EXPERTS USE NEW TECHNOLOGY TO UNCOVER REMBRANDT MYSTERY

New imaging study reveals the most detailed image to date of the painting underneath the J. Paul Getty Museum’s An Old Man in Military Costume

Findings are outlined in a September 1 article published in the journal Applied Physics A

LOS ANGELES — Since the late 1960s, art historians have known that another painting lay underneath Rembrandt’s famous An Old Man in Military Costume (painted about 1630-1631), a compelling character study (tronie) of age and one of the J. Paul Getty Museum’s most beloved Dutch paintings. Until now, however, seeing that hidden image in detail has been frustratingly elusive.

A recent collaborative study conducted by experts from Los Angeles, Antwerp, and Delft, using two complementary, element-specific imaging techniques, has provided the most detailed representation of the underlying painting—an image of a young man wrapped in a cloak—to date. The results of this study were published today in the journal Applied Physics A in an article authored by Karen Trentelman, senior scientist with the Getty Conservation Institute, Koen Janssens and Geert van der Snickt, both from the University of Antwerp, and...
Joris Dik, of the Delft University of Technology, together with Yvonne Szafran, senior conservator of paintings at the Getty Museum and Anne Woollett, curator of paintings at the Getty Museum.

“Our ability to image the underlying painting has greatly benefitted from recent technological advances,” says Karen Trentelman. “Researchers are always limited by the tools available to them, and over the years the study of this painting – and the underlying image – has progressively advanced with the introduction of each new tool. With this latest study, our scans reveal the distribution of specific chemical elements, from which we can infer the pigments used in the first composition, providing us with the most detailed image of the underlying painting to date.”

Rembrandt Harmensz van Rijn (Dutch, 1606-1669) is known to have re-used supports (i.e., wood panels, such as those used for An Old Man in Military Costume, but also canvases and copper plates), particularly during the early years of his career. The figure beneath An Old Man in Military Costume was first revealed in 1968 when the painting was X-radiographed as part of the Rembrandt Research Project’s study of the artist’s work. Subsequently, other imaging techniques, including neutron activation autoradiography (NAAR), provided better, but still indistinct, views of the underlying figure. Now, researchers have combined the results of two complementary, element-specific imaging techniques to study the picture—neutron activation autoradiography (NAAR) and the more recently developed macro-X-ray fluorescence (MA-XRF) scanning.

“The fact that we could use the information obtained with both imaging methods in a complementary fashion was very rewarding,” says Koen Janssens.

The development of a mobile scanner that could be brought to museums was crucial to this research. Prior it its development, such work could only be accomplished at a small number of national research facilities, requiring the transportation of a rare masterpiece to a faraway lab.

“MA-XRF is an X-ray technique that we designed to analyze and visualize hidden paint layers for the museum field,” says Joris Dik. “Its instrumental development has been a joint, five-year effort of industry, museums and academia, co-funded by The Netherlands Organization for Scientific Research NWO. The instrument was designed specifically to accommodate this Rembrandt painting, and so our first U.S. visit was to the Getty - we are excited to see it perform so well.”

The new technology was brought to the Getty Center in Los Angeles and scans were conducted on the painting over a period of about 30 hours. The instrument, now commercially available, is primarily designed for the study of paintings, but has found applications in many other fields, including archaeology and law enforcement.

The general shape of the face of the figure underlying An Old Man in Military Costume was revealed by X-radiography: NAAR imaging provided more details about the shape of the face and the cloak worn by the figure along with indications of the chemical composition of some of the pigments Rembrandt used. MA-XRF scanning significantly added to the understanding of the hidden painting by providing detailed images of the distribution of individual chemical elements, from which the specific pigment(s) – and colors – Rembrandt used to paint the first figure could be inferred. For example, the underlying figure’s face is
rich in the element mercury, indicative of the presence of the red pigment vermilion, one of the components used to create flesh tones. The MA-XRF map of mercury provided a nearly complete, detailed image of the face of the underlying figure; similarly, the map of copper, typically associated with blue or green pigments, provided an image of the cloak.

Together, the information from the NAAR and MA-XRF scans was used to create a tentative digital color reconstruction of the hidden image: a young man, seen in three-quarter view wearing a voluminous cloak around his shoulders. The full significance of the hidden painting within Rembrandt’s oeuvre will continue to be the subject of ongoing research.

During the early years of Rembrandt’s career, the artist was intensely interested in physiognomy and expression. His own face often provided the starting point for lively heads in etchings and paintings. “There is a strong likelihood that, like An Old Man in Military Costume, this underlying image of the young man is another character study (tronie), but one in which Rembrandt used his own features,” says Anne Woollett.

These new findings are now under review by scholars at the Getty and elsewhere, who can use this detailed depiction to better understand the practice of one of art history’s greatest painters.

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The J. Paul Getty Trust is an international cultural and philanthropic institution devoted to the visual arts that includes the J. Paul Getty Museum, the Getty Research Institute, the Getty Conservation Institute, and the Getty Foundation. The J. Paul Getty Trust and Getty programs serve a varied audience from two locations: the Getty Center in Los Angeles and the Getty Villa in Pacific Palisades.

The J. Paul Getty Museum collects Greek and Roman antiquities, European paintings, drawings, manuscripts, sculpture and decorative arts to 1900, as well as photographs from around the world to the present day. The Museum’s mission is to display and interpret its collections, and present important loan exhibitions and publications for the enjoyment and education of visitors locally and internationally. This is supported by an active program of research, conservation, and public programs that seek to deepen our knowledge of and connection to works of art.

The Getty Conservation Institute works to advance conservation practice in the visual arts, broadly interpreted to include objects, collections, architecture, and sites. It serves the conservation community through scientific research, education and training, model field projects, and the broad dissemination of the results of both its own work and the work of others in the field. In all its endeavors, the Conservation Institute focuses on the creation and dissemination of knowledge that will benefit the professionals and organizations responsible for the conservation of the world’s cultural heritage.

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