

Interpreting technical evidence from paintings by Édouard

Manet in The Courtauld Gallery

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Paintings by Édouard Manet from the Courtauld Gallery including *Le Déjeuner sur l' Herbe* (1863-68), *Marguerite de Conflans en Toilette de Bal* (1870-1880), *Banks of the Seine at Argenteuil* (1874), and *A Bar at the Folies-Bergère* (1882) have been investigated for the first time using a combination of non-invasive *in situ* analytical methods. These included multispectral and hyperspectral VIS-NIR imaging, macro X-ray fluorescence (MA-XRF), portable reflectance and fluorescence UV-Vis-NIR spectroscopy, portable Raman spectroscopy, and portable reflection FTIR, provided by collaboration with the University of Delft, University of Antwerp and the European mobile platform MOLAB. The study also included analysis of paint samples using light microscopy and SEM-EDX.

The aims of the study were to investigate the painting techniques and materials used for this group of works, and to critically evaluate the evidence derived from the application of non-invasive site-specific analyses and imaging techniques, highlighting their advantages and limitations in this context. The analytical methods used provided evidence for the identification of a range of inorganic pigments and classes of organic materials used for the works, and it was possible to image underlying elements in the compositions using elemental mapping and NIR imaging that were not visible using traditional methods of technical study including X-radiography and IRR in a more limited range.

The study highlighted questions in relation to the interpretation of elemental distribution maps and spectral images that did not correspond to the reworking visible in X-radiographs. This question is exemplified in the study of the iconic *A bar at the Folies-Bergère* that Manet reworked during painting, making numerous changes directly on the canvas that were not clearly visualised with any of the techniques used. Contrastingly elements of the development

of the composition of the Courtauld's *Le Déjeuner sur l' Herbe* were revealed using MA-XRF that provided new evidence to consider its relationship to other versions of the composition.

This paper will describe the preliminary results and discuss some of the challenges in interpretation of the data.

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