Color Theory

Test 1 Review: Fall 2017

• Exam: 1 Tuesday, September 19.
• Sources covered on exam: Course text (*Color*/6th ed.) Ch. 1, Ch. 2, Ch. 3, p. 77-81 (mixing)
p. 120-127 (major hue schemes: www.harding.edu/gclayton/color/topics/005_schemesintro.html).
Liquitex Acrylic Book reading (p. 5-13)

• Be able to chart colors and hue schemes using color wheel & value staff, and by noting limitations and dominants. (see course web-posted content: www.harding.edu/gclayton/color/assignments/cht01_chartingintro.html)
• Be able to mix using the straight-line method and Y-method. (79)

Topics (note... the numbers, below are page numbers from 6th ed. of the course textbook.)

Three dimensions of color:
• Hue, Value, Chroma (19)
• Chromatic neutral, near-neutral, low chroma
• Achromatic, neutral, true neutral (21)
• Complement, Analogous/Adjacent
• Inherent-, intrinsic- or natural value

Pigment, binder, medium (18)

High key (high-value-dominated scheme)
Low key (low-value-dominated scheme)
Tint, Shade, Tone
Tonalist designer/painter vs. Colorist (lect.: e.g. Leonardo vs. Monet)

Atmospheric vs. local color (49/52)
Impact of prevalent color printing, digital color editing, and dye/pigment chemistry advances on color design.
Physical basis of color variation (wavelengths and frequency, selective absorption, nanometers.)

Color coding of information. (11)
Current scientific understanding of color phenomena. (12)

Theory vs. practice in learning color (12)
Electromagnetic- & visible spectrums (14, 15)
Newton’s color wheel (origin/inspiration)
Sunlight, color of daylight. The “color” of White light (33, 14)

Reflection, transmission, absorption & refraction (text p. 38, fig. 3.23)
Retina (25),
Ganglion cells, opponent theory & color blindness.

Cones, (3 types) Rods & their function (26)
Narrow field of color accuracy (p. 26) & fovea (function & traits) (26)
Optic nerve, blind spots and their cause.
The eye’s lens & iris (role/function) (25)
Color afterimage (successive contrast) (also p132-3), exhaustion of rods (rhodopsin) & cones (iodopsin), night vision. (26/27)

Trichromatic Theory vs. Opponent Theory (27)
Additive color (light), primaries, secondaries. (16)
Subtractive color (pigment), primaries, secondaries, tertiaries (15-18).
Subtractive vs. Additive color (how are they different? Why are they so named?) (15, 16, 22)
Additive vs Subtractive primaries & secondaries.

Munsell’s color wheel vs. ‘traditional’ wheel. (18)
Munsell color tree (f. 2.18): explain its 3-dimensions, and varied row lengths. (5 color wheel f. 2.10)

Munsell hue notation system (e.g. 8R 5 12) (see p. 71)

Liquitex color map & straight-line mixing techniques, (see p.78-79) (21, 22, 70, 71)
Surface quality effects on color (33)

Webber-Fechner mixing (98-99) (Geometric vs. arithmetic mixing)

(painted) Glaze, Tint (80)
Browns, tans, beiges in terms of H/V/C
Warm, Cool, relative color ‘temperature’

Analogous or adjacent color (120-4)
Dominance, Subordinance (from color charting)
Limitation (limited palette), benefits to unity.

Simultaneous contrast: each color “pushes” the appearance of its neighbors away in hue, in value and in chroma. Juxtaposition matters. (see also p. 136-7; web links)

“the only hard and fast rule” (32)

Color constancy, Monet’s series (29, 34-6)
Color vision in animals, bees, worms (30 & web)
Color blindness, prevalence, common types.
color/hue perception variations due to culture. Color field size in relation to clr perception. (31)

Illumination’s impact on perceived color, (34-5)
North light, “full-spectrum” lights, color critical matching. (36-7)

Non-visual perception/ synesthesia (37)
Color proportions/proportion studies. (fig.3.11)
Impact of color juxtaposition (placement) (fig.3.13)
B. **Hue schemes graphically outlined.**
These diagrams represent the most common structured hue schemes. Note that each structure — the black bars, below — can be rotated freely around the center of the color wheel. Thus, the hues can vary, but the relationship between the hues within a scheme holds constant.

<table>
<thead>
<tr>
<th>Family of Schemes</th>
<th>Schemes</th>
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<tbody>
<tr>
<td><strong>Similarity-Based Schemes:</strong> Monochromatic &amp; Adjacent &amp; Saturation</td>
<td><img src="image1" alt="Monochromatic" /> <img src="image2" alt="3-Hue Adjacent" /> <img src="image3" alt="5-Hue Adjacent" /> <img src="image4" alt="Saturation" /></td>
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<tr>
<td><strong>Opposition-Based Schemes:</strong> various Complementary</td>
<td><img src="image5" alt="Complementary" /> <img src="image6" alt="Near-Complement" /> <img src="image7" alt="Split-Complement" /> <img src="image8" alt="Split-Complement-Bridged" /> <img src="image9" alt="Double-Complement" /> <img src="image10" alt="Double-Split Complement Bridged" /></td>
</tr>
<tr>
<td><strong>Distribution-Based Schemes:</strong> Triadic and Quad</td>
<td><img src="image11" alt="Triadic (strict)" /> <img src="image12" alt="Triadic w. Neutral" /> <img src="image13" alt="Triadic w. Neutral as 3rd Hue" /> <img src="image14" alt="Quad" /></td>
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