

MED 370: Color Theory and Practicum Blog #11

1. The main difference between additive and subtractive color is whether you are working with light or physical pigments. Additive color starts with darkness and adds light to create color, which is how digital screens like your phone or laptop work. Its primary colors are red, green, and blue, and mixing them at full intensity results in white light. In contrast, subtractive color starts with a white surface, like paper, and uses pigments to soak up or subtract parts of the light. This is the method used for painting and printing, using cyan, magenta, and yellow as primary colors. While adding more light increases the brightness and darkness in the additive model, mixing all subtractive colors together blocks all light to create black. By managing these two systems, you can control the saturation and value (tone) of an image depending on whether it is meant for a screen or a physical page.

2. The primary colors used in subtractive color are *Cyan, Magenta, and Yellow*

3. The main difference between a core shadow and a cast shadow is where they appear in relation to the object. A core shadow is the dark area located directly on the object itself, appearing on the side turned away from the light to help define its 3D shape and value (tone). In contrast, a cast shadow is the dark shape an object throws onto another surface, like the ground or a wall, because it is physically blocking the light. While the core shadow stays on the subject to show its form, the cast shadow is projected away from it onto the environment.

4. Illumination changes how we see color through intensity, color temperature, and the angle of the light source. High intensity or bright light can make a color look more vibrant, while low intensity can lower its value (tone) and make it appear dull or gray. The color temperature of the light also plays a huge role; for example, a "warm" light can make a blue object look more neutralized, while a "cool" light can increase its perceived saturation. Finally, the angle of the light creates highlights and shadows, which change the consistent brightness/darkness across the surface of an object, often shifting its appearance from one side to the other.

5. Simultaneous contrast is the idea that our eyes don't see a color in isolation, but instead see it based on the colors surrounding it. When you place two different colors next to each other, they shift each other's appearance in terms of brightness/darkness and hue. For

example, the exact same gray square will look much lighter and brighter when it sits on a black background, but it will look darker and duller when placed on a white one. This happens because our brains are constantly trying to find the difference between a subject and its background, which changes the perceived value (tone) and saturation of the art even if the actual pigment hasn't changed at all.

6. Color interaction is the idea that a color's appearance is never fixed; it constantly changes based on the other colors nearby. This happens because our eyes and brain process a hue by comparing it to its background or the colors touching it. For example, a single shade of gray can look like a completely different value (tone) depending on whether it is surrounded by black or white. By changing the background, you can make a color look more vibrant in its saturation or shift its perceived brightness/darkness without actually changing the color itself. Understanding this interaction is key to controlling how a viewer sees the balance and tension within an art piece.

7. The Bezold Effect is a specific type of color interaction where changing just one color in a pattern can completely shift how the entire design looks. Unlike simultaneous contrast, which usually happens with large blocks of color, this effect works with small, thin lines or tiny details spread throughout a piece. By swapping a high value (tone) color like white for a low value (tone) color like black in the outlines, the surrounding colors can suddenly appear much brighter or darker. It's almost like an optical illusion because the main colors haven't actually changed their saturation or hue, but the small shift in the "grid" or detail color tricks your brain into seeing the whole artwork differently.

8. To get a desaturated neutral of the hue red, you simply mix it with its complement, which is green. Adding small amounts of green to the red will lower its saturation and pull it toward a neutral gray or brown without making the value (tone) too light or dark. Another way to change the brightness/darkness while desaturating it is to mix the red with a neutral gray that has the same value (tone) as the red itself. This results in a "muted" or "toned" version of the color that feels more grounded and less intense.

9. To get a desaturated neutral of the hue orange, you mix it with its complement, which is blue. By adding small amounts of blue to the orange, you lower its saturation and pull it toward a neutral brown or gray. You can also achieve a desaturated neutral by mixing the orange with a neutral gray that has the same value (tone). This process reduces the

intensity of the color without shifting it too far toward a specific brightness/darkness, resulting in a muted, earthy version of the original color.

10. Understanding color temperature is important for visual artists because it allows them to control the mood and the sense of space within an image. By using "warm" hues like red or orange and "cool" hues like blue or green, an artist can create an emotional response, such as making a scene feel cozy or sterile. On a technical level, color temperature helps create depth through atmospheric perspective; warm colors often appear to move forward toward the viewer, while cool colors seem to recede into the background. Managing these temperatures also affects the value (tone) and saturation of the art, ensuring that the lighting feels consistent and believable across the entire piece.

11. The three building blocks of color are hue, value (tone), and saturation. Hue is simply the name of the color, like red or blue, and represents its place on the color wheel. Value (tone) describes the brightness/darkness of that color, ranging from light (high value) to dark (low value). Finally, saturation measures the intensity or purity of the color, ranging from a vivid, "neon" look to a dull, grayed-out neutral. By adjusting these three elements, you can change how a color feels and behaves without switching the base color itself.

12. In both visual art and music, saturation acts as a dial for emotional intensity, where high levels usually feel energetic and low levels feel calm or somber. In visual art, a hue with high saturation appears vivid and "pure," often evoking feelings of excitement, joy, or even aggression. When you lower the saturation, the color becomes a more neutral value (tone), which can make a piece feel sophisticated, melancholic, or peaceful. In music, "saturation" refers to a type of harmonic distortion that adds warmth and grit to a sound. High audio saturation creates a "thick" or "driven" texture that feels powerful and rebellious, commonly found in rock or electronic music. Low saturation results in a cleaner, more transparent sound that feels delicate or intimate. Whether you are adjusting the brightness/darkness of a digital painting or the grit of a guitar track, saturation is what determines if the mood feels "loud" and overwhelming or "quiet" and reserved.

13. In music, saturation is a specific type of subtle distortion that occurs when an audio signal "overloads" a piece of equipment, like a tube amp or analog tape. When the signal gets too loud for the hardware to handle, the tops of the sound waves are gently rounded off. This "clipping" creates new harmonics that make the sound feel thicker, warmer, and more present. While heavy distortion or "fuzz" can make a sound feel aggressive and jagged, saturation is often used to add a pleasing grit and value (tone) to a track. It fills in the gaps in the frequency spectrum, increasing the perceived brightness/darkness of an

instrument without actually changing its volume. In a digital recording, artists often add saturation to mimic the "soul" of old analog gear, making a clean, thin sound feel more "expensive" and harmonically rich.

14. Note quite sure what this means "Please provide visual aid?"