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### **Looking at Art in the IR and UV<sup>1</sup>**

CHARLES FALCO, University of Arizona

Starting with the very earliest cave paintings art has been created to be viewed by the unaided eye and, until very recently, it wasn't even possible to see it at wavelengths outside the visible spectrum. However, it is now possible to view paintings, sculptures, manuscripts, and other cultural artifacts at wavelengths from the x-ray, through the ultraviolet (UV), to well into the infrared (IR). Further, thanks to recent advances in technology, this is becoming possible with hand-held instruments that can be used in locations that were previously inaccessible to anything but laboratory-scale image capture equipment. But, what can be learned from such "non-visible" images? In this talk I will briefly describe the characteristics of high resolution UV and IR imaging systems I developed for this purpose by modifying high resolution digital cameras. The sensitivity of the IR camera makes it possible to obtain images of art "in situ" with standard museum lighting, resolving features finer than 0.35 mm on a 1.0x0.67 m painting. I also have used both it and the UV camera in remote locations with battery-powered illumination sources. I will illustrate their capabilities with images of various examples of Western, Asian, and Islamic art in museums on three continents, describing how these images have revealed important new information about the working practices of artists as famous as Jan van Eyck. I also will describe what will be possible for this type of work with new capabilities that could be developed within the next few years.

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