

## The Vienna wing panels by Geertgen tot Sint Jans and his drawing and painting technique

Two recent publications, the catalogue of the 2008 exhibition in Rotterdam, *Vroege Hollanders, Schilderkunst van de late Middeleeuwen*,<sup>1</sup> and the online catalogue of the Rijksmuseum's late fifteenth- and early sixteenth-century collection,<sup>2</sup> can be commended for having brought together information from several decades of research, including the results of various types of technical examination conducted from the 1980s to the present. Such in-depth research often stimulates more synthetic studies, such as those now appearing on key figures like Geertgen tot Sint Jans. Joos Bruyn recently discussed the liturgical underpinnings and other historical aspects of the wing panels in Vienna, while also making telling observations about Geertgen's stylistic development.<sup>3</sup> The dendrochronological data that Peter Klein has generated over the last years was taken up and incorporated completely into the catalogue mentioned above, where it was discussed with its implications for the chronology and make-up of Geertgen's oeuvre. This essay will focus on findings obtained by infrared reflectography (IRR) and the insights this technique provides into the overall working process and the inter-relationships among paintings in the Geertgen group.

Technical documentation of Geertgen's work, especially by infrared photography and reflectography, now covers almost all the paintings attributed to the artist. In preparation for the Rotterdam exhibition, the two paintings in Berlin, *St. John in the Wilderness* and the *Virgin and Child*, were studied with infrared for the first time.<sup>4</sup> Around the same time, the Rijksmuseum took the opportunity to restore its *Adoration of the Magi*. During the 2007-2008 treatment, a new IRR composite was made of the entire painting; and other types of technical material were gathered, such as X-rays and paint samples.<sup>5</sup> Although the *Adoration of the Magi* in Winterthur was not in the Rotterdam show, it also underwent restoration and was exhibited just afterwards in 2007-2008 at the Oskar Reinhart Collection 'Am Römerholz'. The accompanying catalogue published a full complement of technical documents.<sup>6</sup> At the request of the organizers of the Rotterdam exhibition, the conservation research staff at the Louvre restudied the *Resurrection of Lazarus* and reported in detail (in 2008) on the complete technical documentation, which included ultraviolet, X-radiography, paint samples, and new IRR of the painting in its entirety.<sup>7</sup> Taken together, the recent efforts are a welcome addition to those infrared reflectography investigations the present author had already carried out some years earlier. The group I studied includes two of the paintings mentioned above (in Amsterdam and Paris) plus an additional six works.<sup>8</sup> Most importantly, the group of studied works includes the critical pieces in Vienna in the Kunsthistorisches Museum: the *Lamentation of Christ* and the *Burning and Restitution of the Bones of the Baptist* (plates 1 and 2). These panels are the interior and exterior sides of the right wing of the altarpiece Geertgen painted for the hospital order of St. John in Haarlem, and they are the only part of the altarpiece

Plate 1  
Geertgen tot Sint Jans, *The Lamentation of Christ*, panel, 175 x 139 cm. Vienna, Kunsthistorisches Museum.  
Photo: museum.



that survives today. As is well-known, these panels are of utmost importance, because they comprise Geertgen's only documented work. Karel van Mander described these paintings, which he was still able to see in Haarlem, in his *Schilder-boeck* (1604). Van Mander reported that the one wing had been saved but had already been sawn apart by the time of his writing and that the paintings had originally been made for the high altar of the convent's church. According to Van Mander, the other wing and the central panel, which he knew had been a depiction of the *Crucifixion*, had been destroyed, which as we now know must have happened in the spring of 1573, when Spanish troops ravaged the church of St. John.<sup>9</sup>

Any study of Geertgen tot Sint Jans must begin with the Vienna wing panels. For this reason, it was unfortunate that the panels could not be lent to the Rotterdam exhibition. Since there was no opportunity to discuss these works in a lengthy catalogue entry, this article is an attempt to fill that gap, at least in part. In addition, even though infrared documentation of the Vienna wing has been published twice, the publications made only selective use of the material. In 1988, J.R.J. van Asperen

Plate 2  
Geertgen tot Sint Jans, *The Burning  
and Restitution of the Bones of the  
Baptist*, panel 175 x 139 cm.  
Vienna, Kunsthistorisches Museum.  
Photo: museum.



de Boer discussed several results of the preliminary IRR examination that he and I had made of the Vienna wing panels in 1978.<sup>10</sup> In 1991, Truus van Bueren and I published IRR material from the more extensive 1988 examination, focusing on the different approaches to portraiture in the scene with the *Burning of the Bones of the Baptist*.<sup>11</sup>

The Vienna wing panels reward close study. The following text will be based on the copious scanning notes that were taken during four days of IRR study in 1988, as well as the nearly 1000 reflectograms that I recorded, of which only a portion has been published. Information also derives from notes related to study of the paint surface with the magnifying glass, and accompanying slide details. Gradually Geertgen tot Sint Jans' distinctive working process emerges, which in turn helps define the practices of a larger workshop. This essay will focus on IRR findings and information gained about the overall compositional build-up, from the layout sketch on the ground through intermediate paint layers to details of the surface. Accordingly, the organization of the essay follows the stages of the painting process.



1  
Detail with two IRR composites in the Magdalene's drapery in the *Lamentation* showing contour underdrawing in a liquid medium. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Leeftang.



2  
IRR of the rock-cut tomb and basket in the *Lamentation* showing loose, dry underdrawn lines. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.

### Underdrawing

As is common in infrared studies, larger works often yield the most representative examples of underdrawing, and Geertgen's paintings are no exception. It has been estimated that the altarpiece of which the Vienna wing was a part would have been one of the largest of its time. When opened and with its original frame, it would have been up to six meters wide.<sup>12</sup>

The surviving two panels, each 139 cm wide, with slight differences in height, 172 as opposed to 175 cm, have been underdrawn throughout -- from foreground to background. If one could imagine the paint away, the overall layout, as lines on a whitish ground, would seem rather diagrammatic, as well as decidedly uneven in appearance. The artist combines different methods of layout in these works (compare figs. 1, 2 and 3). Large figures dominate in the *Lamentation*, and in the underdrawing, these forms would have stood out as flat, outlined shapes, with rather exacting contours defining internal drapery folds, but with very little shading. Many hands appear in the underdrawing as simple, fingerless enclosed shapes like mittens (see fig. 5), and this applies as well to bare feet that look like socks. There is little detailing in the faces, although outlines define the shape of heads. In contrast, the ground areas, bushes, trees and landscape have barely been indicated. Here vague, random lines appear, occasionally clustered into a zone that can only be described as having been scribbled (see fig. 26). There are still other areas where forms were fully worked up, hatched repeatedly, and changed (as will be discussed more fully below). These areas would have differed again from the abbreviated layout found in the figures and setting. The dense underdrawing occurs only sporadically: in the draperies of figures in the lower foreground of the *Lamentation* and in one figure in the *Burning of the Bones of the Baptist*.

Given that such large amounts of surface in the Vienna panels have been laid out with loose or rudimentary lines, it may not come as such a surprise that only



3  
IRR of the figure to the left of Julian the Apostate in the *Burning of the Bones of the Baptist* showing heavy cross-hatching in chalk in the underdrawing of the robe as well as the opacity of the dark blue undergarment. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.



4  
IRR of St. Adrian's robe in the right wing of the Prague *Adoration of the Magi* triptych showing underdrawn contours and hatchings in a liquid medium. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.

traces of underdrawing could be detected in the smaller paintings attributed to Geertgen. In the artist's exquisite *Man of Sorrows* (24.5 x 24 cm) in the Museum Catharijneconvent in Utrecht, only a few possible underdrawn contours registered in the angels' robes and some of the faces.<sup>13</sup> Similar contours, perhaps done in a liquid medium, have been reported for draperies in the tiny *Adoration of the Magi* in Cleveland (30.1 x 19.4 cm), and quite thin, exacting lines, possibly in a dry medium, were detected near a rafter in the background shed (see fig. 33).<sup>14</sup> Despite the dark pigments, London researchers noted occasional thin lines of underdrawing, presumably in a dry medium, in Geertgen's *Nativity at Night* (34 x 25.3 cm).<sup>15</sup> IRR of the Berlin *St. John in the Wilderness* (42 x 28 cm) revealed only traces of underdrawing, a few seemingly dry lines in the background and thin, possibly liquid contours in John's blue robe.<sup>16</sup> Technical study thus reveals that there are differences in the degree to which the large and small paintings in Geertgen's oeuvre have been laid out. Still, what has been revealed does have some significance, for the artist appears to have made these underdrawings in both a liquid and dry medium.

As a result, the paintings most conducive to infrared study are the larger works, including the panels in Vienna as key pieces, along with the *Adoration of the Magi* in Amsterdam, the triptych with the *Adoration of the Magi* in Prague, and the *Resurrection of Lazarus* in Paris. Infrared reflectography, as will be seen, provides crucial findings linking the technique of these works, establishing in turn the broad outlines of Geertgen's workshop routine.

#### *Underdrawing in a fluid medium*

Geertgen's underdrawings are actually a combination of media, one an ink-like liquid and the other a dry material. In the larger works, the layout in a fluid medium occurs almost exclusively as outlines around large, foreground figures and along drapery folds. In the *Lamentation*, this type of underdrawing serves as the basic layout for almost the entire lower half of the painting. There is much less liquid underdrawing in the *Burning of the Bones of the Baptist*: it may occur in the figure of Julian the Apostate and a few others near him, but it registers most clearly in the red robe of the man with a turban. These layout lines for figures are usually quite long, and relatively straight. When they change direction, they bend at angles. Occasionally, they end abruptly in a hooked shape or crossing bar, creating a T-shape (see fig. 9). The same underdrawing mode is found in the Paris *Resurrection of Lazarus*, the *Adoration of the Magi* in Amsterdam, and the *Adoration of the Magi* triptych in Prague (compare figs. 4, 6 and 7).

The similarity of the contour underdrawing in these works goes beyond the simple fact that it is linear and liquid. The lines share physical characteristics, suggesting not only that the underdrawings were made with the same material but also that they were made with the same type of drawing instrument. The lines are not sinuous, nor do they 'flow'. They do not vary much in width, and they often appear to have been applied in a series of strokes rather than in one smooth, continuous motion. In publications so far, this type of contour underdrawing has been described as brush, which seems a reasonable assumption. The liquid itself varies in tone, depending on the degree of concentration or dilution. Some parts of lines appear quite watery, which would seem easier to achieve with a brush. In addition, some lines end either in extremely long, tapering points or concentrations of liquid in droplets. In many of the contours, liquid also concentrates along the outer edges of the line. This is often seen as characteristic of pen lines, but the phenomenon can also occur in brush strokes.<sup>17</sup> There are, moreover, in each of Geertgen's large paintings, some curves or underdrawn flourishes that would seem to require the pliancy of a brush. Such details include: some of the broader, modulated contours in the Vienna panels, such as those in Christ's shroud and in his hand (fig. 5); the

5  
IRR of Christ's repositioned hand in the *Lamentation* underdrawn as a mitt-shape. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Leeftang.

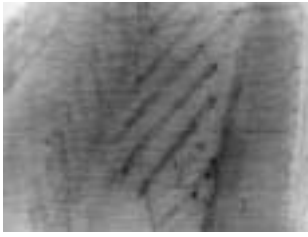


6  
IRR of Peter in the *Resurrection of Lazarus* showing underdrawn contours and hatchings in a liquid medium, as well as the opacity of Peter's undergarment and Christ's sleeve. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.

