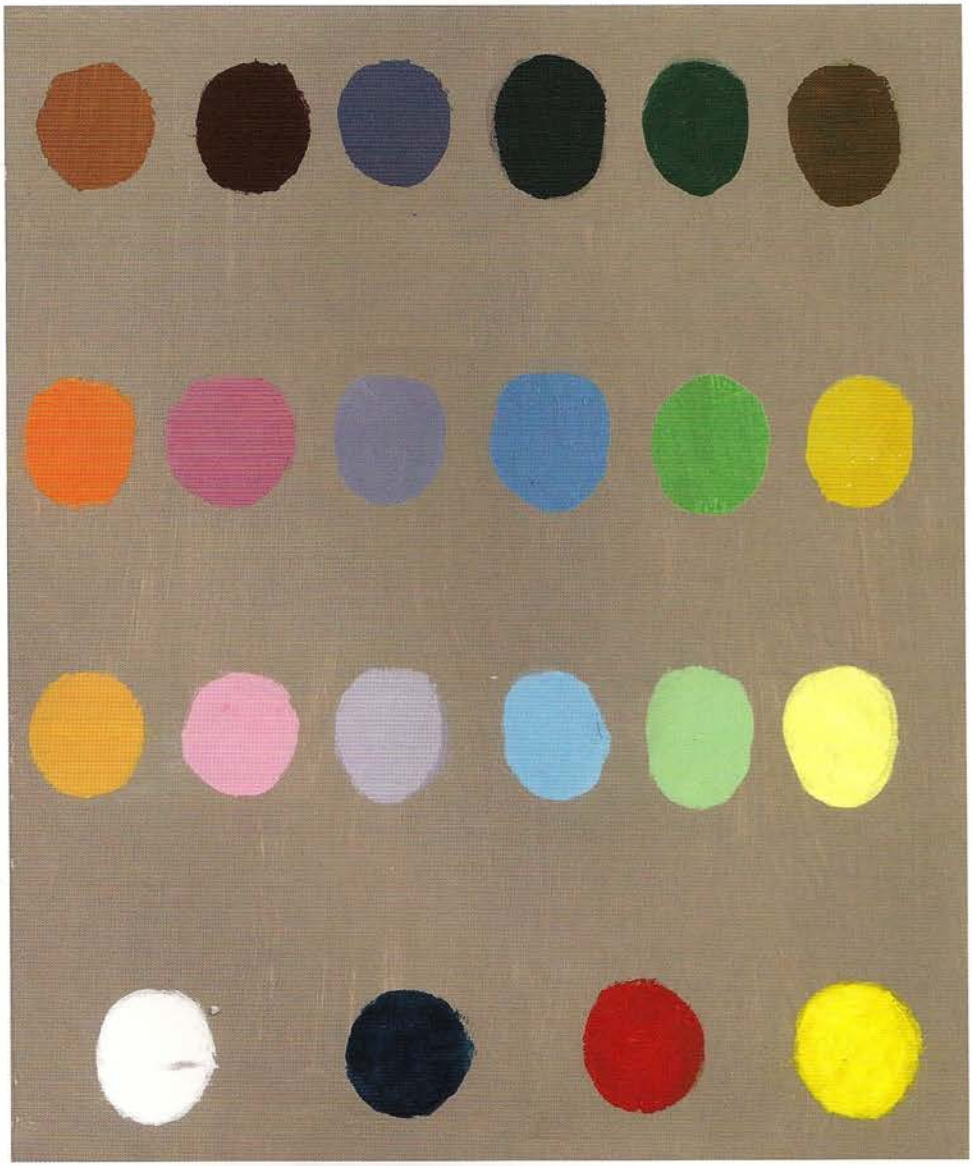
Excerpt from *The Complete Oil Painter*
by Brian Gorst

