



# Afzetters at Work: 'Touching up' in the Diana and Alexander Tapestries by François Spiering and Karel van Mander II

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**D**uring the restoration of a tapestry in the Rijksmuseum collection between 2013 and 2018 we encountered an interesting phenomenon that deserved further investigation – retouches to the tapestry *Alexander and Jaddua* (fig. 1, appendix, no. 9), woven around 1617 in the workshop of Karel van Mander II (1579-1623) in Delft. These additions in different colours were found on top of the weft threads of the fabric in the outlines and details in the borders and in the central scene.<sup>1</sup>

Similar retouches were also discovered in 2019 in *Niobe's Pride* (fig. 2, appendix, no. 1), likewise in the Rijksmuseum. This tapestry was made in the workshop of François Spiering (1551-1630) in Delft in 1610. The museum's comprehensive tapestry catalogue does refer to retouches,<sup>2</sup> but it was only during a thorough condition check prior to the restoration of the tapestry that it became clear how extensive these were.

Applying different types of dye to faded areas was customary in the restoration of tapestries in the past; there are several examples of this in the Rijksmuseum's collection.<sup>3</sup> However because of the specific placement in the outlines of leaves, ornaments,

< Detail of fig. 1

limbs and faces, these particular retouches call to mind the work of *afzetters*.<sup>4</sup> From the early sixteenth century onwards, they were frequently employed towards the final stage of the completion of the tapestries and one of their best-known tasks was to heighten their colour. Although this touching up was only supposed to add accents here and there or retouch later damage such as faded colours and stains, it often did not stop at that. Contemporaries consequently associated *afzetten* with fraud.<sup>5</sup> In art-historical literature it is mainly discussed in connection with lower quality tapestries: 'By the nature of the thing, touching up was done most often and to the greatest extent in poorer qualities,' stated tapestry expert Gerardina Tjaberta van Ysselsteyn in her comprehensive work of 1936.<sup>6</sup> In consequence, tapestries of high-quality sets from the Northern Netherlands were considered to have no retouches.

The two aforementioned Rijksmuseum tapestries come from very high-quality sets, yet they appear to have been touched up. *Alexander and Jaddua* is one of a series about the history of Alexander the Great, and *Niobe's Pride* comes from a set known as the *Tapisserye van Diana*.<sup>7</sup> The question therefore arose as to by

Fig. 1  
 KAREL VAN  
 MANDER II,  
*Alexander and  
 Jaddua*, c. 1617.  
 Wool, silk,  
 436 x 523 cm.  
 Amsterdam,  
 Rijksmuseum,  
 inv. no. BK-1961-52;  
 purchased with  
 the support of  
 the Vereniging  
 Rembrandt.







Fig. 2  
 FRANÇOIS SPIERING  
 to a design by  
 KAREL VAN MANDER I,  
*Niobe's Pride*, 1610.  
 Wool, silk,  
 359 x 529 cm.  
 Amsterdam,  
 Rijksmuseum,  
 inv. no. BK-1954-69-A;  
 gift from Van Leer's  
 Vatenfabriek N.V.

whom and when the retouches were done and which materials were used.

This article examines the history of heightening the colour of tapestries, and the ensuing regulations that were issued by Charles V in his Ordinances of 1544. The extent to which *afzetters* adhered to the stipulations given in this ordinance has been examined by chemically analysing the retouches on several tapestries. The initial chemical research results concerning the location and nature of the retouches in the Rijksmuseum tapestries are presented here. This same research was undertaken (within the limitations of the pandemic etc.) on three tapestries in other collections. The first is a tapestry in the British National Trust Collections, held in Knole House near Sevenoaks: *Niobe's Pride* (c. 1590-1610) by François Spiering (appendix, no. 2) from the series *Tapisserye van Diana*.<sup>8</sup> This design is almost identical to that of the Rijksmuseum's *Niobe's Pride*

(fig. 2). The other two are in the collection of Museum Prinsenhof Delft: *King Porus before Alexander the Great* (1619) by Karel van Mander (fig. 3; appendix, no. 11) from the series *The Story of Alexander the Great*, and *Unknown Scene from the Story of Diana* (c. 1613-20) by François Spiering (fig. 4; appendix, no. 3).<sup>9</sup> Six related Rijksmuseum tapestries have also been scrutinized with the naked eye and in photographs to further determine the presence of retouching (see appendix, nos. 4-8, 10).

As far as we know, the composition of the materials used for heightening the colour ('*afzetten*') of tapestries has not been the subject of research before. Research of this type has certainly never been undertaken for tapestries originating from the workshops of François Spiering or Karel van Mander II in Delft. In collaboration with the Cultural Agency of the Netherlands (RCE) the retouches



Fig. 3  
KAREL VAN  
MANDER II,  
*King Porus before  
Alexander Great*,  
1619.  
Wool, silk,  
420 x 675/681 cm.  
Delft, Museum  
Prinsenhof Delft,  
inv. no. pDtex 3,  
purchased with  
the support of  
the Vereniging  
Rembrandt and the  
Provinciaal Bestuur  
Zuid-Holland.

Fig. 4  
FRANÇOIS SPIERING,  
*Unknown Scene  
from the Story of  
Diana*, c. 1615.  
Wool, silk,  
281 x 237 cm.  
Delft, Museum  
Prinsenhof Delft,  
inv. no. pDtex 117.  
Photo: Tom Haartsen



in the tapestries were chemically analysed in order to discover the materials used. This article presents the initial results of this research.

### The Two Tapestry Weavers

#### *François Spiering*

All the tapestries presented here were made in the workshops of two prominent weavers from the Northern Netherlands. François Spiering settled in Delft in 1591 and around 1593 moved his workshop into the former convent of St Agnes. Earlier, in Antwerp, where he was born, he had a tapestry workshop or business in 'De Schilt van Bruessele', a stone's throw from the *tapissierspand*.<sup>10</sup> Both properties were severely damaged during the Sack of Antwerp in 1576 and several extensive sets of high-quality tapestries were reported to have been looted.<sup>11</sup> These large numbers of tapestries reflect the extensive trading activities of Spiering, who was known as a clever and shrewd businessman.<sup>12</sup> In an endeavour to secure a stable customer base he focused primarily on the States-General of the Netherlands and the States of Zeeland, followed by clients in England, France, Poland and Sweden.<sup>13</sup> Among other things Spiering became known for his Diana set, which was extremely popular in England. In 1593, he was able to supply from stock an initial order of twelve tapestries for Sir Walter Raleigh.<sup>14</sup> Only two of these have survived and they now hang in the Venetian Ambassador's Room at Knole House.<sup>15</sup> During the existence of the workshop in Delft (1593-1636), Spiering, like his sons Aert and Pieter who followed him, produced many different sets of wall hangings that are some of the very finest examples of tapestry art from the Northern Netherlands.

#### *Karel van Mander II*

Like his father, Karel van Mander II was a talented painter, draughtsman and designer of tapestries, and a man with a great knowledge of the Classics.

However, judging by the many debts he incurred, he was no businessman.<sup>16</sup> From 1608 to 1615 he worked as a cartoon painter for François Spiering. He probably made the designs for tapestries in *The Story of Scipio* and in the *Ariostos Orlando Furioso* set.<sup>17</sup> However this collaboration did not go well and, unhappy with what he was being paid, Van Mander set up his own tapestry workshop in the former convent of St Anne.<sup>18</sup> As well as running the business, he made all the cartoons for tapestries. During the seven years his firm was in existence, output was high and he was in constant competition with his former employer which led to major legal consequences. His tapestries are large, bear the Delft city mark and, in the case of the ones examined here, are signed I KMANDER FECIT and dated around 1617-19. It is likely that Van Mander, who was a draughtsman himself, applied the retouches and did not employ any *afzetter*s.

### The Tapestries Examined

#### *Tapestries from the Rijksmuseum*

*Niobe's Pride* (appendix, no. 1), to a design by Karel van Mander I (1548-1606), was woven in François Spiering's workshop. In the centre of a landscape, an altar bearing a statue of the goddess Latona and her twins Apollo and Diana is surrounded by figures making sacrifices. Niobe, dressed in a blue cloak, stands in the foreground on the left. She addresses a group of women and children, who appear in the right foreground of the tapestry. The city mark of Delft is in the blue border lower left.<sup>19</sup> The tapestry is signed in the middle of the yellow intermediate border with the date 1610 (see fig. 9a).<sup>20</sup>

It is part of one of the three sets of tapestry on the subject of Ovid's *Metamorphoses*, with Diana as the central goddess. In total, eleven tapestries have survived from these three sets. The whereabouts of eight of them are known: six are in the

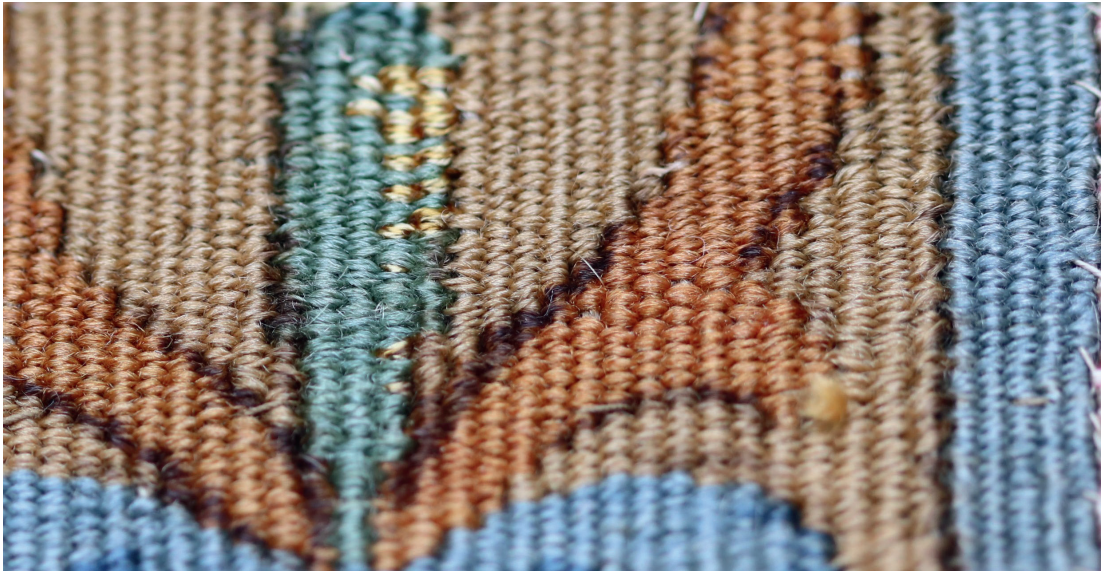


Fig. 5  
Detail with dark  
brown accents of out-  
lines (appendix, no. 1).

