Partnership for Innovation in Education

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THE TAFT MUSEUM OF ART

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The Taft Museum of Art is looking for help in repairing historic murals. Knowing how to correctly assess and portray dimension-using paint on a flat surface is an important component of the task. Can you help fulfill this assignment?

Situation

Taft Museum Director Deborah Emont Scott, stared in dismay at the Duncanson murals on the museum's hallway wall. She was seeing first-hand the damage caused by the cleaning crew. She had heard about the accident last night with the carpet-cleaning machine. The chemicals had spewed in an arc, affecting the prized murals in the original entry to the museum. In tears, she quickly sized up that the murals were completely ruined, with yellowed chemical rings covering the walls. It was a mess.

Deborah was beside herself. These murals were such an integral part of the museum's history and identity. In 1850, art patron and prominent Cincinnatian Nicholas Longworth, was looking for an artist to paint murals in the entry halls of his prestigious home, called the "Belmont". At last, he found Robert S. Duncanson to paint the murals. He commissioned Duncanson, who was a young black artist and one of the first African American artists to gain national recognition, to take on this significant task, which included 8 panels, sized 9 ½ by 6 feet each in size.

Having moved to Cincinnati after 1840 to embark on an artistic career, Duncanson accepted this commission, even though he had never executed anything of this scale or difficulty. At the time, he was painting landscapes of the Ohio River Valley, among other subjects, in the vein of the Hudson River Valley School which was known for creating the illusion of a deep and vast landscape on a flat two-dimensional canvas. Duncanson employed these skillful techniques to complete the massive landscapes on the walls of Longworth's home.

Because of its rich history and importance to the museum, Deborah knew she had to do something to preserve the significance of these murals. She had to replace these great works of art.

She gathered a team of artists to recreate these treasures. She talked with the artists about the importance of the Duncanson murals, and how creating the illusion of a 3-dimensional scene would transport the viewer into the landscapes. This would be no small feat but she hoped the artists were ready for the challenge.

Background

The Taft Museum of Art

Today, the Longworth homestead is one of Cincinnati's most treasured art museums, called The Taft Museum of Art. The Taft Museum of Art was founded in 1927 and houses a unique collection of artworks including Chinese Ceramics, European and American paintings, and European Decorative Arts. The house was originally built in 1820 by Martin Baum, and has changed owners twice after that – in 1829 to Nicholas Longworth and in 1869 to David Sinton. Sinton's daughter, Anna Taft grew up in the home, and when she married Charles Taft, the two of them moved into the house. The Taft's desired to leave their home and artwork to Cincinnati, declaring in their Deed of Gift, "We desire to devote our collection of pictures, porcelain, and other works of art to the people of Cincinnati in such a manner that they be readily available to all."

Painted in the 1850s, The Belmont Murals had been a long-standing prominent piece of the Taft Museum. Deborah Emont Scott referred to the murals as "remarkable in the way that they capture depth. It takes considerable skill to achieve the effect they do." The paintings are surrounded by trompe l'oeil ("fool the eye") frames and accompanied by overdoor decorations of floral bouquets. Painted in the Hudson River School style characterized by Romantic views of virgin landscape, the imagined landscapes in the murals evoke the Ohio River Valley.

Duncanson's career was manifested through the creation of Belmont landscape murals and stand as evidence of one of Duncanson's most ambitious artistic creations. The eight paintings constitute one of the largest existing pre-Civil War domestic murals.

Who Is Robert S. Duncanson?

Born in 1821 in Seneca County, New York, Robert S. Duncanson was a descendent from freed Virginia slaves. He lived with his father in Canada until 1841 where he was a house painter. He then moved to Mt. Pleasant, Ohio – just 15 miles north of Cincinnati – to live with his mother. Upon his return to his mother's home, Duncanson said, "I've come back to be an artist" as he yearned to do more than just paint houses. At the time Cincinnati was known as the

"Athens of the West" and offered Duncanson the right environment to take on his new endeavor. While he had plenty of determination and drive, he never received technical training but instead was self-taught by painting portraits and copying prints.

