

# NEW LIGHT ON THE VIRGIN FROM VELDRE, THE VIRGIN FROM ØSTSINNI AND THE CRUCIFIX FROM TRETEN

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## Introduction

New examinations<sup>1</sup> of the Virgin from Veldre, the Virgin from Østsinni and the crucifix from Tretten in the collection of the Museum of Cultural History, University of Oslo (KHM)<sup>2</sup> have expanded understanding of the changing relationship between sculptural form and polychromy (see Figs 1–5). The three sculptures were revealed to be reworked; they were all subjected to partial recarving and full repainting. The original sculptures, all thought to originate from the bishopric of Hamar, have been dated to the thirteenth century on stylistic grounds.<sup>3</sup> There are striking similarities between the polychromies of the figures in the group. Based on recent technical investigation of their materials and techniques, the conclusion reached is that the three sculptures were entirely repainted in the fifteenth century. Furthermore, the evidence suggests that the same artist may have carried out the repainting of at least the two Virgins, a surprising result as at first glance they could hardly appear more dissimilar.

## The Virgin from Veldre church, Hedmark

The Virgin from Veldre entered the collections of the Museum of Cultural History, University of Oslo, in 1878. The sculpture was restored in 1976 by Grete Gundhus.<sup>4</sup> In 1996, the seventeenth-century church of Veldre burnt down and a copy of the medieval sculpture was commissioned for the newly rebuilt church.<sup>5</sup> In order to produce as faithful a replica as possible, the construction and painting technique of the original sculpture was analyzed (see appendix).<sup>6</sup> In his extensive study of medieval wooden sculpture in Norway, Martin Blindheim dated the Virgin from Veldre to the third quarter of the thirteenth century and noted that the sculpture differs from the rest of the Scandinavian material.<sup>7</sup> On the basis of

the new technical evidence presented below, the author concludes that the original wooden construction of the sculpture should be assigned to the first quarter of the thirteenth century, coinciding with the dating suggested by Anders Bugge in 1957.<sup>8</sup>

Dendrochronology could not be used to date the oak core of the sculpture; the amount of year-rings present was insufficient.<sup>9</sup> Oak came into use in Norwegian sculpture by at least the second quarter of the thirteenth century, and became the predominant species of wood used for this purpose from the middle of the century onwards.<sup>10</sup> The extensive studies of the wood types used for Swedish church sculpture in the Middle Ages carried out by Tångeberg indicate that oak was not widely used as a primary material by Swedish wood carvers before 1225, although it was utilised before this date for supporting elements, such as turned posts and boards for crosses.<sup>11</sup> In contrast, in other northern European countries, the use of oak by sculptors in the early thirteenth century has often been confirmed.<sup>12</sup>

While Blindheim assigned the Veldre Virgin to a large group of carvings whose figures are seated on turned-post chairs, he also noted that 'in style she is quite different and without known parallels in Scandinavia'.<sup>13</sup> He further remarked that 'she is alone in having the posts placed on the bench instead of at the sides of it, also in the fan-like folding systems around the legs, the U-folds between the legs ... and in her touching the Child with her left hand'. No other examples of a seat preserving round posts are found either in Swedish or Danish works of the period.<sup>14</sup> This technological examination shows that the construction of the Virgin shares no similarities with the large group of Virgins and bishops seated on turned posts chairs.<sup>15</sup> This aspect of the sculpture will therefore not be discussed in this paper.

An early thirteenth-century date for the sculpture may be argued not only on stylistic grounds – such as the



**Figure 1** *The Virgin from Veldre (Hedmark), Norway; early thirteenth century, repolychromed in the fifteenth century (author's dating). Polychromed oak, 81.5 × 28 × 23 cm (current dimensions, without the original crown ends). Museum of Cultural History (KHM), University of Oslo, cat. no. 9064. Frontal aspect after restoration by conservator Grete Gundhus. (Photo: Grete Gundhus and Svein A. Wiik © KHM.)*



**Figure 2** *The Virgin from Veldre; proper right side (detail Fig. 1). The secondary wedge on the back of the chair is marked with red cross-hatching. (Photo: Grete Gundhus and Svein A. Wiik © KHM.)*



**Figure 3** *The Virgin from Veldre; reverse (detail Fig. 1). (Photo: Grete Gundhus and Svein A. Wiik © KHM.)*

strong frontal symmetry – but also on the basis of technical features; the unpainted reverse was hollowed in a square, boxlike form and the overall height of the figure is less than a metre.<sup>16</sup> Both these aspects are typical of twelfth-century work.

Two secondary, wedge-shaped vertical pieces of deciduous wood were attached vertically to the back of the posts and lower part of the throne. These are secured with large, countersunk square iron nails with round heads, inserted from the reverse (see Fig. 3). No traces of the fifteenth-century changes made to the original construction are revealed by the X-ray images, but it seems likely that the volume of the original sculpture was reduced during remodelling. If the secondary wedge-shaped pieces at the back are digitally removed and the figure straightened, the narrowness of the front part of the sculptural space below the knees becomes apparent (see manipulated photo, Fig. 6). Compared to the sides of the chair, the front has no profiles (Figs 1 and 2). The head of the Virgin also preserves evidence of remodelling with secondary dimples in the corners of the mouth and a double chin. On the

reverse, the hair appears to be bifurcated, possibly into two three-dimensionally carved plaits that would have rested on the front of the shoulders. In its present state, the sculpture was given two flat masses of hair, applied to the front of the shoulders. The hair is rendered in gilding only; part gold laid onto a reddish brown mordant overlying the red mantle.

A programme of repainting is suggested in the earlier conservation records. In 1976, Gundhus found traces of an older polychromy during the treatment.<sup>17</sup> Reference is made to the identification of two ochre-like pigment layers (one brown, one reddish) divided by a layer of chalk ground in the hair of the Child. No other traces of the older polychromy were found during this examination. The most likely reason for this is the removal of earlier colours before the sculpture was repainted. Other Norwegian examples are known; evidence of scraping down was found on the original polychromy of the crucifix from Dal, Telemark, when later overpaint was removed.<sup>18</sup> This was also the conclusion reached by Unn and Leif Einar Plahter after their examination of the Virgin from



**Figure 4** *The Virgin from Østsinni (Oppland), Norway; second half of the thirteenth century, repolychromed in the fifteenth century (author's dating). Polychromed oak, 67 × 28 × 17.7 cm. KHM, cat. no. 3409. Views from the front and proper right sides. (Photo: Eirik Irgens Johnsen © KHM.)*

Hovland in Eggedal. In this case, the fragmentary condition of the original twelfth-century paint is probably due to its removal prior to being repolychromed in the thirteenth century. Such a treatment would most likely have provided a better key for the new ground.<sup>19</sup>

The reason for repainting could have been that the older polychromy was so poorly preserved that it was necessary to scrape it down in order to remove the loose surface. Scraping before repainting was considered good practice in many areas of Europe, as is attested by the instructions found in the guild ordinances of the painters of Paris of 1391.<sup>20</sup>

