

COLOR THEORY AND COMPOSITION



Lauren Champlin
Rio Hondo College

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1: INTRODUCTION

1.1: Color Systems

1.2: Painting - Color Wheel

Learning Objectives

- **Describe** the contributions of Isaac Newton, Johann Wolfgang von Goethe, Johannes Itten, and Josef Albers to the study of color theory.
- **Explain** how Newton's prism experiments led to the development of the modern color wheel.
- **Define** a color solid and **compare** the organization of color in the Munsell and Ostwald color systems.
- **Identify** the role of the Bauhaus in shaping modern color education and design.
- **Recognize** Johannes Itten's seven color contrasts as a framework for analyzing color relationships.
- **Explain** Josef Albers' emphasis on color perception and interaction in art and design.
- **Connect** historical color theories to contemporary approaches to color perception and visual communication.



Figure 1.1: Copy and Paste Caption here. ("[Die Temperamentenrose](#)" by [Johann Wolfgang von Goethe](#), [Friedrich Schiller](#) is licensed under [Public Domain](#))

1.1: Color Systems

Definition: Color Wheel

A color wheel is a tool that shows the relationships between the primary colors, secondary colors, and tertiary colors. Some wheels also include color properties such as saturation and value. It is useful when mixing pigments for painting and printing.

Isaac Newton

In his 1701 book, *Opticks*, Newton experimented with the refraction of light through a prism, in which he observed the spectral range of colors. The hues consisted of: red, orange, yellow, green, blue, indigo, and violet. Newton was the first to place hues in a circular arrangement, a format that is still used today. Originally he used only five colors, but later he added orange and indigo to match the number of musical notes in the major scale.

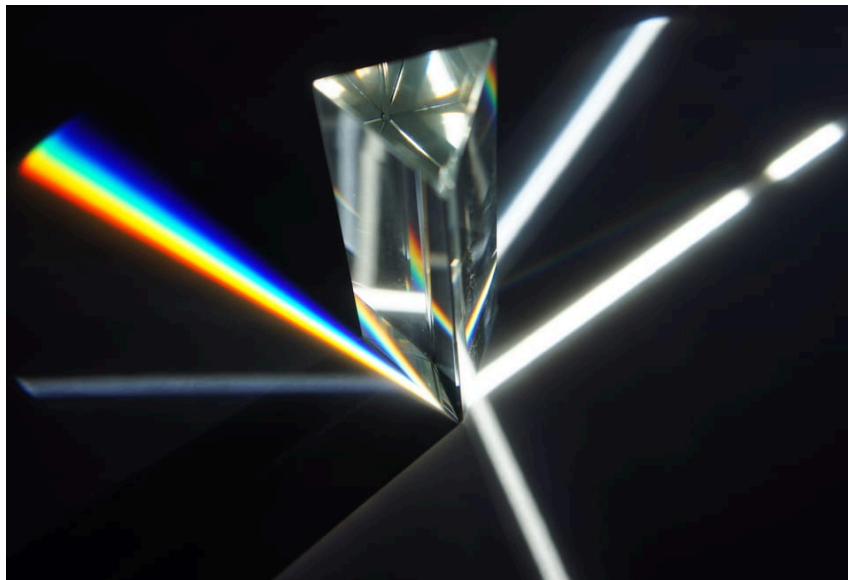


Figure 1.1.1: When it enters a prism, the wavelengths of different colors of light bend in differing directions to create rainbows. (Kelvinsong, CC0, via [Wikimedia Commons](#))

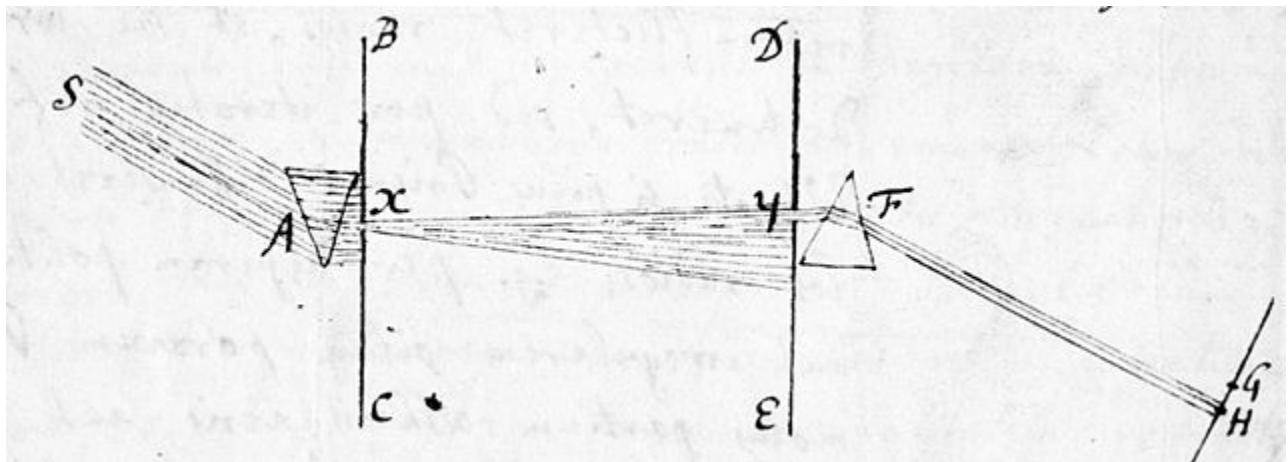


Figure 1.1.2: Isaac Newton's sketch of white light separating into component colors. (Isaac Newton, Public domain, via [Wikimedia Commons](#))

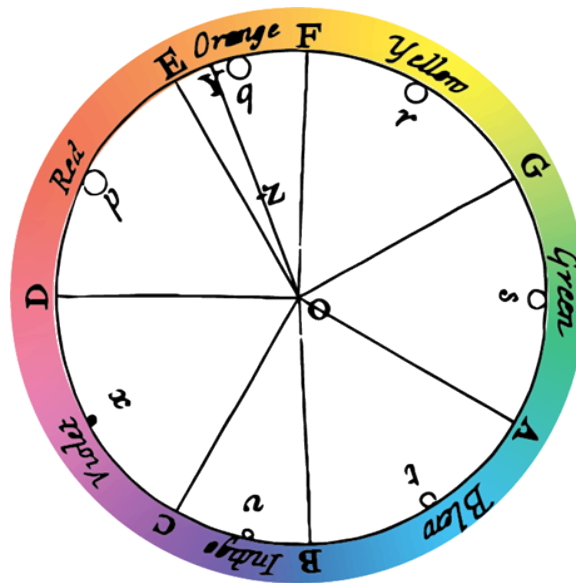


Figure 1.1.3: The original color circle of Sir Isaac Newton with colors added to correspond to contemporary understanding of each hue. (Newton's Color Circle Color by [Molly Champlin](#) adapted from Isaac Newton, Public domain, via [Wikimedia Commons](#))

Goethe



Figure 1.1.4: Goethe's color wheel. Colors corresponding to various personality traits...the first mood ring in history. (Johann Wolfgang von Goethe, Friedrich Schiller, Public domain, via [Wikimedia Commons](#))

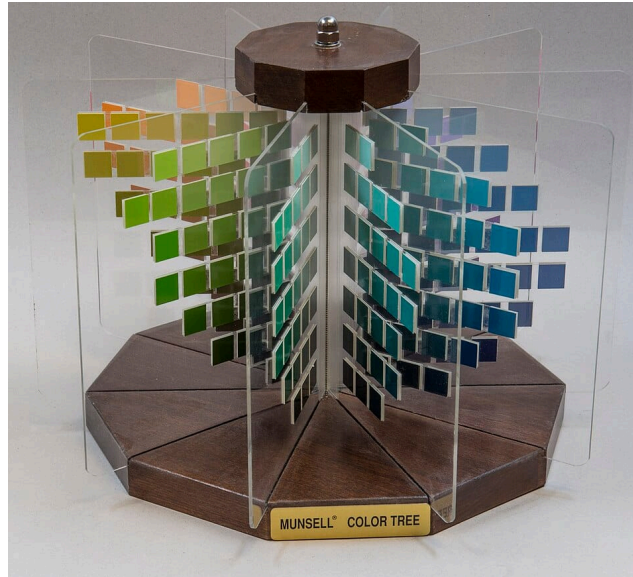
Color Solids

Definition: Color solid

A three dimensional structure that shows all the colors in a consecutive and interrelated relationship.

Munsell's Color System 1905

One of the first color-solids, Munsell's system arranged color by degrees of hue, chroma, and value. It was adopted by the department of agriculture as the official color system for soil analysis and is still in use today in forensics, food, and other fields. Munsell's Color System includes only 10 colors, five principal hues (R, Y, G, B, P) and five intermediate hues. These hues correspond closely to the optical complements, those complements which combine in light to create white. The shape of munsell's color solid was not a perfect sphere, he compared it more to a tree with longer branches for bright light colors like yellow and heavier at the bottom for bright and dark colors such as violet.



Figure

1.1.5:

Color Tree of Munsell

. (Hannes Grobe, [CC BY-SA 4.0](#), via Wikimedia Commons)

The Ostwald color system

Oswald's 1916 system was composed of 680 color chips in varying tints, shades, and tones. This system contained four basic hues Red, Yellow, Blue, and Sea Green. Ostwald was invited to give several lectures at the Bauhaus where his color system was in use. While his system was very similar to Munsell's, one major difference was the shape. Ostwald formed his color solid in a more perfect sphere, ignoring differences in spectral value between the hues.

The Bauhaus



[Wikimedia Commons](#))

Figure 1.1.6: Bauhaus Building. (A.Savin, [FAL](#), via



Figure 1.1.7: A poster design in the iconic Bauhaus style. ("Bauhaus 50 years (1968)" by [Susanlenox](#) is marked with [Public Domain Mark 1.0](#).)

The Bauhaus was a German art school operating from 1919-1922. The school strove for a new model of education that would unite the divisions between the fine and the applied arts. The curriculum had a unique combination of modernist, spiritual, utilitarian, and utopian ideals. The movement was very influential for Contemporary Art and Design. Johannes Itten, Paul Klee, Wassily Kandinsky, and Josef Albers (Itten's former student) taught at the Bauhaus school prior to Nazi closure.

Itten and Albers



Figure 1.1.8: This Color wheel of Johannes Itten is designed to wrap into a sphere shape to organize hue and value. (EugeGreco, CC0, via Wikimedia Commons)

Johannes Itten's 7 color contrasts make up a color theory which embraces the principles of color effects and how they can be applied to design. They form a loose organization system for this class. They are: Hue, Value, Saturation, Complement, Temperature, Simultaneous Contrast and value. With these principles in mind, color can be used to create unique aesthetic experiences which trigger a vast range of associations. The understanding of these 7 contrasts allows an artist to create harmony and/or discord in accordance to the visual experience they wish to provoke.

Another notable figure to have studied and worked at the Bauhaus is Josef Albers. Albers legacy is tied to his painting as well as his years teaching at the Yale University. Published in 1963, *Interaction of Color*, serves as a handbook or guide for the study of color perception and application. While the text and theory are written by Albers, the visual examples are largely student work from throughout his years of teaching.

Both of these texts will be studied in class and used as guides for our explanation of color theory and principles. They will be augmented with contemporary information regarding digital color, and intersectional theories of color meaning and symbolism.

Bibliography

Albers, Josef. *Interaction of Color*. Yale University Press, 1963

Itten, Johannes. *The Art of Color*. Reinhold Publishing Corporation, 1961

Goethe, Johann. *Theory of Colours*. MIT Press, 1994

Loske, Alexandra. *Color: A Visual History from Newton to Modern Color Matching Guides*. Smithsonian Books, 2019

1.2: Painting - Color Wheel

Paint a 12 Part Color Wheel

Learning Objectives

- To ensure a working understanding of the visual nature of color by training the eye to become sensitized and discerning of color properties.
- To practice controlled mixtures of the 12 hues using a double primary palette.

Using a sheet of 14x17in bristol paper, complete a 12 part color color wheel. The inner core should be 8" in diameter. Each consecutive ring is about $\frac{3}{4}$ inch, enough to fill the 14x17 sheet of Bristol.

The goal is to make the purest version of each hue possible with even steps all the way around the wheel. Yellow should be the lightest and violet should be the darkest. Green and red should be roughly equal value.

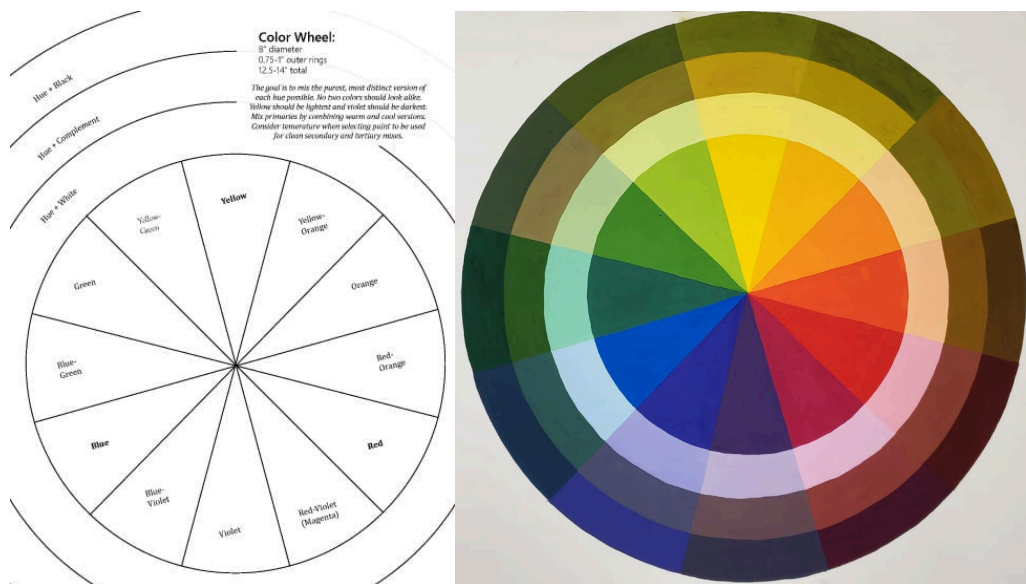


Figure 1.2.1: Color wheel diagram and example. ("[Color Wheel Examples](#)" by [Molly Champlin](#) is licensed under [Public Domain, CC0](#))

2: HUE

2.1: Understanding Hue

2.2: Collage - Polychrome

2.3: Matisse Video

2.4: Organizing Art Elements

Learning Objectives

- **Define hue** as the pure state of color determined by wavelength and distinguish hue from value and saturation.
- **Analyze hue contrast** as the interaction of multiple pure colors within a composition.
- **Evaluate how black and white affect hue perception**, including changes in apparent size, intensity, and strength.
- **Articulate personal and cultural associations** connected to individual hues through reflection or discussion.
- **Apply hue contrast** to create expressive interaction within a composition.
- **Design compositions using unequal hue proportions** to activate visual tension and movement.
- **Describe and control hue range** (broad, medium, narrow) within a composition.
- **Evaluate the emotional and cultural effects** of polychromatic color use.

2.1: Understanding Hue

What is Hue?

Definition: Hue

Hue is the name of the pure state of a color or chromatic group, determined by the wavelengths, which distinguish one color from another

Color is not ever just perceptual. Color is evocative, it stimulates, inspires, soothes, and agitates.

The significant effect of hue contrast is the interplay of pure, prime, forces upon each other within a composition. To use this contrast, at least 3 colors must be present.

The primaries of red, yellow, and blue are the extreme possibility of hue contrast.

Exercise 2.1.1 Characteristics of Hue

Each hue has its own character, energy, weight, movement and spatial power and potential. Consider a single color such as red, yellow, or blue. Spend a moment responding to that color, how do you feel, what do you see, remember, imagine? All of these responses define your subjective experience with that color.

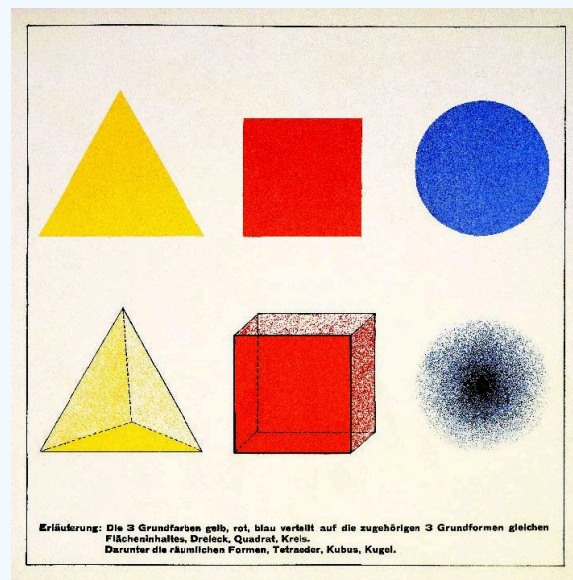


Figure 2.1.1: The painter Wassily Kandinsky was famous for having strong associations between color, shape, and sounds. This diagram shows his correlation between basic shapes and primary colors. ("[Concerning the Spiritual in Art](#)" by Wassily Kandinsky is licensed under Public Domain, via Internet Archive)

Answer available at the end of this section.

The Addition of White and Black

When hues are separated by black and white, their individual character emerges more distinctly.



Figure 2.1.2: Notice the difference white and black make in the painting on the right, each the role of each hue appears more distinct when compared to the frenetic energy in the painting left. STUDIO/HOUSE, 2017, acrylic on canvas, 36×36 inches and “Shakkei” 2017, acrylic on paper, 30×22 inches. (“STUDIO/HOUSE and Shakkei” by Tom Krumpak is licensed under CC BY-NC)

When a hue is surrounded by white, it appears darker, weaker and smaller.

When a hue is surrounded by black, it appears lighter, more intense, and larger.

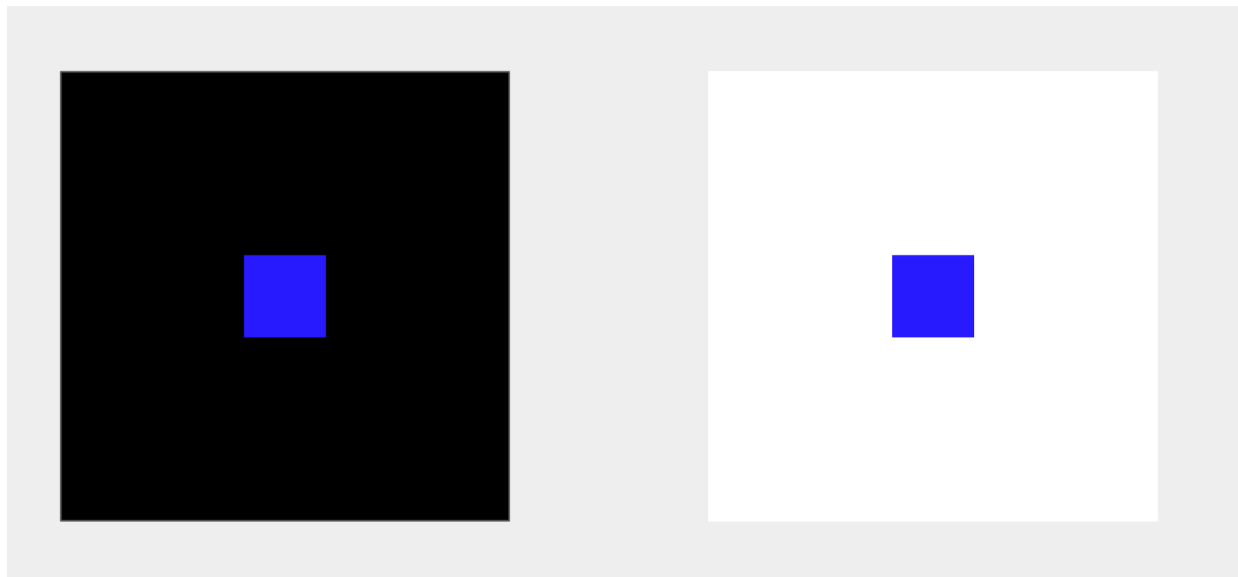


Figure 2.1.3: Here a blue square appears different when place on dark and light backgrounds. (“Value 1” by Molly Champlin is licensed under CC BY)

Proportion

The interaction of various hues in a composition is greatly affected by the proportion of each hue. When hues are used in equal proportions the expressive potential is neutralized. However grid compositions present their own challenges because of the limitations of size and shape and directionality. When hues are used in unequal proportions, the expressive interaction is increased.