Early in his artistic career Duncanson painted portraits and had three portraits displayed as part of an 1842 Cincinnati art exhibit. This was Duncanson's public debut into the art world. Soon thereafter, taking a break from portrait work, Duncanson then worked with another artist, photographer Coates to produce a series of "chemical paintings" called daguerreotype, the earliest widely used photographic process.

While Duncanson was making progress as an artist personally and publicly, he was not receiving enough commission for his work in Cincinnati and proceeded to move to Detroit in 1845 where he returned to portrait painting. He was well received by the local press who praised him for his skill and color usage.

Gaining commissions in Detroit, he turned his attention to genre painting and Cincinnati artist James H. Beard. This sparked his move back to Cincinnati in 1846 where he hoped to expand his repertoire. Reinvigorated, he studied the exploration journals of John Stevens and Frederick Catherwood and experimented with far off places and forgotten civilizations in his work. This led to a major commission in 1848 – called *Cliff Mine, Lake Superior* – for Charles Avery who was an abolitionist Methodist minister. This wok not only bolstered Duncanson's career as a landscape painter but also opened the door to a network of abolitionist patrons who would sustain most of his career.

With the commission for Avery completed, Duncanson continued to explore landscape painting and the work of the Hudson River School artists. He aspired to paint American landscapes and along with two other artists, traveled the country on "sketching trips" to gather the subject matter and inspiration for painting back in their Cincinnati studios. In the early 1850s he turned his focus on the Ohio River Valley for inspiration, as well as Thomas Cole bringing to is landscapes a feel of paradise and parallels between the imaginary lands painted and America.

In 1851, Nicholas Longworth commissioned Duncanson to paint the murals at his Belmont home. While Duncanson was still up and coming, Longworth trusted him with the decoration of his home because he saw Duncanson as "one of our most promising painters."

At the onset of the civil war Duncanson moved to Canada and then to the United Kingdom, where he toured with one of his most accomplished works, *The Land of the Lotus Eaters*. His work was well received, and the London Art Journal declared him a master of landscape painting. He returned to Cincinnati in 1866-67 drawing upon his European travels to paint many scenes of Scottish landscape.

He continued to paint through the end of his life, producing some of his best works. He died in Detroit at the age of 51 in 1872.

Creating the illusion of three-dimensionality on a two-dimensional surface

Leading up to the commission of the Belmont Murals, Robert S. Duncanson gained a wealth of knowledge through the self-taught drive and dedication to his field that no doubt included much practice, planning, and trial and error. To achieve his level of expertise, you will need to consider both the study and practice it takes to perfect such artistic techniques. What will it take to for you to re-create the Duncanson Belmont murals?

Understanding the Artistic Techniques

Creating the illusion of depth requires the scientific and mathematical understanding of many of the techniques employed to achieve the desired three-dimensional effect. To create these visual techniques one of the key elements you will need to understand is perspective and specifically - linear and atmospheric (aerial) perspective. Along with these perspectives the artistic concepts of overlapping, convergence and foreshortening will help to create the depth sought on the 2-dimentional plane. These will require mathematical calculations and the understanding of spatial relationships.

Additionally you will have to understand the intricacies of color, including what scientifically creates the variation in the colors seen by the human eye, as well as how to accomplish color intensity and saturation which can be used to help create the three-dimensional illusion. The student/artists will also need to know the artistic medium, in this case paint, and the practical aspects of achieving the desired feel in the final work.

As Duncanson's murals depict landscapes, students/artists will have to understand the topography of the landscape depicted as well as the scale of objects in relationship to each other in a landscape setting.

Modeling – the Scientific and Mathematical Approach to "Scaling Up"
To accomplish a work of the size of the Belmont murals, employing modeling at a smaller scale will help with the planning and understanding of the three-dimensional techniques. Formulating and testing out various 3-dimensional shapes, as well as testing the 3-dimentional illusionary techniques needed to make the Belmont mural on small scale provides the opportunity to analyze the principles of 3-dimensional shapes as well as make corrections before embarking on the full-scale project.

