The Eye in the Artist

“I never paint dreams or nightmares. I paint my own reality.”

Frida Kahlo

Why did van Gogh draw swirling clouds? Why were Monet’s bridges suddenly darker in tone than the water lilies in the pond? We often wonder if they saw what they perceived.

Several studies have tried to analyze these, and many have hypothesized the medical reasons for some great artists which could have influenced their way of art. In the absence of any documented details or medical diagnosis, many of them remain speculations. In this issue, we explore the world of art through the eyes of some of the greatest artists in history.

Vincent van Gogh (1853–1890)

Perhaps the most talented and tragic of the lot, van Gogh, attained recognition posthumously having sold only a single painting in his lifetime. Nonetheless, his art is a reflection of the beauty and turmoil that lay within one of the most misunderstood artists of his time. The Sunflowers, 1888–1889, a set of five paintings that Vincent envisioned and drew have fascinated connoisseurs and even lay persons for years [Fig. 1]. A stark contrast from the large, blooming blossoms that one associates with sunflowers, van Gogh drew them in a more subdued form. He found the beauty in the drying or budding flowers. But what stands out to anybody who lays eyes on them is the color yellow! The yellow color also dominates many of his Self Portraits, The Bedroom, and The Yellow House. Historians and scholars have suggested that van Gogh was suffering from a condition known as xanthopsia, which results in the person seeing yellow. Walsh and Hoyt list 13 chemicals that can result in xanthopsia.[1] A possible cause could be that he was being treated for his manic depressive state by digitalis. One can see the foxglove plant in the painting of Dr. Gachet, Portrait of Doctor Gachet, 1890.[2] Prolonged and toxic doses of digitalis are known to produce xanthopsia.[3] Additionally, the consumption of absinthe, a popular liquor in France in that period, could have also resulted in his xanthopsia.[1,3] Santonin, a drug used to treat gastrointestinal disturbances, which the artist was known to suffer from, could also be the drug responsible for his xanthopsia.[1,4]

While in an asylum in Saint Rémy, he drew one of his most famous and loved masterpieces, The Starry Night, 1889 [Fig. 2]. Anything said or written about the painting fails to bring any justice to this piece of work and I will refrain from it. However, a striking feature that cannot be missed is the swirling clouds, and the bright halos around the moon and the stars. Many scientists believe that this was the diffraction of light seen by the artist. van Gogh used lead-based paints and lead poisoning could have very well resulted in retinal inflammation, which could explain the halos that he possibly saw around bright objects. There are also theories that suggest that van Gogh was suffering from narrow-angle glaucoma attacks, which could produce episodes of blurry vision.[3,5] Their appearance in paintings set at night, The Starry Night or The Night Café, also supports this possibility, when a pupil in the mid-dilated state in low illumination could precipitate attacks of angle closure.[5] Visual hallucinations of the artist could also produce the scene. However, one must consider that the village he drew in the painting The Starry Night was also not the view seen through his window and therefore the entire painting may just be a product of his vivid imagination.

Vincent drew multiple self-portraits. These were more of a form of practice of his technique because he was not able to afford models. In each of his portraits, the eyes are of a different color. It may be that van Gogh had heterochromia or simply eyes that saw the world differently.

Claude Monet (1840–1926)

When Claude Monet revealed his painting, Impression, Sunrise, 1872, he started a new era of art, Impressionism, where artists diverted from religious motifs to scenes from real life.[6] Monet, known for his faithful portrayal of nature, developed age-related cataract that affected his vision and sense of contrast. This is best appreciated when one compares his paintings Bridge over a Pond of Water Lilies, 1899, drowned in the soothing cool tones of blue with The Japanese Bridge, 1922, painted at a later stage of life, with darker hues [Figs. 3 and 4].[6] Monet was aware of his failing sight, as he wrote, “My bad eyesight meant that I saw everything in a fog. It’s very beautiful and it’s what I would like to be able to represent in my art.”[7] Even in Water Lilies, 1919, the scene is blurry, details less accentuated, which adds to the beauty of the painting. He refused to be operated on for his cataract for a long time, understandably because of poor success and crude techniques of surgery in that period. “[I could] no longer perceive colors with the same intensity. Red appeared muddy to me, pink insipid, and the intermediate or lower tones escaped me. What I painted was everything in a fog. It’s very beautiful and it’s what I would like to be able to represent in my art.”[7] Ultimately, when he could no longer make out the color of the paints and relied on his memory for the order he kept them in, he agreed to undergo cataract surgery in the right eye.[7] This was a staged surgery with iridectomy followed by an extracapsular lens extraction. There were no intraocular lenses at that time, and he had to wear +10D glasses with poor visual recovery. He refused to get the left eye operated and the two eyes had differing color perception with the right eye now more sensitive to blue and violet, which were earlier being filtered by the dense cataract.[5] In Monet’s own words about the surgery, “criminal to have put me in this situation,” and “if I was condemned to see nature as I see it now, I’d prefer to be blind and keep my memories of the beauties I’ve always seen.”[4]

