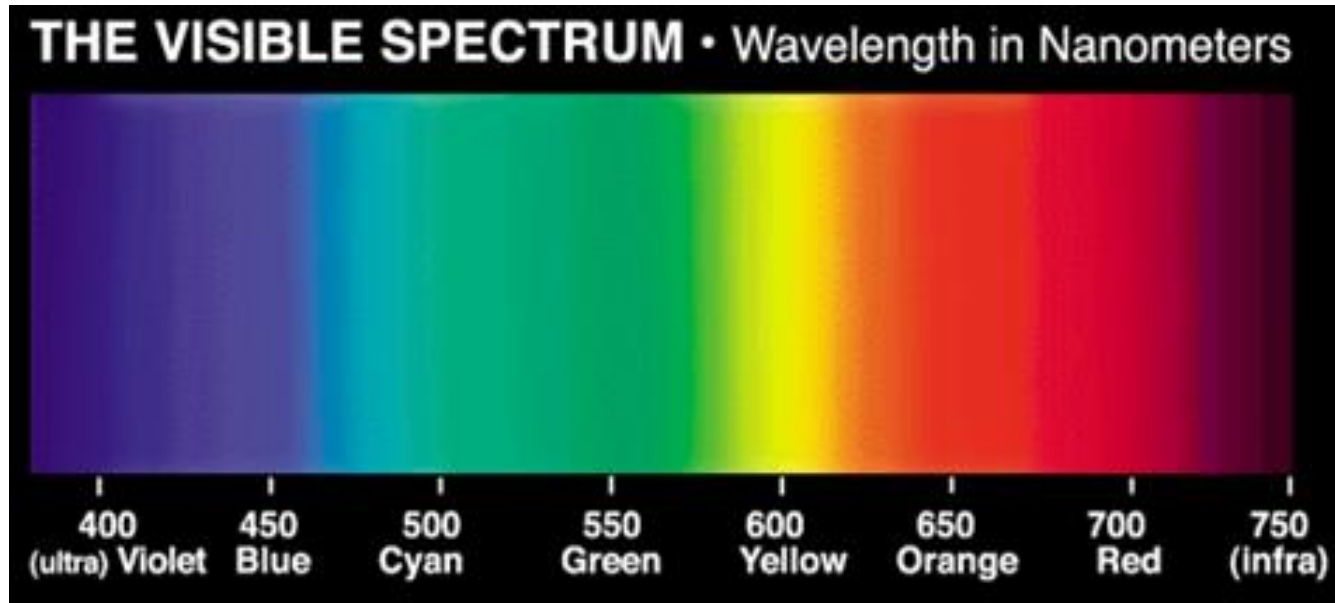# UNDERSTANDING COLOR

Using Color in Design

> "Colors are the native language of the subconscious.
> –Carl Jung, Psychiatrist "

Understanding the principles of color theory and its use in graphic design.

