by Greg DiFranco

Painting Flats:

The Effective Use of Light and Shadow in Color Value

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Greg DiFranco (center) and Jim Horan (foreground) putting on a painting demonstration at the Kulmbach Show 2015. Marilyn Neurhor (left), Stefan Wachter (standing right).

Introduction

Painting light and shadow on a 2 dimensional flat with the goal of creating the illusion of 3 dimensions has always fascinated me. It is interesting that many new flat painters focus their questions around the technical aspects of flat painting, namely the painting medium, brushes, and not near enough around light and shadow (and also color harmony which is not covered here). To me there is no more important aspect, because this is where the illusion of three-dimension is created.

The way in which artists achieve the illusion of three dimension is through two major artist techniques, one is perspective drawing and the other is the effective use of color values (i.e. the relative light or shadow of a color). Flat painters need not worry much about perspective, since the designed flat already has this incorporated, especially effectively if engraved by a Ludwig Frank of Karl Mohr by the way. It's the use of color values and the respective light and shadows that allows the painter to transform the two dimensional flat into a three dimensional object.

I think we can break the subject of light and shadow down into five major categories, each of which we will discuss. They are 1- the light source, 2- form shadowing, 3- color value, 4-thrown shadows and 5- reflected or bounce light. To start with a simple summary, the third dimension is achieved by creating a form with the proper placement of light and shadow values, enhanced by reflected or fill light, and extended to the feeling of distance between objects with thrown shadows, (i.e. form and depth)

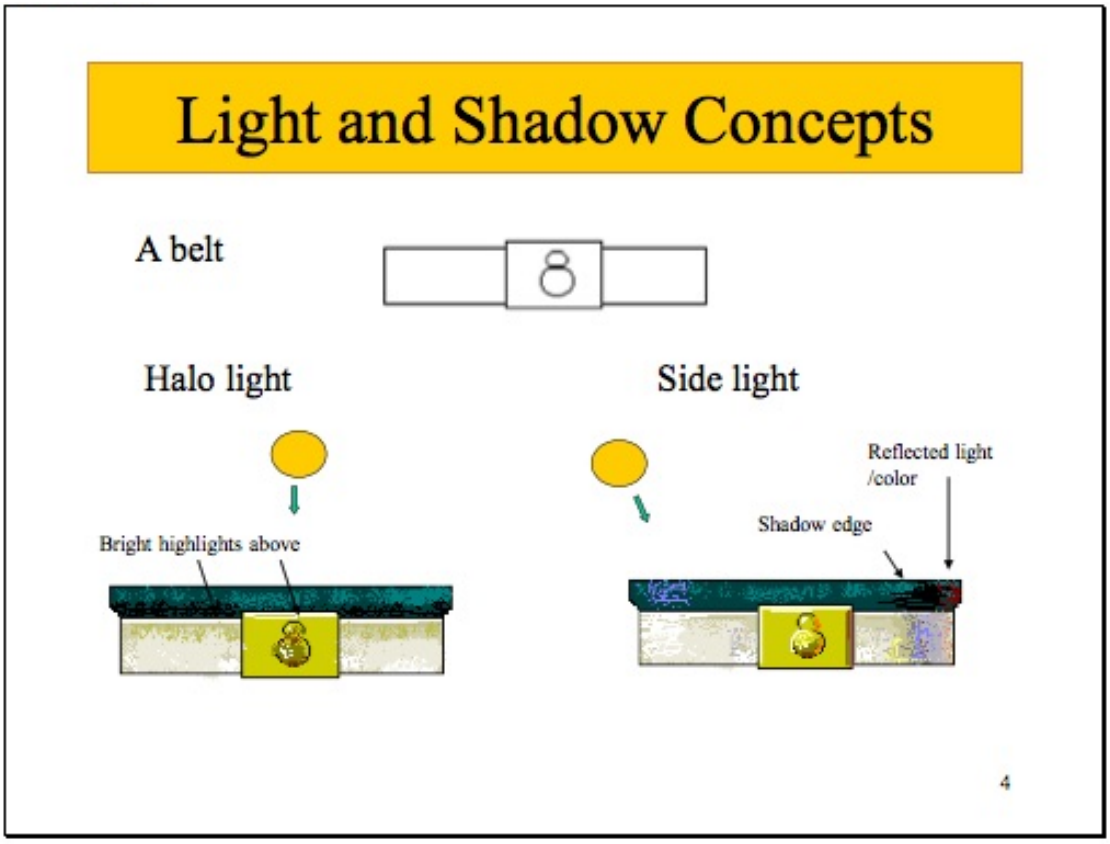
The first thing to do though is to forget for a moment what you may have learned in round figure painting, namely to highlight from above and shadow from below. And if you think that round figure painting is simply highlighting the outer surfaces and shadowing the crevices, then you need to give yourself a lobotomy also.

