14 Color

Saturday, February 20, 2016 10:51 PM

Today:
- Color
- 10 minute team time

A Faster Horse dinner/movie Weds 3/9, 5 pm. Pizza. FLMG 156

Color

Nomenclature
- Digital, photoshop
- Pantone https://en.wikipedia.org/wiki/Pantone

Additive/subtractive physics

Other aesthetics of color

Texts

Color1

Color

Color is used in design to attract attention, group elements, indicate meaning, and enhance aesthetics.

Color can make designs more visually interesting and aesthetic, and can reinforce the organization and meaning of elements in a design. If applied improperly, however, color can seriously harm the form and function of a design. The following guidelines address common issues regarding the use of color.[1]

Number of Colors

Use color conservatively. Limit the palette to what the eye can process at one glance (about five colors depending on the complexity of the design). Do not use color as the only means to impart information since a significant portion of the population has limited color vision.

Color Combinations

Achieve aesthetic color combinations by using adjacent colors on the color wheel (analogous), opposing colors on the color wheel (complementary), colors at the corners of a symmetrical polygon circumscribed in the color wheel (triadic and quadratic), or color combinations found in nature. Use warmer colors for foreground elements, and cooler colors for background elements. Light gray is a safe color to use for grouping elements without competing with other colors.

Saturation

Use saturated colors (pure hues) when attracting attention is the priority. Use desaturated colors when performance and efficiency are the priority. Generally, desaturated, bright colors are perceived as friendly and professional; desaturated, dark colors are perceived as serious and professional; and saturated colors are perceived as more exciting and dynamic. Exercise caution when combining saturated colors, as they can visually interfere with one another and increase eye fatigue.

Symbolism

There is no substantive evidence supporting general effects of color on emotion or mood. Similarly, there is no universal symbolism for different colors—different cultures attach different meanings to colors. Therefore, verify the meaning of colors and color combinations for a particular target audience prior to use.[2]

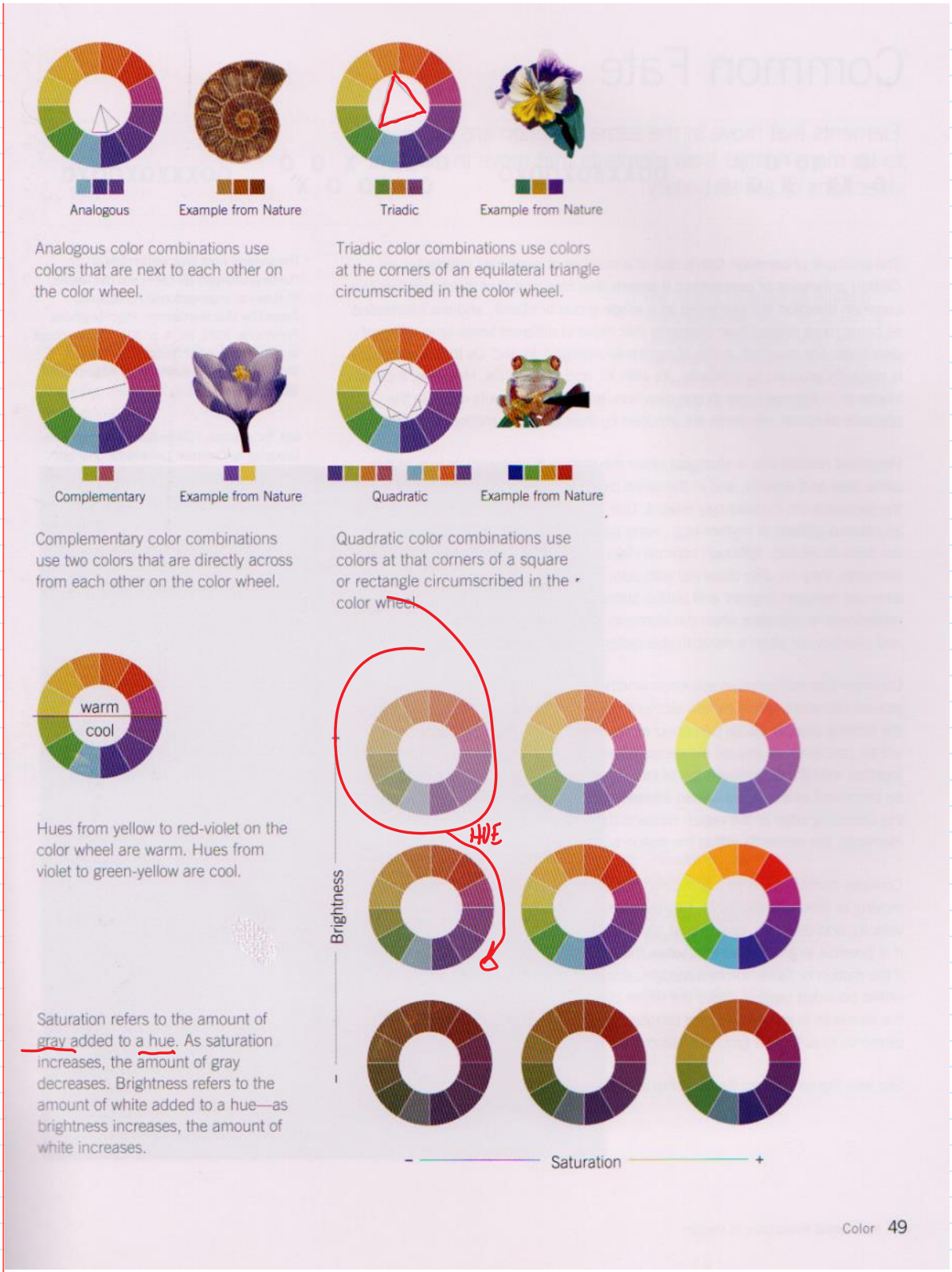
See also Expectation Effect, Highlighting, Interference Effects, Similarity, and Uniform Connectedness.