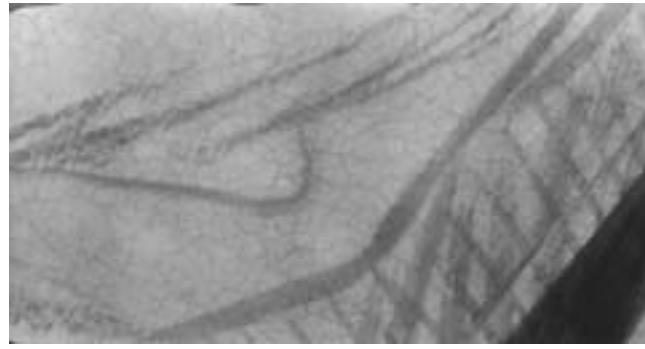


7  
IRR of Joseph's robe in the Amsterdam *Adoration of the Magi* showing underdrawn contours and hatchings in a liquid medium. IRR: © Stichting RKD; composite: M. Wolters.

long, tapered hatchings in Peter's shoulder or under his hand in the *Resurrection of Lazarus* (fig. 6); and similar, long fluid hatchings in Joseph's robe above his foot in the Amsterdam *Adoration* (fig. 7). Estimating on the basis of the scale of the infra-red documentation,<sup>18</sup> the liquid lines average around 3-4 mm, and are sometimes up to 0.5 cm in width, a thickness which would seem too wide for pen.



8  
Close-up IRR of underdrawn pen strokes in the *Glorification of the Virgin*. IRR: © Prof. Dr. Molly Faries/Stichting RKD.



9  
Close-up IRR of the combination of brush and chalk underdrawing in St. John's sleeve (see fig. 20). IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.

Pen has been suggested for underdrawing in a few works attributed to Geertgen, only tentatively for the *Adoration of the Magi* in Cleveland,<sup>19</sup> and more definitively for the Rotterdam *Glorification of the Virgin*.<sup>20</sup> In the Rotterdam painting, the pen strokes are much easier to recognize. They are short and blunt, and their width can be estimated at less than 1 mm, c. 0.5 mm (fig. 8). Similar strokes in the Cleveland painting have been measured at 1 mm. The width of line may thus help in distinguishing the pen underdrawing from that done by brush.<sup>21</sup>

The character of the contour underdrawing may be due in part to the material used for the liquid. The underdrawings in these works by Geertgen have often been described in reports as 'gritty', and in reflectograms, the underdrawing often exhibits dark granules of a coarsely-ground material. Fortunately, the carbon-containing component of the ink-like underdrawing in the *Holy Kinship* in Amsterdam has been analyzed by Arie Wallert and identified as black chalk.<sup>22</sup> Although this material may seem an unusual choice for underdrawings, it is not a unique occurrence, for the same material has been found in the liquid underdrawing of several other north-Netherlandish painters from the same period.<sup>23</sup> When investigating underdrawing materials, London researchers did not consider black chalk (actually carbonaceous shale, a sedimentary rock) as a possibility for liquid underdrawings and postulated instead that burnt plant matter would have been a frequent source of carbon-based inks.<sup>24</sup> Known recipes for ink do not provide much supporting evidence, although Meder believed the *lapis niger* mentioned in a treatise by Jehan Le Bègue (c. 1431) referred to black chalk.<sup>25</sup> Additional instrumental analysis will hopefully lead to further identifications, providing us with more examples of this material in underdrawings before it came into widespread use in the sixteenth century.

In these works by Geertgen, shading along or inside the liquid contours is extremely limited. When it does occur, it takes the form of hatched strokes which are almost always drawn on a sharp slant, usually from the upper right to lower left, although some may veer in other directions. Cross-hatching in a fluid material is almost non-existent, although an exception occurs in the sleeve of John the Evangelist in the Vienna *Lamentation* (see fig. 21). As mentioned above, the internal forms of hands, i.e. fingers, are often not defined, so that the forms have a mitten-shape in the underdrawing. This idiosyncratic manner of drawing hands also appears in the Paris and Prague paintings.

Because of the precision of the more exacting, liquid-contour layout and the fact that there is little compositional change, it is likely that Geertgen had carefully worked out the designs of these parts of the composition in advance before transferring them to the ground. One scholar, Lisa Murphy, has convincingly argued that

some motifs in these areas relate to preparatory sketches and/or workshop drawings. Elizabeth's proper left sleeve in the *Holy Kinship* (see fig. 7, p. 229) in its final painted form is closer to the underdrawing in the sleeve of the Mary on the right side of the *Lamentation*, suggesting that they both derive -- not from each other -- but from a common model.<sup>26</sup> In addition, as is well known, art historians have found that some of Geertgen's figures were influenced by Hugo van der Goes and other southern Netherlandish painters, so that the artist had almost certainly developed a stock of model drawings that he adapted for these elements of his compositions.

*Underdrawing in a dry material*

Geertgen executed other portions of his layouts in a dry material, most likely black chalk. There is as yet no instrumental analysis of the dry material proving this assertion, but the visual characteristics make this identification a strong possibility.



10  
IRR showing loose, wavy underdrawn lines for an unexecuted tree in the background of the *Lamentation*. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.



11  
IRR of the chalk underdrawing in the background of the Amsterdam *Adoration of the Magi*. IRR: © Stichting RKD; composite: M. Wolters.



12  
IRR of the chalk underdrawing and underpainted tree in the background of the *Lamentation*. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.

The material appears coarse and crumbly, and, rather than adhering to the drawing surface in evenly-applied, smooth strokes, the chalk contours skip over ridges of an underlayer. When in close conjunction, or overlapping each other, the chalk lines can clearly be distinguished from the fluid ones (fig. 9). The possibility thus exists that Geertgen used the same material as the basis for both his liquid and dry underdrawing.

Chalk is used exclusively in backgrounds of the Vienna panels as well as the Amsterdam and Prague *Adoration of the Magi* compositions. In Vienna, the artist also sketched with chalk in the landscape between and around figures. The lines here are often long and loose, as seen in the detail near the rock tomb in the right background of the *Lamentation* (see fig. 2). Similar long, sweeping contours indicate branches in foliage, and smaller trees are underdrawn with loose circular strokes or a few wavy lines. A tree that was omitted in the far background of the *Lamentation* compares well with the scribbled lines for trees in the left and right background of the Amsterdam *Adoration of the Magi* (compare figs. 10 and 11). The underdrawn buildings in the backgrounds of the Vienna and Amsterdam paintings are also especially close. The structures appear to have been sketched in quickly and with some force (compare figs. 11 and 12). In the Prague *Adoration*, Geertgen sketched similar trees and buildings with loose, dry lines, but seemingly, with less bravura.<sup>27</sup> Underdrawn figures in the backgrounds of these paintings look like tiny puppets; they are outlined with thin, dry lines, and changes are frequent. In the background of the Amsterdam *Adoration*, heads were underdrawn larger, and some figures were omitted (see fig. 11) or transformed. Caspar's steed, originally underdrawn as a horse, was changed in paint into a camel, providing local color, as Van Asperen de Boer noted.<sup>28</sup> Background figures in the Vienna *Lamentation* and the Prague *Adoration* exhibit changes very similar to those seen in Amsterdam: gestures were modified and swords and other weapons were repositioned.<sup>29</sup> In contrast, no underdrawing could be detected at all in the background of the Louvre *Resurrection of Lazarus* (for further discussion, see below under intermediate paint stages).

Geertgen makes a sharp demarcation in the Amsterdam *Adoration* between the chalk background and the fluid layout in the foreground: it occurs precisely in the brick wall just above the Three Magi. In the Vienna *Lamentation*, Geertgen divides the layout in a slightly different way. Nicodemus and the servant near the rock tomb were underdrawn in chalk, perhaps because they were new design elements. They thus gravitate to the background and are set off from the devotees who form a close ring around the dead Christ.

In the *Burning of the Bones of the Baptist*, chalk dominates in the layout. It is used for almost all forms in the composition, with the exception of few figures in the lower foreground: the bearded man in red with a turban, the red tunic of the man shoveling near the open grave, and possibly Julian the Apostate.<sup>30</sup> Although the way the chalk is applied seems quite spontaneous and forceful, the morphology of the lines is actually the equivalent of those done in a wet medium. The linear arrangement of folds is the same, resulting from long, straight lines and angled contours forming triangular shapes. As an example, the pattern of chalk contours in the underdrawing of the figure in brown in the group of laymen to the right of the *Johannieters* is similar to the array of liquid fold lines revealed in the robe of John the Evangelist in the *Lamentation* (compare figs. 21 and 31). This gentleman's hand was also underdrawn in chalk as the familiar mitten-shape. The only other panels in the Geertgen group underdrawn entirely in black chalk are the exterior wings of the *Adoration of the Magi* altarpiece in Prague.<sup>31</sup> The underdrawing in the figures of Gabriel and Mary exhibits a similar forceful application of straight and angular lines (fig. 13). This finding helps explain the preponderance of chalk sketching in the layout of the *Burning of the Bones of the Baptist*, since it is also an exterior wing.

Some faces in the Vienna panels have features that are marked out with thin,

13  
 IRR of the chalk underdrawing  
 in an exterior wing of the Prague  
*Adoration of the Magi* triptych.  
 IRR: © Prof. Dr. Molly Faries/  
 Stichting RKD; composite:  
 M. Faries.



sketchy strokes that function more or less as placement lines. These lines are probably in black chalk. Geertgen shades the left side of Mary Cleophas's face on the left side of the *Lamentation* with a series of slightly curved strokes and places short dashes under her nose to indicate shadow (fig. 14). The left side of John the Evangelist's face has been shaded in a similar way, the dashes under his nose giving the impression he had a moustache in the underdrawing (see fig. 21). The outer contour of the Virgin Mary's face has been widened, so that the partial circle for her eye and the straight line at the bottom of her nose become visible in the underdrawing (fig. 16). This manner of using abbreviated strokes to lay out a face is very similar to that in the Virgin's face in the Prague *Adoration* (fig. 15). Sketchy markings have also been detected in faces in the *Resurrection of Lazarus*, such as the circles for eyes, including pupils, in the background figure next to Christ (fig. 17).<sup>32</sup> In the *Burning of the Bones of the Baptist*,



14  
 IRR of the face of Mary Cleophas  
 in the *Lamentation* showing some  
 sketchy lines underdrawn in chalk.  
 IRR: © Prof. Dr. Molly Faries/  
 Stichting RKD; composite: M. Faries.



15  
 IRR of the face of the Virgin Mary  
 in the Prague *Adoration of the Magi*  
 showing sketchy placement lines.  
 IRR: © Prof. Dr. Molly Faries/  
 Stichting RKD; composite: M. Faries.



16  
 IRR of the face of the Virgin Mary  
 in the *Lamentation* showing sketchy  
 placement lines. IRR: © Prof.  
 Dr. Molly Faries/Stichting RKD;  
 composite: M. Faries.



17  
 IRR of background faces in the  
*Resurrection of Lazarus* showing  
 sketchy underdrawn eyes. IRR: ©  
 Prof. Dr. Molly Faries/Stichting  
 RKD; composite: M. Faries.

where chalk underdrawing predominates, the faces of Julian the Apostate and the bearded soldier in the lower right corner were sketched with heavier chalk strokes.

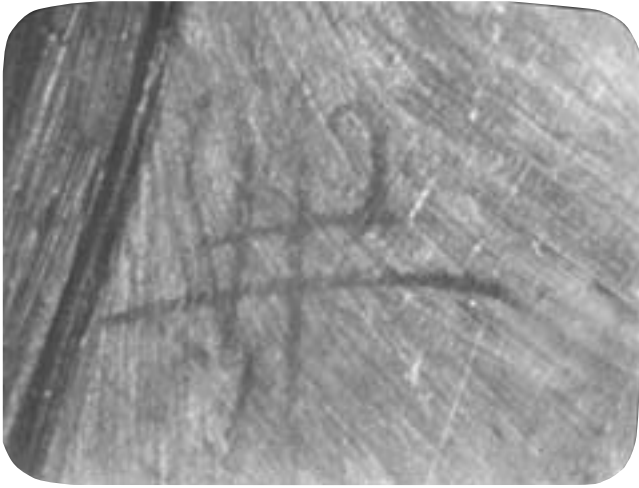
In the sarcophagi on the left side of the *Burning of the Bones*, IRR revealed thin, exacting lines which must have been laid out with the help of a straightedge. When viewed in raking light, it can be seen that these lines have been incised. The possibility thus exists that the incisions are registering in infrared, rather than underdrawing per se. Some of the lines run through hands of the knights of St. John, so that the outlining of the graves must have preceded the layout of the figures, or the hands were additions made later in the paint stage.