Using Color in Design
How We Perceive Color

THE VISIBLE SPECTRUM • Wavelength in Nanometers

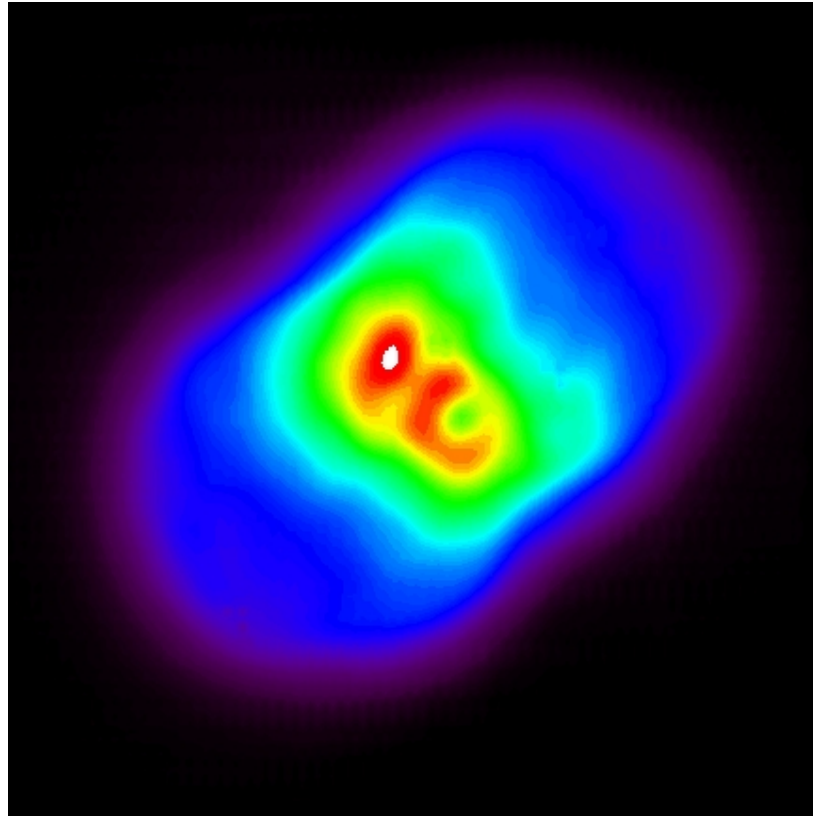| 400 (ultra) Violet | 450 Blue | 500 Cyan | 550 Green | 600 Yellow | 650 Orange | 700 Red | 750 (infra) |

http://www.skidmore.edu/~hfoley/images/spectrum.jpg

Color is based on light

Color perception based on the two components: wavelength and luminosity

Color of light is determined by wavelength and how it hits a surface

Using Color in Design
How We Perceive Color

http://science.nasa.gov/newhome/headlines/images/eta_car_pix/0099_infrared_lg.jpg

Color can exist beyond the spectrum visible to humans:
ultraviolet and infrared light are examples
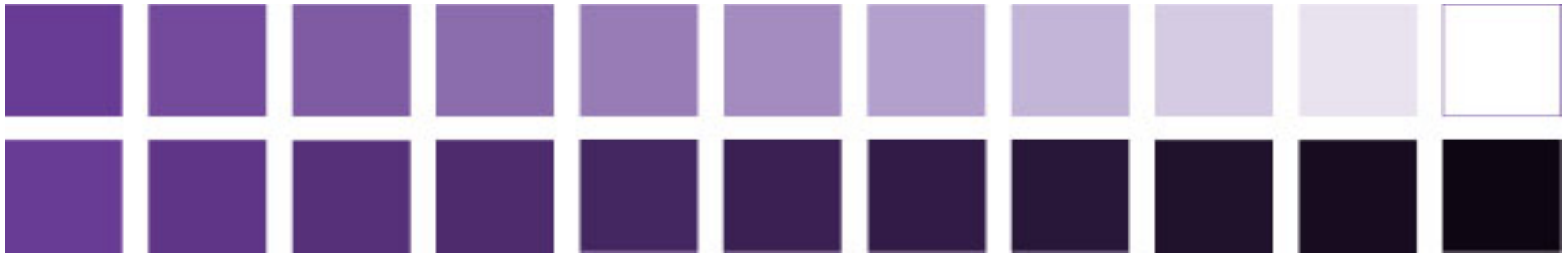
Using Color in Design
Terminology

Hue: Any single color in the spectrum (red, yellow, blue, etc).

Using Color in Design
Terminology

Value: The relative lightness or darkness of a color.

