Eye diseases gave great painters different vision of their work

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Michael Marmor, MD, wanted to know what it was like to see through the eyes of an artist. Literally.

After writing two books on the topic of artists and eye disease, the Stanford University School of Medicine ophthalmologist decided to go one step further and create images that would show how artists with eye disease actually saw their world and their canvases. Combining computer simulation with his own medical knowledge, Marmor has recreated images of some of the masterpieces of the French impressionistic painters Claude Monet and Edgar Degas who continued to work while they struggled with cataracts and retinal disease.

The results are striking.

In Marmor's simulated versions of how the painters would most likely have seen their work, Degas' later paintings of nude bathers become so blurry it's difficult to see any of the artist's brush strokes. Monet's later paintings of the lily pond and the Japanese bridge at Giverny, when adjusted to reflect the typical symptoms of cataracts, appear dark and muddied. The artist's signature vibrant colors are muted, replaced by browns and yellows.

"These simulations may lead one to question whether the artists intended these late works to look exactly as they do," said Marmor who has long had interest in both the mechanics of vision and the vision of artists. "The fact is that these artists weren't painting in this manner totally for

artistic reasons."

Degas and Monet were both founders of the Impressionist era, and their artistic styles were well formed before their eye disease affected their vision. But their paintings grew significantly more abstract in later life as, coincidentally, their eye problems increased.

"Contemporaries of both have noted that their late works were strangely coarse or garish and seemed out of character to the finer works that these artists had produced over the years," Marmor wrote in a paper titled "Ophthalmology and Art: Simulation of Monet's Cataracts and Degas' Retinal Disease" that was published in the December issue of the Archives of Ophthalmology.

It's well-known that such artists as Monet, Degas, Rembrandt, Mary Cassatt and Georgia O'Keefe all reached their heights of artistic vision while facing a decline in their ocular vision. Marmor chose to focus on Degas and Monet for these simulations because both artists suffered from eye disease that was well-documented in historical records, journals and medical histories. Degas had retinal eye disease that frustrated him for the last 50 years of his long career. Monet complained of cataracts interfering with his ability to see colors for 10 years before he finally underwent surgery to have them removed.

"We understand better from these simulations what Degas and Monet struggled with as vision failed," Marmor said.

Over the past 32 years, the Harvard-educated physician has published 200-plus scientific articles on the science of eye disease while at the same time writing about famous artists and how eye disease may have affected their artwork. He authored one book, Degas Through His Own Eyes, and co-authored another, The Eye of the Artist, with James G. Ravin.

"As an ophthalmologist, I'm fascinated with the visual components of art," said Marmor, whose Stanford home is decorated with pieces of modern art that emphasize optical illusions. His family donated works of art to the Cantor Arts Center at Stanford. "I've also spent years talking to patients about the symptoms of their eye diseases. This was a natural outgrowth of my science and art interests."

One museum curator, Richard Kendall, called Marmor's publications on Degas and Monet "of considerable value to the art historical community."

"I consider him one of the most thoughtful commentators from the scientific community on questions of eyesight among French 19th-century artists," said Kendall, who is curator-at-large at the Sterling and Francine Clark Art Institute in Williamstown, Mass.

To create the images of the artists' paintings as seen through their own eyes, Marmor used Adobe Photoshop software. He adjusted the blur and filter settings to what he determined would be the different stages of Degas' and Monet's eye diseases, based on medical expertise and historical research.

Degas suffered failing vision from 1860 to 1910. As his eye disease progressed, his paintings grew increasingly rough. From treating hundreds of patients with retinal disease similar to what Degas suffered, Marmor said, he knows that the shading and contrast of images becomes less defined and blurriness increases as such illness progresses.

"Friends would ask Degas, 'Why are you still painting?'" Marmor wrote in his December paper. "His works in the 1870s were drawn quite precisely with facial detail, careful shading and attention to the folding of ballet costumes and towels." By the 1880s and 1890s, the shading lines and details of the face, hair and clothing of the same subjects

became progressively less refined.

"After 1900," Marmor said, "these effects were quite extreme and many pictures seem mere shadows of his customary style."

Monet wrote of his growing frustration with his deteriorating vision, describing how he was forced to memorize where the colors were placed on his palette. In 1914 he wrote in his correspondence that colors no longer had the same intensity. "Reds had begun to look muddy," he wrote. "My painting was getting more and more darkened." He was forced to rely on the labels on the tubes of paint in place of his own vision.

"Like retinal disease, cataracts also blur vision," Marmor said, "but more importantly for a painter like Monet, whose style was based on the use of light and color, they can affect the ability to see colors."

"Monet must have struggled mightily as he looked out into the murky yellow-brown garden and tried to decide what subtle impression to create on canvas," Marmor wrote in the December paper. "Slowly progressive age-related cataracts manifest as yellowing and darkening of the lens. This has a major effect on color perception as well as visual acuity."

After reluctantly submitting to cataract surgery in 1923, Monet returned to his original painting style, even throwing away much of the artwork he'd done during the 10-year period that he had cataracts.

"He just couldn't see the colors," Marmor said. "These simulations show how much his sense of color had been destroyed. Some people say, 'Oh, it's a stylistic change.' Gosh, I don't think so."

Understanding the challenges these artists faced because of eye disease helps further illuminate the accomplishments they achieved despite their

disabilities, Marmor said.

"There's some reluctance among people in the art world to look outside the historical or psychological influences on the great artists," Marmor said. "I'm open to debate about what these visual changes might mean stylistically or aesthetically. What is not open to debate is what the artists saw. If you ignore that, you're ignoring facts."

Source: Stanford University