All the things you see around you are illuminated, or lit, by some light source. Without light, you would see nothing. No matter how bright your whitest clothes are, you cannot see them in absolute darkness. With a little light, the clothes begin to look gray. As the light increases, the white clothes look brighter.

This range of light and dark is called value; **value is the lightness or darkness of grays and colors.** In a black-and-white photograph, you can easily see the difference between the areas of light gray and white ad the areas of medium gray and black. White is the lightest value, and black is the darkest – and there are an unlimited number of values between them. In this chapter, you will explore the use of value in a design, the differences between light and dark values, and value contrast.


This value chart shows a range of ten steps from white to black. Most people can distinguish about thirty to forty steps, or value gradations, between black and white.
Where is your attention drawn in this image? How does the artist use value to create the center of interest?

Jean-Siméon Chardin (French, 1699–1779), Carafe of Wine, Silver Goblet, Five Cherries, Two Peaches, an Apricot, and a Green Apple, ca. 1728, Oil on canvas; 16 7/8 x 19 1/2 in.

Using Value in a Design
The light in a painting or drawing may come from any single direction or from more than one direction. Areas facing a light source are lightest in value. Areas facing away from a light source are darker. Light also creates shadows. A single bright light creates shadows that are sharp and dark-valued. Multiple light sources or indirect lighting produces lighter shadows with softer edges. Shadows and varying shades of gray can create the illusion of three-dimensional space or volume. Value may also be used to show depth. The farther away that objects are from the foreground in a landscape or cityscape, usually the lighter they are in value. Look at the image of the Grand Canyon. In this photograph, the darkest areas are the canyon walls closest to the viewer. In the distance, the canyon becomes noticeably lighter. In an artist used all light or all dark values, the space within his or her design may seem shallow, with little or no depth.

Artists often depict the actual effects of light, but sometimes they choose to alter or invent them. They may wish to emphasize darkness to convey a sense of mystery, or they might increase the brightness to suggest happiness or excitement. The values may not be realistic, but they can strengthen the mood to better suit the artist’s intended effect.

Vocabulary
- Value
- High-keyed
- Low-keyed
- Value contrast
- Center of Interest

Light Values
To depict happiness, warmth, or sunshine, an artist emphasizes lighter values. Think of the sun’s glare at the beach or on newly fallen snow. The light is so bright that we often put on sunglasses, which darken the intensity of the light so that we can see more easily and clearly. In a work that captures the effects of such bright lighting, the shadows are often dark and clearly defined.

An artwork with many light-valued colors is bright-keyed. High-keyed colors have been mixed with white and are called pastel colors. Notice how Sargent uses light values in the watercolor of alligators. The whiteness of the colors recreates the glare and heat of strong tropical sunlight.

Describe the kind of day depicted in this watercolor.

Look at the still-life painting by Giorgio Morandi, in which the artist worked with values that are close to one another. There are neither bright highlights nor dark shadows. The soft colors and subtle changes in value help emphasize a feeling of quiet and peacefulness.

Berthe Morisot was an Impressionist. Impressionists were fascinated with the effect of light on color.
Berthe Morisot (1841-1895). Lady at Her Toilet, c. 1875, Oil on canvas, 23 3/4 x 31 5/8 in.

Some artists choose to use only a few value changes in their work.
Dark Values
To suggest dark and gloomy days, nighttime, or dim lighting, an artist uses darker values. The lack of brightness tells the viewer that the source of light—whether it is the sun or artificial lighting—is weak or far away. A painting or drawing that emphasizes dark values can convey feelings of cold or sadness.

A work that uses mainly dark-valued colors is low-keyed. Low-keyed colors have been mixed with black or gray. The use of charcoal to draw and shade an object on light-gray paper produces a low-keyed result. All the values will be dark; the lightest value will be the gray of the paper itself.

Look at the painting Aurora Borealis, in which the artist chose to use little value contrast. The only brightness comes from the green and red light in the sky, known as the northern lights. These multicolored flashings are visible near the earth’s poles. The low-keyed colors perfectly capture the atmosphere of a mysterious nighttime scene.

Value Contrast
Artists emphasize not only dark values or light values in their work, but also include values form all parts of the scale. Light values placed next to medium or dark values create value contrast. This contrast may help viewers distinguish between different parts of a design. It may also make one area of a design stand out.