Using Color in Design
Terminology

Tint: A color with white added.
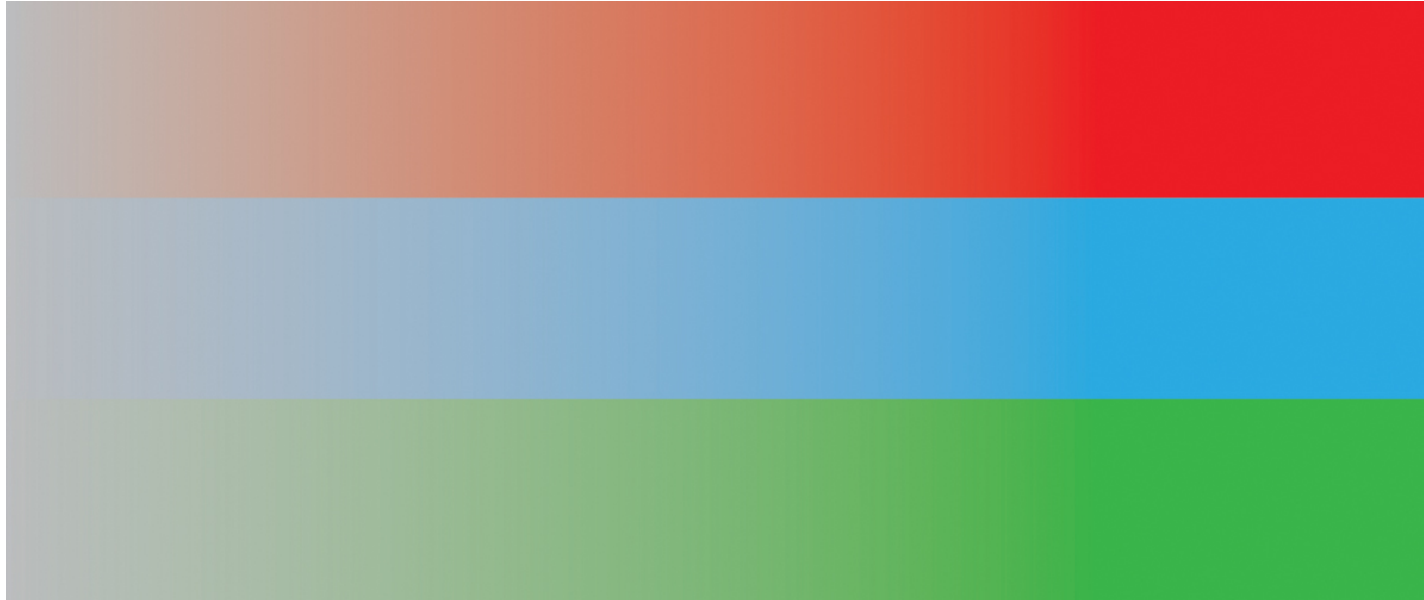
Shade: A color with black added.

Using Color in Design
Terminology

Saturation: The relative intensity or brightness of a color

Bright, vibrant colors (reds or oranges) have a saturation
dull or muted colors (browns) have a low degree of saturation

Using Color in Design
Terminology

Saturation: The relative intensity or brightness of a color

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Using Color in Design
Terminology

Colors can be of the same hue and still have varying degrees of saturation

Using Color in Design
How Do These Ideas Work Together?

Like the elements of design, hue, saturation and value can be used
to emphasize certain areas of a composition or deemphasize others

Colors can balance, organize and harmonize a design, or to create discord

Colors with high saturation intensity and brighter value are more visible
and demanding of a viewer's attention

Colors with low saturation can be used to set apart secondary information
or to create background elements

Color Design
Color Schemes
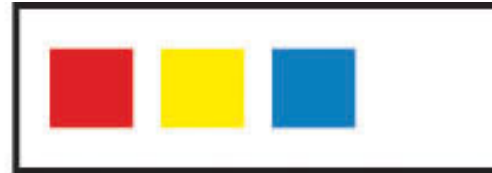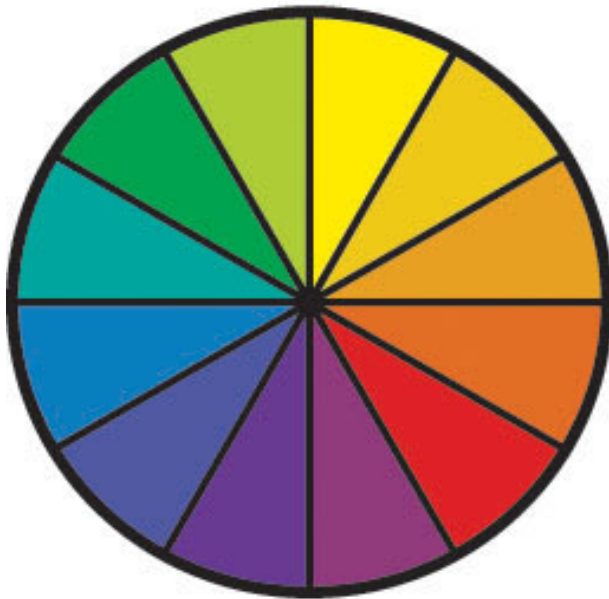
Primary Colors: Red, yellow and blue; the hues that form color wheel base