Thinking in terms of an overall configuration or range of hues in a particular image makes us more conscious of what we see. The

range of hue, value, or saturation in a piece of art or design can be described as broad, medium or narrow. A broad range draws color from diverse regions of the spectrum. A triad implies a broad range because the three equidistant points of any triad imply the entire spectrum. Our first polychrome collage will challenge you to use a triadic color scheme.

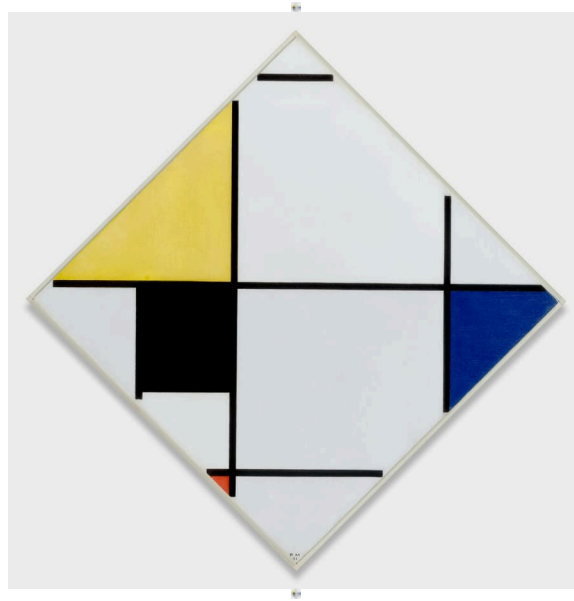


Figure 2.1.1: This painting by Piet Mondrian plays with varying proportions of primary colors within a grid format. The diagonal orientation is a deviation from his traditional work. How does it serve to create dynamic movement in the piece? ("[Lozenge Composition with Yellow, Black, Blue, Red, and Gray](#)" by Piet Mondrian is licensed under Public Domain, CC0, Gift of Edgar Kaufmann, Jr)

Pattern finders: The eye will join like energies or patterns together. Whatever is most similar will interact or join. Ex. Shape, family of hues, value groups, intensities, movement, positioning, ect. Use this principle to create structure and direct the viewers eye in a composition.

Associations

Polychromatic expression is associated with vigor, youth, buoyancy and life. It is found in all cultures, folk art, stained glass, textiles, illuminated manuscripts, ect. Polychromatic compositions tend to convey energy, wholeness, joy, universality, purity, fullness of sound, complexity, and purity of color.



Figure 2.1.5: Bright colors are used in traditional woven textiles in Peru. ([Woman Weaving](#) by Tydence Davis, [CC BY](#), via Wikimedia Commons)

Bibliography

Albers, Josef. *Interaction of Color*. Yale University Press, 1963

Itten, Johannes. *The Art of Color*. Reinhold Publishing Corporation, 1961

Hornung, David. *Color (3rd ed.): A workshop for artists and designers*. Laurence King Publishing, 2020

Answers

Exercise 2.1.1 Characteristics of Hue

Many people often associate red with energy, love, fire, warmth, closeness, fear etc. In contrast blue may be seen as vast, distant, cool, and calming. Yellow may be fast, buzzy, busy, light, and bright.

When hues are used together in a composition each of these qualities affects each other.

2.2: Collage - Polychrome

Exercise *PolychromeCollages*

Minimum size 6 x 4 ½'

For this series of collages, use **pure, saturated** versions of each hue. Avoid using tints, shades, and pastels. You may choose to add white and black to your collages or not.

Collage 1 (In-class) – Polychrome with 3 colors

- Choose three colors roughly equal distance from each other on the color wheel. These may be triadic harmonies (Ex:RYB) or not.
- Make a composition considering the unique properties of each hue: weight, value, temperature, spatial power, etc.
- Consider compositional concerns such as proportion, positive/negative space, and cropping.

Collages 2 and 3 (In-class and homework) -- Polychrome with Many Colors

- Gradually expand your color palettes to include 5-15 different colors.
- Your collages may become more intricate, incorporating elements of repetition and pattern.

Combine a compositional structure from Column A with a subject matter from Column B

Options for polychrome collages

A	B
Geometric	Children's Playground
Organic	Renaissance Theater,
Radial/scatter Repetition/rhythm	Circe de Solei,
Diagonal	Pride Parade,
	Multicultural Dance Festival, Intergalactic Convention

Each collage should be matted on a sheet of Bristol paper with a minimum of 1" border

Collages should be made with neatly glued, color aid paper.

Example PolychromeCollages



Figure 2.2.1: Example polychrome collages by CSULB Students Spring 2025 CC-BY-NC

Notes

- Interesting studies can be made if one hue is given a dominant role.
- White, black, gray or brown can neutralize the effect of hue contrast when appearing adjacently in composition or when intermixed.
- When working with polychromatic interplay, remember that each hue or color is seen in relationship only.
- Consider allowing each hue to have its own clear role in the composition.
- Be aware that the placement will determine the behavior of the hue.
- Consider the characteristics of each hue as you are composing.
- Let the color determine the shape.
- Pay attention to the interaction between colors.
- Artists to study who use polychrome: Matisse, Mondrian, Kandinsky, Frank Stella, Stuart Davis, Judy Pfaff, Gerhard Richter, Tom Krumpak, Linda Day.
- Be inventive and have fun!

2.3: Matisse Video

Watch this video about the artist Henri Matisse whose series of cut paper collages beautifully demonstrates the contrast of pure hues. Notice how the characteristics of each color are enhanced by the shape, placement, and size; and, in turn, how this influences the composition as a whole.

YouTube Video

This interactive element is not available in this format. Visit the link or scan the QR code to access it online.

[View this YouTube Video online](#)



The Metropolitan Museum of Art, "Henri Matisse, the illustrated book *Jazz*," in *Smarthistory*, January 26, 2016, accessed November 24, 2025, <https://smarthistory.org/henri-matisse-the-illustrated-book-jazz/>.

2.4: Organizing Art Elements

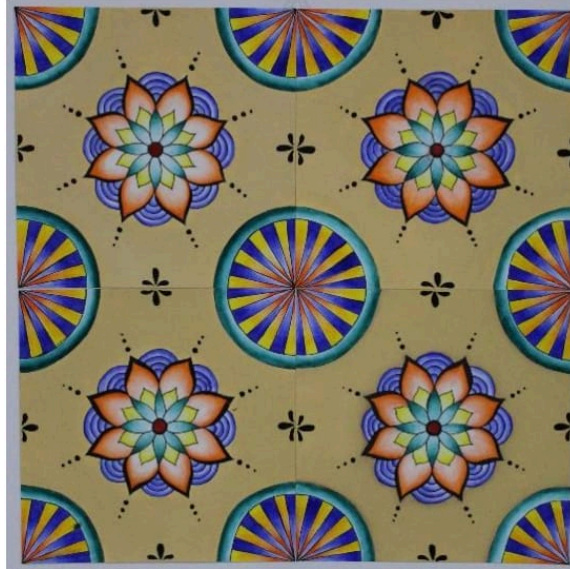


Figure 2.1: Artwork by a student.²³ (23: Artwork by student is used with permission.)

The principles of art are a way of organizing the art elements to make interesting images or objects. When looking at a work, we often generalize about how the principles are used to create a feeling or overall effect. You may also want to think about the elements of art as words and the principles are the sentences you can create in order to communicate your idea.

As you become a more experienced artist, the elements and principles of art will become a subconscious part of what you do. You will consider the entire artwork and make critically informed decisions about what would make it more aesthetically pleasing. Your personal approach to art making will evolve as you find new inspirations and build new technical skills.

Balance

Balance is the sense of visual equilibrium achieved through implied weight, attention, or attraction within an artwork. In 2D art and design, balance also applies to the physical construction of an artwork.

The three types of visual balance most often used are **symmetrical, asymmetrical, and radial balance**. An object has symmetry when it feels like all parts are a mirror image of the others, for example a round, straight sided cylinder. Asymmetry is when there is an uneven amount of visual weight on one side of the object.

The use of asymmetrical balance often creates more visually dynamic objects. Radial balance refers to a circular or wheel-like balance in the shape.

Here we see a symmetrically balanced composition that when divided down the middle is equal on both sides, a mirror image.



Figure 2.1: Symmetrical Balance.²⁴ (24: [Symmetrical Balance](#) by [Wikimedia](#) is licensed under [CC BY-SA 2.0](#).)



Figure 2.2: Asymmetrical Balance.²⁵ (25: [The Great Wave](#) by the [Metropolitan Museum of Art](#) is in the public domain.)



Figure 2.3: Radial Balance.²⁶ (26: [Radial Balance](#) by [Wikimedia](#) is licensed under [CC BY-SA 4.0](#).)



Figure 2.4: "Impression Sunrise" by Claude Monet 1872.²⁷ (27: [Image](#) by [Wikimedia](#) is in the public domain.)

The Orange sun against the blue grey fog creates an area of emphasis.

Emphasis

Emphasis (also known as visual dominance) is the creation of visual importance through selective tension. Parts of the object are differentiated from the other parts to enhance attraction and interest.

There are many ways to achieve emphasis, including contrasting or exaggerating size, shape, value, color, and texture. Parts of the object can be used to point the viewers' attention to the specific element the maker wants to emphasize. This is done through the largest most exciting, or **dominant element**.

Proportion and Scale

Proportion refers to the relative size of an element measured against other elements or against some norm or standard. Proportion often refers to a ratio of the size of parts to the whole. The "Golden Mean" was a proportional system developed by the

ancient Greeks that helped create harmony in Western design. It was based on and can be seen in many forms found in nature.



Figure 2.5: Proportion.²⁸ (28: [Rubber Duck in Keelung Harbor](#) is licensed under [CC BY 3.0](#).)

Scale can be another word for size in a work. Scaling can refer to changing the size of an image or object. A comment often heard during critique is that the object would be more interesting if it was a different scale (larger or smaller). As a species, humans relate everything to their own size (life-size, miniature, and monumental). Small things like insects are tiny to us but we are the size of buildings to them.

For much of art history, artists were attempting to define the "perfect" human proportion. The problem with that idea is that there is no such thing as perfect. The human body and its parts have varied across time and space and what is seen as "beautiful" or pleasing

changes constantly. As a self-absorbed species, the human form has infinite interest to viewer and artists alike.

Movement

Movement (also known as **directional force**) is the direction and degree of energy implied by the art elements in specific compositional situations and directions. In 3d artworks, the element of actual movement is also possible.



Figure 2.6: "Dynamism of a Dog on a Leash" by Giacomo Balla.²⁹ (29: [Image](#) is licensed under [CC BY-SA 4.0.](#))

Ways to create movement can include lines, repeated figures, blurred outlines, illusions of growth, and multiple images. An object with implied movement creates the sense that the object has momentarily stopped but will continue. Some 3D artworks have implied movement as part of their concept.

Unity

Unity (also known as harmony) is the presentation of an integrated image or object achieved through visual similarity (see repetition).



Figure 2.7: Homage to the Russian painter Wassily Kandinsky.³⁰ (30: [In the Black Circle Image](#) by [Flickr](#) is licensed under [CC BY-NC-SA 2.0.](#))

A few ways to achieve unity include proximity of parts, coordination of all elements toward one concept, repetition of the same element in decoration, or a rhythm of slightly changing details. Unity can also be achieved by introducing an element of variety in parts that add up to an interesting whole.

Variety

A principle of art concerned with combining one or more elements of art in diverse ways to create interest. Too much variety can leave a composition feeling chaotic. Not enough variety can make the composition boring.



Figure 2.8: The Old Man sleeping on the Ship is an example of variety³¹ (31: [The Old Man Sleeping on the Ship Image](#) by [Wikimedia Commons](#) is licensed under [CC BY 4.0.](#))

Rhythm / Repetition / Pattern

Rhythm is the intentional, regular repetition of the elements of lines of shapes or color to achieve a specific repetitious effect or pattern and unity in an artwork. Rhythm can also be achieved through pattern, an element repeated in a predictable combination. Rhythm is used to move the viewer through a work of art.



Figure 2.9: Golconda - René Magritte 1953³² (32: [Golconda Image](#) by [Flickr](#) is licensed under [CC BY 2.0.](#))

Economy

Economy is the elimination of elaborate details leaving only the significant essentials of the object or installation. The goal is to pare it down without making the work monotonous. Economy is often associated with the term "abstraction" in which unnecessary elements are eliminated to show the essence of something.

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3: VALUE

3.1: Understanding Value

3.2: Painting - Create a Greyscale Tool

3.3: Collages - Value Pattern

Learning Objectives

- **Define** value as the lightness or darkness of a hue.
- **Differentiate** between achromatic and monochromatic value scales.
- **Analyze** how value patterns create form, depth, and figure-ground relationships in a composition.
- **Distinguish** between modulation and gradation as two types of value transitions.
- **Recognize** the relative value of different hues and **explain** the concept of the spectral mountain.
- **Apply** value relationships to create the illusion of three-dimensional form and visual hierarchy in artwork.

3.1: Understanding Value

What is value?

Definition: Value

Lightness or darkness of hue.

Evolution of Eyesight

Our eyes are composed of light sensors called rods and cones. Rods receive information about the brightness (value) of light, while cones distinguish its component wavelengths (hue). Our eyes have exponentially more rods than cones—meaning we are hardwired to prioritize value pattern in our eyes. Value rather than hue, is what the eyes sees first. This is a useful adaptation, allowing us to distinguish between objects and pick out figure ground relationships. Imagine trying to hunt or forage in a monotonous landscape without it!

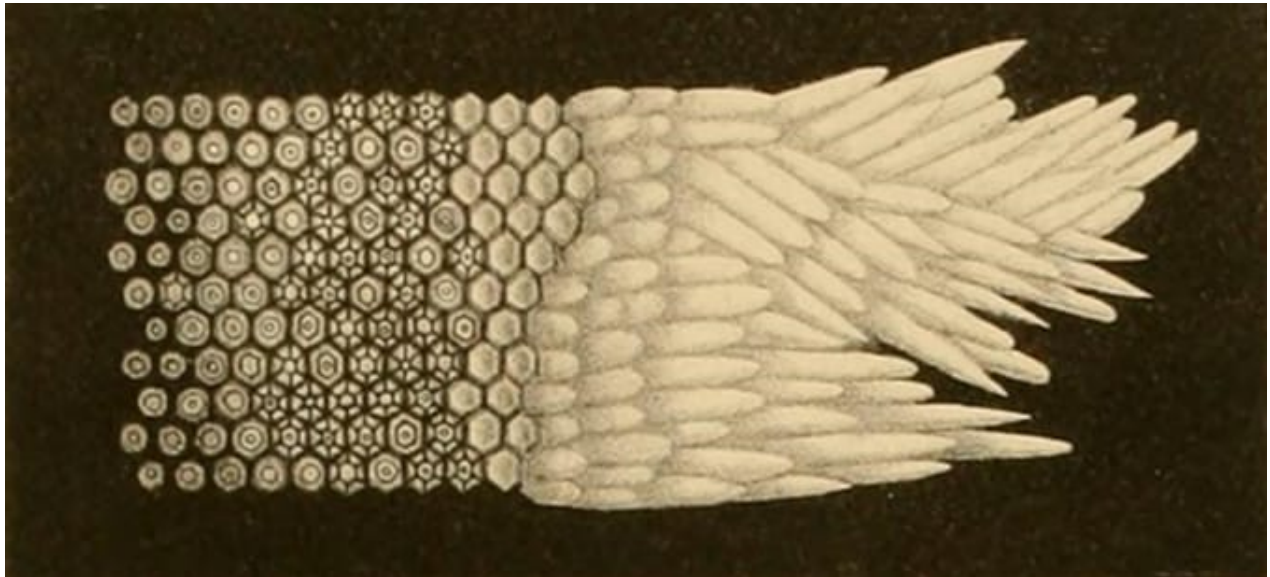


Figure 3.1.1: Drawings of photoreceptors by Adolph Hannover from his paper 'Mikroskopiske undersøgelser af nervesystemet', 1843, Hannover, Adolph ([CC BY-SA 4.0](#) via [Wikimedia](#))



Figure 3.1.2: Scanning electron micrograph of the rods and cones of the primate retina. ([Rods and Cones of the Primate Retina](#), by Helga Kolb, [CC BY-SA 4.0](#), via [Wikimedia Commons](#))

Light Logic and Shading

Value is a continuum. The human eye can perceive hundreds of values. Johannes Itten suggested that most people recognize and group values into 5 value steps, or categories.

Shading is a skill most artists learn early in drawing pictures. In order to master shading, we study changes in light and dark, or value pattern, based on the predictable way light interacts with form. If we understand light logic, we know what to look for when drawing and are better able generate the illusion of real space on a 2 dimensional plane. Separating the area the light touches from the shadow gives us a basic understanding of value pattern.

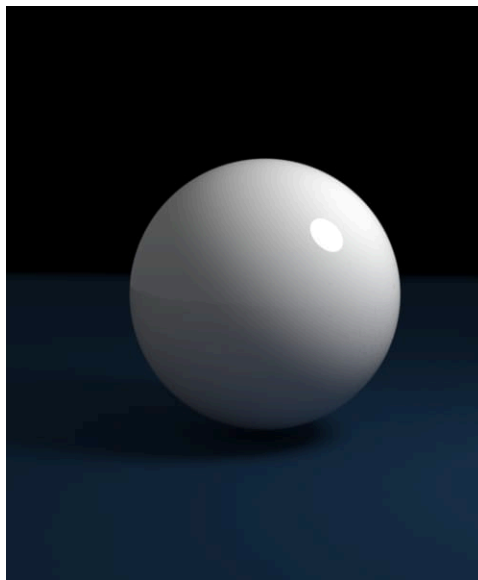


Figure 3.1.3: Example of the predictable logic of how light interacts with a sphere. Notice the presence of a strong hightlight, core shadow, cast shadow, and reflected light. (Rob su, [CC BY-SA 4.0](#), via [Wikimedia Commons](#))

Definition: Grayscale

A **grayscale** is a system for organizing values. It commonly illustrates a range between 9 to 11 value steps from white to black.

