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Van Gogh's True Palette Revealed

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"The Bedroom," Vincent van Gogh's 1888 painting, with its honey-yellow bed pressed into the corner of a cozy sky-blue room, is instantly recognizable to art lovers, with his signature contrasting hues. But does our experience of this painting change upon learning that van Gogh had originally depicted those walls in violet, not blue, or that he was less a painter wrestling with his demons and more of a deliberate, goal-oriented artist? These questions are raised by a new analysis, eight years in the making, of hundreds of van Gogh's canvases as well as his palette, pigments, letters and notebooks by scientists at Shell, the oil company, in collaboration with the Dutch Cultural Heritage Agency and curators at the newly renovated Van Gogh Museum here, which owns the world's largest collection of works by that Dutch Post Impressionist.



A NEW LOOK A digital version of "The Bedroom" shows what may be the original violet walls.

The research did not lead to "earth-shattering new insights" that rewrite van Gogh's life story, said the director of the Van Gogh Museum, Axel Rüger, but it could shift the understanding of van Gogh's temperament and personality. The results of that study will be revealed in an exhibition, "Van Gogh at Work," which opens on Wednesday and features about 200 paintings and drawings, 150 of them by van Gogh and others by contemporaries, including Paul Gauguin and Émile Bernard.

"You discover more clearly that van Gogh was a very methodical artist, which runs counter to the general myth that he was a manic, possibly slightly deranged man who just spontaneously threw paint at the canvas," Mr. Rüger said. "He was actually someone who knew very well about the properties of the materials he used, how to use them, and also he created very deliberate compositions. In that sense it's a major insight in that it gives us a better notion of van Gogh the artist. He was very goal-oriented."

By using an electron microscope and X-ray fluorescence spectrometry, which reveals the parts of pigments without taking invasive samples, researchers found that early on van Gogh used perspective frames as a guide and drew on the canvas to correctly render proportions and depth of field in his landscapes. Later, as he gained mastery, he abandoned these grids. Like many artists, he reworked certain paintings repeatedly to perfect his desired effect. The most important insight was into his palette, said Nienke Bakker, curator of the show.

"We now know much more about the pigments van Gogh used and how they might've changed color over time," Ms. Bakker said. "That's crucial to our understanding of his works, and to know better how to treat them. The colors are still very vibrant, but they would have been even brighter — especially the reds. Some of the reds were much brighter or have completely disappeared since he painted them."



Ralph Haswell, principal scientist at Shell Global Solutions here, which made its lab facilities and researchers available to the museum, said that at the turn of the 20th century artists had just started buying pigments off the shelf rather than mixing them in the studio. “One of the disadvantages of living in a very changing environment where pigments were very new was that they didn’t always know how things would turn out,” he said. “The chemical industry was growing hugely and they came up with all kinds of colors, but you never knew how long they would remain stable. Some pigments weren’t stable.” That was the case with van Gogh’s violet, used to depict the walls of his room in Arles. Because the red in the purple paint faded prematurely, probably even during van Gogh’s lifetime, it left behind only the blue with which it had been mixed.

That may have been fine with van Gogh, Ms. Bakker said, since the largely self-taught artist didn’t regard any of his work as final. He saw pieces as studies that helped him find his style.

“He wanted to express his individual way of seeing the world, and every work of art he made was moving him toward that goal,” Ms. Bakker said, “but he was never satisfied.”

The original hue — seemingly a minor change — presents a more soothing image, said Marije Vellekoop, head of collections, research and presentation for the Van Gogh Museum. The purple and yellow are “not a harsh contrast as we think of now,” she said. “That was something he wanted to express in that picture — tranquillity and a sense of rest.”

In color theory, Ms. Vellekoop said, purple and yellow are complementary contrasts. “Theoretically they have to reinforce each other,” she said. “For me, the purple walls in the bedroom make it a softer image. It confirms that he was sticking to the traditional color theory, using purple and yellow, and not blue and yellow.”

In other paintings the disappearance of the reds had different consequences. For example, in images of blossoming fruit trees, blossoms are now white that were once pink because the red faded away. That might lead to changing the identification of the type of tree depicted, Ms. Vellekoop said.

In a way, his use of complementary colors places van Gogh strictly in the traditions of his time. Although he was radical in his use of bright colors, she said, “he follows the traditional color theory that was already written down in the first half of the 19th century,” she said, adding, “A lot of his artist friends were reading those books,” but didn’t use the pigments so boldly.

Van Gogh experimented with different techniques to applying color that were used by his contemporaries, including Henri de Toulouse-Lautrec, who thinned out his paints and used flat colors. Van Gogh also briefly followed the Pointillists, whose images were built up from many dabs of color. The high-contrast colors of van Gogh’s later paintings are associated with the moment when he came into his own as an artist, developing his own style, in the last couple of years of his life.

The fact that he may have used an even brighter palette, with more reds and purples, indicates that his work may have been closer to that of his friend Paul Gauguin. In that sense, his color choices might have been safer and less iconoclastic than we might imagine.

But, she said, the new color insights don’t necessarily change our view of his psychology. “I don’t think it says anything about his state of mind,” she said. “In Arles, he was using a lot of colors and he was very optimistic about life and his future and his possibilities of selling his work.”

He was also looking forward to Gauguin’s coming to Arles, Ms. Vellekoop said, but he was almost manic about it. “When the cooperation with Gauguin failed, and he was in the asylum, and he becomes more somber and depressed, his colors changed, he goes more towards the ochers, different shades of green and browns,” she said. “A more subdued palette. We do associate color with his state of mind, of course, but it’s not like the more blue, the more depressed he was.”



Starting in September two of van Gogh's renditions of "The Bedroom" will be displayed side by side at the exhibition, one from the Van Gogh Museum and the other borrowed from the Art Institute of Chicago. Van Gogh painted three versions of the room in 1888 and 1889, and all now have those pale-blue walls. Scientists and conservators have also created a digital reconstruction of what the painting might have looked like when van Gogh first painted it, with those violet walls, which will also be part of the exhibition.

"It looks just, different, and a bit strange," Ms. Bakker said.