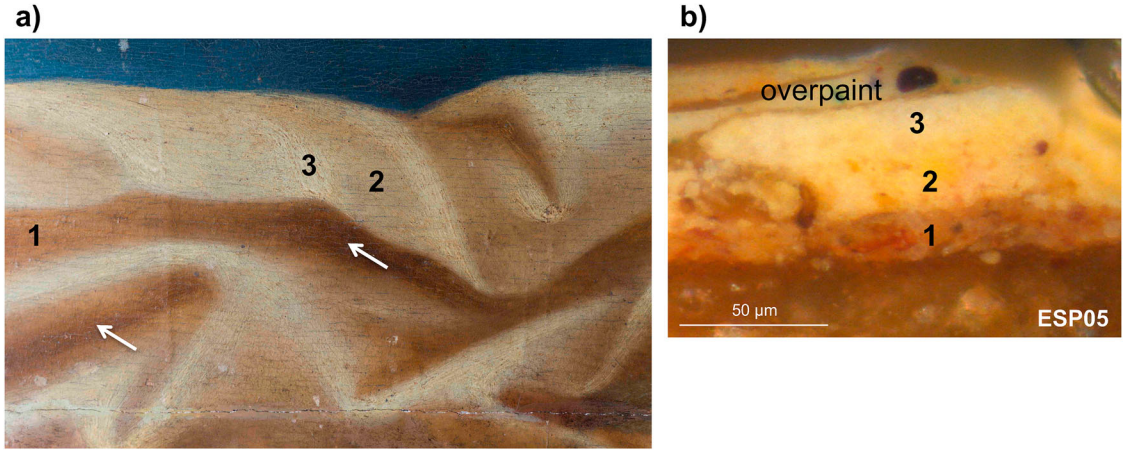

Figure 5. Main modelling technique. Detail under incident light (a) of the fluttering yellow cape of the man standing in the ladder and cross-section under OM-Vis (b) of sample ESP05 corresponding to an area of light yellow of the cape.

2009), as to the variety of techniques used to combine and build-up these paints in order to widen his palette and depict different textures and materials.

Main modelling techniques

Modelling was mainly achieved by painting lights and darks over a first dry undermodelling of the forms. Translucent glazes were no longer layered in a traditional way, over the whole undermodelling, but applied locally, to deepen certain shadow areas in the green, red, and pink colours.

By manipulating the contrast between the first undermodelling and the subsequent paint or local glaze layers, the painter was able to reproduce a variety of textiles. In the case of the fluttering yellow cape of the man standing on the ladder, a first ochre-based paint (Figure 5, layer 1) laid the foundation for the wet-in-wet modelling of the light areas (Figure 5, layers 2-3). Finally, the inside of the folds was darkened with a brownish paint (Figure 5a, white arrows, no sampling of those areas).

The contrasted modelling was achieved using the main modelling technique (see Figure 5) but creating a dramatic contrast between a bright, almost white base layer, left visible in areas where the light falls, and the subsequent mid tones and shadows of the textiles (Figure 6a, b). The shiny appearance of the Virgin's tunic was further enhanced by the use of local pink translucent glazes in shadow areas (Figure 6a, d, e), covered with scumbles of white opaque reflecting brushstrokes on top (Figure 6a, c).

Opaque reflecting underlayers

Nunes complements his main modelling techniques with the use of opaque reflecting underlayers, modelled or not, mostly under the blue azurite-based areas of the sky and draperies. In Portuguese painting practice, the underpainted areas under the blues are generally of a light blue or grey colour (Instituto José de Figueiredo 1999; Redol, Seruya, and Pereira 2004; Melo and Cruz 2009; Antunes et al. 2016; Melo et al. 2022), as is the case in the lighter areas of the sky from *The Descent from the Cross*, where the uppermost blue is painted with azurite and lead white on top of a light-coloured smalt and lead white paint (Figure 7). A speedy execution led the painter to forget to fill in all the light blue underpainted area of the sky, which is now more evident due to the discolouration of the smalt and increase in transparency of the lead white-based paint (Figure 7a). The underlayer left visible at the surface in Figure 7a would correspond to a mixture of lead white and smalt comparable to layer 1 in the cross-section of sample ESP23 (Figure 7b). The warmth of the ochre *imprimadura* underneath can be perceived shining through (Figure 7a).