Secondary Colors: Green, orange and violet; hues that are mixed by combining two primary colors.

Tertiary Colors: Colors created by mixing a secondary color and a primary color. Examples are blue green, red orange, red violet, etc.

Color Design
Color Schemes

Monochromatic: Composition using tints and shades of only one hue. Easiest scheme to balance visually, but lacks high impact of other more contrasting and complicated schemes.

Color Design
Color Schemes

Complementary Colors: Colors that are opposites on the color wheel that, when combined, neutralize one another. Scheme provides strong visual contrast and demands attention. For best use, de-saturate the cool colors rather than the warm ones.

Color Design
Color Schemes

Analogous Colors: Colors that fall in adjacent proximity to each other on the color wheel, such as red, red orange, orange

Using analogous colors in a design creates unity and harmony

Color Design
Color Schemes

Split Complementary: Color scheme using a hue and the two colors that lay on either side of its compliment on the color wheel
Provides more visual variety than complementary scheme; strong contrast
Harder to balance than monochromatic, analogous color schemes
For best results, use one warm color with a range of cool colors or vice versa and avoid de-saturated warm colors
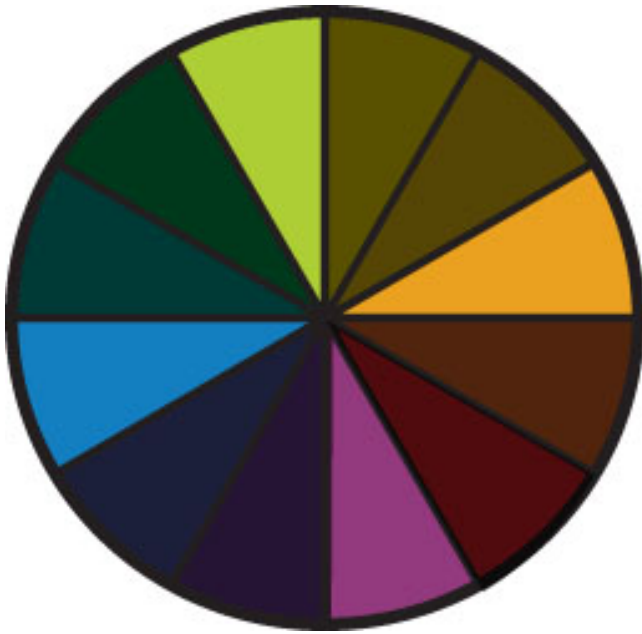
Color Design
Color Schemes

Triadic: Color scheme uses three colors equally spaced around the color wheel. Provides strong visual contrast while adding balance and richness.

