

Caravaggism and Science in the Candlelight Art of the Seventeenth Century was written by a junior History and Art History major for a course entitled *Baroque Art* (ART 332), which the author took to satisfy a requirement of the Art History major. In reviewing this research paper, the author identifies History and Science as disciplines whose concepts, methodologies or modes of inquiry, and/or perspectives are integrated or synthesized.

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CARAVAGGISM AND SCIENCE IN THE CANDLELIGHT ART
OF THE SEVENTEENTH CENTURY

The widespread influence of Caravaggio's tenebrism along with the many scientific break-throughs in the theory of light and optics inspired the generation of Dutch and French painters in the first half of the seventeenth century to develop the complex style of candlelight painting.

BAROQUE ART

BY

APRIL 10, 1997

Candlelight has fascinated and challenged many painters since the Renaissance. Some artists only experimented with the dramatic effect of candlelight, and a few even became obsessed with its delicate, sensual qualities. In seventeenth-century France and the Netherlands, a few painters succeeded in mastering the art of candlelight and enjoyed considerable reputations in their lifetimes, including Georges de La Tour and Hendrick Terbrugghen. However, as the "taste" of art changed their fame dimmed quickly, and by the end of the seventeenth century candlelight images were abhorred. Collectors desired lighter pictures, turning away the dark nocturnes which the candlelight masters had produced. Nineteenth-century art critic John Ruskin believed "any form of shadow and darkness in art was anathema" (Ruskin 1860, 125).

Within the last century, the genius of many of these candlelight masters has been rediscovered. Beginning around 1915, art historians have been slowly uncovering the lives and works of these artists, providing them a place in the history of art. For example, Georges de La Tour, a French candlelight painter who worked in the first half of the seventeenth century, has been recently recognized for his genius as a major French Baroque artist. His works have been transformed from dusty attic artifacts into some museums' most prized possessions. Also, many seventeenth-century Dutch candlelight paintings have been found wrongly attributed to Dutch masters such as Rembrandt and Vermeer.

Many works by these candlelight artists have been rediscovered in the past century, yet art historians remain indecisive about the reasons they chose to paint these dark, delicately lit scenes. Very little information exists about the lives of these artists, except documents of marriages, court cases, or baptisms. Evidently, the major sources for art historians in discussing seventeenth-century

candlelight art are the works of art themselves. In their lifetimes, it seems the candlelight masters generally defied the artistic traditions established in France and the Netherlands by attempting to reproduce the pure, natural effects of light instead of creating dramatic scenes with in-flooding light. They adopted rather individualistic styles which, according to Christopher Wright, seemed to break the great tradition in Western painting from Raphael through Poussin to Picasso (Wright 1995, 8).

Due to many factors, the way the candlelight masters looked at art and light changed throughout their careers. Even though economic incentives promoted the production of night scenes and candlelight images, the development of artistic styles and scientific thought more directly impacted candlelight's emergence in seventeenth-century art. By examining how these artists adopted and modified the Italian Caravaggesque style and discussing the scientific trends of the time, two central factors which enkindled the emergence of the candlelight genre become apparent. The widespread influence of Caravaggio's tenebrism along with the many scientific break-throughs in the theory of light and optics inspired the generation of Dutch and French painters in the first half of the seventeenth century to develop the complex style of candlelight painting.

One general assumption about the sudden rise of candlelight images focuses on the early seventeenth-century art market, stating that economic factors provoked the birth of candlelight art during this period. Merchants and middle-class art buyers in this period often preferred candlelight and nocturnal images over the brightly colored, classical works by mainstream artists such as Rubens or Poussin. Thera Wijzenbeek-Olthuis and Leo Noordegraaf, in an essay on the economic context of Dutch painting, state that "Dutch art collectors in the

seventeenth century had a keener sense of a work's aesthetic quality and valued innovations in technique or composition " (Wijsenbeek-Olthuis and Noordegraaf 1993, 47). Therefore, the experimental quality evident in candlelight images may have been appealing to the art community, encouraging artists to paint in this genre. Also, in the autonomous region of Lorraine in the seventeenth century, Georges de La Tour enjoyed a prosperous career, selling his candlelight scenes to middle-class city dwellers and the municipal government of his home town of Lunéville (Wright 1985, 9, 26). Hence, some artists may have chosen to paint candlelight images for the financial success it offered. However, economic motivation can not explain the emergence of this style of painting, it only explains why artists chose to continue painting candlelight scenes.

