

# Launching the Imagination

A Comprehensive Guide to Basic Design

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third edition

Mary Stewart



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# The Element of Color

Color immediately attracts attention. When presented with a collection of bottles filled with liquid in various colors, very young children will group the objects by color rather than by size or shape. An interior designer may use rose-red walls in a restaurant to increase emotional warmth, while using light blue walls in a day-care center to encourage calm. Bright yellow and magenta red add pizzazz to an eye-catching poster in figure 2.1. Designed to call attention to the disparity in the number of exhibitions granted to male and female artists, this poster had to compete with other posters displayed on walls throughout New York City. Color is both the most elusive and most emotionally complex design element. By harnessing its power, we can substantially expand our compositional capabilities.



2.1 Guerrilla Girls, "Do women have to be naked to get into the Met. Museum? Less than 5% of the artists in the Modern Art sections are women, but 85% of the nudes are female," 1989. Poster, 11 × 28 in. (27.9 × 71.1 cm).

## COLOR THEORY

**Color theory** is the art and science of color interaction and effects. In *The Art of Color*,<sup>1</sup> Johannes Itten lists the following approaches to color theory:

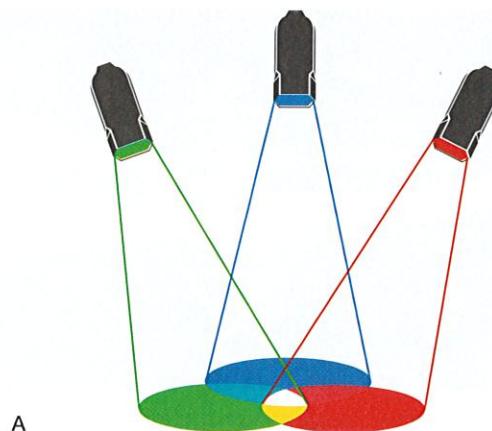
- The physicist studies electromagnetic wavelengths in order to measure and classify color.
- The chemist, working with the molecular structure of dyes and pigments, seeks to produce highly permanent colors and excellent paint consistency.
- The physiologist investigates the effects of color and light on our eyes and brain.
- The psychologist studies the expressive effects of color on our mind and spirit.

An artist combines all these areas of knowledge. Like the physicist, the artist uses color wavelengths to create various effects. Like the chemist, the artist must be aware of the safety and permanence of dyes and pigments. When using color to create the illusion of space, the artist puts into practice theories developed by the physiologist. And both communication and expression are strongly affected by the psychological effects of color.

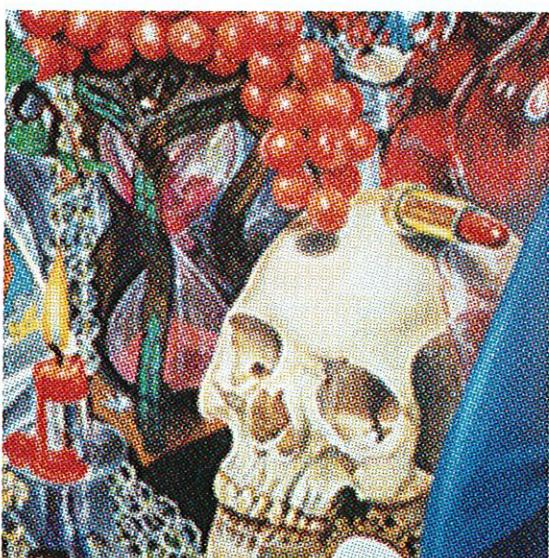
## COLOR PHYSICS

Two major color systems are used in art and design. **Additive color** is created using beams of light (2.2A). Red, green, and blue, the familiar RGB on a computer screen, are the primary colors in this system. Many additional colors can be mixed from these primaries. **Subtractive color** is created when white light is reflected off a pigmented or dyed surface (2.2B). The subtractive primaries are blue, red, and yellow.

This book was printed using cyan blue, magenta red, and yellow, the transparent primaries (or **process colors**) commonly used in mass production. Figure 2.3 provides an example of process printing. As viewers, we optically combine thousands of cyan, magenta, and yellow dots to create a coherent image. Black (abbreviated as *K* in the CMYK printing system) was then added to enhance detail and increase contrast (2.4A–G).



2.2 A. Light primaries and their additive mixtures.  
B. Pigment primaries and their subtractive mixtures.



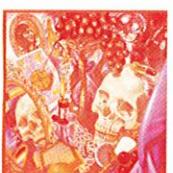
2.3 Color printing detail of *Wheel of Fortune*, showing dot pattern used in CMYK printing.



A Yellow



B Magenta



C Yellow and magenta



D Cyan



E Yellow, magenta, cyan

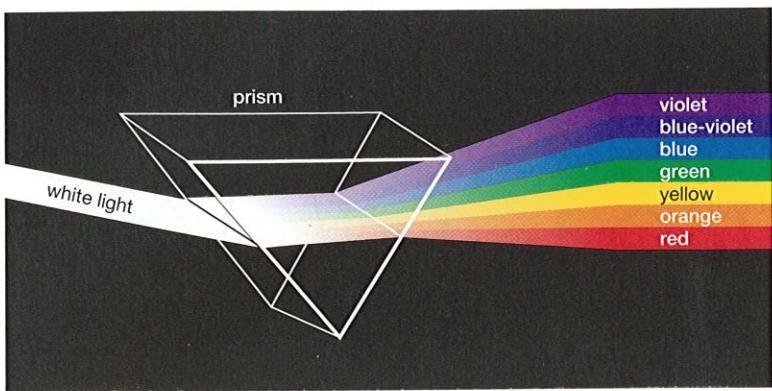


F Black and cyan

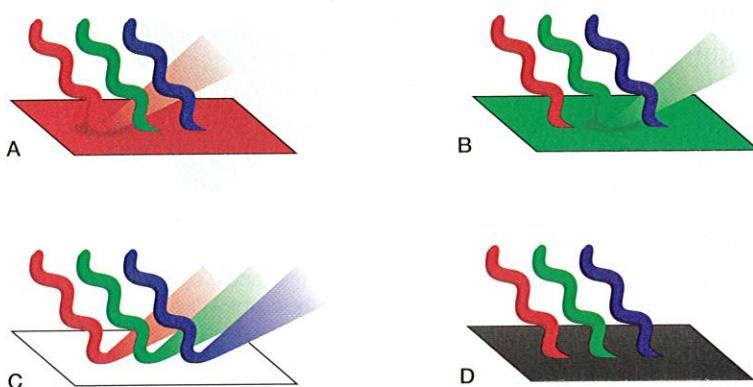


G Full color printing

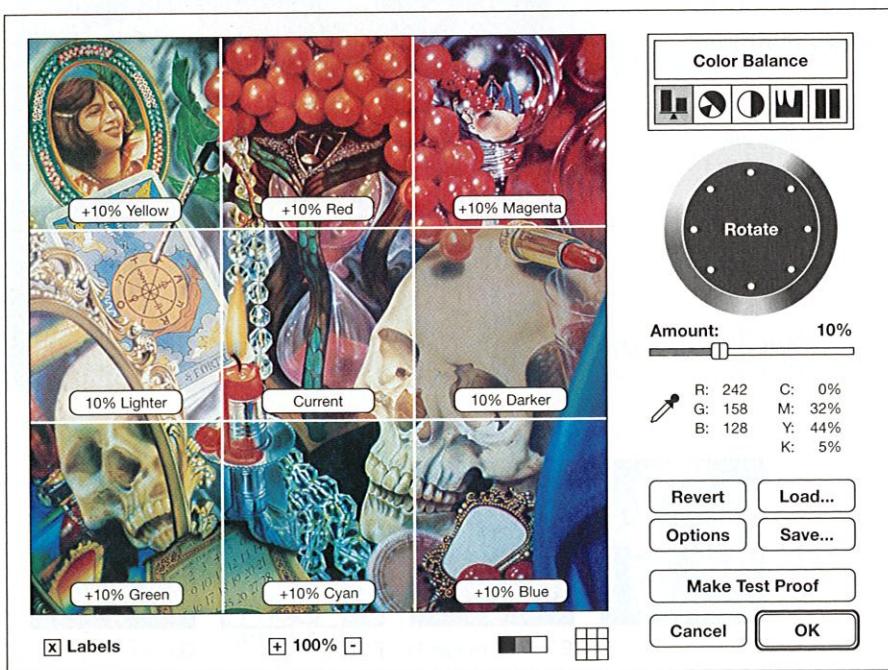
2.4A–G Color separation in CMYK printing. Dots of yellow, magenta, cyan, and black are layered to create a full-color image.



2.5 When white light passes through a prism, the spectrum becomes visible.



2.6 We see color when the primaries of light are reflected off a colored surface. A red surface absorbs the green and blue wavelengths, while reflecting the red. All wavelengths are reflected by a white surface. All wavelengths are absorbed by a black surface.



2.7 Color variations using a computer.

## Color and Light

When white light passes through a prism, it is refracted, or bent. This creates a wide spectrum of hues, which is dominated by red, orange, yellow, green, blue, blue-violet, and violet (2.5). Each hue, or separate color, is defined by a specific electromagnetic wavelength, with red as the longest and violet as the shortest. When white light hits a colored surface, some wavelengths are reflected, while other wavelengths are absorbed. As shown in figure 2.6A, a red surface reflects the red wavelengths while absorbing the blue and green wavelengths. Similarly, a green surface reflects the green wavelengths while absorbing the red and blue (2.6B). All wavelengths are reflected off a white surface (2.6C); all wavelengths are absorbed by a black surface (2.6D). Color reflection and absorption are rarely total. As a result, we can often see hints of various colors within a dominant color.

## Using Additive Color

Lighting designers, videographers, and Website artists use additive color extensively. Beams of red, green, and blue light are used to create a full-color video projection. The mixture of adjacent beams creates cyan, magenta, and yellow, which are the secondary colors in the additive system. When all three beams are combined, white light results.

We can quickly and easily create variations in additive color on a computer. In figure 2.7, the current color choice is shown in the center. Variations are shown in the eight surrounding squares. Even a 10 percent increase in a given color produces a very different result.

Our perception of additive color is influenced by

- The intensity (or wattage) of the projected light.
- The light source, from incandescent light and fluorescent light to daylight.
- The surface quality of the illuminated object. Projected light behaves very differently on transparent, translucent, and textured surfaces.
- The ambient (overall amount) of light in the environment.

Because the variables are subtle and complex, effective work with additive color requires great skill.

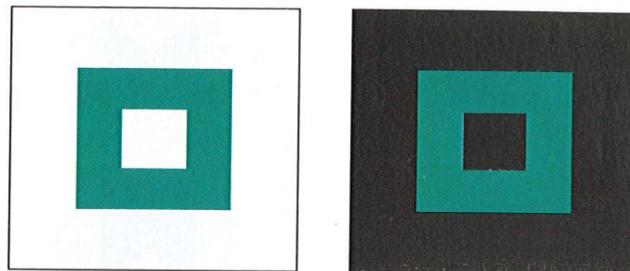
## Using Subtractive Color

Painters, printmakers, and illustrators use subtractive color in various forms, including acrylics, oils, pastels, and inks. Each pigment or dye used in the manufacture of such materials is chemically unique. Quinacridone red and phthalocyanide blue are transparent and intense. The cadmiums and earth colors are generally opaque. **Color overtones** complicate matters further. Color theorist David Hornung defines an overtone as “a secondary hue bias in a primary color.” For example, alizarin crimson is a red with violet overtones, while scarlet is a red with orange overtones. To create a wider range of mixtures, artists and designers often use a six-hue palette, including two reds, two yellows, and two blues, plus **achromatic** black and white, which have no hue. Since many foundation color projects are done using paint, ink, or colored paper, the remainder of this chapter will focus on subtractive color.