Edgar Degas (1834–1917)

The artist, who was known for his ability to capture the heart and grace of dancers, developed progressive loss of vision from age-related macular degeneration and choriotreinitis.[8] An English painter, Sickert wrote, “It was natural that during the years when I knew him [Degas], that he should sometimes have spoken of the torment that is to draw, when he could only see around the spot at which he was looking,
Although his vision failed him, his spirit was not broken. He started making sculptures because he could no longer work as a painter.\[^7\] Michael F. Marmor, an ophthalmologist, studied Degas' correspondence and using computational simulations tried to unravel his visual deterioration.\[^6,10\] Although his central vision became blurry and his paintings became more coarse, it is possible that the painter himself did not notice much difference in his work.\[^6,10\] Marmor also suggested that because the painter realized his poor vision in his thirties, when he could not fire a rifle using his right eye, it was a macular disease other than age-related macular degeneration, like Stargardt disease.\[^9\] This is supported by the fact that his cousin also had poor central vision.\[^6\]

**Leonardo da Vinci (1452–1519)**

A painter, a scientist, an engineer, a sculptor, and a genius in every sense, da Vinci is believed to have had strabismus. According to a study at the University of London, the squint was
a boon rather than a bane for da Vinci. The three-dimensional effect in his paintings that has captured the attention of millions and has, in fact, remained unmatched could be attributed to his strabismus.\textsuperscript{[7]}

Rembrandt van Rijn (1606–1669)
The Dutch master is said to have also suffered from strabismus, as seen in his self-portraits [Fig. 6]. Artists are said to close one eye to represent three-dimensional form on the canvas in two-dimension, which explains why the misaligned eye never affected his work.\textsuperscript{[9]} Neuroscientists Margaret S. Livingstone and Bevil R. Conway have shown that artists often have poorer stereovision.\textsuperscript{[9]} Rembrandt’s paintings in the later stages also became darker that have led scientists to speculate that he also developed age-related cataract and macular degeneration.\textsuperscript{[4]}

Paul Cézanne (1839–1906)
A myope, Cezanne’s work reflects his near-sightedness. The closer objects in his paintings are in sharp focus while his landscapes are blurry.\textsuperscript{[8]}

El Greco (1541–1614)
The Mannerist artist of the Spanish Renaissance, El Greco’s work is striking for the vertical elongation of the figures in his paintings with a religious and mystical elements.\textsuperscript{[11]} In 1913, Germán Beritens, an ophthalmologist, suggested that this could be attributed to his astigmatism, and he demonstrated this using an optical lens. However, his theory is countered by the argument that astigmatism would affect the artist’s perception both of the subject and the canvas, thereby negating the effect. In addition, in his paintings, even horizontally placed objects, such as hands, were often elongated, which makes it more probable that this was El Greco’s style rather than the outcome of a visual pathology \textsuperscript{[6,11]} [Figs. 7 and 8].

It has also been suggested that the artist’s refractive error was overcorrected with a lens that caused the images to be stretched horizontally. To counter this, the artist ended up painting subjects that were vertically stretched. Stuart Anstis, a vision scientist at the University of California, tested this hypothesis using specially designed telescopes that would stretch the retinal images horizontally by 30%. When the subjects attempted to draw a square from memory, the drawing was a tall and thin rectangle. But when the subjects actually visualized and copied a square, it was a perfect replica. This is described as the El Greco effect where drawings from memory are different from the original. When the same subject was made to wear this telescope for two days, the visualized square remained unchanged but that drawn from memory progressively became shorter and at the end of the second day, became exact replicas. Thus, even if El Greco suffered from astigmatism, he would have adapted to it. The fact that angels and religious figures were painted taller than secular people also suggests that El Greco adopted this style by choice.\textsuperscript{[10]}

Charles Meryon (1821–1868)
The artist, whose work dazzled even Victor Hugo, suffered from X-linked red-green color deficiency.\textsuperscript{[9]} The longer wavelengths of light such as red and orange are perceived as yellow or gray and Meryon’s etchings were a result of this,
where the artist retained the contrast sensitivity of light and dark. Meryon was able to tug in the depths of emotions with just grades of black and white in his etchings.

