Documenting the 15th Century Prints with RTI

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Abstract : The Digital Humanities Lab and the Institute of Art History at the University of Basel are collaborating in the SNSF research project 'Digital Materiality'. Its goal is to develop and enhance existing methods for the digital reproduction of cultural heritage objects in order to support art historical research. One part of the project focuses on the visualization of a small eye-catching group of early prints that are noteworthy for their subtle reliefs and glossy surfaces. Additionally, this group of objects – known as 'paste prints' – is characterized by its fragile state of preservation. Because of the brittle substances that were used for their production, most paste prints are heavily damaged and thus very hard to examine. These specific material properties make a photographic reproduction extremely difficult. To obtain better results we are working with Reflectance Transformation Imaging (RTI), a computational photographic method that is already used in archaeological and cultural heritage research. This technique allows documenting how three-dimensional surfaces respond to changing lighting situations. Our first results show that RTI can capture the material properties of paste prints and their current state of preservation more accurately than conventional photographs, although there are limitations with glossy surfaces because the mathematical models that are included in RTI are kept simple in order to keep the software robust and easy to use. To improve the method, we are currently developing tools for a more detailed analysis and simulation of the reflectance behavior. An enhanced analytical model for the representation and visualization of gloss will increase the significance of digital representations of cultural heritage objects. For collaborative efforts, we are working on a web-based viewer application for RTI images based on WebGL in order to make acquired data accessible to a broader international research community. At the ICDH Conference, we would like to present unpublished results of our work and discuss the implications of our concept for art history, computational photography and heritage science.

Keywords : art history, computational photography, paste prints, reflectance transformation imaging

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