the sides. It is these shadows and highlights which give the impression of depth and roundness from the tenth row of the balcony and provide a sense of visual dimension for people and objects on the stage." *(1)*

However, there is an exception to this rule of thumb — when light strikes an object or is reflected from it, it has a large range from light to dark or has a limited spectral range, as in the case of a pure color; our eyes tend not to initiate this compensation.

Local Color Adaptation

This is a phenomena that occurs when our eyes are exposed for a lengthy period of time to an object that has a strong coloration. After looking at this object for some time we retain an after-image of the complementary hue of that color.

If, for example, you look at a cyc that is colored magenta, when you look away you will see the complementary color of magenta, which is green. The same would be true of any of the other colors encountered in nature.

For lighting directors this phenomena becomes useful in the creating or altering of the viewers' mood and perception. Our impression of any experience is strongly colored by the inter-action of all our senses, so color can be used to convey subtle inferences to the viewer when telling a story.

We could use this to advantage by contrasting a warm interior scene with a cold one (in terms of color and temperature) to enhance or emphasize one over the other. A warm fire looks even more inviting when you've been outside in the cold. The reverse is also true when you go from a warm color to a cool color.

Lateral Color Adaptation

Lateral color adaptation is also known as simultaneous color contrast. This effect occurs when viewing a colored object or area against its surroundings. The colored object tends to impose the illusion of the complementary hue into the surrounding background. Or, as is the case with a colored background, it will tend to induce a color change in the foreground object.

A corollary of this phenomena is the fact that colors appear to change intensity when viewed against black or white. Colors appear darker when viewed against white and lighter when viewed against black.

So it is important to note that there are two factors which influence simultaneous contrast. One is the color of the background and its hue in relation to the foreground color. The second is the relative size and brightness of the color when viewed together.

Constancy Phenomena

As our brain interprets the things that we see, it often modifies the incoming information by ignoring certain elements of the information it receives from the eyes. Instead the brain retains a pre-formed concept of how an object appears, whether it looks like that perceived vision or not. This is known as constancy.

Visual constancy can take a number of forms. For this discussion we are mainly concerned with approximate brightness constancy and approximate color constancy.

1. Approximate Brightness Constancy

This interpretation of our brain enables us to see a piece of paper that we know to be white as being white, even if the paper only had sufficient illumination to render it a shade of grey. It is past experience that is used as a reference to conjure the present picture.

Try this experiment to prove the theory is correct. Place an incandescent lamp near a window that has diffuse daylight coming through it. Turn the lamp on, then lay a clean sheet of white paper beneath it. Keep your eye on the paper as you turn off the light. Note how the color of the paper has changed, it appears bluer. Turn on the lamp and the paper has a warmer look to it.

The effect you have seen is the incandescent light source nulling out the additional blue component that exists in diffused sunlight, the blue that shows up in the shadows of our photographs. We don't usually recognize this extra blue because our eye/brain system eliminated it when it interprets our vision.

It stands to reason, then, that even though the "white" sheet of paper appears different under different lighting conditions our brain draws the conclusion that a "white" piece of paper is indeed white, despite being viewed under different lighting conditions.

This is true as long as there isn't a simultaneous reference as in the case of our lamp by the window.

2. Approximate Color Constancy

This effect is related to approximate brightness constancy. With past experience as our reference point we tend to assess surrounding colors in relation to a familiar object of which we know the color.

For example, a familiar white sheet of paper — or a favorite red shirt — is interpreted and recalled as we saw the object when illuminated by daylight. Our color memory of objects is usually in reference to how we saw the object under daylight conditions and leaves us with the strong impression that objects are warmer in tone and much more saturated than they actually are. This color memory also affects the recall of tonal values. We remember scenes that are predominantly lightly colored as being brighter than they were and darker scenes as being darker than they were recorded. This leads to a mistaken impression when viewing work that you have shot in the past; you remember scenes not as they were but as you perceived them at the time.

Our impression of color leads us to associate very saturated colors with sunny lighting. So it is apparent that we judge brightness according to the colors contained within any picture we look at. It also stands to reason that colors that are less saturated suggest to us areas that are less bright. In addition, if we closely examine shadows in a picture we will find reflected coloration rather than the black that we perceive at first glance; this is what a camera records.

The Eye and Color Assessment

In instances where we can't actually see the color of a light source through visual inspection, our brain modifies the color of the object to the color that we see. For example, a white sheet of paper that is lit by a green light will look green.

The exception to this rule occurs when we have a reference point that we know, such as skin tone. We know that people don't usually have blue faces so we know that there is coloration coming from a light source. Further, we will interpret the incident light falling on the subject as blue even if the blue coloration is caused by blue makeup and a white light source. This is because of the eye's constant adaptation to the incoming stimuli.

The eye's adaptability negates any positive effects that using a colored key light might have. Once the eye adapts to the colored light, this color becomes the reference "white" by which all other colors are measured. Thus other colors will now appear incorrect with respect to our reference "white".

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