Color & Light

A Graduate Project on the Theory of Color and how it functions in Light.

By: Michelle Warner & Jamie Lofthouse
Objective

- To create a visual catalog of Rosco Gel thru Light on an object.
- To recreate daylighting on the stage.
  - Sunrise
  - Sunset
  - Sun Thru Leaves
- To Explore the History of Color and Light
- To Examine the Theory of Color
We took the Rosco Gel Swatchbook and illuminated each color on a white object – Our *Hamlet* Skull

We have a database of over 100 images to showcase how color changes the same object.
Rosco Gel Catalog

No Color

Purple

Green

Orange
Rosco Gel Catalog

R22

R47

R74

R52
Rosco Gel Catalog

- We discovered how color can change an object
- This also changes the mood and environment of a space whether on stage or in a building
- We then began to explore two colors

R26

R59
We used a split gel to create a contrast on our skull.

This helped to create a more interesting environment.

We then decided to explore multi-sources with varying colors.
Rosco Gel Catalog

- The Multi-Sources help to round out our skull
- It creates dimension
- It shows how different colors and angles can make the object more interesting
- This led us to think about we can create the beauty of outdoor light
Multi-Source

[Images of four different skulls in a grid format.]

[The image shows four skulls, each with different color schemes and lighting effects.]
Daylighting for the Stage

Haze used in the production of *Cats* mimics the sunlight thru the trees

Photo by Pekka Parvianien

*Cats*, New London Barn Playhouse, New London, NH,
Lighting Designer: Michelle Warner Photograph: Kyle Melton
Daylighting for the Stage

In the production of *The Fiddler on the Roof*, the orange backdrop conveys the image of a sunrise.

*The Fiddler on the Roof*, Nevada Conservatory Theater, UNLV, Judy Bayley Theatre Lighting Designer: Michelle Warner Photograph: Ken Weinberg

Photo by Pekka Parvianinen
Daylighting for the Stage

In this full stage view of The Fiddler of the Roof, the backdrop is seen with multiple colors to create a similar look to the photo on the left.

Photo by Pekka Parvianinen

The Fiddler on the Roof, Nevada Conservatory Theater, UNLV, Judy Bayley Theatre Lighting Designer: Michelle Warner Photograph: Ken Weinberg
Daylighting for the Stage

The flexibility of stage lighting allows us to create many similar looks to those we see in nature.

Photo by Pekka Parvianinen

The Fiddler on the Roof, Nevada Conservatory Theater, UNLV, Judy Bayley Theatre Lighting Designer: Michelle Warner Photograph: Ken Weinberg
Sunlight thru the leaves of a tree can also be demonstrated on stage with the use of a template and color filter.
Color in Architecture

- We then began searching out color in lighting within the architecture world.
- These rooms have a strong sense of light and color.
- The spaces have a more dimension just like our conclusions about the skull in multi-sources.
- These photos demonstrate our findings
Color in Architecture

These rooms each have a different personality with the colored light. They each have a strong sense of daylighting, but the photo on the right showcases other fixtures to bring out the blue color.
Color in Architecture

This residence has a dramatic mood shift with the different colors of light. The Silhouette of the forms also adds to the drama.

Color in Architecture

These spaces demonstrate the use of daylight to accentuate the color.
Color in Architecture


These photos showcase daylighting in a different way. They portray the texture light can create. The theatrical photo shows texture with color.

La Boheme, UNLV Opera Dept, Judy Bayley Theatre, Lighting Designer: Michelle Warner, Photograph: Christine Sietz

Color in Architecture

- These photos demonstrate the color change under different light.
- It is important to think about the color temperature of each fixture and how it will react to the items it will be illuminating.
Color in Architecture

- This office space is more interesting with the windows to let in daylighting.
- It is also more inviting with the task lighting under the desk reflecting off of the orange cork boards.

Central States Pension Fund, Chicago. Architects: HNTB.
The History

- Mikhail Vasilevich Lomonosov (1711-1765)
  - Thought the Retina was only sensitive to 3 different colors
  - Red, Yellow, & Blue
  - This was the Trichromatic Basis
  - He was a Stained Glass Window Maker
    - He used the colored glass as a filter to create colored light

Susanna, Southern Utah Univ. Lighting
Designer: Jamie Lofthouse
Photograph: Melissa Oliver
The History

- George Palmer (1740-1795)
  - Glass Salesman, specialized in colored glass, and a color theorist
  - He a color theorist and a painter
  - He devised a liquid daylight filter for painters who wanted to paint in artificial light
  - He thought the spectrum contained three different rays:
    - Red, Yellow, & Blue – other colors could be mixed if the spectrum was large enough
The History

- Thomas Young (1773-1829)
  - “Comprehensive Genius”
  - Calculated the wavelengths of light at various spectral colors
    - \(0.000266\) = Red
    - \(0.000176\) = Violet
“The law is, that whenever two portions of the same light arrive at the eye by different routes, the light becomes most intense when the difference of the routes is any multiple of a certain length, and least intense in the intermediate state of the interfering portions; and this is different for light of different color.”

Thomas Young
The Theory of Color

How colors respond to varying colored backgrounds
The Theory of Color

- The theory of Four Opponent Colors
- Ewald Hering (1834-1918)
  - The four colors are Red, Yellow, Green, and Blue
  - This theory puts each of the colors as cornerstones of a square.
  - These colors can mix to create other colors, but a color cannot be both reddish and greenish, nor yellowish and bluish.
  - The Diagonals seem to exclude each other.
  - Daylight is the brightest spot in the yellow area of the spectrum.
The Theory of Color

- Aristotle
  - Introduced the term “quality”
  - The four “qualities” are wet, dry, hot, and cold
  - All colors were less bright than white and less dark than black
  - He felt each color was a compound of white or black
  - He noted neither the rain, nor sun had color, but the rainbow exists.
  - The rainbow consisted of “apparent” colors because these colors could not be described
  - The Greek Color Theory directly related to Greek Astronomy and the basis of geo-centric thought.
Conclusion

- We demonstrate how the same object can be changed with the use of color.
- We were able to demonstrate how to recreate outdoor lighting on stage.
- We explored the use of color with architecture.
- We studied the history of color.
- We further explored what color theory is and how it affects us today.