Beyond the flat-matte paradigm and toward a new character of the visual knowledge: a path exploiting works by Leonardo da Vinci and Beato Angelico

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Visual knowledge is nowadays probably the main instrument to get new knowledge due to the extraordinary ease of acquiring, generating, reproducing, and communicating images that the tools developed using Information Technology allow.

This quick and easy ability not only disallowed to overcome the typical limits in the imaging prior to the introduction of IT, that can be well framed by the words of the art historian Richard Krautheimer, who explains the errors of a simple analysis using photography: "*I might as well start with a confiteor. Forty-odd years ago I placed the "Ideal city" panels in Urbino and Baltimore into the context of Renaissance stage design as codified by Serlio, […] I feel deeply ashamed in retrospect on account of the method by which I build toward that thesis, or better, the lack of method. […] the Urbino panel I fear I had not seen since the late 1920s. Thus, for Urbino I relied on an old Alinari photograph*" (Richard Krautheimer, *The panels in Urbino, Baltimore and Berlin reconsidered*, in *The Renaissance from Brunelleschi to Michelangelo*, 1994).

The today digital photographic reproductions and facsimiles, just like those analogical, communicate a minimal part of the contents only. The flattening occurring when using the photographic medium prevents from the improvement of knowledge of the represented subject, but it impedes a clear understanding of the true features of the subject himself.

This presentation aims to show how to go beyond the flat-matte paradigm upon which most of digital representations are based in the artwork's communication, toward an understanding of how objects surface perception operates in its real environment. From the combination of novel concepts and methods arising from the exploitation of today's technological possibilities related to these subjects, it is possible to overcome the limits of methods and techniques used to generate new visual knowledge in the field of the Heritage conservation, analysis, and communication. This opens a blank territory, unexplored since the 2000-years-old definition of architectural representation techniques and methods, and the 200-years-old artwork reproduction techniques based on photography.

The work carried out with my team during the last 5 years shows many developments in this direction, opening new paths both for researchers and for professional operators.

In this presentation, some drawings by Leonardo da Vinci, a painting by Beato Angelico will be shown as case studies.