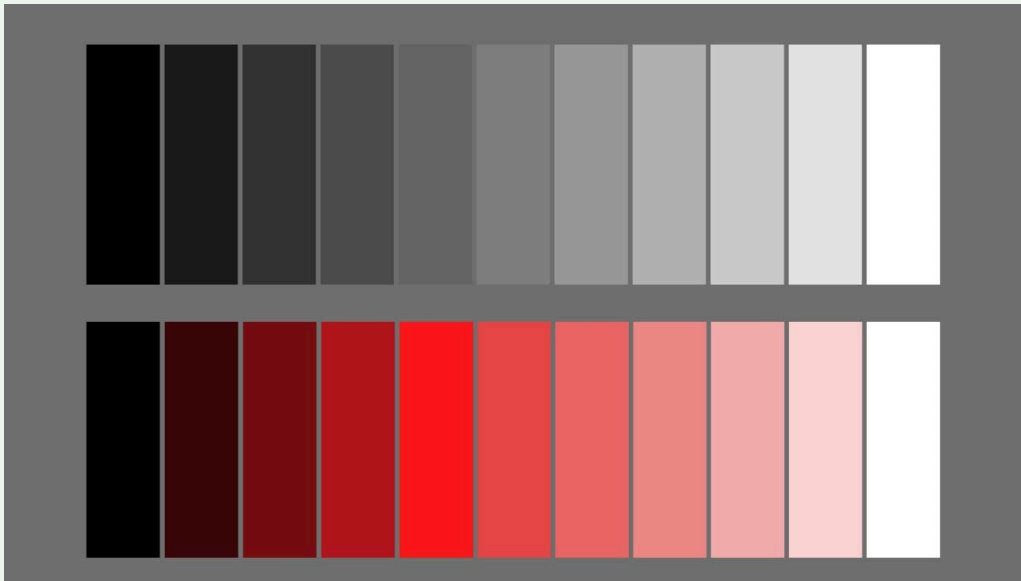


Figure 3.1.4: Achromatic and Monochromatic value scales. ("Value scales" by Molly Champlin is licensed under [CC BY](#))

Value Pattern

Value patterns provide the underlying structure of any composition. In a composition with realistic light, the shadow edge between light and dark will determine the overall value pattern of the composition. Value patterns rely on structures including modulation, intervals, high contrast, and low contrast. You will explore each in more detail in the collage activity of this chapter.

Gradation vs Modulation

While both value modulations and gradations can give the illusion of light and lend structure to a composition, it is important to distinguish between the two. Think of a modulation as a smooth transition, like adjusting volume on an analog dial or tuning across radio stations. A gradation on the other hand is a series of discrete steps, like TV channels. We will return to the structures of modulations and gradations in the following chapters.

Definition: Modulation

Modulation refers to smooth transitions on a value continuum.

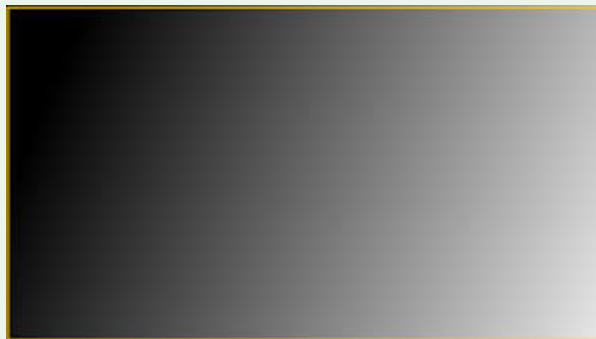


Figure 3.1.5: Value modulation ("[Value modulation](#)" by [Molly Champlin](#) is licensed under [CC BY](#))

Definition: Gradation

Gradation refers to steps descending on a value continuum.

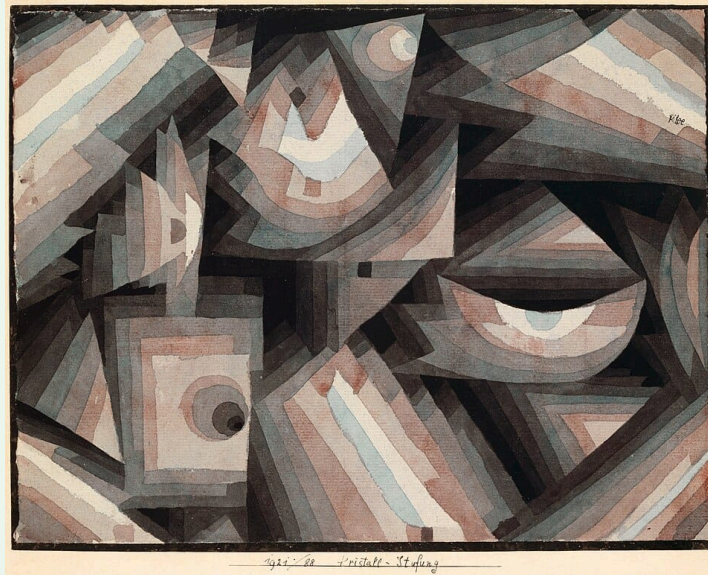


Figure 3.1.6: Crystal Gradation, Watercolor on Paper, 1921. (Paul Klee, Public domain, via [Wikimedia Commons](#))

The Spectral Mountain

Each hue achieves full spectral intensity at only one value level. At its brightest, yellow is the lightest color while violet is the darkest. If all the colors are arranged on a grid displaying a gradations of value for each, you will be able to trace a pyramid or mountain across the most saturated pure hues, violet on the bottom, yellow at the top. This is part of each hues unique characteristic and must be considered when attempting to achieve pleasing expressions of harmony and difference between multiple hues in a composition.

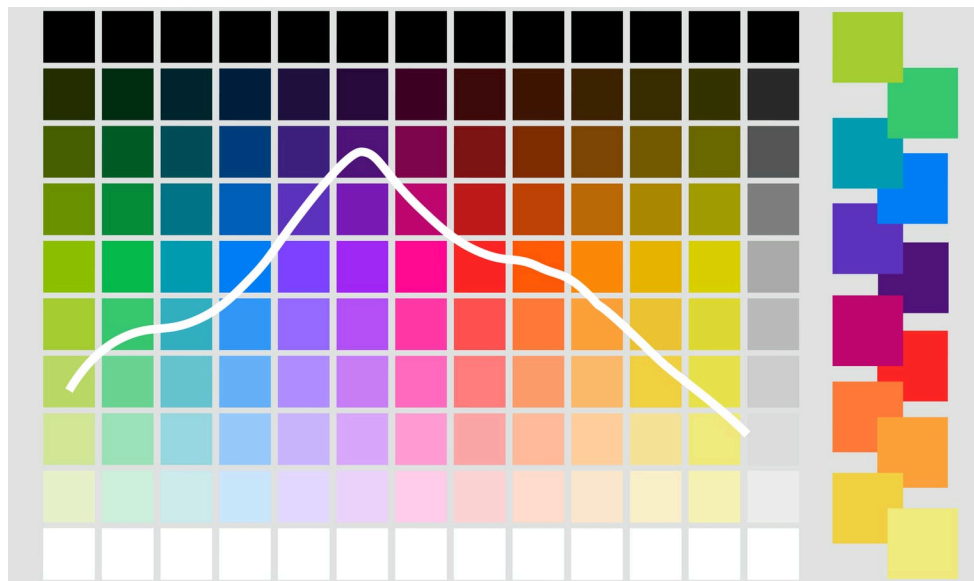


Figure 3.1.7: In this chart you can see that violet is the darkest color at full intensity. ("**The Spectral Mountain**" by **Molly Champlin** is licensed under **CC BY**)

3.2: Painting - Create a Greyscale Tool

Gray scale

A **grayscale** is a system for organizing values. It commonly illustrates a range between 9 to 11 value steps from white to black. You will create your own grayscale using guache paint as a tool will be using for the rest of the semester.

Steps:

1. Divide a sheet of bristol in half the long way: roughly 17"x7"
2. Measure steps 1.5" wide so that you have about 12 steps.
3. Measure one strip also 1.5" along the entire long edge of the paper.
4. Begin by mixing black and white to create a middle gray. Paint this color in the middle rung and along the long side, showing reversed ground.
5. Create even mixtures between middle gray and white on the top half and between middle gray and black on the bottom.
6. Double check that the transition from white to black appears even. If two colors appear too similar remove, add, or repaint to achieve a smooth gradation.

Example:



Figure 3.2.1: This tool will be used throughout the semester to assess the relative value of each hue. ("[Grayscale Tool](#)" by [Molly Champlin](#) is licensed under [CC BY](#))

Notes

Be sure to wait for your paint to dry before painting as it will change color as the water evaporates.

3.3: Collages - Value Pattern

Exercise *ValueCollages*

Minimum size 6 x 4 ½'

For this series of collages, focus on developing the structure of your compositions by utilizing different value patterns. Create color palettes of monochromatic or neutral hues in order to create one example of each value pattern:

- Modulation
- Intervals
- High Contrast
- Low Contrast

Notes

Remember, value pattern is the bone structure of your composition.

Squint, use a red filter, or digitally desaturate a photo of your work to ignore hue contrast and focus on relative values.

Avoid bright colors which will emphasize the contrast of hue or saturation.

Modulation

- Choose one hue for this composition.
- Find all the tints and shades of that hue and arrange them in an even gradation. Not all colors have equal amounts of tints and shades, you should have around 5 different values. You may choose to add black and white.
- Create a collage that utilizes the gradation as a source of light. The light may be singular, multiple, or dispersed.
- Try to compose in a way that gives the illusion of a seamless value modulation.
- Be inventive with your forms and inspiration.

Example *Modulation*



Figure 3.3.1: Copy and Paste Caption here. ("[Value Study - Modulation](#)" by [Katie Marshall](#) is licensed under [CC-BY-NC](#))

Value Intervals

- Think about composing a melody with different values corresponding to notes on a musical scale.
- Choose around 8-10 colors with a range of different values. This works best if the hues are analogous or neutral, avoid highly saturated colors.
- Think about light and dark going up and down, like steps.
- Some patterns in value may repeat and alter or change throughout.

Example *Intervals*



Figure 3.3.2: Copy and Paste Caption here. ("[Value Study - Intervals](#)" by [Samaira Felton](#) is licensed under [CC-BY-NC](#))

High Contrast

For **high contrast** use extremely light colors next to extremely dark colors, use bold shapes to increase drama of stark value contrast.

Example *HighContrast*



Figure 3.3.3: High contrast of light and dark create a powerful composition. ("[Value Study - High Contrast](#)") Student work by [Katie Marshall](#) is licensed under [CC-BY-NC](#))

4. Low Contrast (mostly light/mostly dark)

For **low contrast** use colors withing a similar range of value: mostly light, mostly dark, or mostly medium value. Notice how edges or boundaries between these colors tend to dissolve.

Example *LowContrast*



Figure 3.3.4: Low contrast and dark values create a moody composition. ("[Value Study - Low Contrast](#)") by [Molly Champlin](#) is licensed under [CC BY](#))

4: TEMPERATURE

Learning Objectives

- **Define** color temperature and **distinguish** between warm and cool color families.
- **Explain** how warm and cool colors influence mood, emotion, and visual perception.
- **Apply** color temperature principles to create contrast while minimizing differences in value and saturation.
- **Analyze** how artists and designers use warm and cool colors to create the illusion of light, atmosphere, and depth.
- **Use** warm and cool color relationships to communicate atmospheric space, time of day, mood, and lighting in a composition.

4.1: Understanding Temperature

4.2: Introduction to Impressionism

4.3: Collages - Shifting Light

4.1: Understanding Temperature

What is Temperature?

Definition: Color Temperature

The association of colors or groups of color as relatively warm or cool compared to others. Typically warm colors range from red-violet to yellow while cool colors range from yellow green to blue-violet. The strongest polarity in temperature is present between red orange and blue green.

- **Warm colors:** Red-violet, red, orange, yellow, yellow-green.
- **Cool colors:** Violet, blue-violet, blue, blue-green, green.

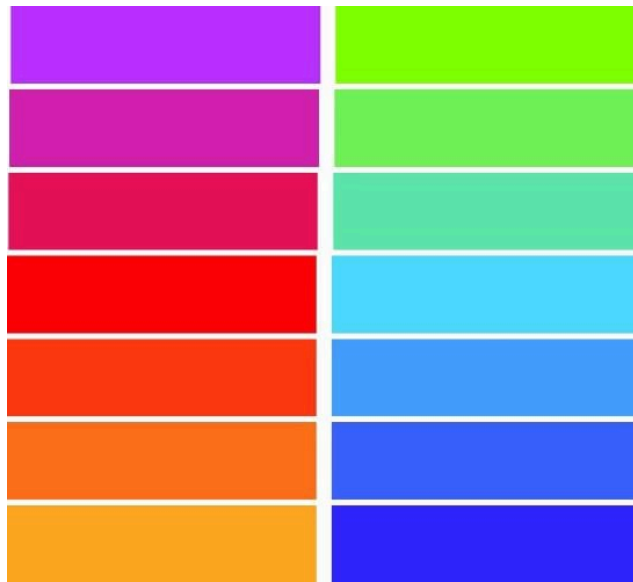


Figure 4.1.1: Warm and cool color families ("Temperature" by [Molly Champlin](#) is licensed under [CC BY](#))

The Most Subjective Contrast

Temperature is understood through associations in experience of warm and cool stimuli in the environment: fire, ice, water, sunshine, and so on. It is reinforced through cultural norms such as heat maps, weather tables, and more. Research shows that the color of walls in a room can influence perceptions of physical temperature. A red room may make you feel warmer. Red is also shown to stimulate the heart rate while blue slows it down, thus stop signs are red while blue is used to create the sense of calm in environments like hospitals.



Figure 4.1.2: David Lynch photographed in Red light, reference to the red room from Twin Peaks. (By cuttlefish, [CC BY](#), via Wikimedia Commons)



Figure 4.1.3: Blue decor in hospital discharge room. (A&E Discharge Waiting Room By Phil Nash, [CC BY-SA 4.0](#), via Wikimedia Commons)

Example

In his book “Catching the Big Fish” filmmaker David Lynch recounts a moment of color inspiration caused by an experience of warmth: after a long day of filming in a dark air conditioned room he walks outside and leans on the roof of his sun-warmed car. Suddenly, he gets a vision of a room with red velvet curtains along its walls. This room was realized in iconic set design for the TV show Twin Peaks

How to Use

The role of temperature can be more subtle than other color contrasts since its effects are often subconsciously noticeable. Therefore, it is most apparent when other contrasts are suppressed. In a composition in which you want a clear sense of temperature contrast, choose colors with similar values and keep saturation (intensity) consistent from one hue to the next. Embrace low value contrast to create radiant sherbert, sunset, and rainbow effects.

Principle: When using temperature to the maximum degree it is best to *eliminate or suppress other contrasts*.

- Use tints to suppress value
- Keep saturation consistent

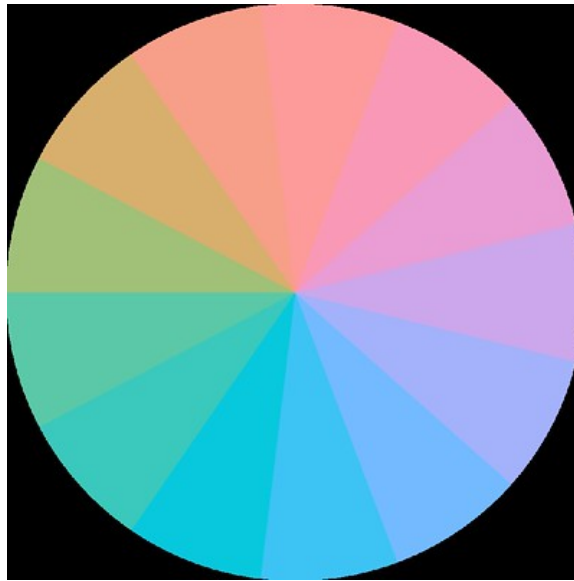


Figure 4.1.4: Color wheel with consistent value and saturation across all hues ("Brighter deuteranope color wheel" by Erica Fisher is licensed under CC BY)



Figure 4.1.5: Photo of color aid sheets arranged into warm and cool temperature modulations with consistent saturation and value. ("Color Aid Temperature Modulation" by [Molly Champlin](#) is licensed under [CC BY](#))

Temperature and Light

*There's a certain Slant of light,
Winter Afternoons,
That oppresses, like the Heft
Of Cathedral Tunes.*

- Emily Dickinson, Public domain



Figure 4.1.8: "Waterloo Bridge" by Claude Monet, Oil on canvas, 25½ x 39 1/8 in 1904 (Claude Monet, Public domain, via [Wikimedia Commons](#))

When buying light bulbs, you have a range of options from warmer to cooler light. Temperature of a lightbulb is given in Kelvins, based on a correlation to the temperature at which metals will glow with a particular color. Warmer bulbs are compared to fire light while cool ones to sunlight. Color and light are strongly linked in both our man-made and natural experience, though sometimes these two can be at odds.



Figure 4.1.6: Sunset over rainbow bridge Tokyo. (Guwashi from Tokyo, Japan, [CC BY](#), via [Wikimedia Commons](#))



Figure 4.1.7: Temperature Comparison of 5 Lightbulbs. (by [Splarka](#), Public domain, via [Wikimedia Commons](#))

Our bodies are tuned to sense the temperature of light; we are highly sensitive to light in the morning and particularly stimulated by shorter blue wavelengths present at mid-day. Dramatic colors in the sky at sunset are caused by increased scattering of light leading to overall warmer tones. Considering intensity and temperature of light throughout the day can help stabilize your circadian rhythm.

Note

A subtle **temperature modulation** can lend an inner light and deeper specificity to any composition. In the coming days, keep a record of color temperature as you move through your day. Do you notice warm lights in particular rooms, or any sensitivity to bright daylight in the morning. How might you bring this into a composition?

Warm light/ Cool Dark

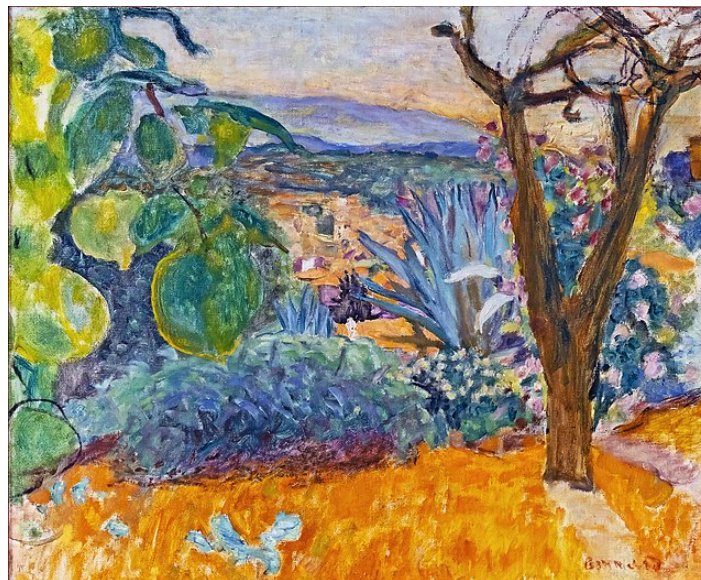
Definition: Color Light

Chroma has the potential to evoke or enhance the illusion of light in a composition in addition to, or in lieu of, predictable value relationships between light and shadow.