However, for the deep blues of the draperies – sampled in the Virgin's cloak and the tunic from the apostle to the right - a different underpaint colour was chosen (Figures 1 and 8). In the Virgin's cloak, Nunes decided to establish a first modelling of the garments with a light to dark pink underlayer superimposed by a purple to light blue paint according to the hues desired (Figure 8). The azurite final layer was then worked on top of this undermodelling, sometimes with thick layers worked wet-in-wet (Figure 8e). The thickness of the final azurite-based paints of these draperies hides the pink to purple undermodelling making it unclear if Nunes applied a technique that he had not fully mastered. In fact, two shades of blue are found in the Virgin's cloak: a cold blue with a slight purple cast in the inside of the fabric and a greenish blue in the cloth's surface (Figure 8a). Yet, this difference in tonality does not arise from the underlying sequence that is the same in both blue areas, but from the admixture of a little red lake to the uppermost azurite rich paint in order to shift the greenish tinge of the azurite to a colder shade (Figure 8b, d). In the tunic from the apostle to the right, a pink colour modelled in one or two thin layers, without any purple, was used under the

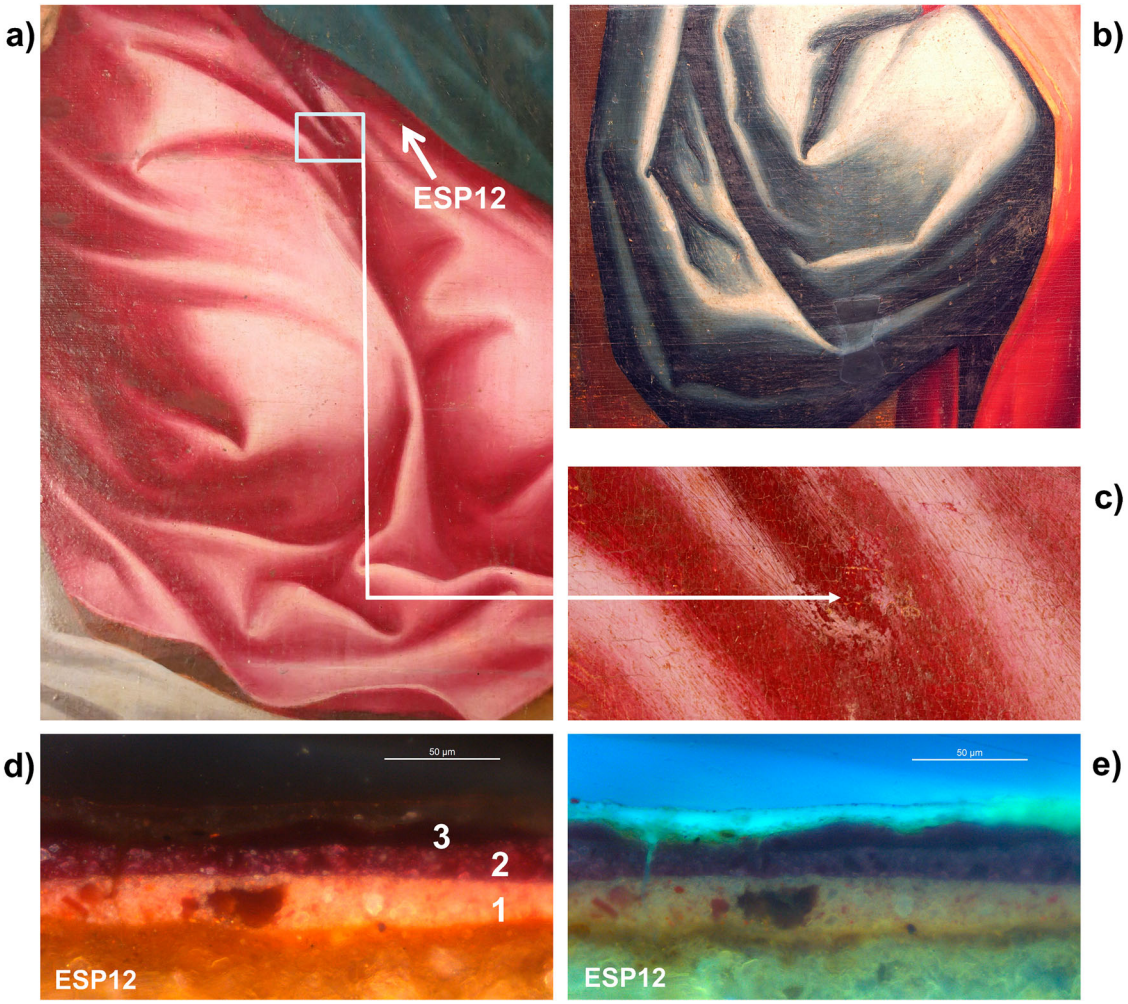

Figure 6. Contrasted modelling. Detail of the tunic of the Virgin (a) and the apostle holding Christ's feet (b). Scumbles of opaque light pink paint applied in a final stage, over the red glazes (c, no sampling of this area) and cross-section under OM-Vis (d) and OM-UV (e) of a shadow area of the Virgin's pink tunic (ESP12) located in (a).

azurite paint (See Melo et al. 2009, Figure 5). Although a change in composition could not be ruled out - with the azurite based paints concealing a pink underlying motif – the fact that a pink underlayer was found in two separate blue draperies, suggests instead that this choice is related to the painter's technique.

From a technical standpoint, the use of opaque underlayers under blue areas is a traditional painting practice that the majority of sixteenth-century Portuguese painters exploited with the aim of increasing the saturation, brightness, or covering power of the blues, while favouring an economical use of the

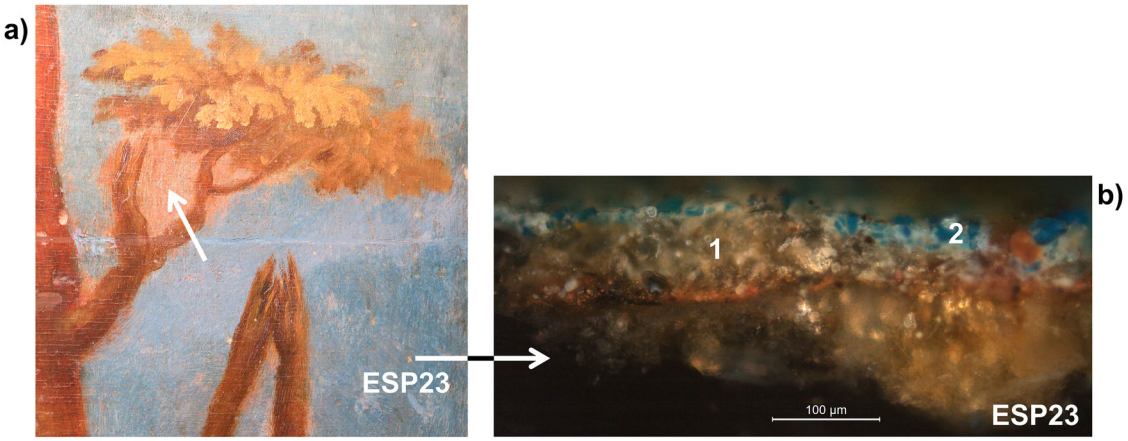

Figure 7. Opaque layers under blue colours. Detail of an area of the sky (a) where the underpaint was left visible (white arrow) and location of sample ESP23 (a) with respective cross-section under OM-Vis (b).