Rijksmuseum and two are in Knole House (National Trust) (see appendix, nos. 1, 2, 4-8 and note 15).

As we have noted, the retouches in the Rijksmuseum's *Niobe's Pride* are more extensive than originally thought. They were applied to accentuate the outlines of the ornaments and vines in the borders, and are dark brown (see figs. 5, 6a), as is the woven signature. In the central scene, dark brown accents were placed in several spots in the vegetation, such as the grasses and foliage. Several outlines of larger areas, where the colour of the weft yarns has clearly faded, were touched up in dark brown and brownish black once, or even twice.<sup>21</sup>

*Alexander and Jaddua* (appendix, no. 9) from a nine-piece series about Alexander the Great, was designed by Karel van Mander II and woven in his workshop in Delft.<sup>22</sup> After Van Mander's death in 1623, this set and two others about the life of Alexander the Great were found in his workshop stock.<sup>23</sup> The borders of the sets each have a different ground colour – blue, red and orange. This tapestry is from the set with the orange border. Aside from this piece, we know the whereabouts of only

four other tapestries originating from all the sets about Alexander the Great. One is in the Rijksmuseum collection (appendix, no. 10) as well. The other three are in the collections of Museum Prinsenhof Delft (appendix, no. 11), the Art Institute of Chicago and the Bundesamt für zentrale Dienste und offene Vermögensfragen in Berlin.<sup>24</sup>

In *Alexander and Jaddua*, Alexander the Great is shown in the centre in a landscape surrounded by various figures. He kneels before the high priest Jaddua. This scene is based on a text from *The Antiquities of the Jews* by Flavius Josephus.<sup>25</sup> The city mark of Delft, with the letters H and D – for Holland and Delft – on either side, is woven into the outermost blue border. The tapestry is signed in the middle of the innermost yellow border.

Some of the faces, including those of Alexander and Jaddua, have retouched accents in red in order to heighten a flush on the cheek or a lip, for example. These kinds of accents are also found on the limbs of some of the figures (see figs. 10a-c). The outlines of ornaments and vines in the borders are sometimes accentuated in greyish black (see fig. 6b).<sup>26</sup>



It is easy to imagine that Karel van Mander II, who originally worked as a (cartoon) painter and had no background as a weaver,<sup>27</sup> accentuated details that were hard to weave with material that resembled paint at the end of the weaving process in order to make the image on the tapestry stand out more clearly.

### *The Other Tapestries*

We were able to inspect most of the known works from the Diana and Alexander series.<sup>28</sup> Aside from the Rijksmuseum's *Niobe's Pride*, six tapestries from the Diana sets woven by Spiering were examined in order to determine whether other examples from these sets also contained retouches. Five of them are in the Rijksmuseum collection (appendix, nos. 4-8). Included was one of two tapestries held in Knole House, Kent (National Trust): *Niobe's Pride* by François Spiering (appendix, no. 2).<sup>29</sup> This tapestry was woven from the same cartoon as the *Niobe's Pride* in the Rijksmuseum (fig. 2) and is therefore practically identical in appearance (and for that reason not shown here). It was cleaned and restored while this research was going on, allowing us to compare the retouches in the tapestries and analyse them.<sup>30</sup> The other tapestry in the National Trust Collections could not be examined.<sup>31</sup> One tapestry from a later series woven by Spiering, inspired by the earlier Diana sets, was also added: *An Unknown Scene from the Story of Diana*, from the collection of Museum Prinsenhof Delft (appendix, no. 3).<sup>32</sup>

Aside from *Alexander and Jaddua*, we have examined two of the total of five known tapestries from Karel van Mander II's Alexander the Great sets. One is in the Rijksmuseum collection (appendix, no. 10), on which no retouches were found. The other one, with retouches, is in the collection of Museum Prinsenhof Delft (appendix, no. 11). Unfortunately, it proved impossible to examine the other two works more thoroughly.



Figs. 6a, b  
Retouch type I: dark  
outlines around vines,  
ornaments and fruit in  
borders (appendix,  
nos. 1, 9).

Clear retouches of various kinds, like those on *Niobe's Pride* (appendix, no. 1), were found on two of these other tapestries: the National Trust's *Niobe's Pride* (appendix, no. 2) and *An Unknown Scene from the Story of Diana* (appendix, no. 3)<sup>33</sup> from Museum Prinsenhof Delft (for the various kinds, see p. 159). On the basis of photographs and examination with the naked eye, it was established that most of the other tapestries had retouches of only one or two kinds, such as those on the *Alexander and Jaddua* (appendix, no. 9).

For instance, in many of these tapestries some of the motifs in the narrow borders adjacent to the large borders were outlined in dark brown or greyish/brownish black (appendix, nos. 4-6, 8, 9, 11), as is also the case with the Rijksmuseum's *Niobe's Pride* (appendix, no. 1), the National Trust's Niobe tapestry (appendix, no. 2) and the Diana tapestry in Museum Prinsenhof Delft (appendix, no. 3) (see figs. 5, 6a, b).

The strings of the longbows depicted on four Diana tapestries in the Rijksmuseum (appendix, nos. 4, 6-8) were touched up, not woven (see figs. 11a-d). This is also one of the several kinds of retouches on both Niobe paintings and the tapestry with the unknown Diana scene (appendix, nos. 1-3).

Unfortunately, it was impossible to carry out a physical examination of some of the Diana tapestries (Rijksmuseum, appendix, nos. 4-8) because of restrictions imposed in response to the COVID-19 pandemic and a storage move.<sup>34</sup> It is, moreover, necessary to make a comparison of what can be seen on the front and the back. This cannot be done in the case of tapestries that have linings or cannot be viewed from the back for other reasons. It was consequently decided to only examine samples from the three tapestries owned by the National Trust and Museum Prinsenhof Delft (appendix, nos. 2, 3, 11) in addition to those taken from the

Rijksmuseum's Niobe and Alexander tapestries (appendix, nos. 1, 9).

## Historical Background

### *The Emergence of Afzetters*

As far as we know, tapestries were already being retouched in the first half of the fifteenth century in France. The earliest recorded source is an account sent to the Duc d'Orléans by Simon de la Croix in 1428.<sup>35</sup> It states that an extract from the juice of buckthorn berries was purchased to touch up stained areas of a tapestry.<sup>36</sup>

Around 1500, Flanders was the major producer of tapestries, with Brussels as the main centre. The high quality was evident in the sophisticated weaving technique, the diversity of yarns – such as wool, silk and gold and silver thread – and the great range of colours. Surrounding towns such as Oudenaarde also had an active tapestry industry. Antwerp was very important for foreign exports. Spain, Portugal and Italy were the major markets. The trade in tapestries took place from a central point, the *tapissierspand* with different shops, which had been in the city since 1551.<sup>37</sup> It was the equivalent of a clothworkers' hall where cloth was examined, traded and stored.

From an economic point of view, the tapestry industry was of great importance to Flanders, but the large demand was also one of the reasons why the weavers were under considerable pressure. At the same time, clients were becoming increasingly demanding about the images on tapestries. As in Flemish painting in this period, perfection was sought in the details. Although an exceptional standard had been achieved with the weaving technique and the dyeing of the woollen and silk yarns, not everything proved to be technically feasible. Despite the craftsmanship of the dyers and the variety of recipes, it was not always possible to achieve the required extensive range of colours to reproduce the design for the tapestry. Although colour nuances

could also be produced by using a composite weft yarn with two threads of a different hue or 'hachures', both techniques were difficult to do in the very light shades needed to weave limbs and faces.<sup>38</sup>

The pursuit of perfection was very time consuming, and high demand meant that the pressure to deliver was extreme. Some *afzetter*s were so good that at first glance there was almost no visible difference between weave and retouch. This made it tempting to add detail by painting rather than weaving.

### *Tasks of the Different Afzetter*s

When the production of tapestries reached its peak in the Southern Netherlands at the end of the fifteenth century, *afzetter*s were given a permanent role in their making. Although around 1500 the rules relating to the *afzetten* of tapestries had yet to be established officially, the requirement of the *laeckengilde* (clothworkers' guild) – to whom the weavers were accountable – was that images on tapestries had to be created by weaving and not by *afzetten*. Only small accents were allowed where this was impossible.<sup>39</sup> This was also described by Alphons Wauters, director of the Archives of the City of Brussels, who at the end of the nineteenth century did pioneering research into the history of tapestries from Brussels. He noted that in the first half of the sixteenth century tapestries were retouched on a large scale by *afzetter*s or painters.<sup>40</sup>

But *afzetter*s were not only active in tapestry workshops. From the last quarter of the fifteenth century onwards, another category of *afzetter*s also coloured prints, books and atlases. Colour was particularly important in cartography: an uncoloured atlas was regarded as incomplete. Colouring was also necessary for scientific studies so that complex images could be understood. *Afzetter*s and master *afzetter*s in this sector were highly regarded colourists, whose names

were well-known in the Northern and Southern Netherlands.<sup>41</sup> This is in sharp contrast to the *afzetter*s of tapestries, about whom hardly anything can be found. A contemporary source mentions a *tappitzier* called Heu, who was also an 'afsetter van tapitzerie', who had fled from Doornik to Brussels.<sup>42</sup> We also know that *afzetter*s were active in the town of Oudenaarde.<sup>43</sup> This is confirmed by research carried out in 2009 by the National Trust into a thirteen-piece set of tapestries about the story of Gideon (1578, Hardwick Hall).<sup>44</sup> In the Northern Netherlands, where the production of tapestries did not start until the end of the sixteenth century, there is just one surviving reference to the use of *afzetter*s.<sup>45</sup> Only one name of an *afzetter* of tapestries, that of a certain Pieter van de Lande, can be found in the records of the Guild of St Luke, the only known craftsmen's guild in Delft.<sup>46</sup>

Although *afzetter*s from both disciplines were only employed at the end of the process, there were great differences in the range of their tasks and the materials they used. Heightening the colour of tapestry added details that could not be created with a weaving technique. Applying retouches to mask errors was also permitted. The retouching material was not related to the dyes and mordants used in weaving textiles, but rather to the material used for working on paper, such as ink and chalk.<sup>47</sup> Prints and drawings, however, were not touched up to make additions, but rather to enhance them.