One method of creating rich color light is to follow a pattern of warm light and cool darks or cool lights and warm darks. Generally, the temperature of a shadow will appear as opposite the temperature of a light source. In a strong composition, the temperature of the light will appear to filter gradually into the dark. It is still important to keep changes in value and temperature gradual so as not to overpower the shift in temperature.



Figure 4.1.9: Example of warm dark/cool light. ("[The Black Rocks at Trouville](#)" by [Gustave Courbet](#), [Public Domain, CC0](#))



4.1: Understanding Temperature

Figure 4.1.10: Example of cool dark/warm light. ("[Le Caneet](#)" by [Pierre Bonnard](#), [Public Domain, CC0](#), via [Wikimedia Commons](#))

Warm/Cool as Space

YouTube Video

This interactive element is not available in this format. Visit the link or scan the QR code to access it online.

[View this YouTube Video online](#)



Cool and warm contrasts can easily suggest nearness and distance. Warm colors have the tendency to advance. Cool colors have the tendency to recede.



Figure 4.1.11: The Adoration of the Magi. ("[The Adoration of the Magi](#)" by [Fra Angelico and Fra Filippo Lippi](#) is licensed under [Public Domain, CC0](#))

Optical Mixtures

When two different colors are placed next to each other and interspersed they create the illusion of a new color. This is how halftone and pixel images work: if you zoom in close enough to a color photograph in newspaper, you will see the whole thing is made of small dots of cyan, yellow, magenta, and black. Small dots of contrasting warm and cool colors will create an especially lively effect when placed next to each other.

Definition: Pointillism

Pointillism is a technique of painting in which small, distinct dots of color are applied in patterns to form an image.

4.2: Introduction to Impressionism



Figure 4.2.1. Claude Monet, *Impression Sunrise*, 1872 (exhibited at the first Impressionist exhibition in 1874)

Establishing their Own Exhibitions—Apart from the Salon

The group of artists who became known as the Impressionists did something ground-breaking, in addition to their sketchy, light-filled paintings. They established their own exhibition—apart from the annual salon. At that time, the salon was really the only way to exhibit your work (the work was chosen by a jury). Claude Monet, August Renoir, Edgar Degas, Berthe Morisot, Alfred Sisley, and several other artists could not afford to wait for France to accept their work. They all had experienced rejection by the Salon jury in recent years and knew waiting a whole year in between each exhibition was no longer tenable. They needed to show their work and they wanted to sell it.

So, in an attempt to get recognized outside of the official channel of the salon, these artists banded together and held their own exhibition. They pooled their money, rented a studio that belonged to the famous photographer Nadar and set a date for their first exhibition together. They called themselves the Anonymous Society of Painters, Sculptors, and Printmakers. The show opened at about the same time as the annual Salon, May 1874. The Impressionists held eight exhibitions from 1874 through 1886.

The decision was based on their frustration and their ambition to show the world their new, light-filled images.

The impressionists regarded Manet as their inspiration and leader in their spirit of revolution, but Manet had no desire to join their cooperative venture into independent exhibitions. Manet had set up his own pavilion during the 1867 World's Fair, but he was not interested in giving up on the Salon jury. He wanted Paris to come to him and accept him—even if he had to endure their ridicule in the process.

Monet, Renoir, Degas, and Sisley had met through classes. Berthe Morisot was a friend of both Degas and Manet (she would marry Édouard Manet's brother Eugène by the end of 1874). She had been accepted to the Salon, but her work had become more experimental since then. Degas invited Berthe to join their risky effort. The first exhibition did not repay them monetarily but it drew the critics who decided their art was abominable. It wasn't finished. They called it "just impressions." (And not in a complimentary way.)

The Lack of "Finish"

Remember that the look of a J.A.D. Ingres or even a surly Delacroix had a "finished" surface. These younger artists' completed works looked like sketches. And not even detailed sketches but the fast, preliminary "impressions" that artists would dash off to preserve an idea of what to paint later. Normally, an artist's "impressions" were not meant to be sold, but were meant to be aids

for the memory—to take these ideas back to the studio for the masterpiece on canvas. The critics thought it was insane to sell paintings that looked like slap-dash impressions and consider these paintings works “finished.”

Landscape and Contemporary Life (not History Painting!)

Also—Courbet, Manet and the Impressionists challenged the Academy's category codes. The Academy deemed that only “history painting” was great painting. These young Realists and Impressionists opened the door to dismantling this hierarchy of subject matter. They believed that landscapes and genres scenes were worthy and important.

Color

In their landscapes and genre scenes of contemporary life, the Impressionist artists tried to arrest a moment in their fast-paced lives by pinpointing specific atmospheric conditions—light flickering on water, moving clouds, a burst of rain. Their technique tried to capture what they saw. They painted small commas of pure color one next to another. The viewer would stand at a reasonable distance so that the eye would mix the individual marks, thus blending the colors together optically. This method created more vibrant colors than those colors mixed on a palette. Becoming a team dedicated to this new, non-Academic painting gave them the courage to pursue the independent exhibition format—a revolutionary idea of its own.

Light

An important aspect of the Impressionist painting was the appearance of quickly shifting light on the surface. This sense of moving rapidly or quickly changing atmospheric conditions or living in a world that moves faster was also part of the Impressionist's criteria. They wanted to create an art that seemed modern: about contemporary life, about the fast pace of contemporary life, and about the sensation of seeing light change incessantly in the landscape. They painted outdoors (en plein air) to capture the appearance of the light as it really flickered and faded while they worked.

Mary Cassatt was an American who met Edgar Degas and was invited to join the group as they continued to mount independent exhibitions. By the 1880s, the Impressionist accepted the name the critics gave them. The American Mary Cassatt began to exhibition with the Impressionists in 1877.

For a very long time, the French refused to find the work worthy of praise. The Americans and other non-French collectors did. For this reason, the US and other foreign collections own most of the Impressionist art. (The Metropolitan Museum of Art owns a good portion of the Havermayer Collection. Louisine Havermayer knew Mary Cassatt, who advised Louisine when she visited Paris.)

Contributors

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- Impressionism. **Authored by:** Beth Gersh-Nesic. **Provided by:** Khan Academy. **Located at:** <https://web.archive.org/web/20141007161132/http://smarthistory.khanacademy.org/impressionism-france.html>. **License:** CC BY-NC-SA: Attribution-NonCommercial-ShareAlike

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4.3: Collages - Shifting Light

Exercise *TemperatureCollages*

Minimum size 6 x 4 ½'

For this series of collages, use tints at the same value ranging from cool to warm or warm to cool. Avoid strong value contrast

Warm/cool modulation

- Select 5-8 tints at the same value ranging from cool to warm or warm to cool
Ex: blue >bg>g>yg>y>y0
- Create a collage keeping the colors mostly in order from warm to cool so we see a modulation in temperature.
- Consider light, atmosphere, time of day, and space.

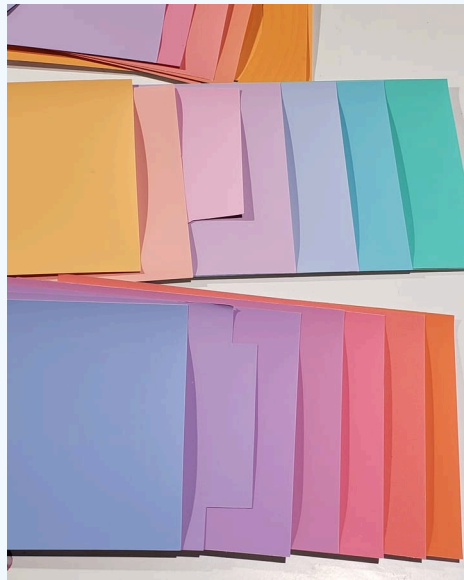


Figure 4.3.1: "Example Temperature Modulation" by [Molly Champlin](#) is licensed under [CC BY](#)

Intervals

- Select 5-8 tints at the same value ranging from cool to warm or warm to cool.
- Create a compositions using subtle steps between warm and cool to build rhythm and space

Pointillism

- Small dots of contrasting warm and cool colors create vibration, energy, light, and optical mixtures

Themes: Landscape, Atmosphere, Weather, Interior Exterior, Seasons

Example *TemperatureCollages*



Figure 4.3.2: "Example Temperature Collages" by CSULB Students Fall 2025 is licensed under CC BY

Notes

When using temperature to the maximum degree it is best to *eliminate or suppress other contrasts*.

- Use tints to suppress value
- Keep saturation consistent

Learning Objectives

- Technique: Each collage should be made with neatly glued, color aid paper and matted on a sheet of Bristol paper with a minimum of 1" border
- Color Contrast: Temperature is emphasized whiel value and saturation contrasts are minimized.
- Completion: All collages are completed with different color palettes, each containing a variety of different colors.

1/3 = ✓- 2/3= ✓ 3/3 = ✓+

*This is a formative assessment not used to calculate the final grade. Feedback will be given in critique/class discussion on the due date indicated above

5: COMPLEMENTARY CONTRAST

5.1: Understanding Complementary Contrast

5.2: Project 5- Complementary Collages

Learning Objectives

- **Define** complementary colors and **identify** them correctly.
- **Differentiate** between true complementary pairs, split complementary pairs, and false complementary pairs based on hue relationships and visual effects.
- **Explain** how complementary colors relate to the natural light spectrum and why their mixture produces white light.
- **Describe** the unique polarity characteristics (light/dark, warm/cool, brilliance/weight) of complementary pairs.
- **Compare** the effects of using complementary colors at full chromatic intensity versus balancing them with neutral colors.
- **Apply** complementary color schemes to achieve visual harmony or deliberate contrast in a composition.
- **Demonstrate** how chromatic (complementary) neutrals can be created through color mixing and used to enhance chromatic light and harmony.
- **Create chromatic neutrals** by mixing complementary colors.
- **Analyze complementary color relationships found in nature** and **translate organic color interactions** into a studio composition.

5.1: Understanding Complementary Contrast

Definition: Complementary Colors

Complements are naturally harmonious pairs of colors. They are found opposite each other on the color wheel.

Parts of a whole

Complementary colors represent two parts of the natural spectrum. The light mixture of two complementary colors will yield white. Harmony is easily achieved with this combination as this establishes equilibrium for the eye. The eye will generate the complement if it is not there.

Frequent Friends, Occasional Enemies

Remember that all hues have their own characteristics: red is warm, blue is cool, violet is dark and yellow is light. It follows that the characteristics of each complementary pair is different; each is distinguished by a unique polarity or relationship dynamic.

~Complementary polarities:

Y= light	B= warm	R= Equal brilliance
V dark	O cool	G and weight

Complementary pairs represent the strongest hue contrast possible. Red and green share no common component, but when considered, together they contain all three primary colors. As a result, the complements incite each other when near each other and annihilate when mixed together. When used in full intensity they can appear to clash. That is why it is good to balance the contrast with neutral colors.

Chromatic Neutrals

Chromatic or complementary neutrals are produced by mixing two complementary colors. When used in combination with their parent colors, the composition will be suffused with the energies of both colors. This is one way of enhancing the sense of chromatic light in a composition.



Figure 5.1.1: Earth Science 2024, Oil on canvas, 72 × 66 inches. ("Earth Science" by Marie Thibeault is licensed under CC BY)

Possible Variations

The opposite colors found on a 12 part color wheel are not the only complements possible. In fact, the opposites on Munsell's 10 part color wheel more closely align with the optical complement produced by mixtures of light. Therefore using these Munsell complements may give stronger effects.

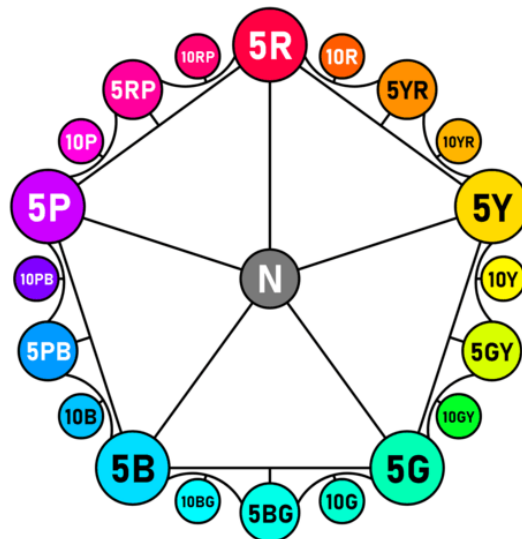


Figure 5.1.2: In Munsell's 10 hue color system opposite colors correlate closely to optical complements produced by simultaneous contrast. (8-leaf clover, CC BY-SA 4.0, via Wikimedia Commons)

It is also possible to suggest a complementary relationship with other variations. Split complementary pairs are made by using two adjacent hues in place of the true complement: for example, you may pair red with yellow green and blue green instead of green for pleasing effects. False pairs are made of secondary hues: Orange+ Green, Violet+ Orange, Green+ Violet. False pairs have similar color effects and characteristics as opposite hues only weaker and less commonly used. They are used often to create a slight sense of unease, such as with comic book villains.

Associations

Complementary contrasts are present in nature. They are associated with landscape, agriculture, bodies, organic matter, skin, plants, animals, food, dirt. They are versatile and tactile. You can use complementary hues in full chromatic strength to intensify each other or mix them with chromatic neutrals as base for mood and expression. Combined with pointillism for shifting and delicate transitions or throw off balance with disproportionate quantities and unusual value combinations.



Figure 5.1.3: Shell with Inlaid Feline, 100 BCE–700 CE. Peru, South Coast, Nasca. Spondylus shell with shell, stone, and gold inlay; overall: 7.5 x 7.4 cm (2 15/16 x 2 15/16 in.). The Cleveland Museum of Art, In memory of Mr. and Mrs. Henry Humphreys, gift of their daughter Helen, 1950.567



Figure 5.1.4: The Temple of Flora; or Garden of Nature. Picturesque Botanical Plates of the New Illustration of the Sexual System of Linnaeus: Large Flowering Sensitive Plant, Plate 16, 1799. (Joseph Constantine Stadler, The Cleveland Museum of Art, Gift of The Print Club of Cleveland in honor of Mrs. William G. Mather, 1955.479)

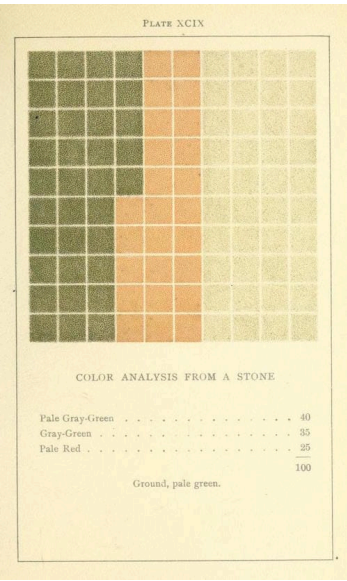


Figure 5.1.5: Color Analysis from a Stone by Emily Noyce Vanderpoel (sourced from the Public Domain Image Archive / Internet Archive / Smithsonian Libraries and Archives)

5.2: Project 5- Complementary Collages

Exercise *ComplementaryCollages*

Minimum size 6 x 4 ½'

For this series of collages, use complementary pairs and their neutral admixtures.

Part one: Paint Strips (In Class)

1. Choose one nature fragment, flower, or plant.
2. Examine the colors to see how many different hues are visible.
3. Carefully mix each distinguishable hue, testing paint on the actual surface of the flower.
4. Paint horizontal stripes of this color to fill a long paper, about 8x17"
5. Cut the paper vertically to create strips containing small squares of painted color to use in your collages.

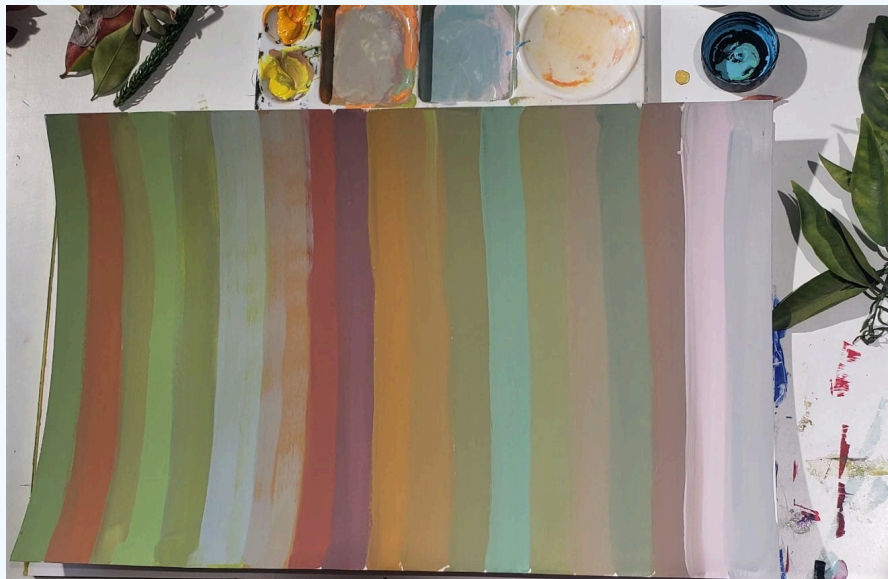


Figure 5.2.1: This sheet was painted only with colors found on the leaf pictured above. Now that it is full, it is ready to be cut into long verticle strips. ("[Example color palette from plants](#)" by [Molly Champlin](#) is licensed under [CC BY](#))

Part two: 6 Complementary Contrast Collages

Create six complementary collages, one for each of the complementary pairs.

R/G Y/V B/O RV/YG BV/YO RO/BG

- Focus on the specific **harmony and mood** that is essential to that pair and their mixes (Ex: blue green/red orange has a very strong warm/cool polarity).
- Keep in mind that complementary contrast can utilize tints and shades, strong value contrast and the specific range of **complementary neutrals** that is created by the mixing the two colors.
- Control **color light** to emphasize the complementary pair you are working with.
- You are encouraged to utilize the painted strips that you created in class as well as those from at least 5 fellow classmates.

Example *ComplementaryCollages*



Figure 5.2.1: Example collages using complementary pairs. ("Complementary Contrast Collages" by CSULB Students Fall 2025 is licensed under [CC BY](#))

Notes

- Use complementary hues in full chromatic strength to intensify each other.
- Use optical mixtures (small dots of opposite colors) to create subtle neutrals with strong chromatic light.
- Exploit chromatic neutrals as a base for mood and expression through saturation.
- Throw things delightfully off balance with disproportionate quantities and unusual value combinations
- Consider the role of color placement in a composition

6: SATURATION

6.1: Understanding Saturation

6.2: Collage - Saturation as Light, Space, and Sound

6.3: Painting - Saturation Grid

Learning Objectives

- **Define color light** and explain how chroma can create the illusion of light independent of traditional lighting logic.
- **Interpret saturation symbolically**, explaining how vivid/dull contrast can communicate transformation, entropy, aging, energy, and spiritual meaning.
- **Mix** intentional chromatic neutrals and grays to support color light effects.

6.1: Understanding Saturation

6.1: Understanding SaturationWhat is Saturation?

Definition: Saturation

chromatic intensity; the degree of concentration or suffusion of a hue from vivid to dull.

