Color affects the quality of our lives in countless ways and on a number of different levels. On a practical level, the ability to see color helps us survive in a complex environment. For instance, without being able to distinguish among red, yellow, and green lights, driving in traffic could be disastrous. Color affects our emotions. It can raise or depress, soothe or stimulate our spirits in the same way that music does. For example, one reason the spring months can seem exhilarating and the winter months depressing could be the brightness or dullness of color that we see in the natural environment. These are only a few of the many ways in which color is important to us both intellectually and emotionally.

Since color—or the lack of it—can play such a significant role in evoking human response, as artists it is to our advantage to acquire a working knowledge of color. Although color theory can be a complex subject, the application and control of color is not difficult once certain concepts and basic vocabulary are learned. Then, practice and application of these concepts can result in an ability to control and manipulate color so that it strengthens and reinforces visual communications in ways no other design element can.

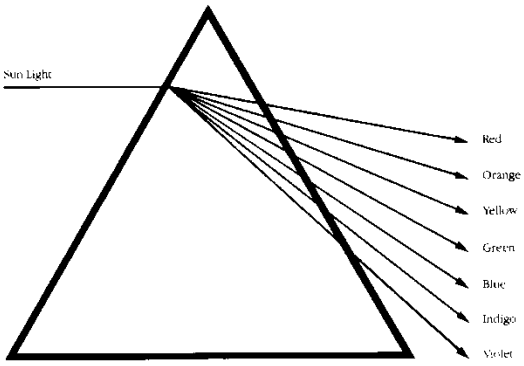
We can simplify this intricate subject by dividing it into two fundamental categories—additive color theory and subtractive color theory. Additive color theory deals with color as a property of light and is of particular interest to scientists; subtractive color theory is concerned with color as a property of pigment, so it is specifically important to visual artists. The properties of color as light and color as pigment vary widely. For example, red- and blue-colored light when mixed will yield a purple light; however, when red and blue pigment are mixed, a kind of dull, purplish-brown color results. Therefore, in order to avoid confusion, it is best to keep additive and subtractive color theory clearly separated.

### Additive and Subtractive Color Processes

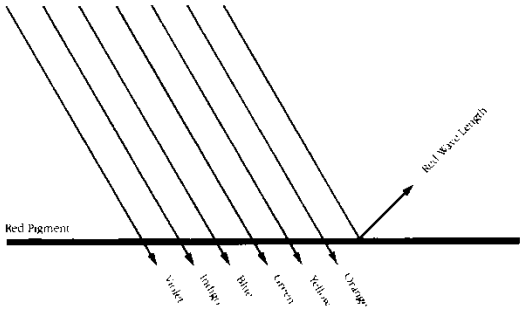
Scientific investigation of color began in the seventeenth century, when Sir Isaac Newton discovered that sunlight passing through a prism was divided into the colors of the spectrum (Figure 1). Later it was found that each of the spectrum colors had a specific and measurable light wavelength, and that when all of these were added they created "white light," or sunlight. Thus, the process of adding intervals of spectrum color is called *additive*.

It is currently believed that when we see a pigment color, such as red, what we are actually seeing is a reflection of a red light wavelength (Figure 2). All other colored light wavelengths are absorbed by the red pigment, and only the red wavelength is reflected. In other words, all color-light wavelengths are subtracted except one —which is the color we see. When all colored light wavelengths are absorbed or subtracted by a pigmented surface, we see black. When all are reflected, we see white. Therefore, the process of absorbing intervals of spectrum color is called *subtractive*.

1 Additive color process




2 Subtractive color process



## PIGMENTS

For anyone studying color as a property of pigment, a short discussion of the various pigments' differences and similarities may be useful. A *pigment* is a coloring agent that is insoluble. Pigments are usually produced in powder form and mixed with various binding agents, such as oil, gum or wax to make inks, paints, and crayons. Wet media, like paint and ink, also utilize a solution or liquefying agent that acts as a carrier for the pigment and binder. Turpentine and water are the two solutions most commonly used for commercial wet media products. All commercially available pigment products, both wet and dry, use identical pigments. It is the various binders and solutions that determine the type of finished product. So in terms of color mixing and color relationships, the color properties of the various pigments are identical—only their working properties and methods of application vary.

| Contemporary dry pigments | Binders | Solution | Brief working properties |
|---|---|---|---|
| Colored pencils: | Wax and extreme pressure | None | Not easily mixed in use; thus limited to colors as they come from the pencil. |
| Wax crayons: | Bees wax or carnauba wax | None | Not easily mixed in use; thus limited to colors as they come from the crayon. |
| Chalk or pastel crayons: | Gum | None | Binders are weak and must be fixed with a spray fixative to prevent smudging. Colors are relatively easy to mix in use in order to alter color as it comes from the crayon. |
| Oil pastel crayons: | Linseed oil | None but soluble in turpentine | Easily mixed in use to alter color, easily smudged. Will never completely dry but can be coated with polyurethane to fix. |
| Conté crayons: | Linseed oil | None but soluble in turpentine | Easily smudged but can be fixed with any spray fixative. Only available in two colors—black and red brown. |

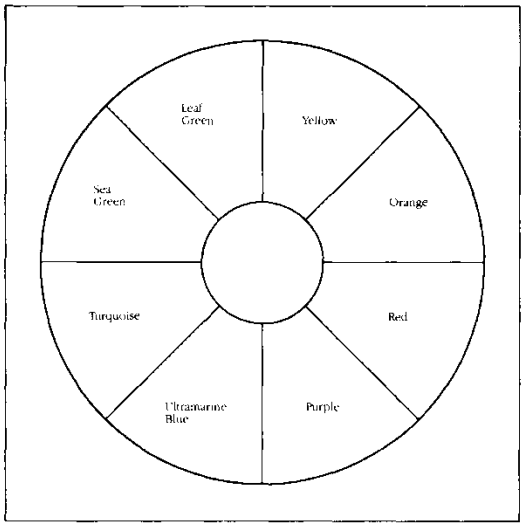
| Contemporary wet pigments | Binders | Solution | Brief working properties |
|---|---|---|---|
| Watercolor: also available in dry form | Gum, honey, glycerine | Water | Dries rapidly to the touch, but can be easily dissolved again in water after drying. Large color selection easily mixed in use. Watercolor is transparent or translucent when dry. |
| Gouache: | Gum, honey, glycerine | Water | Very similar to watercolor except opaque when dry. Large selection of vivid colors easily mixed in use. |
| Casein: | Skimmed milk, acid | Water | Easily mixed in use. Opaque when dry. Almost insoluble in water when dry. Characteristic chalky look to color when dry. Dries fairly rapidly to the touch. |
| Tempera: also available in dry form | Milk, egg | Water | Characteristic chalky look to color when dry. Color strength is usually inferior due to proportion of filler to pigment. Easily mixed in use, dries rapidly, opaque, and water soluble when dry. |
| Oil paint and oil-based printing ink: | Linseed oil | Turpentine | Easily mixed in use. Very wide range of color choice. Dries slowly to the touch—12 to 36 hours depending on color used and thickness of application. Opaque when dry but can be applied transparently if sufficiently thinned. Almost insoluble when dry. |
| Acrylic paint: | Acrylics and polymers (plastic) | Water | Easily mixed in use. Very wide range of color choice. Dries rapidly to the touch—5 to 10 minutes. Can be applied for opaque or transparent effects when dry. Very permanent and insoluble when dry. Dried color is actually a form of plastic. |

## CLASSIFICATION SYSTEMS: THE COLOR WHEEL

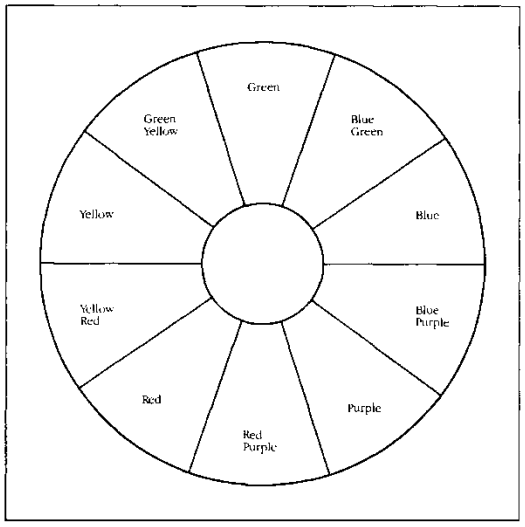
Colors are also known as *hues*. Color names such as red, blue, and green represent only one method of classifying various colors. There are many other methods, and each is dependent on the purpose it is intended to serve: color matching, color marketing, color quality control, color mixing, number identification systems, and so on.

