Mapping Marks Notes

**Slide 5**

There is a type of colour deficiency where the blue–yellow channel is impaired, **tritanopia**, but it is extremely rare and not sex linked. The two common forms of red–green colour blindness are **deuteranopia** and **protanopia**; both are sex linked.

**Slide 6**

The conversion between RGB and HSL values is complex – see <https://en.wikipedia.org/wiki/HSL_and_HSV>

Munzner avoids the term *perceptually linear luminance* as inaccurate for visualization analysis because very few visual encoding idioms carry out this computation. Similarly, she avoids the term **brightness**, the technical term for the human perceptual experience of luminance, because it is affected by many factors such as illumination levels and surrounding context; again, visual encoding idioms typically manipulate luminance rather than attempting to deliver true brightness.

**Slide 10**

Why the double-spelling? In British English, the word is spelt ‘colour’ while in American English it is spelt ‘color’. So, generally on my slides I use the British English spelling.

But, in coding libraries, you have to use the spelling that the library developer uses, and that is always (as far as I know) the American English spelling ‘colormap’. See Java, Python, JavaScript, Matlab, etc.

**Slide 13**

Ineffective categorical colourmap use. (a) The 21 colours used as an index for each mouse chromosome can indeed be distinguished in large regions next to each other. (b) In non-contiguous small regions only about 12 bins of colour can be distinguished from each other, so a lot of information about how regions in the mouse genome map to the human genome is lost.

Effective categorical colourmap use that combines size and shape channels.


[Effective categorical colourmap use: A large space of visual encoding possibilities for 27 categories was considered systematically in addition to the colour channel, including size and shape channels and more complex glyphs. From [Maguire et al. 12, Figure 5].](https://jigsaw.vitalsource.com/books/9781498759717/epub/OPS/xhtml/22_Credits.xhtml#rfig10_9)

**Slide 16**

A range of 1000 units in Figure (a) has different characteristics depending on where within the colormap it falls. While the range from –2000 to –1000 has three distinct colours, cyan and green and yellow, a range of the same size from –1000 to 0 simply looks yellow throughout.

The varying hues allow easy segmentation into categorical regions, for both seeing and describing mid-level neighbourhoods. Luminance is a magnitude channel, providing perceptual ordering. It supports both high-level distinctions between one end (“the dark parts”) and the other (“the light parts”) and low-level structure perception because subtle changes in luminance are more accurately perceived than subtle changes in hue. Figure (b) illuminates the true structure of the dataset with a more appropriate colourmap, where the luminance increases monotonically. Hue is used to create a semantically meaningful categorization: the viewer can discuss structure in the dataset, such as the dark blue sea, the cyan continental shelf, the green lowlands, and the white mountains. The zero point matches with sea level, a semantically meaningful point for this dataset.

**Slide 17**

Diagram from slide 10 for reference