1. The Light Source

We start with the light source, that is the theoretical light source (not the bench light you are using). Here we are determining where the sunlight will emanate from and which side of our figure it will illuminate. This then provides us with the blueprint for where we will place the lights and shadows.

Whereas round figure painters traditionally place the light source directly above a figure, Flat painters prefer the light source from one side of the flat. This placement provides the most dramatic lighting on a flat, i.e. it allows the artist to paint the entire range of values across the figure, thereby increasing the three dimensional look or illusion. The time honored rule most commonly used by Flat painters is to place the light source above the upper left side of the flat (your left side, which is actually the flat's right side). This places the

illuminated areas (the highlight plane) on the upper and left surfaces of the figure and the shadow plane on the right and lower surfaces. And this places the turning edge somewhere in the middle of the figure. A turning edge is the point where the light plane transitions to the shadow, basically splitting the figure into two major tonal or value areas. (See Illustration A)



Although the upper left is the most commonly chosen light source location it really doesn't matter whether you chose this or the upper right of the figure. What is more important is that you maintain a consistent light source throughout your figure or grouping. For a beginning flat painter I would suggest placing the light source facing the figure's face if the flat is in profile. In this case, first

choose which side of the flat you would like the viewer to see, and then have the light source coming from the side that hits the figure's face. I suggest this because it is much more difficult to paint a face in shadow since there are no highlights and any light that hits the face would be skylight or reflected. Of course, in a grouping in which the figures are facing in multiple directions you cannot avoid a face in shadow, so you would probably want to place the light source shining into the face of the most figures of the group, or the most prominent figure of the group. Mike Taylor is a master of painting faces in shadow, and you should study some of his pieces to develop this skill. (see Illustration A)

As we get more confident and skilled at placement of the light source then we can move it slightly forward or backward of the figure to create different light patterns than typical. An example would be the Napoleon in Egypt flat where I have placed the light source coming from the upper left of the figure but also moved it as if coming from behind the figure so that most of the figure is in shadow.

2. The Tonal Undercoat and Bisecting the Figure

If you were to look at a person during a hazy day, you would notice that there are little to no thrown shadows and the light falls down on the person like a halo of soft muted light and all of the shadowing is soft and on the undersides of objects. This is similar to how round figure painters apply highlights and shadows. However, when we paint flats we typically want a dramatic lighting effect that helps to create the feeling of 3D, sort of like sculpting a flat I like to say. The best lighting source for this would be a direct light source, basically a figure painted in a sunny day setting. This is not to say that artists should not paint other interesting lighting

situations on flats, but for the purposes of this article we will concentrate on a direct light source that you would see on a sunny day.

As a starting rule, it is most effective to first bisect the figure into two halves, with approximately 75% of the figure being in an illuminated area and 25% in the shadow area, i.e. 25% distance from the far edge of the figure. This may sound too simple, but as artists are always attempting to simplify complex subjects, the best way to create a 3D feel to a flat figure is to start by splitting it in two, i.e. into two distinct tonal areas. This concept allows the artist to remove the complexities of details and differences in value, and allows the artist to just concentrate on where the edge of the shadow area starts and what form it will take.