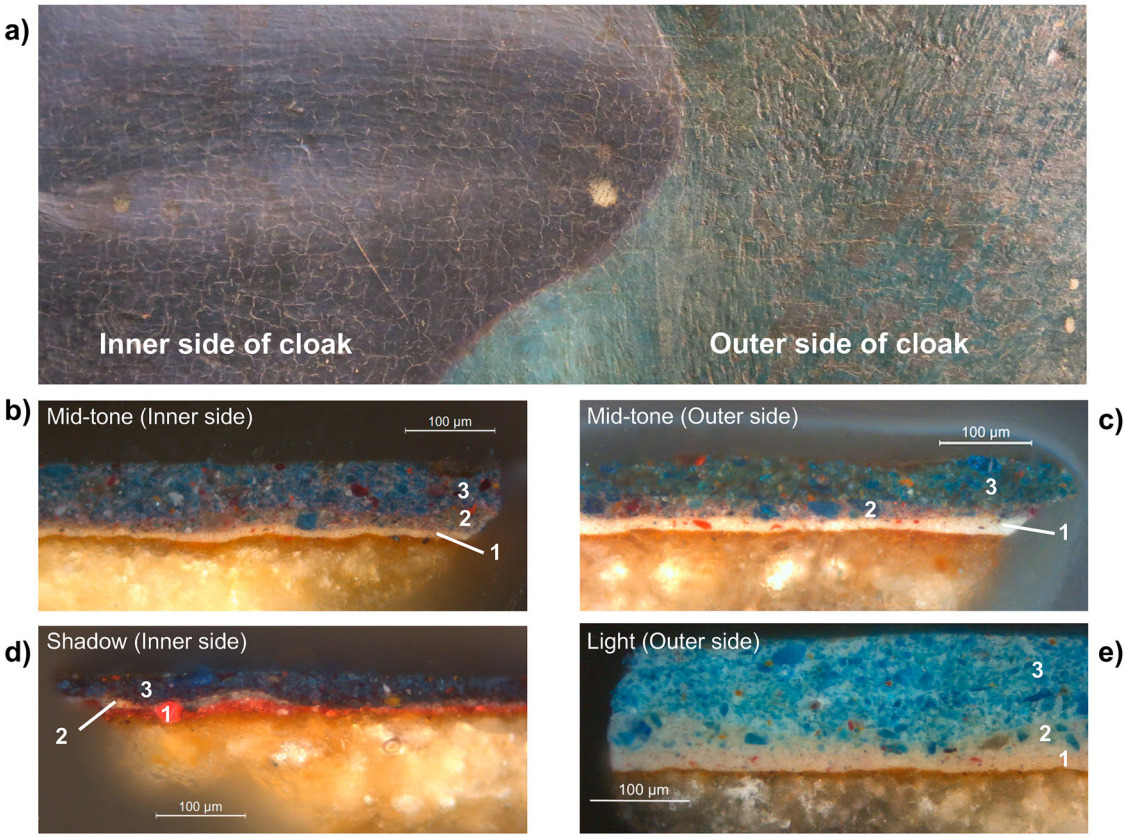

Figure 8. Pink under blue. Detail of the Virgin's cloak under incident light (a) and cross-sections under OM-Vis, corresponding to areas of mid-tone (b) and shadow (d) of the inner side of the fabric, and to areas of mid-tone (c) and light (e) of the outer surface of the fabric.

more expensive azurite (Campbell, Foister, and Roy 1997; Redol, Seruya, and Pereira 2004; Melo and Cruz 2009; Melo 2012; Antunes et al. 2016; Melo et al. 2022). More original is the choice to select a pink undermodelling for the blue draperies, a technique that has been linked to Italian Medieval tempera painting, where it is so often found (Kimbriel and Noh 2012). The pink under blue layer sequence for the depiction of blue fabrics and not purplish iridescent draperies, has in fact been found in works by Mantegna (c. 1431-1506), Giovanni Bellini (c. 1430-1516), Sebastiano del Piombo (1485-1547), and Titian (c. 1488-1576), all Venetian artists that at some point travelled to Rome (Dunkerton and Howard 2009; Kimbriel and Noh 2012; Dunkerton, Spring, and Billinge 2013). On the other hand, a Flemish painter such as Jan van Scorel (1495-1562) is noted to adopt this layer system in some of his works produced after his journey to Italy (Faries 2011). In Portugal, this system has been found in works by the Flemish Master Frei Carlos (Valadas 2016) and in the 1570–72 paintings of the altarpiece of the Monastery of the Jerónimos (Lisbon) by the Spaniard Lourenço de Salzedo (c. 1530-1577) (Almada, Figueira, and Serrão 2000). Although Salzedo's training is unknown, the art historian Serrão highlights the probability of the artist's education in Italy or in the Sevillian workshop of Luis de Vargas (1505-1567), himself a disciple, while in Rome, of Pierino del Vaga (1501-1547) (Almada, Figueira, and Serrão 2000).

The technical choice of using opaque reflecting underlayers can also be seen under green-earth-based paints. When using green earth, Nunes reveals he is fully aware of the optical behaviour of this relatively translucent pigment with poor tinting strength and hiding power when mixed in oil. To achieve a maximum brightness and saturation in the green garments of St John, depicted in the foreground, Nunes makes the modelling of the folds on top of a lead-white based underlayer. He also does so in areas of shadow, where a pure green earth paint was used as a glaze-type layer, thus increasing the saturation and strength of the green earth pigment (Figure 9a, b). On the contrary, in the trees of the background, where such brightness would reduce the sense of distance, the painter lays the green earth paint combined with smalt directly over the ochre translucent *imprimadura* layer, thus darkening the green without adding black. He then covers this green with a thin layer of azurite with the goal of casting a blue tint that further enhances the sense of distance of the landscape (Figure 9c, d).