More concretely contributing to the emergence of candlelight art was the sweeping evolution of art during the Baroque period. One of the most significant artistic forces in this evolution was the style of Michelangelo Merisi da Caravaggio, a vigorous Italian painter who brought realistic intensity to his art with his dominating chiaroscuro. During his life and especially after his death, the popularity of Caravaggio's style soared. Artists from all over Europe were visiting Italy and experiencing the great works of Caravaggio, bringing his tenebristic effects back home to their studios. In this surge of Caravaggism at the beginning of the seventeenth century, many artists who became candlelight masters adopted Caravaggio's style of lighting. Most of the candlelight painters traveled to Italy to, receiving direct influence from Italian Caravaggism. Documents prove that Dutch artists such as Gerrit van Honthorst, Hendrick Terbrugghen, and Dirck van Baburen, also known as the Utrecht Caravaggisti, along with French artists such as Trophime Bigot, lived and worked in Italy for

many years, experiencing the works of Caravaggio and his Italian followers firsthand (Nicolson 1979, 14-15). Georges de La Tour most likely visited Italy early in his career before he began to paint night scenes, although no documents exist to prove such a trip (Thuillier 1993, 26).

After gaining a foundation in the lighting techniques of Caravaggio, the candlelight painters began to experiment with his tenebrism by mixing it with their local and personal styles. Artists such as Honthorst, Terbrugghen, and La Tour strove to improve Caravaggio's tenebrism by enhancing the realism of the lighting effects and bringing sensitivity and detail to Caravaggism with the soft light of a candle. Gerrit van Honthorst, a Dutch painter from Utrecht who began painting night scenes while in Italy, wished to overcome the harshness of Caravaggio's light. Honthorst experimented with artificial and internal light sources in his paintings, bringing him to love the effect of candlelight. One example of Honthorst's night scenes is his *Christ Before the High Priest* (1617, oil, London, National Gallery) [Figure 15, Rosenberg et al.]. Hendrick Terbrugghen, also from Utrecht, actually met Caravaggio while in Italy. The most important change Terbrugghen made to Caravaggism was his addition of delicate color to the semi-dark shadows which candlelight tended to create on objects (Nicolson 1958, 20). This technique is evident in Terbrugghen's *The Calling of St. Matthew* (1621, oil, Utrecht, Centraal Museum) [Figure 12, Rosenberg et al.].

The style of Caravaggio was too "Italian" to be exactly imitated in Dutch art. Italian art followed a separate tradition than in the Netherlands. Through creating candlelight images, both Honthorst and Terbrugghen attempted to make the Caravaggesque manner more appropriate to the north. They mixed Mannerism with Caravaggism, making the tenebrism more subtle and naturalistic,

and candlelight seemed the best 'subtle' source of light. In seventeenth-century Europe, some art critics such as Sir Henry Wotton praised artists who depicted objects and figures realistically instead of symbolically as Caravaggio had (Kahr 1978, 167). As the visual aspect of art became more popular, Honthorst and Terbrugghen aspired to paint night and candlelight scenes as realistically as possible. They also directed more attention to the image with less to divert the viewer's attention, such as the flamboyant Italian gestures evident in Caravaggio's work. Honthorst and Terbrugghen decreased the sweeping gestures which were difficult for northerners to assimilate (Nicolson 1958, 7). Candles in paintings have an intrinsic ability to unify the composition through the dim light, and the Dutch candlelight masters used this to focus the viewer's attention in the image. Combining the Italian Caravaggism with the northern tradition of Dürer, Grünewald, and van Leyden, Honthorst and Terbrugghen successfully created a melange of these artistic styles, of which candlelight became the logical outcome for these Utrecht painters.

In France, Georges de La Tour allayed the intense style of Caravaggio in his candlelight works. La Tour added a quiet analysis of human psychology to Caravaggism. He handled detail like a genius, and captured the character and tactile quality of substances. Anthony Blunt even believes that the clear, mathematical quality of La Tour's art set the stage for the great classical works of Nicholas Poussin (Blunt 1993, 160). La Tour's nocturnes achieve a level of spirituality and calmness that no other candlelight painter had reached in the seventeenth century.