The 75/25 rule of thumb is just that, a rule of thumb and does not always need to be in those proportions. However it gives the artist 75% of the Flat's surface to work in the more colorful highlight to middle tones and keeps the darker tones to a minimum. You can change this when you get more confidence and want to create different lighting effects, but the 75/25 rule is easy on the viewer and the painter as well.

The best way to apply these concepts to your flat is to start with a "grey study" or tonal undercoat. This can be accomplished by either using various grays or cool browns, or for oil painters, thinned out burnt umber. This is in order to work out the light and shadow pattern without worrying about color. Also at this stage it's a good rule to not worry about any details, but to concentrate on light and shadow patterns. I like to stick with larger brushes here, which allows me to paint more freely and avoid fussing with details. A nice feature of using oils at this stage is that you can play with the edge by simply running a dampened brush along the edge to move it a bit. Of course you can do the same with acrylics, but you will need to overpaint to move the edge around. I like to think of it as essentially creating a blueprint for where the light and shadow patterns should be, without worrying about the complexity of color and details. Also, it allows for a bit of creativity in your light and shadow painting since you can be more free with the brush since details are not important at this stage.

Later we will discuss how to apply color over this tonal undercoat and refine the details.

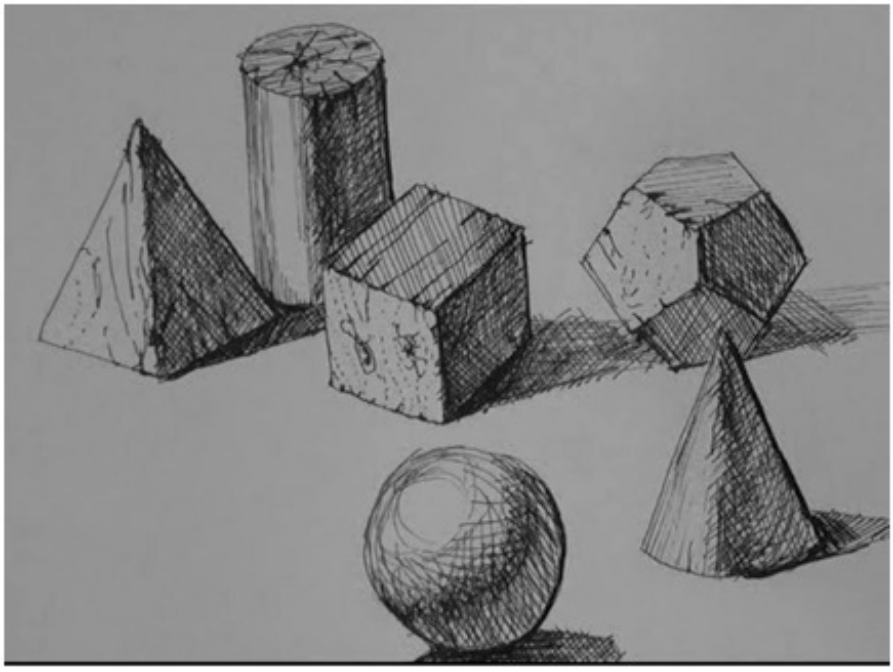
Light and Shadow and Form

Try this simple experiment. Draw two parallel lines on a piece of paper. Next draw a straight line in between the two previous lines. Next evenly shade (not too dark) the entire left side from the middle line to the left-most line. What do you see, the three lines have now started to take on the form of a long box. You have now created a form with value and bisected the object into two tonal areas. Now darken the shaded area around the middle line only, and feather the edge of the middle line. You have now turned the sharp (or hard) edge of the shadow area to a feathered (or soft) edge and in doing so transformed the box into a "tube-like" object with a simple change in the way you apply shading. Bottom line, you have created form with a simple application of light and shadow tones and hard and soft edges, this is the essence of creating form with light and shadow.