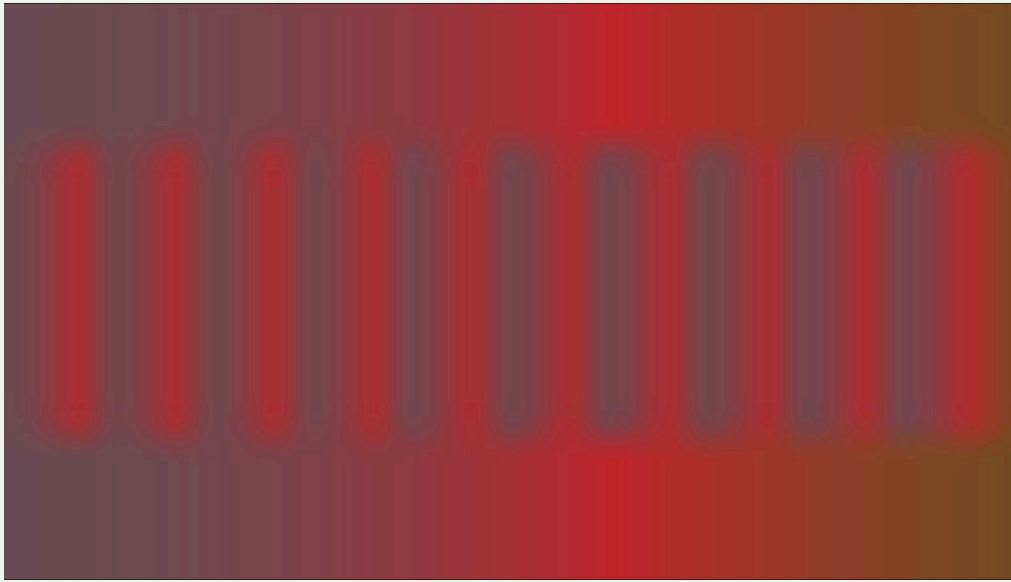


Figure 6.1.1: Copy and Paste Caption here. ("Saturation" by [Molly Champlin](#) is licensed under [CC BY\(opens in new window\)](#))

Color light

Using changes in value to depict the interplay of light on form creates a convincing illusion of 3 dimensional space in a composition. To create the illusion of a light glowing from within a composition, you must use the contrast of saturation. Using mostly intense hues will produces a strong potent **color light**.

Definition: Color Light

Chroma creates the illusion of light in a composition independent of traditional light logic



Figure 6.1.2: An example of magenta color light in a mostly dark composition. ("Globular Cluster" by Mirabel Wigon is licensed under CC-BY-NC)

Color light is most evident in compositions with a single, dominant hue. A composition with closely related hues will convey the color light of that hue family.

Color light can appear in a vivid / dull contrast in controlled value compositions in the following ways:

- Vivid color against duller and lighter background.
- Vivid color against a duller background all the same value throughout
- Vivid color against duller and darker background.

chromatic intensity; the degree of concentration or suffusion of a hue from vivid to dull.

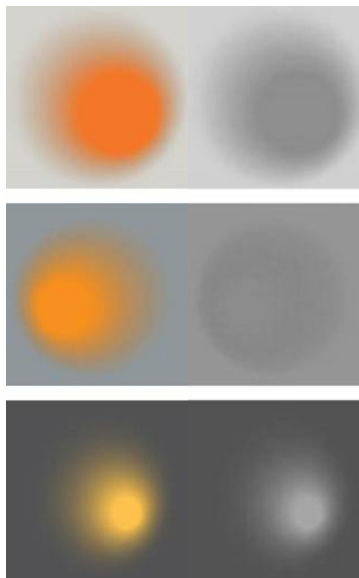


Figure 6.1.3: Compare the difference between these vivid orange 'lights'. Then, notice the value pattern corresponding to each: dark orange against light gray, the same value throughout, light orange against dark gray. Surprised? ("Saturation as color light" by Molly Champlin is licensed under CC BY([opens in new window](#)))

Color light can be used to convey inner light—florescence, neon, stained glass, magic, aura, etc.



Figure 6.1.4: The glow in this painting is created by the chroma of red sunlight seeping through the fence and dog leaping over it. ("[On The Loose](#)" by [Oscar Pearson](#) is licensed under [CC-BY-NC](#))

Saturation as Focal Point

The eye can be directed or manipulated through a composition with levels of saturation. The eye will move from weak color intensity to average color intensity and stop at strong intensity.

In painting, areas of saturation can function to enhance the main focal point, or create additional focal points to keep the composition active and moving.

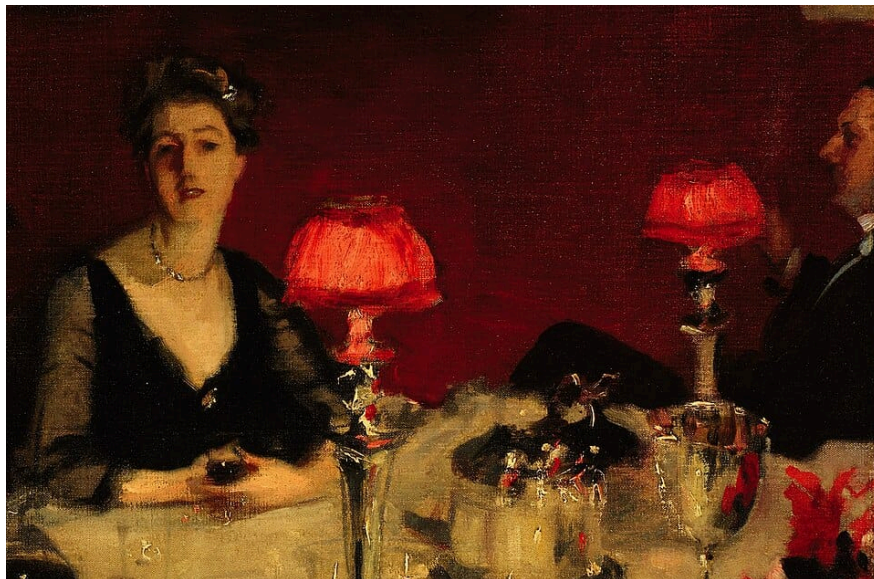


Figure 6.1.5: The red lanterns in this painting act as saturated focal points causing the eye to circle the natural focal point of the woman's face. ([Le verre de porto \(A Dinner Table at Night\)](#) by John Singer Sargent, Public domain, via [Wikimedia Commons](#))

Atmospheric Perspective Space

Strong chromas will advance in space and catch the eye. Weak chromas will tend to recede and create a place of rest. This is akin

to atmospheric perspective where objects in the distance will appear grayer.

Sound

Artists throughout time have used the vivid-dull contrast akin to convey experience with music. Wassily Kandinsky, one of the first modernist abstract painters, famously experienced cross sensory associations, or synesthesia. His work contains many references to music with a resulting symphonic energy. In contrast, the contemporary artist Brianna Bass creates color codes corresponding to pop songs. These codes help guide the careful modulations and gradations in hue and chroma to produce richly tonal paintings.

How to Control Saturation

Now that you have spent some time mixing paint it is likely that at one point you found yourself chasing a particular mixture only to end up with a palette full of dull, indistinguishable mess. Painters call these colors Muddy, and occasionally find good use for them. As you start out though it is good to practice intentional mixing of neutrals depending on your composition. You may want chromatic neutrals or a chromatic greys to enhance your color light.

Exercise 6.1.1

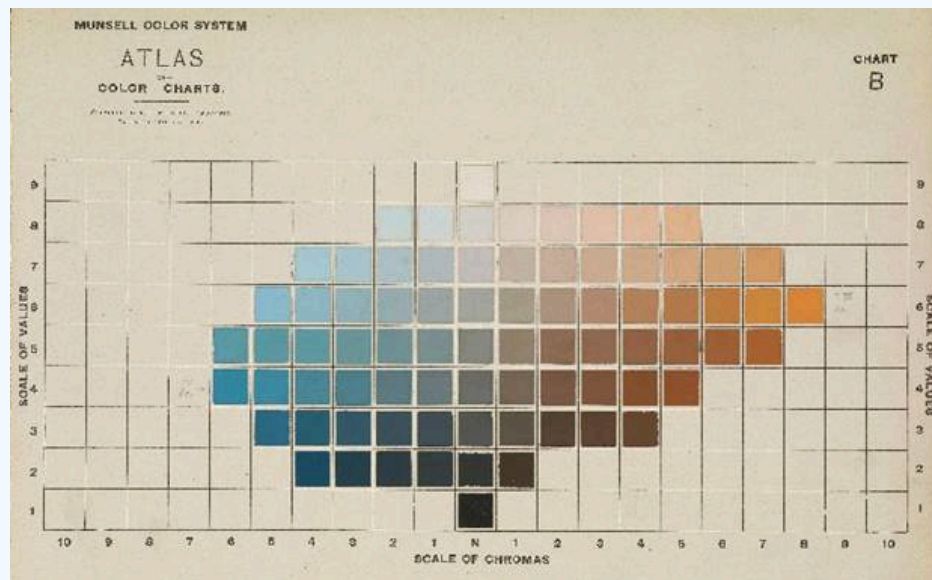


Figure 6.1.6: This color chart demonstrates many forms of saturation, can you spot them all? (From the Atlas of the Munsell Color System by Munsell, A. H. (Albert Henry), Public Domain, via [Archive.org](https://archive.org))

From the Atlas of the Munsell Color System (by Munsell, A. H. (Albert Henry), Public Domain, CC0 , via [Archive.org](https://archive.org))

There are four main ways to *desaturate a hue*, can you guess them all?

Answer available at the end of this section.

Associations

Saturation as Transformation

The vivid/dull expression inherently carries the meaning of transformation. As matter ages it usually goes from more to less colorful. From life to death, light to dark—following these metaphors, we may see saturation as the most profound and spiritually significant of the color contrasts. Entropy - a measure of disorder in a system.



Figure 6.1.7: This painting uses shades of green and yellow to convey a transformation between man and nature. ("Me As the Green Man" by Solomon Salim Moore is licensed under CC-BY-NC)



Figure 6.1.8: This painting exemplifies Van Gogh's persistence in recording luscious degrees of neutrals in aging and dying forms. ("Shoes" by Vincent Van Gogh is licensed under Public Domain, CC0)

Answers

Exercise 6.1.1

- Add white
- Add black
- Add gray
- Add the complementary color

6.2: Collage - Saturation as Light, Space, and Sound

Exercise *SaturationCollages*

Min Size 6x7in

Choose colors of differing chromatic intensity within one hue family. Include as many variations in intensity as possible while staying within a narrow range of hues.

LIGHT FROM WITHIN

"Nothing can dim the light which shines from within" -Maya Angelou

In the first collage the goal is to create a powerful light source by using several versions of one hue at a close value.

Choose a single color for your light that has a symbolic resonance for you. Is light a metaphor for wisdom, emotion, consciousness, or love? Is it something experienced in the world like sun, fire, or moonlight? Or experienced within oneself?

The light source is an energy that needs to be built up, include analogous or adjacent colors to enhance the intensity of the color light. Try to bury this light within a structure using more neutral colors of the same family so that the light seems to be radiating out from behind the surface. The light can emerge from a field that is the same value, or a field that is darker, or even a field that is lighter. Keep the variety of hues narrow and close to the family you are working with.

SPACE

"Trees of smoke-colored lava stretched out twisted branches from which hung thin leaves of slate. Butterflies of ash flying over clay meadows hovered above opaque crystal daisies."

-Italo Calvino

In the second collage, the goal is to use the contrast of vivid-dull to create space.

Imagine a large space of pure color, perhaps a memory of a room or structure in which many of the details have faded. Staying within one hue family, search through the space, what shapes does the color take? Is it big or small, which objects are easier to reconstruct and grab hold of? Which are more distant?

Remember the connection to **atmospheric perspective**, in which the brightest colors come forward in space. Use **overlapping, perspective, and scale changes** to support the idea of pictorial space. Also consider that **space and time/velocity** are closely connected, colors are constantly moving in relation to each other, so a strong collage will utilize the effects of **push and pull**.

SOUND

*"Pale blinds drawn all day
Nothing to do, nothing to say
Blue, blue" -David Bowie*

Following the metaphor that saturation carries the meaning of transformation or change create a composition that attempts to make visible the experience of sound. From loud to soft or high to low. You can work with any sound that sparks your imagination and try to make it visible in a fresh way. See Arthur Dove's [Fog Horns](#) as an example.

Example *SaturationCollages*



Figure 6.2.1: In these examples students used varying intensities of red to create light from within, space, and sound. (Saturation Collages by CSULB Students Fall 2025 is licensed under [CC BY](#))

Notes

- Color light is most evident in compositions with a single, dominant hue.
- A composition with closely related hues will convey the color light of that hue family.
- Artists to study who use saturation: Rema Ghuloum, David Park, Mark Bradford, Sam Gilliam, Jennifer Packer, Matt Bollinger

6.3: Painting - Saturation Grid

Exercise 6.3.1 Saturation Grid

Purpose:

These grids are useful in showing how saturation functions. We see the contrast of saturation clearly as the middle intense color square is gradually neutralized with the addition of the same value gray.

Skills:

- Mixing colors with control strengthens a visual artist's ability to determine color choice while helping increase general attentiveness for the non-artist
- Mastering saturation can allow the artist to utilize chromatic light in a composition to convey glowing and illuminated subjects.

Knowledge:

This assignment will also help you to see the potential of pure saturation contrast in a composition by limiting the appearance of other contrasts such as hue and value.

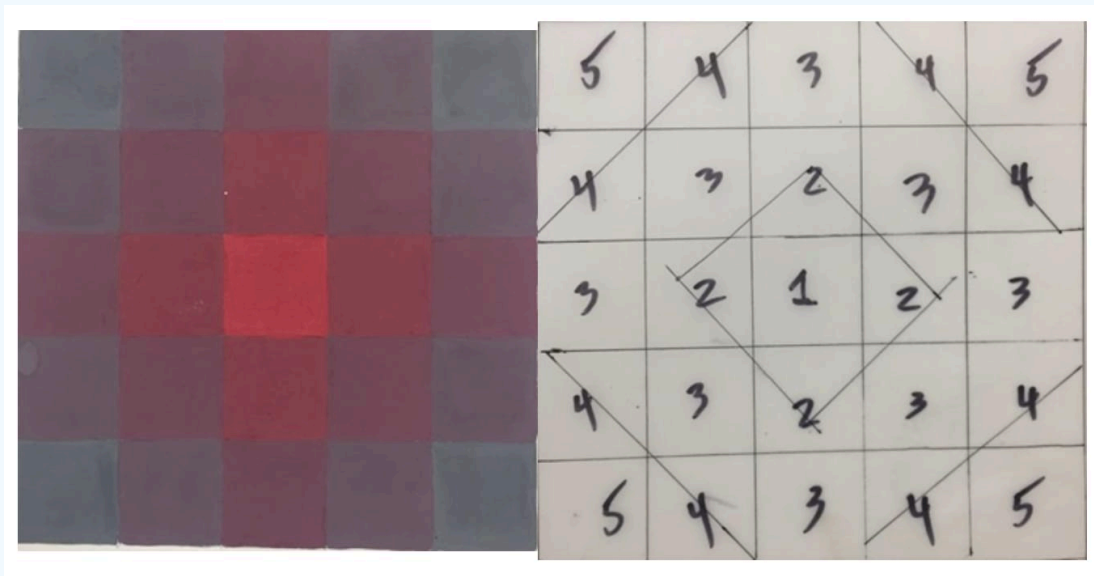


Figure 6.3.1: ("Example Saturation Grid" by Molly Champlin is licensed under CC BY)

Task:

1. Choose one luminous saturated hue for the center color (1)
2. Mix a neutral gray of the same value (5)
3. Paint out 1 and 5 on a scrap sheet of paper and wait for them to dry before checking with the value scale.
4. Adjust if necessary.
5. Mix three steps between (1) and (5), mixing more and more gray to the center color in order to drain out the saturation. (2, 3, 4)
6. The grids should be one consistent value across the saturation levels.

Criteria for Success

- Technique: Each collage should be made with neatly glued, color aid paper and matted on a sheet of Bristol paper with a minimum of 1" border
- Application of color contrast: There is no hue change or value contrast, only pure saturation gradation, revealing the contrast of vivid -dull.
- Completion: All squares are painted according to given dimensions 1.5" each for 7x7"

$$1/3 = \checkmark- \quad 2/3 = \checkmark \quad 3/3 = \checkmark+$$

*This is a formative assessment not used to calculate the final grade. Feedback will be given in critique/class discussion on the due date indicated above.

7: COLOR PERCEPTION

7.1: Understanding Color Perception

7.2: Understanding Simultaneous Contrast

7.3: Josef Albers, Homage to the Square

Learning Objectives

- **Explain** the simple theory of color vision.
- **Outline** the coloring properties of light sources.
- **Describe** the retinex theory of color vision.
- **Differentiate** between additive and subtractive color
- **Apply** the theory of simultaneous contrast to change appearance of colors in interaction with changing grounds

7.1: Understanding Color Perception

Learning Objectives

By the end of this section, you will be able to:

- Explain the simple theory of color vision.
- Outline the coloring properties of light sources.
- Describe the retinex theory of color vision.

The gift of vision is made richer by the existence of color. Objects and lights abound with thousands of hues that stimulate our eyes, brains, and emotions. Two basic questions are addressed in this brief treatment -- what does color mean in scientific terms, and how do we, as humans, perceive it?

Simple Theory of Color Vision

We have already noted that color is associated with the wavelength of visible electromagnetic radiation. When our eyes receive pure-wavelength light, we tend to see only a few colors. Six of these (most often listed) are red, orange, yellow, green, blue, and violet. These are the rainbow of colors produced when white light is dispersed according to different wavelengths. There are thousands of other **hues** that we can perceive. These include brown, teal, gold, pink, and white. One simple theory of color vision implies that all these hues are our eye's response to different combinations of wavelengths. This is true to an extent, but we find that color perception is even subtler than our eye's response for various wavelengths of light.

The two major types of light-sensing cells (photoreceptors) in the retina are **rods and cones**. Rods are more sensitive than cones by a factor of about 1000 and are solely responsible for peripheral vision as well as vision in very dark environments. They are also important for motion detection. There are about 120 million rods in the human retina. Rods do not yield color information. You may notice that you lose color vision when it is very dark, but you retain the ability to discern grey scales.

TAKE-HOME EXPERIMENT: RODS AND CONES

1. Go into a darkened room from a brightly lit room, or from outside in the Sun. How long did it take to start seeing shapes more clearly? What about color? Return to the bright room. Did it take a few minutes before you could see things clearly?
2. Demonstrate the sensitivity of *foveal vision*. Look at the letter G in the word ROGERS. What about the clarity of the letters on either side of G?