[1] A nice treatment of color theory is *Interaction of Color* by Josef Albers, Yale University Press, 1963. For a more applied treatment, see *The Art of Color: The Subjective Experience and Objective Rationale of Color* by Johannes Itten, John Wiley & Sons, 1997; and *Human-Computer Interaction* by Jenny Preece, et al., Addison Wesley, 1994.

[2] It is reasonable to assume that dark colors will make people sleepy, light colors will make people lively, and irritating colors will make people irritated. Otherwise, the only observable influence of color on behavior is its ability to lead people to repaint walls unnecessarily. For those determined to try to calm drunks and win football games through the application of color, see *The Power of Color* by Morton Walker, Avery Publishing, 1991.

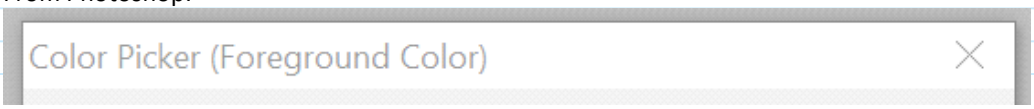
Girl-Boy Pink-Blue preferences are from cultural training. Pink used to be boy color; from diluted blood (red was male color)

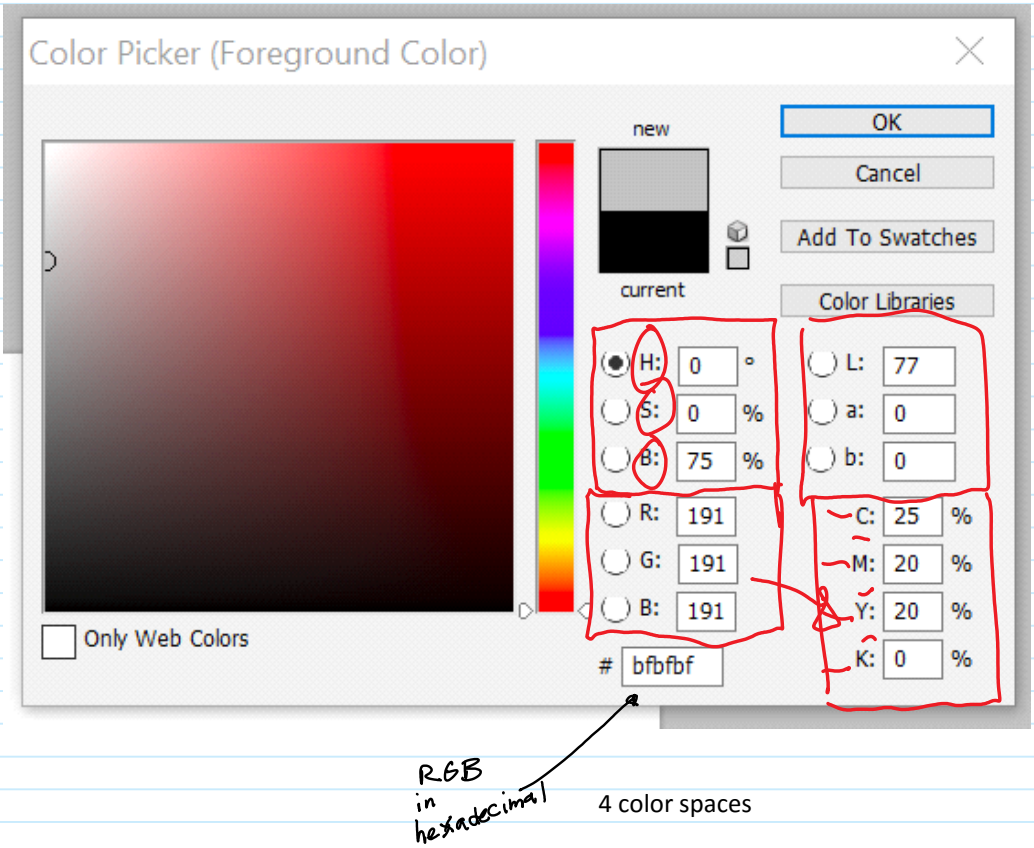
color2



Color Nomenclature

Range of colors that can be produced by a technology = gamut
Matching across devices, technologies = color management
From Photoshop:

