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Hyperspectral Near-Infrared Imaging of Picasso Blue Period Painting Reveals French Newsprint and Earlier Works Beneath Painting's Surface



Infrared false color image of newspaper, John Delaney, National Gallery of Art, Washington, Keiko Imai, Pola Museum of Art. Source gallica.bnf.fr/BnF

Hakone, Japan—Recent hyperspectral infrared imaging conducted by John Delaney, senior imaging scientist, National Gallery of Art, Washington, of Pablo Picasso's *Mother and Child by the Sea* (1902), a Blue Period painting in the collection of the Pola Museum of Art, Japan, revealed portions of printed text in French similar to newsprint. Using the readable text, Keiko Imai, chief curator, Pola Museum of Art, was able to identify the source of the text as an issue of the French daily newspaper *Le Journal* published on January 18, 1902. While the reason for the presence of newsprint in the paint layers is a mystery, the discovery is significant for Picasso scholars due to the proximity of the date to the artist's move from Paris to Barcelona. The study also provided more information about a prior paint composition seen in the x-radiograph. The infrared images also show another earlier signature by the artist in the opposite orientation. *Mother and Child by the Sea* is on view at the Pola Museum through mid-August of 2018. The painting will be on loan to the Musée d'Orsay for their upcoming exhibition, *Picasso: Blue and Rose*, from September 18, 2018, through January 6, 2019.

The study of the painting is part of continuing investigations into the artist's Blue Period works in anticipation of an exhibition in 2020–2021 on Picasso's Blue Period, co-organized by the Art Gallery of Ontario (AGO), Toronto, Canada, and The Phillips Collection, Washington, DC. To this end, Kenneth Brummel, assistant curator of modern art, AGO, and Sandra Webster-Cook, senior paintings conservator, AGO, arranged for Delaney to travel to Japan and examine *Mother and Child by the Sea* with Keiko Imai. The findings of this study will be published in a joint paper co-authored by Imai and Delaney. The discovery follows recent research by a partnership of the Northwestern University/Art Institute of Chicago Center for Scientific Studies in the Arts (NU-ACCESS), the AGO, and the National Gallery on *La Miséreuse accroupie* (1902), another Blue Period work from the AGO's collection that will be featured in the upcoming exhibition. At the American Institute of Conservation's annual meeting on Friday, June 1, 2018, Webster-Cook presented this research along with other discoveries about Picasso's *La Soupe* (1903), which has also been studied by the AGO, NU-ACCESS, and Delaney.

"I was surprised and fascinated by this finding in a painting I have always admired at our museum," said Imai. "Thanks to Dr. Delaney's research and hyperspectral imaging technique, we were able to officially confirm that *Mother and Child by the Sea* was painted after the date of the newspaper article used on the canvas."

"We routinely focus our cameras on a sheet of paper with printed text prior to placing the painting on the easel," said Delaney. "To verify we were in good focus, we pointed the camera first at the face of the mother and to my surprise immediately saw newspaper text in her face!"

"The presence of a paper interleaf begins to make sense of the fine wrinkling in the surface texture and the gentle undulations observed in several areas over the surface," said Webster-Cook. "It suggests that the paper does not perfectly conform to the underlying paint surface."

Brummel added, "What is exciting about this finding is that the sheet from *Le Journal* that Keiko Imai has identified offers Picasso scholars a firm date before which the seated woman in the composition underneath was painted. The January 18, 1902 date of the paper interleaf is also of interest, as it is known Picasso returned to Barcelona from Paris sometime in early January 1902."

History of Picasso Conservation Research

Picasso is commonly known to have reused canvases and often integrated elements of previous compositions into his subsequent works. Indications of earlier compositions are often visible on the painting's surface, and can be linked to distinctive crackle patterns, different paint colors visible through cracks and abrasion or at the edges of works, and the texture of dried impasto formed from previous paint layers that do not correspond to the painting's final composition. Ann Hoenigswald, senior paintings conservator, National Gallery of Art, undertook significant research into this topic prior to the Gallery's 1980 exhibition *Picasso: The Saltimbanques*, identifying at least five different

compositions beneath Picasso's *Family of Saltimbanques* (1905). For the 1997 exhibition, *Picasso: The Early Years, 1892–1906*, a team of researchers made x-radiographs, conducted infrared reflectography, and cross-section analyses of many of Picasso's early works. At the time, x-radiographs and infrared reflectography were done on *Mother and Child by the Sea*, which was on loan to the exhibition.

With new analytical imaging technologies now available, research of what lies beneath Picasso's tremendous oeuvre is widespread and ongoing, and there is still much to be learned. Delaney and co-workers have found these new methods to yield improved and new, expanded information about the two Blue Period paintings in the National Gallery's collection, *Le Gourmet* and *The Tragedy*, as well as *The Blue Room*, at The Phillips Collection, and *Woman Ironing*, at the Solomon R. Guggenheim Museum.

