

Color

A Short Guide On Color Applied to (Naturalistic) Oil Painting

Color is complex. It doesn't really get any simpler when we paint. There is a science of color which gives us clarity in describing color. The *experience* of color, however, is very subjective. For the purposes of oil painting we're going to sample the science and then rely on experience and some tricks.

Describing Color

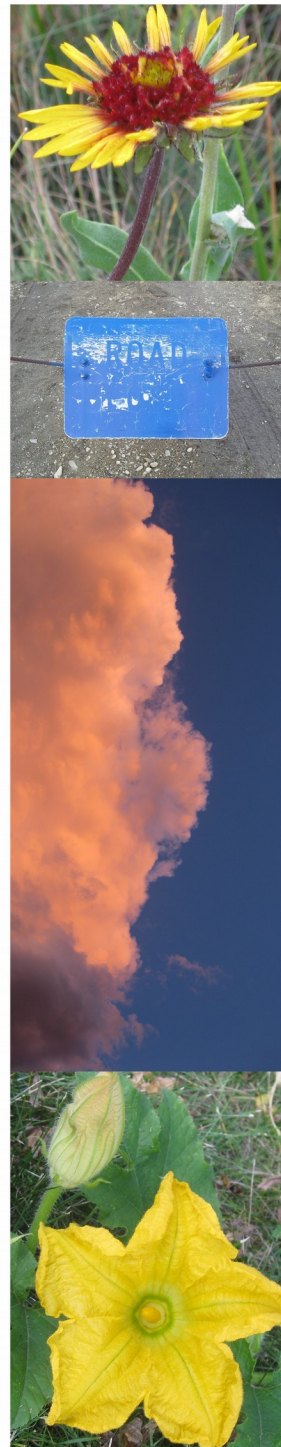
We describe color with three basic attributes: **hue**, **saturation**, and **brightness**. Hue is red, green, yellow, violet, etc., what we usually just call "color". Saturation is the purity, or intensity of a hue. Blood is a saturated red, while the inside of a tomato is a less saturated red. Brightness can be experienced by viewing a typical green leafed tree in bright sunlight. All the leaves are basically the same color, green. Some leaves are in direct sunlight, while some are shaded. The shaded leaves are less bright, while maintaining very similar saturation and hue. Paints are described in these three terms.

Hue in a paint is given a large number of names, e.g., Ultramarine Blue, Cadmium Red, Yellow Ochre, Quinacridone Red, which are terms with either centuries long traditions or recent technical descriptions. (Names like "sea foam" are confined to house paint.) There may be multiple hue names, however, for the same hue, depending on the chemical basis, for example "lapis lazuli" and "ultramarine blue" are variations on the same (very close) color.

Saturation is the purity of a hue. Saturation in a paint is assumed to be inherent in the hue, and the quality of the manufacture. That is, squeezed out of the tube, Cadmium Yellow will have the same saturation regardless of brand. Saturation being a prized quality of a paint, the most saturated hues are sold. You can unsaturate a color by adding white. There is no way to increase saturation.

Brightness in a paint is often indicated by the words "deep", "medium", or "light". In a particular painting it may be useful to have the "light" vs the "deep" formulation of a hue. Perception of brightness is tied to saturation *subjectively*. Practically, when mixing paint, e.g., mixing Cadmium Red medium with Burnt Umber to get a deeper red, reduction of brightness also reduces saturation.

Paint has several other important qualities. **Transparency** is the attribute of a paint that lets you see through the paint layer to the underlying surface. There are transparent, semi-transparent, and opaque paints. For example, ultramarine blue, though very dark and very saturated, is transparent. Titanium white is completely opaque, while Zinc white is somewhat transparent. **Light-fastness**



has nothing to do with brightness, but rather whether the color will degrade from exposure to sunlight. A lot of the progress in paint technology is increased light-fastness. The surface matte appearance of dried oil paint is usually adjusted with varnish back to a glossy surface.

Color is Relative

The human eye reacts differently in low and bright light, sunlight and artificial light, and from individual to individual. Color is highly subjective, but most importantly, color is perceived *relative to* light level and other colors in the image, whether this is directly viewing a scene or viewing a painting of the scene – not that these represent the same experience. Our senses continually and automatically filter for volume, noise, and any number of cultural expectations and individual experiences.

Practically speaking, there is no science or color chart that will exactly specify what hue-saturation-brightness that best renders some part of an image. Further, the paints available are not perfectly pure hues with maximum saturation. Add to these limitations two more: The desire of the artist to convey a sense of place or mood, and the limited light-dark (value) range of light reflected from a painting vs the far larger range that the eye accepts in nature. There is no one perfect color choice.

In a painting it is therefore not so important to have the exact hue of an element to be rendered, as determined by some outside reference such as a photo. It is important, however, that the other colors used in the painting support each other in the illusion that the hues are correct. The eye, which constantly resolves colors in different lighting situations, will be happy to adjust perception. Vision is highly adaptive.

