

## Color and Value changes for Rendering Distance

In life, we judge distance neurologically, using a very slight difference in the image between our left eye and our right eye. We have other clues too, and we pay attention to none of them on any regular basis. In painting, our brains can't use the difference in the image between two eyes. Therefore, we have to be very careful with the other factors in order to simulate distance, and trick the viewer into perceiving distance where there is none.

There are two major factors here:

1. Values narrow as the distance grows.
2. Colors in general more towards blue in the distance.

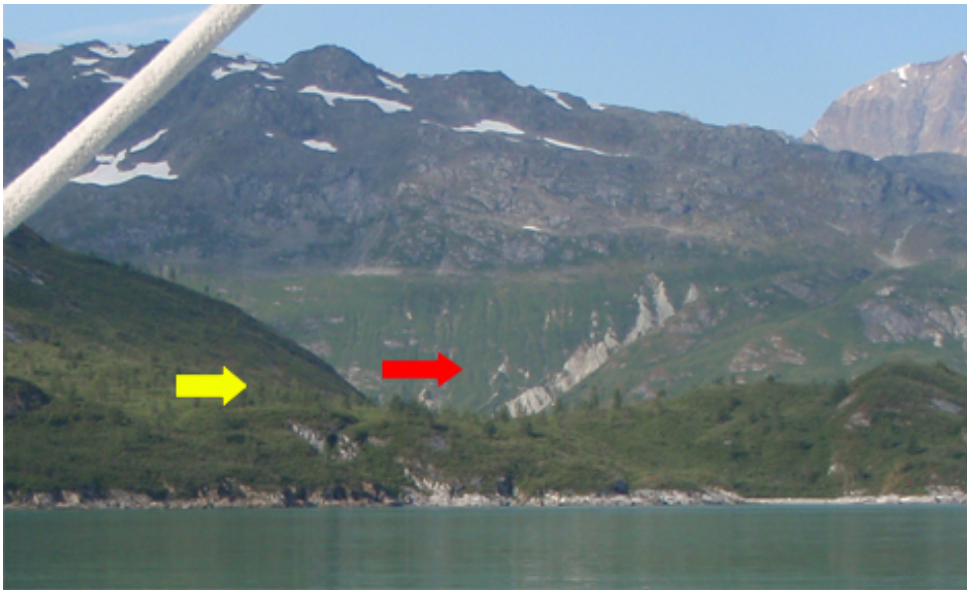
What you need to think of, is that you are painting not only the distance, but the mass of air that is between you and what you are looking at. When regarding very far away things, that is **a lot** of air.

It's difficult to separate value and color in distance but let's try **values** first. **Values** narrow because air interferes with the light coming to you. When something is up close light bounces off of it and to your eye. The highlights have little air to interfere so you see them strongly. The shadows that carry less light send less to your eyes and you perceive something as darker. But as the distance grows, air is messing with all that light. Light bounces off, say a distant mountain, and heads towards your eye. It's bouncing around a lot of air molecules. Some of it gets lost along the way so you don't see lights being as brightly light. Darks on the other hand? Where the original item still doesn't send many photons your way, the light from the bright area that is getting bounced all over everywhere in the molecules of the air bounce into your line of sight for that dark area, meaning you see something as less dark.

**Colors** change the same way. Air has a tendency to absorb all colors of the spectrum fairly evenly, except blue. Air doesn't absorb much blue. So the blue gets sent on to you. This is why you see a very clear sky as blue. Essentially the air is grabbing much more of the rest of the spectrum, red to green, and sending blue along. This has very little effect for you when you have something up close. Just not enough air to make a perceptible difference. But, add distance and the effect becomes much more noticeable. That mass of air starts stealing a lot of the other colors out and sending the blue to you in a much higher ratio.