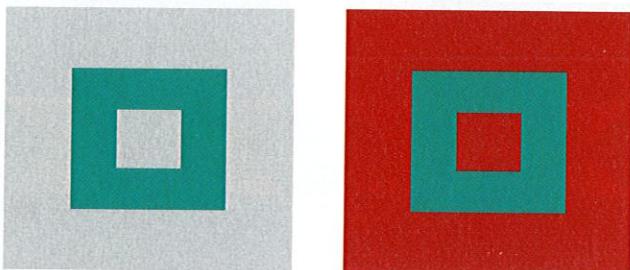
## COLOR INTERACTION

**Color interaction** refers to the way colors influence one another.

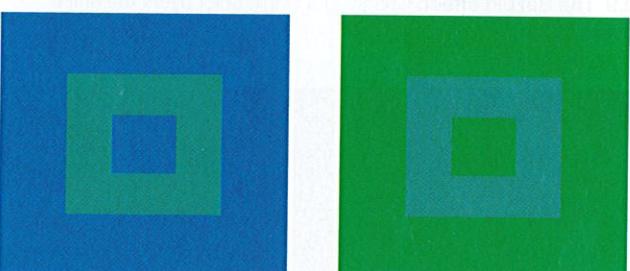
Colors are never seen in isolation. The blue sheet of paper we examine in an art supply store reminds us of the blue of the sky, the ocean, or the fabrics in a clothing store. Lighting also affects our perceptions. Incandescent light creates a warm orange glow, while standard fluorescent lights produce a bluish ambience. And, when our blue paper is added to a design, it is profoundly affected by the surrounding colors.



A



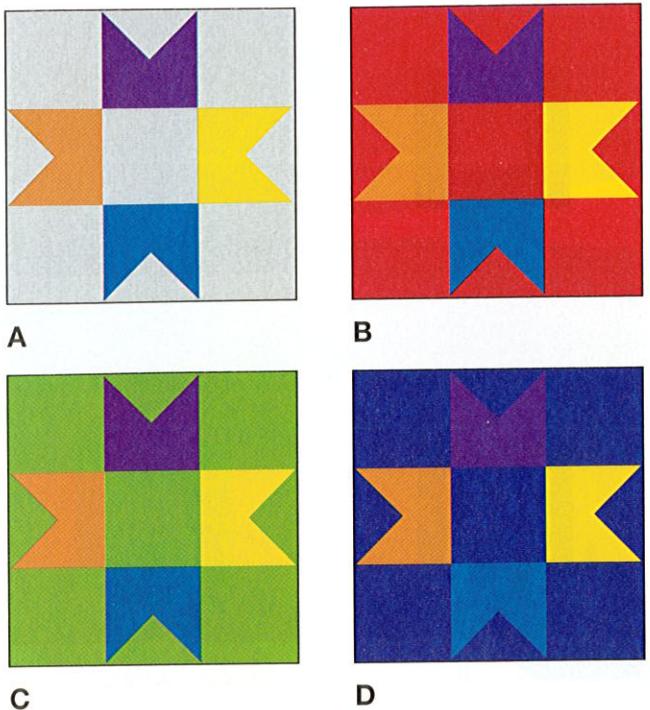
B



C

2.8 Examples of simultaneous contrast. Light/dark contrast is shown in figure A, a complementary reaction is shown in figure B, and subtle variations are shown in figure C. The blue-green square is the same color in all examples, but appears different due to the surrounding colors.

This effect is called **simultaneous contrast**. Three principles of simultaneous contrast are shown in figure 2.8A–C. Light/dark contrast is shown in the first pair of images. A blue-green square appears much lighter when it is placed on a black background. A complementary reaction is shown in the second pair. The same blue-green square appears to glow when it is surrounded by red rather than a neutral gray. In the third example, the same blue-green square appears almost green when it is surrounded by solid blue, yet it appears almost blue when surrounded by green.



2.9 The Bezold effect. Changing a single color alters the entire design.

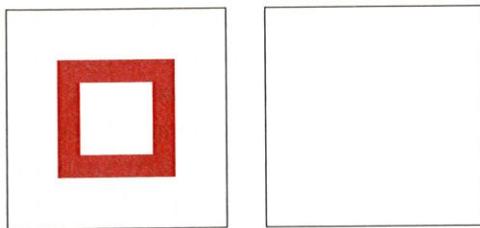


2.10 Pat Steir, *Inner Lhamo Waterfall*, 1992. Oil on canvas, 114 × 90½ in. (289.6 × 229.2 cm).

The **Bezold effect** demonstrates the profound influence of color interaction. Color theorist Wilhelm Bezold (1837–1907) realized that change in a single color can substantially alter our perception of an entire pattern. In figure 2.9A–D, changing the background color from gray to red adds an electric energy to the design. A light green background accentuates the darker shapes while diminishing the brightness of the orange shape. A dark violet background creates a strong contrast in value and pushes the orange and yellow shapes forward. The compositional impact can be substantial, even when the amount of changed color is small.

Color interaction becomes especially dramatic when complementary colors, such as red-orange and blue-green, are used in a composition. In the human eye, two types of cells, known as rods and cones, are arranged in layers on the retina. These cells serve as photoreceptors. The rods record lightness and darkness, while the cones are used to distinguish the hues, such as red and blue. According to **opponent theory**, the cones can register only one color in a complementary pair at a time. Constant shifting between the opposing colors creates a visual overload at the edges of the shapes, resulting in an electric glow. In *Inner Lhamo Waterfall* (2.10), Pat Steir used this effect to suggest the majesty and mystery of the falling water.

A similar characteristic of human vision can be used to create an **afterimage**. If we stare at a red square for 30 seconds (2.11), then stare at a white sheet of paper, a blue or green shape will seem to appear. This is due to fatigue in the cones, the color sensors in our eyes. Overloaded by the intense red, our eyes revert to the blue and green cones, creating the afterimage.



2.11 Afterimage exercise.

# DEFINING COLOR

## Hue

The **hue**, or name of a color, is determined by its wavelength. Red, blue, green, yellow, and so forth are all hues.

Physicists, painters, and philosophers have devised numerous systems to organize hues. Johannes Itten's 12-step color wheel (2.12) is a clear and simple example. Red, blue, and yellow **primary colors** are in the center. These colors can be mixed to produce many other colors. The **secondary colors** of green, orange, and violet follow. These colors are mixed from adjacent primaries. A circular spectrum of **tertiary colors** completes the wheel. The mixture of a secondary color and the adjacent primary color creates a tertiary color.

The Munsell color wheel (2.13) more accurately identifies cyan blue, magenta red, and yellow as the primaries, while the three-dimensional Munsell color tree (2.14) provides examples of changes in color value and intensity as well as hue.

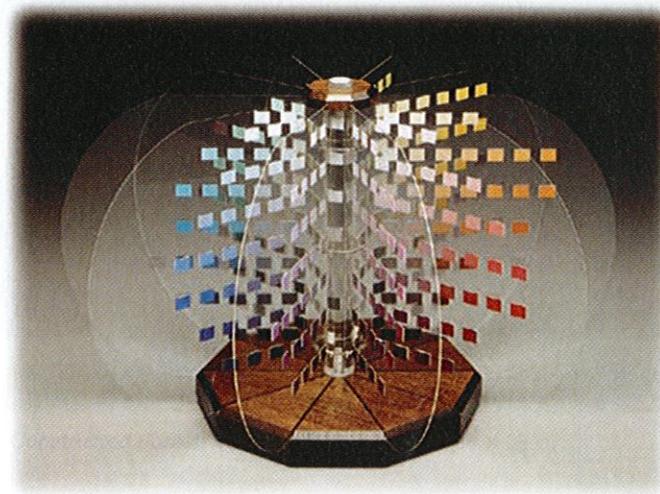
Artists often use a wide range of hues to capture the richness of reality. In *Wheel of Fortune* (2.15), Audrey Flack used a full spectrum of hues to define a collection of symbolic objects in meticulous detail. The makeup and mirrors symbolize vanity; the candles, hourglass, and skull suggest the passage of time; the grapes suggest passion. Reds, blues, and yellows dominate the painting. Hints of orange, violet, and green complete the spectrum.



2.12 The 12-step Itten color wheel.



2.13 The 10-step Munsell color wheel.



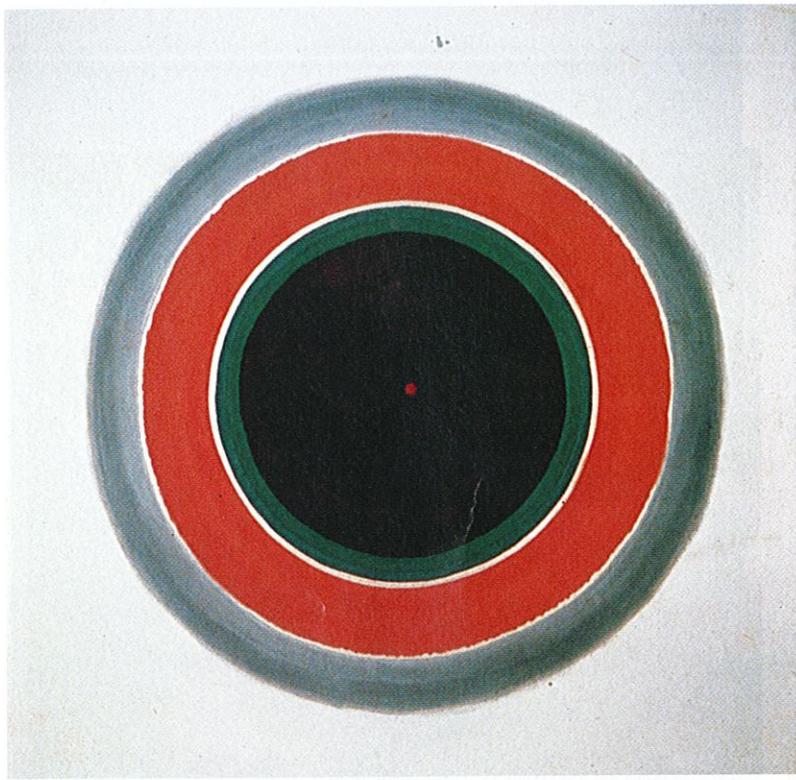
2.14 Munsell color tree, 1972. Clear plastic chart,  $10\frac{1}{2} \times 12$  in. ( $26.7 \times 30.5$  cm); base size 12 in. (30.5 cm) diameter; center pole size  $12\frac{1}{2}$  in. (32.1 cm) high; chip size  $\frac{1}{4} \times \frac{1}{8}$  in. (1.9  $\times$  3.5 cm).



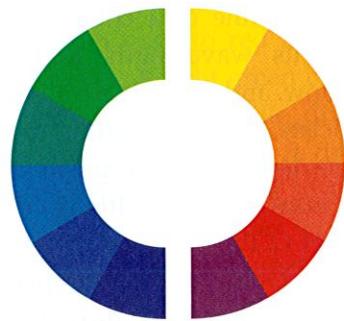
2.15 Audrey Flack, *Wheel of Fortune*, 1977–78. Oil over acrylic on canvas,  $8 \times 8$  ft. ( $2.44 \times 2.44$  m)



2.16 Robert Lazuka, *Thoughts of Summer*, 1999. 21 × 21 in. (53 × 53 cm).



2.18 Kenneth Noland, *A Warm Sound in a Gray Field*, 1961. 6 ft 10½ in. × 6 ft 9 in. (2.1 × 2.06 m).



2.17 Separation of the color wheel by temperature.

A limited number of hues can be equally effective. *Thoughts of Summer* (2.16) was composed using a narrow range of solid and gradated reds. The blocks of color shimmer with energy, suggesting the oppressive heat of a summer day. Using a limited palette, Robert Lazuka created a quiet yet hypnotic image.

Temperature is an especially important aspect of hue. **Temperature** refers to the heat a color generates, both physically and psychologically. Try laying six colored squares of equal value on fresh snow on a sunny day. By the end of the day, the warm-colored oranges, reds, and violets will sink into the melting snow, while the blue and green squares will remain closer to the surface. Figure 2.17 shows a simple division of the color wheel by temperature.