***Mother and Child by the Sea* Findings**

The recent study of *Mother and Child by the Sea* was initially planned to provide clearer images of the compositions believed to be present underneath the painting's surface, which had previously been identified by Hoenigswald in x-radiographs taken in the 1990s, and more recently in 2005 by the Tokyo National Research Institute for Cultural Properties and the Pola Museum. However, hyperspectral infrared imaging conducted by Delaney in April 2018 immediately revealed an unexpected finding—the reverse imprint of French newspaper articles. Imaging clearly showed the words "l'Automobile" and "président." After searching in the archives of *Le Journal*, known to be read frequently by Picasso, Imai was quickly able to identify an issue from January 18, 1902, which was an exact match of the text visible in the hyperspectral images. Exactly why that newsprint was placed on the canvas cannot be confirmed; it may have been used by the artist to cover previous layers before he painted another layer or the final composition of the mother and child.

The date of January 18, 1902, is of interest to Picasso scholars, as it is understood that Picasso moved from Paris to Barcelona in early January. Picasso brought a few canvases with him during his move, and this painting may have been one of them. While it can't be confirmed whether the underlying composition was made in Paris, it shares stylistic similarities to his other works created there. What this discovery firmly establishes is that *Mother and Child by the Sea* was painted in Barcelona after January 18, 1902.

Hyperspectral infrared imaging also provided significantly clearer images of the underlying compositions, including a scene of a woman seated with an absinthe glass with spoon in it. Imaging showed the piece of furniture she is seated on, which had not been previously visible. Imaging also provided a clearer image of a signature by Picasso, inscribed upside-down underneath the upper right corner of *Mother and Child by the Sea*. A subject for future research is the presence of the oversized signature similar to those found in his works of 1901. Unrelated to any of the imagery found

using hyperspectral imaging or x-radiography, it suggests there might be yet another composition underneath the painting.

The Pola Museum of Art

Located in Hakone in the Kanagawa prefecture of Japan, the Pola Museum of Art opened in 2002 to house the collection assembled by Tsuneshi Suzuki (1930-2000), son of the Pola Orbis Group founder, over a period of more than 40 years, starting from the late 1950s. Suzuki's collecting was wide-ranging and his collection of around 10,000 items in all includes representative examples of Western and Japanese Western-style painting, contemporary *nihonga* Japanese-style painting, prints, sculpture, Oriental ceramics, Japanese modern and contemporary ceramics, glass works, and cosmetic utensils. It is, both in its variety and quality, one of the most important Japanese post-war private collections of art. It was Suzuki's wish to place the collection in Hakone, a popular tourist area, so that as many people as possible could enjoy it.

The Pola Museum of Art's collection includes 19 paintings and three illustrated books by Pablo Picasso from across his career. The earliest is a pastel entitled *Seated Woman* (1900), which the artist used to carry around in his folder in the days he traveled between Barcelona, Madrid, and Paris, while the latest work is a large oil painting entitled *Man with a Watermelon and a Goat* (1967), which Picasso painted in a villa in Notre-Dame-de-Vie in the south of France, where he spent his final years.

Hyperspectral Infrared Imaging

Funding in 2007 from The Andrew W. Mellon Foundation enabled the Gallery to be the first to hire an imaging scientist, Delaney, to develop and adapt remote-sensing imaging cameras and methods, as well as to obtain new information for conservation and art historical research using advanced digital imaging methods. Since then, Delaney and co-workers have optimized hyperspectral visible and infrared imaging cameras and image processing to better visualize painted-over compositions and map the distribution of pigments. Additional funding from the Samuel H. Kress Foundation has supported the ongoing training of fellows in new advanced imaging methods.

The method in this study involves reflectance-imaging spectroscopy, the collection of hundreds of images in narrow spectral bands (only a few nanometers wide), in a spectral from 967 to 1660 nanometers in the near infrared. From these images, a three-dimensional image cube of false color images can be created that enhances the contrast and visibility of different artist materials. When the data is calibrated to apparent reflectance, spectra can be obtained for the identification and mapping of artist materials (pigments and paint binders) in situ. The method is based on such sensors as NASA'S AVIRIS camera, which has pioneered the use of imaging spectroscopy to identify remotely and map constituents of the Earth's surface, such as minerals and vegetation. More detail on the method can be found at [here](#).

Conservation and Science at the National Gallery of Art

The conservation division of the National Gallery of Art is responsible for the preservation and study of works of art in the Gallery's collection. The division comprises departments that specialize in the treatment and care of paintings, works on paper, objects, photographs, textiles, and frames.

Departments that support the mission of the entire division are preventive conservation, scientific research, analytical imaging, and administration.

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Press Release

Biography: John K. Delaney

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