Cones are most concentrated in the fovea, the central region of the retina. There are no rods here. The fovea is at the center of the macula, a 5 mm diameter region responsible for our central vision. The cones work best in bright light and are responsible for high resolution vision. There are about 6 million cones in the human retina. There are three types of cones, and each type is sensitive to different ranges of wavelengths, as illustrated in Figure 7.1.1. A **simplified theory of color vision** is that there are three *primary colors* corresponding to the three types of cones. The thousands of other hues that we can distinguish among are created by various combinations of stimulations of the three types of cones. Color television uses a three-color system in which the screen is covered with equal numbers of red, green, and blue phosphor dots. The broad range of hues a viewer sees is produced by various combinations of these three colors. For example, you will perceive yellow when red and green are illuminated with the correct ratio of intensities. White may be sensed when all three are illuminated. Then, it would seem that all hues can be produced by adding three primary colors in various proportions. But there is an indication that color vision is more sophisticated. There is no unique set of three primary colors. Another set that works is yellow, green, and blue. A further indication of the need for a more complex theory of color vision is that various different combinations can produce the same hue. Yellow can be sensed with yellow light, or with a combination of red and green, and also with white light from which violet has been removed. The three-primary-colors aspect of color vision is well established; more sophisticated theories expand on it rather than deny it.

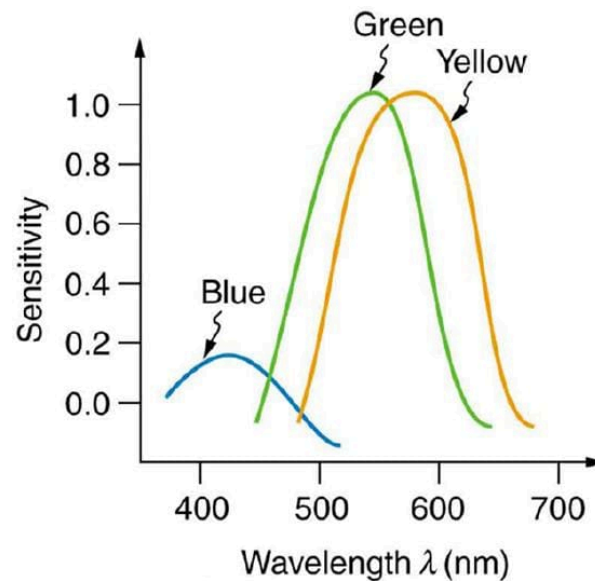


Figure 7.1.1: The image shows the relative sensitivity of the three types of cones, which are named according to wavelengths of greatest sensitivity. Rods are about 1000 times more sensitive, and their curve peaks at about 500 nm. Evidence for the three types of cones comes from direct measurements in animal and human eyes and testing of color blind people.

Consider why various objects display color -- that is, why are feathers blue and red in a crimson rosella? The *true color of an object* is defined by its absorptive or reflective characteristics. Figure 7.1.2 shows white light falling on three different objects, one pure blue, one pure red, and one black, as well as pure red light falling on a white object. Other hues are created by more complex absorption characteristics. Pink, for example on a galah cockatoo, can be due to weak absorption of all colors except red. An object can appear a different color under non-white illumination. For example, a pure blue object illuminated with pure red light will *appear* black, because it absorbs all the red light falling on it. But, the true color of the object is blue, which is independent of illumination.

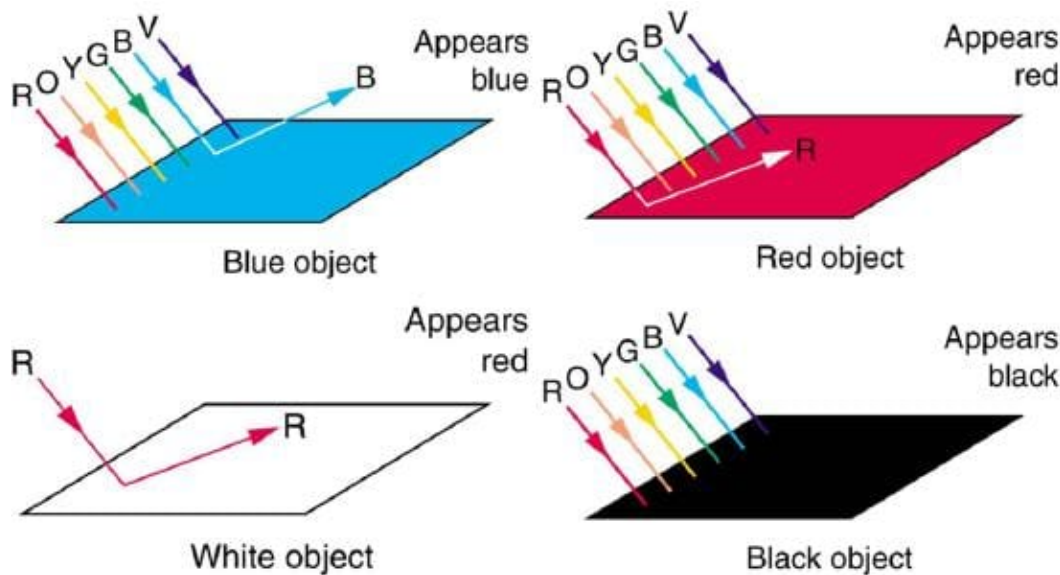


Figure 7.1.2: Absorption characteristics determine the true color of an object. Here, three objects are illuminated by white light, and one by pure red light. White is the equal mixture of all visible wavelengths; black is the absence of light.

Similarly, *light sources have colors* that are defined by the wavelengths they produce. A helium-neon laser emits pure red light. In fact, the phrase “pure red light” is defined by having a sharp constrained spectrum, a characteristic of laser light. The Sun produces a broad yellowish spectrum, fluorescent lights emit bluish-white light, and incandescent lights emit reddish-white hues as seen in Figure 3. As you would expect, you sense these colors when viewing the light source directly or when illuminating a white object with them. All of this fits neatly into the simplified theory that a combination of wavelengths produces various hues.

TAKE-HOME EXPERIMENT: EXPLORING COLOR ADDITION

This activity is best done with plastic sheets of different colors as they allow more light to pass through to our eyes. However, thin sheets of paper and fabric can also be used. Overlay different colors of the material and hold them up to a white light. Using the theory described above, explain the colors you observe. You could also try mixing different crayon colors.

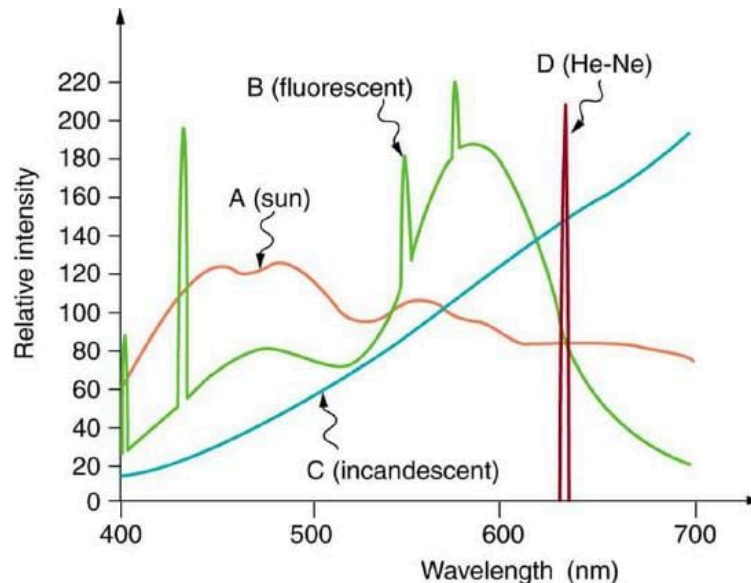


Figure 7.1.3: Emission spectra for various light sources are shown. Curve A is average sunlight at Earth's surface, curve B is light from a fluorescent lamp, and curve C is the output of an incandescent light. The spike for a helium-neon laser (curve D) is due to its pure wavelength emission. The spikes in the fluorescent output are due to atomic spectra -- a topic that will be explored later.

Color Constancy and a Modified Theory of Color Vision

The eye-brain color-sensing system can, by comparing various objects in its view, perceive the true color of an object under varying lighting conditions -- an ability that is called **color constancy**. We can sense that a white tablecloth, for example, is white whether it is illuminated by sunlight, fluorescent light, or candlelight. The wavelengths entering the eye are quite different in each case, as the graphs in Figure 3 imply, but our color vision can detect the true color by comparing the tablecloth with its surroundings.

Theories that take color constancy into account are based on a large body of anatomical evidence as well as perceptual studies. There are nerve connections among the light receptors on the retina, and there are far fewer nerve connections to the brain than there are rods and cones. This means that there is signal processing in the eye before information is sent to the brain. For example, the eye makes comparisons between adjacent light receptors and is very sensitive to edges as seen in Figure 4. Rather than responding simply to the light entering the eye, which is uniform in the various rectangles in this figure, the eye responds to the edges and senses false darkness variations.

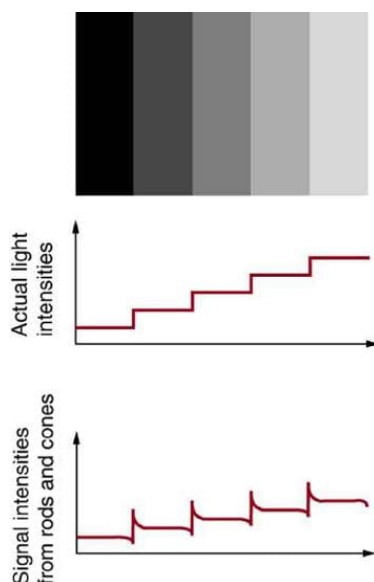


Figure 7.1.4: The importance of edges is shown. Although the grey strips are uniformly shaded, as indicated by the graph immediately below them, they do not appear uniform at all. Instead, they are perceived darker on the dark side and lighter on the light side of the edge, as shown in the bottom graph. This is due to nerve impulse processing in the eye.

One theory that takes various factors into account was advanced by Edwin Land (1909 – 1991), the creative founder of the Polaroid Corporation. Land proposed, based partly on his many elegant experiments, that the three types of cones are organized into systems called **retinexes**. Each retinex forms an image that is compared with the others, and the eye-brain system thus can compare a candle-illuminated white table cloth with its generally reddish surroundings and determine that it is actually white. This **retinex theory of color vision** is an example of modified theories of color vision that attempt to account for its subtleties. One striking experiment performed by Land demonstrates that some type of image comparison may produce color vision. Two pictures are taken of a scene on black-and-white film, one using a red filter, the other a blue filter. Resulting black-and-white slides are then projected and superimposed on a screen, producing a black-and-white image, as expected. Then a red filter is placed in front of the slide taken with a red filter, and the images are again superimposed on a screen. You would expect an image in various shades of pink, but instead, the image appears to humans in full color with all the hues of the original scene. This implies that color vision can be induced by comparison of the black-and-white and red images. Color vision is not completely understood or explained, and the retinex theory is not totally accepted. It is apparent that color vision is much subtler than what a first look might imply.

PHET EXPLORATIONS: COLOR VISION

Make a whole rainbow by mixing red, green, and blue light. Change the wavelength of a monochromatic beam or filter white light. View the light as a solid beam, or see the individual photons.

Summary

- The eye has four types of light receptors -- rods and three types of color-sensitive cones.
- The rods are good for night vision, peripheral vision, and motion changes, while the cones are responsible for central vision and color.
- We perceive many hues, from light having mixtures of wavelengths.
- A simplified theory of color vision states that there are three primary colors, which correspond to the three types of cones, and that various combinations of the primary colors produce all the hues.
- The true color of an object is related to its relative absorption of various wavelengths of light. The color of a light source is related to the wavelengths it produces.
- Color constancy is the ability of the eye-brain system to discern the true color of an object illuminated by various light sources.
- The retinex theory of color vision explains color constancy by postulating the existence of three retinexes or image systems, associated with the three types of cones that are compared to obtain sophisticated information.

Glossary

hues

identity of a color as it relates specifically to the spectrum

rods and cones

two types of photoreceptors in the human retina; rods are responsible for vision at low light levels, while cones are active at higher light levels

simplified theory of color vision

a theory that states that there are three primary colors, which correspond to the three types of cones

color constancy

a part of the visual perception system that allows people to perceive color in a variety of conditions and to see some consistency in the color

retinex

a theory proposed to explain color and brightness perception and constancies; is a combination of the words retina and cortex, which are the two areas responsible for the processing of visual information

retinex theory of color vision

the ability to perceive color in an ambient-colored environment

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7.2: Understanding Simultaneous Contrast

What is Simultaneous Contrast?

Definition: Simultaneous Contrast

a phenomenon that happens when two adjacent colors influence each other, changing our perception of these colors. Simultaneous contrast is caused by the afterimage of the dominant hue washing over onto the smaller area as the two hues are seen simultaneously.

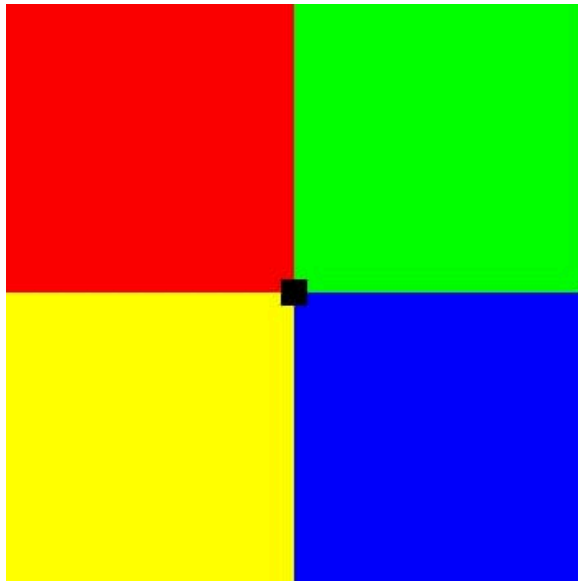


Figure 7.2.1: Stare at the black square on the left for about 10 seconds. Then, shift your gaze to the black square on the right. What do you see?
([Hering's afterimage effect](#) by Magica, [CC BY-SA 4.0](#), via Wikimedia Commons)

We know that the after image produced by any color will be its optical complement, these are most similar to the complements found on the Munsell color wheel. After images are caused by retinal fatigue. Remember for a moment that white light contains wavelengths of all hues, and our photoreceptors can sense different combinations and ranges of wavelengths. These sensors are stimulated and eventually fatigued when saturated with an intense color. So, when we look at a white background, and all photoreceptors are activated, the ones that were resting will overpower the ones that were fatigued, so the opposite hue appears like a ghost on our retina.

M. F. Chevreul

Simultaneous contrast is the basis of the M. F. Chevreul theory of color. In 1839 the French chemist discovered this phenomenon also called reciprocal contrast. It is based on the principles of complementary colors. It may also be called chromatic induction. The publication "The Law of Simultaneous Contrast" set a basis for impressionist theories in using complementary and differing pure hues next to each other for visual excitement.

Impressionist interest in color and light is influenced in part by the research of scientists like Michel Chevreul. Specifically, the idea that an object of any given color will cast a shadow tinged with that of its complementary color and tinting neighboring colors in the same manner influences Impressionists. This theory was already known to earlier painters, such as Eugène Delacroix. A primary color such as red has green (the combination of the other two primaries) as its complementary. Similarly, blue has orange and yellow has purple as a complementary color.

The Most Relative Medium

Josef Albers wrote in the interaction of color that color is the most relative medium in art. It continually deceives. Published in 1963, *Interaction of Color* serves as a handbook or guide for the study of color perception and application. It is one of the most famous books on the applied understanding of the effects of simultaneous contrast. While the text and theory are written by Albers, the visual examples are largely student work from throughout his years of teaching.

YouTube Video

This interactive element is not available in this format. Visit the link or scan the QR code to access it online.

[View this YouTube Video online](#)



Vibrating Boundaries

When placed next to each other two strong hues of contrasting temperature will produce very intense example of simultaneous contrast. The boundary between these colors will appear to vibrate as their after images vie for dominance. This effect has been sought after and used by designers of psychedelic posters, op art, and more.

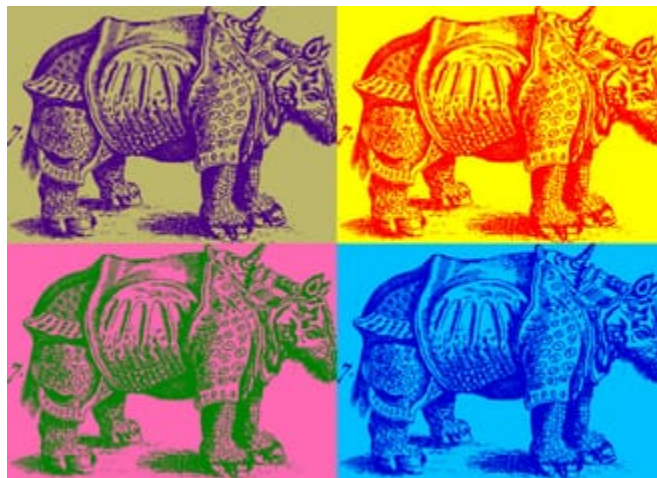


Figure 7.2.2: Andy Warhol's style is a good example of varying intensity of simultaneous contrast. Here it is applied to a rhino illustration from "A Description of 300 Animals" by Thomas Boreman. Which rhino has the most intense SC? ([Andy Warhol Style](#), by MrAlanKoh, [CC BY-SA 4.0](#), via wikimdia)

In cases when legibility is important it may be wise to suppress the effects of Simultaneous Contrast. It can appear overwhelming if not desired. Incorporating strong value contrast between the two hues, muting one or both of them, or placing an outline between them are all ways to suppress the successive contrast between two colors.

Ways to Intensify Simultaneous Contrast

- Strong light.
- SC works best with unequal proportions, large on small.
- SC will increase with viewing time and with intensity or purity of dominant hue.
- Opposite hues give strong SC.
- Near opposite or split complements give stronger SC.
- Close values work to intensify SC.
- By placing or using distinct color areas near each other. (Not confused by line or form) Line, shape, and form are immediately

recognizable to the eye. They appeal to our intellect and are easily grasped as tangible visual elements. SC affects our sense perception; it creates an apparent sensation, which works on visual reality.

Ways to Suppress Simultaneous Contrast

- Extreme value changes.
- Add some of dominant hue (admixture) to other hue so it cooperates with SC.
- Lower intensity of dominant hue.
- Make sizes similar.
- Use a line or ground to separate the areas from one another. This will destroy SC because it acts as a pause. The after image will be projected on the line or ground and destroy the dynamic and make it more stable.

Problem in Color Mixing

Painters must consider the relativity of color when mixing paint. The way a color appears on a white palette will be different than among the colors in a painting. To combat this issue, mixing one color on the palette to find it appearing out of place on the painting, artists may use a toned gray palette to more accurately gauge a color's value. Over time and with practice a good painter can anticipate and create color mixtures to suit the palette they are working with.

Try it out: For fun, try using a RV or Yellow green painted ground or palette to create play with the temperature of your composition.