Although an in-depth study has not yet been undertaken, it appears that in the Middle Ages, modernisation of older sculptures was not an uncommon practice. A reference in a letter written by Bishop Øystein dated 1401 in the collection *Diplomatarium Norvegicum* may be cited as a Norwegian example. In this document, the bishop orders the farmers of the parish to pay a fee to cover the expenses for renovating what is possibly a sculpture of the Virgin.<sup>21</sup> Many other instances are known in Sweden and Germany. These references firmly establish the precedent for reusing older sculptures rather than simply discarding them.<sup>22</sup> Tångeberg defined three main reasons

why sculptures are reworked: repair, embellishment and modernisation. Suckale and Roller suggested that such modernisations were most likely carried out in response to changing aesthetic ideals. They stressed that frequently it was only the face of a figure that was modernised. As the flesh tones of medieval sculptures were usually rendered in a very stable paint formulation – lead white bound in oil – they are generally among the areas that are most resistant to physical damages and to unsightly alterations due to ageing. Thus, such reworkings of the face alone suggest that motivation for such interventions was most often an elective beautification procedure, rather than a ‘necessary’ repair to rectify damages.<sup>23</sup>

#### **The Virgin from Østsinni, Oppland, C 3409<sup>24</sup>**

The technical examination of the sculpture of the Virgin from Østsinni provided much information that contributes to our understanding of the physical condition of the Virgin from Veldre. Like the Veldre Virgin, the figure from Østsinni is carved in oak.<sup>25</sup> It is of a later type, typical of the second half of the thirteenth century (Fig. 4).<sup>26</sup> This sculpture was also partially recarved. The present



**Figure 5** *The crucifix from Tretten I, Øyer (Oppland), Norway; late thirteenth century, repolychromed in the fifteenth century (author's dating). Polychromed wood: sculpture probably in oak and cross probably pine. Cross: 172 × 98 × 15 cm. Figure: 65.5 × 62 × 15 cm. KHM, cat. no. 3014. (Photo: Svein A. Wiik © KHM.)*



**Figure 6** *The Virgin from Veldre; view from the proper right side, digitally manipulated to show the form of the sculpture with the secondary wedges removed (compare with Fig. 2). Without the additions, the insubstantial volume of the lower part of the figure is obvious. (Photo: Grete Gundhus and Svein A. Wiik © KHM.)*

polychromy bears strong similarities to that of Veldre and is likewise thought to be a later addition although no evidence of earlier remains were found during this examination. The polychromy features the same characteristic secondary dimples in the corners of the mouth and the little double chin, neither of which are found in thirteenth-century work, but which are rather characteristic features for late medieval figures. Equally, it is probable that the original volumes of this sculpture were altered in a similar fashion. If the figure is viewed from the side, it is apparent that the mass of both the chest and the throat were reduced. The head now appears to droop forward and the

fold of the robes are almost nonexistent; they are very flat and unmodelled. The polychromy on both sculptures is almost identical; each element has the same colouring and the painting technique is equally close. Despite the resemblances in the polychromy, however, the overall appearance of the sculptures is very dissimilar due to the drastically different sculptural forms and the dissimilar state of preservation of the two works.

Given that the polychromy is virtually the same on the two Virgins, their painting techniques and materials will be summarised together. A more detailed description of the wooden construction and the painting technique

is presented in the appendix. A substantial area of the obverse of the wooden forms was covered with a partial covering, overlapping pieces of canvas, over which the ground, composed of chalk bound in aqueous glue, was applied. Local applications of canvas or parchment to cover joins, cracks, knot holes and other imperfections were common throughout the medieval period, but their use to such an extent (i.e. covering a large area instead of only discreet flaws in the structure) is not recorded on any of the thirteenth-century Norwegian wood sculptures. The presence of the canvas thus suggests that the figures were reworked at a later date.<sup>27</sup> The surface of the chalk preparation is flat and smoothly sanded, but fine details were not rendered in this layer. The mass of the hair is generally rounded and unmodelled, apart from the hair of the Child of the Veldre sculpture, where very fine lines were incised with a stylus. These were most probably executed after the gilding was applied.

Analysis of the coccoliths found in the chalk ground suggests that material from a Continental source was used.<sup>28</sup> This is consistent with the later date proposed for the object. Studies of the sources of the chalk used by Norwegian painters have indicated that in general, the chalk used from 1250 to 1350 was imported from the Channel area of England, while after the Black Death, which arrived in Norway in 1349, the source of supply changed to Continental deposits. It is thought that this shift came about as a result of artistic and mercantile factors; connections with northern Germany were strengthened by the expansion of Hanseatic trade.<sup>29</sup>

The polychromy is relatively simple; red, green and golden tones predominate. Blue is used in small quantities in the linings of the red mantles of the figures. Twelve different pigments and types of metal leaves were identified: indigo, copper green, yellow ochre (an iron earth pigment), lead-tin yellow, red lead, vermilion, red lake, lead white, charcoal black, silver and part gold.<sup>30</sup> Imitation gold was employed; it was created by the application of a yellow glaze (usually based on oil and/or resin) over a highly polished area of silver gilding, which produces a rich, golden effect.

Many of the materials and techniques used are typical of the fifteenth century. Scanning electron microscopy with energy-dispersive X-ray (SEM-EDX) analysis of the composition of the green tones used on both Virgins indicated that a small quantity of lead-tin yellow was added to the copper green.<sup>31</sup> Investigations of artists' materials have shown that this pigment did not come into common use before 1350.<sup>32</sup> Lead-tin yellow has not been identified analytically on any of the Norwegian objects that are dated before the mid-fourteenth century.<sup>33</sup> The polychromy has the 'fatty' surface appearance that is characteristic of oil-bound paints and many of the tones are mixtures of more than two pigments. This again differs from usual thirteenth-century practice where colours were more often created from a single pigment, or perhaps a simple mixture of two pigments.<sup>34</sup> In the polychromy of the two

Virgins, most of the structures consist of single, monochrome layers. The pale pink flesh colour was worked wet-in-wet; a lighter tone of flesh paint was employed to form highlights. It is possible that the red mantle of Veldre originally comprised a two-layer structure consisting of a red organic glaze applied over an opaque application of red lead and vermilion. The overlying transparent coating, however, now appears to be colourless. Without further, more detailed analysis, it is not possible to know if this layer should be interpreted as a varnish or as a degraded red glaze. In the case of the red mantle of the Østsinni Virgin, a distinct layered structure is found – here, vermilion lies over a layer of red lead. The mantle of Veldre may have been painted in the same manner, but the remaining paint layer is so exceedingly thin that it is not possible to make this distinction.

The exteriors of the ankle-length robes under the red mantles are rendered in 'imitation gold'. As described above, this technique is created by applying a yellow glaze to burnished silver gilding. Here, the silver was applied in the ground-gilding technique, i.e. it was adhered directly onto the chalk ground by means of an application of a coating of an aqueous glue or egg white. The flexibility of the ground allows the silver to be polished to a high degree of gloss. This technique of gilding directly onto the white, glue-bound ground remained in common use up to the end of the fifteenth century.<sup>35</sup> The final golden effect is achieved by the application of a yellow glaze (usually based on oil and/or resin) over the highly polished silver gilding.

The colour of the flesh tones is very pale pink – indeed, nearly white.<sup>36</sup> As described above, a pink blush was worked wet-in-wet into the paler colour on raised parts of the forehead, nose, cheeks and chin. This manner of rendering flesh differs from the practice common to thirteenth-century polychromy, where darker pink shading normally outlines the outer edges of the face, for example towards the hair, where it serves to heighten the three-dimensionality of the sculptural forms (Fig. 7).