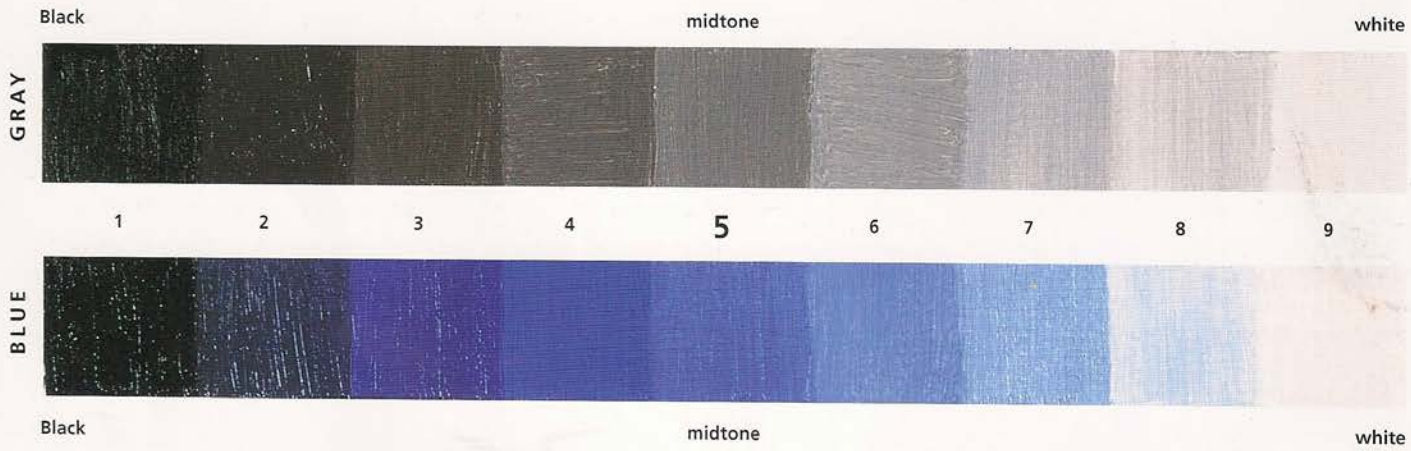


FORM AND COLOR 3

The elements of color

Color describes the nature of the light that we receive through our eyes. This visible light is a narrow section of the electromagnetic spectrum, and different light waves are emitted from different objects and paints. Every object that we see and try to depict has a color and the elements of color are always threefold: value, hue, and intensity. An understanding of these characteristics, and how they are inextricably linked, is a vital part of the painter's craft.

Value



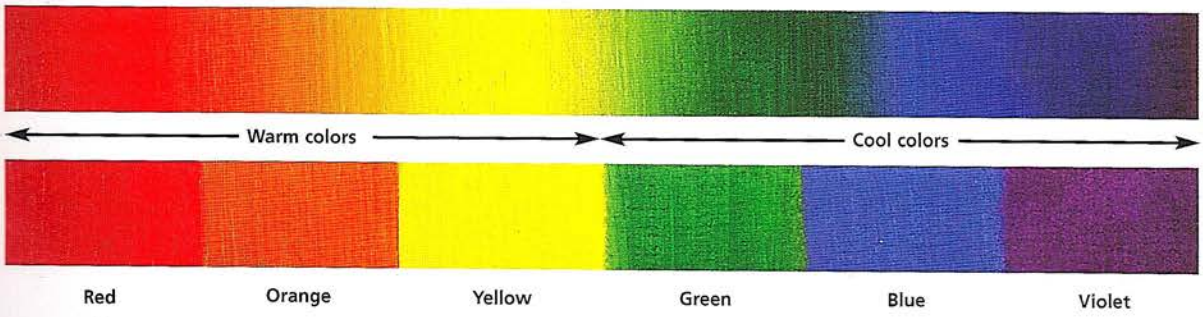
The value, or tone, of a color is essentially its darkness or lightness. It is scientifically related to the height of the light wave and describes its overall reflectance. Value ranges from black to white, with varying increments in-between. The artist Franz Kline often worked with just two divisions—white and black; but it is said that the French painter Ingres required his students to mix over 200 discernibly different tones from black to white. The American colorist Albert H. Munsell developed a useful color classification system with nine values in which black = 1, white = 9, and a midtone is placed at 5.

A tint is a high-value or lighter color (often achieved by mixing the basic color with white), while a shade is a low-value or darker color (often achieved by mixing the basic color with black). Tints and shades tend to possess less intensity than full-strength colors closer to the middle values. Different colors of a similar value have a fraternal relationship with one another that can be highly harmonious.

Black and white, at the extremes of the value scale, can be overdominant and disruptive in a picture. An area of black can isolate and disunite the colors around it and white can stifle the subtlety of color harmonies. When black or white is used as a solid color in a painting, it is often in order to stress the emotional or symbolic nature of other colors, as in Mondrian's geometric abstractions or the near-heraldic simplicity of a court portrait by Holbein.