Chalk was also used for the color notations that have been discovered in Geertgen's Vienna wings.<sup>33</sup> The fact that they appear in figures outlined with fluid contours suggests that they were added later in a separate underdrawing stage. There are five notations in the *Lamentation*: 1-2) *groen* (green) and *roet* (red) near the juncture of the Magdalene's green mantle with her red garment (see fig. 1); 3) *roet* (red) in St. John the Evangelist's red robe near his proper right shoulder (see fig. 21); 4) *pp* (an abbreviation for *purper*, purple) in the dark purple-gray garment just to the left of the praying hands of Mary Cleophas on the left edge (fig. 18); and 5) *gruen* (green, spelled differently here) near Nicodemus's lower hand in his green garment. If there were a notation for blue under the Virgin's robe, it would not be possible to detect since the color remains opaque in infrared reflectography (see further below, under intermediate paint layers). There are five more notations in the *Burning of the Bones of Saint John*: 1) *roet* (red) in the red trousers of the man with a shovel in the lower left corner; 2) *r* (an abbreviation for red) in the red tunic of the man shoveling next to the open grave; 3) *roet* (red) in the red cloak of the man to the right of Julian the Apostate, near the left arm; 4-5) *groen* (green) in the green coat of the soldier in the lower left corner, under the second button from the top, and *r* (red) in his sleeve. It is customary for notations for red to predominate when color is indicated in the layout, and the form of the letter 'p' in purple is similar to that found in other north-Netherlandish paintings.<sup>34</sup> No color notations have been found in any other works by Geertgen.

Another type of notation appears in the white drapery under the sleeve of the woman on the right edge of the *Lamentation: Iac[-]B* (Jacob ?) (see fig. 19). This is possibly a designation for 'Maria Jacobi' (i.e. Mary Salome, who according to the legend of the Holy Kinship, was the mother of John the Evangelist and James the Great).<sup>35</sup> There are, however, inconsistencies in the identification of this figure in the art-historical literature.<sup>36</sup> In this paper, the woman wringing her hands in the lower left corner will be identified as the Magdalene. She has been taken, in reverse, from a Magdalene figure by Rogier van der Weyden; and, in addition, she wears the same green robe and has the same hairdo as the Magdalene in Geertgen's *Resurrection of Lazarus*.<sup>37</sup> In this case, the woman on the right is indeed Mary Salome, and she has been properly labelled, indicating that she -- and not the Magdalene -- is the Mary who should stand at Christ's feet.

#### *Revisions in black chalk*

In the Vienna wings, Geertgen not only uses brush and black chalk in combination but he also uses them in sequence, one on top of the other. This procedure is remarkable, because Geertgen is sketching in chalk on top of already-existing liquid underdrawing in what would seem to be its 'fixed' form. This makes it clear that the chalk underdrawing is a corrective phase and that the artist is continuing to redesign after the initial layout. The areas of reworking are also the only ones where the black chalk has been heavily applied and, even more significantly, where hatching and cross-hatching are found in abundance. Again, the form of the angled hatching done in chalk is exactly the same as that done in brush (compare the hatchings in figs. 4 and



18  
Close-up IRR of color notation for purple in the *Lamentation*.  
IRR: © Prof. Dr. Molly Faries/Stichting RKD.



19  
IRR of Mary Salome's sleeve in the *Lamentation* showing contour underdrawing in a liquid medium and, in her skirt, a notation written in chalk. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Leeftang.

31). In the *Lamentation*, many of the foreground figures were reworked in this manner.<sup>38</sup> The areas of revision are often difficult to read in infrared, since the two stages of underdrawing overlap each other. The elaborate, green robe of the Magdalene in the lower left corner was changed by having the upper portion of the cloak lie flatter and the lower folds bundle up and project further forward in space (fig. 20). St. John's robe was also altered: the folds on the left side were shifted in position; shadows were more precisely defined, and the drapery was lengthened downwards in position (fig. 21). Christ's legs and feet were completely repositioned (fig. 22). His feet were originally higher, and they lay next to each other with space between. In chalk, Geertgen angled the legs downward, brought the feet together, and shaded freely to enhance the sense of volume. The shroud was widened in chalk, and then narrowed in paint. There is only one figure in the *Burning of the Bones of the Baptist* that has been reworked as extensively. In the white robe with ornamental, striped borders to the left of Julian the Apostate, there are lines of an underlying contour underdrawing<sup>39</sup> that deviate from the extremely dense hatching and cross-hatching defining the final drapery volumes (see fig. 3).

These revisions represent significant change, occurring, as they do, in main, foreground figures. In the *Burning of the Bones of the Baptist*, Geertgen accentuates the complex draperies in the figure flanking Julian the Apostate, who commands the action. In the *Lamentation*, Geertgen's modifications most likely reflect the necessary

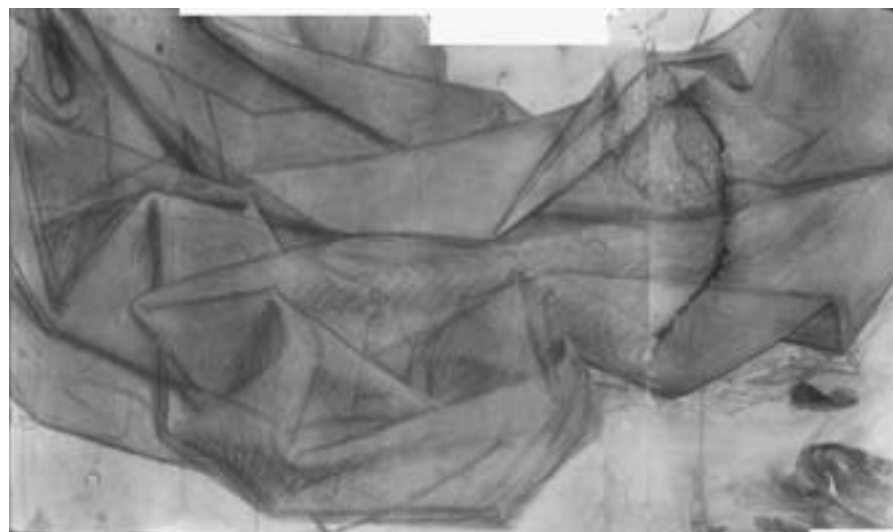
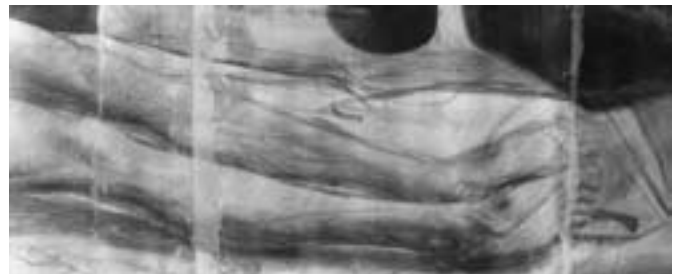
21

IRR of St. John in the *Lamentation* showing underdrawn lines in chalk revising the position of the folds that had already been laid out in brush. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.



20

IRR of the Magdalene's robe in the *Lamentation* showing underdrawn lines in chalk revising the position of the folds that had already been laid out in brush. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.



22

IRR of Christ's legs in the *Lamentation* showing underdrawn lines in chalk revising the earlier position of the legs laid out in brush. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Leeftang.



23  
IRR of the vase underdrawn in chalk in the foreground of the Prague *Adoration of the Magi*. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.



24  
Detail of Christ's feet in the *Lamentation* with chalk underdrawing showing through the thin paint. Photo: M. Faries

adaptation of figures taken from drawings on flat sheets of paper to the new spatial situation of the evolving painting. Nonetheless, by lowering and pushing portions of the figures forward in space, Geertgen alters the basic viewer-image relationship and brings the mourning of Christ into closer proximity to the beholder.

The only other time Geertgen made revisions in chalk in a late design stage is in the Prague *Adoration of the Magi*. A bit of chalk underdrawing detected in the white drapery near the left side of the *Adoration* indicates that the lower edge of the Virgin's robe may have been altered. In addition, the large jar in the foreground (the gift of a Magus) was inserted into the composition only late in the painting process and was underdrawn entirely in chalk (fig. 23).

### Priming layer and the position of the underdrawing

Before beginning to paint, it was usual for painters of this period to seal the ground with a layer called an isolation layer, or priming. Geertgen appears to have followed this customary practice, for reports of previous IRR examinations and descriptions of radiographs repeatedly note the likely presence of a priming layer. Broad streaking registers in both types of document, suggesting the application of a layer with a wide brush over the entire surface of the painting. Based on the reports, priming can be suspected in the Vienna panels, the Prague *Adoration*, and the London *Nativity at Night*.<sup>40</sup> Samples, however, have verified priming layers in the Paris *Resurrection of Lazarus*, the *Adoration of the Magi* paintings in Amsterdam, Cleveland, and Winterthur, and the *Holy Kinship* in Amsterdam.<sup>41</sup> Seen in cross-section, the priming

appears as a thin layer of lead white on top of the ground. When underdrawing is present, it is also on top of the ground and under the priming. This build-up is completely in line with general fifteenth-century practice.<sup>42</sup>

What still remains a question is the position of the corrective chalk phase. The underdrawing in samples taken so far always appears as one layer, and no locations have been sampled where the underdrawing occurs in two phases. A detail in the Prague *Adoration* illustrates the problem. In IRR, some chalky underdrawn lines in the lid of the added jar in the foreground appear to overlap the edge of the Madonna's blue robe (see fig. 23).<sup>43</sup> Inside the lid, the robe appears dark and opaque in the infrared document because a gray underpainting lies beneath the blue. If the chalk underdrawing is indeed on top of the underpainting, or the blue, it would imply that Geertgen sometimes continued to draw into the painting stage. Occasionally, in thin areas of paint, the chalk revision stage can be viewed by the naked eye. It appears to skip over the ridges of an underlying layer, as seen in the chalk lines in the underdrawing of Christ's feet (fig. 24). Could, then, the chalk revisions lie on top of the priming rather than underneath?<sup>44</sup> Clarification of this question requires further study with the stereomicroscope and sampling; but since this stage is so characteristic of Geertgen's working process, it would seem worthwhile investigating this aspect of the artist's technique in more detail.

### Changes in composition

The extent to which Geertgen took the compositions of the Vienna wing panels through separate design stages in the underdrawing is exceptional, but the artist also continued to make changes as the painting progressed. Describing these changes illustrates Geertgen's continuing, creative process and shows how and where the painter directed his attention to craft a more compelling image.

Modifications are found throughout the *Lamentation*. In the background, IRR revealed many small changes in the Calvary scene, such as shifts in the figures silhouetted against the sky and in the rope and ladder near the left edge as well as the omission of a strut underdrawn supporting a cross. Another omission occurs below the burial of the bad thief. A shovel was underdrawn that was as long as the grave opening (fig. 25); it was replaced by a bone and the pick lying on an angle against a stone. The painter also made significant alterations in scenic elements in the middle ground: on the right, Christ's grave inside the rock-cut tomb was painted in a higher position than underdrawn (see fig. 2), and the hill above the two Mary's on the left was painted as a larger, more rectangular shape. Costumes and ornament were modified, sometimes simplified and sometimes made more complex.<sup>45</sup> In the Magdalene, three round buttons (like those elsewhere in both Vienna paintings) originally closed the side opening of her dress, but were replaced by clips. In addition to the repositioning of Christ's upper hand illustrated earlier (see fig. 5), Geertgen also lengthened Christ's lower arm and thinned the contour of his stomach, making it appear more sunken. The attributes of Christ's passion, the crown of thorns and spikes, were added in paint only.