Color temperature can help create the illusion of space. Under most circumstances, warm colors advance, while cool colors recede. This effect is demonstrated very clearly in Kenneth Noland's *A Warm Sound in a Gray Field* (2.18). The red ring with its yellow halo pushes toward us, while the blue-black circle pulls us inward. The small red dot in the center of the composition

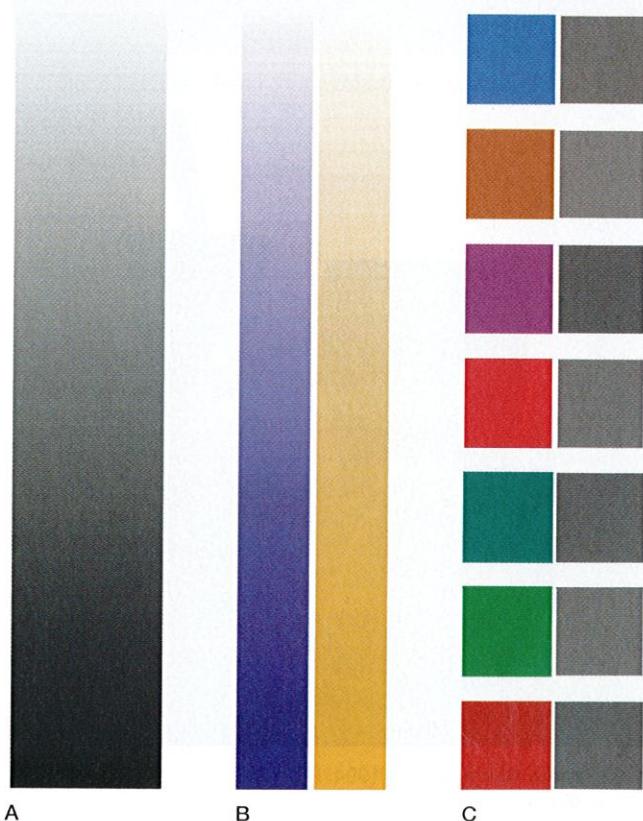


2.19 MANUAL (Suzanne Bloom and Ed Hill), *Quinault*, from *A Constructed Forest*, 1993. Chromogenic print, 24 × 36 in. (61 × 91.4 cm).

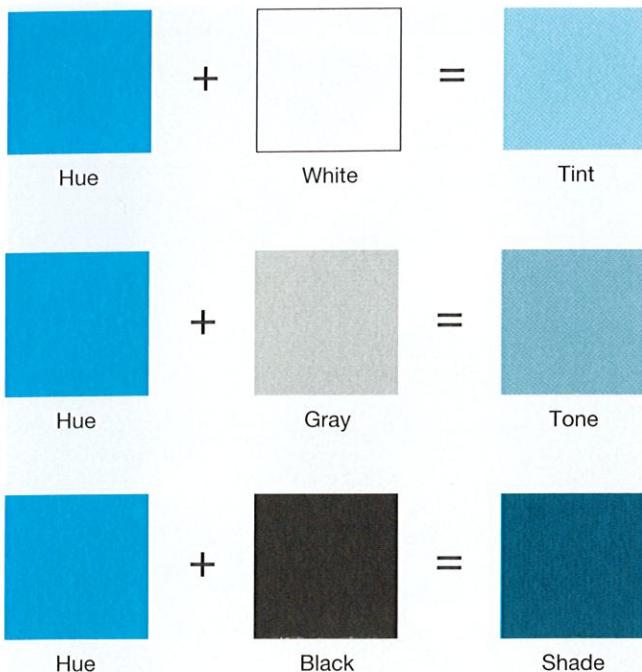
further activates the void by creating another advancing shape. In *Quinault* (2.19), Suzanne Bloom and Ed Hill used a similar combination of warm and cool colors to create a very different illusion of space. A warm brown ring dominates the image, targeting the tree stump in the center. The cool blue lake and mountains recede into the background.

## Value

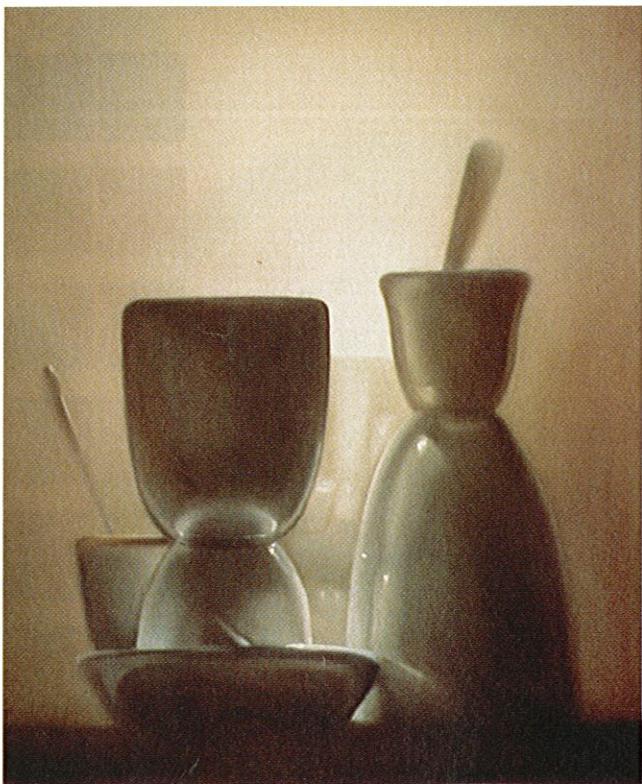
**Value** refers to the relative lightness or darkness of a color. By removing hue from the equation, we can create a simple value scale (2.20A) that shifts from white to black through a series of grays. As shown in figure 2.20B, hues such as violet, blue, and green are inherently darker in value than pure yellow or orange. Translation of color into value is shown in the final column. Despite the wide variety of hues, all the colors in 2.20C have nearly the same value.



2.20 Value scales.



2.21 Tint, tone, and shade.

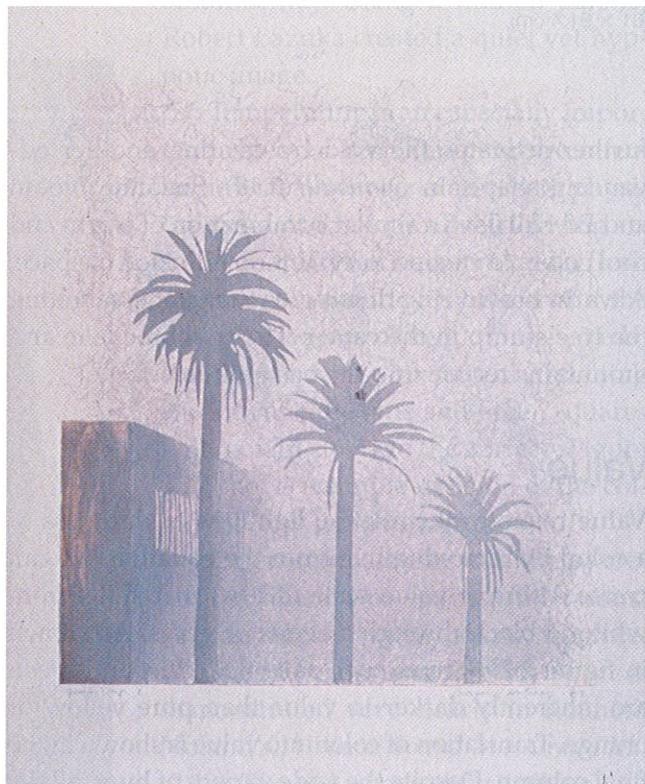


2.22 Nicora Gangi, *Vision*, 1994. Pastel, 10 × 14 in. (25 × 36 cm).

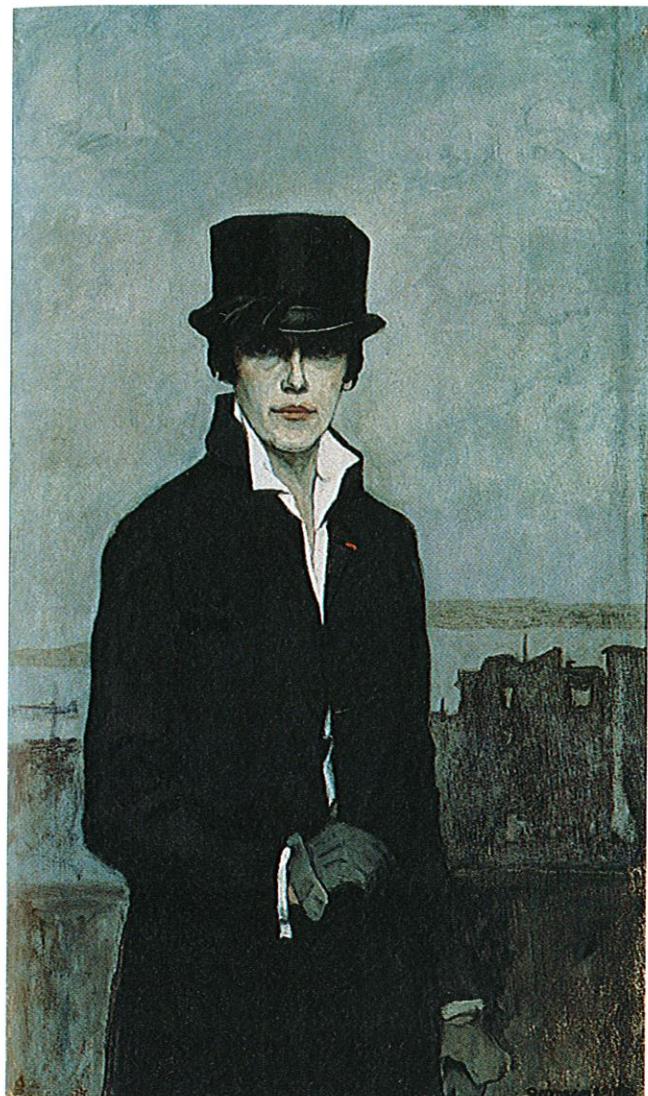
Three basic variations in value are shown in figure 2.21. When white is added to a hue, the resulting **tint** will be lighter in value. The addition of gray produces a **tone**. The addition of black creates a darker **shade**. One of the simplest ways to unify a design is to limit the colors used to the tints, tones, and shades of a single hue.

Using a full range of values, we can create a very convincing representation of reality. In *Vision* (2.22), Nicora Gangi transformed a simple still life into a dramatic drawing. A bright light in the background pushes the dark foreground vessels toward us. The limited value range in David Hockney's *Mist* (2.23) is equally effective. The gray-green palm trees dissolve into the peach-colored fog as quietly as a whisper.

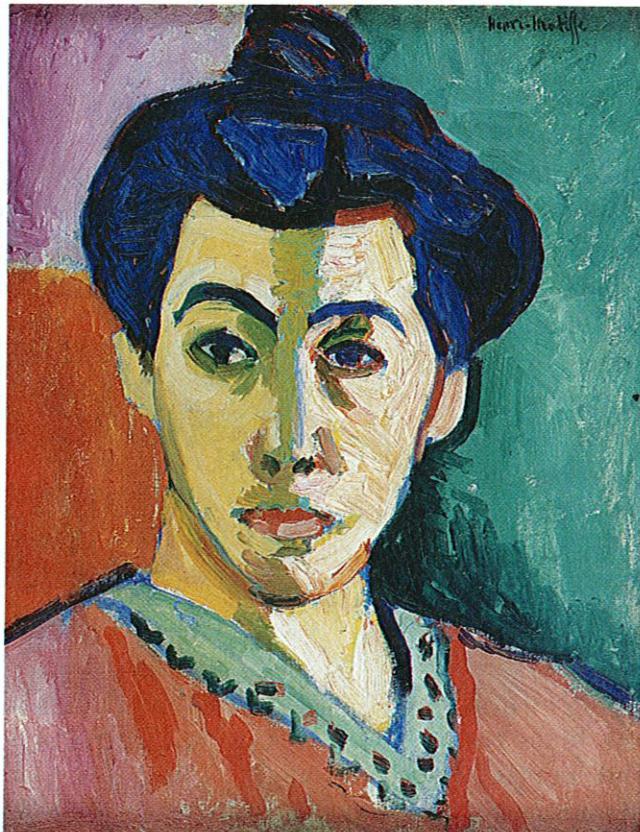
By making a black-and-white photocopy, we can easily check the range of values in a design. The photocopied image will be quite



2.23 David Hockney, *Mist*, 1973. From The Weather Series. Lithograph in 5 colors, edition 98, 37 × 32 in. (93.9 × 81.2 cm).