Cambiante effect

The *changeant* technique, refered to as *cambiante* by Filipe Nunes in his 1615 treatise (Ventura 1982) and

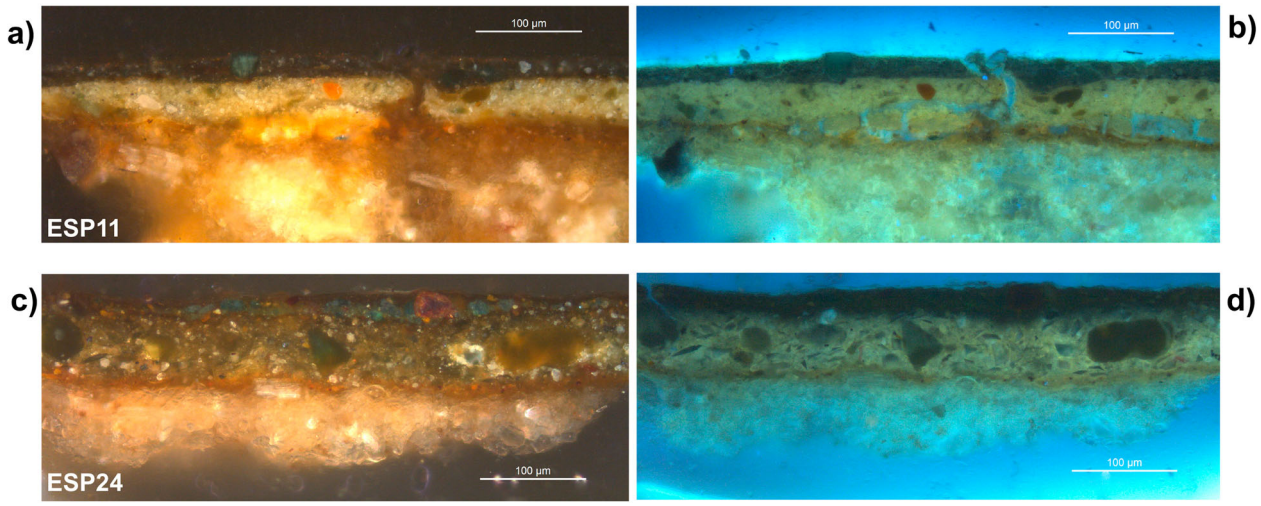

Figure 9. Green earth in shadow areas. Cross-section of sample ESP11 under OM-Vis (a) and OM-UV (b) corresponding to an area of shadow of St John's green tunic and cross-section of sample ESP24 under OM-Vis (c) and OM-UV (d) corresponding to the trees in the landscape (shadow).

as *cambeante* by the anonymous Portuguese monk of the order of Christ when describing the manuscript illumination technique (Monteiro and Cruz 2010) relates to the depiction of shot silk fabrics where the warp and the weft are of two different colours (Clarke and Vandivere 2011). A description of the technique is made by Filipe Nunes (Veliz 1986, 6):

> *Changeant* colors are made in many ways. One is to make the highlights of massicot and the half-tint of rose, and the darks of *lacra*. Or the highlights may be rose, and the half-tint light purple, and the shadows dark purple. Another way is to make the highlights of rose, the half-tints of light green, and the shadows of dark green. You may make as many iridescents as you wish, always with two tints. The lighter one serves for the lights; the darker one serves for the half-tint by lightening it; left unmixed, it serves for the dark shadows.

However, the method described by Filipe Nunes does not recreate the optical effect of a real *cambiante* fabric. Instead it repeats the conventional modelling technique of any drapery, using contrasting colours instead of a single colour from which shades and lights would be formulated.