Geertgen made just as many changes in the *Burning of the Bones of the Baptist*. In the distance some trees were omitted or shifted in position.<sup>46</sup> Sketchy lines indicate changes in the architecture of the city, such as the archway, which was originally underdrawn much higher. The large, round tower was added in paint only, and the smaller tower was originally positioned more to the left. Another more significant alteration was made in the scenery, since the rounded hill just below the group of Jansheren exiting the city was painted higher and larger (fig. 26). Lower in the composition, in the open grave, there were many more bones underdrawn than just the



25  
IRR of an underdrawn shovel in the background of the *Lamentation*.  
IRR: © Prof. Dr. Molly Faries/  
Stichting RKD; composite:  
M. Faries.



26  
IRR showing a hill in the background of the *Burning of the Bones of the Baptist* underdrawn in chalk as a smaller form. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.

one now shown in paint. (Perhaps it would have been indecorous to suggest that some of John's remains might have been left behind.) The bones that are still included in the finalized image have been given careful attention: the two held by knights are clearly recognizable as an arm bone and a finger, and they were either reshaped or added late in the painting process. The finger was painted in a late paint stage on top of the black cloak of one knight, as was the knob of the arm bone, which was also widened in paint out over the black background color. Surely an accurate rendering of these relics would have been of utmost importance to the commissioners of the altarpiece.

### *Faces and hands*

Geertgen must have given faces and hands special attention, because some of the most telling changes occur in them. Since features are barely indicated or sketched only with loose placement lines, the expressions on faces, tears and red-rimmed eyes were all relegated to the final painting stage. In addition, many of the hands were underdrawn as mitten shapes, obligating Geertgen to define them further during the painting process. The sheets with studies of hands and heads in the Louvre that Châtelet attributed to Geertgen are exactly the type of study drawings that one would anticipate the painter used in this process of defining features. The techniques of the drawings, however, do not exhibit obvious parallels with the underdrawing or graphic details in the paint surface.<sup>47</sup>

Although Geertgen consistently lengthens fingertips, as in the hands of the Virgin, St. John, and Mary Salome on the right, the changes in the hands of Joseph of Arimathea and Nicodemus are more complicated and were taken through several stages (see figs. 27, 28 and 29). Nicodemus's lower hand was not predicted in the underdrawing. Since underdrawn fold lines run through the hand, it was obviously added during the painting process, and the fingertips also appear to have been lengthened. Joseph's hand was carefully reshaped several times. The hand was originally underdrawn as a



27  
Detail showing the hands of Nicodemus and Joseph of Arimathea in the *Lamentation*. Photo composite: M. Faries.



28  
IRR of the hand of Nicodemus in the *Lamentation*. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.



29  
IRR of the hand of Joseph of Arimathea in the *Lamentation*. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.

mitt; the underdrawn lines of this form run through the fourth and fifth fingers. The hand was then given a more detailed shape when it was delimited, but Geertgen then went on to enlarge the thumb and hand considerably beyond the delimitation, and once again, extended the tips of the fingers out over the background color. Joseph's hand may have been enlarged to match the size of Nicodemus's, and, in its final form, it closely resembles the hand of the middle Magus in a painting that served as a source for Geertgen on other occasions, Hugo van der Goes's *Montforte Altarpiece*. As gestures of fealty and devotion, these motifs play a critical role in transmitting the mood of the scene depicted.<sup>48</sup> Moreover, the attention Geertgen gave these gestures is underscored by similar changes in other paintings. In the Prague *Adoration of the Magi*, Geertgen changed Melchior's upper hand completely: it was originally higher, holding open the lid of the chalice (fig. 30). It is not entirely clear, but the first position of the hand may have been underdrawn in chalk. The final hand assumes a form similar to those in the *Lamentation*; the fingers curve, and the hand is held in front of



the chest.<sup>49</sup> It has also been noted that in the *Nativity at Night* Joseph does not hold a candle in his hand, as often occurs, but clutches his hand to his heart.<sup>50</sup> A very similar motif can be seen in the Cleveland *Adoration of the Magi*. In these cases, knowledge of the painting process can add to the appreciation of the way Geertgen developed meaningful gestures and employed them to effect.

### *Portraits*

In the *Burning of the Bones of the Baptist*, five *Johannieters*, identified by the eight-pointed white crosses on their robes, appear twice. They stand on the left side of the group of men behind the sarcophagi, and they reappear in procession in the middle ground walking towards the city that has recently been identified as Acri.<sup>51</sup> Although much of the underdrawing in these figures continues to be hidden by the black robes, most of the heads and hands have been delimited, suggesting that these shapes were reserved following some sort of layout. The five figures must be portraits, and it is even possible to recognize the same five faces in both groups.<sup>52</sup> Attempts, however, to identify the five knights or the six laymen on the right side of the foreground group have met with only partial success. The most plausible identification is that recently argued by Joos Bruyn: the predominate figure, clad in brown, in the group of laymen is Claes van Ruyven (d. 1492), sheriff of Haarlem and associate member of the order of St. John.<sup>53</sup> By combining dendrochronological and historical information, one can estimate that the commissioning of Geertgen's altarpiece could not be earlier than the early to mid 1480s.<sup>54</sup> It stands to reason, then, that the commander of the Haarlem order at that time, Jan Willem Jansz, would be portrayed in the group -- most likely as the knight about to receive an arm bone of St. John in his open hands (see fig. 35). Unfortunately, it has not been possible to recognize the same countenance in other known portraits of this individual. There is fuller discussion of this perplexing issue elsewhere.<sup>55</sup>



<sup>31</sup>  
IRR of the group of layman  
portrayed in the *Burning of the  
Bones of the Baptist*. IRR: © Prof.  
Dr. Molly Faries/Stichting RKD;  
composite: M. Faries.

The heads in this group of persons have been recognized as ‘among the most impressive portraits of the fifteenth century’.<sup>56</sup> It is interesting to learn, then, that Geertgen took different approaches to these faces in the underdrawing, suggesting not only the use of model drawings but also the insertion of some heads after an initial layout. This was first published some years ago by Truus van Bueren and myself,<sup>57</sup> and was discussed again more recently by Joos Bruyn, who associates the added portraits with historical events in Haarlem surrounding the death of Claes van Ruyven, implying that Geertgen was working as late as c. 1492/1493 on the altarpiece.<sup>58</sup> Three of the heads in the group of laymen have been underdrawn as blank, ovoid shapes (see fig. 31). This is not entirely surprising, since the artist was given to underdraw hands and feet as mitten-, or sock-shapes. Nonetheless, this implies that Geertgen originally

marked out three spaces for associate members of the order and that he probably relied on sketches taken from the sitters for completion of the portraits in paint. The head just to the left and behind Claes van Ruyven was not predicted in the underdrawing and was added later: lines of a staff (?) run through what was originally open space. It is tempting to associate this attribute of authority with sheriff van Ruyven, since in the finalized painting a shorter staff is held in his lower hand. In addition, the figure on the far right, sometimes identified as a self-portrait of the artist, was added later, perhaps on top of an underpainting layer (fig. 31).<sup>59</sup> Loose underdrawn lines of the bush nearby run through this figure's chest. A third head may also have been added: that of the man in brown somewhat awkwardly placed highest in the group. There are, however, no other forms laid out under this figure, and the lack of underdrawing alone cannot prove that the head is a later addition.<sup>60</sup> In contrast to the portraits of laymen, no clearcut underdrawing at all could be detected in the heads of the five Jansheren. Once again, Geertgen may have relied on sketches taken from the sitters, but since he lived in the convent, one can assume he could have consulted his patrons on a regular basis. These portrait heads have been worked up in exquisite detail (see also below, under reddish-brown contours).

### Idiosyncratic painting procedures

In addition to revealing underdrawings, infrared reflectography can also provide a great deal of information about intermediate paint stages as well as certain applications of paint in the final surface.

#### *Gray underpainting*

The infrared examinations cited in this paper have disclosed a recurring painting technique that can be considered a defining feature of the Geertgen group: a gray layer painted under dark blues -- as well as some green and purples. In IRR, deep blues, particularly those in the robes of the Virgin Mary, appear completely dark and opaque. Since blue pigments become relatively transparent in the spectral range of infrared reflectography, the effect must be due to a layer beneath that is toned with black, and thus infrared-absorbing. A detail from the Amsterdam *Adoration of the Magi* can illustrate the degree to which the addition of black can affect registration in infrared (fig. 32). Some of the blue folds of the Virgin's robe have been enlarged beyond their original borders; the blue extensions register as a light tone and differ markedly from the areas underpainted in gray, which are noticeably darker. Such opaque areas stand out clearly when a painting is documented in its entirety, as seen in the Virgin's robe in the IRR digital composite of the Cleveland *Adoration of the Magi* (fig. 33). In the X-radiograph, the same form is whitish, suggesting the addition of lead white in the underlayer. Samples confirm this. Deep blues in four paintings have been sampled, and the cross-sections show a thin layer directly under the blue that is a mixture of white and black.<sup>61</sup> Ostensibly, underpainting blues with gray would be an effective way to darken the color, and it was cost-saving, since it would preclude having to use larger amounts of expensive blue pigment.

This technique occurs consistently in the paintings in the Geertgen group. It has been detected in the key pieces in Vienna in the robe of the Virgin Mary in the *Lamentation* and in a few costumes in the *Burning of the Bones of the Baptist* (see fig. 3). In the Louvre *Raising of Lazarus* (see fig. 5, p. 239), it appears in the dark blue robe under Peter's red mantle and in the drapery over Martha's arm.<sup>62</sup> It is found in the Virgin Mary's robe in two more of the larger paintings, the Prague *Adoration* triptych and the Amsterdam *Adoration of the Magi* (where it also appears under Melchior's robe).<sup>63</sup> This painting practice is also employed in smaller works,



32  
IRR of the Virgin Mary's opaque blue robe in the Amsterdam *Adoration of the Magi* with underdrawing in the white undergarment. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.



33  
IRR of the *Adoration of the Magi* in Cleveland. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.



34  
IRR of the landscape background in the *Resurrection of Lazarus* showing gray underpainting. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.

such as the Cleveland *Adoration*, already mentioned, the Utrecht *Man of Sorrows*, and the London *Nativity at Night*, where it occurs again in the Virgin's blue robes.<sup>64</sup> While it can be assumed that the blue robe in the Berlin *Madonna and Child* is underpainted in gray, it is not entirely certain.<sup>65</sup> On the basis of IRR, the gray underlayer is not part of the paint build-up in the Berlin *St. John in the Wilderness*, but one would not expect it here, since the Baptist's robe in this painting is not a deep blue, but a lighter, more azure blue. Finally, the same practice of underpainting blues with gray has been documented in the *Holy Kinship* in Amsterdam and the *Adoration of the Magi* in Winterthur.<sup>66</sup>

Dark underpainting also appears in some greens and purples. One detail that has been published previously is the tree silhouetted against the background sky in the Vienna *Lamentation* (see fig. 12).<sup>67</sup> The castle to the left of the tree has been laid in with black chalk contours, but the tree has a noticeable dark shape at its core. Judging from the darkness of this layer, compared with the way other greens register, black must have been added to the underpainted form. Brush strokes appear in this layer, which are rather coarsely applied. Since similar broad strokes appear in infrared further to the right (see fig. 10), the underpainting may extend in a horizontal band. Another broadly-applied underpainting was detected in the background of the Louvre *Resurrection of Lazarus*; in this case, however, the gray underlayer extends underneath the entire, greenish background (fig. 34).<sup>68</sup> This prevented the detection of any underdrawing in this area. Gray under green may also occur in draperies, for, in infrared, the dark green robe of the black Magus remained opaque in the Prague *Adoration*.<sup>69</sup> It has been verified by a paint sample that Christ's purple robe in the *Resurrection of Lazarus* has a gray underpainting;<sup>70</sup> in infrared, the robe appears almost black. The same may be true of Mary Cleophas's violet-gray garment under her black mantle in the Vienna *Lamentation*, since the color is almost totally opaque in IRR.