To reemphasize an earlier point, it is important to first simplify any complex subject we are attempting to render before moving to detail. Although our nature as figure painters is to focus on detail right from the start, detail should be saved for later. This is a difficult transition for many of us, since we spend so much time in our hobby working with fine detail. Focusing on the simple forms in the person or object we are painting allows us to more easily determine the major areas of light and shadow and hard and soft edges, without being confused by the added complexity of details, folds, etc. Some of the common simple forms we find on a Flat figure are, spheres such as the head, tubes such as the torso, arms and legs, boxes such as cartridge boxes, rectangular boxes such as shoes and horses heads. With hard edges we can simply "fill – in" the space with the proper overall value, with the soft edges, we need to determine where the blended edge of the shadow will begin and what shape it will take. Obviously, with an oval such as the head, the shape would curve with the edge of the sphere and be soft at the cheeks, like the shadow we see form around an egg. And then within that form there are hard edge objects on a face that are major forms, such as the nose and even lips (objects within objects). With a leg (or tube) we can think in terms of a long straight "tube-like" object with a

Gold at Kulmbach Show 2015

shadow and turning edge like we discussed with the drawing of 3 lines. (See Illustration C)



Let's briefly discuss stepping an object backwards or forwards. Once you feel like you have mastered the bisected figure and 75/25 light patterns you will notice that all the objects on the figure tend to look as if they are exactly in line from a shadow perspective. But in reality many objects are either slightly back or forward from one another and we can actually move objects back and forward on a flat simply by how we place them in the light and shadow pattern. For instance, on the Garde du Corps flat the figure's left leg and left arm have been painted to look as if they are moved back. This was accomplished by putting most of the arm and leg in the shadow area rather than painting each leg in the 75/25 pattern. Any highlights they receive are actually ambient light, which we will discuss later.

A good learning experience is to try your hand at a grey scale on a simple drawing, such as you would find in a coloring book using crayons or colored pencils. Experiment until you get the feel for working with the shadow line and forms on the simple line drawing and until it starts to look like it has form to it.

Once the basic shapes and forms are painted in the tonal study we can add some detail to help further define the figure and provide a tonal undercoat that will guide us when the colors are applied. Such items as, more detailed folds, edges of belts, eyes, ears, etc. can be painted in the grey tones to add further definition at this stage. Always remind yourself that the details must be painted within the overall value area we just created and within the general forms of the light or shadow.

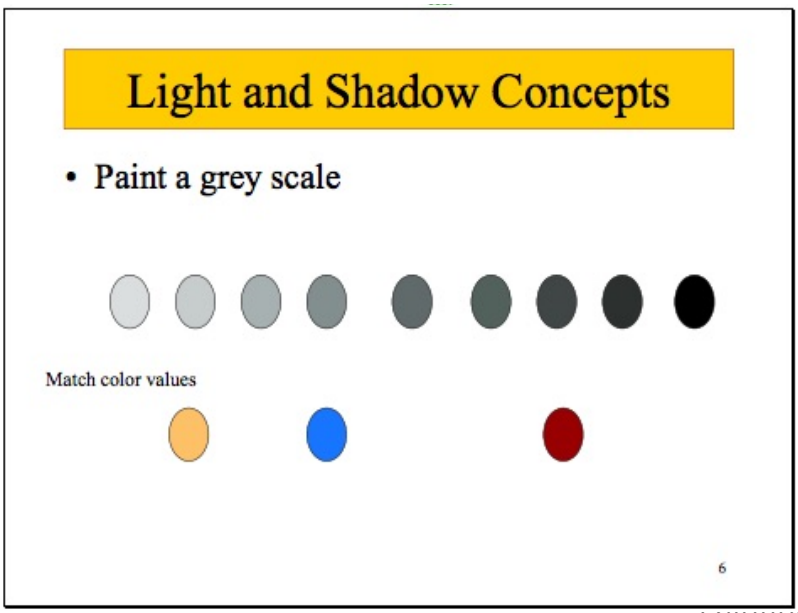
3. Defining Color Value and Applying Color

Before we can determine how to mix our various tones, and where to place them, we need to understand the concept of Color Value. Color Value is simply a term artists use to describe the relative lightness and darkness of a color. Sounds easy right? Actually it is the relationship between color values that is the difficult part that we need to study and master.