The greatest possible value contrast is between black and white. A woodcut or a linoleum-block print made with black ink on white paper uses such contrast.

In Salome, the artist’s use of black helps to direct your eyes to the figure holding the head.

Some artists prefer to use strong value contrast only a little, perhaps saving it for a design’s center of interest, a special area to which the artist wishes to draw the viewer’s attention. Notice how you are drawn to the eyes in the top right Holbein portrait; they are far darker in value than most of the rest of the drawing. In the other Holbein, the eyes also stand out by being darker but are also ‘framed’ by the hat. The center of interest, usually where the artist wishes the viewer to look first, may also contain a design’s most important object or figure, or other important information.
In a generally light-valued design, a dark shape of line will stand out. Look at the White Girl. Notice how your eyes are quickly drawn to the top of the work, where the subject’s face is composed of dark features and framed by dark hair. This is the painting’s center of interest.

In a generally dark-valued design, a light shape or area will become the focus. Look at the seventeenth-century painting Newborn Child. The entire scene is dark, with a burning candle as the only source of light. The candle itself is hidden, but it beautifully highlights the face and right arm of the young woman. The artist, Georges de La Tour, is famous for such bold, candle-lit scenes.

Finding the contrasting values in a design is sometimes difficult. First, shut out tiny details by squinting your eyes. Then look only at the larger shapes of similar value. When you do this, the elements of dark and light will become more noticeable. You can also use this technique to balance the value contrasts in your own work more effectively.

Though most know Whistler’s painting of his mother best, the White Girl is what caused Whistler to become the first American painter after the eighteenth century to gain fame in Europe. Why do you think the artist called this painting Symphony in White?

James Abott McNeill Whistler (1834-1903). Symphony in White, No. 1: The White Girl, 1862. Oil on canvas, 83 7/8 x 42 1/2".

The eye of the photographer captured the figures of the women crossing a Parisian street on a foggy day. How do the light values of the fog help the figures to stand out and to give the photograph a sense of depth?

Yale Joel (b.1919). Silver gelatin print

One of the most exciting and powerful aspects of our environment is color. Color appeals directly to our senses and emotions. We walk along streets and shop in stores filled with color – and we often make purchases because of it. Perhaps some colors, such as school colors, cause you to cheer and feel pride. Other colors might affect your mood, making you feel happy or sad. Look around you – rusted signs, neon lights, patterned clothing, flowering plants, and other everyday objects. Color is a necessary part of our lives. Knowing where color comes from and its properties will help you learn how to use it in your artwork.

**The Source of Color**

When studying color, it is helpful to understand some of the scientific facts and principles involved. Color comes from light, either natural or artificial. Have you ever been outside at sunrise? Or surprised by a sudden power failure at night? If so, you know that colors constantly change with the time of day and the amount of natural or artificial light. Where there is little or no light, there is little or no color. With bright light, colors are more intense.

Color is produced by the way our vision responds to different wavelengths of light. When a ray of white light (such as sunlight) passes through a glass prism, the ray is bent, or refracted. This ray of light then separates into individual bands of color, called the color spectrum. This spectrum includes red, orange, yellow, green, blue, and violet. You can see this same grouping of colors in a rainbow, in which raindrops act as the prisms.

The color spectrum represents the brightest colors possible. The coloring matter that you use in art class is neither as bright nor as pure as that in a ray of light. Artist’s colors come from powdered substances called **pigments**. These natural or chemical materials are combined with other substances to make the various paints, crayons, inks, and pencils commonly used by artists.
Neutrals
Not all objects have colors that are in the spectrum. Stars in the night sky appear white. Smoke may be gray. Ink is often black. Because we do not clearly see any one color in them, white, gray, and black are called neutrals. These three neutrals are created by different amounts of reflected light.

White is the sum of all colors. A white object reflects to our eyes all the wavelengths shining on it, absorbing none of them. What we see is the color of the original source of light.

Gray is created by a partial reflection. A gray object reflects part of all the wavelengths shining on it. It also absorbs part of all the wavelengths. The more light that is reflected, the lighter the gray; the more that is absorbed, the darker the gray.

