Surrounding Matters

* Guidelines
  + Use saturated colors sparingly
  + Neutral borders

Perceptual Color Spaces

* Instead of RGB primaries it uses XYZ primaries
* Normalizing for luminance and perceptive distance yields the CIE chromaticity diagram
* Chart, surface chart

  Description automatically generated
* Can not generate all colors
* No triangle can encompass all visible colors in the CIE -> modern monitors are unable to display all visible colors

The Munsell Perceptual Color Space

* 3 axes
* Chroma (saturation): distance from the core
* Value (brightness): vertical axis
* Hue: 10 principal hues (R, YR, Y GY, G, BG, B, PB, P, RP)

Contrast

* Difference of brightness in adjacent regions of the image
  + Grey-level contrast
  + Color contrast

Chromatic Aberration

* Different wavelengths of light are focused at different distances within the eyes
  + Shot-wavelength blue light is refracted more than long=wavelength red light
  + The human eye has no correlation for chromatic aberration

Human vision

* Vision is a MASSIVELY parallel processor dedicated to
  + Detect
  + Analyze
  + Recognize
  + Reason with
* Sensitivity to differences in
  + color, orientation, size, shape, motion, shading, 3D depth, …

Texture

* A visual texture represents that visual sensation the allows us to pre-attentively differentiate two adjacent
* Improve perception of position and orientation
* Communicate information about the 3D structure regardless of their coloring
* Do not include information are to be avoided in visualization
* 3D display
  + Linear perspective
  + Shadow
  + Occlusion
  + Shading