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PAINTINGS

# The narrative of Vilhelm Hammershøi revised: Investigating the artist's use of cobalt blue, chromium-based green and cadmium yellow

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An ongoing project, the Vilhelm Hammershøi Digital Archive (ViHDA), at the National Gallery of Denmark (SMK) is investigating the characteristics and development of the working methods of the Danish painter Vilhelm Hammershøi (1864–1916) through systematic visual, technical and scientific documentation of, thus far, 80 paintings by the artist. In spite of Hammershøi's growing reputation, very little is known about his techniques or materials. This research, the results of which will become available in an open-access digital archive, will provide significant insights into the distinctive artistic qualities of this world-famous Danish painter. Although known generally for his use of greyish and toned-down shades, Hammershøi in fact made extensive use of pigments such as cobalt blue and cadmium yellow. The analytical methods employed in this research include infrared reflectography, to reveal early stages of the compositions and the potential presence of underdrawing; X-ray radiography, to detect possible changes made during the painting process; and weave mapping, to compare canvases and identify potential counterparts. Scanning X-ray fluorescence spectroscopy is being used to map chemical elements in the paint layers and thereby determine pigment use in the individual paintings. The stratigraphy and composition of the ground layers were investigated and compared by sampling each painting from the tacking edge and then examining cross-sections using scanning electron microscopy coupled with energy-dispersive X-ray spectroscopy. The results of the project have so far revealed an artist whose working methods were substantially more colourful and experimental than previously assumed. Not only did Hammershøi make use of a considerably more comprehensive and versatile palette, he also made significant changes to many of his otherwise very well defined and highly balanced compositions during the painting process. The poster presentation will explore the extensive and repeated use of cobalt blue and cadmium yellow in Hammershøi's paintings. Surprisingly, cobalt blue was identified as a predominant component in the skin tones of Hammershøi's portraits and figures, while for other compositional elements it was mixed with chromium-based green or cadmium yellow. In addition, in some of his landscape paintings, remarkable for the lack of a green pigment, Hammershøi instead mixed cobalt blue and cadmium yellow. Our results demonstrate the artist's mastery in the use of colours beyond the viewer's eyes.