

# 'Celestial sleuth' sheds new light on Vermeer's masterpiece 'View of Delft'

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View of Delft by Johannes Vermeer (1632-1675). Credit: Mauritshuis, The Hague

Johannes Vermeer is one of the most celebrated artists of the 17th century's Dutch Golden Age period. Widely known today for his "Girl with a Pearl Earring," he was famed for his mastery in rendering the effects of light and shadow. Nowhere is this technical precision more evident than in his masterpiece, "View of Delft", a vibrant cityscape that has captivated viewers for centuries. Because few details of Vermeer's life survive to the present day, little is known about when "View of Delft" was painted. Art historians have long assumed Vermeer painted it sometime during late spring or early summer of 1660. Based on the lighting, scholars have offered a wide variety of times of day: morning, mid-day, afternoon and sunset have all been mentioned. Now, a team of researchers led by Texas State University astronomer, physics professor emeritus and Texas State University System Regents' Professor Donald Olson has applied his distinctive brand of celestial sleuthing to Vermeer's masterpiece, using the artist's signature gift for depicting light and shadow to resolve the long-standing uncertainty over when it was painted.

Olson, along with Russell Doescher, retired professor in the Department of Physics at Texas State, Charles Condos and Michael Sánchez, students at Texas State and Tim Jenison of San Antonio, publish the findings in the September 2020 issue of *Sky & Telescope* magazine, on newsstands now. Based upon the team's research, Vermeer painted "View of Delft" from the second floor of an inn overlooking the city and was inspired by the scene that he observed on or near September 3, 1659 (or an earlier year) at 8 a.m. local mean time.

## **A journey to Delft**

Most printed sources claimed the light in the image was coming from the west in Vermeer's painting, while others were certain that the sun was high overhead. Olson and his students consulted maps of Delft and realized the view is looking north. That meant the light would be coming

from the southeast, making the painting a morning scene, as some previous authors have asserted. "The students and I worked for about a year on this project," Olson said. "We spent a lot of time studying the topography of the town, using maps from the 17th and 19th centuries and Google Earth.

We planned out exactly what we should do. On this research trip, it was the students who told us where to go to find Vermeer's viewpoint and when to be there." Condos and Sánchez mapped out the landmarks in the painting, using Google Earth to determine the distances and angles of view that would most closely represent Vermeer's view from centuries earlier.

"Google Earth is spectacularly accurate when it comes to distances and angles, so we used it as our measuring stick," Sánchez said. "Google Earth is basically another tool in our arsenal of techniques. "I'd known about Dr. Olson's work for quite some time, and it's always fascinated me," he said. "Combining my appreciation for art and love of astronomy appealed to me. When he approached me about this project, I was excited." Upon arriving in Delft, Olson and Doescher set about taking extensive photographs and measurements to confirm and supplement the students' advance work. The on-site topographical survey, combined with data from Jenison's previous trips to Delft, established that the painting's field of view is  $42^\circ$  wide, which would prove invaluable.

## **An exaggerated octagon?**

In modern times, as in the 17th century, the octagonal tower of Nieuwe Kerk (New Church) is one of the landmark features of Delft. The existing literature asserts that Vermeer significantly enlarged the tower in his painting, as much as doubling its width. Olson and his team conducted their own examination of this claim. They took detailed measurements of the framed canvas at the Mauritshuis museum in The

Hague. Comparing those measurements to high resolution photographs from a similar vantage point and field of view showed Vermeer depicted Nieuwe Kerk almost exactly as he would have seen it.

Olson also took measurements of the octagonal tower itself, which further confirmed Vermeer's accuracy. Establishing the accuracy of the tower's depiction was key to unlocking the date. The octagonal tower has a stone column projecting from each of the eight corners. In the painting, the column in the center almost, but not quite, shades the column to the left. A thin vertical sliver of light just grazes past the center column and lights up the left column, enabling the astronomers to calculate the angle of the sun with great precision.

As Vermeer is renowned for his technical skill in depicting light and shadow, it was only fitting that light and shadow proved the crucial clue in this investigation. "That's our key. That's the sensitive indicator of where the sun has to be to do that, to just skim the one projection and illuminate the other," Olson said. "The pattern of light and shadows was a sensitive indicator of the position of the sun."

## **Phantom hands and absent bells**

Once the angle of the sun was established, other details fell into place. A clock on the façade of a building in the painting had been interpreted for years as reading "just past 7 o'clock," before Sánchez noticed a curious coincidence. In all the other paintings and drawings featuring clocks the team had reviewed from that era, it appeared that the hands were lined up straight.

After further investigation and consultation with architectural experts, the team realized that tower clocks did not have minute hands until late in the 19th century—instead, the earlier clocks had a single, long hour hand, with the front side pointing to the hour and the back side acting as

a counterweight. Armed with that new knowledge, the team reexamined the clock in Vermeer's painting and realized the single, oversized hour hand suggested a time near 8 a.m. Vermeer also painted the Nieuwe Kerk with clear, unobstructed openings in the belfry. Those belfry openings are currently filled with the bells of a carillon. Historical records indicate installation of the original carillon began in April 1660 and was completed by September of that same year. To match the bell-less belfry in his painting, Vermeer would have painted "View of Delft" at some point prior to the carillon's installation in 1660.

Using the data collected from their research, the Texas State team used astronomical software to calculate when the sun's position in the sky at 8 a.m. local mean time in Delft to produce the observed shadows on the Nieuwe Kerk tower. The software returned only two possible date ranges: April 6-8 and September 3-4. In Delft's northern climate, trees do not break winter dormancy until late April or May, and Vermeer's painting depicts abundant leaves on the trees. As the carillon had been installed in the Nieuwe Kerk tower during 1660, that leaves a date near September 3, 1659 (or an earlier year), as the most likely date for the origin of Vermeer's masterwork.

"Vermeer is known to have worked slowly. Completing all the details on the large canvas of his masterpiece may have taken weeks, months or even years," Olson said. "His remarkably accurate depiction of the distinctive and fleeting pattern of light and shadows on the Nieuwe Kerk suggests that at least this detail was inspired by direct observation of the sunlit tower rising above the wall and roofs of Delft."

Provided by Texas State University

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