The most common and widely known classification is the wheel system. A variety of color wheels have been developed since they were introduced in the early 1700s. The best-known color wheels are shown in Figure 3, 4, and 5. All these wheel systems arrange colors in the same order as found in the spectrum. Because of its practical value, the twelve-part color wheel (Figure 5) is the most commonly used. A twelve-part color wheel that has been expanded to extend its practical application in color work can be seen in Figure 6. This color wheel can be used in much the same way that a calculator is used in mathematics. In the rest of this chapter, we will look at some of its uses.

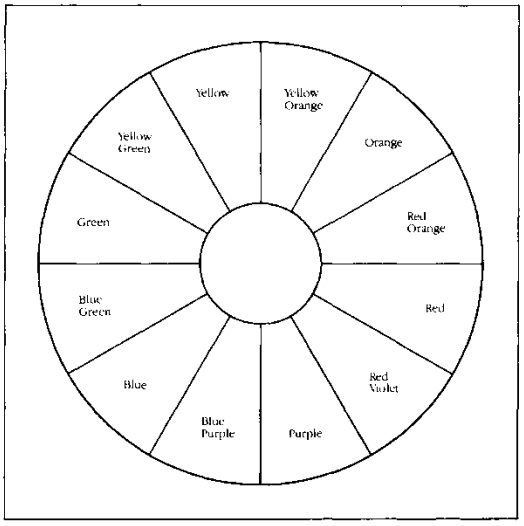
4




3




5



6

Expanded color wheel

## NEUTRAL GRAYS

Because neutral gray is rarely found in nature, it can be seen as primarily a product of human invention. *Neutral gray results from mixing black and white pigments together in any proportion.* Therefore, it is possible for us to mix an almost unlimited number of different neutral grays by varying the amount of black added to white. In Figure 7, the neutral gray in the lefthand square of the diagram has a very light tonal quality because little black has been mixed with a relatively large amount of white. Conversely, the neutral gray in the righthand square has a very dark tonal quality because little white has been mixed with a relatively large amount of black. This light and dark tonal quality, or appearance, is referred to as *value.* All neutral grays have value, ranging from very light to very dark, depending upon the various proportions of white and black.

Neutral gray, since it has no discernible hue, is not considered to be a color. However, neutral gray is included in this discussion because in art it is frequently used with color, as well as mixed with other colors. When neutral gray is mixed with a color, the resultant mixture creates another type of gray known as a *chromatic gray.*

## CHROMATIC GRAYS

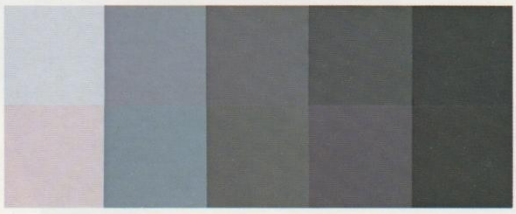
The dictionary tells us that *chroma* is a Greek word meaning color; "chromatic" means containing color or colors. Consequently, a chromatic gray is simply *a gray that contains color.*

There are several ways to arrive at chromatic grays. One way has already been mentioned—adding a color to a neutral gray. If very small amounts of color are added to large amounts of neutral gray, the visual result is similar to the appearance of the neutral grays of the same value (Figure 8). In this example, the row of chromatic grays looks very neutral because the small amounts of color are diminished, or neutralized, by the large amount of neutral gray in each. However, chromatic grays do not

7

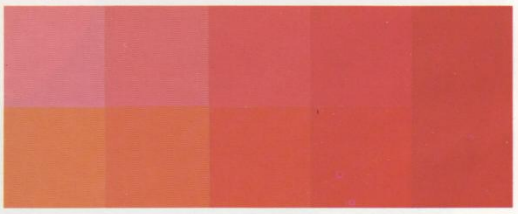
Light to dark tonal quality of neutral grays in nine steps

Neutral grays 8



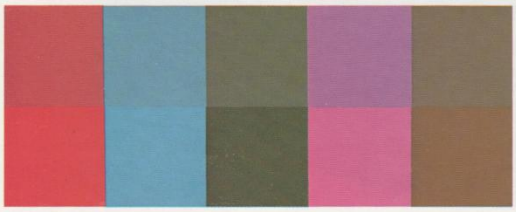
Chromatic grays achieved by mixing small amounts of color with neutral grays

Red lightened in value by adding white is neutralized 9



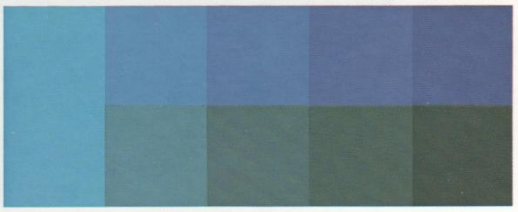
Red lightened in value by adding yellow is not neutralized 10

Chromatic grays made by mixing small amounts of neutral gray with colors 11



Colors with no neutral gray added to them

Blue darkened in value by adding purple is not neutralized 12



Blue darkened in value by adding black is neutralized

always have this very neutral appearance. If only small amounts of neutral gray are mixed with large amounts of color, the mixtures result in chromatic grays of an entirely different nature (Figure 11). These chromatic grays appear more colorful than neutral—in fact, the examples do not seem grayed or neutralized until they are compared with colors that have no neutral gray.

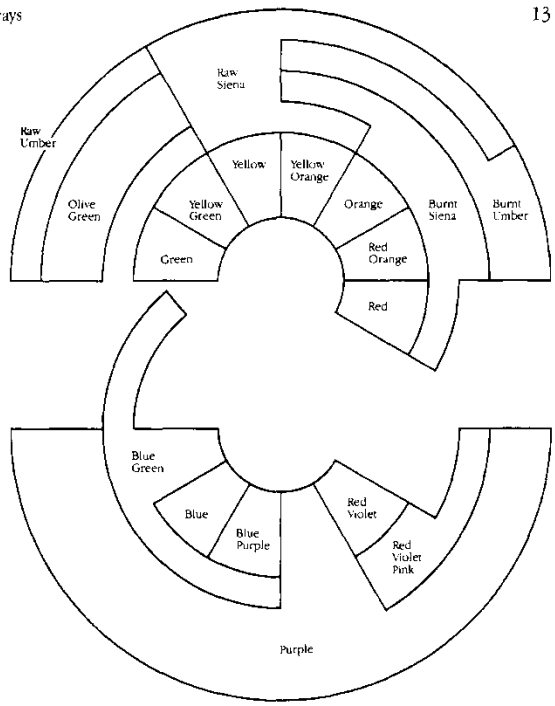
Another way by which colors can be neutralized, grayed, or transformed into chromatic grays involves the separate use of black or white. Certain colors become chromatic grays with the addition of any amount of white. Others become chromatic grays with the addition of any amount of black. In order to show how colors can become neutralized or grayed in this way, Figures 9 and 10 present two rows of red. The values in both rows of each color have been adjusted from light to dark so that each square corresponds in value to the one below. The values in the bottom row have been lightened by adding a color that is naturally lighter in value—in this case, yellow. The values in the top row have been lightened by adding white. The colors on the top appear "washed out," neutralized, or grayed compared to those in the bottom row. In Figure 12, black has a similar neutralizing effect when added to blue to darken its value. Blue has been darkened in value with either purple or a darker blue in the top row, while black has been used in the bottom row. We can easily see that the blues in the bottom row are grayed in comparison to those on the top row. Finally, Figure 13 depicts the expanded color wheel, which shows the colors that can be transformed into chromatic grays by the addition of black or white, respectively.