Black is the total absence of reflected light. It results when an object absorbs all the wavelengths shining on it, reflecting none of them.

Black-and-white photography is made only of neutrals. Compare the different black-and-white prints on this page.
Above: Andy Ilinchansky, Entropicmystery, digital image.
Below: Joel Yale, Couple on a street called Schofelgasse. Silver Gelatin Print.

The Properties of Color
When artists discuss color, they talk about three properties that can be defined and measured: hue, value, and intensity. These properties are sometimes called qualities or characteristics of color.

Hue
Hue is the name of the color itself, such as “blue” or “red,” and it refers to the color’s position in the spectrum. The wavelength of blue, for example, is 19 millionths of an inch long. The wavelength of red is 30 millionths of an inch long. Each hue has a definite wavelength and position in the spectrum.

For easy study, the colors of the spectrum are usually arranged in a circle called a color wheel. Look at the color wheel. Red, yellow, and blue are the three primary colors or hues. All other pigment hues are made by mixing different amounts of these three colors.

If you mix the pigments of any two primary colors, you will produce on the three secondary colors or hues. From experience, you know that red and blue make violet, red and yellow make orange and blue and yellow make green. These are the three secondary colors. Notice their location on the color wheel.
The color wheel also shows six intermediate colors or hues. You can create these by mixing a primary color with a neighboring secondary color. For example, yellow (a primary color) mixed with orange (a secondary color) creates yellow-orange (an intermediate color). Mixing the primary and secondary colors creates the six intermediate colors shown. Mixing different amounts of these colors produces an unlimited number of hues.

A color wheel also illustrates other relationships among colors. One of the most important is the pairing of complementary colors. Complementary colors – such as blue and orange or yellow-green and red-violet – appear opposite each other on a color wheel. These pairings show the maximum visual contrast between colors. The line where two complementary colors meet seems to vibrate. Artists sometimes place complementary colors side by side to produce just such an effect.

Grant Wood, who was strongly influenced by early Flemish painting, discovered the Flemish masters of the northern Renaissance during several trips he made to Europe in the 1920s. The realism, painstaking detail, and high color of Flemish art all appear in his paintings. The shades of red and green that Wood used in Death on the Ridge Road are often found together in the works of the Flemish painters Rogier van der Weyden and Jan van Eyck.

How has Grant Wood used complementary colors to heighten the drama of this scene?

Grant Wood (1892-1942). Death on the Ridge Road, 1935. Oil on masonite panel, 39 x 46 1/16".

Notice how the black-and-white reproduction allows you immediately to see the range of values used by the artist. The contrast between sunlit and shadowed areas is obvious. How does the black-and-white image help you better understand and appreciate the range of values?

Thomas Eakins (1844-1916). Miss Amelia Van Buren, c. 1891. Oil on canvas, 45 x 32".
Intensity

The third property of color is intensity. Intensity refers to the quality of light in a color. Intensity is different from value, which refers to the quantity of light that a color reflects. Intensity refers to the brighter and duller colors of the same hue. For an example, look at the two squares. The top one has a higher degree of saturation, or strength. It is more intense than the one below it. Your investigations with color will show you that you cannot change value without changing intensity, even though these two properties of color are not the same.

You already know two ways to change the intensity of a color when mixing pigments: adding black to produce shades, or adding white to produce tints. After adding either of these neutrals, the resulting hue loses its intensity. The color becomes less and less intense as more black or white is added. A third way to change intensity is to mix any shade of gray with the hue. This is called a tone.

Mixing a color with its complementary color will also change intensity. As you mix complementary colors, bit by bit, an neutral gray is formed. This is because the complementary colors represent an equal balance of the three primary hues. In theory, the mixture should produce white, but the pigments in artist’s materials are not as pure as the colors in a ray of light.

Georges Seurat
Le Point de Courbevoie

How is it that we can know a great deal about how artist from previous centuries worked? One way is to analyze clues they might have left behind. In the case of Le Point de Courbevoie, Seurat made a careful sketch of the water scene he planned to paint.