Whereas colouring prints and drawings was the only job of these craftsmen, *afzetter*s of tapestries had a far wider range of tasks to perform. Their work started when the tapestry was taken off the loom in order to give it a separate woven border. The Flemish term *afzetten* was derived from edging (*afzetten*) tapestries, an important part of their activities.<sup>48</sup> It is still not clear which part of the borders this referred to. In fifteenth-century Flanders this edging

was also carried out by ‘merseniers’ or pedlars.<sup>49</sup>

By the very nature of the material, tapestries were susceptible to wear and tear, discoloration, soiling and damage because they used to hang for extended periods decorating the walls in public areas. Since they were costly and status-enhancing objects, their owners would not quickly replace them, but would have them cleaned and repaired. Such maintenance work was another part of the *afzellers*’ remit; they were also responsible for stitching up the woven slits and for mending damaged areas such as tears that arose later through use.<sup>50</sup>

#### *Measures Against Excessive Retouching*

As we have seen, the huge demand for sets of tapestries placed immense pressure on the continuity of supply. In the first quarter of the sixteenth century the retouching of Brussels tapestries by *afzellers* – instigated by the weavers – took on extraordinary proportions and damaged the reputation of the tapestry industry. In order to prevent economic abuses and to protect the art of tapestry making, the regulations regarding retouching (*afzetten*) had been tightened up and defined in an ordinance by the Magistrate of Brussels as far back as 1525,<sup>51</sup> but they were frequently contravened. A new ordinance in 1528 required weavers to identify their tapestries with their own workshop mark as well as that of the city of Brussels. These weavers’ marks had to be listed in a register that was kept up to date by the wholesalers who bought tapestries from weavers and subsequently sold them on. This guaranteed the source of supply and the quality; that is to say that before the city mark could be applied, the work had to be inspected by a panel of judges from the *laeckengilde* or cloth weavers’ guild. After ten years, serious forms of fraud were again reported by commissioners of the

court of law in Brussels. As a result, Mary of Hungary, regent of the Netherlands, requested her brother Charles v to order an investigation into the trading and production of tapestries.

After this investigation, which was met with much opposition and dragged on for more than four years, the Imperial Edict was published on 16 May 1544. These (General) Ordinances were wide-ranging and consisted of ninety-one articles; articles 49 to 57 related to the role of the *afzellers*. As far as we know, it is the oldest document that endeavoured to regulate the trade and industry under constitutional law, and had to be followed throughout Flanders. It states that the task of an *afzetter*, commissioned by the seller and approved by a panel of judges – made up of members of the particular *laeckengilde* to which the weavers belonged – was to inspect and correct the completed tapestry *op het weefgetouw* (on the loom) by touching it up. This had to happen before it was cut from the loom, as no further alterations were allowed to be made after that. There were only two exceptions to this rule: if the tapestry had subsequently been damaged as a result of use or external influences, or if the buyer wanted to have his coat of arms added to it. These repairs or transformations could only be carried out by *afzellers* who had been trained in accordance to the rules of the guild and were also members of it, and with the permission of the designated panel of judges. The *afzetten* also had to be done in the workshop where the tapestry had been made.

The other regulations mainly concerned the protection of the interests of all those dependent on the work (weavers, dyers, *afzellers*, dealers) and on the tapestry trade. Buyers, for instance, were obliged to ask members of the panel of judges to inspect their tapestries. If they complied with the regulations the sellers were allowed to proceed with the sales. Weavers were

not liable if new retouches that did not comply with the regulations were made afterwards.

In the Southern and Northern Netherlands, the Ordinances continued to govern the tapestry industry until the end of the seventeenth century. Nevertheless, the rules kept being broken. Between 1621 and 1626, for example, there was a legal battle between two prominent weavers, Jean Raes and Jacques Geubels on one side and the well-known *afzetter* Guillaume Reynbout, who was recognised by the guild, on the other. Reynbout accused the weavers of excessive embellishment without engaging a registered *afzetter*. Initially the complaint against the weavers was not upheld, but Reynbout subsequently won his case on appeal. This meant recognition for the *afzetter*s and also for their trade.<sup>52</sup>

Articles 50, 51, 52 and 57 of the Ordinances were used as the basis for the chemical research presented in this article.<sup>53</sup> They concern the

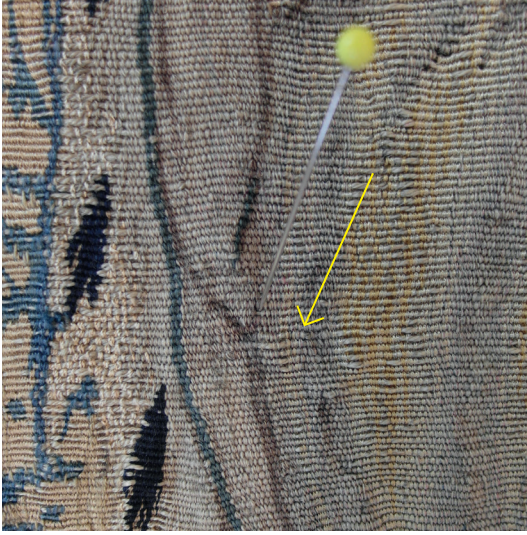
nature of the materials and the areas on tapestries that *afzetter*s were allowed to touch up.

Article 50 states that the retoucher/*afzetter* may not use liquid dyes, with the exception of ink and the dye made from 'follegraine' or 'folle gramme soppe'. In the fifteenth century this referred to colour extracted from shavings of fabric that had been dyed with kermes.<sup>54</sup> It is a corruption of the French word *fil-de-grain* (yarn dyed with kermes). In the sixteenth century 'follegraine' was made from red shavings from the cloth industry dyed with madder. This was cheap because it was made from waste. There are also name variations such as *fyligreijn*, *vollegreijn* and *viligreyn*.<sup>55</sup> The article goes on to state that colour could be applied with the aid of dry ingredients such as red chalk, white chalk and black *pinoir*, also known as *pierre noir*, *pietra nero* or *pierre d'Italie*.<sup>56</sup>

According to article 51, these materials could only be used to accentuate details of faces, such as

Fig. 7  
Retouch type 2:  
shadow of foliage with the aid of a multi-spectral camera (Crime-Lite) under infrared light (appendix, no. 3).  
Photo: Cultural Heritage Agency





*Figs. 8a, b*  
Retouch type 3:  
accents in out-  
lines and folds in  
faded garments  
(appendix, no. 2).  
Two lines of  
retouches can  
clearly be seen  
next to each other.  
Photos:  
May Berkouwer

noses and lips. One important condition here is that the image on the tapestry must have been obtained entirely by weaving.

Article 52 states that ink is permitted to accentuate the outlines of fruit, flowers and vines in the borders and to highlight foliage and other vegetation in tapestries. This had to be worked in as dry as possible and only on the top of the weft thread, in order to prevent the ink from flowing into the adjacent parts or into the underlying warp thread. In addition, red chalk, white chalk, black *pinoir* and *viligreyn* were permitted for applying accents to limbs and faces.

Finally, according to article 57, retouches in ink could be applied after damage had occurred or the colours had faded through use. This can be seen as a form of restoration carried out by an *afzetter*.

### Chemical Research Results

Quotations proving that Spiering strove to work according to the rules of the Ordinances can be found in various archives.<sup>57</sup> We do not know precisely how Van Mander went about it, but it is likely that he, too, largely adhered to them.

Various kinds of retouches can be distinguished with the naked eye in the tapestries that were examined; these are subdivided into six types. These types – except for types 4 and 6 – are clearly described in articles 50, 51, 52 and 57 of the Ordinances. Greyish black was used in the tapestries from the Alexander set, for example, and in both Niobe tapestries brownish black outlines were applied to define the vines, ornaments and fruit in the borders (type 1, figs. 5, 6a-b). Foliage was also given shadows (type 2, fig. 7). By accentuating outlines and folds, in faded garments, for instance, definition and depth in the scene were recreated in both the Rijksmuseum's *Niobe's Pride* and the *Niobe's Pride* from Knole House (type 3, figs. 8a-d). In addition, the shadows of the letters of the signature were added in both tapestries (type 4, figs. 9a-e). As far as we were able to see, red and white accents were applied in faces and limbs in only the two Alexander tapestries (type 5, figs. 10a-e). Finally, strings added to the longbows were found in various tapestries woven by François Spiering (type 6, figs. 11a-d).

To determine sample areas, the retouches were studied with technical



*Figs. 8c, d*  
Retouch type 3:  
front and back of the  
tapestry (appendix,  
no. 1).



*Figs. 9a-d*  
Retouch type 4:  
enhanced shadows of  
the letters of the signa-  
ture (appendix, nos. 1  
front and back, 2, 3).  
Photo fig. 9c:  
May Berkouwer





*Fig. 9e*  
Detail type 4  
(appendix, no. 3).

photography, using a USB microscope (Dino-Lite) and a multi-spectral camera (Crime-Lite) with a visible ultraviolet (UV) and infrared light (IR). It became clear that the retouching on the weft thread is visible in images made using the Dino-Lite (figs. 12a-c). Wear is noticeable where retouching was done on silk, in contrast to retouches made on wool.

A non-invasive, handheld x-ray fluorescence spectrometer (XRF) was initially used to identify chemical elements in the retouches, but this technique did not prove accurate enough, so we switched to surface sampling with the aid of ground magnesium oxide sample swabs (MOMS). The samples were analysed non-destructively with a raster electron microscope with energy dispersive x-ray spectroscopy (SEM-EDX). The same MOMS surface samples of the retouches were also analysed for organic dyes with ultra-high performance liquid chromatography, photodiode array detection and high-resolution mass spectrometry (UHPLC-PDA-HRMS).