Every object we paint has value to it, and every color that comes from a bottle or tube starts with its own value. We then go and alter this value by adding lighter and darker valued colors. Even bright and vibrant colors (i.e. those with high Chroma) have value to them. An example might be Cadmium Red Light (or a scarlet

Andrea acrylic) which is a middle value on the lighter side. One of my favorite examples of seeing "value" in the extreme is when you see the light shining through a mini blind on a bright day. Pick out an object in the room that is the same color all around and notice the intense difference between the area where the light hits (lighter value) and the area where the mini blind throws a shadow (darker value). Now think about how you would mix these two values of the same color on a palette.

Everyone interested in painting flats should prepare a simple grey scale as an exercise in understanding value relationships. Take an index card and mix a middle grey. Then work your way to the right in black and to the left to white. Make sure there is an even transition and use at least 10 greys in between. Now the most important part comes, pull out some colorful paints and try and match the colors to a corresponding grey on the scale. At first it will be difficult, but by doing this you are starting the training process to recognize color values. Learning how to match these values will help you learn how to mix and place values of color in the appropriate illuminated or shadow area of you flat. (see illustration B)



Many times I mix a grey scale on a piece of index card, and as I mix various paints I pre-match the mixture to the corresponding grey on the scale. It's a helpful guideline that allows me to test the value before I place the mix on the figure.

Importance of Middle Tones or Values

Let me take a quick diversion here and discuss the importance of the middle values. Some think that when we discuss the light and shadow planes that this is one in the same as the highlight and shadow colors we mix for round figure painting. Actually when we are painting in two dimension (flats) the highlight and shadow planes are a simple way of bisecting the figure into two major tonal areas, not simply a highlight and shadow tone. So when we bisect the figure into two sections we are creating areas that we can then refine by adding a full range of color values that includes lighter as well as darker middle tones across the spectrum of light and shadow, but keyed within either the darker shadow area or the lighter highlight area. Each area has its own array of middle tones you might say. By cutting the figure into two sections with the turning edge, we free ourselves to paint the range of middle to lighter values (including the lighter middle values that we traditionally call the base colors) into the light plane, and the darker middle values into the shadow plane. So as you notice we need to think in different terms about color mixing when we are painting flats verses when we paint round figure. This is a conscious change in how we think that is needed, especially if we first learned how to paint by painting round figures. Years ago I wrote on article on

painting flats and the editor, who was a round figure painter, actually edited out the part about bisecting the figure into two!!!

4. Thrown Shadows

Now we come to the technique that provides a most convincing way of transforming our flat into a three dimensional object, namely thrown shadows. A thrown (or cast) shadow is one which is created when an object blocks the light, thereby throwing a shadow on another object behind the first. An example is the shadow your body throws on the ground under bright sun light. In flat figure painting we look for areas to apply thrown shadows to enhance the illusion of three dimension.

Thrown shadows are different from the highlights and shadows of the subject itself. They have the definitive form of the subject that created them but they also conform to the shape of the object they are falling on. A simple example, and one that is very effective on mounted flats, is the shadow thrown from a horse's rein onto the horse's neck. The shape of the shadow would be a thin line like the rein itself, but it would not be straight. Instead it would conform to the shape of the horses neck and therefore be curved downward as you approach the front of the neck. Other examples of thrown shadows would be those thrown from the peak of a hat onto a face, from the rear of a rider onto the back of the saddle and horse, from an extended arm or other object onto the body, from the body onto the ground or base. These are the most common, but obviously there are many more instances of thrown shadows. I usually pre-paint large thrown shadows, such as the rider's shadow onto the back of the horse, when I do the initial value blocking and painting. However, small thrown shadows, such as the reins, are better painted on the object after the basic painting is dry.

