

How Color Works: Color Theory in the Twenty-First Century
Pamela Fraser

Chapter Two: Defining Color

Chapter Summary

In this chapter, readers are introduced to the rudimentary concepts and terms used in the field. The chapter describes the mechanics of light, of material color, the laws of color perception, and puts forth a color-mixing system that replaces traditional primary colors of red, blue, and yellow with process primaries cyan, magenta, and yellow to produce a cleaner, brighter array of colors. The three major attributes of color are detailed and a methodical approach to color mixing—that will teach readers to mix any color—is described.

Suggested Projects

- *Try:* Replicate the Venn diagram in Image 2.5 using process primaries cyan, magenta, and yellow paint to create the secondary colors out of mixtures of two primaries. This will give you experience getting a feel for the proportions involved in making these admixtures.
- *Try:* Create a value-gamut with an odd number of intervals, including black and white at either end. Start with seven, then try creating a harder one with eleven. Make the middle value exactly between the black and white. Our eyes can perceive differences between values on the lighter end of the value scale better than they can perceive the darker end. The scale in Image 2.9 was created mathematically, not perceptually. Each darker interval has more ink added in equal increments, but changes on the dark end of this gamut are more physiologically difficult to perceive than those on the light end. You should expect to have to paint the intervals multiple times, as you will only be able to perceive how equidistant they are from each other once all increments are painted. In other words, you will need to measure their values in relation to each other and make adjustments through trial and error.
- *Try:* Create a design or pictorial composition that uses a specific gamut of values of a single color. Start with seven increments of an unadulterated color—the darkest will be the color at maximum saturation, and the lightest will be white. There will therefore be five values in between. The value contrasts will enliven the composition and create a sense of depth.
- *Try:* Create a seven-color saturation gamut with the pure hues at either end and a perfect middle mixture in interval four. The middle mixture should not appear to contain either one of the component colors. Then bring a saturation gamut to an image-based work, using it to describe volume. Add degrees of white to this palette if you desire lighter colors or value variability. The colors will then be more gray than brown, like Tuymans's palette.

Recommended Links for Chapter Two: Defining Color

2.1: Optical effects caused by cognitive structures.

Link: http://thebrain.mcgill.ca/flash/a/a_02/a_02_p/a_02_p_vis/a_02_p_vis.html

2.2: Edwin Land, "Mondrian" color panel, 1975–1985, wood, felt, paper.

Link: <http://waywiser.fas.harvard.edu/search/Mondrian>

2.3: CIE chromaticity diagram. Commission internationale de l'Eclairage (International Committee of Illumination), 1931.

Link <http://www.cie.co.at/>

2.6: Alfred Hicethier, 1000-hue cube. 1952.

Link: http://www.colorsystem.com/?page_id=938&lang=en

2.11: Edward Hopper, *Room in Brooklyn*, 1932. Oil on canvas, 73.98 x 86.36 cm (29 1/8 x 34 in.) Museum of Fine Arts. Photo Credit: Erich Lessing | Art Resource, NY.

Link: <http://www.mfa.org/collections/object/room-in-brooklyn-32499>

2.14: Judy Ledgerwood. *In Love*, 2011. Oil on canvas. 60" x 60". Courtesy of the artist and Tracy Williams Ltd. Gallery, NY.

Link: <http://www.tracywilliamsLtd.com/judy-ledgerwood/judy-ledgerwood.html>

2.15: Luc Tuymans. *The Rumour*, 2001. Oil on canvas. 118 x 67 cm / 46 1/2 x 28 3/8 inches. Private Collection.

Link: <http://www.tate.org.uk/whats-on/tate-modern/exhibition/luc-tuymans>

2.16: Kerry James Marshall. *Untitled (Sofa Girl)*, 2014. Acrylic on PVC panel. 150.6 x 212 cm.

Link: <http://www.metmuseum.org/press/exhibitions/2016/kerry-james-marshall>

2.18: Yale Art School color study, "Problem 3: To make two colors look like one." Wilson Wright, student of Josef Albers. color-aid paper, pen, and ink on mat board, 10 x 12 in. (25.4 x 30.5 cm), undated. Courtesy the Josef and Anni Albers Foundation.

Link: A digital version of these lessons is available as an interactive app.

<https://itunes.apple.com/us/app/interaction-of-color-by-josef-albers/id664296461?mt=8>

2.19: Michel Eugène Chevreul, effects of juxtaposition from *The Laws and Contrast of Colour and their application to the arts of painting, decoration of buildings, mosaic work, tapestry and carpet weaving, calico printing, dress, paper staining, printing, military clothing*. Translated by John Spanton. London: Routledge, Warne, and Routledge, 1861.

Link: <http://www.chemistryexplained.com/Ce-Co/Chevreul-Michel.html>