Lecture 10: Color & Artifacts
April 15, 2013

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The Eye

Optical Illusions

The Eye

Optical Illusions
The Eye

Optical Illusions

Image from http://en.wikipedia.org/wiki/Troxler's_fading
Color Space
Color Spaces

sRGB
Color Spaces

AdobeRGB

Image from http://en.wikipedia.org/wiki/Adobergb
Color Management

Image from http://www.normankoren.com/color_management.html
Gamut mapping

Perceptual

Large gamut
Color spaces
Small gamut
Maintains low saturation colors.
Compresses out-of-gamut colors and some in-gamut colors.
Reversible (mostly; best with 48-bit color)

Colorimetric

Maintains in-gamut colors.
Clips out-of-gamut colors.
Not reversible.

Image from http://www.normankoren.com/color_management.html

Color Management  Gamut Mapping
Color Management

Gamma

Image from http://www.normankoren.com/color_management_2A.html
Image from http://www.cambridgeincolour.com/tutorials/white-balance.htm
Color

White Balance

<table>
<thead>
<tr>
<th>Feature</th>
<th>RAW</th>
<th>JPEG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit depth</td>
<td>10-, 12-, 14-bit</td>
<td>8-bit</td>
</tr>
<tr>
<td>Tonal Curve</td>
<td>Not applied</td>
<td>Applied</td>
</tr>
<tr>
<td>White Balance</td>
<td>Not set</td>
<td>Set</td>
</tr>
<tr>
<td>Compression</td>
<td>Lossless</td>
<td>Lossy</td>
</tr>
<tr>
<td>Portability</td>
<td>Nonstandard</td>
<td>Standard</td>
</tr>
<tr>
<td>Post-Processing</td>
<td>Required</td>
<td>Optional</td>
</tr>
</tbody>
</table>

Digital Cameras
RAW vs JPEG!
Computer Science 194-23
The Art and Science of Digital Photography

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