



Technical Photography at the Bibliothèque nationale de France

Antonio Cosentino

Cultural Heritage Science Open Source

Introductory Note from Jerome A. Offner

In 2016 and 2017, I arranged with Laurent Héricher¹ to allow Antonino Cosentino of Cultural Heritage Science Open Source (<https://chsopensource.org>) to conduct noninvasive technical photography of the *Codex Xolotl*. This had never before been permitted in the département des Manuscrits and the 2016 visit proved to be a trial run as the safety of the light sources employed had to be evaluated and approved by Bibliothèque nationale de France photographic experts and the available equipment forced a slightly oblique imaging of most of the manuscript pages in five overlapping, nonattachable exposures. Nevertheless, the resulting work provided valuable complementary images for the 2017 session for which Cosentino constructed and first employed his Archimedes imaging system (<https://chsopensource.org/archimedes-multipurpose-scanner-for-art-diagnostics>) that allowed direct overhead imaging of the manuscript page. Cosentino proved to be a consummate and innovative professional in difficult situations; I highly recommend his advice and services. He has provided the following brief report on the specifications and procedures of his work.

Examination Technical Specifics

Scanner

Most of the folios were photographed in four sections using the Archimedes scanner (Figure 3.1), an automatic system that moves the camera over the subject. The resulting images are stitched



together with the Hugin panoramic stitching software (<http://hugin.sourceforge.net/>). The Archimedes scanner can accommodate subjects as large as 68 cm.

Figure 3.1. Antonino Cosentino making final adjustments and safety securements to the Archimedes scanner at the BnF.

Technical Photography

The manuscript pages were photographed with four technical photographic methods: VIS, UVF, UVR, and IR. A Nikon D800 camera, modified for full spectrum, was used together with the CHSOS filters set.

VIS: Visible photography covers the spectral range 400–700 nm and was performed with two 180-watt flashes, with an output of 180 watts, with a Guide Number (m ISO 100) of 45 and a

¹ Currently Conservateur général des bibliothèques, then Chef du Service Orient, département des Manuscrits, Bibliothèque nationale de France, site Richelieu. I also thank Loïc Vauzelle for traveling at his own expense to Paris to provide a wide range of indispensable assistance during the imaging sessions.

Color Temperature of 5600 ± 200 K. The CHSOS VIS filter was employed. VIS photography is used as the reference image for comparison with UVF, UVR, and IR.

UVF: Ultraviolet fluorescence photography covers the same spectral range as VIS photography (400–700 nm) but uses UV lamps. UVF was performed with two UV lamps and the VIS filter. UVF photography can allow increased contrast in faded inks and make pigments more visible based on their fluorescence. It can also detect organic materials such as glues and consolidants on the support (*amatt* in this case).

UVR: Reflected ultraviolet photography covers the spectral range 350–400 nm and was performed with two UV lamps and a UVR filter. UVR imaging can increase contrast in faded inks.

IR: Infrared photography covers the spectral range 900–1000 nm and was performed with an IR filter and two flashes, as used for visible photography. IR photo can make pigments and preparation layers transparent, revealing under-drawing and changes.