COLOR

an interactive tool to explain and analyze color space

Although color is a concern of disciplines as diverse as art, science, medicine, and business, color is also a fundamental aspect of human perception. Color is crucial for communication, as it can convey information and evoke emotions. To understand color relationships, it is necessary to look beyond two-dimensional modeling. The VCH Color Mapping Project is a collaborative effort between art and physics faculty to create a three-dimensional color visualization tool. The software uses three parameters to display color location and relationships. To provide greater accuracy and specificity, the color-space identification system plots a color numerically on a cylindrical Cartesian coordinate system, using percent (0 percent - 100 percent) to identify Value, a proportional scale (0% - 100%) to identify Chroma, and an angular rotating scale (0 degrees – 360 degrees) to identify Hue.

More than 100 years ago, Albert Munsell developed a method of quantifying color that was based on human color perception. He proposed his system to identify colors in art and industry, which was limited since there are only 10 numerical steps for Value, and 10 for Chroma, and 40 for Hue to describe the many millions of colors that are perceptible with human vision. We have a very limited vocabulary to describe the many millions of colors detectable with the human eye. When we use common names like red, blue, and yellow to identify a color, we are referencing a very broad collection of colors and grouping each unique color into a larger group. We do this because we lack a common language to identify colors with this system. In professional practice, the tools used to identify, analyze and manipulate color can lack a level of precision and functionality that would benefit a range of fields where color analysis is important. Colors, graphic design, fashion, interior design, and printing are just a few examples of the many industries that can benefit from greater accuracy and specificity in color-space identification.

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Any color modeling and analysis tool that attempts to go beyond a basic palette must also include a method to identify specific colors. There are simply not enough words to describe the many millions of colors visible to the human eye. Chroma and hue are the same in English, French, Japanese and every other language.

There are many very accurate color identification tools that can perform a specific color and deliver a CIELAB, CIELCH, or other form of color location. The Mapping Color software we are developing can be used to identify a single isolated color and can also be used to map the color space for an entire image or image sequence.