#### *Reddish-brown contours*

Previous studies of painting technique in the Geertgen tot Sint Jans group have reported that flesh areas are outlined with reddish to reddish-brown contours. Lorne Campbell noted reddish contour lines in the London *Nativity at Night* and mentioned that they also occurred in the Louvre *Raising of Lazarus*, the Utrecht *Man of Sorrows*, and the Vienna panels.<sup>71</sup> The researchers who produced the recent catalogue on the *Holy Kinship* found the same painting practice throughout the Rijksmuseum's painting, particularly in female faces.<sup>72</sup> These brownish contours have thus been seen as typical of Geertgen's works, but they are actually a fairly widespread painting technique. They appear in works by other north-Netherlandish masters, and they also occur in early Cologne painting.<sup>73</sup>

Nonetheless, the use of reddish-brown contours is quite elaborate in the Vienna panels; it can, in fact, be described as 'drawing' in paint and frequently involves a combination of brownish and white contours. In the Vienna panels, such fine detailing can be noticed in faces, hands, and even feet (see fig. 24). Similar fine lines, in both brown and white paint, carefully define the veins and wrinkles in the hand of Nicodemus that was added during the painting process (see fig. 27). In the lower eyelids of the female mourners, Geertgen suggested tears welling up by applying a series of tiny stipples and dashes of white paint. The most extensive use of fine brown detailing, however, appears in the portraits in the *Burning of the Bones of the Baptist*. The portrait of the presumed commander of the Order of St. John actually exhibits a number of features (fig. 35). Ridges of the white priming can be seen in the forehead and cheek to the left of the mouth, indicating that the paint has been thinly applied. Fairly thick reddish-brown contours outline the ear and establish the edges of the neck, nose and nostril, and line of the upper lip. The ear is quite loosely painted, in strokes that are almost as free as those in the leaves nearby. Fine, very precisely



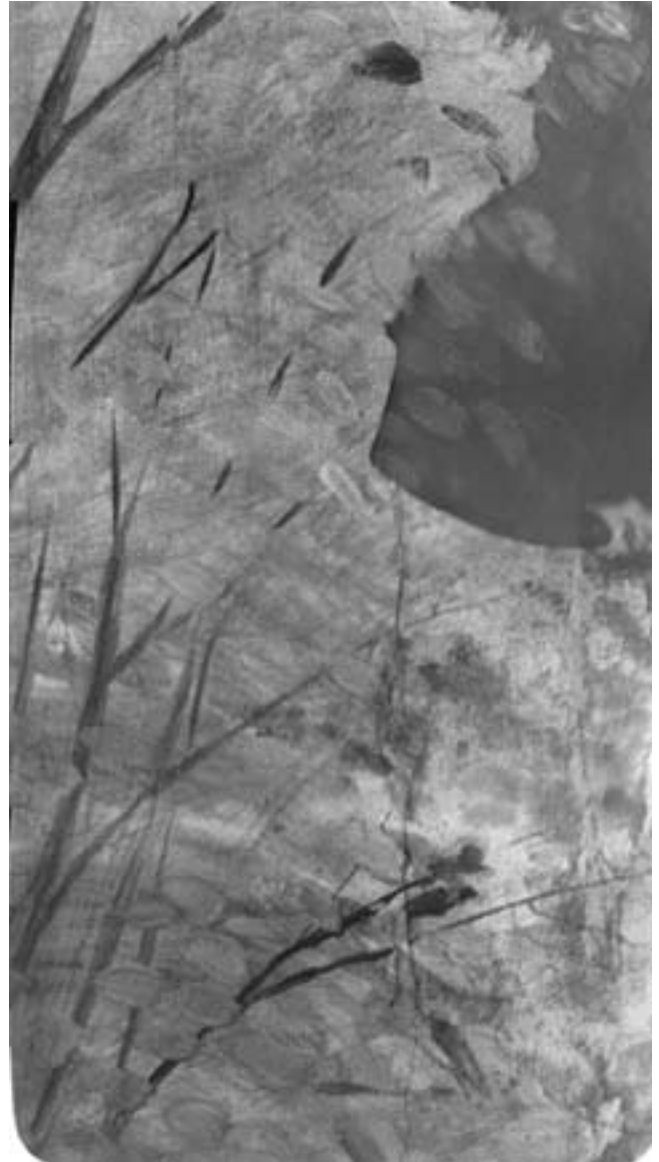
positioned brown lines further define the details of the face. Geertgen paints curved, double lines just under the lower lip and traces a few creases from the nose down to the corner of the mouth. Double strokes depict the 'crow's feet' wrinkles near the eye, and high arching lines suggest those in the forehead and around the eyelids. These lines are clearly graphic rather than blended to suggest rounded volumes, and they make the portrait more vibrant and incisive.

#### *Free painting technique*

Scholars have often remarked on Geertgen's free painting technique, and the authors of the recent Rotterdam catalogue use his loose, painterly strokes as a criterion of attribution.<sup>74</sup> Although infrared reflectography is not used primarily for this purpose, it can add information about this manner of applying paint. It can document underlying dark applications of paint that might be hidden by surface forms, and, when colors are not completely penetrated, it can sometimes bring out the shape of painted strokes more clearly than can be seen with the eye. In some bushes just to the left of the Jansheren in the *Burning of the Bones*, dark branches, presumably applied in black paint, are obscured by the green foliage; but infrared reveals remarkably free flourishes of the brush establishing a tree trunk (fig. 36). Infrared has also brought out the forms of long, slashing strokes for leaves (fig. 37) -- some of which have been dragged



36  
IRR showing a flourish in dark paint indicating a tree trunk in the *Burning of the Bones of the Baptist*. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.



37  
IRR showing loose paint application in the leaves and branches in the *Burning of the Bones of the Baptist*. IRR: © Prof. Dr. Molly Faries/Stichting RKD; composite: M. Faries.

dry-brush across underlying paint<sup>75</sup> -- as well as wide, curving strokes in rocks, such as those near the rock-cut tomb (see fig. 2).

### Precedents and influences

It has already been suggested elsewhere that some of Geertgen's painting practices find parallels in the southern Netherlands,<sup>76</sup> and the following text will discuss these observations in more detail. Establishing which connections are valid and which are less so can play a role in the arguments art historians have advanced about Geertgen's formative years and his training.

Geertgen's practice of combining media in underdrawings and selecting chalk for specific parts of his paintings, backgrounds and exterior wings, is not entirely unique. It relates in general to the greater use of chalk, along with brush, in underdrawings in

the late fifteenth century. A transition from brush to chalk layouts can be observed, for instance, in the early works of Hans Memling. In the artist's first, datable altarpiece, the Gdansk *Last Judgment* of c. 1467-1471, Memling lays out the composition primarily in brush, but also uses chalk in certain areas, such as the revisions in the background of the central panel and the overall layout of the exterior wings. By the mid-1470s Memling was using chalk instead of a liquid as his preferred drawing medium.<sup>77</sup> Chalk underdrawing, limited specifically to backgrounds, has also been documented in Cologne, as in some works dating from the mid-1480s from the circle of the Master of the Holy Kinship.<sup>78</sup> For the north Netherlands, the calculated use of materials to subdivide the compositional layout can be seen as typical of Geertgen tot Sint Jans and his close followers. This particular technique has not been found in the Master of the Virgo inter Virgines group,<sup>79</sup> and other masters, such as the Master of the Gathering of Manna, found other ways of setting off the background in the layout stage.<sup>80</sup>

It is the combination of materials in design stages and the revisions in chalk that find more parallels in painting of the southern Netherlands. Since, in principle, most artists would want to avoid extensive change in a late layout stage, the degree to which Geertgen redraws forms in the Vienna panels is remarkable. His use of chalk as the tool to sketch these changes represents a judicious choice. In the late fifteenth century, when chalk was coming into greater use, it is not surprising that other masters made the same choice. However, it was much more common for the chalk sketching to precede brush contours, which then 'fix' the composition. This appears to be the general sequence in larger paintings by Hugo van der Goes, c. 1467- c. 1477. Interestingly, Hugo also underdraws hands and feet as mitten-shapes. He sometimes allows his sketching in chalk to stand alone, but in most cases, he finalizes the forms with brush contours.<sup>81</sup> His sketching is more continuous, and not in discrete stages as seen in Geertgen. Gerard David is also known for the underdrawing sequence he developed in Bruges in the 1480s: a free layout in black chalk followed by refinements for shading and lighting in brush. This artist also occasionally made late revisions, in these cases in brush and during the painting process.<sup>82</sup> Still, multi-media underdrawing and the use of chalk as a sketching tool existed earlier in Bruges painting, most notably the early works by Hans Memling, as mentioned above. In the Gdansk *Last Judgment*, Memling made a radical change in the composition of the upper portion of the middle panel. He had to add the figures of apostles, who were not predicted in the first underdrawing stage, and shift the positions of the angels. Memling drew these new elements in chalk and dry brush, on top of the earlier layout stage, which had been done in brush.<sup>83</sup> This is, of course, exactly the same sequence as Geertgen's corrections. Another Bruges example that was taken through extensive compositional change shows a similar shift in materials. The first layout of the Master of the Saint Ursula Legend's *Nativity* triptych in Detroit, c. 1493-1499, was done in brush. At that point, the master was for some reason forced to change the subject matter, and the new content was drawn in chalk over the first design. A thin white, priming-like layer was applied to separate the first layout from the second, masking the earlier compositions and providing a new substratum for the chalk underdrawing.<sup>84</sup>

The technique of using black pigment in underpainting layers is not restricted to the Geertgen group alone. It has been found in works as early as Jan van Eyck and as late as Jan Gossart and some of his contemporaries, but it does not appear to be particularly widespread until the sixteenth century. As revealed by infrared reflectography, Jan van Eyck underpainted some of the greens in the *Ghent Altarpiece* with a dark pigment.<sup>85</sup> Suggested examples of this practice in works by other masters, such as Petrus Christus, are sporadic.<sup>86</sup> More study will be needed to find other verifiable examples, since identification requires not only information from IRR but also from paint samples.<sup>87</sup> So far, publications on painting technique suggest that the addition

of black to underpainting begins to concentrate in the early sixteenth century. There are documented examples of gray layers under various colors in works by Jan Gossart, such as the *Adoration of the Magi* in London.<sup>88</sup> Under blues and greens, the technique also occurs in works by Quinten Metsys, the Master of Frankfurt, the Master of 1518, Lucas van Leyden, and others, such as Herri met de Bles.<sup>89</sup> On the basis of the documentation in this essay, there is no question that this technique is a persistent feature in the Geertgen group; and as such, this use of gray underpainting becomes a noteworthy instance in a broader trend.

To what extent might Geertgen's presumed teacher, Albert van Ouwater, have contributed to Geertgen's technique? Elsewhere in this issue, Stephan Kemperdick makes a convincing argument associating Ouwater with paintings in the circle of Dirk Bouts c. 1460-1465. The evidence Kemperdick enumerates -- brocade patterns, facial types, and underdrawing style -- is much stronger than anything comparable that can be found to link Ouwater and Geertgen. One might expect a master to pass on to a pupil certain aspects of technique, such as underpainting in gray, but the infrared documentation of the *Raising of Lazarus* gives no indication that Ouwater employed this practice (see Kemperdick, p. 241, fig. 8). Ouwater's underdrawing is also entirely different: it is brush alone, with both thick and thin contours and concentrations of hatching, often containing zigzags (see Kemperdick, p. 241, fig. 8).<sup>90</sup> Geertgen's underdrawing, as the above discussion suggests, shows many more parallels with underdrawing practices that developed in the southern Netherlands about a decade later, i.e. around the time of Geertgen's presumed apprenticeship from the mid 1470s to early 1480s. This finding does not detract from the importance Ouwater may have had for painting in Haarlem, nor does it mean that Geertgen could not have known Ouwater's work. Still, despite Karel van Mander's claim, the fact remains: technical study does not provide evidence of a master-apprentice relationship between the two artists.