Once the smaller-scale models are created and tested to make sure they accurately depict 3-dimensional depth, you will need to apply mathematical proportional equations to creating a proportionally larger version of the models. This intermediate step of smaller-scale modeling provides a way to test the techniques and revise them, as needed, before working on the large-scale mural.

Modeling using Modern-Day Technology
Today, there are many programs that can provide computer graphics to model the desired illusionary effects and techniques listed above, providing a way to learn

the desired techniques and test how well these techniques will accomplish the desired effect. Programs such as working with 3-D games and ray tracers as well as CAD software offer a way to explore the mathematical applications such as linear algebra, by using a set of points projected on a plane to create a sense of perspective.

Definitions:

Linear Perspective

As objects become more distant they appear smaller because their visual angle decreases. The visual angle of an object is the angle subtended at the eye by a triangle with the object at its base. The greater the distance of the object from the eye, the greater is the height of this triangle, and the less the visual angle. This follows simply from Euclidean geometry.

The Sun and the Moon appear to be roughly the same size because the Sun, although much larger, is also much farther away. The relationship between distance and apparent height of objects is an inverse-linear function:

$h = a/d$

where h is the apparent height, d is the distance of the object, and a is the actual size of the object. So if you want to find the true height of an object in the distance, multiply the apparent height with the distance the object is from you.

Atmospheric Perspective

Aerial perspective or **atmospheric perspective** refers to the effect the atmosphere has on the appearance of an object as it is viewed from a distance. As the distance between an object and a viewer increases, the contrast between the object and its background decreases, and the contrast of any markings or details within the object also decreases. The colors of the object also become less saturated and shift towards the background color, which is usually blue, but under some conditions may be some other color (for example, at sunrise or sunset distant colors may shift towards red).

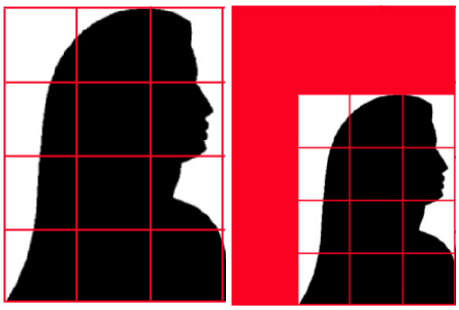
The picture below illustrates this concept.

Modeling – Drawing to Scale

The murals are each 9.5’ x 6’. The artists are presented with the problem of how to paint the image on something of such large size. To accomplish this, the students know they first have to draw it to scale. Scale is a relative term meaning "size" in relationship to some system of measurement. In art and design when discussing scale it refers to the size of object in relationship to a clear set of measurements. For example, if a pair of shoes drawn on a piece of paper were drawn at “half scale," that would mean that they were half the length of the actual object--that is, one-half "full" or "actual size."

In this case, using a ruler and measurement, the artists will first have to draw the object to scale marking the mural out on a grid and creating a small-scale model. The small scale mode can then be “scaled up” to its actual size. To do this they will employ the mathematical term called proportion which refers to the ratio between the parts of a larger whole. In their case, they could choose to draw the small-scale model using a 1” to 1’ scale or ratio, meaning every 1” of the drawing on the paper represents 1’ of the actual sized mural that will be painted on the wall.

Using a ruler and grid paper, the picture can be carefully marked out on the grid creating a small-scale model and then can be "scaled up" to its actual size. The Picture below illustrates this concept.



The Problem

Deborah Emont Scott has asked that you recreate the Duncanson Murals. She is counting on you to translate the concepts of illusion and three dimensionality on a flat wall.

QUESTIONS TO BE RESEARCHED:

- Understand the artist's tools that you will be using - medium, composition, elements and principals.

- Know the techniques that "fool the eye" including:
    a. Linear perspective or the mathematical system for creating illusions of space and distance on a flat surface
    b. Atmospheric (or aerial) perspective
    c. Foreshortening and convergence
    d. Proportions
    e. Overlapping

- Apply the scientific method to your efforts to master this technique, using models and mathematical calculations to "scale up" to your final project.