The conte crayon study for the work shows that Seurat planned the composition of Le Point de Courbevoie thoughtfully. The slight tilt of the sailboat masts, the position of the bridge and shoreline, and the curved tree on the right are found in the study and the painting. Seurat added items to the composition as he painted the canvas. These include the foreground sail, the two fishermen in the distant boat, and the two isolated figures in silhouette. The angled figure on the dock adds a sense of movement to the otherwise quiet composition. Seurat probably worked on the painting both in his studio and at Courbevoie, perhaps during several visits to the riverside.

Through extensive research, scholars have also learned about Seurat’s use of color. Scholars disagree about how he worked. Some say that Seurat based his decisions on a scientific color theory. Others believe that he worked instinctively, his brush creatively flowing with colors that interlock with those underneath.

Most scholars believe, however, that Seurat’s palette contained an assortment of pure colors (hues), an assortment of colors mixed with white (tints), and various whites. Because Seurat could not always obtain pure pigments, he was forced to use some colors that were only close to what he wanted. Today, we do not see the painting as Seurat planned or painted it: within a few months of its completion, some of the pigments faded. We can only imagine the original effect.

Georges Seurat used a painting technique called pointillism, in which paint is applied to the canvas in small dots or dabs. From a distance, the eye blends these dots to make an array of colors and values. The stillness throughout this work is a result of both the painting technique and the low intensity of the colors.

Georges Seurat (1859-1891). La Parade, 1889. Oil on Canvas
Color harmonies
Have you ever thought that certain colors “go well together”? Or that other colors “clash” when placed side by side? When designers and artists use combinations of colors to get certain results, they are using color harmonies. You have already read about one example of color harmony: complementary colors. Following are descriptions of other color harmonies that you might see in a design or wish to use in one of your own.

Analogous colors are next to each other on the color wheel. They have a single color in common. Because of this common color, they naturally relate well to each other. Fragonard used analogous colors in A Young Girl Reading. The color group is yellow, yellow-orange, and orange. These analogous colors give a warm and soothing quality to the work.

Another color harmony is split complementary. This is made up of a color plus the two hues on either side of that color’s complement. For example, blue with yellow-orange and re-orange forms a split complementary. Such a combination forms a sharp contrast within a design. In Down the Hall, the blue urn creates a startling contrast to the yellow-orange of the ceiling and red-orange of the floor.

Color studies such as this student work heighten our awareness of how color can help create a dynamic environment. Iza Wojcik (age 17). Down the Hall, 1996. Oil on matte board, 18 x 24".

What are the analogous colors in this painting?
Honore Fragonard (1732-1806). A Young Girl Reading, c. 1776. Oil on canvas, 32 x 25 ½”.

Triadic harmony involves three equally spaced hues on the color wheel. The group of blue-green, red-violet, and yellow-orange is one example of a triadic harmony. Red, yellow, and blue is another. Notice that Willem de Kooning used this combination in the painting Untitled V. Look at the color wheel. Which other triadic harmonies can you find?

This headdress is worn by men during various rituals. The breast feathers are arranged in the shape of rosettes around a bamboo center. With the help of a color wheel, name the triadic color harmony used in this work.
Amazon. Karajá tribe (Araguaia river, mato Grosso, Brazil). Lori-lori, c. 1920. Tail and breast feathers of the blue and gold macaw, bamboo and various plant fibers.

An example of analogous colors.
An example of split complementary colors.

The Interaction of Color
Artist Josef Albers began a study of color in the 1950’s called Homage to the Square, which he continued to develop until his death in 1976. His series showed that a color can produce unpredictable effects upon the colors in close proximity to it. For example, in this painting, Albers caused three colors to appear as two. The vertical ochre stripe, interrupted by yellow and dark blue stripes, appears to be two squares of different brown hues.

Describe the colors used in this work.
Aaron Douglas (1899-1979). The Creation, 1935. Oil on masonite, 48 x 36".

An example of Triadic color harmony.
Right: Why might the artist have chosen blue as the principle color in this work? Lyonel Feininger (1871-1956). *Blue Coast*, 1944. Oil on canvas, 18 x 34”.

Below: Compare this painting to the feather cap. Consider the decisions about color that each artist must have made when selecting feathers and paint. Willem de Kooning (1904-97). *Untitled V*, 1983. Oil on canvas, 88 x 77”.

An artist may sometimes use only one color or hue within a design. If a painting is made using only one hue, plus black and white, it is called monochromatic. In a monochromatic work, contrast is created by the use of lights and darks. Because only one hue is used, all the parts of a monochromatic design work well together.