It is interesting to note that some aspects of Geertgen's drawing and painting technique seem to predict sixteenth-century practices. This would apply to his subdivision of the layout into foreground and background, his sketching in chalk, his use of gray underpainting, and his free painting technique. These features do not represent a simplification of technique; the use of underpainting would contradict this. Nonetheless, the artist employs practices that achieve certain effects in the most efficient manner; and, in this sense, Geertgen was finding ways to streamline his painting process.

### Geertgen tot Sint Jans and his workshop

It is difficult to postulate much participation of workshop assistants in Geertgen's Vienna wing panels. Such a statement goes against logic, given the estimated size of the overall altarpiece at a width of nearly six meters. Nonetheless, because the middle panel and the left wing no longer survive, we have no way of knowing if assistants might have contributed more in those paintings. As an unusual subject requiring a new composition, the *Burning of the Bones of the Baptist* may well have demanded more of Geertgen's time.

It stands to reason that the underdrawn revisions in chalk in the layout stage were carried out by Geertgen himself. These areas represent major design changes that affect crucial spatial relationships; they would certainly have required the approval of the master of the shop, and they would most likely have been executed by that individual. This helps support an argument that all of the chalk underdrawing was by Geertgen, given that these areas also display assured and forceful sketching.

If assistants were involved in the layout stage, they might have been employed in those areas for which workshop patterns were available, such as large foreground figures. They may have assisted in compositional transfer and perhaps even in the careful outlining done in a wet medium. Still, this proposal is contradicted by the fact that the graphic appearance of the liquid and chalk lines is so similar. Since color notations occur only in these works, they must have been necessary to facilitate the painting of such large panels. Shop assistants may have contributed here, either by preparing the required amounts of certain pigments or by laying in sections of underpainting, as, for instance, under blue robes. Backgrounds were also set off from the rest of the composition. Geertgen may have charged assistants to block in the underpainting for the landscape and perhaps paint some of the background narrative. Some scholars have observed a certain coarseness in execution in the background figures.<sup>91</sup> For the most part, however, the painting process of the Vienna panels presupposes Geertgen's personal responsibility: there are many, nuanced changes in composition that occur throughout; and there are many areas of free, virtuoso painting as well as fine, linear drawing in paint.

The situation is different when considering other paintings attributed to Geertgen. Although the workshop is a new paradigm for the study of Geertgen's works, the idea has gained fairly rapid acceptance. As Joos Bruyn stated in his recent article, 'The idea that Geertgen, who lived in the convent of St. John, had a workshop with assistants is the most surprising result of recent research of his work.'<sup>92</sup> Lisa Murphy was the first to argue in this direction in her 2003 article on the Rijksmuseum's *Holy Kinship*. She noted that the painting evolved following established procedures and relied on pre-existing models, concluding that the panel was certainly produced in Geertgen's workshop but was not necessarily entirely by his hand.<sup>93</sup> Stephan Kemperdick and Jochen Sander greatly added to this argument by showing that the Winterthur *Adoration of the Magi* and the *Holy Kinship* were closely-related workshop pieces. These authors again stressed the pervasive re-use of motifs taken from Geertgen's earlier designs.<sup>94</sup> The present author has also argued that Geertgen had a workshop, but from another point of view. I observed that certain painting procedures -- ones that could only have been learned in Geertgen's atelier -- carried over in works by one of the painter's followers, the Master of the Brunswick Diptych. This master divided his layouts between brush for figures and freely-sketched chalk for backgrounds, and he reworked his underdrawing in stages. Even the color notations found in one of this master's paintings were written in a script very much like that found in Geertgen's Vienna wings.<sup>95</sup> It is only now that the situation has come into clear focus. The accumulation of technical evidence in recent years has revealed procedures in the underlying, preparatory stages that link the paintings in the Geertgen group. Yet, just as clearly, art historians have long expressed doubts about the stylistic consistency of the painted surfaces. There is an easy explanation for this phenomenon: Geertgen had a workshop.

Further refinements in the attribution of the paint surfaces, or even parts of the paint surfaces, lie beyond the scope of this essay. These will no doubt require close, comparative study of details of painting technique, probably also in the works of Geertgen's followers. This essay is intended instead to highlight the basic contribution of infrared reflectography: the reconstitution of Geertgen's larger oeuvre by building on workshop associations. Even though infrared reflectography has revealed less about the layouts of the smaller paintings, it has still provided nothing definitive that could contradict the generally-accepted attributions of the paintings in Berlin (in this case, the *St. John in the Wilderness*), Cleveland, London, and Utrecht. In the last three works, gray underpainting has either been verified or can be presumed, as discussed above. The lack of gray underpainting, however, as well as underdrawing done almost entirely in pen, suggests that the Rotterdam-Edinburgh diptych was

probably executed outside Geertgen's workshop.<sup>96</sup> The same arguments can be used to disassociate the *Tree of Jesse* from the Geertgen group, as the painting can only continue as a viable attribution as an exception to the rule. In this regard, it should also be noted that other researchers have recently expressed doubts about the attribution of this work to Geertgen.<sup>97</sup> On the other hand, the Berlin *Virgin and Child* should be maintained in the overall Geertgen group. It is probable that the Virgin's blue robe has been underpainted in gray, and the chalk hatching that has been revealed under the red robe is very close to the heavily worked up areas of underdrawing in the Vienna wing panels.<sup>98</sup> Moreover, in this author's view, it is more important to recognize that the *Holy Kinship* and the Winterthur *Adoration of the Magi* are connected with Geertgen's workshop than to consider them works by an anonymous follower. As is well known to specialists in this field, dendrochronology has established late dates for these paintings, perhaps even after Geertgen's death.<sup>99</sup> Yet the employment of certain painting procedures, such as underpainting in gray, provides these works with their basic identification. In this sense, whether or not Geertgen still lived is irrelevant: the paintings should be seen as the continuation of the painter's workshop, probably under the direction of a shop assistant. This line of reasoning results in an estimate of Geertgen's workshop production at twelve surviving paintings. This number differs slightly from other estimates, due mostly to the retention of certain works in what can be seen as the larger scope of Geertgen's activity.<sup>100</sup>

Without the information about drawing and painting technique from Geertgen's Vienna panels, the more significant conclusions in this essay would have been impossible to articulate. Geertgen's compositional layouts can be characterized by a calculated handling of underdrawing materials and, in certain instances, critical revisions of design that occur in phases. The Vienna panels also incorporate a significant amount of compositional change, a sign of the continuing creativity of Geertgen's painting process. Some changes strongly affect the emotive content of his images, while other procedures indicate the artist was striving for more efficient painting techniques. In the final analysis, this information not only leads to a greater appreciation of Geertgen's skills as designer and painter, it also defines the broad outlines of the painter's workshop.

## NOTES

<sup>1</sup> F. Lammertse and J. Giltaij (ed.), *Vroege Hollanders, Schilderkunst van de late Middeleeuwen*, exh. cat. Rotterdam (Museum Boijmans Van Beuningen) 2008.

<sup>2</sup> *Early Netherlandish paintings in the Rijksmuseum, Amsterdam, Volume I: Artists born before 1500* at www.rijksmuseum.nl/early-netherlandish-paintings, 2009.

<sup>3</sup> J. Bruyn, 'Een gedachtenisvenster voor Claes van Ruyven en Geertgen tot Sint Jans' *Johannespaneel te Wenen*, *Oud Holland* 122 (2009), pp. 81-120.

<sup>4</sup> The infrared documentation was done in Berlin, Gemäldegalerie: the infrared photography by Gerald Schultz and the IRR by Christoph Schmidt, who used a Hamamatsu vidicon IRR camera; the results are summarized in Rotterdam 2008 (note 1), cat. nos. 4 and 12. I am grateful to Stephan Kemperdick, Curator of Early Netherlandish and Early German Painting, Berlin, Gemäldegalerie, for allowing me to consult these documents.

<sup>5</sup> See the entry in *Early Netherlandish painting in the Rijksmuseum* (note 2) under technical notes for the documentation and researchers. Margreet Wolters, at the RKD, carried out the IRR documentation using the IRR equipment of the RKD in The Hague: a Hamamatsu C 2400-07 camera with a N2606 IR vidicon, a Nikon Micro-Nikkor 1:2.8/55 mm lens, a Heliopan RG 850 (or RG 1000) filter, with a Lucius & Baer VM 1710 monitor (625 lines). The digital documentation was done with a Meteor RCB framegrabber, 768 x 574 pixels, colorvision toolkit (Visualbasic). I would like to thank Margreet Wolters for providing me with the IRR digital composite for consultation.

<sup>6</sup> See especially the essay, Stephan Kemperdick and Jochen Sander, 'The Winterthur *Adoration of the Kings* and Geertgen tot Sint Jans', in M. Reinhard-Felice (ed.), *Venite, Adoremus, Geertgen tot Sint Jans and the Adoration of the Kings*, exh. cat. Winterthur (Oskar Reinhart Collection 'Am Römerholz') 2007, pp. 23-60. See also the article mentioned below in note 41.

<sup>7</sup> See the report, B. Mottin (ed.), 'Compte-Rendu d'Étude: Geertgen tot Sint Jans, La Résurrection de Lazare, Référence du dossier: F 5187', Centre de Recherche et de Restauration des musées de France, Paris 2008. The infrared reflectogra-

phy was carried out by Elsa Lambert using an infrared vidicon camera. I am grateful to Bruno Mottin for providing me with a copy of this report and the infrared document.

<sup>8</sup> I made IRR examinations of the following eight paintings: 1) Amsterdam, Rijksmuseum, *Adoration of the Magi* (studied August 1995); 2) Cleveland, The Cleveland Museum of Art, *Adoration of the Magi*, (studied July 1989); 3) London, National Gallery of Art, *Nativity at Night* (studied March 1993); 4) Paris, The Louvre, *Raising of Lazarus* (studied September 1991); 5) Prague, National Gallery, triptych with the *Adoration of the Magi*, (studied May 2001); 6) Rotterdam, Boijmans Van Beuningen Museum, *Glorification of the Virgin*, (studied September 1993); 7) Utrecht, Catharijneconvent, *Christ as the Man of Sorrows*, (studied August 1995); and 8) Vienna, Kunsthistorisches Museum, the *Lamentation and Burning and Restitution of the Bones of the Baptist*, the front and back of a wing panel (studied August 1988). The equipment used was Indiana University's Grundig equipment: a Grundig 70 H television camera set at 875 lines and outfitted with a Hamamatsu N 214 infrared vidicon, a TV Macromar 1:2.8/36 mm lens, and Kodak 87 A filter, with a Grundig BG 12 monitor; documentation was done with a Canon A-1 35 mm camera, a 50 mm Macrolens, and Kodak Plus X film. The digitized infrared reflectogram composites assembled by me for this article were done using PanaVue ImageAssembler and Adobe Photoshop CS4Extended. The IRR films of the above paintings have now been digitized and are archived at the RKD, where they may be consulted along with the accompanying IRR report forms. Some of this material was summarized in Rotterdam 2008 (note 1), cat. nos. 6, 8, and 10.

<sup>9</sup> T. van Bueren, *Macht en onderhorigheid binnen de Ridderlijke Orde van Sint Jan, De commandeursportretten uit het Sint Jansklooster te Haarlem*, Haarlem 1991, p. 16; as cited by Bruyn 2009 (note 3), p. 99.

<sup>10</sup> J.R.J. van Asperen de Boer, 'Some observations on underdrawings in Geertgen tot St. Jans paintings', *Akt* 12 (1988), pp. 49-53.