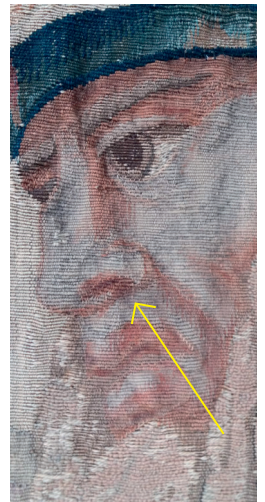
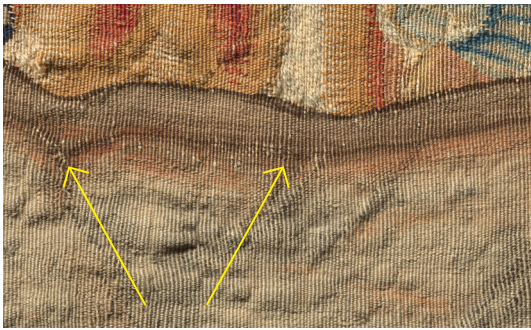
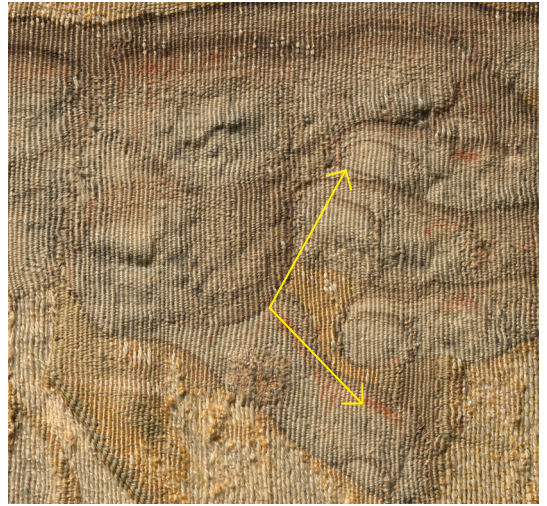
Finally, the dyes and mordants in the dyed material around the retouches were researched. This was necessary to determine whether they masked discoloration, due to the degree of colourfastness of the dyes used in the fabric. For this purpose, different textile samples were taken and analysed with

SEM-EDX (mordants) and UHPLC-PDA-HRMS (organic dyes).<sup>58</sup> The research methods used for each tapestry are indicated in the appendix.

The fronts and backs of the tapestries were compared in order to demonstrate that the marks on the tapestries were created not by weaving but by applying the proscribed materials for embellishment and therefore were only visible from the front. In the Knole House Niobe tapestry it can clearly be seen that the outlines in the borders (type 1) were probably applied soon after the tapestry was completed. This is illustrated by a section that had been folded back (figs. 14a, b).<sup>59</sup> Although the colours and the materials there still look unaffected, good and clear, the outlines are accentuated. In this case damage or discoloration could not have been the cause.

As article 57 of the Ordinances of Charles v decreed, faded and damaged parts of the image could be retouched after a number of years. One example is the accentuated outlines and folds of faded garments in red, violet and purple colours that were found in the two Niobe tapestries examined (see figs. 8a-d). It was suspected that orchil had been used for the woollen threads because it was known for its poor colourfastness; for that reason, this dye was prohibited for dyeing cloth.<sup>60</sup> Dye analyses undertaken in the past





Figs. 10a-e  
Retouch type 5:  
accents applied  
in faces and limbs  
with red and  
white chalk (a-c:  
appendix, no. 9;  
d-e: appendix,  
no. 11).

showed that Spiering and Van Mander both used mixtures of orchil (*Rocella tinctoria* DC.) for dyeing their yarns.<sup>61</sup> Colours in other tapestries, including Van Mander's *Alexander and Jaddua* (appendix, no. 9) are very badly faded (fig. 13). Elsje Janssen comments in an article that probably a lot of orchil was used to dye these faded threads.<sup>62</sup>

As a check, fibre samples were taken from the back of some pinkish-purple garments and the sky in both Niobe tapestries. These areas of colour were chosen because they are faded

on the front and bordered by dark brown retouches. Orchil (*Rocella tinctoria* DC.) as well as Mexican cochineal (*Dactylopius coccus* Costa.) were found as a dye in fibre samples taken from the Knole House Niobe tapestry,<sup>63</sup> unlike the Rijksmuseum tapestry, which contained madder; this could indicate *viligreyn*.<sup>64</sup> Both dyes give a reddish-purple colour, but they are not colourfast. The backs of the Niobe tapestries show how spectacular the colours must have been originally (see fig. 8d).

The Ordinances do not tell us whether accentuation of the lettering (type 4) was permitted. The shadows of the letters in the Niobe tapestries (appendix, nos. 1, 2) show that they have been touched up. This is clearer in the Rijksmuseum tapestry than in the National Trust's example. With the exception of the tapestry from the small Diana set (appendix, no. 3), this has not been found with the naked eye in the other Diana tapestries, nor in those made by Van Mander.

The reddish-pink accents (type 5, art. 50), which were only found in the two Alexander tapestries, were established with the naked eye (appendix,

nos. 9, 11; see figs. 10a-e). It was decided to use a non-destructive method (XRF) to confirm this. Five spots were selected on the arm and finger (appendix, no. 9; figs. 10b, c) of a soldier and a detail from the border on the left of the tapestry. As the results from XRF were not sufficient, more sample material was taken for SEM-EDX.<sup>65</sup> XRF revealed primarily iron, with traces of manganese, titanium, copper and magnesium, in the red accents (type 5), while SEM-EDX found silicon among other things. This indicates that red ochre or haematite, also known as sanguine, was used for the retouches. Red ochre is an earth pigment whose colour is caused by the



*Figs. 11a-d*  
Retouch type 6:  
strings added to the  
longbows  
(appendix,  
nos. 2, 4, 7, 8).  
Photo fig. 11d:  
May Berkouwer





*Figs. 12a-c*  
Images of dark brown  
retouches with the  
aid of a usb micro-  
scope (Dino-Lite)  
(appendix, no. 1).

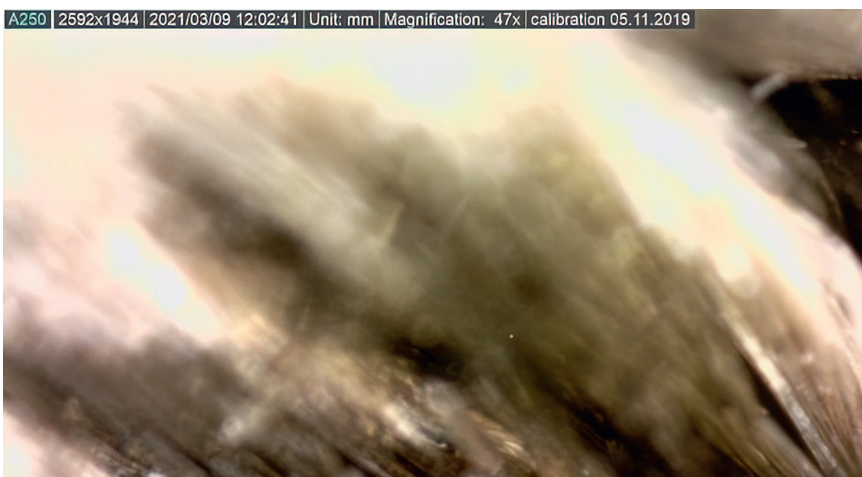
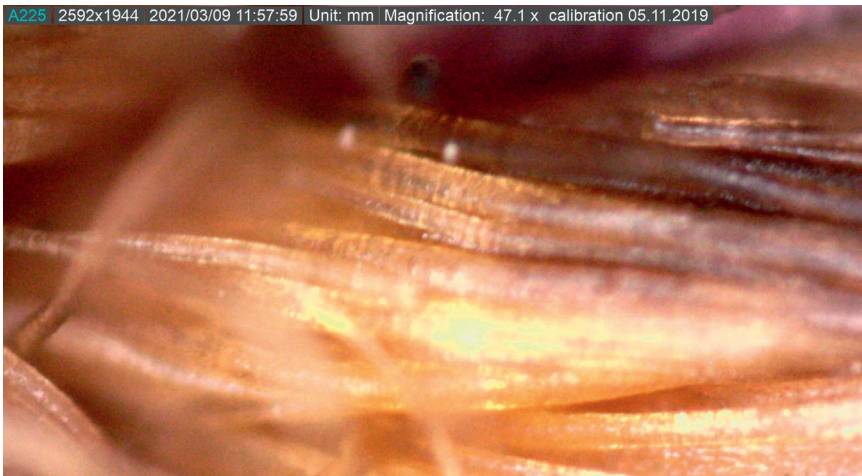


Fig. 13  
Detail with faded  
woollen threads  
(appendix, no. 9).



presence of ferrous oxide. Calcium and barium were also found in one of the fingers, indicating the presence of white chalk. A spot was selected in order to identify the greyish black pigment of the accentuated outline. Unfortunately, this did not produce any results.<sup>66</sup>

The photographs taken of the tapestry from the Alexander set (appendix, no. 11) confirm the presence of red pigments. Regrettably, there was no scope in this research to take sample material for SEM-EDX, so for the time being we are unable to establish the presence of red and white chalk with certainty. Photographs of accentuated outlines in the borders of this tapestry (type 1) were taken with the multi-spectral camera using UV and IR filters in the hope of finding possible indications of the use of iron gall ink. Iron gall ink looks dark in UV light and disappears in IR. As this was not the case, it is likely that a carbon-based ink, such as bone black or lamp black, was used.<sup>67</sup>

We decided to take samples from the retouches in ink applied on top of the weft for the investigation of the retouches in the Niobe tapestries. Fibre samples cannot be taken from them, so the RCE introduced the MOMS method.<sup>68</sup> The roughened tip of a rod

of magnesium oxide is gently moved back and forth across the ink surface causing particles to detach from the support and adhere to the magnesium oxide (fig. 15). These particles could be examined later using SEM-EDX. As far as possible, the samples from the two tapestries were taken from the same area. First samples from the Rijksmuseum's *Niobe's Pride* tapestry (appendix, no. 1) were taken, while samples from the Knole House tapestry of *Niobe's Pride* (appendix, no. 2) were provided by the conservators engaged in its treatment.<sup>69</sup>

A total of seven samples of types 1, 2 and 3 were taken from both tapestries with a magnesium rod. A combination of iron and sulphur (ferrous sulphate) was found in six of them, with the exception of one sample (type 3) which proved to be unusable because the silk fibre had deteriorated.<sup>70</sup> In order to identify the presence of organic dyes, a diluted hydrochloric acid solution was dripped on to the magnesium rod and evaporated after extraction. Finally, the samples were analysed using liquid chromatography, which revealed tannins.<sup>71</sup>

Carbon and a small percentage of calcium in addition to iron and sulphur were found in the point measurements



from the SEM-EDX analysis of three samples from the National Trust's tapestry.<sup>72</sup> The combination of calcium, carbon and, according to OED, phosphorus could point to the presence of an ink with bone black.<sup>73</sup> In the area where these last two samples were taken it is obvious that two types of retouches had been made side by side.