Apart from a single thin line marking the lower edge of the crown and the top opening of the golden robes, another technical characteristic that is very common before the mid-thirteenth century – the use of black outlines to distinguish areas of colour – is almost entirely absent on these two figures. Unn Plahter has shown that in the twelfth and first half of the thirteenth century, differently coloured elements were 'coloured in' and outlined with black on both sculpture and panel painting. The use of black outlines seems to fall out of favour in fifteenth-century general practice.<sup>37</sup>

The brushwork of the polychromy is characterised by a rather imprecise and rough application with broad overlapping strokes (up to half a centimetre in width) where the different colours meet. This is evident in the opening of the golden robe where it abuts the flesh of the throat. There is also a broad overlap of the silver foil exposed on the throat. Originally this was not visible, but with time



**Figure 7** Crucifix from Haug (Buskerud), Norway, c. 1225. Polychromed wood: sculpture in alder, cross in pine. Sculpture: 109 × 92.5 × 20 cm. Cross: 235.5 × 146.5 cm. KHM, cat. no. 3604. Detail of the head. (Photo: Kaja Kollandsrud © KHM.)



**Figure 8** The Virgin from Veldre; the face (detail Fig. 1). (Photo: Grete Gundhus and Svein A. Wiik © KHM.)

the lead white paint delaminated from the silver where it was unprotected by the glaze used to create the imitation gold. Another area of overlap may be found where the red exterior of the mantle of the Veldre Child meets the blue lining.

The matte gilding of the hair on the Veldre sculpture consists of part gold applied onto a mordant. The mordant is a medium-rich reddish layer containing large particles of lead white and minor amounts of red lead, which are probably bound in a drying oil. Where the hair lies over the red mantle, the structure is underpainted with a reddish brown. In the case of the hair of the Child, this layer is distinctly more brown than red in colour. Poliment gilding with pure gold foil applied onto a red-brown gilding ground is typical of the late medieval Swedish material. The same red-brown colour is likewise typical of the mordants used in the fifteenth century.<sup>38</sup> In the case of the Virgin from Østsinni, the mordant used as a seat for the part gold in the areas of the hair is a somewhat lighter pink tone, while that used on the Child is a deeper red colour. The use of part gold in less visible areas such as the reverse of figures and on repairs has often been documented, especially on Norwegian, Swedish and German sculptures. When the crucifix from Dal, Telemark was examined in 1970, part gold was found on the outside of the crown, the loincloth and the royal insignia.<sup>39</sup> Blindheim dated this crucifix to the second quarter of the thirteenth century and believed that the repaint was executed not

long after.<sup>40</sup> Given the character and execution of the current polychromy, it is rather more likely that the figure was repainted at a significantly later date, either in the fourteenth or in the fifteenth century.<sup>41</sup>

The circular ornaments on the outside of the red mantle of the Veldre Virgin were created using part gold applied in the stencil-gilding technique. The metal leaf was applied on the uppermost glaze/vanish layer before it was fully dry and still somewhat tacky by means of a stencil. On the Østsinni Virgin these patterns are rendered in silver, which lies on a layer of transparent medium that was applied locally. The use of stencils to embellish coloured surfaces is normally found from the end of the fourteenth century onwards.<sup>42</sup> An early Norwegian example is the stencilled silver flowers found on the exteriors of the red mantle and of the blue robe of the Christ Child of the Virgin from Dal, dated by Blindheim to the second half of the thirteenth century.<sup>43</sup>

The painting of the eyes of the Virgins is not at all consistent with the style of the carving of the figures. In the thirteenth century, irises were normally painted blue and were separated from the pupil. This structure was painted directly onto the flesh colour or onto white, with a lighter ring (Fig. 7). In contrast, the eyes of Veldre and Østsinni are painted in a distinctly fifteenth-century manner (Figs 8 and 9). Here, a strong black line marks the eyelid and two thin, dark pink lines define the lower contour of the eye. The black pupils are painted onto brown irises that



**Figure 9** *The Virgin from Østsinni; the right eye (detail Fig. 4).* (Photo: Eirik Irgens Johnsen © KHM.)

are outlined with black. A lighter colour does not separate the iris from the pupil and the short, blunt eyebrows are dull yellow in colour (an earth pigment is the probably source of this colour).

These two figures are the only two examples of brown-eyed Virgins preserved in the collection of the Museum of Cultural History, University of Oslo. Their painting techniques differ from the style characteristic of earlier examples, where a calligraphic method of execution is typical: generally, an elegant red-brown line frames the eye and tapers off into a tip possessing the width of a single hair of the brush. Tångeberg observed that reflections of light and other details painted onto the eye are features that were first introduced in the late fifteenth century – from the 1480s onwards.<sup>44</sup> No such details are found here.

### Crucifix from Tretten, Oppland

The polychromy of the crucifix from Tretten (Fig. 5), also in the collection of the Museum of Cultural History, shows the same characteristics as the two Virgins.<sup>45</sup> Blindheim placed the crucifix into the group attributed to the artists responsible for the Calvary group from Balke and suggested a dating to the first quarter of the fourteenth century.<sup>46</sup> In contradiction to this interpretation, the author concludes that the current polychromy of the crucifix is a modernisation of an older paint scheme that dates from the fifteenth century.

It is not obvious that this sculpture was recarved or its volumes modified, but the same characteristic loss of crispness in the carving is found, attributable to the extensive use of canvas applied directly on the wooden

form (and covered by the thick chalk ground). The lack of modelling of the ground augments the roundness of the three-dimensional form. The secondary polychromy, like that of the Virgins, consists primarily of tones of red, green and gold. Equally, the green colour was again found to be composed of a copper pigment to which were added small amounts of lead-tin yellow. A darker green structure, identified as traces of an older polychromy lying over the original chalk ground, was found under the later surface in the green centre of the left hand trefoil of the cross. It is distinctly different in composition when compared to the younger layer. The older mixture consists of copper green with minor components of lead white and bone white; no traces of lead-tin yellow were found.

The eyes of the Christ are half open. Although they are simplified, they are formed in the same fashion as the eyes of the Virgins. The eyelids are defined by a thicker black line while the half-hidden iris is marked with a black outline. The lower edges of the eyes are indicated with very fine red lines.

### The Virgin from Follebu, Østre Gausdal in Oppland

A useful comparison can be made between the three sculptures discussed above and the Virgin from Follebu (Fig. 10).<sup>47</sup> Engelstad dated this sculpture to 1420–30 and attributed it to the school of Lübeck.<sup>48</sup> The polychromy of the figure is original and shares many features of the sculptures discussed. Like the sculptures from Veldre, Østsinni and Tretten, there is extensive use of overlapping pieces of canvas on the wooden support and the chalk ground is relatively thick. The polychromy is dominated by red, green and golden tones. Black outlines are not used. The red mantle worn by the Virgin is decorated with a stencilled motif of gold stars. The eyes are painted in the same characteristic manner: the pupils are painted directly onto the iris, which is outlined with black. A black line defines the eyelid and a thinner line marks the lower edge of the eye. The colour of the eyebrows again suggests that yellow ochre was employed.