Yet another way in which colors can be grayed down, neutralized, or transformed into chromatic grays involves mixing two or more complementary colors.

White added to any of these colors transforms them into chromatic grays

To lighten the values of these colors without neutralizing them, add a lighter value color from this group which is not a complement or near complement

13




Black added to any of these colors transforms them into chromatic grays

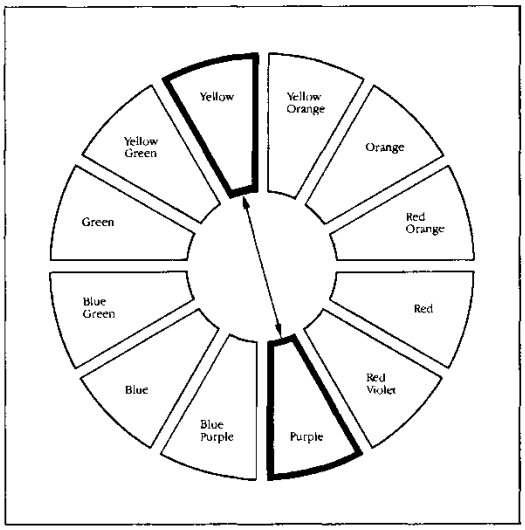
To darken their values without neutralizing them, add a darker value color from this group—or the group above—which is not a near complement

## COMPLEMENTS AND COMPLEMENTARY CHROMATIC GRAYS

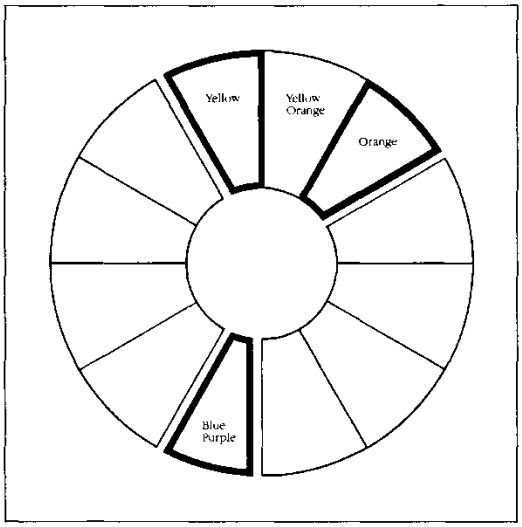
*Complementary* colors are those that appear directly opposite one another on the twelve-part color wheel (Figure 14).When complementary colors are mixed in any proportion, they neutralize one another and create a chromatic gray. Figure 15 illustrates the various chromatic grays achieved by mixing each of the complementary pairs in equal proportions.

*Near complements* are another group of color pairs that, when mixed, react similarly to the complementary colors to create a series of somewhat less pronounced chromatic grays. Near complements are colors that are very close to being complementary but are not exactly opposite each other on the twelve-part color wheel. Figure 16 designates the near complements of blue-purple (yellow and orange). Figure 17 illustrates the near complements of blue (yellow-orange and red-orange) and so forth around the wheel. The near complements of blue (yellow-orange and red-orange) have enough orange components in each to cause a complementary neutralization when mixed with blue. Chromatic grays that result from mixing equal amounts of blue with an equal amount of yellow-orange and an equal amount of red-orange can be seen in Figure 18. Various chromatic grays will result from mixing other near complements.

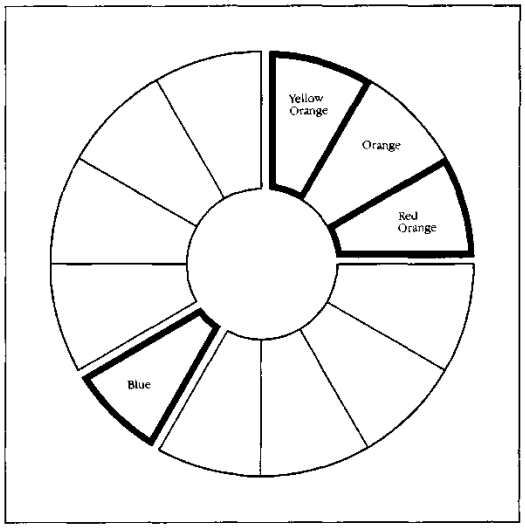
14
Complementary colors are opposite one another on the color wheel