Painting in color finally comes down to experience mixing with a limited set of tubes of paint, and a bag of tricks.

Mixing

As a painter you have a limited number of hues to work with. Each hue has different properties, particularly useful in some painting or another. Mixing hues is not very intuitive. True, mixing a blue and a yellow will produce a green, but what sort of green? When starting out you will gravitate to a certain number of hues. Get to know your usual palette and then explore when new painting challenges arise.

Reduce brightness in a hue:

- Use a “deep” variant of the hue to retain saturation.
- Use a darker hue in the same color range, for example darken a red with Burnt Umber which has a reddish hue itself.
- Add complementary color if saturation may be sacrificed.

Increase brightness in a hue:

- Use a “light” variant of the hue to retain saturation.
- Add white as last resort, where dulling the saturation is ok.
- Increase saturated brightness of a **transparent hue** by under painting with a bright neutral color, e.g., titanium white, or a light grey. When the base color is dry, paint the hue in thin layers as many times as necessary to get the desired brightness. This trick has its limits and is highly

subjective, but it's the only means to get a very bright *and* very saturated effect for some hues, for example Ultramarine Blue. This is called “**glazing**”.

Color mixing is subtle and learned from trial and error. Often it's difficult to determine what exact hues were used to get a given color. Depending on your working habits it can be a good idea to take notes while you paint, so that if you want to go back and adjust parts of your painting it will be easier to match colors.

Reflection Affects Colors

Reflection

- Light bounces around, losing saturation and brightness on each reflection.
- Light reflects off objects with the hue of the object being reflected, which colors other objects.
- Colors in darker, shadowed, areas of the painting should be less saturated than in light areas.

Each object you see is illuminated from many directions with a variety of colors. Normally this is noticeable only when a large object with saturated color reflects a lot of light onto nearby objects. But all scenes are affected by light source (daylight, lamp, etc.), color, and reflectivity. For example, late in the day the west side of objects are lit with warmer colors, and the east sides with more blue hues.



Illustration 1

In Illustration 1 note the leaves that appear red; the dark shiny green plastic flower planter strongly reflects desaturated colors; the ceramic dish has two very different levels of saturation; the green leaves have a range of brightness while maintaining more or less the same green hue; there are many incidental reflections.

Don't let intellect overpower observation. If a leaf looks red, paint it red, without letting your knowledge that the leaf is green get in the way. It might, however, make sense in painting Illustration 1 to modify a red with some of the same hue used to paint the “green” leaves so that a color harmony is maintained in the image. Consider using three hues to represent the red cloth, green leaves, brown platter. Mix these with more incidental colors white, blue, umber to create the range of values from white to darkest dark, and the subtle color blends that occur in the leaves and planter reflections.

Back Lighting

Illustration 2 shows a strong back light seen through foreground materials with a variety of thickness: a mountain, tree trunks, and twigs.

- Light bends around objects. In a painting this is particularly noticeable when an object is backlit. The stronger the back lighting, the more noticeable.
- The thinner the foreground object the more the light “engulfs” it. Render backlit foreground objects by painting them brighter and less saturated.
- A similar effect is the bright outline edge sometimes seen on objects with rounded edges when there is lots of background light. The low angle of reflection on the curved edge between the light and eye creates a mirror effect. These edge effects are often very thin and subtle.