2.24 Romaine Brooks, *Self-Portrait*, 1923. Oil on canvas, 46 1/4 x 26 1/2 in. (117.5 x 68.3 cm).



2.25 Henri Matisse, *Green Stripe (Madame Matisse)*, 1905. Oil on canvas, 16 x 12 1/2 in. (40.6 x 32.4 cm).

readable when the value range is broad. When a very narrow range of values is used, the photocopy will produce a solid black or gray image.

Value is the dominant force in some paintings, while hue is a dominant force in others. Each approach has a distinctive emotional effect. Romaine Brooks' *Self-Portrait* (2.24) is essentially a value painting. Blacks, whites and grays dominate the image. Her eyes are concealed by the brim of her hat and the shadow it casts. Patches of red on the woman's lips and coat add just a touch of color. She

is wary and reserved. Value, rather than hue, is the appropriate choice for this image.

In contrast, hue dominates Henri Matisse's *Green Stripe* (2.25). Surrounded by large blocks of red, green and violet, the woman seems bold and self-confident. The avocado-green dividing line separates blocks of pink on the right and lime-green on the left half of her face, suggesting warmer and cooler aspects of her personality. Even her eyes and hair are painted in blue-black adding yet more color to this expressive portrait.

## Intensity

Intensity, saturation, and chroma all refer to the purity of a color. The primary colors are the most intense. This intensity generally diminishes when colors are mixed.

Figure 2.26A–C presents three intensity scales. Column A shows the most intense primary and secondary colors. Column B demonstrates the loss of intensity when black is added. In column C, two complementary colors are mixed, producing a range of elegant, low-intensity colors.

High-intensity colors are often used to maximize impact. Grace Hartigan's *City Life* (2.27) explodes with energy, as a full palette of blues, reds, and yellows dance across the canvas. In the background, a blue and orange striped awning vibrates with complementary color. Dark blocks of violet in the lower left corner and blue in the lower right compress the warm reds, oranges and yellows at the center of the composition, adding yet more energy. The entire scene is highly abstracted. Our understanding of both space and movement are based on the use of color rather than on photographic representation.

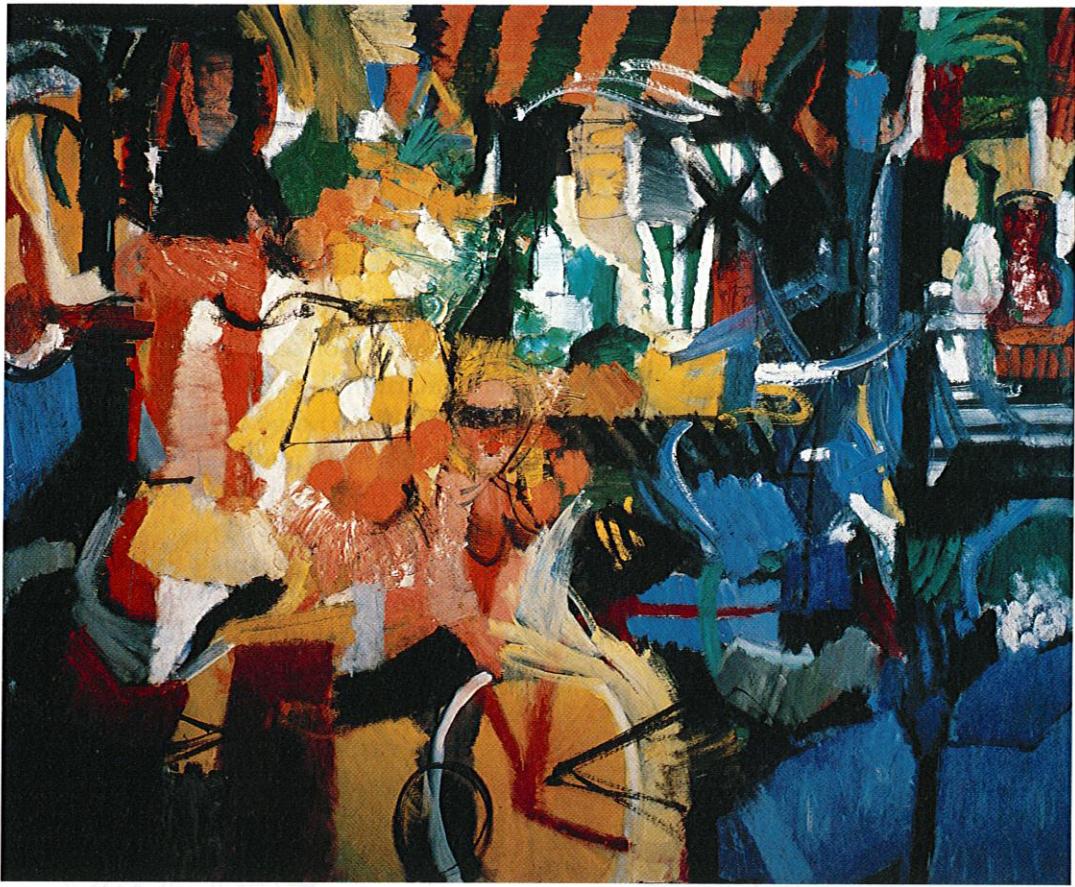
A combination of high- and low-intensity colors can be especially effective. Arshile Gorky combined primary hues and subtle earth colors in *The Liver Is the Cock's Comb* (2.28). Grays, tans, and browns cover more than half of the surface. Surrounded by these low-intensity colors, the brilliant yellow and red shapes seem to pulsate with energy. Like variations



2.26 Intensity scales.

in the volume and tempo in an interesting piece of music, the interplay between subdued and intense colors adds complexity to the composition.

Gorky's masterful understanding of how the eye reads and responds to color gives his paintings their unusual vibrancy and sense of animation. There is a wider range in his application of muted color than in Hartigan's work, but the impact is comparable. In both cases, the viewer is drawn into and moves throughout the painting because of the use of color.



2.27 Grace Hartigan, *City Life*, 1956. Oil on canvas, 81 × 98½ in. (205.7 × 250.2 cm).



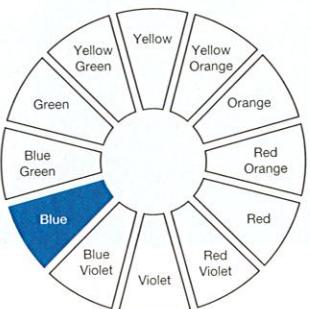
2.28 Arshile Gorky, *The Liver Is the Cock's Comb*, 1944. Oil on canvas, 72 × 98 in. (1.86 × 2.49 cm).

# COLOR SCHEMES

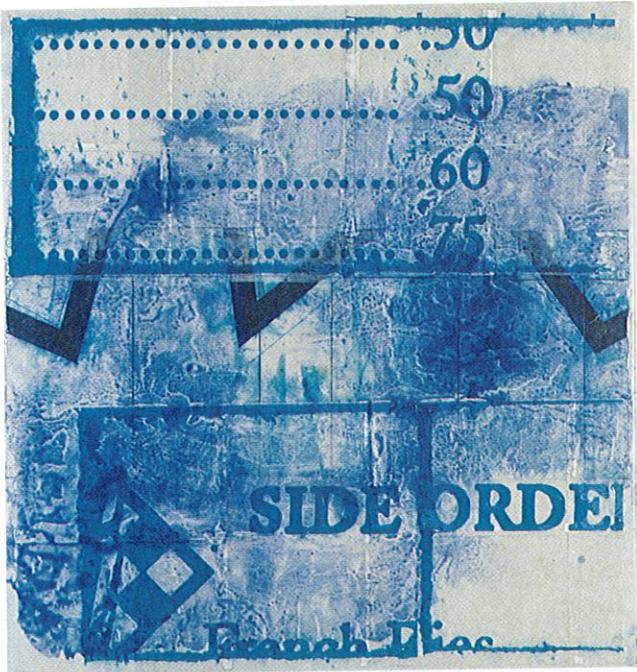
Relationships among colors are critical to the success or failure of a design, and many theories of **color harmony** have been developed to help artists, architects, and designers make good choices. A basic color wheel can help illustrate five common approaches.

## Monochromatic

Variations on a single hue are used in a **monochromatic** color scheme (2.29). The advantage of this system is a high level of unity: all the colors



2.29 Monochromatic color system.



2.30 Guy Goodwin, *Tracers-Side Order*, 1999. Resin, polyurethane, ink on polycarbonate, 51 × 54 × 4 in. (130 × 137 × 10 cm).

are strongly related. Boredom, due to the lack of variety, is a potential disadvantage. In *Tracers-Side Order* (2.30), Guy Goodwin used various textures, patterns, and words to add interest to the monochromatic image.

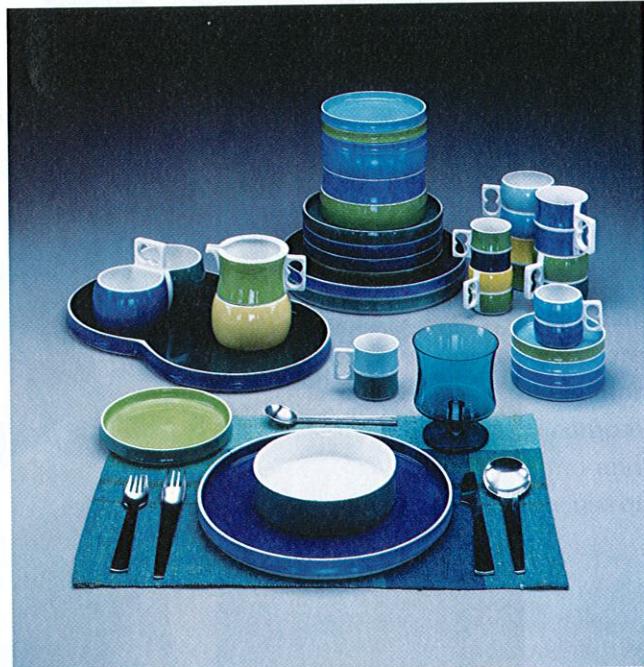
## Analogous

Adjacent colors on the color wheel are used in an **analogous** color scheme (2.31). As with monochromatic harmony, a high degree of unity is ensured, but the wider range of hues offers greater variety and can increase interest.

Blues and a surprising variety of greens activate the *Chromatics Place Setting* shown in figure 2.32.



2.31 Analogous color system.



2.32 Gerald Gulotta, shape designer; Jack Prince, pattern designer. *Chromatics Place Settings*, 1970.

## Complementary

The palette dramatically expands in a **complementary** color scheme (2.33). Complementary colors are opposites on the traditional color wheel. When mixed together, they can lower intensity and produce a wide range of browns. When paired in a composition, complementary colors become ideal partners. Each increases the power of the other.

Bacon's *Four Studies for a Self-Portrait* (2.34) is dominated by the complements of red and green. The design is unified by browns, including the reddish brown filling the background. Vigorous slashes of pure green and red add visual energy and create the illusion of movement.

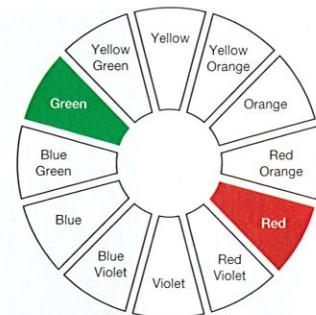
Each complementary pair has its own distinctive strengths. Violet and yellow provide the widest value range, while orange and blue provide the widest range of variations in temperature. Red and green are closest in value and create extreme agitation when placed side by side. By mixing two complements plus black and white, we can create a range of colors that begins to suggest the power of a full spectrum.