<sup>11</sup> T. van Bueren and M. Faries, 'The 'Portraits' in Geertgen tot Sint Jans' Vienna panels', in H. Verougstraete-Marcq and R. Van Schoute (ed.), *Le*

*dessin sous-jacent dans la peinture, Colloque VIII: Dessin sous-jacent et copies* (Université Catholique de Louvain, Institut supérieur d'archéologie et d'histoire de l'art, Document de travail no. 26), Louvain-la-Neuve 1991, pp. 141-150.

<sup>12</sup> See the estimate of size and reconstruction in A. Châtelet, *Early Dutch Painting, Painting in the northern Netherlands in the fifteenth century*, trans. C. Brown and A. Turner, New York 1981, pp. 99 and 220, fig. 201.

<sup>13</sup> Scanning notes, IRR examination by M. Faries, 3 August 1995.

<sup>14</sup> Report, IRR examination by M. Faries, 23 July 1989.

<sup>15</sup> L. Campbell, *The Fifteenth Century Netherlandish Paintings*, National Gallery Catalogues, London 1998, p. 236.

<sup>16</sup> According to my reading of the IRR digital composite made by Christoph Schmidt, Berlin, Gemäldegalerie, using a Hamamatsu infrared vidicon. I am grateful to Stephan Kemperdick, Curator of Early Netherlandish and Early German Painting, Berlin, Gemäldegalerie, who provided me with a digital file of the IRR documentation.

<sup>17</sup> J. Kirby, A. Roy, and M. Spring, 'The Materials of Underdrawing', in David Bomford (ed.), *Underdrawings in Renaissance Paintings: Art in the Making*, London, 2002, p. 27.

<sup>18</sup> In order to estimate the width of underdrawn lines, I opened a single digitized reflectogram in Adobe Photoshop, then sized it to the scale of the original infrared documentation, which in the case of the Vienna panels was usually  $\pm 8$  cm, and measured the width directly on the computer screen.

<sup>19</sup> Report, IRR examination by M. Faries, 23 July 1989.

<sup>20</sup> Scanning notes, IRR examination by M. Faries, 13 September 1993.

<sup>21</sup> The difficulties of distinguishing between underdrawn lines made by a brush or pen has long been noted in the literature; see Kirby et al. 2002 (note 17), p. 29; and Mottin (ed.) 2008 (note 7), felt that parts of the underdrawing in the Louvre *Resurrection of Lazarus* might have been done with pen. Marks can only be judged visually as registrations in the infrared, and the degree to which

the drawing surface might influence appearance is often unknown. Since, however, fluid contours are so distinctive of Geertgen's underdrawings, it would be worthwhile investigating the question further, especially if one of the newer digital cameras capable of high resolution could be employed, and if selective sampling and instrumental analysis could be carried out at the same time.

<sup>22</sup> For Wallert's identification, see A. Wallert, G. Tauber and L. Murphy, *The Holy Kinship, a medieval masterpiece*, Zwolle 2001, p. 30.

<sup>23</sup> For Wallert's identifications of this underdrawing material in works by the Master of Delft and the Master of the Amsterdam *Death of the Virgin*, see the relevant entries in *Netherlandish painting in the Rijksmuseum* (note 2); see also M. Faries, J. P. Filedt Kok, M. Leeftang and M. Wolters, 'De laat middeleeuwse schilder aan het werk: Atelierpraktijken van de vijftiende eeuwse Hollandse schilders', in Rotterdam 2008 (note 1), p. 49.

<sup>24</sup> Kirby et al. 2002 (note 17), p. 30.

<sup>25</sup> J. Meder, *The Mastery of Drawing*, translated and revised by Winslow Ames, New York 1977, vol. 1, p. 45; and M. P. Merrifield, *Medieval and Renaissance Treatises on the Arts of Painting: Original Texts with English Translations*, Mineola, NY 1999, p. 30.

<sup>26</sup> L. Murphy, 'The Holy Kinship: A Study of Workshop Practice', *Bulletin van het Rijksmuseum* 51 (2003), pp. 130-132.

<sup>27</sup> Rather loose, sketchy chalk lines outline buildings in the background; see reflectogram no. MF 1526/19.

<sup>28</sup> Van Asperen de Boer 1988 (note 10), p. 53.

<sup>29</sup> For illustrations of these very similar background vignettes, see Rotterdam 2008 (note 1), cat. no. 10, figs. 2-3. In addition, in the Prague *Adoration*, the sheep on a distant hill were also underdrawn larger and in different positions.

<sup>30</sup> Fluid-looking outlines appear near Julian's feet in the brownish sash that hangs from his hat (see reflectograms nos. MF 707/16-17), but underdrawing is otherwise obscured by his dark garment.

<sup>31</sup> As discussed earlier by Faries in Faries et al. 2008 (note 23), p. 51, and in Rotterdam 2008 (note 1), cat. no. 10, p. 108.

<sup>32</sup> Mottin (ed.) 2008 (note 7) considered these dry, sketchy lines in the eyes and in Peter's beard as vague traces of a first layout stage.

<sup>33</sup> The full list of color notations was published for the first time by Van Bueren and Faries 1991 (note 11), pp. 142-143, and notes 9-10. Three of the notations for green and red were illustrated in Faries et al. 2008 (note 23), figs. 17a-c.

<sup>34</sup> Faries et al. 2008 (note 23), pp. 53, 56.

<sup>35</sup> K. Demus, *Katalog der Gemäldegalerie, holländische Meister des 15., 16. und 17. Jahrhunderts*, Vienna 1972, p. 32, was the first to make this suggestion.

<sup>36</sup> The standing Mary on the right has been identified as the Magdalene by Snyder (J. Snyder, 'The Early Haarlem School of Painting, II: Geertgen tot Sint Jans', *Art Bulletin* 42 (1960), p. 114); and Van Bueren and Faries 1991 (note 11), p. 143; while Snyder (J. Snyder, *Northern Renaissance Art*, New York 1985, p. 177) changed his mind and identified the Magdalene as the kneeling figure in the lower left, as do Kemperdick and Sander 2007 (note 6), p. 34, although Wallert et al. 2001 (note 22), p. 16 and fig. 15b, identify the Magdalene as still another figure, the uppermost Mary on the left.

<sup>37</sup> As cited by Kemperdick and Sander 2007 (note 6), pp. 35-36, and note 46, as well as by Bruyn 2009 (note 3), p. 82, the Magdalene figure derives from Rogier van der Weyden's famous *Descent from the Cross*, c. 1440, in the Prado. It should also be noted that the costume of Mary Salome in the Vienna panel is similar to that of Mary Salome in the Rijksmuseum's *Holy Kinship*.

<sup>38</sup> These reworkings were first published by Faries in Van Bueren and Faries 1991 (note 11), p. 142 and were discussed again in Faries et al. 2008 (note 23), p. 52, and M. Faries, 'Geertgen tot Sint Jans: continuing studies of the painting process', *Simiolus* 33 (2007-2008), where fig. 6a-b shows the brush layout compared with the chalk stage in John's robe, indicating that the latter better envisions the forms as finally painted.

<sup>39</sup> Fluid-looking contour lines appear in the area of this figure's feet, where the drapery was originally underdrawn longer; see reflectograms MF 701/05-06.

<sup>40</sup> For the observations of streaking in these paintings, see the reports

accompanying the IRR examinations mentioned by date in note 8.

<sup>41</sup> For a discussion of priming and its identification in the *Holy Kinship* in the Rijksmuseum, see Wallert et al. 2001 (note 22), p. 36 and figs. 34, 41, 45, and 48; for its presence in the Cleveland *Adoration*, see Murphy 2003 (note 26), p. 134, fig. 14; for the Louvre *Resurrection of Lazarus*, see Mottin (ed.) 2008 (note 7); for the Winterthur *Adoration*, see H. Stege, P. Dietemann, U. Baumer, I. Fiedler and C. Tilenschi, 'Investigations into the Painting Materials of the Adoration of the Kings in Winterthur', in Winterthur 2008 (note 6), p. 74 and fig. 50b; and for the Amsterdam *Adoration*, see the entry in *Early Netherlandish painting in the Rijksmuseum* (note 2).

<sup>42</sup> L. Campbell, S. Foister, and A. Roy (ed.), 'The Methods and Materials of Northern European Painting in the National Gallery, 1400-1550', *National Gallery Technical Bulletin* 18 (1997), pp. 22-24.

<sup>43</sup> First published in Faries et al. 2008 (note 23), pp. 52-53, and discussed again in Faries 2007-2008 (note 38), p. 28.

<sup>44</sup> According to an email dated 21 December 2007 from Gwen Tauber, paintings conservator at the Rijksmuseum, there is one sample from an area of chalk underdrawing in the Amsterdam *Adoration* that appears to have a very thin isolation layer on top of it. This sample, however, was taken in the background, where chalk was generally employed for the layout, rather than in an area where chalk was used to revise the composition.

<sup>45</sup> A tassel hanging from Nicodemus's open sleeve was omitted, as well as a decorative border on the robe of Mary Salome on the right edge. On the left, the Mary just under the enlarged rock originally had a square neckline that was changed into a V shape. Otherwise, draperies were generally made more complex during the painting process, such as the headdresses of the Virgin and the Magdalene as well as Christ's loin cloth and shroud.

<sup>46</sup> Just above the scene showing the burial of John's head, a few trees were underdrawn but left unexecuted, and the clump of trees to the right was underdrawn lower between the tall, solitary tree and the city wall.

<sup>47</sup> These drawings were attributed to Geertgen by Châtelet 1981 (note 12), pp. 118-119; and were discussed further by M.W. Ainsworth, *Gerard*

*David, Purity of Vision in an Age of Transition*, New York 1998, pp. 34-36. While a study of these drawings lies outside the scope of this article, it should be noted that the difference in function might account for the difference in technique between the underdrawings and drawings on paper. Nonetheless, the drawings exhibit very fine crosshatching done in brush or silverpoint, which does not reappear in the graphic delineations -- in paint -- that are so striking in Geertgen's faces and hands (see also below, under reddish-brown contours).

<sup>48</sup> Châtelet 1981 (note 12), p. 102, argues that Geertgen emphasizes these two figures as two different types of believers.

<sup>49</sup> Châtelet 1981 (note 12), p. 110, observes "this is probably the first appearance of this motif in northern painting."

<sup>50</sup> Campbell 1998 (note 15), p. 218.

<sup>51</sup> Bruyn 2009 (note 3), p. 102.

<sup>52</sup> As discussed in Van Bueren and Faries 1991 (note 11), p. 143.

<sup>53</sup> Bruyn 2009 (note 3), pp. 84-88.

<sup>54</sup> Van Bueren and Faries 1991 (note 11), p. 145, and Bruyn 2009 (note 3), p. 84.

<sup>55</sup> Van Bueren and Faries 1991 (note 11), pp. 144-146; and Bruyn 2009 (note 3), pp. 98-99, who says the issue remains unresolved.

<sup>56</sup> Kemperdick and Sander 2007 (note 6), p. 24; Bruyn 2009 (note 3), p. 109, mentions that his article would not have been written but for Geertgen's *haarscherp* portrayal of Claes van Ruyven.

<sup>57</sup> Van Bueren and Faries 1991 (note 11), pp. 143-144.

<sup>58</sup> Bruyn 2009 (note 3), pp. 88-90.

<sup>59</sup> Van Bueren and Faries 1991 (note 11), p. 144, who observe that this head is slightly darker in infrared. In the paint surface, it is apparent that the green leaves of a later paint stage leave a reserve for this head.

<sup>60</sup> This would require ascertaining the presence of background color under the portrait.