7.3: Josef Albers, Homage to the Square

by SHAWN ROGGENKAMP

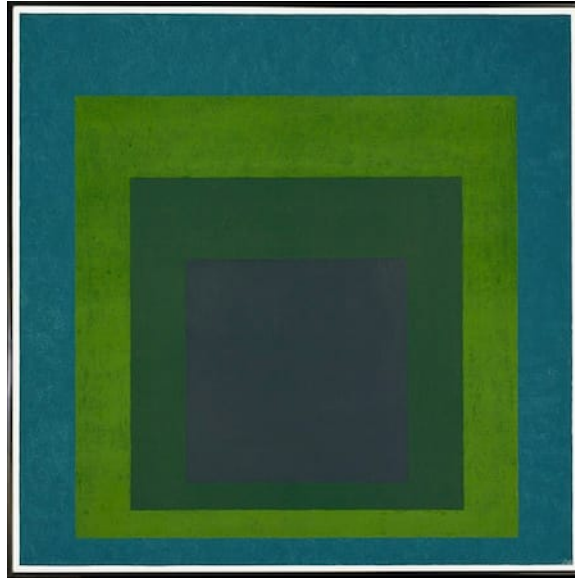


Figure 7.3.1: Josef Albers, *Homage to the Square: Soft Spoken*, 1969, oil on masonite, 121.9 x 121.9 cm (The Metropolitan Museum of Art, New York)

Looking deeply

Take a moment to really look deeply at this example of Josef Albers' extensive series, *Homage to the Square*. The composition of this painting is simple enough – four progressively smaller squares within each other, each in a different color, and all aligned closer to the bottom of the composition than to the top.

So stand back from this *Homage to the Square* and look at the whole thing. What is the relationship between the squares? Are they stacked on top of each other, like cut out pieces of construction paper? Are they sinking underneath each other, as if you are looking at a painting of a tunnel? Do some appear to push toward you and others to fall away? And how does it change between each version of the painting? Looking at the pieces, you may find that you are able to force your eyes to see a stack of blocks or a tunnel, or you may find that you are instinctively drawn to one interpretation of how the squares are arranged. This is exactly the principle that Albers experimented with as he produced hundreds of variations on this theme over a period of about 25 years. These included paintings, drawings, prints, and tapestries—but each explored the same basic question: can an artist create the appearance of three dimensions, using only color relations?

The Bauhaus



Figure 7.3.2: Josef Albers, *Homage to the Square: "Ascending,"* 1953, oil on composition board, 110.5 × 110.5 cm (Whitney Museum of American Art)

Though Albers began work on the *Homage* paintings in 1950, he was introduced to color theory very early in his career, when he enrolled as a student at the Bauhaus in 1920. The Bauhaus was a revolutionary school of art and design in Germany, founded by Walter Gropius in 1919. Its philosophy was to integrate the principles of fine art and functional design, and many of the most important artists in Europe were teachers there. When Albers was a student, the foundation for all Bauhaus education was the *Vorkurs*, or preliminary course, taught by Johannes Itten. The course covered the fundamentals of material, composition, and color theory, and was one of the most influential and widely disseminated aspects of Bauhaus curriculum.



Figure 7.3.3: Left to right: Josef Albers, Marcel Breuer, Gunta Stölzl, Oskar Schlemmer, Wassily Kandinsky, Walter Gropius, Herbert Bayer, László Moholy-Nagy and Hinnerk Scheper on the roof of the Bauhaus, Dessau, 1928

Many studies done by students as part of the *Vorkurs* can be seen in museums and exhibitions, and they often bear a resemblance to Albers' *Homage* paintings: a repeated series of shapes, each in different color combinations. The goal of these exercises was for the students to understand how colors related to each other. Many years later, Albers used the *Homage* paintings to go into even more depth with those lessons, and bring them to audiences, as well as art students.

From Dessau to Black Mountain



Figure 7.3.4: Josef Albers, *Study for Homage to the Square*, 1950, oil on artist board 26.67 x 26.67 cm

In 1925, the year that the Bauhaus moved from Weimar to their iconic building in Dessau, Gropius invited Albers to be the first student of the Bauhaus to join the faculty. Albers worked with Paul Klee in the stained glass workshop and was the longest-serving member of the faculty when the school was shut down by the Nazis in 1933. But the Bauhaus was to be only the first of Albers' celebrated and influential teaching positions. When that school was shut down, Albers' and his wife, Anni—herself an influential artist and Bauhaus alumna—emigrated to the United States, where he was invited to teach at the revolutionary Black Mountain College in North Carolina, and later Yale University, where he began the first *Homage* paintings in 1950. An encouraging but strict teacher, Albers brought Bauhaus ideas to a new country, introducing his disciplined approach to color theory to the next generation of the artistic vanguard in America.



Figure 7.3.5: Mark Rothko, *Orange and Red on Red*, 1957, oil on canvas, 174.92 x 168.59 cm (The Phillips Collection)

For all their variety of color, the *Homage* paintings are relatively cold and clinical. It is interesting to compare them to paintings by Mark Rothko, who produces canvasses that have strong similarities to the *Homage* series. Albers and Rothko both use roughly square or rectangular forms in solid colors, and both take the relationship between colors as their subject matter. But while Rothko's paintings use variation of color to suggest or inspire certain emotional reactions, Albers' paintings are exploring the creation of space through the use of color. He experiments with subverting the limits of two-dimensional space.

Tradition and variation



Figure 7.3.6: Leonardo da Vinci, *The Virgin of the Rocks*, c. 1491-1508, oil on panel, 189.5 x 120 cm, (National Gallery, London)

The idea of creating space through color goes back to a technique known as atmospheric perspective. The best examples can be seen in landscapes of the Dutch Golden Age and Italian Renaissance artists such as Leonardo da Vinci. The principle of atmospheric perspective is that objects that are far away are less saturated in color, and have less contrast. Looking at the mountains behind Leonardo's *Virgin of the Rocks*, each set of mountains that is farther away is closer in color to the sky than the set of mountains in front of it.

This technique had been used to create space in representative paintings going back to antiquity, but Albers was revolutionary in applying it to abstract art. His experiments in the *Homage* series paved the way for artists such as Bridget Riley and a whole generation of Op artists, who also pushed the limits of two-dimensional media by creating large-scale optical illusions. Though *Homage to the Square* may seem boring and repetitive to some, their simple beauty is often compared to classical music, like the work of Bach: a study on theme and variation.

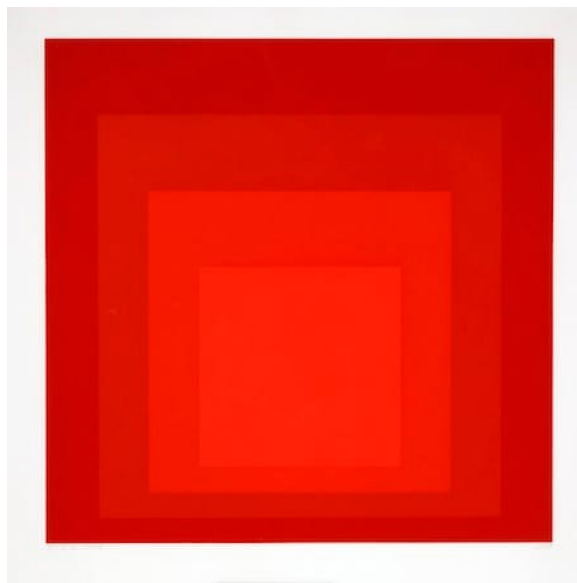


Figure 7.3.7: Josef Albers, *Homage to the Square I-Sa*, 1968, silkscreen, 54.6 x 54.6 cm (Dallas Museum of Art)

"If one says "Red" (the name of a color) and there are 50 people listening, it can be expected that there will be 50 reds in their minds. And one can be sure that all these reds will be very different." —Josef Albers, *Interaction of Color* (1963)

Additional Resources:

Josef and Anni Albers Foundation

Holland Cotter, Harmony, "Harder Than It Looks 'Josef Albers in America: Painting on Paper,'" *The New York Times*, July 26, 2012

[Josef Albers entry in Wikipedia](#)

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8: COLOR SYMBOLISM

8.1: Understanding Color Symbolism

8.2: Abstract art and Theosophy

8.3: Australia

Learning Objectives

- **Distinguish** between universal and culturally specific meanings of color.
- **Compare** the symbolic meanings of colors across different cultures, belief systems, and traditions.
- **Examine** how color functions as a system for organizing information, influencing behavior, and communicating social or political messages.
- **Analyze** the role of color in natural and built environments, including its relationship to materials, ecology, and human perception.
- **Apply** concepts of color symbolism and meaning when interpreting artworks, media, and everyday visual experiences.

8.1: Understanding Color Symbolism

Definition: Color Symbolism

– The use of color to convey meaning. The evocative power of color is both a product of natural phenomenon and a learned response.

Universal and Specific Meanings

While some color meanings cross cultural boundaries, color symbolism often varies across time and place. Much like different colors appear to change when placed on different grounds, associations and meanings of specific colors shift in different contexts.

Connotations can be universal or culturally specific. Red may mean danger if used on a stop sign, but in Chinese culture it represents good luck.

What do you think? 8.1.1

Consider encountering an artwork of red LED lights ticking off from 1 to 9 continuously. What might that mean to you?



Figure 8.1.1: Red LED lights. (Canon LE-10 LEDs by Mister rf, CC BY-SA 4.0, via Wikimedia Commons)

Answer available at the end of this section.

Exploring Color and Meaning - Four Categories

Color signifies in many different ways: it can be coded, cryptic, intuitive, emotional, ceremonial, or decorative. It is a language with the unique ability to communicate both meanings and direct sensations. Picture a row of flags: color information of striped bands is used to distinguish country affiliation. Now, on the other hand, imagine standing in front of a Rothko painting: entering fields of red and orange raises your heart rate slightly, makes you feel warm, excited, complex emotions.

An exhaustive understanding of color symbolism would be akin to learning a new language. Luckily, we already come to the topic with a native color fluency. In order to understand color symbolism it is useful to break it up into four categories.

Color in the Arts -- Painting, Literature, Music, Film

How have individual artists used color, changed the way we see color, or developed a unique language of color?

(Choose one artist or movement to focus on: Kandinsky, Joan Mitchell, Hoffman, Rothko, Bauhaus, Color in 20th century Abstraction, Hilma af Klint, Agnes Pelton, Eamon Ore Giron, Mark Bradford, etc)



Figure 8.1.2: Hilma af Klint's work was re-discovered in recent years and challenged the claim that many male artists held to being the progenitors of abstract art. Her work, pictured here in a 2018 Guggenheim exhibition, drew on spiritual practices rich with color symbolism. ("Hilma af Klint - exhibition view at Guggenheim by Ryan Dickey, [CC BY 2.0](#) , via Wikimedia Commons)

How has color been referenced or used in other media?

For example: Color in Music (Scriabin), Color in Literature (Nobokov, Wallace Stevens, Italo Calvino), Color in Film, Philosophy (Goethe, Derrida)

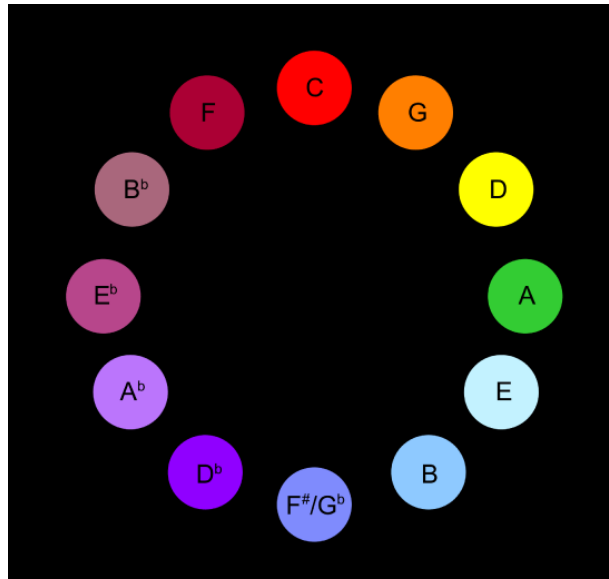


Figure 8.1.3: Alexander Scriabin was a Russian Composer who was inspired by synesthesia, or the cross sensory association between sound and vision. He create the system above correlating musical notes to colors as he saw them. ([Scriabin Circle](#) by Mouagip, Public domain, via Wikimedia Commons)

Culture/Spirituality

For example: Color use in specific cultures, countries, and/or religious practices.



Figure 8.1.3: Australian aboriginal painting utilized colors derived from the earth such as ochre and shells. Each color had specific meanings and symbolism. ([Painting](#) by Unidentified Australian Aboriginal Artist, [CC BY-SA 4.0](#), via Google Art Prject)

Color Systems

How is color used to organize information, in science and technology, or as a system of analysis?

For example: Color in Politics, Propaganda, Protest Movements, Cognitive Science and Perception, Healing, Psychology (Jung)

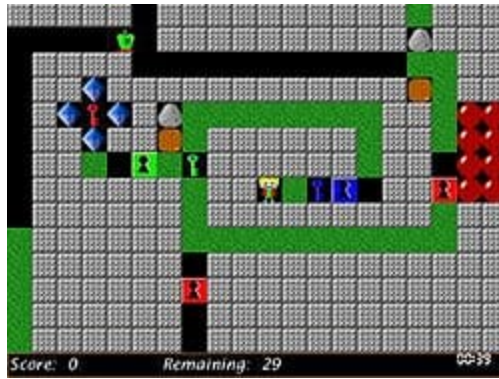


Figure 8.1.4: Color is often used as a code to guide players in video games. ([Epiphany game screenshot](#) by KarstenSchulz, [GPL](#), via Wikimedia Commons)

Environment

How do we encounter color in the natural and man-made world? How have humans and animals adapted around color? How might color and our environment continue to change in the future?

For example: Signage, Urban Color, Architecture (Le Corbusier, Olafur Eliasson), Pigments and Dyes, Climate Change, Nature



Figure 8.1.5: Photo of the Cochineal insect used to create vivid red dyes. ([Dactylopius coccus](#) by Dick Culbert, [CC BY 2.0](#), via Wikimedia Commons)

Answers

What do you think? 8.1.1

The visual artist and Buddhist practitioner, Tatsuo Miyajima, creates work using LED numbers. He often uses red lights to symbolize the life force of Buddha. The artwork can surprise viewers who are accustomed to seeing red lights on stock market tickers, marquees, and alarm clocks.

Learn more here:

This interactive element is not available in this format. Visit the link or scan the QR code to access it online.

[View this YouTube Video online](#)



8.2: Abstract art and Theosophy

by **DR. CHARLES CRAMER** and **DR. KIM GRANT**

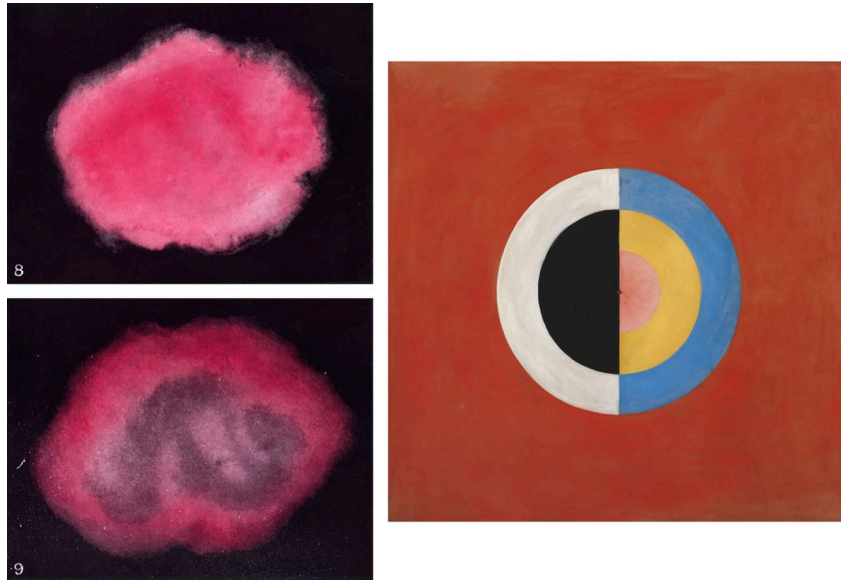


Figure 8.2.1: Left: from Annie Besant and C. W. Leadbeater, *Thought Forms*, 1905 (London: The Theosophical Publishing House LTD); right: Hilma af Klint, *Group IX/SUW, No. 17. The Swan*, 1915, oil on canvas, 150.5 × 151 cm (Moderna Museet / Stockholm)

On the left, two amorphous pinkish clouds float against a black field; and on the right, a nested set of hard-edged, bisected disks converge toward a tiny equilateral triangle. These images look like they belong in the milieu of mid-twentieth century Abstract Expressionism, but they were actually produced almost half a century earlier by two remarkable women, Annie Besant and Hilma af Klint. They provide the first hints of the way in which abstract art was underwritten by a very surprising



Figure 8.2.2: Helena Petrovna Blavatsky

source: an occult spiritualist movement called Theosophy. Many early abstractionists, including [Vassily Kandinsky](#), [Piet Mondrian](#), [Kasimir Malevich](#), and František Kupka, as well as Hilma af Klint, cited Theosophy as a direct source for their ideas and works.

The Theosophical Society, founded in 1875, was probably the most influential spiritualist organization of the late-nineteenth and early-twentieth century. Theosophy was a highly eclectic mixture of religious, philosophical, and occultist ideas. One of the founders, Madame Blavatsky, wrote books that mix elements of Hinduism and Buddhism with Ancient Greek philosophy and modern science.

The Society had no formal dogma or established rituals, and had multiple, sometimes competing, centers and leaders around the world. Its members generally believed that there were truths beyond the reach of science, and that throughout history certain enlightened individuals or Mahatmas (including Abraham, Jesus, Buddha, and Confucius) used spiritual discipline to grasp these truths and obtain supernatural powers.

Symbolism

The connection between Theosophy and formally-innovative modern art begins in the late-nineteenth century, when some artists and writers reacted strongly against the materialism of an age dominated by science and industrialization. In an 1892 essay, the art critic Albert Aurier decried the futility of scientific reasoning in the face of the deeper mysteries of life:

The nineteenth century, after having proclaimed for eighty years, in its infantile enthusiasm, the omnipotence of observation and of scientific deduction, after having affirmed that no mystery could survive its lenses and its scalpels, seems finally to realize the vanity of its efforts, the puerility of its boasts.*Albert Aurier, "Les peintres symbolistes," in Textes critiques, 1889-1892 (Paris: Ecole nationale supérieur des Beaux-Arts, 1995), pp. 29-30 (authors' translation)*

Aurier saw hope for the future in a new art movement called Symbolism, led by Paul Gauguin. Gauguin's work demonstrates his rejection of science and modernity most obviously in its turn away from the modern, [urban subjects preferred by the Impressionists](#) in favor of rural and religious subject-matter. His *Vision after the Sermon*, which Aurier described as the first masterpiece of the new movement, shows a group of Breton peasant women leaving church and having a collective vision of the Biblical patriarch [Jacob wrestling an angel](#) (Genesis 32:22-32).



Figure 8.2.3: Paul Gauguin, *Vision after the Sermon (or Jacob Wrestling with the Angel)*, 1888, oil on canvas, 72.20 x 91.00 cm (National Gallery of Scotland, Edinburgh)

Equally important is the work's style, which rejects what had been a constant in Western art since the Renaissance: a basis in naturalism. Anatomy in Gauguin's work is rendered with the crude simplicity of a medieval woodcut. There is very little [chiaroscuro](#) to indicate volume, and the ground is painted a virtually unmodulated red, defying expectations of both spatial recession and naturalistic color choice.



