Notes on Photographing Gold in Manuscript Pages ©Wayne Torborg, HMML 2019

Tim Ternes forwarded your email inquiry regarding the photography of gold elements in manuscripts. His description of me as an expert is a bit generous—persistence and the willingness to try different methods when photographing manuscripts was the key to success. There are often a number of ways to deal with gold elements in manuscript pages, and each photographer will use slightly different methods.

Metallic elements in manuscripts can take several forms. Gold leaf applied to gesso is found in many illuminated manuscripts. It is often quite shiny and can cover large areas of a manuscript page. Shell gold is a sort of paint made with gold powder and has a granular appearance. The Saint John's Bible contained various styles of gold treatment, some of which were quite challenging.

Preliminary testing on sample Bible pages began in the latter half of 2001. The last volume, the Book of Honor, was imaged in September 2015. There were gaps between deliveries of volumes ranging from one to four years. During that time, four different camera systems were used and the studio location changed four times. The techniques for imaging the folios evolved as well.

One advantage we had was that the Bible folios were not (and still are not) bound into book form. This would have made things even more challenging, as we would have had to devise some sort of sturdy cradle capable of holding a very large and heavy book.

The big disadvantage is that the pages had to be photographed "straight on," with the camera perfectly parallel and coplanar with the subject matter (standard copystand setup). This makes it tough to capture the glitter of gold compared to being able to approach the subject matter at an angle.

Documents on studio setup and such can be found at:

http://www.vhmml.us/Resource/Downloads/

This download page is for our field technicians who are often working in less-than-ideal conditions. The studio setups HMML provides can be put together almost anywhere where there is electricity at hand. The setup is basic copystand photography, which is fine for capturing the textual content of a manuscript, but generally does not produce a pleasing rendering of any gold elements. Here is an example from Aleppo, Syria.

Unretouched Manuscript Image. Gold is dark and resembles brown paper.

With the two light units off to the side, the gold leaf doesn't "catch" any light to reflect back to the viewer. It can end up looking like a brown paper bag or dark greenish-brown paint. When a publication image is needed from such an image, I tend to put it in Photoshop, select the gold and brighten is up a bit as such:

Image Retouched for Publication. The cluttered background is replaced with pure black and the gold is selected and adjusted. Cheating? Perhaps, but as least it resembles gold now.

If one is photographing a gilded page from an angle, it becomes much easier to use lighting to make the gold shine. The gold is reflective, so a light striking it from the opposite direction from the viewing (and photography) angle will create the desired effect. Here's an example:

Gilded Letters Reflecting Light Source. Here the tungsten modeling light in a "soft box" provided the overall illumination, with a small hand-held spotlight moved in a manner to "paint" the gold elements during a three-second exposure.

In the example above, there is no text to contend with, making things a bit easier. In imaging the Bible, the challenge was to get a usable image of the text while getting the gold accents to "pop." In addition to the usual copy lighting, extra fixtures and lights were used for the gold elements.

One issue is that if the camera is aiming straight down at the page, the ideal place to put a light to reflect the gold would be right where the camera is! One solution is to create a vee-shaped reflector with a hole in the center (where the crease is) big enough for the camera lens. This is suspended above the page with the camera above it (this can require some creative rigging with stands, clamps, etc.). Now, auxiliary lights can be aimed at the angled surfaces of the reflector—these light rays bounce off the reflector, down to the gold (if the angles are set up right) and finally into the camera lens.

Variations abound for this sort of thing. White foam-board can be used for the reflector, or the board can be covered with metallic foil. I've made custom reflectors with applied stripes of gold and silver metallic foil to create a non-uniform light splash onto the gold (I call these "zebra boards"). It sounds counter-intuitive, but you often want some non-uniformity in the effect so that the gold in the final image has some variation. This gives it a sort of shimmer effect, even though the page is stationary. With an illuminated manuscript, the gold twinkles as the page is turned and catches light on different parts of the gilded work, and this isn't easy to re-create with a static image.

As I worked my way through the volumes of the Bible, I learned new methods. I have made extensive use of small (250 watt) spotlights to create the accent lighting to light up gold elements on manuscript pages. This also seems counter-intuitive, but shining such lights directly at the gold elements can really make them light up. The problem is that the accent lights are generally far too powerful—the gold reflects back as pure white, which won't work. If one reduces the exposure settings to lower the brightness of the gold, the overall exposure of the page will be inadequate.

One could equip the accent lights with dense neutral-density filters to cut down the amount of light emitted, but my solution has been to put the accent lights on dimmers. I built a number of dimmer boxes using ordinary electrical components. The dimmer box is plugged into the regular AC outlet and the accent light is plugged into an outlet on the box that is fed by the dimmer. Intensity of controlled by a knob. One can cut the voltage to the accent light to a considerable degree. When the lights are dimmed down, they emit only a weak glow, but this is enough to light up gold elements without overpowering the main manuscript lighting. In addition, lowering the voltage to the accent lights also lowers the color temperature of the light, which makes the gold elements "more gold" in color.

The main page lighting for the Bible consists of four 1000-watt broad lights, two on each side with heat-absorbing filter material hung in front of the units to prevent heat from being directed onto the pages (vellum can dry out rapidly if heat is directed at it). The accent lights, after being dimmed, emit very little heat and are enclosed. This is an important point, as the lamp is *inside* the unit. If a lamp bulb fails and breaks, any (hot) debris cannot fall out of the unit onto the subject matter. I've used as many as six such lights as accent lights on Bible pages.

In working with Bible pages, I often would shoot a preliminary image without the accent lights, followed by a shot with the accent lights turned on. This gave me a reference image to check against the image with accent lighting—this to make sure that the accent lighting affected only the gold elements and did not negatively affect the readability of the text. No two pages were the same, so the setup changed a bit for each page with gold elements.