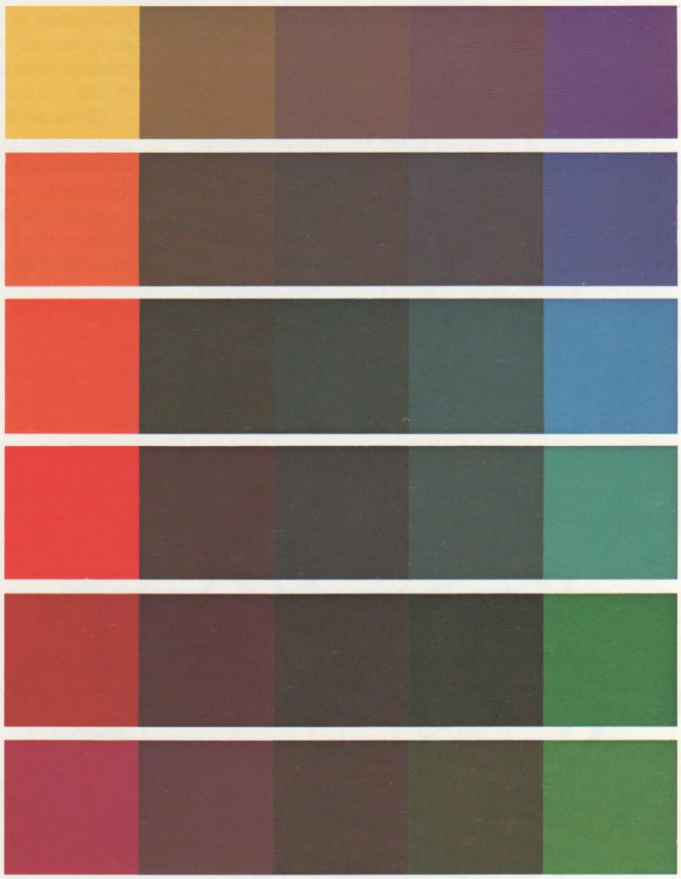

16 Near complements of blue-purple: yellow and orange




17 Near complements of blue: yellow-orange and red-orange

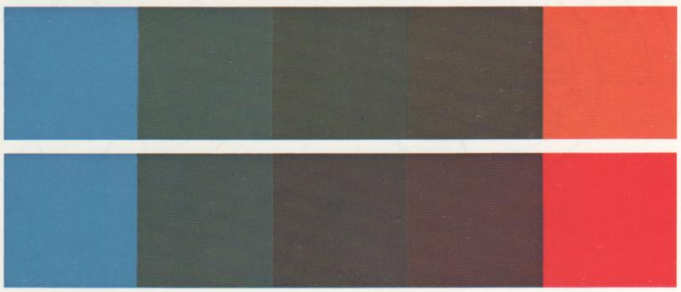


15



Complementary color pairs and the chromatic grays that result from their mixture

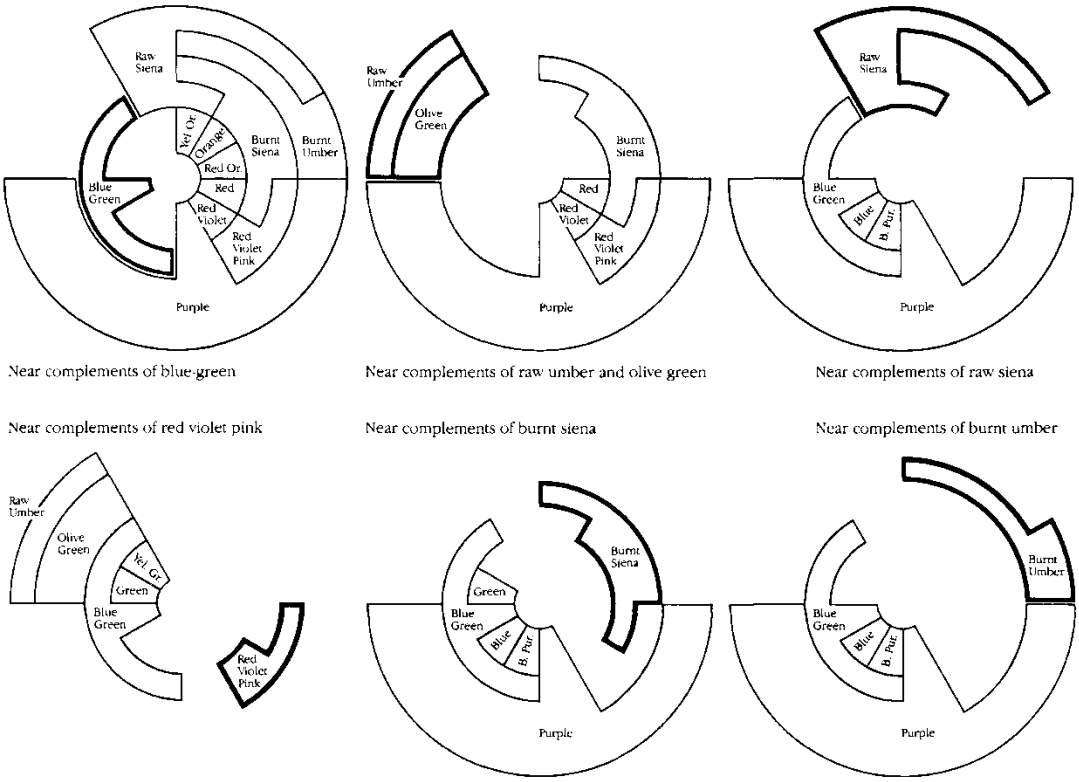
Chromatic grays resulting from mixing blue with its near complements 18



Looking at the expanded color wheel, we can see a number of colors placed around the outside circumference of the twelve-part wheel (Figure 19, Example A). Any of these colors, when mixed with a color opposite it, either inside or outside the twelve-part wheel, will also create a variety of chromatic grays. For example, purple, the widest band of color on the outside color wheel, is opposite half the colors on the wheel. Therefore, the mixture of purple in varying proportions with any of the six colors opposite it on the twelve-part wheel and with any six colors opposite it on the outside wheel, will result in chromatic grays (Figure 19, Example B). In the same way, Figure 20 illustrates additional colors, such as blue-green, raw umber, and olive green, and their near complements. Mixtures of these colors and their near complements in varying amounts will also yield a variety of rich chromatic grays.

Like neutral grays, chromatic grays and complementary chromatic grays have light and dark tonal qualities. Any chromatic gray or complementary chromatic gray can be lightened in value by adding white and darkened in value by adding black (Figure 21). In all cases, the addition of white or black to any chromatic gray will make it appear even more neutralized or grayed.

Near complements using the expanded color wheel 20




Near complements of blue-green

Near complements of raw umber and olive green

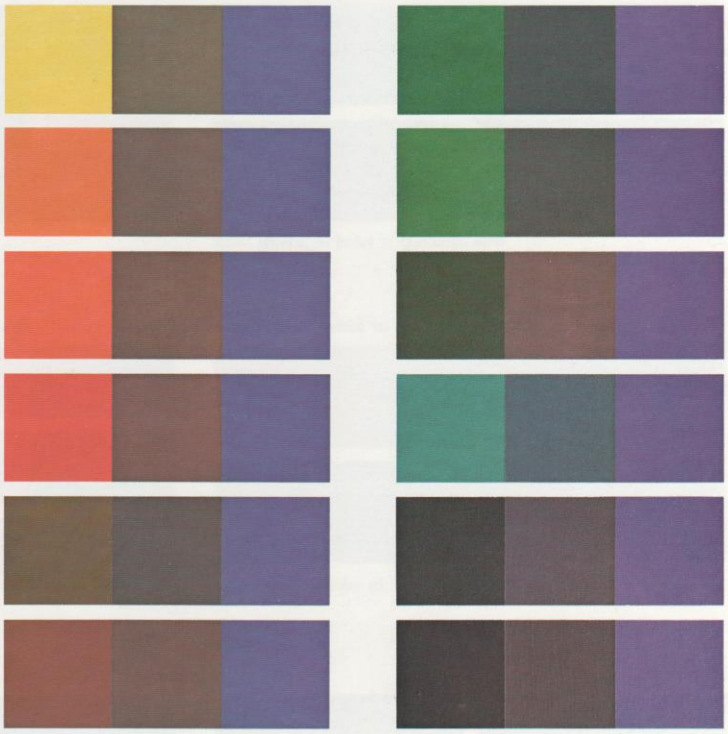
Near complements of raw siena

Near complements of red violet pink

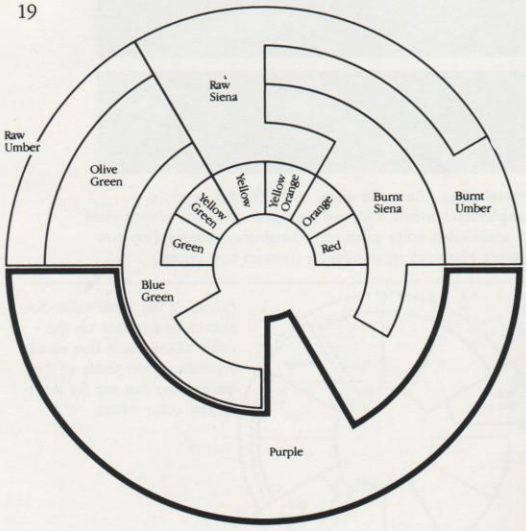
Near complements of burnt siena

Near complements of burnt umber

Near complements of purple 19



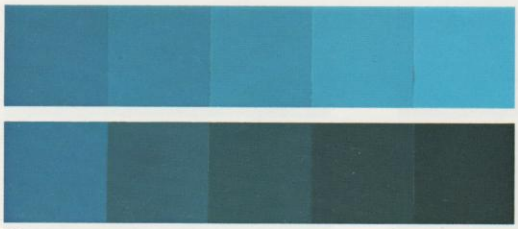
19




Chromatic gray lightened in value by adding white 21

Complementary chromatic gray darkened in value by adding black

22 Blue lightened in value by adding white



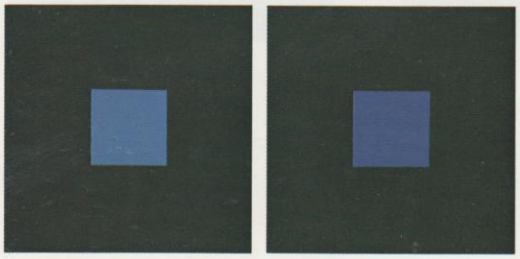


23 Blue darkened in value by adding black

24 Burnt siena lightened in value by adding yellow-orange

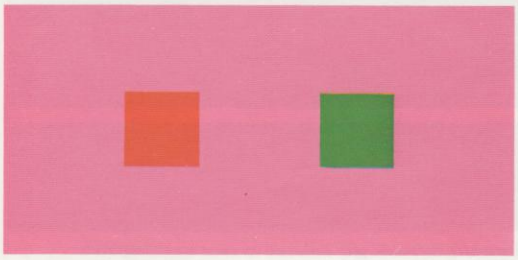
25 Burnt siena darkened in value by adding burnt umber

26

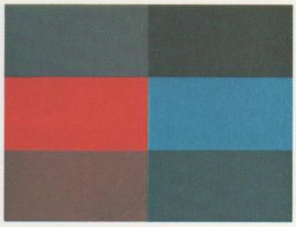


Colors of different value (left above) separate more than colors of equal value (right above)