For best use, choose one color to be used in larger amounts than others; experiment with color saturation and value
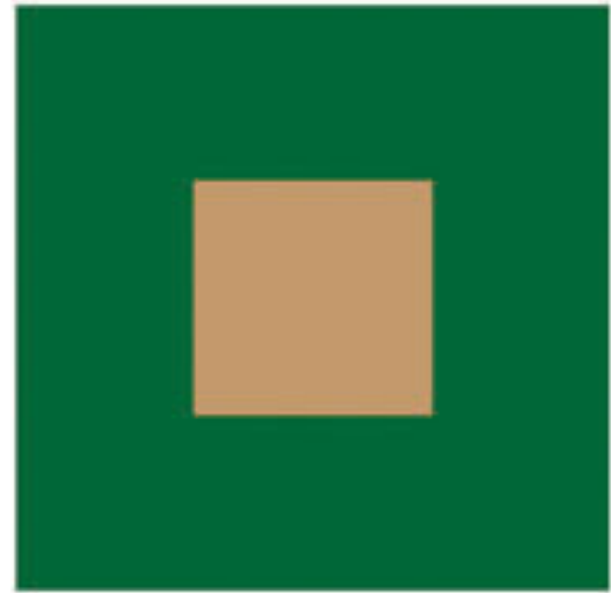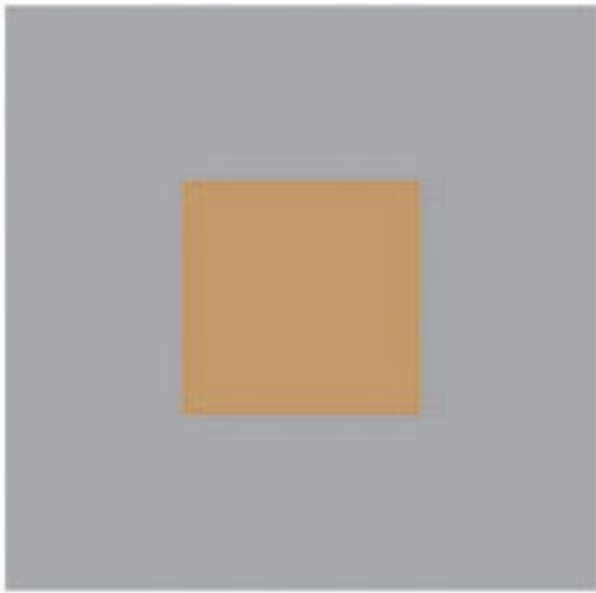
Color Design
Color Schemes

Tetradic (Double Complementary): This is the richest of all the schemes; utilizes four colors arranged into two complementary color pairs

Can be hard to harmonize; if all four colors are used in equal amounts, this scheme risks looking unbalanced and chaotic, so choose one color to be dominant

Color Design
Simultaneous Contrast

Simultaneous Contrast: The concept of color perception based on the other colors surrounding it.

Color can look completely different when set against different hues, and is perceived in relation to its surroundings.
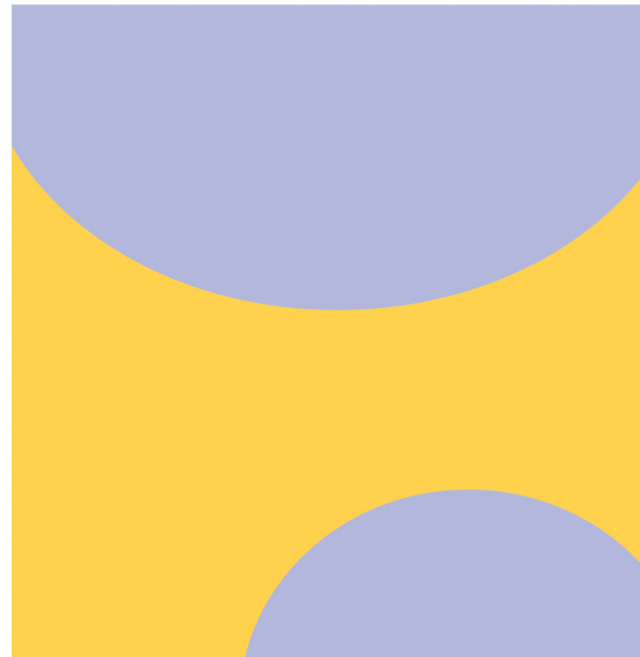
Color Design
Advancing and Receding Color

Advancing/ Receding Color: Warm and bright colors give the illusion of being closer to a viewer within a composition, while cool and dull colors appear to be further away.

Color Design
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Color Design
Vibration

Vibration: Complementary colors of equal saturation and brightness compete with our eye for attention when seen in close proximity to one another.

Color Design
Weight

Weight: Colors differ in visual weight based on their hue and intensity.

For example, red is considered a "heavy" color, and would demand a viewer's attention, even if shown in only a small amount within a composition.

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