Workflow

Art & Culture, Artists

COLOR WORKFLOW If an object absorbs red light wavelengths then we will most likely see the object as what hue and why?

It is impossible to reveal the true color identity as they affected by light and other variables. Viewers and designers only perceive color appearance. Color plays a critical role in consumer choices and hence should be measured in a standardized production scale. Although challenging, it is important for producers, manufacturers, and designers to present a consistent color range with consumer's specifications. Color occurs from the interaction between three objects: light, viewer and object. Color therefore is defined as light (the visible components of electromagnetic spectrum) which is object modified to produce a distinct color when viewed (Billmeyer and Max Saltzman 8).

When an object absorbs visible red light wavelengths (within wavelength of about 700nm) it is observed be hue. This is explained by the fact that not when red light wavelength strikes the object, not all the light rays are absorbed, but some are reflected by the surface. This reduces the brain perception of the red light as refection is accompanied by wavelength transformation.

1. Describe the wavelength range in which our eyes are sensitive to, and how

humans perceive color. Trichromacy?

Light is described by its wavelength (a physiological property) which is the distance between two consecutive crests. However, not all the wavelengths are visible to our eyes. Human eyes are sensitive to a limited electromagnetic spectrum range with falls between 400 to 700 nm (nanometers) which accounts for only a mere slice within the massive

electromagnetic spectrum range. Although the range of light spectrum visible to human eye are limited within 400-700nm, we use the invisible waves which are beyond our vision in a number of ways ranging from x-rays (of short-wavelength) to radio and television broad-wavelengths. Human eyes are made of light sensors which are very sensitive to visible electromagnetic spectrums. When the visible light wave strikes the light sensors in the eyes, the sensor communicate the signal to the brain, which perceives the received signals as being instinct color. The type of the color perceived by the brain depends on the constituents and composition of the wavelengths of the visible light spectrum (Billmeyer and Max Saltzman 12). For instance, when all the visible wavelengths are detected once by the sensor, white light are perceived by the brain or a black color would be perceived when the brain detects no wavelengths. The normal ability of an individual to visualize color or light wavelengths is defined as trichromacy.

3. What Kelvin temperature is tungsten light? What Kelvin is midday sun light?

Tungsten is an example of Illuminant-A falling in the class of incandescent lighting with a temperature of 2856° K. On the other hand, midday sunlight falls in the category of Illuminants-B with a temperature of approximately 4874° K.

4. Why is color communication between different devices difficult?

Color communication between different devices is made complex by the fact that different devices have varied range of wavelength and color absorption intensity. This limits the ability of electromagnetic spectrums to effectively pass from one medium to another.

5. What is spectral data?

Spectral data is the wavelengths pattern which leaves an object after reflection. Transmitted, reflected, or emitted light waves take the color of the reflecting object which gives them different colors depending on the surface nature of the reflecting object, hence the uniqueness of these colors. It is these patterns of reflected wavelengths which are referred to as object's spectral data. Spectral data is also known as color fingerprint which depends on the intensity of the wavelengths.

6. Who or what is the CIE and what did they do in the early 1930's?

The Commission International d'Eclairage is an international body charged with the responsibility of standardizing color calorimetric measurement scale. This body sets the international standards of color measurement through calorimetric devices. In 1931, CIE developed standards for a range of color spaces which represented the visible light spectrum. This move was fundamental in comparing color spaces for diverse devices and viewers against the repeatable measurement standards. CIE also conducted ' color-matching' experiments and ' universal color space' as a representation of average visual color range for humans (Billmeyer and Max Saltzman 18).

7. What do D50 and D65 illuminants represent?

These are type D-illuminants which represent a range of daylight conditions measured by the representative color temperature. The main illuminants in this category are D50 and D65 which are generally accepted as standardized graphical art illuminants. D50 represents D-illuminants whose color temperatures are about 50000K while D65 are those D-illuminant categories with a color temperature of 65000K (Billmeyer and Max Saltzman 42).

8. Adding equal amounts of red light and green light together produce what?

When green and red light are mixed in equal luminance, these two colors cancel out. However, since the most common form of lights are RYG, our eye cones communicates to the brain that the resulting color is yellow as opposed to the white color when the red-green canceling out happens. The canceling out of these colors occurs because the cones in our eyes cannot see all the three colors at once.

9. Cyan ink combined with magenta ink produces what?

When mixed in the right proportion, a mixture of magenta and cyan inks produces blue ink. This is because cyan, yellow and magenta are the basic ink pigments with cyan having bright blue hue as part of its components while magenta has bright deep pink ink color.

10. A colorimeter is designed to do what?

A colorimeter is an instrument which is light sensitive which is designed to measure the degree or intensity of color absorbed by an object. Besides, this light sensitive device measures the intensity and concentration of colors absorbed by different surfaces or bodies. It therefore enables the user to determine the concentration of each component of the light waves within a given medium. The working calorimeter is founded on Beer-Lambert’s law which asserts light transmission in a medium and medium concentration is directly proportional to each other (Billmeyer and Max Saltzman 24).

Work Cited

Billmeyer, Fred W. Jr., and Max Saltzman. Principles of Color Technology. Second Edition. Chichester, England: John Wiley & Sons. 1982. Print.