

A STUDY OF THE MATERIALS AND TECHNIQUES OF MAURICE GALBRAITH CULLEN

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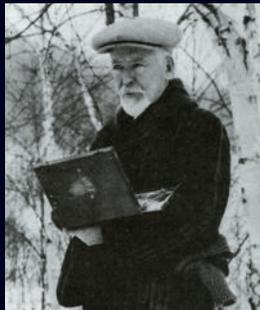


Figure 1: Maurice Galbraith Cullen painting "en plein air" during winter 1925. (Antoniou, 1982, 44)

INTRODUCTION

Maurice Galbraith Cullen (1886-1934) seen in **Figure 1**, is an important 20th century Canadian painter who adopted and modified the Impressionism technique to suit the Canadian landscape. This research collected information regarding the techniques and materials employed by Cullen in order to enrich the understanding of the history of art, provide comparative data for attributing artworks and aid the development of appropriate conservation treatments.

EXPERIMENTAL

The Agnes Etherington Art Center in Kingston provided four paintings by Cullen, shown in **Figure 2, 3** and **4**, which were examined using normal illumination, microscopy, ultraviolet and infrared radiation as seen in **Figure 5**. Two paintings, *Study* and *Sketch for "Spring Break-up at Beaupré"* were subject to scientific analysis to identify the materials present in the paintings and to compare the results with information found in the literature. Samples of fibers, wood, ground, paint and varnish were extracted from the paintings and were analysed using X-ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR), transmitted and reflected light microscopy and Scanning Electron Microscopy/Energy Dispersive X-ray (SEM/EDX). The results from the examination and the instrumental analysis were compared with the information found in the literature concerning the use of materials and techniques by Cullen.



Figure 2: Maurice Cullen, *Study*, 28-189, 1891-1892, oil on canvas, 26.30 x 40.80 cm, Agnes Etherington Art Center, Kingston.

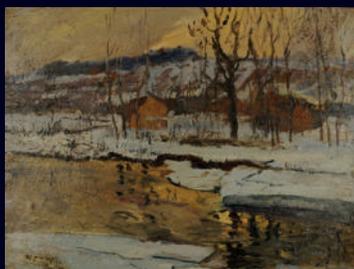


Figure 3: Maurice Cullen, *Sketch for "Spring Break-up at Beaupré"*, 38-040, c. 1906, oil on panel, 26.30 x 35 cm, Agnes Etherington Art Center, Kingston.



Figure 4: Maurice Cullen, *The Quebec Ferry*, 48-007.04, not dated, oil on panel, 26.30 x 35 cm, Agnes Etherington Art Center, Kingston.

RESULTS	SUPPORT	GROUND LAYER	PAINT	VARNISH
Study 28-189	Finely woven canvas made of flax fibers. The canvas was commercially prepared and corresponded to the information found in the literature. Robert W. Pilot mentioned that Cullen purchased commercially prepared canvases prior to 1900.	The thin and even ground layer appears to have been commercially applied onto woven material. Lead white and linseed oil seem to be the main components of the ground layer.	The paint likely made of linseed oil is thinly applied onto the canvas. Oil was identified in the paint samples; although it was impossible to determine if it was linseed oil. Only a few pigments were identified such as lead white, cobalt blue, red lead, chrome yellow and lazurite.	No protective layer.
Sketch for "Spring Break-up at Beaupré" 38-040	Thin wood panel likely made of yellow-poplar, <i>Liriodendron tulipifera</i> . Certain characteristics of the wood samples corresponded to the identification features of yellow-poplar like the dimension and distribution of the pores as seen in Figure 6 . Oil was found to be present on the surface of the wood panel on the verso which indicate that the panel might have been immersed in oil during its fabrication as declared in the literature by Hugues De Jouvantour.	The ground layer is thickly, unevenly and locally applied likely by the artist. Lead white, iron oxide pigments and oil were identified in the ground layer. According to Hugues De Jouvantour, Cullen employed a mixture of lead white, linseed oil and a little bit of burnt umber to prepare the surface of his wood panels.	The paint likely made of linseed oil is thickly applied onto the wood panel as seen in the paint cross-section in Figure 7 . Impastos and brush strokes are visible through raking light. Oil was identified in the paint samples; although it was impossible to determine if it was linseed oil. Only a few pigments were identified such as lead white, leadhillite and lazurite.	A sample of discoloured varnish found on the paint layer was analysed. Beeswax was identified in the sample using FTIR as seen in Figure 8 .



Figure 5: During the visual examination of the painting.

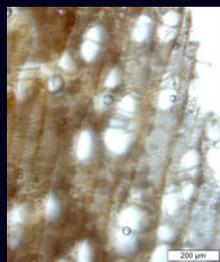


Figure 6: A cross-sectional view of the wood panel showing the small and radial pores.

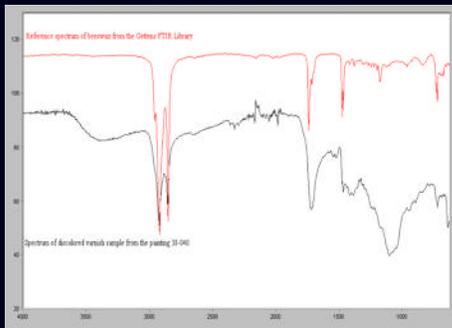


Figure 8: Comparison of a spectrum of discoloured varnish from the painting *Sketch for "Spring Break-up at Beaupré"* and a reference spectrum of beeswax from the Gettens FTIR Library.



Figure 7: Microscopic image of the paint cross-section extracted from an impasto area analysed under 40x magnification.

CONCLUSION

The study of materials and techniques of Maurice Galbraith Cullen permitted a comparison of the results from the instrumental analysis with reference to the literature. The information found in the literature appears to be accurate and explicit. The knowledge gained from this research permitted a more thorough understanding of the techniques and materials used by Cullen.

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