

Color Theory 4 – The masters

I realize that many of you will not find this post the least bit interesting but before jumping into color theory I think it's interesting to know a little about how modern color theory developed and how the understanding of color had changed over time. Here are just a few of the contributors to the science of color study.

Earliest Known Studies

Many of us know about the modern theorists such as Itten and Albers but color study goes back to the ancient Greeks. The first known color theorist was the Greek philosopher [Empedocles](#) (490–430 BC). He is known for defining the 4 elements of earth (fire, air, water and earth). He was the first to put forth theories of light and perception and concluded that color is a property of the observer, not the object being viewed. Democritus (460–370 BC) and Plato (428–347 BC) expanded on his work.

The first known book, *De Coloribus (On Color)*, about color was written by [Aristotle](#) (384–322 BC). In addition to explaining the effect of blending of light to create color, he identified the “primary” hues were white, black, red, yellow, brown, violet, green and blue. All other colors could be created by blending some amount of these hues.

As you can see, although the thoughts at this point aren't totally accurate there was already an acceptance of color being a property of light and an almost correct list of colors for our modern color wheel.

The Renaissance

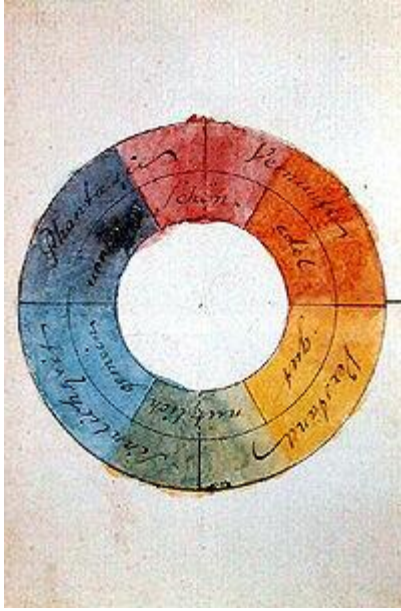
[Leonardo da Vinci](#) (1452-1519) identified yellow, green, blue, red, white and black as the primary colors in his *Treatise on Painting* that was published in 1651. More importantly, he was the first to explore the **relationship of colors when placed next to each other**. What we call complimentary colors, he called direct contraries, and he noticed that when placed side by side intensify each other.

Age of Enlightenment



It was during the Age of Enlightenment that [Sir Isaac Newton](#) (1642-1727) studied the physics of color and developed the first **color wheel**. I talked about that in the last article. But it was [Moses Harris](#) (1730-1788) who first **identified red, yellow and blue as the true primaries**. Harris' color wheel had 18 different hues.

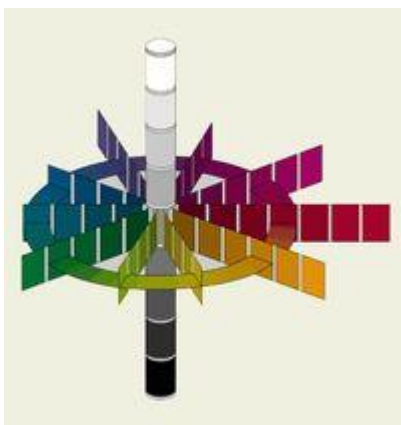
Modern Era



In 1810 the German poet [Johann Wolfgang von Goethe](#) (1749-1832) published his [Theory of Colors](#). It was the most comprehensive book on color theory written and he considered it more important than his poetry. He defined the characteristic of luminosity to colors and rated the colors in order of luminosity (white, yellow, orange, red, green, blue, violet, black) and he built the work of Newton to explore the effect of light on color.

The next step in the development of modern color theory came through [Michael Eugene Chevreul](#) (1786-1889), a French Chemist. In his early career he was known for his research of animal fats that all of us home soap makers can be greatly appreciative. Later in life he became the dye master at a tapestry-weaving studio. Here is where our knowledge of **simultaneous contrast (the effect of colors on each other)** took a giant leap.

American Ogden Rood (1831-1902) introduced the concept of the **three properties of color: hue, luminosity/value, saturation/purity**. As with all of the other color scientists, he developed a color wheel. The complimentary colors were based on afterimages rather than pigment mixing. He also expanded the study of simultaneous contrast and optical mixing such as occurs in [pointillism](#).



Around the same time the American color theorist [Albert Munsell](#) (1858-1918) developed a [color system](#) that was adopted by the US Bureau of Standards as the acceptable language of color. He **defines color in terms of hue, value and saturation**. This is the way we still define color today. Munsell's system defines 5 primaries (red, yellow, blue, green and purple) and the complimentary colors are determined by afterimages.

In 1931 the first standardized notation for colors was developed at the [International Commission on Illumination](#). Through the work of this committee is that colors can be accurately and consistently matched.



Much of our modern understanding of color and color interaction comes from the work of [Johannes Itten](#) (1888-1967) and, his student, [Josef Albers](#) (1888-1976) at the Bauhaus School. Through the independent work of these men art students began to study the interaction of color. Their color wheel and color triangle identified red, yellow and blue as the primary colors. Itten's wheel is shown on the right.

In the 20th century there came a need for color work in the printing industry. It was German painter Alfred Hicethier (1903-1967) who developed what we now know as the process wheel that has yellow, cyan and magenta as primaries. The process wheel is specific to the printing industry because of the inks used in printing techniques. It was through his work that printers could now standardize and precisely reproduce colors.

Current Work

The most recent work on color theory has been done by American [Faber Birren](#) (1900-1988) and Dutch artist, [Frans Gerritsen](#). Both of these theorists based their work on the perception of color. Birren published his work in the 1930's and Gerritsen in the 1970's – 80's. They go beyond theories that color is a property of light and specifically define it as a property of perception. The best example of this is dreams. We dream in color and we see color in those dreams and yet there is no "light" present.

One thing that you might notice if you research further into any of these theorists is that each developed their own color system. Any of these system may or may not be valid for the work you are doing. One thing is for sure, this is no one right color system for all purposes. Unfortunately, in many of the books and materials available fiber artists we are taught that one or another is the "right" system. That's not really true and we will see why in a later post.

Next we are going to spend some time talking about color perception so that we can finally get down to playing with fabrics and colors.