### Conclusion

The examination of the construction and painting technique of the Virgin from Veldre, the Virgin from Østsinni and the crucifixes from Tretten and Dal show that they are all older sculptures that were recarved and repolychromed, probably between 1420 and 1480. It seems plausible that the modernisation of the crucifix from Tretten was related to the building of a new stone church in 1464.<sup>49</sup> The examination of the materials and techniques used in the secondary polychromy of the crucifix from Dal, undertaken in the 1970s, indicated that the polychromy is likely to be later than the date suggested by Blindheim, possibly as late as the late fourteenth or fifteenth century.<sup>50</sup>



**Figure 10** *The Virgin from Follebu, Østre Gausdal (Oppland), Norway, c. 1420–30. Polychromed oak. Sculpture: 84 × 45 × 22 cm. Tabernacle: 115.5 × 51.5 × 11.5 cm. KHM, cat. no. 3083. (Photo: Anette Høyer © KHM.)*

On the basis of the recent technical analysis of the materials and techniques of the Virgin of Veldre and the other related works, the author suggests a date of the first quarter of the thirteenth century for the wooden core of this Virgin, in agreement with the dating proposed by Bugge.<sup>51</sup> The technical features, which are typical of the early thirteenth century, include the symmetrical and

frontal composition of the figure, its height of less than a metre and the rectangular and boxlike form of its hollowed back. This date is, however, early for a figure carved in oak.

The form of the Veldre Virgin was most likely recarved, thus reducing its original volume. The face was remodelled and its mouth modernised in the style of the fifteenth



century, and it was given new features such as the deep dimples in the corners of the mouth and a little double chin. The volume of the lower legs (from the knees downwards) was also reduced. The extensive use of pieces of canvas applied to the wooden support prior to the application of the chalk ground is also an indication of a late application.

Analysis of the painting technique indicates that the polychromy was applied in the fifteenth century. The author suggests a date of 1420–80 based on the following aspects of the technical study presented above: the presence of lead-tin yellow; the use of red, green and golden colours; the lack of black contour lines; the reddish brown gilding grounds; the use of stencil-gilded decoration; the method used to model the flesh tones and the techniques used to paint the eyes.

The original form of the Virgin from Østsinni firmly places its date of origin in the second half of the thirteenth century. Despite the stylistic dissimilarities with the Virgin of Veldre, there are also a few points of correspondence between the modernised three-dimensional forms. For example, the characteristic dimples and chin, both of which are typical for the later medieval period, are utterly inconsistent with the date of origin of these sculptures. Equally, the absence of articulated folds of drapery on the flattened chests of the sculptures supports the theory that both were recarved.

The three sculptures all originate from a single bishopric: they are assigned to Hamar and Oppland. The polychromy preserved on the sculptures of the Virgin from Veldre and from Østsinni is so similar, both in terms of materials and technique, that it seems likely that they were created by the same craftsman, a theory strengthened by the original geographic proximity of these works.

Evidence has been put forward to suggest that the polychromy on the crucifix from Tretten is also contemporary. Here traces of the original polychromy and original chalk ground were found under the present finish. Based on these technical findings, it may be argued that the dating of the original sculpture suggested by Blindheim (first quarter of the fourteenth century), should be pushed back, perhaps to the second half of the thirteenth century. It appears that the later polychromy has impeded accurate interpretations of the nature of the original wooden core and its polychrome remains. Given the growing number of known examples of later reworking of medieval sculptures and the obvious implications that such interventions hold for the present condition of such works, it is clearly to our benefit to be aware of these practices if we wish to better understand the surviving material.

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#### Appendix

##### *Virgin from Veldre, Hedmark, cat. no. 9064*

##### *Construction*

- Maximum dimensions: 81.5 × 28 × 23 cm.
- Woodwork: oak (visual observation).
- Original parts: three or four. The Virgin with the Child and chair have been carved in one piece, except for the Virgin's right hand that has been attached separately with a wooden peg at the wrist. A plug hole of 1 cm diameter remains. A missing attribute, such as a sceptre, was once held in her right hand and may have been carved and attached separately. The Christ Child's right arm was carved separately and secured to the shoulder with a wooden plug, 1 cm in diameter.
- Missing parts: the tips of the crown have broken off; the Virgin's right hand (which was carved separately); part of the Virgin's right shoe; part of the Child's nose; the Child's right arm (from the shoulder downwards); the onion-shaped terminal element of the chair post.
- Later additions: the small remains of the attached crown ends are probably secondary. Two wedge-shaped pieces of deciduous wood are attached vertically behind the chair posts. These are broadest at the bottom, up to 5 cm, with a depth of 8 cm. They are attached to the sculpture with four large iron nails with round heads, three with a diameter of 1.4 cm, one of 1 cm. Two nails are used in each wedge. The two lowermost nails are sunk down into the wood (Fig. 3). There are two holes drilled into their undersides. A secondary plug, 2.5 cm in diameter, sits in the hole under the right wedge. The diameter of the hole in the left wedge is 2.3 cm, depth 5 cm. A plug, 2 cm in diameter, in a hole in the centre of the base also appears to be secondary.
- Secondary recarving of the original wooden support: certain elements of the face, the deep dimples in the corners of the mouth and the double chin are most probably later modifications (the same features are found on the Virgin from Østsinni). Evidence of bifurcation in the middle of the hair at the back of the Virgin's head indicates that the hair was originally arranged in braids. These appear to have been cut away at the front of the shoulders. The folds of the robe where it falls over the breast were softened; they would originally have been much sharper. The area of the Virgin's shins, the volume of wood from the knees to the plinth, was probably reduced. Alterations in this area include reduction of the front of the chair, which lacks the profiles still preserved at the sides.

- The pith: if the radial crack lines in the base are extended, it is evident that the pith of the log was placed behind the back of the sculpture, but within the area of the secondary wedges. It is estimated that the pith would have originally sat a little to the left of the middle of the mass of the original sculpture. The pith cannot be examined at the top because of the intact polychromy.
- Hollowing out: the head has been fully carved in the round. The main piece comprising the body is hollowed out from the back of the shoulders. The open-ended hollowing is rectangular and boxlike. It measures 52 × 17.5 cm and has a depth varying from 10 to 15 cm (measurements include the secondary wedges). The finish of the unpainted surface is quite rough. There are tool marks suggesting that the hollowing was carried out with a flat-edged iron tool with a width of at least 9.2 cm.
- Drilled holes: a hole has been drilled into the top of the head. A large wooden plug with a diameter of 3.6 cm remains in the hole with its end standing 2 cm above the surface of the top of the head. In the underside of the base are four holes, three of which are drilled. Two of these holes are drilled into the underside of the secondary wedge-shaped pieces, one in each. Thus, the third, central drilled hole is the only one that could possibly be original: it measures 2.2–2.5 cm in diameter and has a depth of 7.7 cm. A wooden plug, apparently secondary, remains in this hole (see description of secondary parts, above). A second plug is inserted in the hole in the secondary wedge on the right side. On the left side of the round plug in the centre is another hole that is more square than round; its largest width is 1.3 cm. There are remains of what may be a broken wooden plug in this hole.
- Canvas covering: apart from its face and the hands, the wooden surface of the sculpture appears to be covered by canvas. The textile is a fine and even plain weave. The thread count is 13 threads per cm in both the warp and weft directions.
- Polychromy: because of the similarities, a description of the present secondary polychromy is given together with the Virgin from Østsinni, below. Gundhus describes two ochre-like pigment layers in the hair of the Child; one with a colour tending towards brown and one reddish. She also recorded the presence of a chalk ground between these two layers.<sup>52</sup> No other traces of the older polychromy were found. The polychromy appears to be generally well preserved. This impression is created by the large, coherent areas of painted surface; for example, the carnation, the red mantle and its blue lining. Other parts, however, such as the Virgin's shoes and the plinth, have lost almost all of their paint. On the mantle of the Virgin, the mantle and robe of the Child and on the sides of the throne, parts of the paint and ground have been cut away with a knife. The sides of the throne and the Child's clothes were the most severely attacked. Here, up to 70–95% of the paint is lost. The knife dam-

ages do not seem to be limited to certain defined areas of colour.<sup>53</sup> This treatment is unusual as iconoclastic deformations, for example, usually concentrate on the faces of figures. Blindheim has suggested that this was done for prophylactic reasons; it was thought that such scrapings had the power to cure illness.<sup>54</sup>

The most severe alteration to the original appearance is caused by the darkening of the imitation gold on the outside of the crown and robes. These areas would originally have been finished in a rich metallic gold tone. The darkening is caused by corrosion of the silver leaf; as it blackens, the volume of the silver expands causing the breakdown of the overlying transparent yellow glaze. Its surface is now disrupted by a finely distributed craquelure pattern.

### *Virgin from Østsinni, Oppland, cat. no. 3409*

#### *Construction*

- Maximum dimensions: 67 × 28 × 18 cm.
- Wood: oak (visual observation).
- Original parts: three or four. The bodies of the figures and chair have been carved from one piece. It is probable that the Virgin's right arm was formed separately and attached to the main block with a wooden plug. An attribute, which would have been held in the missing right hand, would probably have been carved from a separate piece as well. The Child's right arm, carved separately, was attached with a wooden plug at the elbow. The attribute held in this hand was also probably carved as a separate piece.
- Missing parts: the tips of the crown at the centre and to the left side have broken off along the fibre direction of the wood. The Virgin's lower right arm and hand has broken just before the elbow joint. On the right knee, traces of a missing attribute, once held in the right hand, are preserved. The top ridge of the fold of the mantle held by the left hand is missing, c. 11 cm from the top. The Child's right arm is missing from the shoulder. The attribute once held in the Child's left hand is lost.
- Later additions: a small square wooden plug, 2 mm wide, has been set in from the back; it now penetrates through the paint on the front.
- Secondary recarving of the original wooden support: it is likely that the deep dimples in the corners of the mouth are secondary. The little double chin is also a new element (compare the same characteristics on the Virgin from Veldre). The drape of the robes over the Virgin's chest and that of the Child is now uncharacteristically unmodelled and relatively flat. It is likely that these areas have been cut down. This becomes more apparent when the sculpture is viewed in profile: the Virgin's head now appears to lean forward in an unnatural angle and the distance from the chin to the throat is conspicuously long, suggesting that the neck

has been cut back as well. Furthermore, it is possible that the Virgin may have originally worn some sort of headdress, which may have been carved away. The Child now wears small, narrow shoes, which may be a modification of the original feet. On other contemporary figures, naked feet with characteristic, outspread toes are often found.

- The pith: this is visible in the left shoulder. Extending the radial crack lines under the base of the sculpture shows that the centre of the log is relatively far behind the sculpture at the back.
- Hollowing out: the head is fully carved in the round. The back of the body is flat and has been hollowed out from behind the shoulders down to the open-ended base (see Fig. 11). The hollowing is softly rounded at the top to follow the shape of the shoulders. Behind the upper body its broadest point measures *c.* 17 cm and narrows behind the hips to 13.5 cm. Behind the throne it measures 19.5 cm at the widest point. The maximum depth is 6 cm behind the shoulders where the hollowing is rounded. This varies from 7.5 to 9 cm behind the throne. The wood is scored with traces that indicate the use of an iron tool with a rounded edge, 3 cm wide.
- Repairs to the hollowed area: there are several smaller repairs within the hollowed area where the carver has cut through to the front of the figure. The repairs are made by gluing small, square, thin sheets of wood in varying sizes onto the interior surface of the hollow. Thin wedges of wood have been set into the radial cracks in the front of the sculpture between the legs.
- Drilled holes and wooden plugs: there is a drilled hole in the top of the head (diameter 1.8 cm, depth 6.2 cm) and three under the plinth (one in the middle and two in each side). There are remains of plugs in two of the holes. Their diameters vary from 1.6 to 2 cm. The third, empty hole has a depth of 4 cm. There are also two holes at the back, one in each side of the middle of the figure, diameter 0.7 cm. The hole in the blue lining of the mantle under the right elbow has been partially covered by a piece of canvas. These two holes may have served as part of a fastening system to secure the sculpture to a backboard or to the back wall of a tabernacle.
- Canvas covering: under the chalk ground, a canvas covering has been applied to large areas of the front of the sculpture. Thread count measures 19 threads per cm in both the warp and weft directions.
- Polychromy: see the summary of the description of the present secondary polychromy below. No traces of an earlier polychromy were found. The sculpture has not been restored. The poor state of preservation makes the polychromy difficult to read; large areas of the white chalk ground are exposed where the paint has flaked off. Its surfaces are now essentially grey in colour. This may be due, in part, to remains of a discoloured original egg white varnish. The grey effect is particularly evident on the lighter areas of flesh. The original yellow glaze applied over silver leaf in areas of imitation



**Figure 11** *The Virgin from Østsinni (Fig. 4); reverse. (Photo: Eirik Irgens Johnsen © KHM.)*

gold (on the outside of the crown and the robes) was accidentally removed during an early treatment, thus leaving large areas of the grey silver gilding exposed.

#### *The paint stratigraphy on the sculptures from Veldre and Østsinni*

Unless stated otherwise, the structures are the same for both sculptures. <sup>A</sup> indicates that SEM-EDX analysis has been performed on cross-sections from the paint layers of

the Virgin from Veldre.<sup>B</sup> indicates that SEM-EDX analysis has been performed on cross-sections from the paint layers of the Virgin from Østsinni. Eleven structures are documented on each sculpture. The following pigments have been used: indigo, copper green, yellow iron-earth pigment, lead-tin yellow, organic yellow glaze, red lead, vermilion, organic red lake, lead white, carbon black, silver leaf and part gold leaf. Chalk has been added to some colours as filler.