Three photographs were taken of types 1 and 3 retouches on the tapestry from the small Diana set in Museum Prinsenhof Delft (appendix, no. 3) with the multi-spectral camera, two of them with a UV and an IR filter. These photographs clearly show the presence of retouches, which were probably made with iron gall ink. It seems that a carbon-based pigment was sometimes also used.

*Figs. 14a, b*  
Detail of the folded section, in which the border between faded and nonfaded is easy to see, front and back of the tapestry (appendix, no. 1).  
Photo: May Merkhouwer



*Fig. 15*  
Taking a sample using the MOMS method (appendix, no. 1).

## Conclusions

Thanks to the analyses, the research has provided insight into six types of retouching or *afzetten*. It has also provided a new use for the MOMS method. It has been established that *afzetten* was used under the responsibility of François Spiering and Karel van Mander in some of their tapestries one or more times by heightening their colours, and retouches do indeed also feature on high-quality tapestries from the Northern Netherlands. Both weavers largely adhered to Charles v's Ordinances regarding *afzetten* in terms of the nature of the materials, the places on the tapestry and the time of application.

However, Spiering did not comply when it came to retouching the shadows of the lettering and adding the strings of the bows. Red and white chalk was found in faces and limbs in Van Mander's tapestries, but so far no black *pinoir*. Spiering, on the other hand, did not use any red or white chalk to accentuate faces and limbs. It is likely that different materials were used to accentuate outlines in the borders: iron gall ink and bone black. In *The Unknown Scene from the Story of Diana* (appendix, no. 3) iron gall ink was also probably used for adding shadows to the foliage. The use of

*viligreyn*, which the Ordinances permitted for *afzetten*, was not detected in the retouches, since neither kermes nor madder were found. However, madder was actually used for dyeing wool and was found on the back of the tapestry that had not faded.

It can be established with a considerable degree of certainty that the accentuation of the outlines in the borders of the National Trust's tapestry *Niobe's Pride* (appendix, no. 2) was done soon after it was made. However, the retouches encountered alongside and in faded areas of colour were only applied at a later stage. The fact that several brushstrokes were found next to each other may indicate that the colours of the tapestry were heightened twice and the first version was retouched later. At least twenty years elapsed between the making of the two Niobe tapestries, but the heightening on them is so alike that it is conceivable it was done by the same person.

The results presented here should be seen as a starting point for further research into the touching up of tapestries by Spiering and Van Mander II and their contemporaries, in the collections of the Rijksmuseum and others.

## ABSTRACT

During the restoration of two highly accredited tapestries (2013-21) from the Rijksmuseum collection, *Niobe's Pride* (BK-1954-69-A) and *Alexander and Jaddua* (BK-1961-52), we discovered an interesting phenomenon that warranted further investigation. It concerns retouches that are not the result of restorations but, because of the colour and placement, are reminiscent of the work of *afzetters*. The tapestries were woven in the early seventeenth century in the workshops of François Spiering and Karel van Mander II in Delft, and are part of the *Tapisserye van Diana* set and the series showing the life of Alexander the Great respectively.

In collaboration with the Cultural Agency of the Netherlands (RCE) (chemical) research was conducted into the nature of the materials used for *afzetten* and the dyes were analysed. Three tapestries, from the National Trust Collections (UK) and Museum Prinsenhof Delft, which form part of the series, were also involved in the research.

In this article we examine the history of the development of *afzetten*, and the resulting regulations that Charles v established in 1544 in his Ordinances. This is followed by the presentation of the first research results regarding the positions and nature of the retouches, and the extent to which Charles v's rules were followed.

## APPENDIX

## Examined Tapestries: Object and Research Information

	Tapestries from the Diana set: Object information	Retouches	Research method	Results and conclusions
I	<p><i>Niobe's Pride</i></p> <p>Rijksmuseum, Amsterdam BK-1954-69-A 1610 359 x 529 cm (h x b) Warp: wool Weft: wool and silk, 8 warp threads/cm</p> <p><i>FRANCISCVS.SPIRINVS.FECIT.ANNO 1610</i> in the narrow yellow silk edge above the border. Delft city mark: arms of Delft flanked by the letters <i>H D</i> in the blue border lower left. Weavers mark in the blue border lower right.</p>	<p>Type 1: brownish black outlines of the vines, leaves, ornaments and fruit in the borders.</p> <p>Type 2: brownish black shadow and outlines of foliage.</p> <p>Type 3: brownish black outlines of garments where the purple/violet has faded.</p> <p>Type 4: brownish black shadow of the signature and the date.</p> <p>Type 6: greyish black strings of the longbows.</p>	<p>RCE 2020-119 Photographs with a multi-spectral camera and Dino-Lite.</p> <p>Three samples of retouches using MOMS*, SEM-EDX* And UHPLC-PDA-HRMS*:</p> <p>RCE 2020-119-5 (type 1): upper right in the narrow border.</p> <p>RCE 2020-119-7 (type 2): shadow of foliage on the right.</p> <p>RCE 2020-119-6 (type 3): hair-ribbon of the woman on the far right.</p>	<p>2020-119-5 en 6: Fe, digallic acid, ellagic acid and gallic acid. The presence of Fe together with tannin indicates an iron gall complex which points to the presence of iron gall ink.</p> <p>In RCE 2020-119-7 there were no results because of the excessive presence of silk fibres.</p>
			<p>Two samples taken for dye analysis using UHPLC-PDA-HRMS*:</p> <p>RCE 2020-119-1 Reddish pink thread (wool) from the hair- ribbon of the woman on the left.</p> <p>RCE 2020-119-3 Light violet thread(wool) in the sky.</p>	<p>In both samples: anthragallol 3-methyl ether, rubiadin, xantho purperine, alizarin, and quinizarin, which point to madder (viligreyn). Indigotin and isatin were also found. These point to the presence of indigo.</p>

2	<p><i>Niobe's Pride</i></p> <p>National Trust Collections, Knole House, Sevenoaks NT 1300801.3 c. 1590-1610 335 x 525 cm (h x b) Warp: wool Weft: wool and silk, 8 warp threads/cm</p> <p><i>FRANCISCVS SPIRINGIVS FECIT</i> in the narrow yellow silk edge above the border. Brussels city mark flanked by the letters <i>B B</i> in the narrow blue border lower left.</p>	<p>Type 1: brownish black outlines of the vines, leaves, ornaments and fruit in the borders.</p> <p>Type 2: brownish black shadow and outlines of foliage.</p> <p>Type 3: brownish black outlines of garments where the purple/violet has faded.</p> <p>Type 4: brownish black shadow of the signature and the date.</p> <p>Type 6: greyish black strings of the longbows.</p>	<p>RCE 2020-163 Four samples of retouches using MOMS*, SEM-EDX*, UHPLC-PDA-HRMS*:</p> <p>RCE 2020-163-1 (type 1): upper right in the narrow horizontal border.</p> <p>RCE 2020-163-2 (type 1): upper right in the narrow vertical border.</p> <p>RCE 2020-163-3 (type 3): Sleeve of Niobe's garment.</p> <p>RCE 2020-163-4 (type 3): Undergarment of person front centre.</p>	<p>In all four samples: Fe, digallic acid, ellagic acid and gallic acid. The presence of Fe together with tannin indicates an iron gall complex which points to the presence of iron gall ink.</p> <p>RCE 2020-163-1, 3 and 4: High concentrations of C, Ca, S, P, which eventually point to the presence of bone black.</p>
			<p>Six samples taken for dye analysis using UHPLC-PDA-HRMS*:</p> <p>RCE 2020-163-sky: light violet coloured (wool) thread in the sky.</p> <p>RCE 2020-163-66, 67: Dark purple (wool) thread in the wing and over-garment of the angel in the upper right corner.</p> <p>RCE 2020-163-68: Purple (wool) thread in the over-garment of the angel in the upper right corner.</p> <p>RCE 2020-163-69: Mixed purple thread of wool and silk in overdress of the angel in the upper right corner:</p> <p>RCE 2020-163-70: Light purple(wool) thread of the skirt of the angel in the upper right corner.</p>	<p>RCE 2020-163-sky, 66 en 67: <math>\alpha</math> &amp; <math>\beta</math>-hydroxy orcein, <math>\alpha</math> &amp; <math>\beta</math>-<math>\gamma</math>-amino orcein, <math>\gamma</math>-amino &amp; <math>\gamma</math>-hydroxy orcein, lucidin, rubidin, which indicate orchil; indigotin and isatin were also found, which points to the presence of indigo.</p> <p>RCE 2020-163-68: carminic acid, flavokermes acid, kermesic acid, lucidin, rubiadin, which point to cochineal and tannin from gall nuts.</p> <p>RCE 2020-163-69: Wool: <math>\alpha</math> &amp; <math>\beta</math>-hydroxy orcein, <math>\alpha</math> &amp; <math>\beta</math>-<math>\gamma</math>-amino orcein, <math>\gamma</math>-amino &amp; <math>\gamma</math>-hydroxy orcein, lucidin, rubidin, which indicate orchil and indigotin, isatin which indicates indigo. Silk: carminic acid, flavokermes acid, kermesic acid, which indicate cochineal.</p> <p>RCE 2020-163-70: <math>\alpha</math> &amp; <math>\beta</math>-hydroxy orcein, <math>\alpha</math> &amp; <math>\beta</math>-<math>\gamma</math>-amino orcein, <math>\gamma</math>-amino &amp; <math>\gamma</math>-hydroxy orcein which indicate orchil.</p>