## Split Complementary

An even wider range of possibilities is offered by the **split complementary** color scheme (2.35). Rather than pair colors that are in opposite positions on the color wheel, the artist completes the scheme using the two colors on either side of one of the complements. Georgia O'Keeffe's *Jack in the Pulpit No. V* (2.36) is dominated by rich greens and violets, with accents of yellow at the top of the composition and a vertical line of red just to the left of the center.

### Key Questions

- Which will work better in your design, a limited or a wide range of hues?
- What proportion of warm and cool colors best communicates your idea?
- What happens when you combine low-intensity colors with high-intensity colors?



2.33 Complementary color system.

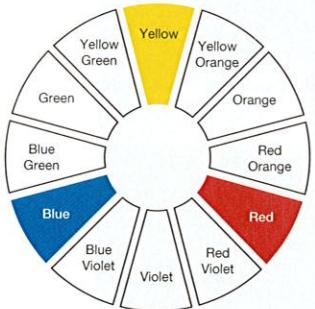


2.34 Francis Bacon, *Four Studies for a Self-Portrait*, 1967. Oil on canvas, 36 × 13 in. (91.5 × 33 cm).



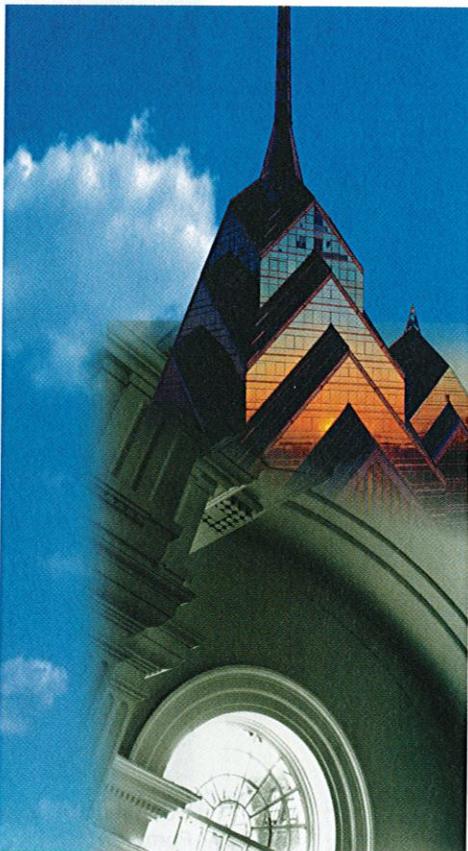
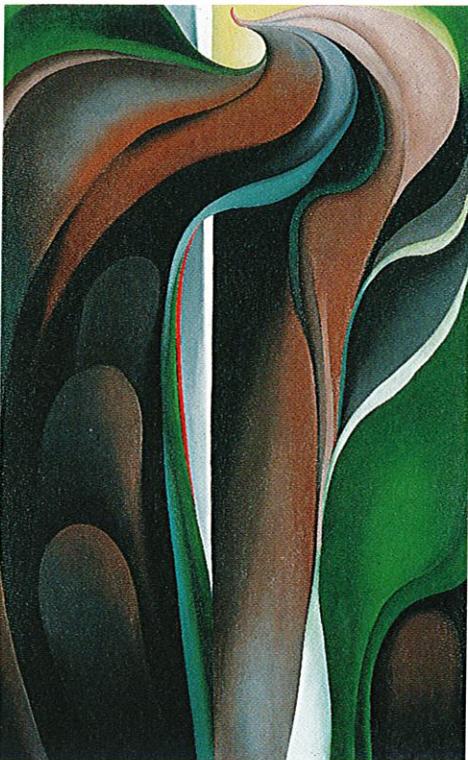
2.35 Split complementary system.

2.36 Georgia O'Keeffe, *Jack in the Pulpit No. V*, 1930. Oil on canvas, 48 × 30 in. (122 × 76 cm).



2.37 Triadic system.

2.38 Joel Katz Design Associates, Cover of *Philadelphia Architecture: A Guide to the City*, 2nd ed., 1984.



## Triadic

The **triadic** color scheme pushes the choices even farther apart, so that they are now located in a triangular position, equally spaced around the wheel (2.37). This scheme is often used when variety and a strong impact are essential. In a cover for *Philadelphia Architecture* (2.38), variations on red, blue, and yellow bring energy to the design, while the dark gray values provide detail.

## Chromatic Grays and Earth Colors

While the basic color wheel can help us identify many kinds of relationships, two important types of colors are not included: chromatic grays and earth colors. A **chromatic gray** is made from a mixture of various hues, rather than a simple blend of black and white. The result is both subtle and vibrant. In *The Magpie* (2.39), the grays vary widely, from the purples and blue-grays in the shadows to the golden-gray light in the foreground and the silvery grays for the snow-covered trees. This is not a dark, sullen winter day. Through the use of chromatic grays, Claude Monet makes the warm light and transparent shadows sparkle in the crisp air.

**Earth colors**, including raw sienna and burnt sienna, raw and burnt umber, and yellow ochre, are made generally from pigments found in soil. Often warm in temperature, when used together they create a type of analogous harmony. For example, browns, oranges, and tans accentuate the gestural energy and organic shapes in *Bush Cabbage Dreaming at Ngarlu* (2.40), by Australian artists

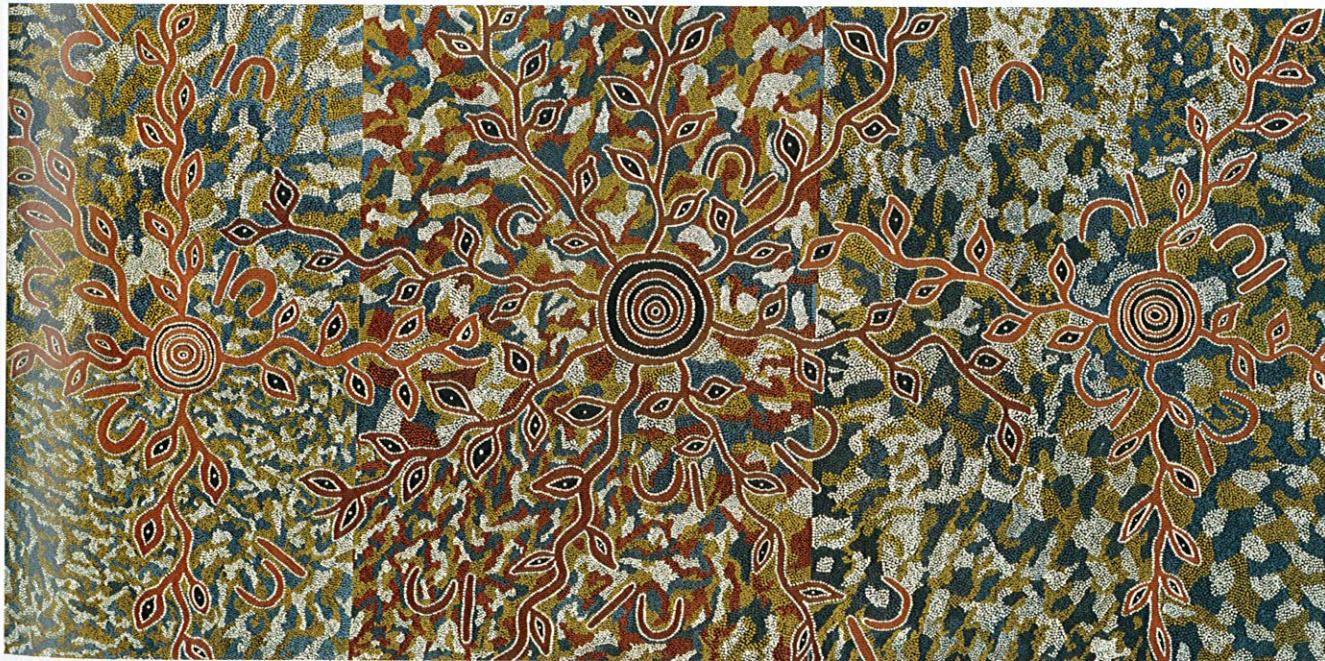


2.39 Claude Monet, *The Magpie*, 1869. Oil on canvas, 35 × 51 in. (89 × 130 cm).

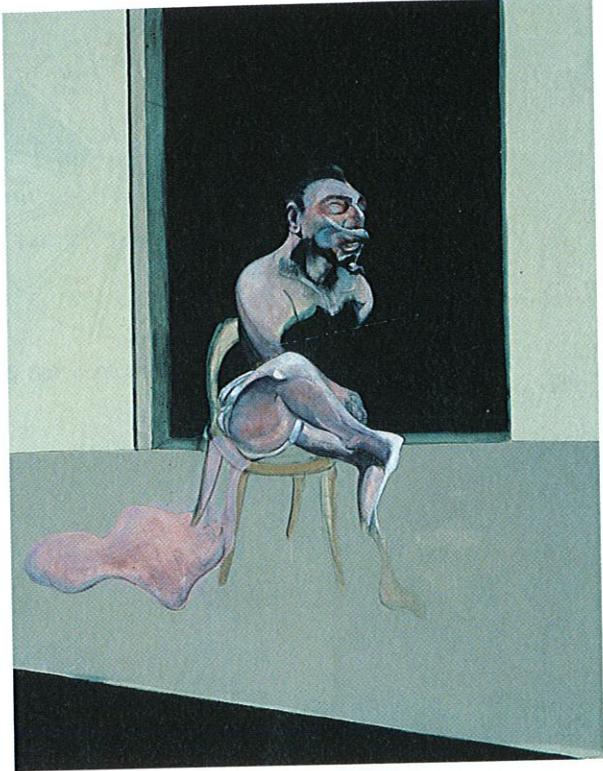
Cookie Stewart Japaljarri, Alma Nungarrayi Granites, and Robin Japanangka Granites. This acrylic painting was inspired by traditional aboriginal artworks, which are literally made from earth colors. When used alone, earth colors can unify even the most agitated composition. When used in combination with high-intensity colors, they can provide an elegant balance between subdued and louder, more overt colors.

## Using Disharmony

Selecting the right colors can make the difference between a visual disaster and a visual delight. As a result, color harmony is the subject of endless books offering advice to artists, architects, and surface pattern designers. Monochromatic, analogous, complementary, split complementary, and triadic systems are traditional forms of color harmony.



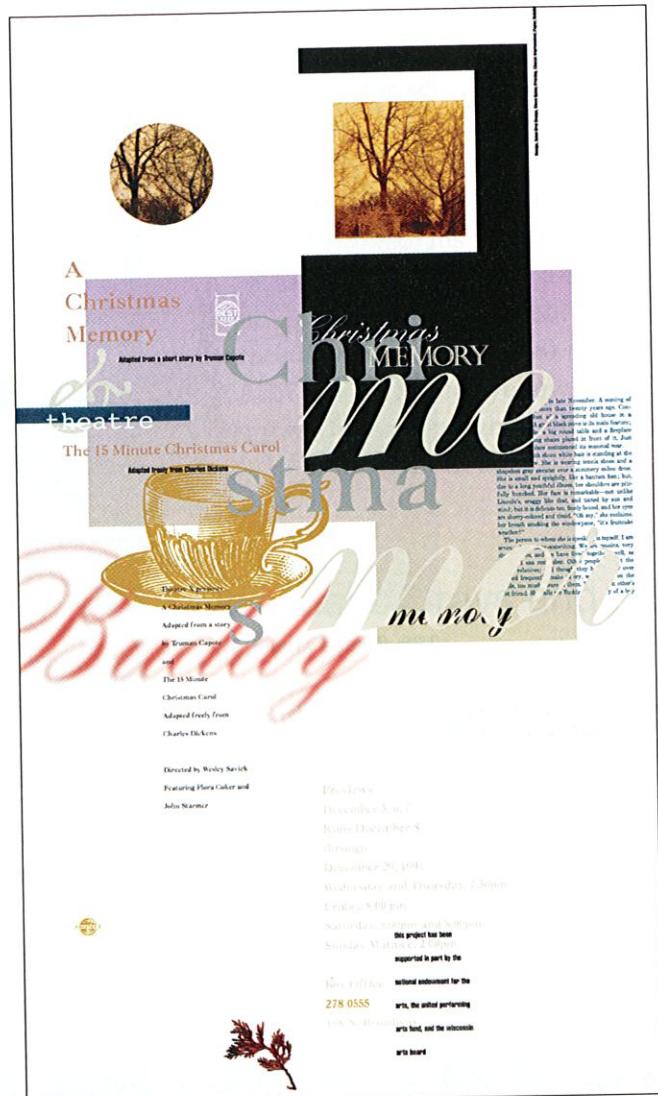
2.40 Cookie Stewart Japaljarri, Alma Nungarrayi Granites, and Robin Japanangka Granites; *Bush Cabbage Dreaming at Ngarlu*; Yuendumu, Central Australia, 1986. Acrylic on canvas, 47½ × 93½ in. (120.5 × 237.5 cm).