---

**Warm and Cool Colors**

Warm colors are the hues that range from yellow to red-violet. These colors are associated with warm objects or circumstances. The colors of fire, the sun, and desert sand, for example, are in the warm-color range. Look at the color wheel and the line that divides it in half. This line separates the warm colors from the cool colors. The cool colors are the hues that range from yellow-green to violet. What are some examples of things that have these colors?

We react in certain ways to these colors. We sense that warm colors, especially reds and oranges, seem to come forward in a painting or photograph. These colors also make shapes and forms appear larger. We sense that cool colors, especially greens and blues, seem to recede, or move backward, in a design. These colors make shapes and forms appear smaller. Notice how Chagall contrasts warm and cool colors in *The Farm, The Village.*

**Raffia** is a fiber product of the raffia palm of Madagascar, and is used as a textile. Baule (Avikam or Dida), Ivory Coast. *Raffia work with plangi and titik decorative technique, pigment, 68 ¼ x 70 ½”.*

---

Left: Compare and contrast this work with the portrait of Soldado Senegales. How would you describe the individual and setting depicted in each? Wassily Kandinsky *1866-1944). *Russian Beauty in a Landscape* (Russische Schönheit), 1904. Gouache, 16 ¾ x 10 5/8”.


---

Above: Notice how the artist picked up the warm reds, yellows, and oranges of the background and clothing, and used them to create accents on the brown skin of the figure. James A. Porter (1905-1971). *Soldado Senegales*, 1935. Oil on canvas, 38 ¾ x 80.”
Another Look at Color

Which portion of this painting shows analogous colors?
James Rosenquist (b. 1933). House of Fire, 1981. Oil on canvas, 78 x 198".

Use terms from this chapter to describe the different ways color was used in this window.
Chartres, Zodiac stained glass window from the south ambulatory: Labors of the months, detail of February, Pisces. 13th century. Cathedral, Chartres, France.

Edgar Degas was a master of color. Consider how he used color to lead the eye through this scene. What kinds of colors did he use, and how did he arrange them in the composition?
Edgar Degas (1834-1917). The Millinery Shop, 1884/90. Oil on canvas, 39 3/8 x 43 3/8".

The Visual Journal
Complete your visual journal as usual. Use the homework (list below) for the hand drawn aspect of the journal. You may always improve on what you did for homework for the journal, or add missing pieces.

The range of dark and light is called value; the lightness or darkness of a color.
1. Create a 10 value scale from white to black. Each block of your scale should be slightly darker (or lighter, depending on direction) than the next.

A Color wheel illustrates the relationships among colors.
Hue is the color itself, such as “blue” or “red”, and it refers to the color’s position in the spectrum.
2. Create a 12-Hue color wheel. Make it interesting. It does not have to be in a circle.

Complimentary colors appear opposite each other on a color wheel.
These pairings show the maximum visual contrast between colors.
3. Use three pairs of complimentary colors beside, within, around or in some other interesting way to demonstrate how they react when placed close together.

A tint is made by adding white to a hue. A shade is produced by adding black. The more white or black that you add, the lighter or darker the hue will become.
4. Choose any one of the twelve hues of the color wheel and make a 3-step example.

Materials and Techniques
The design and creation of a medieval stained-glass window most likely began with a full-size cartoon drawing on parchment. The glass was then cut and trimmed to fit the section the composition for which it was intended. Details of the figures and other ornaments were added with paint. The glass was then re-fired to fuse the painted detail to the glass. Lead molds were made to hold the individual glass pieces. As a final step, the glass and lead were soldered together, and the over-all scene or figure was framed in iron.

The stained glass at the cathedral at Chartres covers an area equal to 21,520 square feet (2,000 square meters). The structure has the most complete set of stained glass windows dating from the mid-twelfth to the first part of the thirteenth century, the great age of stained glass. Stained glass at this time was composed primarily of blue and red hues. Blue allows the greatest penetration of light; red, the least. The color, design, and size of each window was planned according to its location in the church. For example, on the north side, the windows tend to have more blue glass, thus allowing in more light. The orientation of the sun and exterior structural elements such as towers and buttresses were carefully considered during the design process.