Science and art, in our own day, tend to be thought of as fundamentally separate; one, an analytical tool; the other, the result of an elusive creative process. Actually, however, they are sister reflections of the human imagination – of the ability to explore and interpret, to respond to and shape the realities both within and outside of ourselves.


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**Agenda**

**Speakers:**
- Gregory Smith, Andrew W. Mellon Assistant Professor of Conservation Science at Buffalo State College
- Laura Fulton, chemistry teacher, Greece Central Schools, 1983-2003

**Materials:**
- Selected classroom materials available in MAG’s Teacher Resource Center.

The Gallery Store is offering a “teacher special” on selected items tonight only.
The universe is pulsating with an energy that we call electromagnetic waves. The frequency range of electromagnetic waves is huge…but the average human eye can detect only a very small portion…chemical colors appear because they (the objects) absorb some of the white light and reflect the rest. So the green glass on the book cover is simply absorbing the red and orange wavelengths from the white light around it and rejecting the green—so that is what we “see.”

If you are, like me, not a scientist, you’re probably inclined to skip this section, but stay with me because it is quite an astonishing story. What is important to remember about chemical coloring is that the light actually does affect the object. When light shines on a leaf, or a daub of paint, or a lump of butter, it actually causes it to rearrange its electrons, in a process call “transition.” There the electrons are, floating quietly in clouds within their atom, and suddenly a ray of light shines on them. Imagine a soprano singing a high C and shattering a wineglass, because she catches its natural vibration. Something similar happens with the electrons, if a portion of the light happens to catch their natural vibration. It shoots them to another energy level and that relevant bit of light, that glass-shattering “note,” is used up and absorbed. The rest is reflected out, and our brains read it as “color.”

Victoria Finlay, Color: A Natural History of the Palette

QUESTIONS TO INSPIRE DISCUSSION

What is a painting?
What is a fresco and what materials were required?
What is paint and what are its components?
What are the characteristics of paint that must be considered by the artist?
How is the appearance of a watercolor different from an oil painting and what are the properties of the paints that account for this?
After a period of time, some paint actually changes color. What could be happening and why?
What causes color?
What is responsible for some paints being transparent while others are opaque?
How did the classical artist create the illusion of light coming from behind.
What technological advances that benefited the painter coincided with the evolution of impressionism.

TERMINOLOGY

The following terms might be useful in the discussion of paints (and conversely, paints may be useful to demonstrate these terms):

Pigment
Dye
Solvent (liquid vehicle)
Solution
Suspension
Volatility
Viscosity
Chemical changes

These terms might be useful in the discussion of color and light:

Transparent
Opaque
Translucent
Glaze
Ground
Transmit
Reflect
Refract
Absorb
RESOURCES

Books:


Harris, Leon. “After the Sting” in *Connoisseur Magazine*, June 1984. An interesting article about the forged Romanesque frescoes purchased by major museums in the US.

Mayer, Ralph. *The Painter’s Craft: An Introduction to Artists’ Methods and Materials*. Princeton, NJ: Van Nostrand, 1966. Detailed information about paints, their specific characteristics, as well as the properties of the mediums in which they are immersed.


Websites:
www.gamblincolors.com
A range of information about oil paints, history and use. Thoughtful articles are included in their newsletters.

www.artistsmag.com

www.nga.gov
Website for the National Gallery of Art in Washington, D.C.

www.goldenpaint.com
Information about acrylic paint

If there are questions or comments I can be reached at LAURALFULTON@yahoo.com

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The Art of Science; the Science of Art
February 7 and March 7, 2007
Teacher Resource Center
Memorial Art Gallery

Resources for the Classroom

Books:

Ars Medica: Art, Medicine and the Human Condition.

Art of Healing: Medicine and Science in American Art

In the Name of Art, in the Name of Science: Considerations of Conservation

Leonardo on the Human Body.

Moon Journals: Writing, Art and Inquiry through Focused Nature Study.

Science Within Art.
72 pages organized by Life Sciences and the Material Sciences

The Visible World: Observation in Art and Science.
Education Department, Los Angeles County Museum of Art, April, 1999.
Teacher materials from an Evening for Educators.

Books for Young People:

Art and Technology Through the Ages.

Art Fraud Detective.

Art of Science: a Pop-up Adventure in Art.

The Color of Nature.

Joseph Cornell Secrets in a Box.
Alison Baverstock. Munich; New York: Prestel, 2003


Making Books that Fly, Fold, Wrap, Hide, Pop Up, Twist & Turn.


What It Feels Like to be a Building.


Posters:
Interdisciplinary Connections: Art and Science, Natural Environments.
Take 5 art reproductions and teacher guide

Videotape:
Art + Science = Conservation
19 minute Videotape
Also included on the Making Art dvd