Another way to enhance 3D with thrown shadows is by creating distance between the objects, or "spatial" shadows. The concept is that when a shadow is separate from the originating object, i.e. the shadow is not connected, the further away the shadow is the more illusion of three-dimensional distance is created. An example is the rein on the horse, the further away the thrown shadow line is from the actual rein, the more illusion of distance between the two objects is created. To create this, you simply leave or paint in the base (or non-shadow) color value in between the rein and the rein's thrown shadow. Another example of a spatial shadow is the arm and spear on the Alexander the Great 30mm flat that I painted a number of years ago.

The physics of thrown shadows is that the intensity of the shadow changes based on its distance from the object. Simply put, thrown shadows are more intense or darker the closer they are to the object that creates them. The further a thrown shadow is from the blocking object, the lighter it becomes. For instance, the thrown shadow from a rider onto

the back of the horse is very dark nearest the rider, but lightens as you move towards the rear. This is because the surrounding bounce light and sky light neutralizes the shadow intensity. When painting spatial thrown shadows, the entire shadow is neutralized because of the theoretical distance from the object to shadow. One effective way to neutralize thrown shadows is to lighten the shadow value a bit by adding mid blue to the shadow color. This is very effective when the thrown shadow is facing upwards, because of the effect of blue sky light bouncing into the shadow.

5. Reflected, Bounced and Ambient Light

Painting indirect light, i.e. reflected or ambient light, is a powerful tool for the artist to use in creating the feeling of roundness. Simply put, it is the way painters include the effect of indirect light in the shadow areas. In real life the shadow area is not just one or two dark tones, but many subtle changes in tone. Lie on your back under a picnic table on a sunny day and once your eyes adjust you will see an entire array of values, yes they are all on the dark side but they are there. How does this happen when there is no sun hitting this underside? It comes from the light that is reflecting or bouncing off the ground.

Reflected light for our purposes occurs on the far side (away from the light source) of the shadow area. So instead of painting the entire far side of the object in full shadow value, we lighten the shadow as we move further away from the light source. Ambient light is the available light that illuminates a shadow area from other sources, basically for our purposes, from the sky. If you are a beginning Flat painter you may want to skip most of this section and come back when you have mastered the other aspects of light and shadow, because it is a bit complicated. That said, there are

some simple applications of reflected and ambient light and tricks of the trade that beginning Flat painters can experiment with. These can be used even if we don't fully understand the "physics" of indirect light and will be described here.

The most important principle is that indirect light neutralizes shadows. Therefore, the darkest part of a shadow area on a form is where the light changes to shadow (the turning edge as we discussed before), and not the side furthest away from the light source as you would expect. Jump ahead and read the egg experiment, and note that the darkest part of the shadow on the egg is the turning edge, and that the shadow gets neutralized or lightens as we move around to the bottom of the egg. Therefore, when you are painting in the shadow area, the values actually go the opposite way from the light area, i.e. the turning edge is darkest and the values get lighter as you move to the far edge. The key when painting in indirect light is to keep the values on the dark side – never let indirect light be as light a value as any color or value in the light plane.

Now lets discuss some physics, firstly, indirect light is not a highlight and as mentioned, should be kept dark. As with all rules, this can be broken with special effects, such as when there are other light sources filling in the shadow (a trick used a lot in Fantasy painting) but in general stick with the rule. Another aspect is that lighter colors reflect more light than darker colors. Therefore, with white you can see very strong reflected light in the shadow area, whereas with darker colors it is much more subtle. A good example is when painting a white horse. You can paint some relatively strong middle tones into the belly of a white horse because it will reflect a good amount of light from the ground. Of course, this would not hold true for a Bay, the reflected middle tones would be more subtle.