#### *Chalk ground*

The white chalk ground is bound in aqueous glue. The ground is quite thick. The coccolith components present in the chalk used on both figures indicate a Continental source.<sup>55</sup>

#### *Pigments*

- Blue (indigo with addition of lead white)<sup>AB</sup> has been used on the linings of the red mantles on both Virgins and Children.
- Green (copper green with additions of lead-tin yellow and traces of vermilion)<sup>AB</sup> has been used on the onion-shaped terminals of the posts of both figures and on the plinths. On the Veldre figure, it is found on the green bands of the chair and the Child's book. On the sculpture from Østsinni, it is used along the long flat sides between the profiles and on what may have been silver gilding of the plinth.
- A yellow mixed colour (comprised of lead-tin yellow, chalk and traces of an organic glaze)<sup>A</sup> has been used in a repair in the imitation gilding under the missing right hand.
- Red (red lead and vermilion)<sup>AB</sup> has been applied on the outside of the mantles of both Virgins and Children. It is a two-layered structure on Østsinni, where the vermilion lies over an underlayer of red lead. The layer structure is not as obvious on Veldre, but the paint is so thin in the cross-section that use of this build-up cannot be excluded. In addition to red lead and vermilion, a significant amount of chalk is present, which suggests it was used as a filler. The hair has been gilded with part gold leaf, which is applied to a reddish mordant. On Veldre a reddish brown mordant is visible beneath the part gold where the hair falls onto the front of the shoulders onto the red mantle.
- Brown is found as the surviving polychromy on the shoes of all of the figures. There are no traces of colour left on the shoes of the Veldre Virgin, but it is probable that these were also brown. The irises of the eyes are brown. The white fingernails of the Veldre Virgin are defined by a thin, light brown stroke at the base of the nail.
- White has been used on the sides of the green book of the Veldre Child and on the fingernails of the Veldre Virgin.
- Black (carbon black, probably charcoal)<sup>AB</sup> has been used in details of the eyes, such as the lower edges,

outlining of the irises and for the pupils. A single, thin black line is used to define both the lower edge of the crown and also the neck opening of the robe.

- The flesh colour<sup>A</sup> is whitish in tone. It is composed primarily of lead white. Black and red particles were observed during an examination of the surface of the polychromy under a microscope, but these were not seen in the cross-section. When the copy of the Veldre figure was made, black and vermilion were added to the lead white of the flesh colour in order to produce a warm, slightly greyish hue. The cheeks, the middle of the forehead and the chin were modelled with a darker pink tone that was worked wet-in-wet into the lighter flesh paint. A pink stroke has also been added in the innermost corners of the eyes. Both of these paints probably derive their pink tone from vermilion.

#### *Metal foils*

- Imitation gold<sup>A</sup> is created by applying silver leaf directly to the chalk ground – ground gilding, here technically a 'water-silvering' technique – which was burnished to a high gloss and then coated with a yellow glaze, thus creating a golden effect. This technique has been applied to the outside of the crowns and to the ankle-length robes.
- Silver leaf<sup>B</sup> has also been used for the round ornamental motifs that decorate the red exteriors of the mantles of the Virgin and Child from Østsinni. As a result of corrosion they now appear black. In cross-section, it is apparent that the metal ornaments have been applied over a transparent medium. No remains of a yellow glaze can be identified. Silver gilding was also found on the ground under the green colour of the plinth. The cross-section was taken in an area of overlap with the brown paint of the shoes on the Østsinni sculpture.
- Part gold<sup>AB</sup> is used in the hair. On the Veldre sculpture, the leaf has been applied on a semi-transparent, medium-rich mordant containing large particles of lead white and some red lead; this is applied to a glaze or varnish that is itself posed upon a red-brown paint layer. The inside of the crown seems to have been painted with the same colour. On the Østsinni sculpture, the mordant is dark pink in colour on the Virgin and more red in tone on the Child's hair. Part gold has also been used in the circular motifs stencilled over the outside of the red mantle. The red mantle of the Veldre Child is so worn that few traces of the paint remain; there are, however, surviving traces of part gold that indicate that the mantle was once ornamented with the same stencilled pattern. It is not clear whether the stencil gilding employed the still-tacky paint surface as a mordant, or instead an overall application of glaze or varnish that was applied on the red colour. The layer is transparent, medium rich and contains lead white and chalk. It now looks colourless, but it may have originally been a red organic glaze.

No remains of colour were found on the outside of the headdress and the pillow of the throne of Østsinni, or on the shoes of the Veldre Virgin.

*The crucifix from Tretten I, Øyer, Oppland, cat. no. 3014*

The crucifix has not been analyzed to the same degree as the two other sculptures.

<sup>c</sup> indicates that SEM-EDX analysis has been performed on cross-sections from the paint layers.

- Maximum dimensions: cross: 172 × 98 × 3 cm; figure: 65.5 × 62 × 12 cm.
- Wood: the figure appears to be carved of oak, the cross of pine (visual observation).
- Original parts: the figure consists of two parts – the body and arms have been carved separately (the arms as one, single cross piece). The cross consists of two tangential boards, which are joined at the crossing with an interleaving lap joint.
- Construction: the sculpture is not hollowed; rather, it is fully carved in the round at the back. It is secured to the cross with three iron nails, one through each of the hands and one through the feet. At the back of the cross, the iron nails have been bent tangentially to the direction of the wood fibre. The arms of the figure, including the portion that comprises the back of the shoulders, have been mounted onto the torso with two (possibly three) wooden plugs that are driven in from the back. Two wooden plugs have been set diagonally into the armpits to further secure the arms. Three wooden plugs have been set into the right side of the figure: in the hip, in the folds of the loincloth and at knee level. Wiik has suggested that they were added either to secure a crack in the wood or to secure a now-lost separate piece.<sup>56</sup> The arms of the cross overlap the central element. The lower part of the vertical has been extended with a tenon (10.5 × 8 cm).
- Drilled holes and wooden plugs: a hole has been drilled into the tenon from the front. A wooden plug once probably secured the tenon when mounted into a mortise. The two sections of the cross were reinforced with two battens at the back. One, 41cm long (apparently original), is applied over the crossing at the back and is secured with four wooden nails. The other is a later addition (described below).
- Later additions: the cross stem is broken off above the upper part of the overlap in the crossing. A batten, measuring 63.5 cm in length, is fixed along the vertical of the cross; it probably replaces an original reinforcement. The use of different materials, the technique used to form it and its method of attachment clearly identifies it as a secondary element. It has been set into the middle of the batten on the cross arms and secured with four iron nails driven through the paint from the front of the cross. Small pieces of wood have been set into the crack above the upper part of the lap joint; these may be secondary. A hole, 2 cm in diameter, penetrates the upper trefoil of the vertical of the cross. This may be part of a secondary mounting of the sculpture. The hole is apparently responsible for the loss of a wedge of wood, 17 cm in length, from the back of the cross.<sup>57</sup>
- Canvas covering: an extensive partial canvas covering, in the form of many small pieces of textile, was applied to the wooden support before the application of the chalk ground.
- Polychromy: the (non-original) polychromy of the sculpture is relatively well preserved. Delamination of the paint from the wooden substrate is minimal. In 1976, conservator Svein A. Wiik carefully retouched losses to the painted surface with watercolours using a hatching technique, thus quieting their disruptive visual effect. The most striking alteration of the polychromy is the darkening of the imitation gilding that was originally such an important aspect of the sculpture. The corrosion of the silver and the darkening of the original yellow glaze have drastically changed the intended appearance; the rich golden areas are now much duller and darker. A trace of an older polychromy and chalk ground (polychromy I) was found under the green centre of the trefoil on the left arm of the cross. The present polychromy (polychromy II), which is painted on a more recent chalk ground, is datable to the fifteenth century.
- Chalk grounds: the two chalk grounds are both bound in aqueous glue. A sample was taken from both the original and the secondary grounds of the cross. Katharina von Salis has established that the two samples are not the same; they are different in age and contain different types of coccoliths. Both chalks are, however, from a Continental source.
- Paint structures: nine paint structures have been observed on the crucifix. Blue has not been used. The arms of the cross are oriented so that the bark side is towards the front of the sculpture; the vertical member of the cross is formed so that the pith side faces forwards.
- Pigments: green<sup>c</sup> has been identified in the centre of the trefoils at the cross ends. Polychromy I: chalk, copper green with addition of bone white. Polychromy II: copper green, lead white and particles of lead-tin yellow. Christ's crown of thorns is also painted green. Reddish yellow has been used on the sides of the cross. Red (red lead with some particles of vermilion in the upper portions of the layer)<sup>c</sup> is present at the convex middle and the flat end profile of the trefoils of the cross, on the lining of the loincloth and areas depicting Christ's blood. Small remains of reddish brown<sup>c</sup> are preserved on the reverse of the cross; brown is also used for the mordant found under the part gold in the hair and beard. This mixture consists of an earth pigment with additions of chalk or gypsum and possibly