2.41 Francis Bacon, *Triptych*, 1972. Oil on canvas, one of three panels, each 78 × 58 in. (198.1 × 147.3 cm).

However, cultural definitions of harmony are as changeable as popular music. In a search for eye-catching images, designers in all fields invent new color combinations each year. For example, the pink, gray, and black prized by designers in one year may seem passé in the next. Consequently, definitions and uses of color harmony are actually quite fluid.

Furthermore, when skillfully used, color disharmony can be as effective as color harmony. Disharmony is often used when the subject matter is disturbing or when an unusual visual approach is needed. In figure 2.41, Francis Bacon used pinks, grays, and blacks to produce a painting that is as disturbing as it is beautiful. The colors in the body suggest disease, while the blocks of black, green, and gray create a room that is bleak and disorienting. Using a similar pink, gray, and black plus yellow-orange, Steve Quinn created a gentle evocation of memory in his Christmas poster (2.42). Here, the words and images shift back and forth in space, as fluid as a dream. As these examples demonstrate, the degree and type of harmony used must depend on the ideas behind the image and on the visual context in which an image will appear.



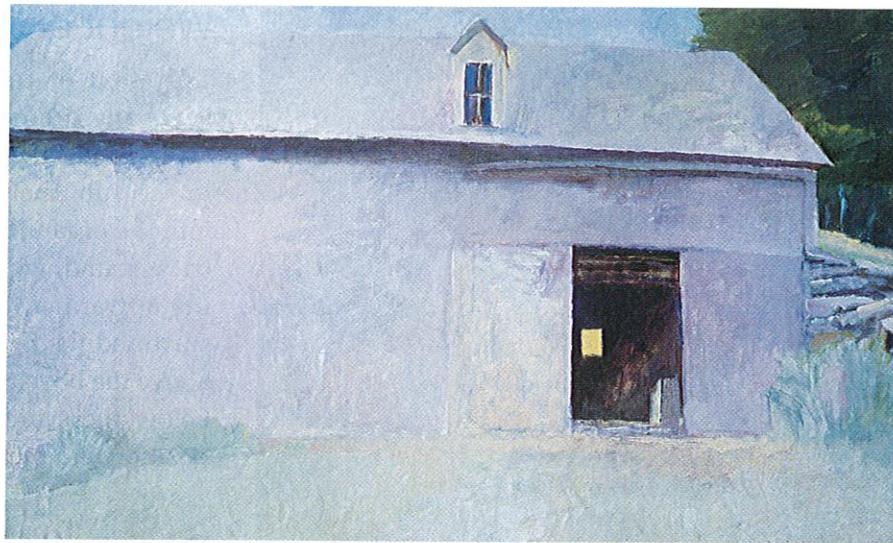
2.42 Steve Quinn, *A Christmas Memory*, 1991. Photoshop, 11 × 17 in. (27.94 × 43.18 cm).

## Key Questions

- What are the advantages of each of the traditional color schemes?
- When a limited palette is used, how can a few colors produce the greatest impact? When a full palette is used, how can the colors become unified?
- What happens when your composition is dominated by earth colors or chromatic grays? How does it change when an intense color is added?
- Which is more suitable for the idea you want to express: traditional color harmony or some form of disharmony?

# COMPOSING WITH COLOR

Composition may be defined as the combination of multiple parts into a harmonious whole. The effect of color on composition is profound. Color can shift visual balance, create a focal point, influence our emotions, and expand communication. In this section, we will consider four major compositional effects of color.

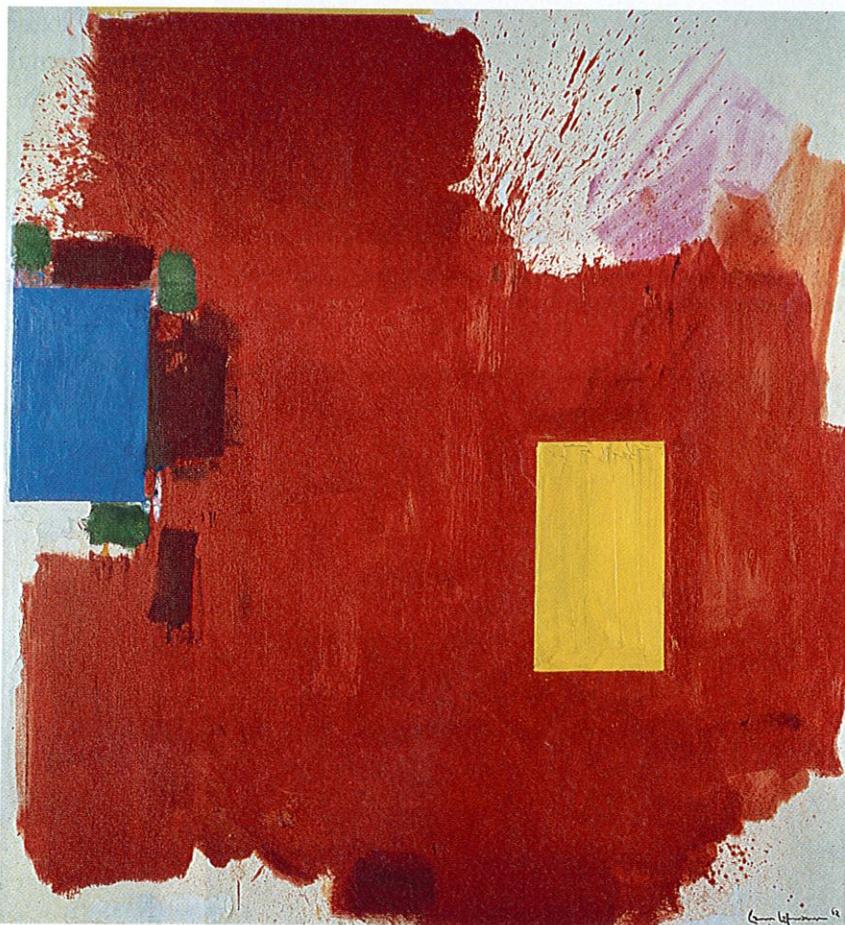


2.43 Wolf Kahn, *The Yellow Square*, 1981. Oil on canvas, 44 × 72 in. (112 × 183 cm).

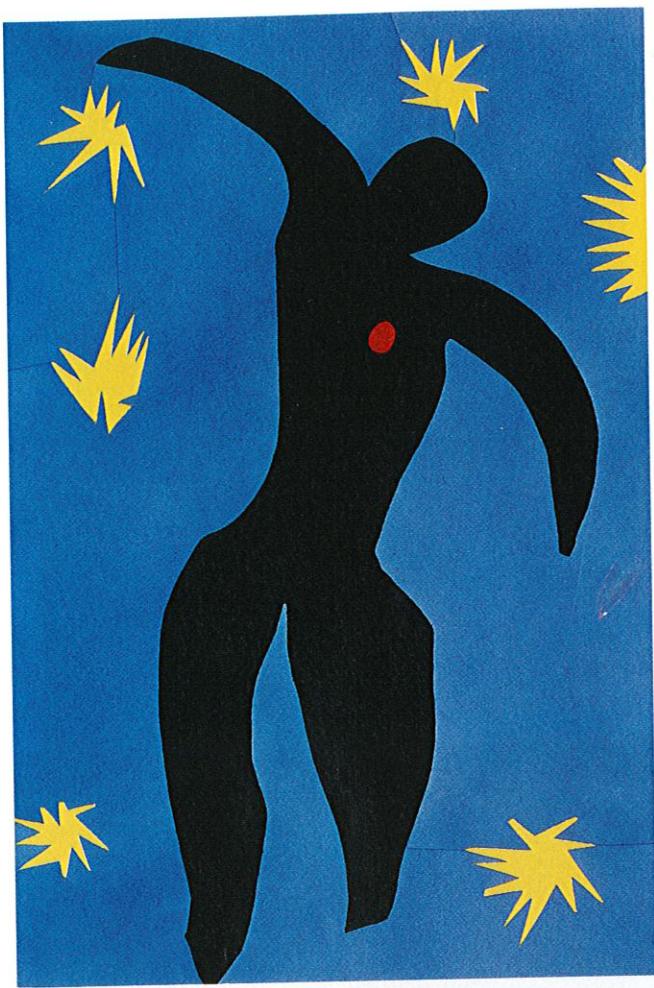
## Creating the Illusion of Space

Pictorial space is like a balloon. When we “push” on one side, the other side appears to bulge outward. Through our color choices, we can cause various areas in a composition to expand or contract visually. In most cases, cool, low-intensity colors tend to recede, while warm, high-intensity colors tend to advance. In Wolf Kahn’s *The Yellow Square* (2.43), the greens and violets defining the exterior of the barn gently pull the viewer into the painting, while the blazing yellow window inside the barn pushes out as forcefully as the beacon in a lighthouse.

This effect can play an even more important role in nonobjective paintings. As described by painter Hans Hofmann, the “push and pull” of color can be a major source of energy in a nonobjective composition. For example, a large block of intense red dominates Hofmann’s *Magnum Opus* (2.44). The blue rectangle at the left side pulls us inward, while the crisp yellow shape on the right pushes outward.



2.44 Hans Hofmann, *Magnum Opus*, 1962. Oil on canvas, 84 1/2 × 78 1/2 in. (213 × 198 cm).



2.45 Henri Matisse, *Icarus*, from *Jazz* series, 1947. Gouache on paper, cut and pasted,  $17\frac{1}{2} \times 13\frac{1}{2}$  in. (43.6 × 34 cm).



2.46 Nancy Crow, *Double Mexican Wedding Rings 1*, © 1988. Hand quilted by Marie Moore. 72 × 72 in. (183 × 183 cm).

## Weight and Balance

The effect of color on visual weight and balance is equally dramatic. In *Icarus* (2.45), Henri Matisse visually tells the story of the boy who flew too close to the sun, melting his wax wings and plunging into the ocean. The black body “falls” into the blue background, while a red heart seems to pull the figure upward, away from death. Six bursts of yellow surround the figure. Equally suggestive of the stars above the boy and of light shimmering on the water below, these simple shapes add energy to the composition and meaning to the myth.

## Distribution and Proportion

Through careful distribution, even the most disharmonious colors can work together beautifully. Four rectilinear gray shapes dominate Nancy Crow’s *Double Mexican Wedding Rings 1* (2.46). Gradated values extend outward, creating a subtle glow. Twelve small multi-colored squares accentuate the edges of the four large squares and frame up the composition as a whole. In most compositions, the earth colors, chromatic grays, and high-intensity reds, blues, and yellows would clash. In this composition, an even distribution of colors creates a unified composition.