Therefore, the development of candlelight painting in the Netherlands and France coincides with the artistic evolution of Caravaggio's tenebrism into a more

complex, naturalistic effect. The art of the candlelight painters would not have emerged without the widespread influence of Caravaggio. However, the complexity of light which the candlelight masters created in their work defies purely Caravaggesque influence. In order for an artists like Terbrugghen and La Tour to drastically alter their perception of light, they must have studied the scientific break-throughs of the time. In the early seventeenth century, Johannes Kepler and Pierre de Fermat were revolutionizing the principles of light, while art theorists like Francois d'Aguilon and inventions like the camera obscura were making a bridge between art and science.

One of the first scientists to emerge in the seventeenth century with a propensity towards revolutionary innovation was Johannes Kepler. Working in Germany most of his life, Kepler fathered many radical theories on planetary motion and he was the first strong supporter of Copernicus's heliocentric theory. In relation to art, Kepler's work on light and optics is most valuable. Between 1604 and 1611, Kepler published two treatises on light and optics. The first treatise dealt mostly with the diffusion and refraction of light. In his experiments, Kepler worked with candles as light sources, making it easy for candlelight artists to reproduce some of his basic theories. Kepler attempted to calculate exactly how candlelight diffused from its source, concluding that light diffused proportionally with its distance from the source (Beer 1975, 810). Many candlelight artists such as Gerrit van Honthorst showed a firm command over Kepler's diffusion of light from a candle. Also experimenting with the refraction of light through glass, Kepler devised many new laws of refraction which artists could use when representing the passage of light through glass in paintings.

Kepler's second treatise of optics focused on the lens systems of telescopes,

but also discussed the camera obscura, which will be discussed later in this paper. In terms of the accessibility of Kepler's theories to artists, Kepler's works were published all across Western Europe, especially in the Netherlands where people became almost crazed about scientific developments. Therefore, it is likely that Dutch candlelight artists were exposed to Kepler's work with light.

Another influential scientist of the seventeenth whose ideas may have impacted the art of candlelight painters was Pierre de Fermat. More of a mathematician than a scientist, Fermat was most famous for his important discoveries in analytic geometry and number theory, but he experimented with light and optics as well. Much of Fermat's work came slightly after the revolutionary discoveries of Kepler, hence his ideas were strongly influenced by Kepler. Most important to art were Fermat's experiments with the behavior of light. He observed and recorded how light traveled through various media, including glass, cloth, and metal screens (Mahoney 1973, 388, 389). Being a mathematician, Fermat described the behavior of light through mathematical equations, possibly influencing artists like Georges de La Tour, who exhibited a mathematical clarity in his depiction of candlelight. In contrast to Kepler's work, Fermat's work seemed to be very accessible to French artists. In the 1620's, he lived and worked in Toulouse, home to the studio of candlelight painter Troph me Bigot. Later, during the 1630's, Fermat moved his work to Nantes, a city where Georges de La Tour would have worked and frequently visited during this time. This indicates that Fermat's ideas, embodying much of Kepler's work, were related to the development of candlelight art in France, if not all of Europe.

In general, the scientific break-throughs of Kepler and Fermat exhibited widespread influence on artists all across seventeenth-century Europe. However,

neither scientist directly addresses art in their theories, making it hard to translate the highly technical scientific laws into practicable artistic conventions. Filling in this gap between science and art, art theorists such as Francois d'Aguilon, better known as Aguilonius, interpreted the erudition of Kepler and Fermat into understandable artistic terms.

In 1613, Aguilonius published his "Light and Shadow," which presented his studies of the relationship between the strength of light sources and their diminishment over distance (Kemp 1990, 103). Unlike Kepler, Aguilonius's experiments showed that light diffuses in an inverse square in regard to distance. This proved that light diffused much more rapidly than Kepler had concluded. Aguilonius also described how to use complex lighting effects in paintings, such as candlelight.