Although oil paint has a much greater tonal range than watercolor, tempera, and most drawing media (and, unlike acrylic paint, it maintains a constant value during the drying process), the value range on the palette very often cannot match the range seen in real life. Moreover, the value range found in nature is often deliberately abbreviated and modified by artists for particular effects. The Impressionists, for example, limited the tonality of their paintings in order to emphasize color relationships; conversely, Caravaggio limited the variety of color to highlight dramatic tonal effects. In his portraits, Rembrandt often rationalized broad areas in the background or clothing into simplified darks while expanding the value range of the light mass on the face.

Hue



Hue relates scientifically to the length of the light wave, and ranges in a scale from red to violet, passing through orange, yellow, green, and blue. The scale extends farther than this into both ultraviolet and infrared, but these six colors form the spectrum that is visible to the human eye.

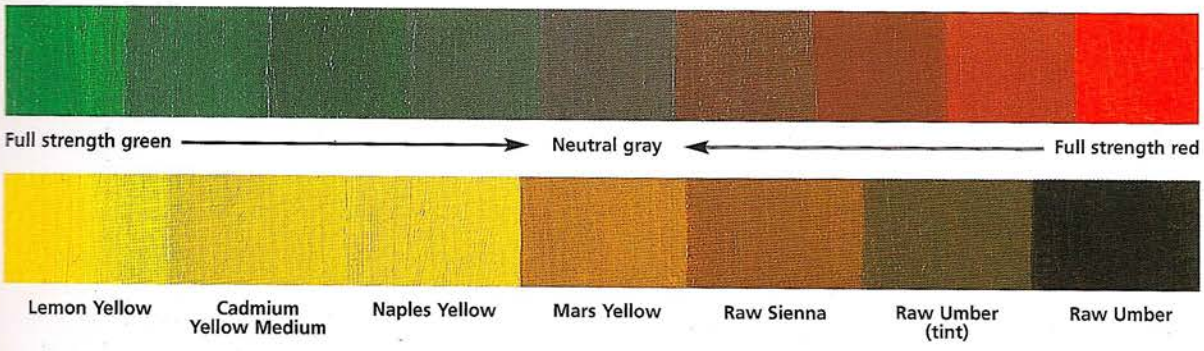
It is important to stress that all colors found in nature can ultimately be described as one of these six hues (R, O, Y, G, B, V) or increments between (RO, YO, YG, BG, BV, RV). Pink is of a red hue; navy is blue; brown and peach are both orange hues; maroon becomes red-violet. All grays are biased toward one hue or another as, theoretically, are black or white.

It is vital that we understand the true hue of colors when mixing paints on the palette. This enables us better to neutralize or intensify a mixture with other hues.

A monochromatic picture is made up of only one hue, within which a vast variety of tones and strengths is available. A prismatic or full-color palette can achieve most hues in various tonal and chromatic combinations. Successful paintings are often those that have a balanced and restrained use of hue, combining gentle contrasts with resonant harmonies.

The hue of a color can also be expressed in terms of temperature. Hues of red and orange tend to evoke warmth; blue and green tend to coldness; yellow and violet can possess either. Temperature is, however, highly relative, subjective, and often culturally specific. Warm colors can appear cool when surrounded by an even warmer color, and colors may aggregate to give an overall impression of coolness or warmth.

Intensity



Intensity (sometimes referred to as saturation or chromasity) is the term used to describe the purity and strength of a color. This ranges from a full-strength bright color to a hypothetical neutral gray. A pure, intense color catches the eye in the same way that a crystal-clear musical note attracts the ear. Colors that are subdued or muted are commonly called earth colors.

The intensity range of pigments has greatly increased since the development of synthetic colors during the nineteenth century, and today so-called "day-glow" colors push the intensity of certain colors even farther. Intensity affects the presence and relationship of colors: if the value and hue of two colors are equal, the one with the greater intensity will advance optically. Yellow Ocher may have the same hue and value as a Cadmium Yellow Deep, but it is more neutral and less intense.

Although colors tend to be less intense the closer they move toward black or white, different hues have their most saturated moments at different values. The most intense yellow, for example, has a high tonal value, while the most intense violet is darker than the midtone. Artists learn to sense the intensity of a pigment and this becomes vital in the mixing of paints, especially with white.