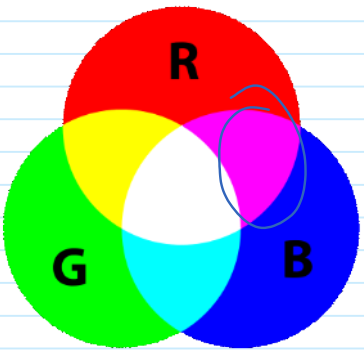




Pantone https://en.wikipedia.org/wiki/Pantone
Another color nomenclature and color management system. Common in design world.

Additive/subtractive color

Additive color = light.



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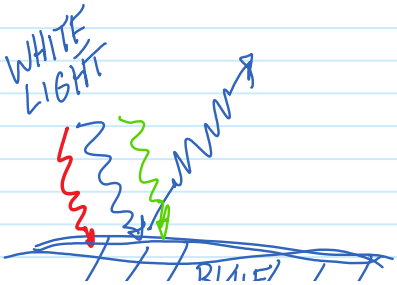
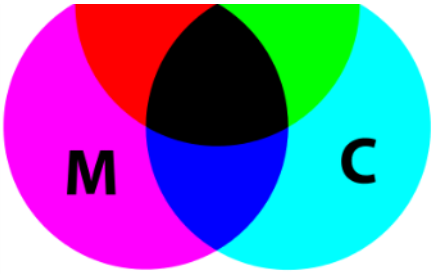
Subtractive color = surfaces; dyes, pigments, inks. All wavelengths are absorbed except the scattered ones.





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Perception of Color

Classic text:

Albers, Josef, and Nicholas Fox Weber. *Interaction of Color: 50th Anniversary Edition*. -50th Anniversary ed. edition. New Haven Connecticut: Yale University Press, 2013. First edition 1963. $12 paperback

Much has been learned about the physiology of vision; active area of research.
Recommended: Livingstone, Margaret, and David Hubel. *Vision and Art: The Biology of Seeing*. Reprint edition. Abrams, 2008. $20 paperback.
Topics:

- The eye and color vision
- Luminance and night vision
- Neural processing of color information
- Acuity and spatial resolution
- From 3-D to 2-D: Perspective, Shading and Chiaroscuro, Stereopsis
- Illusions of motion
- Color mixing and color resolution
- Digital color

Color perception is HIGHLY VARIABLE among humans

- Remember the blue/gold dress?
  http://www.nytimes.com/interactive/2015/02/28/science/white-or-blue-dress.html?_r=0

Color illusions: http://www.archimedes-lab.org/color_optical_illusions.html

Tiles a, b and c are identical

Palmer, Stephen E, Karen B Schloss, and Jonathan Sammartino. “Visual Aesthetics and Human

Preference." *Annual Review of Psychology* 64 (January 3, 2013): 77–107. doi:10.1146/annurev-psych-120710-100504.

Abstract

Human aesthetic preference in the visual domain is reviewed from definitional, methodological, empirical, and theoretical perspectives. Aesthetic science is distinguished from the perception of art and from philosophical treatments of aesthetics. The strengths and weaknesses of important behavioral techniques are presented and discussed, including two-alternative forced-choice, rank order, subjective rating, production/adjustment, indirect, and other tasks. Major findings are reviewed about preferences for colors (single colors, color combinations, and color harmony), spatial structure (low-level spatial properties, shape properties, and spatial composition within a frame), and individual differences in both color and spatial structure. Major theoretical accounts of aesthetic response are outlined and evaluated, including explanations in terms of mere exposure effects, arousal dynamics, categorical prototypes, ecological factors, perceptual and conceptual fluency, and the interaction of multiple components. The results of the review support the conclusion that aesthetic response can be studied rigorously and meaningfully within the framework of scientific psychology.

Aesthetic response can be + or -
Art is more than just aesthetic response; cultural, social etc.
Art vs aesthetics: "Perhaps the most straightforward difference is that significant aesthetic experiences can (and do) occur anywhere in response to seeing any sort of object, scene, or event, whereas art is limited to the subset of human artifacts intended to be viewed as art, whether in a museum, a gallery, or one's own living room"
No universal positive response to any specific thing.

20 Aesthetic-Usability Effect http://www.lynda.com/Higher-Education-tutorials/Aesthetic-usability-effect/193717/436485-4.html