Figure 8.2.4: Paul Sérusier, *Portrait of Paul Ranson in Nabi costume*, 1890, oil on canvas, 51 x 46.5 cm (Musée d'Orsay)

Following Gauguin, a number of Symbolist artists affirmed this linkage of a simplified or abstracted style with higher spiritual content. Prominent among these was a group who called themselves The Nabis, after the Hebrew word for “prophet.” They were influenced by the Theosophist Edouard Schuré, whose book *Les Grands Initiés* (1889) recounts the esoteric wisdom of an eclectic group of spiritual “initiates,” including Krishna, Hermes, Moses, Pythagoras, Plato, and Jesus.

Paul Sérusier’s *Portrait of Paul Ranson* shows the Nabi artist in an elaborate blue-and gold robe, holding a gold staff decorated with symbols, and reading from a medieval-style illuminated manuscript. Behind him a red circle creates a mystic halo, and also shows the flat bright colors and abstract designs favored by the Nabis.

Although the juxtaposition of Ranson’s 19th century pince-nez, waxed mustache, and well-trimmed goatee with this Medieval and esoteric regalia is somewhat incongruous (and may well have been intended to be tongue-in-cheek), it does demonstrate the spiritual aspirations of the group.

Spiritual visions

Theosophists often claimed that the “initiated” had an ability to directly perceive spiritual manifestations in the world around us. The Besant and Klint works with which we began were the result of such visions. Besant was a medium who was able to perceive color auras or “thought-forms” emanating from individuals that revealed their emotional and spiritual state. The upper pink cloud of “vague pure affection” was seen issuing from someone who was “happy and at peace with the world, thinking dreamily of some friend,” while the one below shows affection intermixed with “the dull hard brown-gray of selfishness,” and thus indicates affection based upon the pleasure of favors received or anticipated [1].

Klint was a member of a group of five women in Sweden who used séances to communicate with the spirits of deceased Mahatmas in order to recover lost wisdom. She claimed that her series of *Paintings for the Temple* were

...painted directly through me [by these spirits], without any preliminary drawings, and with great force. I had no idea what the paintings were supposed to depict; nevertheless I worked swiftly and surely, without changing a single brush stroke.[as quoted by Moderna Museet](#)

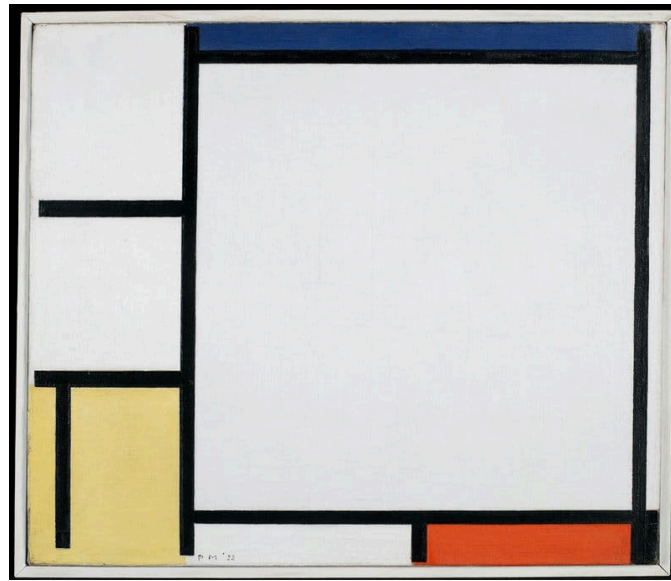


Figure 8.2.5: Piet Mondrian, *Composition with Blue, Red, Yellow, and Black*, 1922, oil on canvas, 41.9 x 48.9 cm (Minneapolis Institute of Art)

Theosophy and Modernism

Theosophy aligned so well with modern art because it validated the idea that European art's traditional naturalistic style, which (they believed) merely imitates the surface appearances of nature, is inadequate to explain the deep underlying mysteries of the universe. For the theosophists and the artists who were influenced by them, there are truths inaccessible to the scientific method, and a meta-reality beyond the reach of human perception. Theosophy was a source for many artists who sought higher spiritual truths and a non-perceptual basis for their art, and it validated the idea that a fully spiritual art would leave behind all basis in natural objects and would be fully abstract.



Figure 8.2.6: Vassily Kandinsky, *Study for Painting with White Form*, 1913, watercolor, opaque watercolor and ink on paper, 27.6 x 37.8 cm (MoMA)

It is important to recognize, however, that the styles inspired by Theosophy were remarkably diverse, ranging from Mondrian's rigidly rectilinear geometry to Kandinsky's improvisational painterly exuberance. The spiritual meta-reality appeared to different artists in remarkably diverse guises.

Theosophy was also undoubtedly compelling to some artists because of its suggestion that the artists themselves could be counted among the initiates, and that they had a mission to enlighten humankind. In his treatise *Concerning the Spiritual in Art*

(1909), Kandinsky imagines the spiritual evolution of humankind as an upward-moving triangle articulated with different levels of enlightenment, from the ignorant masses at the base to the few initiates at the apex. Those toward the top of the triangle cannot be understood by those below them – thus helping to explain the poor critical reception of innovative modernist art such as Kandinsky's – but nonetheless are leading humanity upward in their spiritual evolution.

Notes:

1. Annie Besant and C. W. Leadbetter, *Thought Forms*, New York: John Lane, 1905, pp. 40–42.

Additional resources:

Sixten Ringbom. "Art in 'The Epoch of the Great Spiritual': Occult Elements in the Early Theory of Abstract Painting." *Journal of the Warburg and Courtauld Institutes*. vol. 29 (1966), pp. 386–418.

Maurice Tuchman, et al. *The Spiritual in Art: Abstract Painting 1890-1985* (New York, London, and Paris: Abbeville Press, 1986).

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8.3: Australia

by DR. ALLISON YOUNG



Figure 8.3.1: Emily Kame Kngwarreye, *Earth's Creation*, 1994, synthetic polymer paint on linen mounted on canvas, four panels (private collection)

At nearly twenty feet wide and nine feet high, Emily Kame Kngwarreye's painting *Earth's Creation* is monumental in its scale and impact, rivaling Abstract Expressionist masterpieces by Willem de Kooning and Jackson Pollock not only in size but also in its painterly virtuosity (see a photo of it [in a gallery here](#), to get a sense of its scale). Patches of bold yellows, greens, reds and blues seem to bloom like lush vegetation over the large canvas. Comprised of gestural, viscous marks, each swath of color traces the movement of the artist's hands and body over the canvas, which would have been laid horizontally as she painted, seated on (or beside) and intimately connected to her art.



Figure 8.3.2: Still from a short video produced by The National Museum of Australia [source](#)

The work made records at auction when it was sold in 2007 for over \$ 1,000,000 — the highest price ever fetched for a work by a female artist in Australia. Yet, just decades earlier, Kngwarreye was virtually unknown to the world outside her small desert community in the Australian country of Alhakere. A self-taught artist who was trained in ceremonial painting, she rose to international prominence only in her eighties, and enjoyed a flourishing career at the end of her life.

Rooted in tradition

Kngwarreye was born around 1910, and spent most of her life in an isolated Anmatyerr community in Central Australia. The area, however, was forcibly occupied by European pastoralist settlers in the 1920s, and the artist, alongside other members of her community, worked on the pastoral property (pastoral refers to the tending of cattle and sheep). In 1976, Aboriginal land rights were legally granted, and she was able, finally, to live independently.

Aboriginal culture has long been intimately connected to the landscape of Australia; inhabited by humans for over 40,000

years, the region is characterized by deserts, grasslands and dramatic arched rock formations. Kngwarreye was an established elder of her community and was trained to create ceremonial sand paintings inspired by her ritual “dreamings,” as well as to paint decorative motifs on women’s bodies as part of a ceremony called *Awelye*. These visual forms were connected to cultural expressions in song, storytelling and dance. While her paintings have never been figural, they remain influenced by the culture in which she grew up as well as the natural environment.

Artistic intervention

In the late 1970s, Kngwarreye began to work in the medium of batiks, making works that were purely artistic endeavors for the first time. In 1977, she was a founding participant of the Utopia Women’s Batik Group. Her compositions were abstract and featured the motif of repeated dots, acting sometimes as a linear stroke, or elsewhere used to fill large patches of space. A decade later, in 1988, the S.H. Ervin Gallery in Sydney initiated a “Summer Project” that sought to facilitate the creation of Aboriginal art, as well as to establish a market for the genre. Sponsored by the collector Robert Holmes à Court, curators traveled to the Aboriginal homeland of Utopia and delivered acrylic paints and materials. After two weeks they returned to find “abstract and richly expressive” compositions created by many of the artists, and held a group exhibition in Sydney.



Figure 8.3.3: Emily Kame Kngwarreye, *Emu Woman*, 1988–89, synthetic polymer paint on canvas, 92.0 x 61.0 cm (The Holmes à Court Collection, Heytesbury)

Kngwarreye’s painting *Emu Woman* (above) was selected for the cover of the exhibition catalogue as a gesture of respect for her seniority, as she was the oldest artist from the community. Dominated by rich, earthy tones, the painting—her first ever on canvas—contained references to plants and seeds that featured in her “dreaming” ritual. Against a dark field of charcoal, violet and black, the piece is punctuated with bright marks in tangerine and white hues, which lend the work an electric sense of energy and rhythm. Her decades-long experience in painting directly on the human body informs the curving swells of dotted marks that comprise the composition.

Critics lauded the piece, and virtually overnight, the artist received international exposure and unprecedented acclaim. The following year, Kngwarreye held her first solo exhibition at Utopia Art Sydney, after which she would be invited to participate in several renowned international exhibitions and biennales.

The “global” turn

The arc of Kngwarreye’s career runs alongside a period of tremendous change in Australia, moving from the end of a phase of colonial settlement through to a more ethical embrace of Aboriginal culture by the nation’s Western population. Yet the period in which she came to prominence also reflects changes taking place in the contemporary art world internationally, as the 1980s and 1990s saw a notable expansion within the mainstream to include non-Western or minority artists.

“Green time”

Earth's Creation belongs to the “high colorist” phase in Kngwarreye's work, which is characterized by a loosening of her compositions—which were no longer reliant on pseudo-geometric patterns—and the expansion of her color palette to include a range of tones beyond the familiar clay and ochre hues that dominated her prior works. Still connected to the natural environment, however, these works reference the changing atmospheric character of seasonal cycles. *Earth's Creation* documents the lushness of the “green time” that follows periods of heavy rain, and makes use of tropical blues, yellows and greens. The piece has often been likened to Claude Monet's studies of seasonal and temporal change, and given its formidable, room-filling scale, a comparison to the artist's *Water Lilies* of 1914-26 (MoMA) might be remarkably apt.

Earth's Creation was created as part of the larger Alhalkere Suite which contains twenty-two panels, and is still considered one of the most virtuosic of Kngwarreye's immense and prolific artistic output. In the last two weeks of her life, Kngwarreye completed a suite of twenty-four small paintings. These were characterized by extremely broad, milky strokes of jewel-toned hues of blue and rose, and communicate the artist's long-standing fascination with color and her sophisticated grasp of abstract composition.

Additional resources:

[“Utopia: The Genius of Emily Kame Kngwarreye” at the National Museum Australia](#)

[Earth's Creation at the Venice Biennale, Universes-in-Universe](#)

[The artist at the National Gallery of Australia](#)

[Emily Kame Kngwarreye, The Alhalkere suite from the National Gallery of Australia](#)

[Utopia: The Genius of Emily Kame Kngwarreye, review by Chrischona Schmidt](#)

[Teacher notes for Emily Kame Kngwarreye: Alhalkere – Paintings from Utopia](#)

[Australia 1900-present on the Metropolitan Museum of Art's Heilbrunn Timeline of Art History](#)

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9: EXTENSION AND COMPOSITION

9.1: Understanding Extension

9.2: Hannah Höch, Cut with the Kitchen Knife Dada Through the Last Weimar Beer Belly Cultural Epoch of Germany (essay)

Learning Objectives

- **Identify** and **describe** the three primary dimensions of extension: quantity, recurrence, and brilliance.
- **Analyze** how the relative amount of a color influences visual emphasis, balance, and meaning in an artwork.
- **Explain** how recurring colors, shapes, or motifs create unity, rhythm, and organizational structure within a composition.
- **Evaluate** the role of brilliance, including saturation and value contrast, in shaping mood, intensity, and visual impact.
- **Compare** how artists use extension differently to communicate ideas and emotional experiences.

9.1: Understanding Extension

Definition: Extension

The relationship between two or more areas of color in regards to the amount, degree, or range of each.

Extension is always at play in a composition and can help guide many compositional concerns. It relates not only to individual strokes and patches of color, but also to each of the contrasts studied so far. We can talk about the degree that value, saturation, or temperature are emphasized or suppressed in a work of art. Extension can be thought of in terms of three questions: Quantity, Amount, and Recurrence

The Three Main Questions of Extension 9.1.1

The Three Main Properties of Extension

Property	Question to ask	Design Element
Quantity	How much?	Amount, Area, Shape, Scale, Proportion
Recurrence	How often? Where?	Singular/Multiple, Sparsity/density
Brilliance	How strong?	Saturation, Light/Dark Contrast, and Intensity

Three Examples

In order to better understand, let's take three examples of artworks where the meaning is tied very closely to one of these questions of extension: Barnett Newman's Red, Yayoi Kusama's dots, and Giorgio Morandi's neutrals.

Who's Afraid of Red, Yellow and Blue?

Quantity



Figure 9.1.1: Digital Recreation of Newman's painting "Who's Afraid of Red, Yellow, and Blue III". ("Who's Afraid of Red, Yellow, and Blue III" by Barnett Newman, Public domain, via Wikimedia Commons)

Barnett Newman's painting measures 88in x 214in. Red takes up the majority of the canvas. Along the left edge he has painted a narrow strip of blue and on the right an even narrower strip of yellow. This painting is provocatively titled, *Who's Afraid*

of Red, Yellow, and Blue? A high modernist color field painter, Newman was famous for stripe paintings, large canvases with a single hue meant to provoke experiences with color. This title can be read as a challenge to those skeptics of this new turn art was taking. This 1966 painting was part of a series in which the artist used only the three primary colors in extreme proportion to achieve maximum visual impact. It was successful in challenging dissenters and provoking strong reactions, it was vandalized—twice! In part because of its bold defiance of figurative concerns in painting, but also due to the amount of space given to red, a color known for its ability to stimulate the heart rate in viewers.

Love Forever

Recurrence

YouTube Video

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[View this YouTube Video online](#)



In contrast to Newman, let's take a look at Japanese artist Yayoi Kusama. Kusama is known for her polka dots. The motif is present in a large body of painting, sculpture, and installation work. Her use of a single recurring shape creates visual unity and acts as a symbol of infinity and love. Some paintings feature limited palettes of red and white, achromatic neutrals and white, and others are fully polychrome. Throughout her work we are exposed to a range of mood and expression through changing colors, yet they are all held together through as a cosmic multiplicity of dots.

Everyday Beauty

Brilliance (or lack thereof)

YouTube Video

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Dr. Beth Harris and Dr. Steven Zucker, "On looking closely: Giorgio Morandi, *Still Life*," in *Smarthistory*, December 13, 2024, accessed January 20, 2026.

Giorgio Morandi was known for his delicate and sensitive still lifes of vases. He used muted palettes and explored subtle shifts in value to great effect. Restraint in chromatic intensity allowed him to create a feeling of calm and enduring beauty, the kind that is consistent and reliable as the morning light on a set of vases in the kitchen. Here the lack of intensity gives us the strongest cues to the meaning of the work.

9.2: Hannah Höch, Cut with the Kitchen Knife Dada Through the Last Weimar Beer Belly Cultural Epoch of Germany (essay)

by [DR. JULIANA KREINIK](#), [DR. BETH HARRIS](#) and [DR. STEVEN ZUCKER](#)

YouTube Video

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Video 9.2.1: Hannah Höch, *Cut with the Kitchen Knife Dada Through the Last Weimar Beer-Belly Cultural Epoch of Germany*, 1919-1920, collage, mixed media

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GLOSSARY

A

After Image | The image that appears after the viewer has looked intently for a period and shifts their gaze to another surface. The apparent image seen is the complement or near complement of the original image.

Analagous | Color appearing in a row on the color wheel.

C

Chroma | Degree of intensity, saturation, or purity of color.

Chromatic | Relating to or produced by color.

Color Solid | A three-dimensional structure that shows all the colors in a consecutive and interrelated relationship in space.

Color Symbolism | The use of color in culture, art, spiritual traditions to signify meaning. May be universal or subjective and shifts with time and context.

Color Wheel | The band of individual colors that shows the spectrum bent into a circle. Used for painting.

Complement | Complements are naturally harmonious pairs of colors. They are found opposite each other on the color wheel.

Complementary | Opposite colors on the color wheel. When mixed, complementary colors yield balanced, chromatic neutrals. Complementary polarities: Y/V, light dark; O/B, warm cool; R/G equal weight, equal value.

E

Extension | One of Johannes Itten's seven contrasts of color. Applies to the relationship between two or more color areas considering elements of quantity, recurrence, and brilliance.

F

False Pairs | Sets of two secondary colors: O&G, G&V, V&O.

False Pairs

| Sets of two secondary colors: O&G, G&V, V&O.

G

Gradation | A scale or a series of [successive](#) changes, stages, or degrees between colors

H

Hue |

The name of the pure state of a color or chromatic group, determined by the wavelengths, which distinguish one color from another

I

Intervals | A compositional tool for creating rhythm and movement by using alternating steps in colors along a single gradation.

M

Modulation | Smooth transitions on a value continuum

Modulation | Smooth transitions from one color to another.

Monochromatic

| A color scheme that contains only one hue, but with value and intensity changes

N

Neutral

| Dull hues, hues with little intensity, low-chroma.

P

Primary | Primary colors are any group of colors from which all other colors can be obtained by mixing. In pigment: red, yellow, blue; printing: magenta, yellow, cyan; light: red, blue-violet, green; and psychology: yellow, red, blue, green.

S

Saturation | Chromatic intensity; the degree of concentration or suffusion of a hue from vivid to dull.

Secondary | Colors mixed from two primaries: orange, green, violet.

Shade

| Hue mixed with black

Simultaneous Contrast | This occurs when two or more hues are seen next to each other or in succession. The after image of the dominant hue in the large area washes over onto the smaller area as the hues are seen simultaneously. Also known as successive contrast. One of Itten's 7 contrasts.

Spectrum | A band of colors, as seen in a rainbow, produced by separation of the components of light by their different degrees of refraction according to wavelength.

Split Complement

| The use of one hue in a complementary pair with one or two hues on either side of that pair.

Synesthesia | The fusion of the senses. Cross sensory associations. Color to sound etc. See Kandinsky.

T

Temperature |

The association of colors or groups of color as relatively warm or cool compared to others. Typically warm colors range from red-violet to yellow while cool colors range from yellow green to blue-violet. The strongest polarity in temperature is present between red orange and blue green.

- **Warm colors:** Red-violet, red, orange, yellow, yellow-green.
- **Cool colors:** Violet, blue-violet, blue, blue-green, green.

Tertiary

| Color step which appears between each primary and secondary; intermediate: YG, YO, RO, RV, BV, BG

Tint

| Hue mixed with white

Tone

| Hue mixed with gray

Triad | Any three colors that are equally spaced or equidistant on the color circle. Triadic harmonies

V

Value |

Lightness or darkness of hue.