of bone white. The layer is described as 'bole' in Wiik's treatment report from 1976 although the gilding does not seem to be burnished. He notes that it seems to be softened by water. Brown is also used to render the eyebrows. The lines of the eyelids and the line that outlines the iris are painted in black. On all areas depicting exposed flesh, flesh colour is preserved. Part gold has been used to render the plant ornaments of the cross and for the outside of Christ's loincloth. Part gold<sup>C</sup> is found on the hair and beard.

## Notes

1. The work presented is part of an ongoing research project mapping material and techniques used in the construction and painting of Norwegian polychrome wooden sculpture from the period 1100–1350 at the Museum of Cultural History, University of Oslo. See Kollandsrud, K., 'Technological mapping of Norwegian polychrome sculpture, 1100–1350: a preliminary overview', in *UKM – En mangfoldig forskningsinstitusjon, Universitetets kulturhistoriske museer Skrifter nr. 1*, ed. E. H. Hofseth, Universitetets kulturhistoriske museer, Oslo (2002) pp. 125–42.
2. For ease of referencing, the initials KHM (for the original Norwegian: *Kulturhistorisk museum, Universitetet i Oslo*) will be used in this text to designate the Museum of Cultural History, University of Oslo. The *Kulturhistorisk museum, Universitetet i Oslo* was renamed in 2003. Formerly the museum was known as *Universitetets kulturhistoriske museer* (UKM) (as in note 1, above).
3. Blindheim, M., *Painted Wooden Sculpture in Norway c. 1100–1250* (Medieval Art in Norway), Scandinavian University Press, Oslo (1998) pp. 66–7, pl. 39. Bugge, A., 'Kirkene på Hedmark', in *Hedmarks Historie. Første fellesbind*, eds R. W. Halvorsen, G. Gjestvang, O. Rømer Sandberg *et al.*, Hedmark historielag, Hamar (1957) pp. 445–660.
4. Gundhus, G., *Virgin from Veldre C nr. 9064*, unpublished restoration report, KHM (1976).
5. The copy was carved in oak by woodcarver Bjarte Aarseth, Museum of Cultural History, University of Oslo. The polychromy was executed by conservator Marie Louise Juel Sauerberg of the Hamilton Kerr Institute, Cambridge, and by Inger Draugedalen, intern from the conservation studies programme of Oslo University, under the guidance of conservator Svein A. Wiik, Museum of Cultural History, University of Oslo.
6. The analysis of the painting technique was performed by the author in cooperation with Marie Louise Juel Sauerberg. I am also grateful to Unn Plahter for help in interpreting the analysis and for the inspiring daily discussions.
7. Blindheim 1998 (cited in note 3), pp. 66–7, pl. 39.
8. Bugge 1957 (cited in note 3), p. 487.
9. The pith of the log and the material towards the bark side of the stem was removed when the log was prepared and hollowed out. There are less than 100 growth rings preserved. The poor state of the underside of the base would need a major intervention to clean a track in order to read the remaining rings. This was not found justifiable in relation to the uncertainty of obtaining a valid result. Personal communication, Ian Tyers, ARCUS Dendrochronology Laboratory, University of Sheffield, England.
10. The Virgin from Hove (cat. no. MA 27, Bergen Museum), dated by Williamson to 1230, is an early confirmed example where oak was used both for the tabernacle and for the sculpture: Williamson, P., *Gothic Sculpture 1140–1300*, Yale University Press, New Haven and London (1995) p. 117. According to the references in my database, some sculptures before this date are documented as oak, but the sources of information are questionable or have not yet been double-checked. Examples are: crucifix from Giske (cat. no. MA 333a, Bergen Museum), dated to the end of the twelfth century; Blindheim 1998 (cited in note 3), p. 69. Crucifix from Kaupanger (cat. no. MA 335, Bergen Museum), dated to c. 1180 or to the beginning of the thirteenth century; Blindheim 1998 (cited in note 3), p. 57.
11. Tångeberg, P., *Holzskulptur und Altarschrein. Studien zu Form, Material und Technik Mittelalterliche Plastik in Schweden*, Callwey verlag, München (1989) p. 5, n. 2. Originally published as *Mittelalterliche Holzskulpturen und Altarschrein. Studien zu Form, Material und Technik Mittelalterliche Plastik in Schweden*, Kungl. Vitterhets Historie och Antikvitetsakademien, Stockholm (1986).
12. Tångeberg, P., 'Träskulpturens tekniker', in *Signums svenska konsthistoria*. Volume 3: *Den romanska konsten*, Författarna och Bokförlaget Signum, Lund (1995) pp. 281–90, esp. 282.
13. Blindheim 1998 (cited in note 3), p. 67.
14. Thanks to Dr Peter Tångeberg, Nykøping and art historian Ebbe Nyborg, National Museum of Denmark, Copenhagen, for sharing enlightening information.
15. Around 60 of this type are preserved in Sweden. Typical examples are the Virgins from Appuna and Viklau. See Tångeberg 1989 (cited in note 11) and Tångeberg 1995 (cited in note 12), p. 284. A Norwegian example is the Virgin from Dyste, Oppland, cat. no. 1525. Dimensions: 90 × 31.5 × 24 cm. The sculpture is dated to the first half of the thirteenth century. See Selsjord, M., 'The "Golden Madonna" from Dyste', *Technologia Artis* 3 (1993) pp. 113–16. See also the paper by Tångeberg in this volume, pp. 59–75.
16. Tångeberg 1989 (cited in note 11), table, p. 7 and Tångeberg 1995 (cited in note 12), p. 284.
17. Gundhus 1976 (cited in note 4).
18. Plahter, U. and Wiik, S. A., *C 1411. Krusifiks fra Dal*, unpublished restoration report, KHM (1970) and Blindheim, M., 'Skandinaviske krusifiks med verdighetstegn', *Festskrift til Martin Blindheim, Universitetets Oldsaksamlings Skrifter, Ny rekke*, eds I. Martens, B. Myhre, E. Straume, P. J. Nordhagen and E. Hohler [Oslo (1972)], Oslo (reprinted 1986) pp. 59–90.
19. Simonsen, U. and Plahter, L. E., 'The Virgin from Hovland stave church in Eggedal: examination and conservation', *Universitetets Oldsaksamling Årbok 1963–64* (1967) pp. 79–96, esp. 78.
20. The ordinances of 1391 of the image carvers, sculptors, painters and illuminators of Paris state that 'those who will take old panels to repaint, are ordered to scrape away all of the old painting, down to the wood, and to properly fill all of the gaps or joins, and then work and paint as is prescribed' ('... *et qui prendra vieilles tables à repeindre, il doit toute la vieille peinture razer jusqu'au bois, et bien remplir les fentes ou jointes, et puis ouvrir et peindre comme dit est.*'). French transcription published in: Leber, C., *Collection des meilleures dissertations, notices et traités particuliers relatifs à l'histoire de France* (20 volumes), J.-G. Dentu, Paris (1938) vol. 19, p. 454. English translation, Jilleen Nadolny.
21. DN I:578: 'vare fru bilæth' (probably a sculpture representing the Virgin). I am grateful to Jan Brensdalmo of the Norwegian Institute for Cultural Heritage Research (NIKU) for drawing my attention to this document.
22. Tångeberg 1989 (cited in note 11), pp. 305–9. See also the contribution by Tångeberg in this volume.
23. Suckale, R. and Roller, S., 'Mittelalterliche Veränderungen und ihre Erklärung: Reparatur? Verschönerung? Umdeutung?' in *Unter der Lupe. Neue Forschungen zu Skulptur und Malerei des Hoch- und Spätmittelalters, Festschrift für Hans Westhoff zum 60. Geburtstag*, eds A. Morath-Fromm and G. Weilandt, Süddeutsche Verlagsgesellschaft, Jan Thorbecke Verlag, Stuttgart/Thorbecke/Ulm (2000) pp. 39–50.
24. The sculpture does not seem to have been published previously.
25. Visual observation by the author.
26. As dated by the author.
27. Tångeberg points out examples of extensive use of canvas on sculptures from the mid and late fourteenth century onwards in the Swedish material. See Tångeberg 1989 (cited in note 11), p. 206.
28. Analysis of the chalk was performed by Prof. Katharina von Salis in 2003. The unpublished analytical report is filed in the conservation department, KHM, Oslo.
29. von Salis Perch-Nielsen, K. and Plahter, U., 'Analyses of fossil coccoliths in chalk grounds of medieval art in Norway', in *Norwegian*