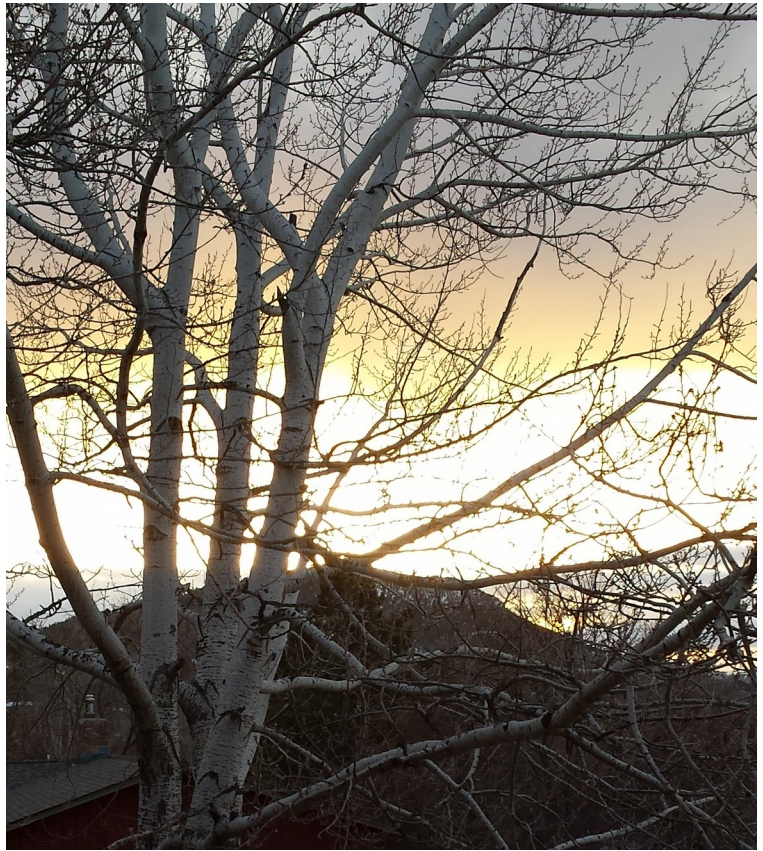


Illustration 2

Color Plan

- **Value** is far more important in the success of a painting than color. (Value is the art term for the range of brightness from white to black.) Make sure your value composition is good, then paint colors in those same values.
- Generally, warm colors for nearby objects, cool colors (bluer) for further away. You are conditioned to expect this depth illusion from a lifetime of observing atmospheric bluing.
- Consider using each main color on your palette in your painting in all the areas of the painting, in varying proportions. As discussed, light bounces around, so typically all parts of a scene have illumination from all the light colors reflected. The exception would be a clear blue sky. Most scenes, however, look artificial if completely different hues are used for different areas/objects.
- To enhance three dimensionality use a separate main color for each non-parallel plane in your scene. For example, in mixing a color for the west side of all buildings you might use Cobalt Blue, and use Ultramarine Blue for all north sides. This trick takes advantage of the typical situation where different colors of light come from different directions.
- Edges where two contrasting colors meet can set up an optical illusion of a third line of color. Careful handling of edges is essential to realism in paintings. Generally there are darkening or lightening and saturation changes in an area of color at an edge. These effects may vary along the length of the edge. See Illustration 3 for a variety of edges which vary with intensity and color of reflected light.

- Shadows have color and create edges. Hues *in* shadows will vary as much as the variation in the area *outside* the shadow. Generally you can simply reduce brightness of the color used in the non-shadowed area for a believable shadow. With very strong differences in light color coming from different directions, however, look carefully at the color of the light source providing the illumination of the *shadowed area*. You may have to shift the hue of the shadow warmer or cooler for the most realistic rendering. See Illustration 3 where two strong shadows are painted, one under the car, the other leaf shadows on concrete. The leaf shadows are bluer, taking in account that major illumination comes from a bright blue sky.
- Dramatic light effects call for pre-planning in the use of color. If there is high contrast and saturated color in a scene, choose different hues – in this case we mean tubes of paint – for the different bright objects. For example, painting a string of colored lights with several greens, reds, and blues will work best if you devote a particular hue to each similar light. Let the rest of the color assignments in the painting revolve around those choices.

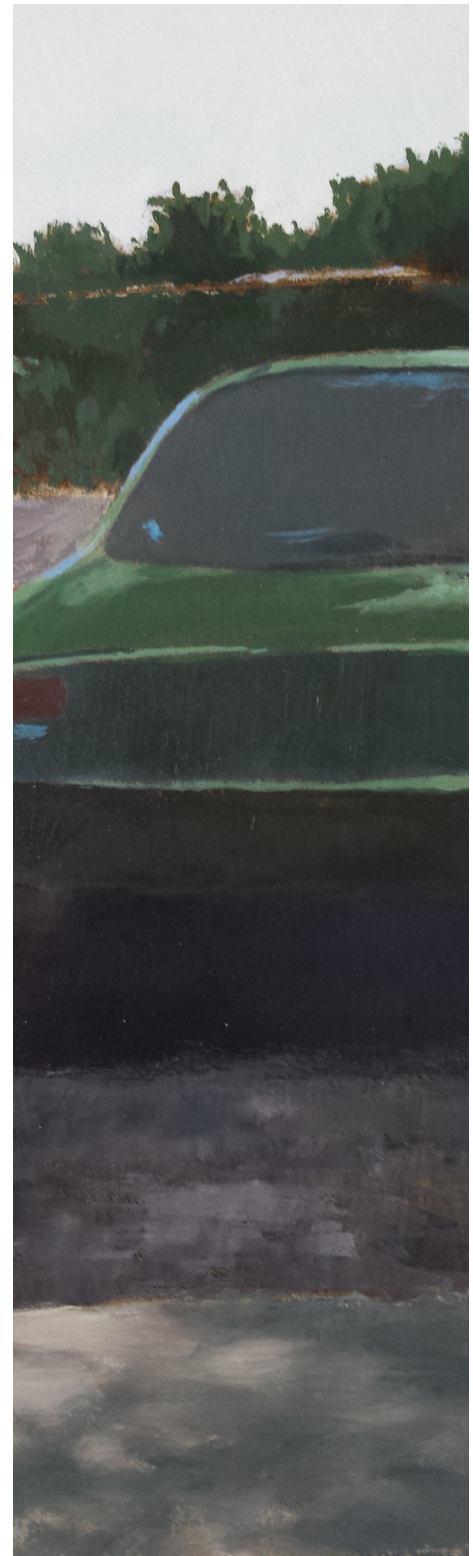


Illustration 3