In the *cambiante* tunic from the man with the fluttering yellow cape, Pedro Nunes developed an unconventional layering system that is based on first blocking-in of the tunic with a paint made of red lake and lead white, later superimposed by a smalt layer whose 100 µm thickness creates a relief in the paint surface that is clearly visible under raking light (Figure 10). Subsequently, the painter structured the folds of the drapery with an opaque blue paint for the lights and, for the shadows, a glaze made of pure red lake to which a little azurite was sometimes added to shift the red colour to purple (Figure 10c). The smalt layer is so strongly altered that it is now seen as a deep grey colour in areas where the uppermost paint is missing (Figure 10b). The blended surface modelling of this drapery mostly respects the folding structure of a shot silk fabric, with the planes parallel to the viewer painted in blue and the receding perpendicular folds in purple. This was not, however, fully respected, as the main horizontal fold is developed according to the upwards source of light, therefore revealing the difficulties of the painter in emulating the optical effect of a real *cambiante* fabric (Clarke and Vandivere 2011). Due to smalt degradation, the desired optical effect of this build-up is no longer perceivable. This alteration would have been particularly detrimental to shadow areas, where the presumed subtlety and nuance of the underlayers was lost and no longer shimmers through the glaze, now perceived as an almost flat form.

A close-up inspection of the turban from the apostle standing to the extreme right side of the composition, not sampled, reveals a two-stage approach to the depiction of the iridescent effect of this type of textile (Figure 11). In this case, the turban was first modelled in pink, with the shadows richer in red lake. After this underpaint was dry, Pedro Nunes applied a stiff unblended opaque blue paint mostly over the top relief of the folds and independently of the incidence of light. This attempt to reproduce a real *cambiante* fabric is hampered by the schematic modelling and the rigid transition between colours, with the underlying pink having no optical effect on the blue reflections. Despite being perceived as an artificial and unnatural depiction of the textile when viewed up-close, a certain shimmering effect does come through when the painting is observed from afar.