For this reason, the best object to start experimenting with reflected light would be on a light colored object.

Indirect light is painted with the help of the grey scale. So mix colors on the darker side of the grey scale and have fun painting them into the shadow area. Its amazing how many values you can place into the shadow plane.

The difference between the two types of indirect light we have discussed is very subtle but important. Reflected or bounced light is the light that bounces off one surface onto another, so for a flat it would mostly be the light that bounces off the ground onto the undersides of objects in shadow. For this reason I like to use warm colors for reflected light, such as yellows and orange. Ambient light for our purposes, is the light that comes from the sky and illuminates the upper parts of a figure that happens to also be in shadow. For this reason the color of ambient light would have a bluish cast to it. An example of ambient light would be the lighter portions of a shadow thrown from a rider onto the back of a horse and saddle, the various tones being blue in cast. Even shadows painted on the ground would warrant this treatment. This contrast of warm reflected lights on the undersides, and cool or bluish ambient light on the upper shadow surfaces, adds greatly to the illusion of three dimension we are seeking.

Some simple tricks – The basic simple trick of reflected light painting is to mix a slightly lighter color than your deep shadow (use the grey scale) and paint a thin line of it along the right edge of your flat (i.e. the opposite side from where the light is hitting), blending the edge into the shadows. This is especially effective on light objects, for instance, a mid grey on the right side edge of white trousers.

Putting it All Together

Now that we have gone through the 5 concepts it is time to put it all together in terms of the painting steps. First of course we need to pick the light source, which is the artist's choice, and will form the focal point for where the entire light and shadow pattern will be keyed. Second we create a grey study, first bisecting the figure and then taking into account the form shadows and where the turning edge of the shadow edges will be. Within this step we can also start to work in some of the thrown shadows we want to add. Then we consider where we want ambient or reflected bounce light to neutralize the shadows while still working the grey study. Finally, we can start mixing our colors and mix the various values when we are ready to apply color to match the grey values we have already defined. This can be very deliberate where you actually key the colors to the grey scale card or it can be more of an overall guideline if you are not the type to be too deliberate. Also I should point out that there are times when you can let some of the grey scale show through, but for the most part I build up the colors to eventually fully cover the grey scale. That's really what has been referred to in the art world as a "happy accident".

I typically do not recommend "wet on wet" painting, i.e. where the artist mixes a light or shadow tone directly into the wet paint on a figure, but if you think you can control the values with this approach then go at it! I should also mention that color harmony and chroma are important aspects of color mixing that I did not cover here, but that is something you can read in any art book. Mixing colors so they fall within the atmosphere of the figure you are painting is something all figure artists should study and consider. A figure painted in what is called "local" color with no attempt to harmonize

the color mixing is something to avoid if we are seeking realism in figures.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The Egg

Now that we have gone through the 5 concepts its time for another experiment. Place an egg on a table under a strong light and notice the changes in value (light to dark). Notice that there are two major areas of value or tone on the egg, the lit area and the shadow area. Notice that the shading is darkest, or has the strongest value, at the point where the light transitions to the dark (the turning edge). The shadow then gets neutralized as you move more towards the table. This neutralizing of the shadow is what we call reflected light (the light reflecting off the table onto the shadow area of the egg). Once you have convinced yourself that you can see these different values then you are on your way to developing that eye. Next go outside on a sunny day and look at other objects to try and see the same value transitions. Avoid studying objects in a room with multiple light sources, or overcast days, this will only confuse you in an already complicated concept.

When I have presented this subject at seminars I always make a point to the audience to change the way in which they view objects once they leave the room. Go outside and observe the various value transitions you see in shadow areas, look for reflected light and color, note the physics of thrown shadows. You can actually train your eye to see these things, which by our nature we tend to ignore until we are made aware of them. After all, there is no better teacher than educated observation.

More Examples of Greg's Work: