Data Visualization for Understanding Widespread Efflorescence Formation on a Collection of Oil Paintings by Edwin Austin Abbey

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Introduction:

BACKGROUND: This poster describes the findings of a data-driven investigation of a large collection of efflorescence by the American artist Edwin Austin Abbey (1852-1911) in the collection of the Yale University Art Gallery (YUAG). Consisting of over 3000 artistic works that came directly from Abbey's studio in London, the Edwin Austin Abbey Memorial Collection includes 609 paintings, many of which are preparatory studies for easel paintings or mural commissions. Largely untouched and stored for over 60 years in uncontrolled environmental conditions, many of the paintings display hairy surface efflorescence. Sharing a similar storage history, this collection provides a valuable opportunity to broadly explore the possible factors involved in efflorescence formation on a substantial dataset of late 19th- and early 20th-century paintings.

METHODLOGY: This research project utilized data analysis and visualization to gain further insight about efflorescence formation on a large collection of preparatory paintings. Analysis primarily used a dataset derived from a condition survey and rehousing of the collection completed by paintings conservator Anne O'Connor and funded by the Institute of Museum and Library Services (IMLS) in the early 2000s. This dataset was supplemented with information from past inventories and condition reports of the collection. This investigation sought to explore four main questions: 1) How many paintings in the collection display efflorescence and how severe is its appearance? 2) Is there a presence or severity of the efflorescence related to the commission or date of creation? 3) Is there a presence or severity of the efflorescence related to past storage conditions or locations? 4) Is there a presence or severity of the efflorescence related to the materials used to create the work, such as support type or ground color, or the colourman who prepared the materials? Investigating these questions yielded valuable information about the overall scope of the efflorescence on the Abbey Collection and allowed for an exploration of the influences of environmental conditions and painting materials on the aging and degradation of Abbey’s works.

Efflorescence - Additional Information

Scientific analysis of samples of the efflorescent material from several Abbey paintings have identified the efflorescence as composed of primarily lead or zinc carbonate with a small amount of free fatty acids. For more information, please refer to Wingel, Kelsey et al. 2019. "Hazy Conditions: Revealing the Materials and Techniques of Edwin Austin Abbey’s Efflorescing Oil Studies and Exploring New Approaches to Treatment" in AIC Paintings Specialty Group Proceedings, 47th Annual Meeting, Uncasville, Connecticut, Vol. 32 (forthcoming).

Conclusion:

At this point in time, there is no clear trend in the Edwin Austin Abbey Collection's efflorescence. Based on our findings in Q1, the presence of efflorescence is a significant condition concern for the collection. Based on our findings in Q2, the distribution of efflorescence is not equal across all commissions represented in the collection. At this time, Q3 and Q4 require further investigation. We have begun to discover trends in how external factors, like the physical state of storage, might effect efflorescence. Paintings that were stored flat are more likely to have efflorescence, yet the commission with the largest quantity of efflorescence present was predominately not stored flat. This contradiction is interesting and points to the conclusion that efflorescence formation on the Abbey collection is not caused by one factor alone. The authors believe that the formation of efflorescence also relates to the materials and painting techniques of each work, which likely bear similarities within one or several commissions. Our initial investigation leaves us hopeful that, as we begin to ask more specific questions, our answers will become more precise.

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