	Tapestries from the Diana set: Object information	Retouches	Research method	Results and conclusions
3	<p><i>Unknown Scene from the Story of Diana</i></p> <p>Museum Prinsenhof Delft PDTex-117 c. 1613-20 281 x 237 cm (h x b) Warp: wool Weft: wool and silk, 8 warp threads/cm</p> <p><i>FRANCISCVS.SPIRINGIVS.FECIT.</i> in the narrow yellow silk edge above the border.</p>	<p>Type 1: brownish black outlines of the vines, leaves, ornaments and fruit in the borders.</p> <p>Type 2: brownish black shadow and outlines of foliage.</p> <p>Type 3: brownish black outlines of the garments where the purple/violet colour has faded.</p> <p>Type 4: brownish black shadow of the signature and the date.</p> <p>Type 6: greyish black strings of the longbows.</p>	<p>RCE 2021-033 Photographs with multi-spectral camera in three places:</p> <p>RCE 2021-033-117-E (type 1): outlines of left border, centre.</p> <p>RCE 2021-033-117-F (type 2): Shadow of foliage, left in the central scene, middle.</p> <p>RCE 2021-033-117-D (type 6): string of the bow.</p>	<p>RCE 2021-033-117-E and 117-F: the outlines show dark in uv light, suggesting the possible presence of iron gall ink.</p> <p>RCE 2021-033-117-D (type 6): distinction between iron gall ink and carbon-based ink hard to perceive.</p>
4	<p><i>The Story of Cephalus and Procris</i></p> <p>Rijksmuseum, Amsterdam BK-1954-69-B c. 1593-1610 351 x 542 cm (h x b) Warp: wool Weft: wool and silk, 8 warp threads/cm</p> <p><i>FRANCISCVS.SPIRINGIVS.FECIT.</i> in the narrow yellow silk edge above the border.</p>	<p>Type 1: dark brown outlines of the vines in the narrow borders.</p> <p>Type 6: greyish white strings of the longbows.</p>	<p>Based on photographs and with the naked eye.</p>	
5	<p><i>The Story of Latona and the Lycian Peasants</i></p> <p>Rijksmuseum, Amsterdam BK-1969-2 c. 1593-1610 354 x 336 cm (h x b) Warp: wool Weft: wool and silk, 8 warp threads/cm</p> <p><i>FRANCISCVS.SPIRINGIVS.</i> in the narrow yellow silk edge above the border.</p>	<p>Type 1: light retouching of the brownish black outlines of the vines in the narrow borders adjacent to the large borders.</p>	<p>Based on photographs and with the naked eye.</p>	

6	<p><i>The Story of Jupiter and Callisto</i></p> <p>Rijksmuseum, Amsterdam BK-2006-75. c. 1593-1610 360 x 260 cm (h x b) Warp: wool Weft: wool and silk, 8 warp threads/cm</p> <p>FRANCISCVS.SPIRINVS.FECIT in the narrow yellow silk edge above the border</p>	<p>Type 1: dark brown outlines of the vines in the narrow borders adjacent to the large borders.</p> <p>Type 6: greyish black strings of the longbows.</p>	<p>Based on photographs and with the naked eye.</p>	
7	<p><i>The Story of Cephalus Telling Phocus about his Dog Lelaps and the Savage Fox</i></p> <p>Rijksmuseum, Amsterdam BK-2006-76 c. 1593-1600 360 x 400 cm (h x b) Warp: wool Weft: wool and silk, 8 warp threads/cm</p> <p>FRANCISCVS.SPIRINGIVS.FECIT. in the narrow yellow silk edge above the border. Brussels city mark flanked by the letters B B in the blue border lower left.</p>	<p>Type 6: greyish black strings of the longbows.</p>	<p>Based on photographs and with the naked eye.</p>	
8	<p><i>The Story of Meleager and Atalanta</i></p> <p>Rijksmuseum, Amsterdam BK-2006-77 c. 1593-1600 360 x 470 cm (h x b) Warp: wool Weft: wool and silk 8 warp threads/cm</p> <p>FRANCISCVS.SPIRINGIVS. in the narrow yellow edge above the border. Brussels city mark flanked by the letters B B in the blue border lower left.</p>	<p>Type 1: dark brown outlines of the vines in the narrow borders adjacent to the large borders.</p> <p>Type 6: greyish black strings of the longbows.</p>	<p>Based on photographs and with the naked eye.</p>	

	Tapestries from the Alexander the Great set: object information	Retouches	Research method	Results and conclusions
9	<p><i>Alexander and Jaddua</i></p> <p>Rijksmuseum, Amsterdam BK-1961-52 c. 1617 436 x 523 cm (h x b) Warp: wool Weft: wool and silk 8 warp threads/cm</p> <p><i>I KMANDER FECIT' AN: '1617.</i> (.....) in the narrow yellow edge above the border. Delft city mark: arms flanked by the letters <i>H D</i> (Holland Delft) in the narrow blue border lower left.</p>	<p>Type 1: brown outlines of the vines, in the outlines of the leaves, ornaments and fruit in the borders.</p> <p>Type 5: red and white accents in limbs, faces and nails.</p>	<p>RCE 2018-038-15 (type 1): greyish black line in detail border.</p> <p>RCE 2018-039 Five samples of retouches using XRF*, SEM-EDX*</p> <p>RCE 2018-039-1 (type 5): red in finger.</p> <p>RCE 2018-039-2 (type 5): red in arm.</p> <p>RCE 2018-039-3 (type 5): red in arm.</p> <p>RCE 2018-039-4/5 (type 5): white in fingernail.</p> <p>RCE 2018-039-7 (type 5): pink.</p>	<p>RCE 2018-038-15 (type 1) Ca, Cu, possibly Pb. It was not possible to identify the pigment used as black/grey retouch; this might be due to the larger spot size of the handheld XRF. A superficial sampling may be needed.</p> <p>RCE 2018-039-1 (type 5) XRF*: S, Ca, Cu, Fe, possibly Pb. Indicates red ochre.</p> <p>RCE 2018-039-2 (type 5) XRF*: S, Fe, Cu, Ca, possibly Pb. SEM-EDX*: C, O, S, Ti, Ca, Ba, Fe, Al, Mg, (Si). Indicates red ochre.</p> <p>RCE 2018-039-3 (type 5) XRF*: S, Fe, Ca, Mn, Cu, possibly Pb. Indicates red ochre.</p> <p>RCE 2018-039-4/5 (type 5) XRF*: S, Ca, Cu, Ba, possibly Pb. SEM-EDX*: C, O, S, Ca, Ba, (Fe). Indicates white chalk.</p> <p>RCE 2018-039-7 (type 5) XRF*: S, Ca, Cu, possibly Pb. Indicates red ochre.</p>
10	<p><i>The Burning of Persepolis</i></p> <p>Rijksmuseum, Amsterdam BK-2011-19 c. 1619 438 x 513 cm (h x b) Warp: wool Weft: wool and silk, 8 warp threads/cm</p> <p><i>I KMANDER FECIT' AN: '1619</i> in the narrow edge above the border. In the blue edge on the right: <i>κ</i>.</p>	<p>No retouches found. Six samples of purple/violet threads were taken.</p>		<p>See RCE 2012-2</p>

II	<p><i>King Porus before Alexander the Great</i></p> <p>Museum Prinsenhof Delft PDTex-3 1619 420 x 675/681 cm (h x b) Warp: wool Weft: wool and silk, 8 warp threads/cm</p> <p><i>I KMANDER FECIT' AN 1619</i> in the narrow yellow edge above the border. Delft city mark: arms flanked by the letters <i>H D</i> (Holland Delft) in the narrow blue border lower left.</p>	<p>Type 1: greyish black outlines of the vines, in the outlines of leaves, ornaments and fruit in the borders.</p> <p>Type 5: reddish pink accents in arms and legs and faces.</p>	<p>RCE 2021-033 Photographs with multi-spectral camera with infra-red and ultraviolet filters in several places.</p>	<p>Cannot indicate any iron gall ink.</p>
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- \* Experimental UHPLC-PDA-HRMS Ultra-High Performance Liquid Chromatography with Photo-Diode Array and High-Resolution Mass Spectrometry detection. The sample was photographed with a USB microscope (Dino-Lite) at approx. 35 x magnifications. After extraction the analysis was carried out with an ultra-high performance liquid chromatograph with an ultraviolet visual photodiode array detector and a HESI – high resolution mass spectrometer.
- \* Scanning Electron Microscopy (SEM) with Energy Dispersive X-Ray Analysis (EDX).
- \* Magnesium Oxide Micro Sampling was developed by the RCE in 2015 to take samples of nano-particles of ink from the surface of a drawing using a magnesium oxide rod.
- \* X-ray fluorescence (XRF) is a process of fluorescence whereby material irradiated with X-rays also emits X-rays. The emitted photon has a longer wavelength. The difference in wavelength represents a difference in energy which as a rule is lost as heat.

## NOTES

- \* With thanks to Art Ness Proaño Gaibor (RCE Cultural Heritage Agency of the Netherlands), May Berkouwer (May Berkouwer Textile Conservation), Maria Jordan (National Trust textile conservation studio), Anita Jansen (Museum Prinsenhof Delft), Helen Wyld (National Museums Scotland), Hillie Smit, and my colleagues in the Rijksmuseum: Sara van Dijk, Erma Hermens, Marieke de Jong, Suzan Meijer and Bianca du Mortier. I would like to express my special thanks to my close colleagues in the Rijksmuseum's textile conservation department for the continued support they gave me.
- 1 Tapestry (tapisserie): 'hand-woven, plain weave construction where the warp is completely hidden by the weft, weft threads of different colours are added according to the design, enabling the creation of large pictorial hangings.' Border: 'an integral section of weaving which acts as a decorative frame around the main field of a tapestry.' See Ksynia Marko, *Woven Tapestry: Guidelines for Conservation*, London 2020, p. 333 and p. 327 respectively.
  - 2 Ebelte Hartkamp-Jonxis and Hillie Smit, *European Tapestries in the Rijksmuseum*, coll. cat. Amsterdam (Rijksmuseum) 2004, pp. 208-09, no. 52a.