Along with the significance of Aguilonius' writings is the importance they played in the careers of famous Baroque artists. Although not a candlelight painter, Peter Paul Rubens owned a copy of Aguilonius's treatise in his personal library, and used it as his connection to the scientific revolution of the seventeenth century. Due to Aguilonius's suggestions, Rubens experimented with a few images which were lit by candles or lanterns. Velazquez has also been documented as having Aguilonius's treatise in his library in the court of Philip IV (Kemp 1990, 104). In relation to the candlelight painters of France and the Netherlands, Aguilonius also investigated the principle of diffused light which searches out color even in shaded areas of a painting (Kemp 1990, 275-276). One must remember that Hendrick Terbrugghen chose to represent his shadows with delicate colors, painting with this style almost ten years after Aguilonius's treatise was published. Throughout candlelight painting, the works of art theorists like

Aguilonius made a bridge between science and art, inspiring artists to adopt the scientific theories of light in their art.

Another bridge between art and science in the seventeenth century was the camera obscura. The camera obscura was invented on the principle that rays of light from an object or scene would pass through a small aperture in such a way as to cross and re-emerge on the other side in a divergent configuration. If a wall or flat surface intercepted this divergent light, an inverted image would be formed. All of this must occur in a dark room, hence the term camera obscura, or "dark chamber." Later developments by Kepler discovered a way to reverse the image with mirrors or lenses (Kemp 1990, 189).

The development of the camera obscura changed the way artists looked at their work in respect to light. It also allowed artists how to paint such complex lighting effects as candlelight. In the seventeenth century, artists strove to represent objects naturally. In this field, Kepler once again became very influential. His motivation in the creation of the camera obscura was to duplicate the vision process which occurs in the human eye, not to aid the artist. Kepler considered the use of a camera obscura in art to be cheating (Seymour 1964, 324). Kepler's concept that "vision is brought about by a picture of the thing seen being formed on the concave surface of the retina, and that the retina is painted with the colored rays of visible things" seems to have sparked the desire for optical accuracy in Dutch art (Kemp 1990, 119). If an artist could paint an image in the same way the human eye perceived it, he or she had grasped the concept of naturalism.

The trend towards direct and empirical naturalism in art moved away from the traditional re-creation of the Italian manner partly due to the development of

the camera obscura. Several seventeenth-century art theorists and critics have promoted this shift in art. For example, Constantijn Huygens, art theorist and later secretary to the three stadtholders of the Dutch Republic, wrote in 1622 about the natural qualities which painting could achieve from the camera obscura. Also, another Dutch art theorist named Hoogstraten wrote, ". . . with a camera obscura, one sees the main or general qualities that should belong to a truly natural painting" (Kemp 1990, 192). In relation to the candlelight painters, the camera obscura and other optical aids would have helped them naturalistically represent light in scenes. But did the candlelight masters actually use camera obscuras in their studios?

Recently, much research has been done to discover whether or not seventeenth century artists used camera obscuras and other optical devices as aids for naturalistic painting. Direct written evidence of named painters who used a camera obscura is almost entirely lacking. Art historians have been forced to study the works of art, looking for certain characteristics. Intense contrasts between shade and light, small circular highlights, and blurred foreground objects are some of the aspects of a painting which may deem it "optically-aided" (Kemp, 193). Philip Steadman has recently researched Jan Vermeer's art, and has proven the possibility of his use of a camera obscura. Other seventeenth-century artists which most likely used a camera obscura include Torrentius, an early still-life painter, and Jan van der Heyden (Kemp 1990, 196). However, even if an artist never used a camera obscura, the fascination with optical devices which spread across Europe was likely to impact their art. Therefore, whether or not the candlelight masters used optical mechanisms to achieve their precise and complex lighting effects, the practicable science of light and optics would have

definitely inspired their art.

“To paint a candlelight scene from life is an impossibility,” claims Christopher Wright, who has researched the work of many candlelight artists, especially Georges de La Tour (Wright 1995, 8). Therefore, what inspired these artists to attempt the impossible? The previous discussion has been aimed at revealing two of the most important factors which logically led to the development of candlelight scenes: the influence of Caravaggio’s tenebristic lighting effects and the contemporary revolution in the science of light and optics. The recent rediscovery of the work of Dutch and French candlelight painters from the seventeenth century has increased the scholarship on the subject. Yet, art historians have just begun to understand why a group of artists would have broken the artistic tradition and chosen to paint such a complex effect such as candlelight.