

## **The Colors of the Pearl-Gawain Manuscript: The Questions that Launched a Scientific Analysis**

Maidie Hilmo's request for a scientific analysis of the Pearl-Gawain Manuscript, British Library, MS Cotton Nero A.x (January 12, 2014, revised from July 5, 2013). The purpose was to determine what color pigments were used in the miniatures framing the four poems in this unique copy of the Middle English poems, *Pearl*, *Cleanness*, *Patience*, and *Sir Gawain and the Green Knight*. The materiality of the pigments is itself an area of research helping to establish the sequence of tasks and the people involved in the layering and blending of pigments, especially in relation to the underdrawings and the painted layers, but also in relation to the text and the flourished initials. Restoring by technological means what the underdrawings might have looked like offers new research avenues for a study of the iconographic scheme of the miniatures often dismissed as crude and new insights into the role and time frame of the people involved.

The results of this request—including the detailed report on the pigments by Dr. Paul Garside, the Conservation Scientist at the British Library, and the full set of enhanced images—will become available on the Cotton Nero A. Project website and, selectively, in forthcoming publications.

**Request for scientific analysis of the visual elements, including the illustrations, the decorated letters, and the text of British Library, MS Cotton Nero A.x (e.g., the chemistry of the pigments and inks).**

(January 12, 2014, revised from July 5, 2013, as submitted to the Cotton Nero A.x Project)

### **A. PIGMENTS AND BINDERS**

#### **Blues, Blue Green, Green, Yellow, Yellow Ochre, and Brown**

1. What pigment/s are used for blue, both light and dark, e.g. the 82r illustration of Jonah and the Whale OR the 82v illustration of Jonah preaching?
2. Is this blue the same as that used for the decorated letter on folio 83r (facing the Jonah preaching scene on 82v)?
3. Is the green on 82v a separate pigment or a mixture of the blue and yellow pigments used in the same folio?
4. Is blue sometimes painted on top of yellow to give the effect of green shading or are there two different greens on 125v and 125r? Does one green simply have more blue added to it (e.g., the dots on the lady's gown as distinguished from the more yellow green of alternate stripes on the blanket of the sleeper on 125r; or on the standing figure with the axe as distinguished from the more yellow green in parts of the landscape)? Could it be that the lighter, more yellow green is simply the same green, but thinned and painted on top of a yellow ground?
5. What pigment/pigments are used (layered?) on top of the wavy spot on 37r of the Dreamer sleeping, or inside the barrow of 125v, or on the top of the arch of 126r of Gawain entering Camelot?
6. What pigment is used for the ochre color, e.g., on the boat of 82r or on the buildings of 82v. Is it a separate pigment or a mixture of brown (ink or paint) and yellow?
7. Why are some of the paints so streaky and greasy looking, especially blue/greens? Poor quality pigments or just a rough brush? What is used as a binder or to thin the paint? Is it water soluble or is there any evidence that oil was used in some way? Why do some of the pigments soak through the parchment onto the reverse side of the folio so much on some of the illustrations and decorated letters (126v and 83v) and not others (this is not the case with all verso sides, e.g., 56r and 56v, or 82r and 82v)?

## **Reds**

What pigments are used to make the two colours of red in the illustrations, e.g., in the scene of Jonah preaching on 82v? Is one of these different from the (rubricating?) red of the decorated letters, e.g. on 83r (see also 90v and 91r)? Are the red spots on 57r and 83r the result of transfer due to damp or because these folios might have been folded before the paint was completely dry? In the digital image, there is an odd splash of red seemingly dropped accidentally on the top of the fish head on 38v illustration of the Dreamer walking. Does it match any other red used in the illustrations or the decorated letters?

## **Browns and Ink**

What pigments are used for the ink of the main text, e.g. on 82r? Also on 82r, is the same pigment used for the underdrawing (e.g., on the bottom of the boat and defining the fingers holding Jonah) and, separately, the highlighting of some of the outlines on top of the finished painted illustration of the boat and the fingers (i.e., did the person doing the initial drawing likely also do the final outlining)? Is the brown of 82v on the rounded arch of the left doorway and the outlines and fills of the cross holes in the battlements the same brown (might answer the same question)?

Is the ink of the manicules (e.g. very faint, just over half-way down the left margin on 55v and 62v) different from the main text on the same pages? Is the ink of other marks, including corrections, different from the main text (e.g. 67r)? Is the ink of the added motto at the bottom of 124v different from the text above the illustration on 125r, and are these different from the main text of the manuscript and from any other marks in connection with the text?

## **Under/Drawing Outlines and Layers of Paint**

Is it possible to remove all the layers of paint from one or two illustrations to reveal what the (initial) artist had drawn (could be just the underdrawing), e.g., of 125v of Gawain seeking the Green Chapel, and of 82r of Jonah and the Whale? For one or more of these folios, is it possible to determine in what sequence the original outline drawing, the addition of the different colors, and the final outlining of parts (for emphasis) was done?

## **B. CROPPING, PATCHING AND BINDING ISSUES ALONG THE SPINE**

Is there evidence that the entire manuscript was cropped along the spine, expertly repaired /patched, and then reassembled (as intimated to me by Anthony Parker, the Chief Conservation Officer when I examined this manuscript in the mid 1990s?) To test this, possibly two sections of folios could be examined more fully, those surrounding the Jonah illustrations (82r and 82v) and the last folios of the text and the Gawain images at the end of the manuscript (e.g. 124v and 125v, where it is possible to see the stitching more clearly). Specifically, is there evidence along the spine, including the patching and stitch work, that this might be so? Also, are the folios precisely aligned with each other where there are holes (in the parchment or the worm holes). If these do not realign exactly, then this would support the possibility that the folios were reassembled.

## **Folios relating to the Jonah illustrations (82r and 82v)**

There are two scalloped holes in the parchment beside the spine on 82r. Here the person who painted the water appears to have done so over the scalloped holes onto the folio underneath (beginning the text of Patience on 83r). This would seem to indicate that the painting was done after the manuscript was first assembled into booklets or as a whole book; or even, less likely, after the manuscript was reassembled following cutting and repair along the spine. Is there any indication that one or the other of these is correct?

On 81v there is some green, obviously painted over the large scalloped hole from the Jonah preaching illustration of the folio on top (82v). Curiously, there is also an odd dark brown “accident” (?) that shows through the large scalloped hole, but it is difficult to tell from the digital image if this was originally on 81v or on 83r (on the Jonah and the Whale image, the whale’s “eyebrow” is painted over it).

On 81v – 83r does the paint over the scalloped holes align exactly on all these folios?

What is indicated, concerning assembly, by the corresponding other half of the scalloped holes on 79r and 79v? Is there a gap in circumference between one half of the scalloped holes on 79r and 79v, and the other half on 82r and 82v? If so, how can this be explained? Could it be an indication that the bifolium was cropped in the middle, i.e., at the spine?

Re the alignment of holes, worm holes, or tears: do these align with neighboring folios; e.g., is there a wormhole at the bottom left of 79r and does it align exactly with the worm hole on 80r and the preceding folio 78r?

**In the course of examining some of these issues, have there been any related observations concerning the illustrations that emerged?**

Maidie Hilmo