**Georgia O’Keeffe (1887–1986)**
The paintings of the American artist became progressively flat and less detailed as she developed bilateral age-related macular degeneration.

**Francis Bacon (1909–1992)**
Margaret Thatcher once described Bacon as, “The man who paints those dreadful pictures.” Bacon’s works are no doubt

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**Figure 7:** El Greco’s St. Jerome, 1609, Metropolitan Museum of Art, New York. While the figure is vertically elongated, the hand is also elongated even though placed horizontally. (From https://en.wikipedia.org/wiki/Saint_Jerome_%28El_Greco%29)

**Figure 8:** St. Andrew and St Francis, 1595–1598, Prado, Madrid, El Greco (From https://en.wikipedia.org/wiki/Saint_Andrew_and_Saint_Francis)

**Figure 9:** Three Studies for a Portrait of Henrietta Moraes, 1963, Francis Bacon. (From https://en.wikipedia.org/wiki/Francis_Bacon_(artist))
haunting and unsettling, with the distorted representation of the human body, specifically the face. [Fig. 9] According to Safran et al., from the University of Geneva, Bacon suffered from dysmorphopsia, a neurological disorder. Bacon himself described his perception of faces as ever-changing.[10]

Francisco Goya (1746–1828)
The Spanish artist suffered from a mysterious disease in his mid-life with loss of vision, hearing, hemiparesis, vertigo, abdominal pain, confusion, and malaise. His symptoms have led to the differentials of late acquired syphilis, VKH, Cogan’s syndrome, lead toxicity, and malaria treated with quinine with resultant quinine toxicity. The artist recovered and went on to live until 82 years of age; however, the themes in his paintings became darker with elements of psychosis and horror.[10] [Fig. 10] One wonders if the illness left a permanent mark on the way the world appeared to him.

Edvard Munch (1863–1944)
The Norwegian painter, known for his paintings with psychological themes with striking colors, had an amblyopic left eye [Fig. 11]. In 1930, he suffered from a vitreous hemorrhage in his seeing right eye and was not able to work for several months. The vitreous hemorrhage could have been because of hypertension, retinal tear, vascular malformation, or wet type of age-related macular degeneration. Known as the Father of Expressionism, Munch drew a series of sketches, depicting the course of the intraocular hemorrhage and how it changed over time. Several of his paintings during the healing phase had a sinister bird that is believed to be a scotoma from the vitreous debris from resolving hemorrhage. In another painting where he shows himself in bed, checking the vision of his right eye with his left eye covered, he painted Death’s head at the foot of the bed [Fig. 12]. The bird and the dark scotomas disappeared from his paintings by 1931.[4]

Many conditions such as cataract, glaucoma, macular degeneration, astigmatism, and strabismus are easily diagnosed and treated now. Revisiting the lives and works of these artists not only makes us laud the scientific advancements made but also makes us understand that a doctor must retain his humanity and go beyond the objective treatment of the disease to addressing the concerns of the patient. One also marvels at the tenacity, the will, and the passion of the Masters. The work of an artist sometimes sings a soothing hymn, sometimes mirrors his thoughts, and at times Screams out the turmoils in his heart. When, how, and who actually hears and sees them, he does not know, for the world wears a blindfold while a failing eye draws the most terrible truths with clarity.

“I do not paint a portrait to look like the subject, rather does the person grow to look like his portrait.”

Salvador Dali

Figure 10: Goya’s The Bewitched Man, 1798, National Gallery, London (From https://en.wikipedia.org/wiki/The_Bewitched_Man)

Figure 11: The Scream, 1893, National Gallery, Oslo, Edvard Munch (From https://en.wikipedia.org/wiki/Edvard_Munch)
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Figure 12: The Artist with a skull: Optical Illusion from the Eye Disease, 1930, Munch Museum, Oslo, Edvard Munch (From https://www.tate.org.uk/tate-etc/issue-25-summer-2012/inside-eye-beholder)

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