- Medieval Altar Frontals and Related Material. Papers from the Conference in Oslo 16th to 19th December 1989.* ACTA 11, eds M. Malmanger, L. Berczelly and S. Fuglesang, Giorgio Bretschneider, Rome (1995) pp. 145–56.
30. Part gold is a metal leaf formed by beating a thin sheet of gold and a thicker one of silver together to obtain a leaf of about the same thickness as gold leaf. See Nadolny, J., 'Some observations on northern European metalbeaters and metal leaf in the late Middle Ages', *The Materials, Technology and Art of Conservation. Studies in Honor of Lawrence J. Majewski on the Occasion of his 80th Birthday, February 10, 1999*, eds R. A. Rushfield and M. W. Ballard, Conservation Center of the Institute of Fine Arts New York University, New York (1999) pp. 134–60, esp. 134.
  31. The energy-dispersive X-ray analysis with an electron microscope was performed on a Jeol Link with Inca software.
  32. Kühn, H., 'Lead-tin yellow', in *Artist's Pigments: A Handbook of their History and Characteristics 2*, ed. A. Roy, National Gallery of Art, Washington DC (1993) pp. 83–112.
  33. Professor Unn Plahter, verbal communication to the author, 2005.
  34. Plahter, U., 'Colours and pigments used in Norwegian altar frontals', in Malmanger *et al.* (cited in note 29), pp. 111–26, esp. 126.
  35. Tångeberg 1989 (cited in note 11), p. 223. See also the contribution by J. Nadolny, in this volume.
  36. To imitate the grey character, vermilion and charcoal black were mixed into the flesh colour. Draugedalen, I., *Om kopieringsarbeidet av Madonna fra Veldre*, unpublished report, KHM, Oslo (2002).
  37. Professor Unn Plahter, verbal communication to the author, 2005.
  38. Tångeberg describes the colour as yellowish red to light reddish brown, mostly such as burnt terra da Sienna. He also describes the occurrence of an unusual dark brown bole. See Tångeberg 1989 (cited in note 11), p. 223. See description of the character and production of part gold in Nadolny 1999 (cited in note 30), pp. 139–40. The analysis of the different metal qualities used in the hair and beard of the crucifix from Haug is described in Kollandsrud, K., 'Krusifiks fra Haug kirke. Undersøkelser og behandling', *Varia* 27 (1994) pp. 72 ff.
  39. Plahter, U. and Wiik, S. A., *Restaureringsrapport. C. 1411. Krusifiks fra Dal*, unpublished restoration report, KHM, Oslo (1970).
  40. Blindheim, M., 'Skandinaviske krusifiks med verdighetstegn', in *Festskrift til Martin Blindheim ved 70-årsdagen 2. februar 1986*, Universitetets oldsaksamlings skrifter. Ny rekke 7 (1986) pp. 59–90, esp. 60.
  41. The original form was modified. The bracelet on the left arm of the sculpture, which was added at a later stage, was carved down and into the original paint. Professor Unn Plahter, KHM, has informed me that part gold was found when the crucifix was examined in 1970; see Plahter and Wiik 1970 (cited in note 39). The use of part gold on a reddish bole-like colour is not consistent with other examples of polychromy of thirteenth-century Norwegian material examined thus far. The early dating of the secondary paint suggested by Blindheim is not consistent with this technical evidence. There are several early fourteenth-century Swedish examples on which the use of part gold was identified: Tångeberg 1989 (cited in note 11), p. 72, n. 110. The eyes of the crucifix are painted in a way that resembles the eyes of Veldre and Østsinni: the pupil is painted onto a monochrome iris outlined in black. The eyelid is marked by a broader black line, while the lower edge of the eye is a red thin line.
  42. Tångeberg 1989 (cited in note 11), p. 266.
  43. Plahter and Wiik 1970 (cited in note 18).
  44. Tångeberg 1989 (cited in note 11), pp. 258 ff.
  45. Wiik, S. A., *Krusifiks from Tretten, C 3014*, unpublished restoration report, KHM, Oslo (1976). Special thanks to my colleague conservator Svein A. Wiik, KHM, for drawing my attention to the resemblance to this crucifix.
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  47. Høyer, A., *Virgin from Follebu, Ø. Gausdal, Oppland*, unpublished restoration report, KHM, Oslo (1978).
  48. Engelstad, E. S., 'Die Hanseatische Kunst in Norwegen. Stilkritische Studien', *Skrifter utgitt av det Det Norske Videnskaps-Akademi i Oslo* (1933) pp. 17–50.
  49. Schøning, G., *Reise gjennom Hedemarken 1775. Særtrykk av Hamar Stiftstidende. Utgitt etter foranstaltning av Hedmark Slektshistorielag*, ed. L. Midthaug, Hamar Stiftstidendes trykkeri A.S., Hamar (1942) pp. 6–8. My thanks to Jan Brendalsmo of the Norwegian Institute for Cultural Heritage Research (NIKU), for drawing my attention to this reference.
  50. Plahter and Wiik 1970 (cited in note 18).
  51. Bugge 1957 (cited in note 3), p. 487.
  52. Gundhus 1976 (cited in note 4).
  53. *Ibid.*
  54. Blindheim 1998 (cited in note 3), p. 66.
  55. The analysis was performed by Professor Katharina von Salis, Switzerland.
  56. Wiik 1976 (cited in note 45).
  57. *Ibid.*