It is important to monitor the degree of intensity across a picture, as the subtle neutralizing of colors is one way of creating depth. The underpainting of a composition is nearly always more muted and less intense than the subsequent layers, where notes of intense color emphasize and bring objects forward.

FORM AND COLOR 4

The color wheel

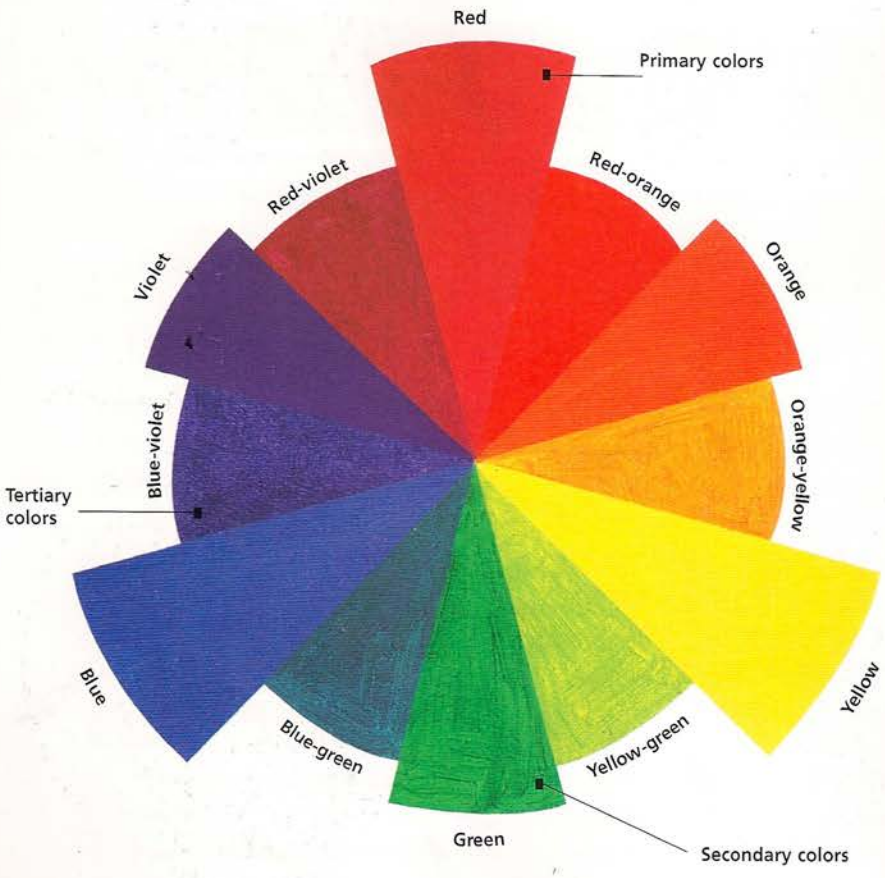
Color wheels are principally diagrams of hue, constructed to illustrate theories of color, in which the linear shape of the visible spectrum is curved into a circle, joining red and violet together in the same way as twelve and one are joined together on a clock face.

Color wheels are used for different purposes, and although the order of the six hues is always the same, certain hues are given more importance in some systems than in others. Psychologists recognize that we mentally differentiate color into four primaries of yellow, green, red, and blue. Scientists studying light and optics subdivide their color wheel into red, green, and blue primaries. The Munsell industrial color classification system further extends this to five primaries of red, yellow, green, blue, and violet. The four-color printing system used in most commercial media has cyan (blue), magenta (red), and yellow as its primaries along with black; and it is to this final convention that most painters' concepts of color relate.

Painters classify red, yellow, and blue as primary colors, because they cannot be satisfactorily generated by other paint mixtures yet, hypothetically, can combine to create all other colors. Orange, green, and violet are described as secondary colors and are created by mixing their two neighboring primaries. Colors mixed from combinations of secondary and primary colors are known as tertiary colors.

Color relationships

PRIMARY, SECONDARY, AND TERTIARY COLORS



A color wheel shows how colors relate to each other, and so can help artists predict whether colors will harmonize or contrast in a painting. There are a number of different types of color relationships, each one creating a different mood.

Complementary colors are located opposite one another on the wheel; they tend to resonate when placed together. Red will appear vivid when placed next to green; yellow with purple; blue with orange. The intensity of the effect depends on the value and saturation of the colors in question: red and green may have a very resonant complementary effect, whereas the sheer luminosity of yellow can dominate a strong violet.

