

BOB BOYER'S 'BLANKET STATEMENTS'

AN INVESTIGATION OF EFFLORESCENCE ON LAYERED OIL & ACRYLIC MEDIA

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The painting 'Kevin Coyote on 5th Avenue' By the Native Canadian artist Bob Boyer is exhibiting an unusual pattern efflorescence.

Determination of the reason behind this particular efflorescence pattern is the purpose of this study



Kevin Coyote on 5th Avenue by Bob Boyer, 1989



INTRODUCTION

This research project was both an art historical and scientific examination of Bob Boyer's blanket painting 'Kevin Coyote on 5th Avenue' housed at the Agnes Etherington Art Centre. Analyses focussed on the composition and structure of the paint layers to determine the reasons behind the blanching. Fourier transform infrared spectroscopy (FTIR), x-ray diffraction (XRD), scanning electron microscopy (SEM), reflected light microscopy and fluorescence microscopy were used to analyze the paint layers and the efflorescence material.

EXPERIMENTAL

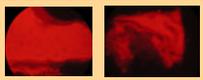
| TYPE | NUMBER | LOCATION | ANALYSES METHOD |
|-------------------------|-----------|--|---|
| Cross-sections | 8 | 2 in affected areas 6 in unaffected areas | 1. Reflected light microscopy 2. Fluorescence microscopy 3. SEM |
| Efflorescence | 4 | 2 from purple paint film 2 from pink paint film | 1. FTIR 2. XRD |
| Medium Characterization | 8 | Approximately two layers of paint; top and bottom layer will be sampled from 4 different areas | 1. FTIR |
| TOTAL SAMPLES | 20 | | |

RESULTS

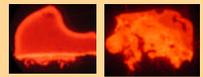
FTIR analysis proved capable of identifying the respective mediums of the different layers as well as composition of the efflorescence. XRD was not able to characterize the efflorescence material. Reflected light microscopy and SEM provided excellent imaging of the paint layers composing the image. Fluorescence microscopy combined with the stain Rhodamine B supported the presence of oil paint confirmed with FTIR.



REFLECTED LIGHT MICROSCOPY IMAGES



AUTOFLORESCENCE UNDER GREEN LIGHT



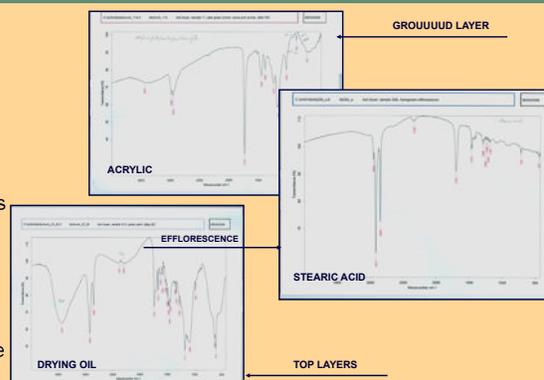
SECONDARY FLUORESCENCE AFTER STAINING



SEM IMAGES

DISCUSSION

FTIR determined the efflorescence to be stearic acid, a common component of drying oils. FTIR characterized the medium of the ground layer to be ethyl acrylate/methyl methacrylate, a typical polymer of acrylic paint, and the top layers to be a drying oil. FTIR Images are seen on the right. The ground layer and subsequent oil layers can be seen with reflected light microscopy and SEM. These images along with the fluorescing stained cross-sections can be seen on the left.



CONCLUSION

This study found the efflorescence on the paint surface to be the result of fatty acids, stearic acid in particular, migrating to the surface of the paint film. While this is a common occurrence in oil paintings and is known to occur as a matter of course in some instances, the fact that this efflorescence affected only certain areas of the design pattern led the researcher to believe that something in the paintings construction gave rise to it. This study was unable to determine a particular construction method or material combination that could be responsible for the efflorescence occurring in specific areas of the design. Further study is needed.