Proportional distribution is another way to harmonize seemingly incompatible colors. Willem de Kooning’s *Door to the River* (2.47) is dominated by a large mass of brilliant yellow. Five patches of blue-gray provide a subordinate **accent color**.

## Key Questions

- How much space is needed in your composition, and how can color increase the illusion of space?
- How can color shift the visual balance in your composition?
- Can color shift or enhance the emphasis in your composition?

Vigorous strokes of olive and grays create essential connections between major compositional shapes, adding both energy and unity to the design.

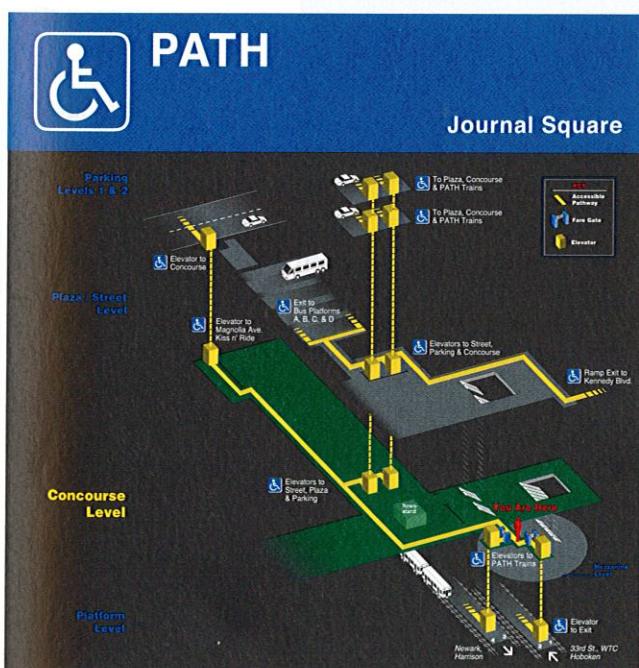
## Color as Emphasis

Graphic designers often use color to emphasize critical information in a composition. The subway map in figure 2.48 provides a good example. Cooler areas of gray, green, and blue, placed on a black background, provide basic structural information. The bright yellow lines show the path through the subway. Red, which is used at only one point in the diagram, clearly locates the viewer on the map.

Color can also be used to create a focal point. A small red astronomical observatory dominates Vernon Fisher's *Objects in a Field* (2.49). Located just above the center of the painting, it commands our attention while echoing the curved shape of the white parachute in the foreground.



2.47 Willem de Kooning, *Door to the River*, 1960. Oil on canvas, 80 × 70 in. (203.2 × 177.8 cm).



2.48 PATH Station Maps, Louis Nelson Associates, Inc., NY.  
Graphic designer: Jennifer Stoller.



2.49 Vernon Fisher, *Objects in a Field*, 1986. Acrylic on canvas, 8 × 8 ft (2.4 × 2.4 m).



2.50 Andrew Wyeth, *Wind from the Sea*, 1947. Tempera on masonite,  $18\frac{1}{2} \times 27\frac{1}{2}$  in. (47  $\times$  69.9 cm).

## COLOR, EMOTION, AND EXPRESSION

Colors are never emotionally neutral. The subtle browns and greens in Andrew Wyeth's *Wind from the Sea* (2.50) suggest the sepia color of a nineteenth-century photograph and evoke the slow pace and serenity of a countryside at rest. Richard Diebenkorn's *Interior with Book* (2.51), painted just 12 years later, provides a very different interpretation of a similar

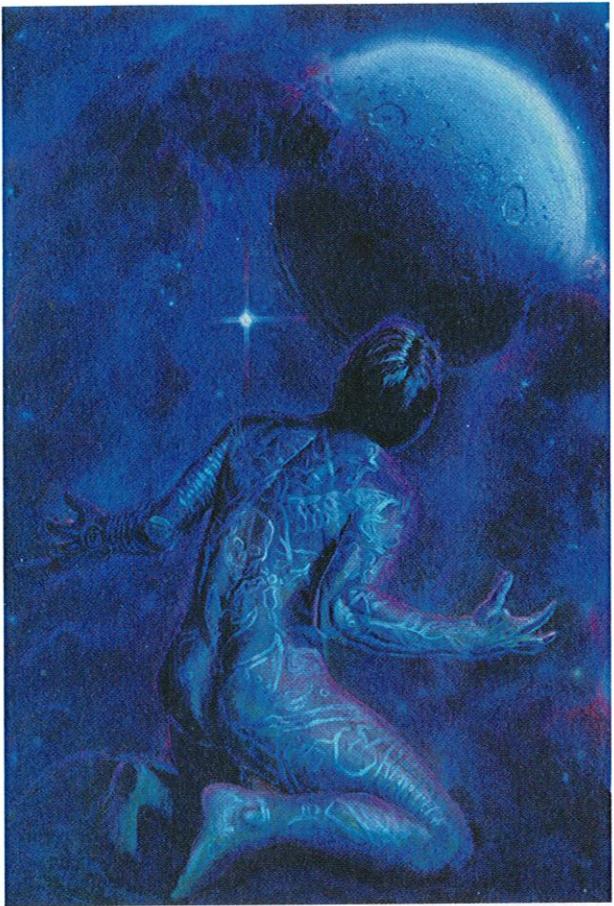
interior scene. The intense yellows and oranges in the background push toward us, while the solid blocks of blue pull inward, flattening the image. The tension and power thus generated create a California landscape that is a world apart from Wyeth's New England. The color in Sandy Skoglund's *Radioactive Cats* (2.52) creates yet another interpretation of an interior space. The gray walls, furniture, and clothing suggest a world that is lifeless and coated in ash. In contrast, the lime-green cats glow with an inquisitive energy that may be toxic!



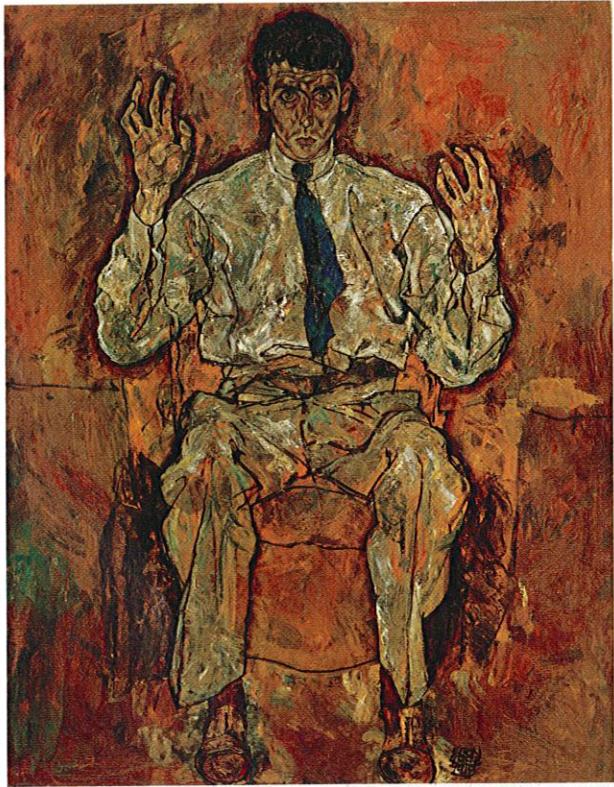
2.51 Richard Diebenkorn, *Interior with Book*, 1959. Oil on canvas, 70 × 64 in. (178 × 163 cm).



2.52 Sandy Skoglund,  
*Radioactive Cats*, 1980.  
Cibachrome print,  
30 × 40 in.  
(76.2 × 101.6 cm).



2.53 Joseph Spadaford, *Illustrated Man*, 1998. Acrylic.



2.54 Egon Schiele, *Portrait of Paris von Gütersloh*, 1918.  
Oil on canvas, 55 1/4 x 43 1/4 in. (140.3 x 109.8 cm).

## Color Keys

A dominant color, or **color key**, can heighten psychological as well as compositional impact. The blues that dominate Joe Spadaford's *Illustrated Man* (2.53) suggest both magic and melancholy. Based on Ray Bradbury's collection of stories by the same name, Spadaford had to suggest the torment of a man whose tattoos come to life at night. At the other extreme, in Egon Schiele's *Portrait of Paris von Gütersloh* (2.54), the flaming orange around and within the figure places the anxious man in an emotional electric chair. Designers also use color keys. Blood red dominates Chaz Maviyane-Davis' *Our Fear Is Their Best Weapon* (2.55). The soldier's face is tightly cropped, highlighting his fierce red eyes. The powerful slogan, presented in faded black letters, is almost consumed by the red background. As the text says, the voice of the people will be lost if fear is allowed to prevail. In these three cases, color was used to heighten emotion rather than represent reality.

## Symbolic Color

Colors are often assigned symbolic meaning. These meanings may vary widely from culture to culture. In *The Primary Colors*, Alexander Theroux writes:

[Blue] is the symbol of baby boys in America, mourning in Borneo, tribulation to the American Indian and the direction South in Tibet. Blue indicates mercy in the Kabbalah and carbon monoxide in gas canisters. Chinese emperors wore blue to worship the sky. To Egyptians it represented virtue, faith, and truth. The color was worn by slaves in Gaul. It was the color of the sixth level of the Temple of Nebuchadnezzar II, devoted to the planet Mercury. In Jerusalem a blue hand painted on a door gives protection . . . and in East Africa, blue beads represent fertility.<sup>2</sup>

In Hopi culture, colors symbolize spatial location and geographic direction. The Kachina doll in figure 2.56 represents Butterfly Maiden, a benevolent spirit. Red represents a southerly direction; white, the east or northeast; blue or green, the west.

Symbolic color also plays a major role in *Flag* (2.57) by Jasper Johns. Part of a series of images based on the American flag, this print presents a reversal of the usual colors at the top. If we stare at

Don't be intimidated  
Use your vote and be counted

# Our fear is their best weapon



2.55 Chaz Maviyane-Davis, *Our Fear Is Their Best Weapon*, 2002. Offset poster.

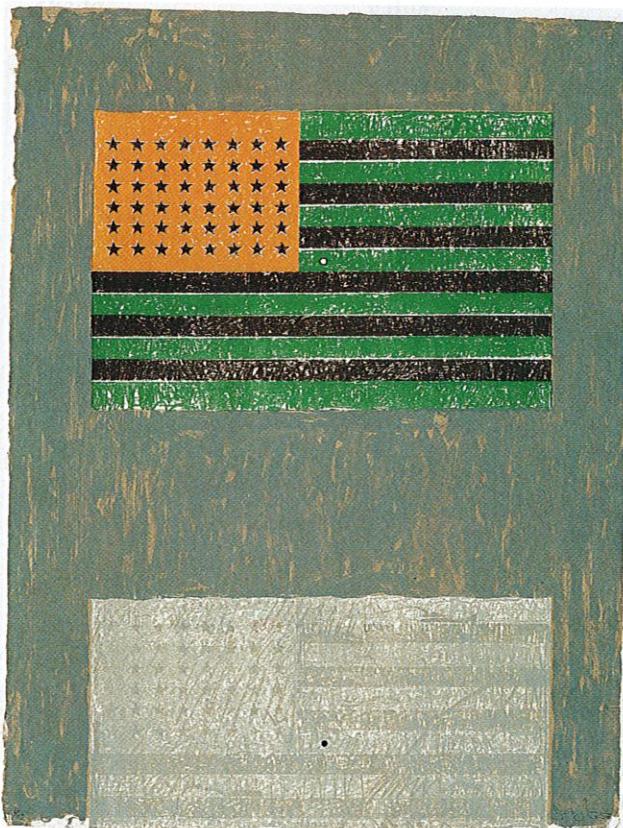
this flag, then shift our attention to a white sheet of paper, we will once again see the familiar red, white, and blue. In this painting, an afterimage was used to suggest the contradictory nature of patriotism.

## Key Questions

- Will deeper space strengthen your composition? If so, what colors might you choose?
- Will a shift in coloristic balance improve your design?
- Will a dominant color key increase the emotional impact of your design?
- Considering the ideas you want to express, which is more effective: an even distribution of color or focused use, as a way to emphasize a particular shape or word?



