COLOR THEORY
HISTORY
Color theory is about how color works – the better you understand this, the better designer you’ll be.
The first color wheel was invented by Sir Isaac Newton. He split white sunlight into red, orange, yellow, green, cyan, and blue beams; then he joined the two ends of the color spectrum together to show the natural progression of colors. Newton associated each color with a note of a musical scale.

A century after Newton, Johann Wolfgang Goethe began studying psychological effect of colors. He noticed that blue gives a feeling of coolness and yellow has a warming effect. Goethe created a color wheel showing the psychological effect of each color. He divided all the colors into two groups - the plus side (from red through orange to yellow) and the minus side (from green through violet to blue). Colors of the plus side produce excitement and cheerfulness. Colors of the minus side are associated with weakness and unsettled feelings.

The current form of color theory was developed by Johannes Itten, a Swiss color and art theorist who was teaching at the School of Applied Arts in Weimar, Germany. This school is also known as ‘Bauhaus’. Johannes Itten developed ‘color chords’ and modified the color wheel. Itten’s color wheel is based on red, yellow, and blue colors as the primary triad and includes twelve hues.
The first color wheel was invented by Sir Isaac Newton 17th century. He divided white sunlight into a color spectrum to show the natural progression of colors that you see in your basic prism. The presence of all colors produces white. The absence of color is black.
Goethe took Newton’s color wheel and investigated the psychological effects of colors. In 1810 he published *Theory of Colours*, his thesis on the nature, function, and psychology of colors, and what he considered his most important work. Goethe’s most intriguing theories explore the psychological impact of all colors on mood and emotion that you see reinterpreted for present day interior design color theory books and guides.
JOHANNES ITTEN

In terms of Modernism and color theory, Swiss color and art theorist Johannes Itten receives the most prominent credit as a color wizard. Itten taught the preliminary course at the Bauhaus School of Applied Arts in Weimar, Germany. He wrote three essential books on color theory: Design and form: the Basic Course at the Bauhaus, The Art of Color: the Subjective Experience and Objective Rationale of Color and The Elements of Color: A Treatise on the Color System of Johannes Itten Based on his book The Art of Color. He modified the color wheel and based it on red, yellow, and blue colors as the primary triad and includes twelve hues. This is the standard that is still used today.
In 1963 he published *Interaction of Color* which presented his theory that colors were governed by an internal and deceptive logic.

JOSEF ALBERS

Josef Albers (1888-1976) was an extremely influential artist, teacher and established himself as a leading color theorist of the 20th century as well.

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COLOR THEORY

TERMINOLOGY
COLOR SYSTEMS:
ADDITIVE AND SUBTRACTIVE

There are two primary color systems – methods by which color is reproduced: additive and subtractive (also known as reflective). We use both on a daily basis – the screen you’re reading this article on uses additive color to generate all the colors you see, while the book you’re reading uses subtractive color for its front cover.

In simple terms – anything that emits light (such as the sun, a screen, a projector, etc) uses additive, while everything else (which instead reflects light) uses subtractive color.
ADDITIVE

Additive color is based on red, green, and blue - RGB for short. Additive color works with anything that emits or radiates light. The mixture of different wavelengths of light creates different colors, and the more light you add, the brighter and lighter the color becomes.

When using additive color, we tend to consider the building block (primary) colors to be Red, Green, and Blue (RGB), and this is the basis for all color you use on screen. In additive color, white is the combination of color, while black is the absence of color.

This is standard subtractive, printing color model. Each color is represented by a corresponding value of cyan, magenta, yellow and black inks, on a scale from 0% to 100%. Each color is described as set of
Subtractive color, like additive, has three primary colors - Cyan, Magenta, and Yellow (CMY). In subtractive color white is the absence of color, while black is the combination of color, but it’s an imperfect system.

The pigments we have available to use don’t fully absorb light (preventing reflected color wavelengths), so we have to add a fourth compensating pigment to account for this limitation.

We call this “Key”, hence CMYK, but essentially it’s black. Without this additional pigment, the closest to black we’d be able to render in print would be a muddy brown.

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THE THREE COMPONENT PARTS THAT HELP US DEFINE A COLOR ARE HUE, SATURATION AND BRIGHTNESS
HUE

This is the position on the color wheel, and represents the base color itself. This is typically referred to in degrees (around the color wheel), so a yellow color will appear between 50 and 60 degrees, with the perfect yellow appearing at 56 degrees. Green, meanwhile, appears at 120 degrees on the wheel at so on.
This is a representation of how saturated (or rich) a color is. Low saturation results in less overall color, eventually becoming a shade of grey when fully desaturated. Saturation is normally referred to as a percentage between 0 and 100%.
TINT

Tint is a color term commonly used by painters.

A tint is a mixing result of an original color to which has been added white.

If you tinted a color, you’ve been adding white to the original
VALUE

the level of luminosity-lightness or darkness-of a color (shade, tone, tint)
BRIGHTNESS

Lightness defines a range from dark (0%) to fully illuminated (100%). Any original hue has the average lightness level of 50%.
THE HSB MODEL (OR HSL / HSV)

This color model is based on RGB but is better suited to artists and designers. Each color is described as a combination of Hue, Saturation and Brightness values which allows for quick and intuitive color choices.

For example, in HSB model, making an orange color brighter or darker is a matter of playing with the Brightness slider. In RGB model, you'd have to move around all sliders to find a darker tone of the same color, with no clear idea on what you need to do.
PRIMARY COLORS

Typically Red, Yellow and Blue.

SECONDARY COLORS

Green, orange and purple hues created by mixing primary colors.

TERTIARY COLORS

Further color hues you get by mixing a primary color with a secondary color.

They are usually named with two words: blue-green, red-violet, yellow-orange.

But why is this useful?

the color wheel helps you quickly grasp how colors relate to each other and which combinations work best through color wheel harmonies.
Harmonies are created by picking colors from the wheel according to predefined schemes, such as analogous, complementary or triad. These combinations always look balanced, natural and eye pleasing, just as certain note harmonies in music.