

## Science behind the Art

Andrea Ojeda

**Course:** Earth Science 101

**Instructor:** Mr. Bruce Sherman

**Assignment:** Comparative Essay

Is there a relation between science and art? The two worlds are so far apart, and yet, can one exist without the other? Although many broad topics in science and art seem to be interrelated, research and history proves that the two go hand-in-hand on a more specific basis. The genius of artists such as Brunelleschi and DaVinci can be compared to scientists like Galileo and Einstein. All four men seemed to be ahead of the curve in thought and creativity. Filippo Brunelleschi “used systems of proportion that were based on the sixteenth century writings of mathematician Pythagoras” (Hartt 167). In the same manner, the scientist Galileo unlocked many of the secrets of astronomy and natural motion. While Leonardo DaVinci painted the famed Mona Lisa, he also made discoveries in meteorology, learned the effect of the moon on the tides, and foreshadowed modern conceptions of continent formation. Although these comparisons are quite vague, there are more meticulous comparisons of art and science. Meteorology and astronomy play an epic role in the natural works of artist Charles E. Burchfield and the effects of the climate on artist Aert van der Neer during the Maunder Minimum.

Many artists have used the night sky and its stars to enhance the feeling of their compositions. Van Gogh used radiant swirls to portray the light and feeling the stars conveyed in his *Starry Night*. Nonetheless, being that these celestial objects are so tiny and seemingly insignificant to the finished piece, most artists do not choose to emulate in depth the actual stars and their real location in the sky. As Van Gogh used the stars and moon in an impressionistic manner to generate an ambience for his work, artist Charles E. Burchfield used his works to

create accurate depictions of the night sky. In Burchfield's paintings, one can clearly note the exact date and location the work was completed by reading the accurate star maps done in each work. Specifically, if one were to examine Burchfield's charcoal drawing entitled *Moon Light in June*, done on June 23, 1915, it can be noted on that date the moon was "86% full and bright enough to produce prominent shadows and at 8:50 PM EST it would have been at an altitude of 26 degrees and almost due south, so that the long shadows would fall straight along a road-running west" (Harrington 37). He stated, "The only bright star in the proper position would have been the star Regulus, which is the brightest star in the constellation of Leo" (Harrington 37). Scholars suggest the other two dimly lit stars may be Rho Leonis on the left and Delta Cancri to the right. Without hardworking scientists who study astronomy, Burchfield's accuracies of the stars and moon would have been just another creative interpretation of the tiny flickers of light seen in the sky. There have also been other instances where astronomy has influenced the art community. Recent discoveries of sunspots and their effect on our climate here on earth have lead to questions of whether or not these have affected artists during the other artistic periods.

During the Maunder Minimum, "scientists have discovered a decrease in sunspots to around 50 in comparison with the usual 40,000 to 50,000" (Eddy 80). This decrease in sunspots and temperature lead to the "little ice age." During the "little ice age," the rate of famine and poverty were at a pinnacle. The art of the time provides a look back at the mood of the artists that were suffering as well. Many of the works were a somber reflection of the feelings of a suffering people. In Dutch painter Aert van der Neer's *Sports on a Frozen River*, the poorly dressed inhabitants of a small frosty town occupy a dimly lit landscape. The image dates approximately to 1660 BCE around the beginning of the Maunder Minimum. Scientists are still unsure whether

or not the climate change was “global or regional” (Eddy 82). The effects of the cold weather must have been felt both mentally and physically by the Dutch painter and others across the globe. Historical facts tell how many of the people affected by the sudden onset of cold were hungry and sick. It was a dour time. Just by looking at Aert van der Neer’s work, one can feel the lifelessness and gloom. Although there were no photographs in the year 1660, this artwork can take one and invoke in them the same depression that must have been felt by most.

Many instances have occurred over the years of weather affecting history. Just as a flood can affect a town, something as minute as a star or as magnificent as an ice age can affect art. If one can look at art during certain periods, he or she can get a general feel for the weather and mood an artist may have experienced at the time a work was completed. Sometimes artists are completely aware they are using a specific scientific discovery such as in the works of Charles E. Burchfield. While other times, in the case of Aert van der Neer, the science behind the paint is not evident for hundreds of years. Without science and the discoveries it has made, all art would be impressionistic and vague.

#### Works Cited

- Eddy, John A. “The Case of the Missing Sunspots.” Scientific American 236 (1977): 80-92.
- Harrington, J. Patrick. “The Moon, The Stars, and the Artist: Astronomy in the Works of Charles E. Burchfield.” American Art Journal 22 (1990): 33-59.
- Hartt, Frederick, and David Wilkins. History of Italian Renaissance Art : Painting, Sculpture, Architecture. Upper Saddle River: Prentice Hall Art, 2006.

**Mr. Sherman's Comments:** *Andrea's paper definitely fulfilled the requirements of the assignment. I challenge my students to relate earth science to their majors in an attempt to show them that they are not simply taking a class that has "nothing to do with their major." Earth sciences have, either directly or indirectly, inspired, many artists through time. Andrea did an excellent job of relating art and earth science.*