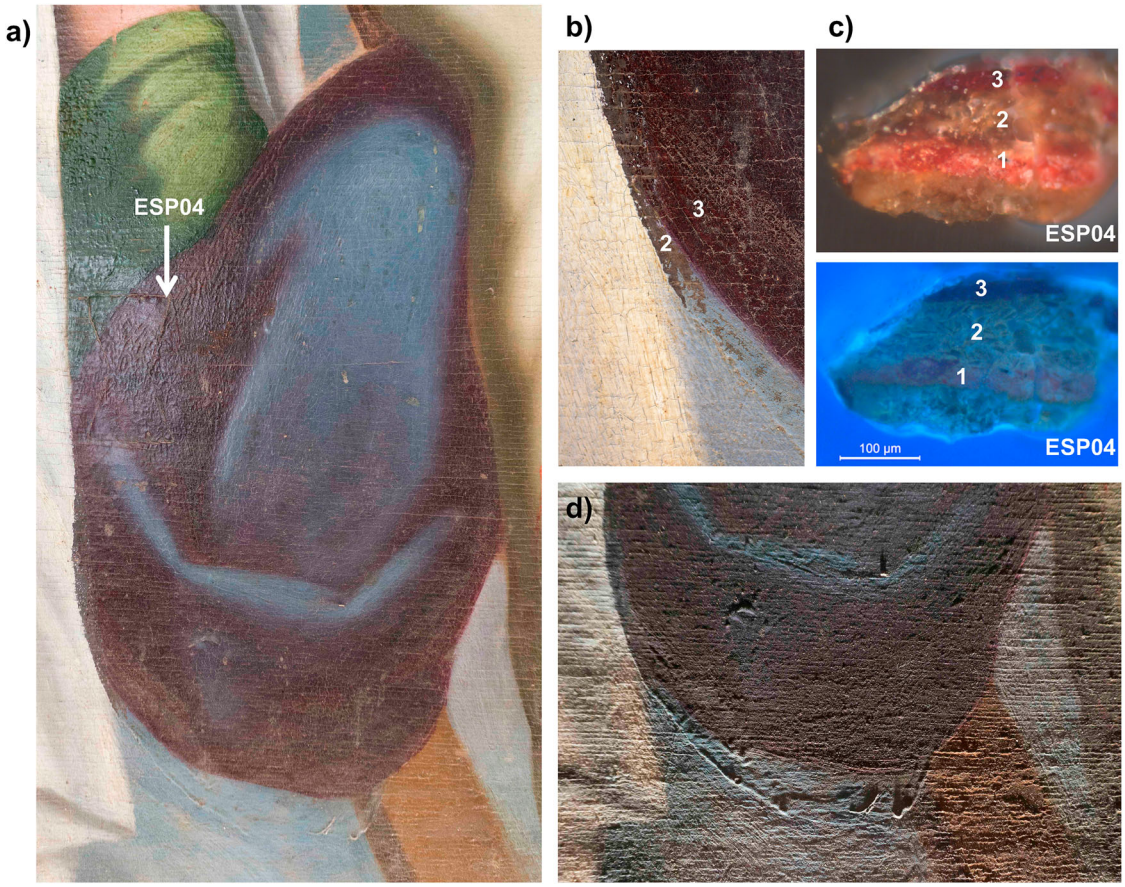

Figure 10. *Cambiante* technique I. Detail of the *cambiante* fabric of the tunic of the apostle with the fluttering cape under incident (a, b) and raking light (d). Cross-section of a shadow area (ESP04) under OM-Vis and OM-UV (c). In detail (b), the altered smalt (2) is now visible as a grey paint covered by the purple glaze (3). The thickness of the smalt layer is particularly evident under raking light (d).

Figure 11. *Cambiante* technique II. Attempt to create a *cambiante* fabric in the turban of the apostle standing to the right side of the composition.

Although not completely successful, both techniques nevertheless reveal a technical search and effort on behalf of the painter and a direct contact with similar optical effects depicted in artworks of the time. *Cambiante* fabrics are found in Portuguese sixteenth-century paintings and therefore Pedro Nunes could have seen more or less satisfying examples among Portuguese contemporary works. In Évora, Francisco João (doc. 1558-1595) the most productive local mannerist painter before Pedro Nunes, followed the decorative and standardised technique described in Filipe Nunes painting treatise (Melo et al. 2009; Melo 2012). However, skilled representations of this textile, mostly related to major artists, would also have been accessible in Évora, as in the rest of the country. Among these, are the paintings by Salzedo for the Jerónimos Monastery (Almada, Figueira, and Serrão 2000) or those by Giraldo Fernando do Prado (c.1530-1592) for the Almada altarpiece (Serrão and Antunes 2013), both subject to scientific analysis.

Flesh tones

As previously analysed (see Part I), green earth was abundantly used in the flesh tints, not only in the

Figure 12. Reverse *verdaccio* technique. Detail of the hand of Mary Magdalene under incident light.

cool shadows of Christ's dead body but in the pink flesh of live figures as well. Particular to Pedro Nunes flesh layering technique, observed in some of his main figures, is the option to lay the greenish flesh tint as a scumble over a strong pink underpaint, in what can be seen as a reverse *verdaccio* technique (Figure 12).

Conclusion

Material and technical analysis of the *Descent from the Cross*, painted by the Portuguese Pedro Nunes in 1620, reveals that the nature of the support and preparatory layers are traditional to Portuguese painting practice. The same applies to the use of light reflecting opaque underlayers or the restriction of glazes to shadow areas. However, the panel construction system as well as the use of a set of particular techniques related to the handling of colour, namely unusual and complex layering systems to depict blue and *cambiante* fabrics, clearly distances Pedro Nunes from the mainstream practice analysed so far in Portuguese painting. These technological features likewise convey Nunes' technical ability to widen the range of tonal values and visual effects of his work making full use of the pigments available at his time. His versatility is further illustrated by the combination of a wide range of oil painting techniques, such as glazing, scumbling, wet-in-wet, and wet-in dry painting. Although not completely successful in the depiction of a real *cambiante*, paint alteration related to smalt underlayers may have affected the actual perception of the quality of his work.

As noted by Dunkerton and colleagues (1999), the diversity of painting techniques at the beginning of the seventeenth century as well as the exchange of experiences and practices of the increasing number of foreign painters working in Rome, makes it impossible to separate techniques according to the dichotomy in use in the fifteenth and beginning of the sixteenth century between Italy and the North. Perhaps more than an Italian influence, the painting *Descent from the Cross* reflects Nunes' Roman international experience and his proud effort of updating the more traditional painting practices of his predecessors.

Further works by Pedro Nunes and other Portuguese painters need to be investigated in order to gain a full picture of the relevance of this Master in Portuguese painting and gradually understand the 'patterns of use and diffusion' (Eastaugh, Nadolny, and Lowengard 2012, 197–198) of materials and techniques in sixteenth-century Western European painting.

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