- 3 Examples of this are *Large-Leaf Verdure with Animals*, Southern Netherlands, 1525-30, inv. no. BK-17257; *Court Scene with a Monarch on a Throne Surrounded by Courtiers*, Southern Netherlands, 1500-25, inv. no. BK-NM-9192; *Court Scene with a Monarch Receiving the Symbols of Power*, Southern Netherlands, 1500-25, inv. no. BK-NM-8838; *The Harvester's Meal*, Southern Netherlands, 1700-25, inv. no. BK-NM-178; *Acis and Galatea Listening to Polyphemus' Song*, Paris, 1680, inv. no. BK-1959-59-A. See also Mieke Albers, 'Colouring the Past for the Future: Retouching of Old Restorations in a Tapestry', in *A Woven Alliance: Tapestry, Yesterday, Today and for Tomorrow*, Edinburgh 2013 (ICON, Textile Group Symposium Postprints 2012), pp. 93-100.
- 4 Gerardina Tjaberta van Ysselsteyn, *Geschiedenis der tapijtweverijen in de Noordelijke Nederlanden: Bijdrage tot de geschiedenis der kunstnijverheid*, 2 vols., Leiden 1936, vol. 1, pp. 13-17.
- 5 Sophie Schneebalg-Perelman, 'Le 'retouchage' dans la tapisserie Bruxelloise ou les origines de l'édit impérial de 1544', *Annales de la Société royale d'Archéologie de Bruxelles* 50 (1961), pp. 191-210.
- 6 'Afzetten geschiedde uit den aard der zaak het meest en het sterkst bij mindere kwaliteiten', see Van Ysselsteyn 1936 (note 4), vol. 1, p. 13.
- 7 From a surviving document written in 1593 by the Treasurer-General of Zeeland, Jacob Valcke, it can be concluded that there were already references to 'tapisserye van Diana' while it was still being made, see Van Ysselsteyn 1936 (note 4), vol. 2, no. 104; Hartkamp-Jonxis and Smit 2004 (note 2), pp. 208-09, no. 52a, pp. 224-25, no. 55.
- 8 The conservation of NT 130081.3, commissioned by the National Trust, was carried out by May Berkouwer Textile Conservation. See <http://www.mbtexcon.co.uk/> (consulted 8 September 2021).
- 9 The National Trust and May Berkouwer established the presence of retouches in the tapestry in the borders and vegetation and in the central scene. Commissioned by Anita Jansen (Museum Prinsenhof Delft) to compile condition reports for the two tapestries, Carola Holz, a textile restorer from the Rijksmuseum, established the presence of retouches with the naked eye. In the case of inv. no. PDTEX 117 they were applied in the outlines of ornaments and vines in the borders, the vegetation and the shadow of the lettering, and in the case of inv. no. PDTEX-3 in the outlines of ornaments and vines in the borders and in faces and limbs (see also appendix).
- 10 Literature gives no decisive answer about whether it was a tapestry workshop or a commercial establishment.
- 11 Fernand Donnet, 'Les tapisseries de Bruxelles, Enghien et Audenarde pendant la furie espagnole', *Annales de la Société royale d'archéologie de Belgique* 8 (1894), pp. 445-47.
- 12 Van Ysselsteyn 1936 (note 4), vol. 1, p. 68.
- 13 Ebelte Hartkamp-Jonxis, *Geweven mythen. Ovidius' Metamorphosen en de Diana-tapijten van het Rijksmuseum*, exh. cat. Maastricht (Bonnefantenmuseum) 2009, p. 20.
- 14 Van Ysselsteyn 1936 (note 4), vol. 2, pp. 75-91, no. 165.
- 15 National Trust Collections, United Kingdom: Knole House, Kent, inv. nos. NT 130081.2 (*Diana and Actaeon*, 1590-1610) and NT 130081.3 (*Niobe's Pride*, c. 1590-1610), see <https://www.nationaltrustcollections.org.uk/object/130081.2> and [/130081.3](https://www.nationaltrustcollections.org.uk/object/130081.3) (both consulted 18 August 2021).
- 16 Abraham Bredius, 'De tapijtfabriek van Karel van Mander de jonge, te Delft 1616-1623', *Oud Holland* 3 (1885), pp. 1-21, esp. p. 12.
- 17 There are two tapestries from this set in the Rijksmuseum's collection: *Isabelle and Rodomonte* (BK-1962-6) and *Scipio and the Ambassadors from Carthage* (BK-1972-77).
- 18 Bredius 1885 (note 16), p. 3.
- 19 We do not know when the Brussels city mark was replaced by Delft's. It must have been after 1603 because two tapestries from a signed and dated set about Amadis de Gaula bore the Arms of Delft as well as those of Brussels. Milan, Museo Poldi Pezzoli, inv. nos. 401, 402.
- 20 Hartkamp-Jonxis and Smit 2004 (note 2), pp. 208-09, no. 52a.
- 21 In 2008 or 2009 this tapestry together with *The Story of Cephalus and Procris* was cleaned by De Koninklijke Manufactuur De Wit in Mechelen using aerosol suction. The retouches were not lost using this treatment. It has not been established whether they have changed in colour strength.
- 22 Seven of them have survived. We know the whereabouts of five of them, see appendix, nos. 9-11, and note 24. Two of these are in the Rijksmuseum collection: *Alexander and Jaddua* (BK-1961-52, no. 9) and *The Burning of Persepolis* (BK-2011-19, no. 10).
- 23 Bredius 1885 (note 16), p. 21.

- 24 Karel van Mander II, *The Battle of Granicus*, 1619, Art Institute of Chicago, inv. no. 1911.429; Karel van Mander II, *The Satrap of Suza before Alexander the Great*, 1619, Berlin, Bundesamt für zentrale Dienste und offene Vermögensfragen (BAVD), inv. no. 23941-2012.
- 25 Nicolaas van Winghe (trans.), *Flavii Josephi des vermaerden Joetschen hystorie scrivers Seven boecken, van die Joetsche oorloghe, ende destructie van Jerusalem ....*, Antwerp (Symon Cock) 1552.
- 26 The tapestry was cleaned in the Rijksmuseum in 1991. Nothing can be found in the restoration report about retouches found, so it is not possible to discover whether wet cleaning has an influence on their fading or disappearance.
- 27 A cartoon painter made the design for a tapestry (gobelin), on which the scene, order of weaving and use of colour are indicated. See F.P. Thomson, *Tapestry: Mirror of History*, Newton Abbot 1980, p. 16. For Van Mander's background, see Bredius 1885 (note 16), p. 3.
- 28 Colleagues who worked in the museums with the relevant tapestries in their collections were asked if they would check them for retouches. Photographs of the retouches of tapestries appendix nos. 1 to 9 were sent for clarification and the colour and location of the retouches were indicated. Some of the colleagues approached could not spare the time to do this, so some of the tapestries could not be examined. These are Karel van Mander II, *The Battle of Granicus*, 1619, Art Institute of Chicago, inv. no. 1911.429; Karel van Mander II, *The Satrap of Suza before Alexander the Great*, 1619, Berlin, Bundesamt für zentrale Dienste und offene vermögensfragen (BAVD), inv. no. 23941-2012; François Spiering, *Diana and Actaeon*, 1590-1610, Knoke House, Sevenoaks (Venetian Ambassador's Room), National Trust, inv. no. NT 130081.2.
- 29 See note 9. The conservation of NT 130081.3, commissioned by the National Trust, was carried out by May Berkouwer Textile Conservation. See <http://www.mbtexcon.co.uk/> (consulted 8 September 2021).
- 30 The tapestry was cleaned in April 2018 by De Koninklijke Manufactuur De Wit in Mechelen using aerosol suction (see also note 21). Ebelte Hartkamp-Jonxis and Hilly Smit observed that both tapestries were woven to the same design; see Hartkamp-Jonxis and Smit 2004 (note 2), pp. 205-06.
- 31 One of the two National Trust tapestries was included in this research (appendix, no. 2), the other is *Diana and Actaeon*, 1590-1610, inv. no. NT 130081.2, see notes 15 and 28.
- 32 A new Diana series (which included this tapestry) was completed in 1613. It was commissioned by the States-General as a gift for Elizabeth, the daughter of the English king James I. The design was made by David Vinckboons rather than Karel van Mander I. To distinguish it from the famous Diana set, it was described in contemporary documents as the 'small Diana set'. The scenes are depicted in an entirely different way. The gift was probably the first edition of the 'small Diana set', twenty years after the Diana tapestries to a design by Karel van Mander. See Hartkamp-Jonxis 2009 (note 13), pp. 27, 28; Anita Jansen, 'Een Delfts wandtapijt uit circa 1615 met Diana en haar jachtgezelschap', *Studies in textiel* 3 (2016), pp. 197-200.
- 33 This tapestry was cleaned in 2014 by De Koninklijke Manufactuur De Wit in Mechelen using aerosol suction. The retouches have not disappeared as a result of this treatment and it has not been established whether they have changed in colour strength (see also note 21).
- 34 *The Story of Cephalus and Procris*, BK-1954-69-B (appendix, no. 4), *Meleager and Atalanta*, BK-2006-77 (appendix, no. 8) and *The Story of Latona and the Lycian Peasants*, BK 1969-2 (appendix, no. 5) are on permanent display in the Rijksmuseum. *The Story of Jupiter and Calisto*, BK-2006-75 (appendix, no. 6) and *Cephalus Tells Phocus the Story of his Dog Lelaps and the Savage Fox*, BK-2006-76 (appendix, no. 7) were not available for examination because of an internal depot move.
- 35 Francisque Michel, *Recherches sur le commerce, la fabrication et l'usage des étoffes de soie, d'or et d'argent et autres tissus précieux en occident, principalement en France pendant le Moyen Age*, Paris 1852, p. 482.
- 36 Heinrich Göbel, *Wandteppich*, Leipzig 1923, vol. 1, p. 26.
- 37 Koenraad Brosens, Klara Alen and Astrid Slegten, 'Claiming Commerce, Quality and Credit: *Raisons d'être* of the Antwerp and Brussels Tapissierspanden (Sixteenth-Eighteenth Centuries)', *Textile History* 49 (2018), no. 1, pp. 5-21. DOI, 10.1080/00404969.2018.1440709.
- 38 *Hachure*: 'a form of shading produced by weaving elongated triangular shapes using