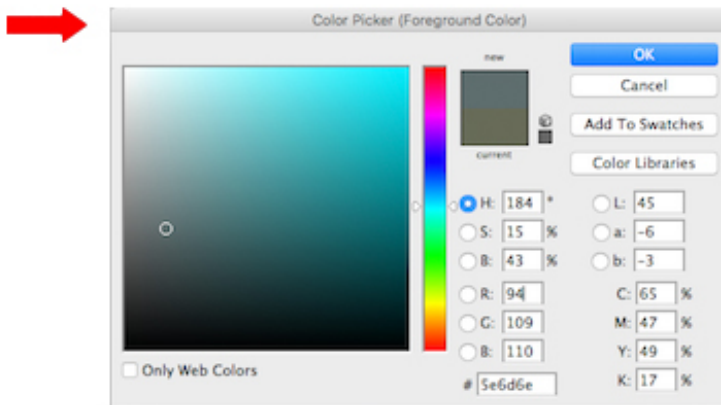
The following pages will show how this plays out, using the color grabbing feature of PhotoShop.





Here is a picture of some mountains in Alaska. The area indicated by the yellow arrow is within a mile of the camera. The red arrow points to land that is about 3-4 miles distant.

Down below, you can see where the color falls. The large box shows the color where the little white circle is. The pure color is in the upper right corner. The value decreases from top to bottom, while the color intensity decreases as you move right to left.



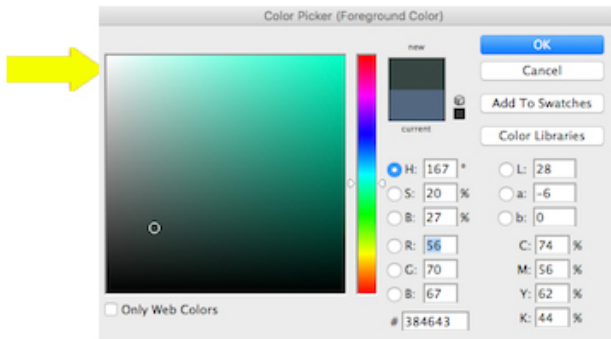
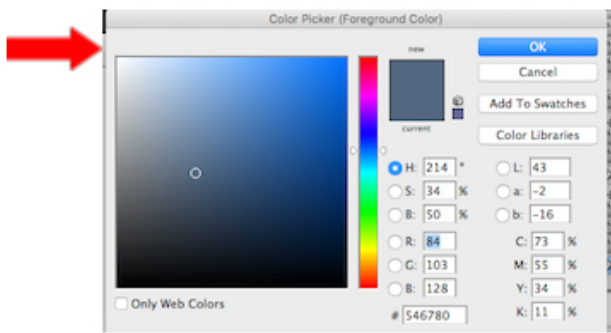
You can see the pure color of the farther land (red arrow) is far bluer than that of the foreground (yellow arrow).

I'm going to exaggerate this slightly in my painting because of the lack of the viewer's eyes to use the difference in the image from actual distance to determine how far away that land is. I have to be careful though. Exaggerate it too much and it will be very hard to render the farthest mountain. Too little will bring everything closer. Practice makes this easier.

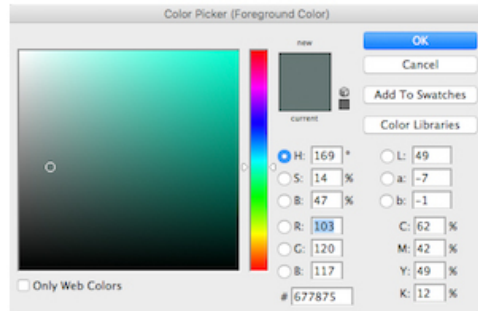




Here's another image from Alaska. I'm several miles from even the yellow arrow here. That far mountain is more like 10 miles away—perhaps even further.



Here's a painting of the scene, where you can see how I exaggerated the bluing, just a bit. Look carefully and you'll see a very far peak on the left. I blued that a lot.



The top is a photo of a pond on a foggy day. The bottom is a painting I did from that photo. The red arrow points to the land on the far side of the pond. In my version, I again exaggerated the blue to indicate distance and the wet air between me and there.