The pairing of full-strength complementary colors is seen as coarse and oversimple in most artistic settings and is more often found in design contexts. Complementaries are useful when painting with a limited palette, as they enable the artist to exploit relationships between colors to maximum effect. It is common in still lifes and portraits to paint backgrounds a subdued complementary of the main subject, the contrast pushing the subject forward to greet the viewer.

Simultaneous contrast refers to the use of a complementary color (instead of a neutral gray) in shadow areas to provide a visual link with the main subject and bring the shadow to life. An intense subject, such as golden sun-drenched snow, for example, will make the shadow mass appear blue-violet; the shadows of a human face can often appear slightly blue-green. (This effect may influence the color chosen for the painting surface.)

Split complementaries are those adjacent to the true complementaries; they tend to offer more pleasing, harmonious pairings.

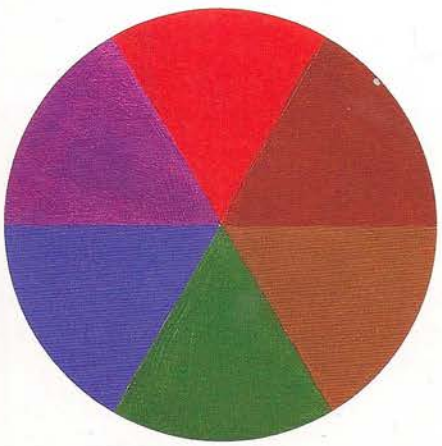
Triadic colors are found a third of the way around the color wheel from any given hue. Triadic pairings offer less emotive contrasts than complementaries, and three triads can form the basis of a balanced limited palette.

Analogous or diadic relationships occur between colors that are near neighbors on the color wheel and have the influence of a primary in common. Analogous colors are often used in design, as they offer decorative variety with limited color contrast. Analogous relationships are useful in bringing variety into single-color objects, such as cloth or foliage.

Adaptations of the color wheel

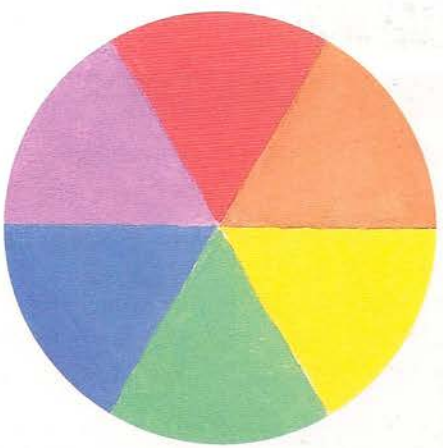
The painter's color wheel usually indicates all hues at their most saturated and consequently contains a range of values from the brightest yellow to the deepest violet. A color wheel may, however, show all hues at full intensity at a single value range or alternatively all hues at varying degrees of intensity. An adapted color wheel demonstrates how color limitations can be extremely interesting and pleasing. When artists produce their own color wheels they learn the vital skill of mixing paints into exacting values, hues, and intensities.

FULL-STRENGTH COLORS AT SAME VALUE



While red and blue are quite intense at this value, yellow is less so and appears muted in comparison.

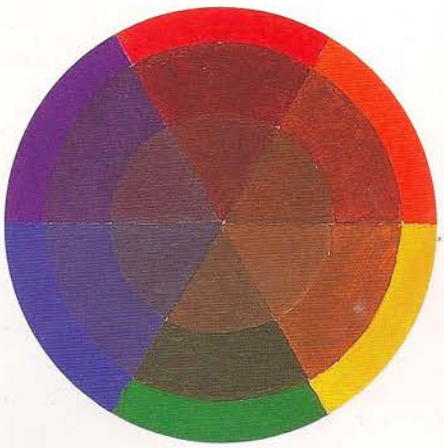
TINTS WITH WHITE ADDED



Even tinted with a little white, yellow remains strong against the high value cooler tints. Notice the way all six colors sit comfortably together in this instance.

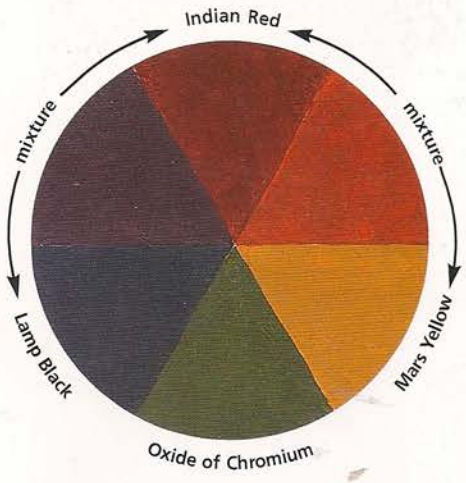
VARIABLE INTENSITIES AND VALUES

This color wheel combines hue with three degrees of intensity. The prismatic colors of the outer band, when mixed with their opposite pairing to form the inner bands, begin to assume the appearance of earth colors.



LIMITED (MUTED) COLORS AT DIFFERENT VALUES

Earth colors tend to be nearer in value and intensity to one another, and so these hues sit well together across the whole wheel.

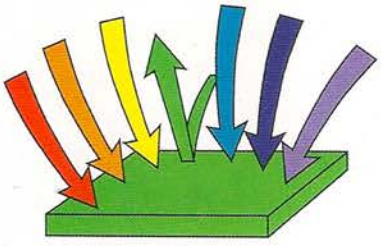


FORM AND COLOR 5

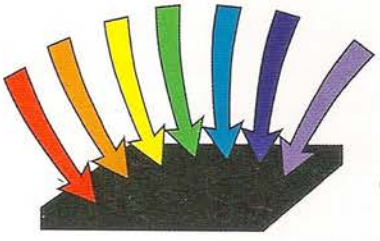
Color mixing

When light falls on a painted surface, each pigment absorbs and reflects different hues in the spectrum. Full-strength colors reflect their own hue with various quantities of their neighbors', and absorb the light of the color that lies opposite on the color wheel. Black absorbs almost all light, while white reflects the complete spectrum.

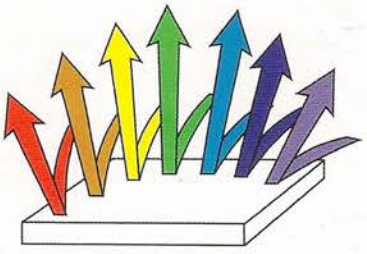
When two pigments are physically mixed, their light-absorbing tendencies are combined in a process called subtractive color mixing, with more and more hues of light being subtracted or absorbed with each color that is added. All mixtures are therefore duller and less intense than their constituent pigments. The more pigments that are combined to create a color, the more neutral that mixture will be.



Green reflects green and absorbs other colors



Black absorbs all colors

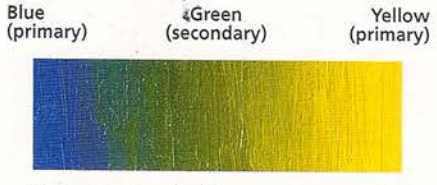


White reflects all colors

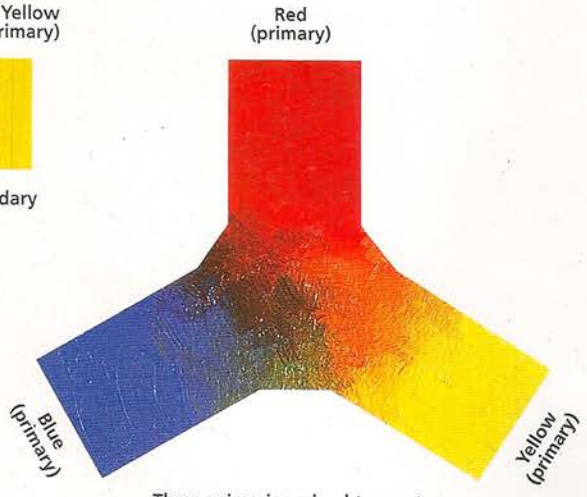
The effects of mixing colors

The three primaries when mixed in pairs (red, yellow, and blue) produce the strong secondaries that lie between each pairing on the color wheel. When all three primaries are combined, the result should be close to a dark, neutral gray. The hue, value, and intensity of each mixture will depend on the strength of the primaries, and the principles remain the same for muted primary hues of any value.

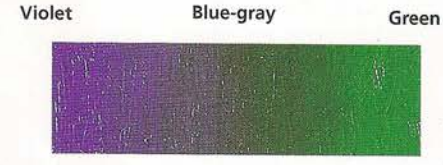
When full-strength secondary colors, such as Cadmium Orange, Viridian, and Dioxazine Violet, are paired together, they can also produce muted, though pleasing, tertiary versions of the primaries. All other tertiary colors are mixed from combinations of the six primary and secondary hues.



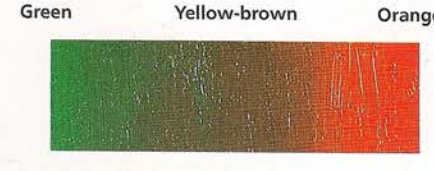
Two primaries mixed to create a secondary



Three primaries mixed to create secondaries and a dark neutral gray



Mixture of two secondaries



Mixture of two secondaries

Colors that are opposite each other on the color wheel (complementaries) neutralize each other when mixed together, moving each color closer to gray. This effect forms the basis of an economical and efficient color-mixing practice. Complementaries can be used instead of grays to lessen the intensity of a color; if a dark complementary is used to lower the value of a color, it has less impact on the intensity than mixing that color with black.

Theory, however, always has to be tempered with trial and error, as pigments all have different strengths and values and can behave differently. It is difficult, for example, to mix a true violet from even the purest red and blue; and although orange should, in theory, neutralize blue it often tends toward a green.

Two colors mixed together at different percentages (value maintained in mixtures using a little white)

Approaches to mixing color

Color mixing occurs at different stages of the painting process: on the palette or glass before and during painting; on the picture surface either physically or through glazes; and often optically between the picture and the eye (see Pointillism, page 70). Colors can also be completely or partially blended and glazes can be thickly or thinly layered.

These methods have been used throughout the history of painting in intuitive and creative combinations. Rubens was renowned for his rich, transparent shadows and fleshy, opaque light masses heightened by partially blended highlights and cool turnings, mixed directly on the canvas. The French Neoclassicists favored a highly regimented palette, with dozens of earth-colored tints carefully premixed and applied opaquely with precision. It is important to remember that as long as the color effect in the pictures works well, it really matters little how it was arrived at, and so by trial and error painters should aim to develop their own solutions.

Using a palette knife rather than a brush to mix improves palette tidiness, saves time, and keeps thinners clean.

TIPS FOR BETTER COLOR MIXING

- **Make each mixture using as few colors as possible.**
- **Use a palette knife to mix paints wherever possible. This keeps brushes and thinners clearer for longer.**
- **Complementaries and triadic hues neutralize other colors and darken in more subtle and interesting ways than merely adding black.**
- **Use separate brushes for the light and shadow masses to avoid muddying color mixtures.**
- **Make swatches of pigments and mixtures, noting their toptone, undertone, and tint with white, along with their name and manufacturer.**

Garden contrasts
Roy Sparkes
Oil on canvas, 1990
30 x 36 in.
(76 x 91cm)

Here the main mass of the green is built up of multiple colors, mixed wet-into-wet on the canvas and concluded with single-stroke impasto marks that are left unblended.

FORM AND COLOR 6

Color palettes

An artist's choice of colors for each painting is called a palette. A limited palette is less intense, less contrasting, and made up of fewer colors than the subject. Alternatively, a palette can be extended into bright "prismatic" pigments for heightened and more intense effects. A palette may be chosen to cover all aspects at once within a picture, or it may be selected in order to paint one object at a time.

1

In choosing a palette of colors, you should consider the subject matter, the color of the surface on which you are painting, and the amount of time available for each session (which will determine whether complex color combinations can be tackled). The high cost of some of the saturated colors may also be a factor in your choice. Through trial and error, working with different subjects, you will learn which colors need to be replaced often and which are left unused, and adapt your palettes accordingly.

Tonal palettes

The appearance of real volume and depth within a painting is created through the use of different tones across a surface, mimicking the effect of light (see Illusionistic form, page 28). In this case, it is useful to mix and arrange tones on a palette in value scales rather than in color relationships.

2

1 **Achromatic** A palette of grays arranged in order of tone, producing grisaille paintings of varying values from black to white. It is sometimes used as a training palette to enable artists to develop their mixing skills and tonal awareness without the need to consider color.

2 **Monochromatic** A tonal palette of one hue. A monochromatic palette may be composed of either one pigment extended with black and white, a transparent pigment used on a light ground, or two or more colors of similar hue but different values. Underpainting (see page 53) is commonly done in a monochromatic palette, usually in an earth color, such as Raw or Burnt Umber, Terre Verte, or Raw Sienna.