<sup>61</sup> This layer appears in samples from Amsterdam (the *Holy Kinship*) published in Wallert et al. 2001 (note 22), p. 33 and fig. 41; Cleveland, published in Murphy 2003 (note 26), p. 133 and fig. 14; Winterthur,

published in H. Stege et al. 2008 (note 41), p. 81 and fig. 54a; and again in Amsterdam in the *Adoration of the Magi*, see cross-sections nos. 160-4 and 160-6, as I was kindly informed by Gwen Tauber, paintings conservator at the Rijksmuseum (see note 44).

<sup>62</sup> Mottin (ed.) 2008 (note 7).

<sup>63</sup> For documentation of the opacity of the blue in IRR, see Rotterdam 2008 (note 1), cat. no. 10, fig. 1, and the IRR digital composite of the Amsterdam *Adoration of the Magi* by Margreet Wolters of the RKD.

<sup>64</sup> For Utrecht, see the scanning notes of the IRR examination, 3 August 1995; and for London, see Campbell 1998 (note 15), p. 234, fig. 1, where it is likely that there is gray underpainting under the Virgin's robe, since the draperies would have presumably become partially transparent in IRR if the layer was lacking and since this area has the same mottled appearance these dark blues have in the infrared images of the other paintings.

<sup>65</sup> It is not certain if the Berlin IRR is in a range beyond 0.9-1.0  $\mu\text{m}$ ; that is required to be certain that what registers is a true opacity due to the addition of black, rather than the opacity of blue that usually occurs in images closer to the range of infrared photography.

<sup>66</sup> See note 61.

<sup>67</sup> Van Asperen de Boer 1988 (note 10), p. 51, fig. 2.

<sup>68</sup> See scanning notes of Faries IRR examination dated 16 September 1991 and Mottin (ed.) 2008 (note 7), with the comment: "il est en fait possible qu'un dessin sous-jacent existe mais qu'il soit dissimulé par la couche qui apparaît en grisâtre sous-infrarouges et qui couvre toute l'étendue du paysage."

<sup>69</sup> See the report of the IRR examination dated 26-27 May 2001.

<sup>70</sup> Mottin (ed.) 2008 (note 7), referring to sample no. 6128.

<sup>71</sup> Campbell 1988 (note 15), p. 237.

<sup>72</sup> Wallert et al. 2001 (note 22), p. 19.

<sup>73</sup> Another example where brownish-red contours occur is the Master of the Amsterdam Death of the Virgin, see the entry in *Early Netherlandish painting in the Rijksmuseum* (note 2) as well as the color plate in Rotterdam 2008 (note 1), p. 179 related to cat. no. 29; the technique

also appears in Cologne painting, as in work by Stephan Lochner; see L. Campbell, S. Foister, and A. Roy (ed.), 'A Double-sided panel by Stephan Lochner', *National Gallery Technical Bulletin* 18 (1997), pp. 62-63.

<sup>74</sup> See, for instance, F. Lammerse, 'Geertgen tot Sint Jans', in Rotterdam 2008 (note 1), p. 80, who mentions the *losse toets* that characterizes the Vienna panels. Many areas in these paintings can be singled out in this regard: the broad, flat strokes of the leaves, just mentioned in the main text, behind the portraits in the *Burning of the Bones of the Baptist*; the swirls of gray paint suggesting bark lifting on a tree trunk in the background of the same panel; in both panels, the curved dashes of green paint for foliage with highlights of light green, whitish-yellow, and blue; and loose, sweeping strokes in rocks.

<sup>75</sup> For an illustration of slashing strokes for leaves in IRR, see Rotterdam 2008 (note 1), p. 50, fig. 10.

<sup>76</sup> Faries 2007-2008 (note 38), pp. 28-29.

<sup>77</sup> M. Faries, 'The Underdrawing of Hans Memling's *Last Judgment* Altarpiece in Gdansk', in *Memling Studies, Proceedings of the International Colloquium, Bruges 10-12, 1994*, ed. by H. Verougstraete, R. Van Schoute, and M. Smeyers, Leuven 1997, pp. 243-259.

<sup>78</sup> See Lesa Mason, *A Late Medieval Cologne Artistic Workshop: The Master of the Holy Kinship the Younger, a Technical and Art Historical Study*, Ph.D. dissertation, Indiana University, Bloomington, IN 1991, p. 166, and cat. nos. I.1, I.4 and Ia.1.

<sup>79</sup> There was no use of different materials for the fore- and background in the Master of the Virgo inter Virgines group, as Margreet Wolters kindly informed me via email, 1 February 2010.

<sup>80</sup> Sometimes this master underdraws only the background and in other instances only the foreground; see Rotterdam 2008 (note 1), cat. nos. 35 and 36.

<sup>81</sup> For the sequence of Hugo's underdrawing, see R. Grosshans, 'IRR-Investigation of the Panel Paintings by Hugo van der Goes in the Berlin Gemäldegalerie', in *Jérôme Bosch et son entourage et autres études, Colloque XIV, Le dessin sous-jacent et la technologie dans la peinture*, ed.

H. Verougstraete, R. Van Schoute, Leuven 2003, pp. 242-243, and also p. 245, where Grosshans notes a greater and more assured use of the brush in Hugo's later work; Margaret L. Koster, 'New documentation for the Portinari altar-piece', *Burlington Magazine* 145 (2003), pp. 175-177; and Margaret L. Koster, *Hugo van der Goes and the Procedures of Art and Salvation*, London/Turnhout 2008, pp. 94-97. Late revisions, such as the addition of the donors' children in the *Portinari Altarpiece*, were also done in brush, and Hugo's brush shading is also much more extensive than Geertgen's. In addition, the exterior wings of the Portinari Altarpiece were underdrawn in brush.

<sup>82</sup> Ainsworth 1998 (note 47), pp. 45 and 171.

<sup>83</sup> Faries 1997 (note 77), pp. 255-259.

<sup>84</sup> M. Faries, B. Heller, and D. Levine, 'The Recently Discovered Underdrawings of the Master of the Saint Ursula Legend's *Triptych of the Nativity*', *Bulletin of the Detroit Institute of Arts* 62 (1987), pp. 4-19.

<sup>85</sup> As noted by Van Asperen de Boer when discussing the underpainted tree in Geertgen; see note 67 above.

<sup>86</sup> For black added to underpainting in dark greens in works by Petrus Christus, see L. Kockaert, 'Problems Concerning the Brussels *Lamentation* by Petrus Christus', in M. Ainsworth (ed.) *Petrus Christus in Renaissance Bruges, An Interdisciplinary Approach*, Turnhout 1995, p. 190; and for a discussion of darkened blues in Christus, one of which may have been over a gray wash layer, see C. Metzger, 'The Washington *Nativity*', in the publication just mentioned, pp. 168-169 and note 9. What may be of greater significance is the fairly frequent addition of black to underpainting under blues in fifteenth-century Cologne painting; see H. Kühn, 'Pigmentanalysen', in F.G. Zehnder, *Katalog der Altkölner Malerei*, Cologne 1990, pp. 583, 589, 592, 604, 606, 611, 612, 629, 639, 646, and 648. No evidence of gray underpainting appeared in the infrared study of the *Virgo inter Virgines* group, as Margreet Wolters kindly informed me by email 31 December 2009. So far as I know, manuscripts have not been studied by infrared to ascertain the possible presence of gray underpainting.

<sup>87</sup> Although the report form I developed for IRR examinations always includes a description of which colors become transparent as

opposed to which remain opaque, not all researchers document opaque areas or report them.

<sup>88</sup> For gray layers under certain blues, reds, and greens, see L. Campbell, S. Foister, and A. Roy (ed.), 'Gossaert's *Adoration of the Kings*', *National Gallery Technical Bulletin* 18 (1997), pp. 92-94, with illustrations of the gray layer in cross-section, figs. 70-71 and the opacity of the Virgin's blue dress in IRR, fig. 16.

<sup>89</sup> For occurrences in works by these artists, see Campbell (ed.) 1997 (note 42), pp. 37, 39, 40; J.P. Filedt Kok, 'Underdrawing and Other Technical Aspects in the Paintings of Lucas van Leyden', *Nederlands Kunsthistorisch Jaarboek* 29 (1979), pp. 142-143; and M. Faries, 'Technical Studies of Early Netherlandish Painting: A Critical Overview of Recent Developments', in M. Faries and R. Spronk (ed.), *Recent Developments in the Technical Examination of Early Netherlandish Painting: Methodology, Limitations & Perspectives*, Turnhout 2003, p. 10, for gray modeling and underpainting in the works by a number of artists, including Herri met de Bles.

<sup>90</sup> For a fuller description of the underdrawing in this work, see the essay by S. Kemperdick elsewhere in this issue; I would like to thank Stephan Kemperdick, Curator of Early Netherlandish and Early German Painting, Berlin, Gemäldegalerie, for allowing me to consult the infrared documents of this painting.

<sup>91</sup> As noted by Kemperdick and Sander 2007 (note 6), p. 34 and note 45.

<sup>92</sup> Bruyn 2009 (note 3), p. 108.

<sup>93</sup> Murphy 2003 (note 26), pp. 126-137.

<sup>94</sup> Kemperdick and Sander 2007 (note 6), pp. 42-50.

<sup>95</sup> Faries 2007-2008 (note 38), pp. 29-32.

<sup>96</sup> For the transparency of the Virgin Mary's blue robe in IRR, see Rotterdam 2008 (note 1), cat. no. 14, fig. 3.

<sup>97</sup> To mention a few: Kemperdick and Sander 2007 (note 6), pp. 54-55, review earlier opinion and lean towards an attribution to Mostaert; and the handout prepared by Friso Lammertse and Micha Leeflang that was given out during a symposium connected with the exhibition in Rotterdam 2008 (note 1) also removes the painting from the group of Geertgen's autograph works.

<sup>98</sup> The hatchings on a slant and the angled cross-hatching are very similar to that detected in the man with a white robe in the *Burning of the Bones of the Baptist* (see fig. 3 in this article).

<sup>99</sup> For a discussion of the dendrochronology and probable date of execution of these works from 1496 on, see Kemperdick and Sander 2007 (note 6), p. 50; and Rotterdam 2008 (note 1), cat. no. 11.

<sup>100</sup> The works, in alphabetical order according to their location, are: 1) Amsterdam, Rijksmuseum, *Adoration of the Magi*; 2) Amsterdam, Rijksmuseum, *Holy Kinship*; 3) Berlin, Staatliche Museen, Gemäldegalerie, *John the Baptist in the Wilderness*; 4) Berlin, Staatliche Museen, Gemäldegalerie, *Madonna and Child*; 5) Cleveland, The Cleveland Museum of Art, *Adoration of the Magi*; 6) London, National Gallery of Art, *Nativity at Night*; 7) Milan, Biblioteca Ambrosiana, *Madonna and Child*; 8) Paris, The Louvre, *Raising of Lazarus*; 9) Prague, National Gallery, triptych with the *Adoration of the Magi*; 10) Utrecht, Catharijneconvent, *Christ as the Man of Sorrows*; 11) Vienna, Kunsthistorisches Museum, the *Lamentation* and *Burning and Restitution of the Bones of the Baptist*, the front and back of a wing panel; and 12) Winterthur, Oskar Reinhart Collection 'Am Römerholz', *Adoration of the Magi*. As implied in Rotterdam 2008 (note 1), cat. no. 11, and as listed in the handout mentioned in note 97 above, Lammertse and Leeflang give the Berlin *Virgin and Child*, the Amsterdam *Holy Kinship*, and the Winterthur *Adoration of the Magi* to a separate hand. While the present author does not disagree, she would prefer to list these works in such a way that they can be retained within the scope of Geertgen's workshop activity. When this article was in a late stage of writing, Margreet Wolters, Research Associate, RKD, kindly provided me with a file showing the new IRR documentation of the Milan *Madonna and Child*. There are only vague traces of underdrawing that register in infrared, not surprising given the extremely small size of the work; however, the blue robe of the Virgin does not appear to have been underpainted in gray, which would be an atypical feature in the Geertgen group. Nonetheless, until more aspects of the painting technique can be studied, it should be retained in the list above.