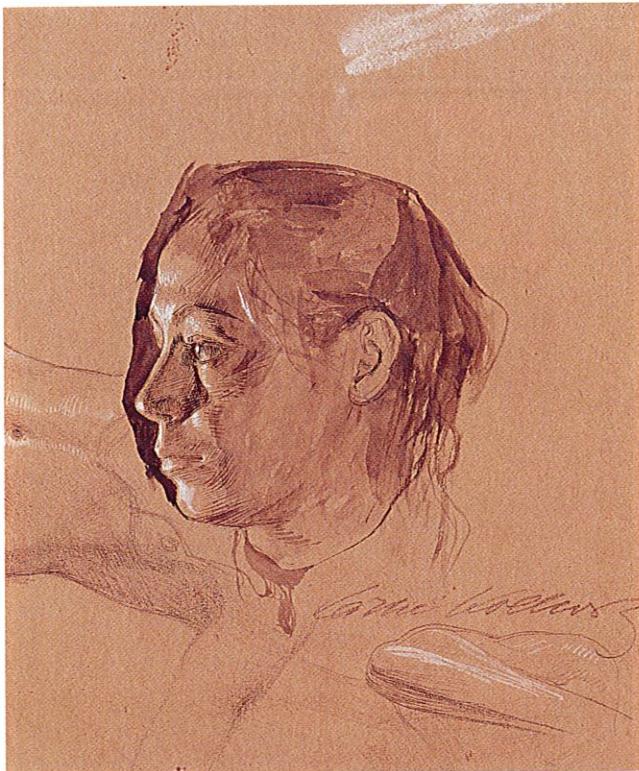
2.56 Butterfly Maiden, Hopi Kachina. Carved cottonwood, 13½ in. (35 cm).



2.57 Jasper Johns, *Flag*, 1968. Lithograph, printed in color, composition: 34⅞ × 25⅜ in. (87.9 × 65.7 cm).



2.58 Käthe Kollwitz, *Self-Portrait in Profile, Facing Left, I*, 1889. Lithograph,  $5\frac{1}{8} \times 5\frac{1}{8}$  in. (15 × 15 cm).

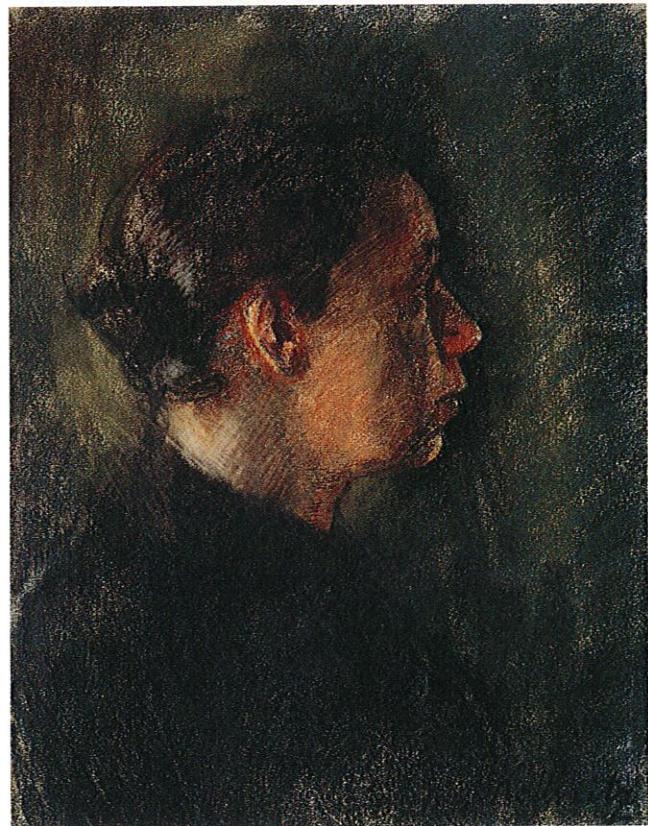


2.59 Käthe Kollwitz, *Selbstbildnis und Aktstudien (Self-portrait and Nude Studies)*, 1900. Pencil, dark gray ink wash, with white and yellowish highlights, on heavy brown paper,  $11 \times 17\frac{1}{2}$  in. (27.8 × 44.5 cm).

## Expressive Color

Color and value each have unique strengths. A group of self-portraits by Käthe Kollwitz demonstrates three possibilities. The black-and-white value study on cream-colored paper (2.58) has a simple eloquence, while a more developed value drawing (2.59) adds drama and definition to the figure. The last portrait (2.60) places the warm figure against the cool background and makes her seem more accessible.

Color can increase the power of a given shape, shift compositional weight, and create a focal point. It can enhance the illusion of space, suggest volume, and heighten emotion. Well used, color is one of the most expressive elements of art and design.



2.60 Käthe Kollwitz, *Selbstbildnis im Profil Nach Rechts*, c. 1900. Pastel on laid paper,  $19 \times 14\frac{1}{8}$  in. (46.8 × 36.5 cm).

# SUMMARY

- Color immediately attracts attention. Its emotional and physiological impact strengthens communication and heightens expression.
- Red, green, and blue are the additive color primaries. Blue, red, and yellow are the subtractive color primaries.
- The three basic qualities of color are hue (the name of the color), value (its lightness or darkness), and intensity (its purity).
- Using a monochromatic, analogous, complementary, split complementary, or triadic color scheme can increase harmony in your design.
- The level of color harmony must match the expressive intent. In the right context, disharmony can be more expressive than harmony.
- In a composition, color can enhance the illusion of space, shift visual weight and balance, and help emphasize compositional details.
- Distribution and proportion can help unify disharmonious colors.
- Colors are never emotionally neutral. A dominant color key can heighten psychological impact, while a symbolic color provides a cultural reference.

# KEYWORDS

accent color  
achromatic  
additive color  
afterimage  
analogous  
Bezold effect  
chroma  
chromatic gray  
color harmony

color interaction  
color key  
color overtone  
color theory  
complementary  
composition  
disharmony  
earth colors  
hue

intensity  
monochromatic  
opponent theory  
primary colors  
process colors  
saturation  
secondary colors  
shade  
simultaneous contrast

split complementary  
subtractive color  
temperature  
tertiary colors  
tint  
tone  
triadic  
value

# IN DETAIL



Multiple dots of paint serve two major purposes in this composition. First, the textures they create produce a vibrant energy. Second, they form a map of a mythical and actual Australian landscape. Seemingly random, each dot is actually highly purposeful.

# Profile: Ann Baddeley Keister, Fiber Artist

Color, Construction, and Communication:  
Designing a Tapestry



Ann Baddeley Keister is a nationally renowned fiber artist. Her work has been exhibited both nationally and internationally and is in many private and corporate collections, including The Vanguard Group, The Discovery Channel, and the Indianapolis Museum of Art.

**MS:** When I look at your work, I am impressed by the very deliberate use of design in these complex narrative tapestries. These images could be painted or done on a computer so much more quickly. What is the advantage of weaving? What attracted you to fiber arts?

**AK:** My undergraduate degree actually was a general degree in design, which allowed me to explore a number of different craft and fine art media, including textiles. The University of Kansas has a great fiber facility, and since I had learned how to knit and sew at the age of seven, the materials of textile art just felt natural and familiar to me. I love making the structure through the repetitive action of weaving. And I'm attracted to the pliability of the material. For me, metals are too unforgiving, clay is too messy—fiber, as a material, just feels "right" to me. I feel that there is a strong symbiosis between the images that I am interested in making and the material from which those images are constructed. One seems to feed off of the other.

**MS:** Designer Paul Rand said, "Art is an idea that has found its perfect form. Design is the means by which this is realized." And it is often said that art is about expression, while design is about communication. Is your work both art and design?

**AK:** Yes, and it is also craft and decoration. Contemporary fiber arts is such a diverse field. I love pure pattern AND I love storytelling. I love looking at beautiful colors, and want to offer the viewer a visual feast through my work!

**MS:** What is your usual work process?

**AK:** Many of my projects begin with a commission.

I determine the client's requirements and puzzle over possible solutions. With *Memory*, during a walk along the Grand River, I saw a historical marker describing the late nineteenth-century flood. I began to think about this terrible storm that washed away bridges and created piles of logs careening through the city. I immediately realized that this event could provide my image.

I made a number of pencil sketches, exploring compositional possibilities. I then developed these sketches in color, using the Adobe Illustrator. I have an extensive knowledge of color theory and this actually gives me the freedom to choose my colors very intuitively. I am using a lot of blue in this piece, since it is one of the school's colors, and I have a lot of discordant colors, which seem appropriate for such a devastating event.

A full-size, 6' × 10' computer print comes next. I match colors from my collection of approximately 200 colors of wool yarns. One strand on the loom is made up of six strands of yarn. I use a lot of optical mixing to create very subtle gradations. Finally, I weave the piece. The most useful thing I learned from my teachers is this: DO YOUR WORK! There is no substitute for action. Weaving is slow and simply has to be done consistently. During my summer work time, I am in the studio from about 9 to 6 an average of five or six days a week. Since weaving is an activity that makes demands on the body and the concentration, I do take breaks in my daily work with forays into the garden or other household chores. This is one reason that I find working at home so satisfying. My domestic interests in cooking, the garden, and my home

often find their way into the imagery in my work as well.

**MS:** What are your criteria for excellence?

**AK:** I seek unity between concept and composition.

Each of the formal elements: line, shape, texture, and color — is essential. There is almost always a dynamic sense of space in my work, which makes the tapestry read well in an architectural setting. I

seek an inseparable connection between imagery, technique, and material.

**MS:** Do you have any advice for my students?

**AK:** Take this time to be inventive. Try out many possibilities. If you don't like an image, don't do it! Invent another way to solve the problem. The joy you bring to the creative process will be apparent in the final design.



Ann Baddeley Keister, *Memory*, 2000. Wool tapestry, 6 × 10 ft (1.83 × 3.1 m).

# Principles of Two-Dimensional Design

Imagine yourself practicing jump shots on a deserted basketball court. By focusing all of your attention on the basket, you can master the sequence of moves needed to score. Now, imagine yourself playing in a high-paced game. You are now surrounded by skillful and cooperative teammates. The skills you practiced alone become heightened as you take passes and make shots. The complexities increase and the stakes rise when 10 players fill the court.

Developing a rich complex composition can be equally exhilarating. **Composition** can be defined as “the combination of multiple parts into a unified whole.”<sup>1</sup> In a well-composed design, line, shape, texture, value, and color work together, as a team. As one element becomes dominant, another element becomes subordinate. A dialogue is created between positive and negative shapes, and opposing forces add vitality rather than creating confusion.

We will begin this chapter with a discussion of unity and variety, the basis on which all design is built. We will then define and discuss balance, scale, proportion, rhythm, and emphasis. Connections between concept and composition will be emphasized throughout.

## UNITY AND VARIETY

**Unity** can be defined as similarity, oneness, togetherness, or cohesion. **Variety** can be defined as difference. Unity and variety are the cornerstones of composition. When they are combined effectively, we can create compositions that are both cohesive and lively.

Mark Riedy used three major strategies to unify figure 3.1. First, all of the major shapes are organized diagonally, from the lower left to the upper right. A series of parallel lines in the sand and sea emphasizes this diagonal structure. The cast shadows then create another diagonal pattern, running from the upper left to lower right. Second, the top third of the painting is filled with the blue water, while the beach fills the bottom two-thirds. This proportional relationship has been used since antiquity to create a dynamic form of balance. Third, one shape is repeated 19 times, creating the graceful collection of umbrellas. Repetition in any form tends to increase unity.

A sailboat, 9 groups of bathers, and especially the single red umbrella add variety. The red umbrella breaks the pattern set by the 18 white umbrellas. The resulting focal point attracts our attention to a particular spot on the beach. As we begin to notice the number of people clustered around this umbrella,