27



28

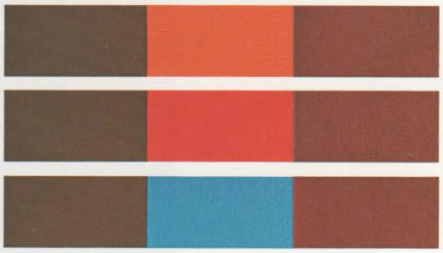


Neutral grays in any value have no intensity

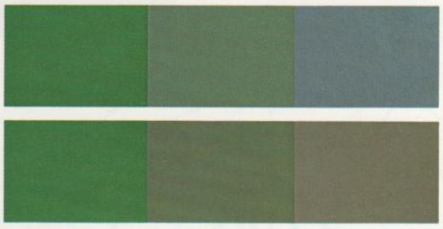
Equally intense red-orange and blue have more intensity than neutral or chromatic grays

Chromatic grays are low in intensity but more intense than neutral grays

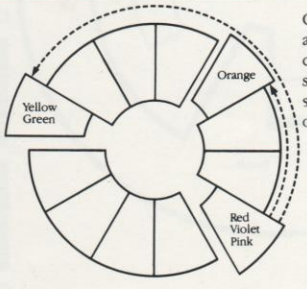
29 All saturated color is not equally intense



30



Neutral grays, chromatic grays, complements or close complements mixed with any saturated color will always yield an unsaturated color mixture. Neutral gray mixture (top row center); chromatic gray mixture (bottom row center)




Colors of the same value and also close together on the color wheel, have less visual separation than those of the same value that are far apart on the color wheel

## VALUE

Color, like all tones of gray, has value—lightness and darkness. Logically, then, commercial color as it comes from the tube or container also has a value range from light to dark. This value range is an inherent characteristic of unaltered color derived from natural and synthetic pigments. Yellows, yellow-oranges, and oranges are naturally light in value. Purple, red-purple, and blue-purple are naturally dark in value. Yellow is the lightest color represented on the twelve-part color wheel, and purple is the darkest. It is understood that yellow is not as light in value as white and that purple is not as dark in value as black. However, yellow and purple represent the light and dark value extremes in color, just as black and white represent those extremes in neutral grays.

The values of "tube" colors can be altered in various ways. We can lighten the value of any of these colors by adding white. Figure 22 illustrates blue progressively lightened in value by adding white. Similarly, we can darken the value of any color by adding black. The same blue darkened in value by adding black can be seen in Figure 23. Perhaps a less obvious way to alter the values of colors consists of adding a naturally lighter or darker color. For instance, since yellow-orange is naturally lighter in value than burnt siena, it can be added to burnt siena in order to lighten the value (Figure 24). Correspondently, since burnt umber is naturally darker in value than burnt siena, it can be added to burnt siena to darken its value (Figure 25).

With practice, the values of colors and grays can be easily manipulated, and we can learn to anticipate the hue changes that will occur when altering values. Once this degree of proficiency is achieved, we can control the value patterns to achieve an intended effect. For instance, strong- or weak-value contrast in color may be desired. When using weak-value contrast, the visual separation between colored areas is dependent upon color change rather than value change. Conversely, the greater the value change, the greater the separation there will be between colors. Figure 26 illustrates this value and color separation principle. Raw umber and blue are distinctly different colors. When used together in their natural values, a great deal of value and color separation occurs between them; this can be seen on the left. On the extreme right, the blue has been darkened so that it is identical in value to the raw umber. In this way, it is possible to see that the separation in the example on the right is totally dependent on color change.

Finally, colors that are closely related in hue will have less separation visually than those that are not closely related in hue. For example, pink and orange are more closely related in hue than pink and green. As a result, less color separation occurs between pink and orange than between pink and green, even when all values are equal (Figure 27).

## INTENSITY AND SATURATION

*Intensity* simply refers to the brightness or dullness of a color or gray.

Sometimes there is confusion between the intensity of a color and the value of that same color. That is, it is not difficult for us to recognize that a yellow or red-orange, such as those found on the color wheel, are intense colors. However, colors such as purple or blue—as found on the color wheel—are not always recognized as being as intense as red-orange or yellow. Actually, blue and purple *are* as intense as red-orange and yellow—the difference between the two groups is value. Obviously, blue and purple are darker in value than yellow or red-orange, but they are all of equal intensity. Therefore, we can see that the intensity of a color has little to do with its value, and that it is entirely possible for both dark and light colors to be intense.

Just as colors that are bright are called intense, those colors that are not bright are said to be of low intensity. For example, chromatic grays are most often perceived as low-intensity colors. And neutral grays have no intensity (Figure 28).

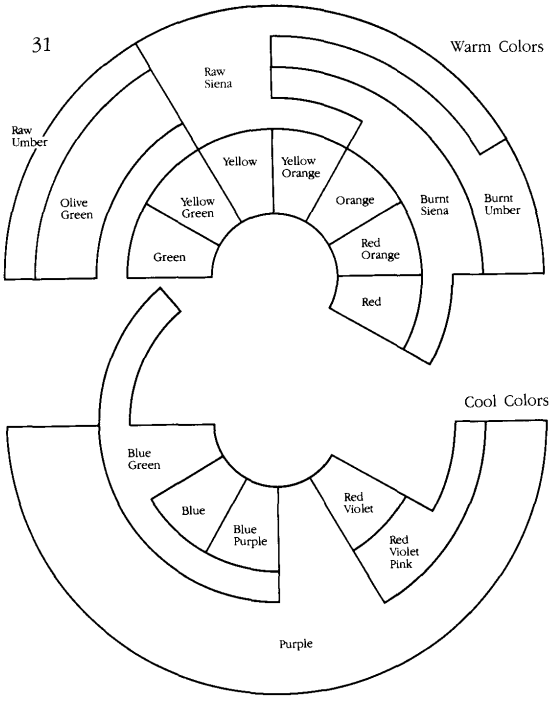
Intensity and saturation are also often confused. While the meanings of both, in reference to color, have a definite relationship, there is an important difference between the two. Intensity has been defined as the brightness of a color. *Saturation* refers only to the purity of a color, and not to its intensity. That is, many saturated colors are intense, while others are not. The distinction to be made, then, is this: All intense colors are saturated, but not all saturated colors are intense. For instance, in Figure 29, the earth colors, raw siena and burnt siena, used directly from the tube are saturated (pure). However when these are contrasted with yellow-orange, red-orange, even blue, neither appears very intense.

A number of things can affect the purity, or saturation, of colors. Mixing neutral or chromatic grays or a complementary color with any saturated color will result in an unsaturated color mixture (Figure 30). Additionally, as previously mentioned in the discussion of chromatic grays, any amount of white added to certain colors and any amount of black added to others will create an unsaturated color. Therefore, when the need arises to lighten or darken the value of a color while maintaining its saturation, a method other than adding black and white must be used.

On the expanded color wheel (Figure 31), the colors clockwise from green through red can be lightened in value while maintaining saturation by adding yellow or any other color from that group that is lighter in value. Figure 32 compares a very dark burnt umber that has been lightened in value by the addition of orange to one that has been lightened with white. Only the mixture of orange and burnt umber is saturated. All these colors (Figure 31) can be darkened in value, while maintaining saturation, by adding darker-value colors from the group or small amounts of black. In all these cases, slight color changes will take place.

The colors blue-green through red-violet, moving counterclockwise on the wheel in Figure 31, can be lightened in value while maintaining saturation by adding white; however, they can only be darkened in value (maintaining saturation) by adding a darker-value color from the group. Blue-green is the one exception. In order to maintain saturation, it can only be darkened with another, darker blue-green. Figure 33 compares a saturated, medium-value blue-purple progressively darkened in value by the addition of a darker-value blue with one that has been darkened by the addition of black. Only the mixtures of the blue-purple and the darker-value blue appear saturated.

31




These colors can be lightened in value while maintaining their saturation in only one way—by adding lighter value colors from this group which are not complements or near complements

Any white added to lighten the values of any of these colors will render them unsaturated

These colors can be darkened in value while maintaining saturation in two ways—by adding darker value colors from the group which are not complements or near complements and by adding small amounts of black (5% or less)

These colors can be darkened in value while maintaining their saturation in only one way—by adding darker value colors from this group which are not near complements (blue-green is a near complement of red-violet, red-violet pink and purple)

Any black added to any of the colors in this group renders them unsaturated

All the colors in this group can be lightened in value while maintaining saturation by adding up to approximately 75% white

A lighter value blue-green can be added to blue and blue-purple to lighten their value while maintaining their saturation. Any lighter value color, except blue-green, can be added to the other colors in the group to lighten their values while maintaining their saturation.

## WARM–COOL

Color has a curious characteristic that can be associated with weather or temperature. Color can appear either warm or cool in feeling. And, at times, it can even feel quite hot or cold. The various temperature feelings associated with color can be controlled and manipulated in a composition in the same ways that value, intensity, and saturation can be. For example, the color composition on the left in Figure 34 is composed entirely of warm colors. As a result, it feels quite warm and perhaps even uncomfortable—like being in a stuffy room. The composition to the right has been changed very little, except that a small amount of cool color has been introduced into the otherwise predominantly warm composition. Although this composition also feels warm, it has a fresher feeling—as though a window has been opened.

The expanded color wheel, Figure 31, shows those colors that usually appear warm and those that appear cool. Two colors—green and red-violet—are designated as transitional colors between warm and cool. In any given composition, the transitional colors can appear either warm or cool, depending on the colors surrounding them and their relative amounts. In most cases, however, green will appear warm and red-violet will appear cool. Color compositions are usually more successful if they contain both warm and cool components.

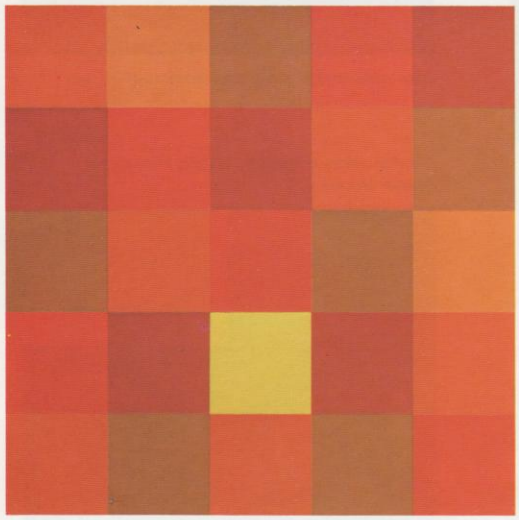
32
Burnt umber lightened in value with yellow-orange remains saturated

Burnt umber lightened in value with white is unsaturated

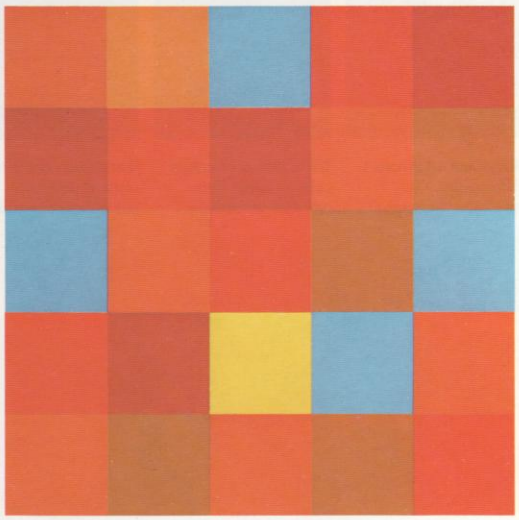
33
Blue-purple darkened in value with a darker blue remains saturated

Blue-purple darkened in value with black is unsaturated

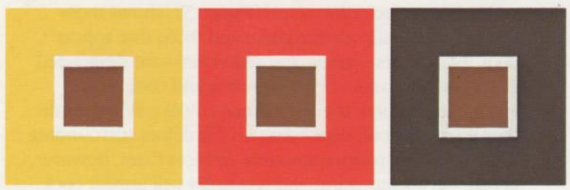
34
Composition composed entirely of warm colors feels uncomfortably warm or stuffy



When a cool color is introduced into the composition, the colors —although still predominantly warm—feel fresher, less oppressive



35



All light browns in the top row are identical in color, value, intensity and degree of warmness. All appear identical because they are surrounded by white

All light browns in this row are identical to those in the top row although they now appear different to those in the top row and to one another

This brown appears to be darker in value than the others

This brown appears to have a greenish cast and seems more intense than the others

This brown appears more yellow and lighter in value than the others

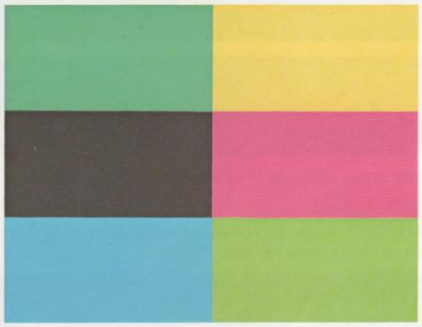
36

Warm and cool colors different in value and intensity

Warm and cool colors close in value but different in intensity

Warm and cool colors close in intensity but different in value

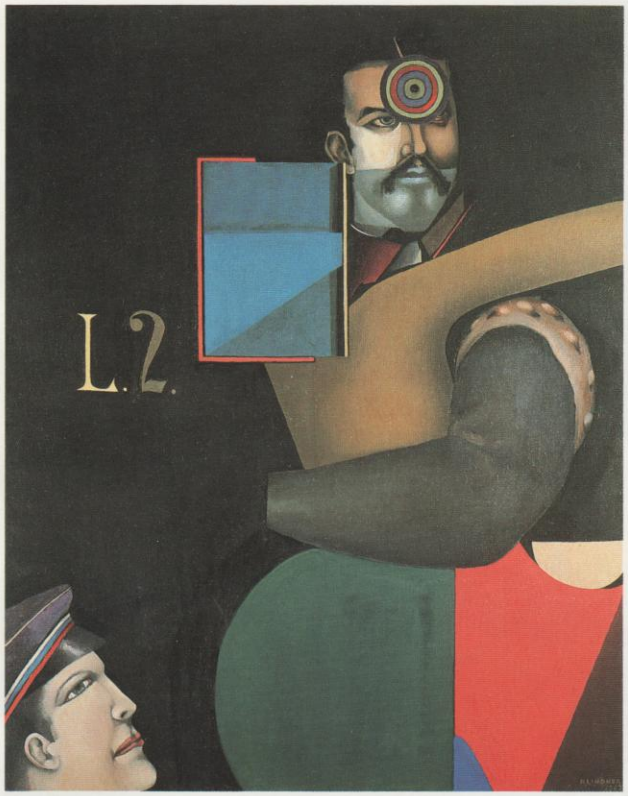
37



Color relationships which seem unpleasant or ugly

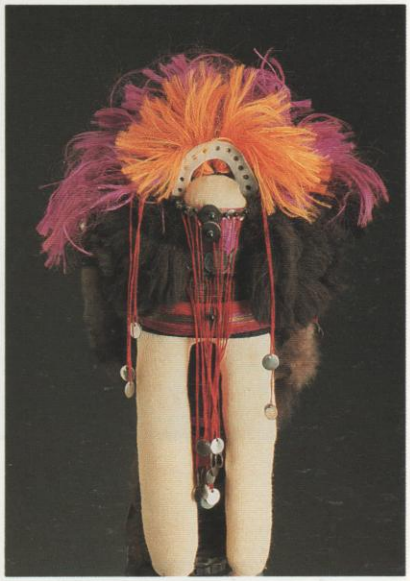
Identical colors adjusted by amount now appear unusual but not ugly

38




Richard Lindner, *Louis II.* Contemporary Collection of The Cleveland Museum of Art

41



Meredith Owens, *Magic Man* (detail)

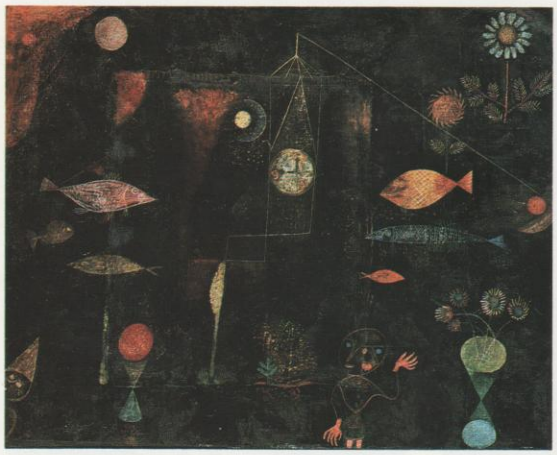
39


Student project: poster designed by Tracy Cheatham

42

Movable Mask; Kwakiutl; Cape Mudge, British Columbia. Courtesy of Museum of the American Indian, Heye Foundation, N.Y.

43

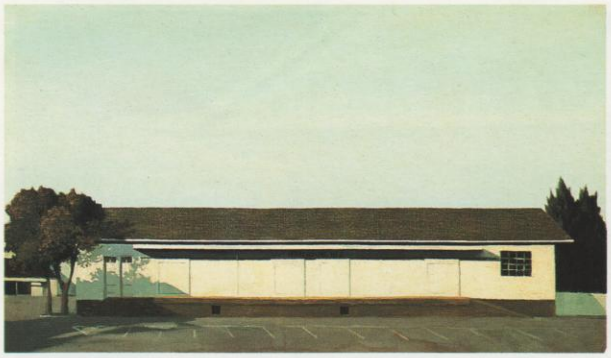


Paul Klee, *Magic Fish.* Philadelphia Museum of Art.

40

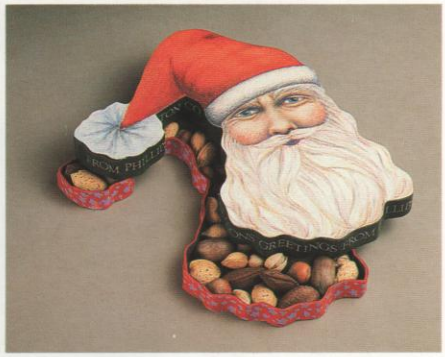
Pierre Bonnard, *Fete sur l'Eau (Regatta).* Museum of Art, Carnegie Institute, Pittsburgh; Acquired through the generosity of Mrs. Alan M. Scaife.

44



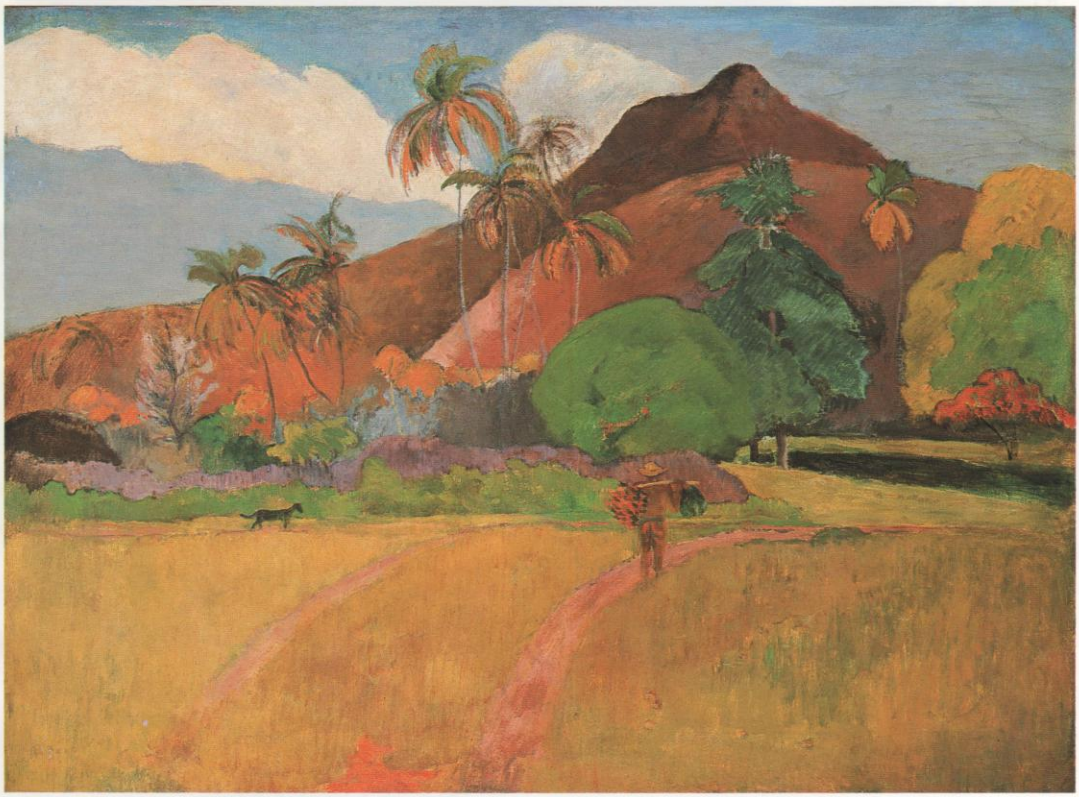
Morgan Allen, *Farmers' Market.*

45



Catherine Porciello; A Christmas card in carton form for a box manufacturer.

46



Paul Gauguin, *Tahitian Landscape.* The Minneapolis Institute of Arts.

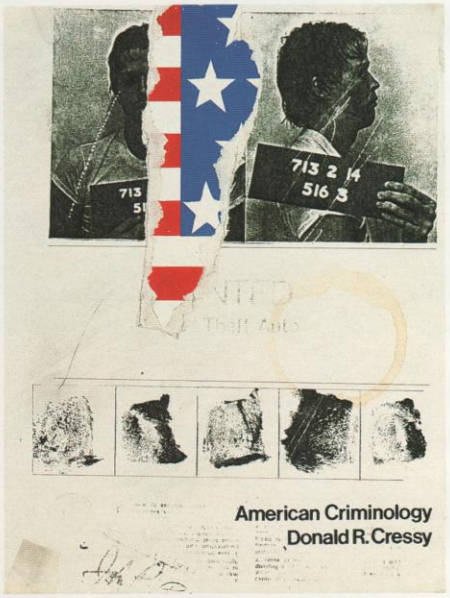
47

N. C. Wyeth, *The Springhouse;* Delaware Art Museum, Wilmington. Photo by Jon McDowell.

49

Seti, *Yes #24.*

48




Book cover designed by Keith Owens

## COLOR INTERACTION AND AMOUNT RELATIONSHIPS

When colors touch, without being separated by any black or white, they often alter or modify one another's visual character. Such a relationship between two or more colors is called *color interaction.* At times, colors can undergo such a change in character that the difference is remarkable. Figure 35 illustrates identical colors of the same value placed on different background colors. When surrounded by white, the browns appear identical—which they are. However, when the same browns are adjacent to the various background colors without a white division, the character of each brown is noticeably altered. An additional change also takes place each time the background color changes. Even though each brown is identical, some appear lighter or darker in value as well as more or less intense than their neighbors. A hue change is only one method of varying the interaction between colors.

Value, intensity, saturation, and warm-cool adjustments can also be used to create different interactions of color. For example, Figure 36 varies the color interaction between a warm and a cool color by altering the degree of value and intensity contrast. As the colors become closer in both value and intensity, there is a more lively and active interaction between them.

Another factor that can radically alter the visual character of a color composition is *amount relationship.* By increasing or decreasing the relative area of a color, the amount relationship between colors will be changed. When this occurs, the overall character of the color composition also changes. Any combination of colors—no matter how awful they may appear initially—can be made to work satisfactorily by adjusting the various amounts of color relative to one another. For instance, in Figure 37 two color compositions have been made with colors of the same hue, value, saturation, and intensity. The combination of colors in the composition on the top seems unpleasant and ugly. The same colors in the composition on the bottom appear unusual and exciting. This change in visual character is the result of increasing and decreasing the amounts of each color used. Obviously, when working with color the ability to adjust amount relationship is an indispensable tool. Amount relationships can easily be checked or changed by using one of the cropping procedures explained in Chapter 1.

## COLOR CONTRAST

While it is always imperative that a good gestalt (unity) be achieved in a work of art, it is still possible to create some diversity within this unity, producing a richer or more dynamic visual quality. Diversity is usually achieved by employing one or more types of contrast—contrast of scale, contrast of number, contrast of texture—and *contrast of color.*

Although there are a number of classifiable color contrasts that may be used alone or in combination, some of the most useful color contrasts for the beginning artist are outlined in the following sections.

### Contrast of Value

*Contrast of value* is produced by using dissimilar values throughout the image area. For instance, in Richard Lindner's dramatic painting, *Louis II* (Figure 38), the overall dark tones are enriched by the use of medium-value saturated reds, neutralized blues, and yellow-browns that are sensitively and strategically placed throughout. Additional drama is created with the light-value accents in the two faces, the cap, and the letter form *L.*

Figure 39, a student poster project, uses contrast of value to generate a powerful and dynamic graphic image. The dark, neutralized blue-purple areas in the arms and hands contrast with the lighter flesh tones to help describe the forms as well as to illustrate clearly the intellectual information concerning the human circulatory system. The light-value chromatic gray typography contrasts with the darker-value chromatic gray background so that the letter forms may be easily seen and the exhibit information comprehended quickly. Finally, the value dissimilarities in the central image area contrast as a group with the close-value color relationships contained within the borders and background.

### Warm-Cool Contrast

Compositions that have all warm or all cool colors will seem to the viewer either too hot or too cold, respectively. Such temperature extremes are essentially uncomfortable; therefore, as previously mentioned, color compositions are more successful if they contain both warm and cool colors in contrast to one another.

An artist who consistently and successfully used warm-cool contrast was Pierre Bonnard. In *Fete sur l' Eau* (Figure 40), the color is primarily warm—burnt siennas, oranges, reds, yellows, umbers, and so forth. However, with the addition of the cool, neutralized blue-purples in the water and in small areas, such as the back of the neck in the large foreground figure and the railing, the painting achieves the wonderful harmony of a lovely warm day refreshed by a shimmering, cool body of water.

Even though color is most often associated with two-dimensional works, it is often used in three-dimensional works with marvelous results. Figure 41, *Magic Man* by Meredith Owens, exemplifies a rich use of color that incorporates warm–cool contrast. This can be seen most readily at the top of the form where the slightly neutralized warm orange fibers are overlaid on the saturated red-violet ones. This contrast is reinforced just above the off-white arm area by juxtaposing the gray-green color with the saturated reds. In this case, the green acts as a cool modifier on the surrounding warmer colors.

### Complementary Contrast

As described earlier, colors that appear directly opposite one another on the color wheel are said to be *complements;* this designation describes color pairs that visually enhance each other's hue if they are juxtaposed. For example, when green is placed next to red the green appears more green and, conversely, there appears more red. In this way, complementary pairs are by their nature contrasts and have a vast potential for creating marvelous color relationships when used in the same visual field.

The degree of interaction between complementary pairs will vary according to their proximity to one another and to the degree of intensity, saturation, or neutralization of each. For instance, the painted wooden mask, Figure 42, displays complementary contrast between red-orange and blue-green in varying degrees of saturation. These colors in the center mask appear more vigorous and dynamic due to the high degree of saturation of each and their proximity to one another. Conversely, even though these same colors are still juxtaposed on the right and left mask coverings, the dynamic effect is somewhat diminished because the red-orange and blue-green are more neutralized. On the other hand, complements do not always have to be placed side by side to create exciting color relationships. In Paul Klee's *Magic Fish,* Figure 43, the violets in the fish and disc on the left contrast with the complementary yellow circle to the left of center. Similarly, the red fish on the right contrasts with the complementary green vase on the lower right. Such contrast of complementary pairs helps to reinforce the playful and otherworldly content of the painting.

## COLOR APPLICATION CONCEPTS

Color in actual application is usually used in one of two ways (although these ways may be combined as they are not mutually exclusive): (1) color as local color, and (2) color to reinforce the content of the work.

### Color as Local Color

The term *local color* means the actual or generic color of an object or thing as it is commonly experienced in our vision—that is, a *red* apple, a *blue* sky, a *green* dress, and so on. This type of color usage is basically more intellectual than emotional, as its goal is to promote the believability or "realness" of an image.

The spare and handsome effects of local color can be seen in Figure 44. Blue, green, white, and so forth immediately complete the intellectual communication of things like sky, trees, and buildings. However, the local color has been sufficiently neutralized into chromatic grays so that an emotional mood associated with a lonely, late afternoon is also expressed.

Local color creating a totally different mood is exemplified in Figure 45. In this student project, flesh tones, blue eyes, pink cheeks, red velvet, and so on assist in communicating intellectually the familiar figure of Santa Claus. Additionally, much of the color is saturated so that an appropriately festive and happy emotional content is generated.

### Color to Reinforce Content

Color that actively enhances the emotional content of a work—with or without adherence to the "local color" of the objects or things that comprise the image—represents the use of *color to reinforce content.* For instance, upon first examination Paul Gauguin's painting *Tahitian Landscape,* Figure 46, seems to employ local color only. However, on closer analysis we find that many of the palm trees have been executed in near saturated reds, burnt siennas, and neutralized purples. The cloud formations are not white but a mixture of light-value neutralized pinks, purples, and oranges. Additionally, the ground color in the foreground has been rendered in a much more saturated red-brown than is normally found in nature. Such alteration of local color not only creates a richer and more harmonious color field but enhances the emotional content of peace, warmth, and tranquility that one might expect of an island paradise.

Peace and tranquility are also expressed in N. C. Wyeth's painting, *The Springhouse* (Figure 47), but in a cooler and more restrained way through the use of overall chromatic grays. The stones of the springhouse are all neutralized oranges, vermillions, purples, and blues. The surrounding landscape is created by heavily neutralized warm and cool greens, browns, and so forth. The cream being poured from the container is a neutralized white which acts as an illuminated accent due to its very light value contrasted with dark surroundings.

Color to reinforce another kind of emotional content can be seen in Figure 48, a book cover created by designer Keith Owens. Dull, warm blacks and grays in the mug shots and fingerprints coupled with the faint brown of the coffee stain act to promote the unhappy and undesirable undertones of crime and punishment. The more saturated colors of the torn American flag can be seen as an accent that provides relief from an otherwise drab color field.

Finally, Seti's painting, Figure 49, depends almost entirely on color to communicate the content of the work. Since there are no recognizable images to communicate intellectually its mood, color becomes the main vehicle. The painting's feeling of joy and delight is expressed through the use of nearly all saturated colors in varying degrees of complementary contrast. Intermittently the artist has placed a few chromatic grays to leaven and enrich the total color field.

## USING COLOR EFFECTIVELY

Two methods are helpful in learning to use color effectively. One way—the most important—is to use it often. The more we use it, the better we become. It is essential to know the color vocabulary and understand what each color term means. With practice, color manipulation and control can be acquired. In this way, visual expressions of great clarity and strength can be created.

The second way to learn to use color effectively is aided by the first method, and the two used in tandem can accelerate color mastery. This method consists of studying how other artists have used color. Many artists are proficient in color use, but the extraordinary colorists in art history are the most profitable to study. Paul Klee, Henri Matisse, Pierre Bonnard, Claude Monet, and Richard Lindner are a few of the great artists whose color usage, we suggest, is worthy of close examination.