- two colours or tones of weft and increasing and decreasing numbers of picks (rows) in both colours'. Marko 2020 (note 1), p. 329.
- 39 Brussels City Archives, *Le Registre de la Gilde* no. 1436, fols 156, 160, *préambulance de l'ordonnance de 1525*. With thanks to Virginie Coumans, deputy head archivist.
- 40 Alphons Wauters, *Les tapisseries bruxelloises essai historique sur les tapisseries et les tapisseries de haute et de basse-lice de Bruxelles*, Brussels 1878, pp. 134-38. See also Schneealg-Perelman 1961 (note 5).
- 41 Truusje Goedings, *Afsetters en meester-afsetters: De kunst van het kleuren 1480-1720*, Nijmegen 2015, pp. 7-10.
- 42 A.J. van der Aa, *Biografisch woordenboek der Nederlanden*, vol. 8, Haarlem 1867, p. 727; Anonymous, *Historien ofte gheschiedenissen der vromer martelaren ...*, Dordrecht 1585, p. 515.
- 43 Martine van Welden, *Productie van wandtapijten in de regio Oudenaerde: Een symbiose tussen stad en platteland (15de tot 17de eeuw)*, Louvain 2006 (diss. KU Louvain), p. 429, appendix 12.
- 44 Helen Wyld, 'The Gideon Tapestries at Hardwick Hall', *West 86th* 19 (2012), no. 2, pp. 231-54, esp. pp. 240-41.
- 45 Van Ysselsteyn 1936 (note 4), vol. 2, p. 190, no. 409. On 27 March 1624 master tapestry makers Jan Rufelaer and Arent de Lepelaer described a certain Francoys van der Plancken, an *afzetter* from Gouda: 'Den voorn. Franchoys van der Plancken wel over de veertich jaeren hebben gekent ende dat zy hem ordinaris hebben gebruyckt ende noch gebruycken in 't schoonmaeken ende afsetten van haeren tappyten' (Have known Franchoys van der Plancken well for forty years and that they have used him ordinarily and still use him to clean and heighten the colours of their tapestries). Gouda Municipal Archives, Not. Arch., inv. no. 86, nt. C. van de Houff: 1624 Maart 27.
- 46 *Twee Meesterboeken van het St. Lucas-gilde te Delft, 1613-1715*, vol. 1 (1613-49), p. 26, The Hague, KB/The Royal Library of the Netherlands, 75 c 6, included in Fr. D.O. Obreen, *Archief voor Nederlandsche kunstgeschiedenis: Verzameling van meeren-deels onuitgegeven berichten en mededeelingen betreffende Nederlandsche schilders, plaat-snijders etc.* [better known as *Meesterboeken van Obreen*], Rotterdam 1877-90, vol. 1 (1877-78), p. 26, <https://objects.library.uu.nl/reader/index.php?obj=1874-33492&lan=en#page/39/45/49/394549182242223988195701303494102154.jpg/mode/zup> (consulted 15 December 2021); John Michael Montias, 'The Guild of St. Luke in 17th-Century Delft and the Economic Status of Artists and Artisans', *Simiolus* 9 (1977), no. 2, pp. 93-105, esp. p. 93.
- 47 Textile fibres are dyed using a dye liquid in a dye bath, in which the fabric is immersed, so that the fibres can totally absorb the dye.
- 48 *Afzetten*: 'Met iets van een sterk afstekende kleur omboorden' (Border with something of a strongly contrasting colour). Guido Geerts and Ton den Boon, *Van Dale groot woordenboek der Nederlandse taal*, Utrecht/Antwerp 1999, p. 152, no. 13.
- 49 In 1404 'hij die tapijt boert [omboordt]' (he who edges tapestry) was described as a *mersenier* in St Michael, the guild that also included *merseniers*. See Van Welden 2006 (note 43), pp. 52-53.
- 50 Woven slit: 'opening created when two separately woven areas of weft meet along adjacent warps and do not interlock'. See Marko 2020 (note 1), p. 334.
- 51 *Le Registre de la Gilde* 1525 (note 39).
- 52 Sophie Schneealg-Perelman, *Peintres-retoucheurs des tapisseries au 17e siècle: Procès de Jean Raes et Jacques Geubels contre G. Reynbout, 1621-1626*, Brussels 1960, pp. 270-88.
- 53 Van Ysselsteyn 1936 (note 4), vol. 2, pp. 1-22.
- 54 The dyestuff kermes is obtained from the dried bodies of the female of the insect *Kermes vermilio* Planchon (formerly *Coccus ilicis*) living on the kermes oak (*Quercus coccifera* L.). See Judith H. Hofenk de Graaff et al., *The Colourful Past: Origins, Chemistry, and Identification of Natural Dyestuffs*, London 2004, p. 54.
- 55 Jacoba van Veen's manuscript contains the terms 'fyligreijn' or 'vollegreijn', and in *Een cleyen verff-boecxken* (1638) it is called 'viligreyn'. Old urine was added to the wool shavings dyed with madder and the whole was heated in a cauldron. Everything was brought to the boil again with arsenic, and finally gum Arabic was added. Alum was introduced once the wool had dissolved. This dyed each surface a faint red. See also [www.archiefbankleuven.be/index.php/conste-des-ververs-anno-1620-henrieus-coghen-disthensis-fecit-woonende-tot-loven-iin-olberch-talrijke-recepten-voor-het-verven-van-lijnwaad](http://www.archiefbankleuven.be/index.php/conste-des-ververs-anno-1620-henrieus-coghen-disthensis-fecit-woonende-tot-loven-iin-olberch-talrijke-recepten-voor-het-verven-van-lijnwaad) (consulted 12 May 2021).
- 56 Red chalk: 'it is relatively water resistant, has a distinct and intensive colour, and adheres to many surfaces with a quite

- indelible, rainproof, and lightfast mark. These properties make it an interesting material for several professions'. See Birgit Reissland, Jaap den Hollander, Nina Wichern and Ineke Joosten, 'Introduction of Natural Red Chalk as Drawing Material to Italian Renaissance Artists,' in Luca Fiorentino and Michael W. Kwakkelstein (eds.), *Disegni a Pietra Rossa: Fonti, Tecniche e Stili, 1500-1800*, Florence 2021, pp. 11-20, esp. p. 12. *Pierre noir* is a carbon-based pigment. There is much confusion among the archaic and historical nomenclature for pigments based on carbon. It is now known as a 'conté à Paris Pierre noir pencil', which is soft and indelible and matt deep black. See Barbara Berrie, *Artists Pigments: A Handbook of their History and Characteristics*, London 2007, vol. 4, p. 3. See also [http://makeyournextmove.nl/~jcdenhollander/roodkrijt/abraham\\_bloemaert.html](http://makeyournextmove.nl/~jcdenhollander/roodkrijt/abraham_bloemaert.html) (consulted 4 May 2021).
- 57 Van Ysselsteyn 1936 (note 4), vol. 2, p. 39, no. 88.
- 58 Cultural Heritage Agency of the Netherlands, research reports RCE 2012-048, RCE 2018-039, RCE 2020-119 and RCE 2020-163.
- 59 The tapestry was probably too large for the intended space and was therefore shortened by folding it in.
- 60 Hofenk de Graaff et al. 2004 (note 54), p. 276.
- 61 These dye analyses, carried out on some of Spiering's tapestries, were done by the Central Laboratory and the Cultural Heritage Agency of the Netherlands, see Judith. H. Hofenk de Graaff, 'Woven Bouquet': *Dyestuff-Analysis on a Group of Northern Dutch Flowered Table-Cloths and Tapestries of the 17th Century*, Venice 1975 (International Council of Museums, Committee for Conservation, Triennial Meeting, Central Research Laboratory for Objects); see also note 54. Research in 2012 into tapestries by Van Mander (appendix, nos. 9 and 10) proved that he also used mixtures of orchil, as well as Armenian cochineal (*Porphyrophora hamelii* Brandt), Mexican cochineal (*Dactylopius coccus* Costa.) and indigo from woad (*Isatis tinctoria* L.) or Indigofera varieties. The dye research on *The Burning of Persepolis* (no. 10, RCE 2012-2) shows the presence of Polish and Armenian cochineal and madder. No orchil was found in the samples taken. By contrast, orchil was found in the dye research on *Alexander and Jaddua* (no. 9, RCE 2012-48).
- 62 Elsie Janssen, "The Burning of Persepolis" – A Tapestry from a Set of "The Story of Alexander the Great", *The Rijksmuseum Bulletin* 60 (2012), no. 2, pp. 82-99, esp. p. 89, note 17.
- 63 RCE 2020-163.
- 64 RCE 2020-119.
- 65 RCE 2018-039, 2021-033.
- 66 RCE 2018-039.
- 67 'Carbon-based black pigments comprise any pigments that contain some form of elemental carbon as either sole or the chief ingredient. Carbon-based pigments can be classified according to starting material used and method of manufacture.' See Berrie 2007 (note 56), p. 2. 'The general term for animal black is *carbon animal* or *noir animal* (French). Bone black (which does not always refer to a pigment) is *noir d'os* (French), *beenderzwart* (Dutch)', see *ibid.*, p. 1.
- 68 Magnesium Oxide Micro Sampling (MOMS) was developed in 2015 by the RCE to take samples of a number of nano-particles of ink from the surface of a drawing or letter by Vincent van Gogh, using a magnesium oxide rod, see <https://vangoghmuseum-assetserver.appspot.com/serve?id=5662848109772800&filename=201706-REVIGO-eng> (consulted 14 January 2022).
- 69 The materials and instructions required for this were sent in advance and the paint samples were taken during a Zoom meeting by May Berkouwer, under the supervision of Art Ness Proaño Gaibor (RCE). Anna Peck (May Berkouwer Textile Conservation), Maria Jordan (National Trust) and Mieke Albers (Rijksmuseum) were also present.
- 70 Hofenk de Graaff et al. 2004 (note 54), p. 286. The use of iron gall ink is not surprising because iron salts and plant extracts containing tannin were also used for dyeing brown and black silk, wool and linen.
- 71 RCE 2020-119#5 en #6, see appendix.
- 72 RCE 2020-163-REM, see appendix.
- 73 These are sample RCE 2020-163#1 (type 1) and RCE 2020-163#3 and 4 (type 3). See note 63, 64.