3 **Single-object palette** Often a palette is laid out in order to paint a single object in its local color (the color of the actual surface of the object, disregarding any reflected or ambient color). Single-object palettes were often used in fresco painting and are sometimes necessary in a larger picture. Such a palette may be close to a monochrome arrangement in tints and tones of one color.

4 **Flesh palette** Flesh is traditionally painted in a different session to other aspects of a picture and the palette may be arranged with three corresponding tonal "strings" of yellow, red, and a neutral gray. This allows the painter to paint in a tonal manner while altering hue and intensity, responding to the enigmatic color changes found on the human form.

3

4

Earth palettes

An earth palette is the traditional palette of the pre-modernist age, when colors tended to be taken from the earth rather than synthesized artificially.

5 **Limited earth palette** It is said that Apelles, the greatest painter of antiquity, used a palette of yellow, red, white, and black to create pictures of astonishing realism. This can be replicated with Yellow Ocher, Red Oxide, Lamp Black, and white, producing muted primaries and concordant secondaries. Many painters, such as Velázquez and Rembrandt, used very few pigments and yet, by carefully offsetting warm and cool passages of paint, achieved a balanced color scheme. The simplicity and natural harmonies of this kind of palette make good results easier to achieve and mean that it is extremely useful to the untrained painter.

6 **Full earth palette** In many cases the limited earth palette needs to be extended to achieve a wider variety of hue and intensity. Landscape painters may add greens and use more dark earth browns; a portraitist may need a purer red, violet, or blue. It is important to include colors that do not make the intensity of the overall palette too bright.


5


6

Prismatic palettes

Throughout history, artists have continued to add brighter colors to their palettes as they became available, and this is reflected in the full-strength colors of prismatic palettes.

7 **Triadic** The simplest prismatic palette is probably one with full-strength red, yellow, and blue, from which a wide range of hues can be produced. The Fauves and early Abstractionists like Kandinsky and Mondrian preferred the striking simplicity of this palette. Cadmium Reds and Yellows combined with Manganese Blue produce rich secondaries, and French Ultramarine, Alizarin Crimson, and Viridian are commonly used to add depth of tone and transparency. As with the four-color printing process, this choice of primaries may be most effective on a pale ground.

8 **Full palette** This is a palette using an unrestricted range of pigments, often with a warm and cool version of all the primaries and secondaries, deep transparent colors, and possibly more than one white. A full palette was used by colorists such as Seurat and Renoir and many twentieth-century painters. Most full-palette arrangements use paint straight from the tube rather than premixing tints with a palette knife, and painters using this kind of palette may avoid the use of black.

9 **Glazing** This is a palette composed of transparent pigments of full-strength colors (sometimes the brighter earth colors). The value of the palette surface itself has to be high, if not white, to see clearly the strength of glazes.


7

Arranging color palettes

All artists lay out their palettes according to their own tastes, but here are a few suggestions of ways to arrange the colors.

Continuous spectrum The most common way of arranging colors is in a continuous line of hues according to the color spectrum. This makes more sense in palettes without browns, grays, or black, such as are used in impressionist or broken-color techniques.

10 **Warm/cool** Another way of arranging full-color or extended earth palettes is to lay out all the blues, greens, and violets in one line of colors and the reds, oranges, yellows, and browns in another. The white acts as an axis between the two strings. This encourages a color scheme that is balanced in temperature, with the complementaries easily identifiable on the palette.

11 **Transparent/opaque** Setting out all the transparent colors in one line and the opaque colors in another is a useful arrangement for painters exploring a combined transparent and opaque method of paint application.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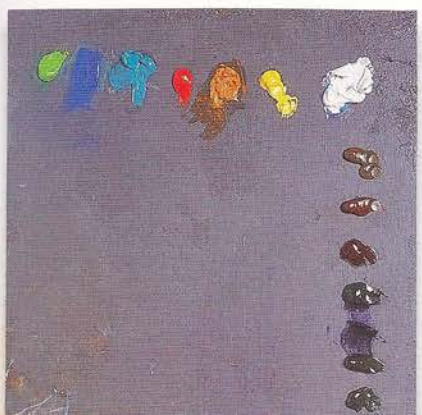
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