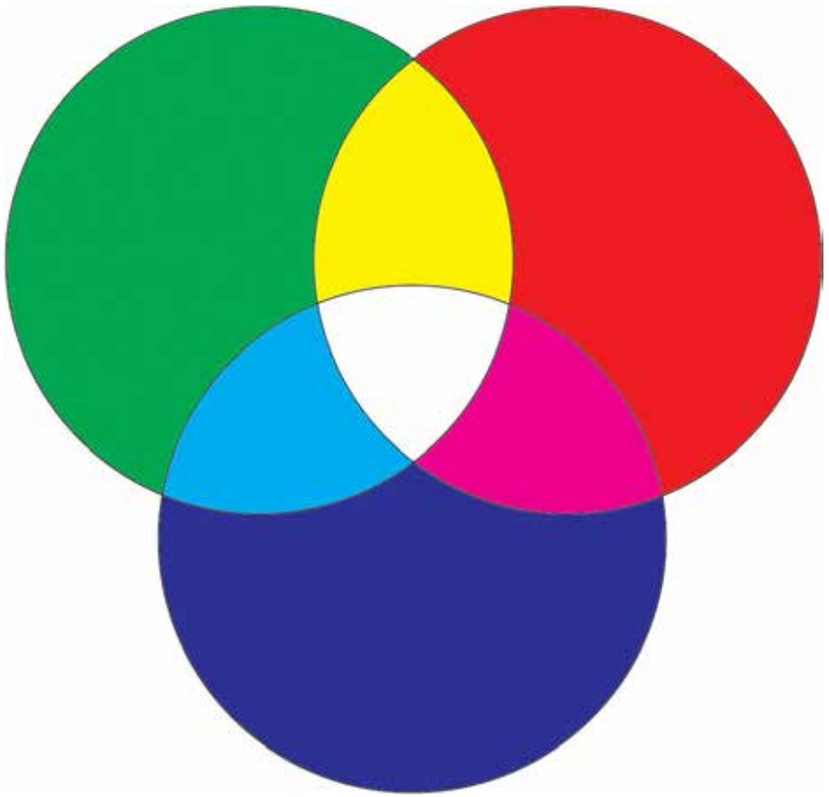
# Sight

## *Colour*



By choosing stark, complementary colors, text becomes easily readable.

Sometimes, choosing a color scheme in which the text is the brightest element of the design reduces eyestrain by focusing the User's attention.

A lack of contrast between text and its background will drive your users insane. Their eyes don't know which color to focus on, which will almost instantly strain their eyes.

A complementary color scheme does not necessarily mean the contrast between text and background is strong enough. Sometimes, one of your colors will be too bright in comparison to the other, which will lead to eventual eyestrain.

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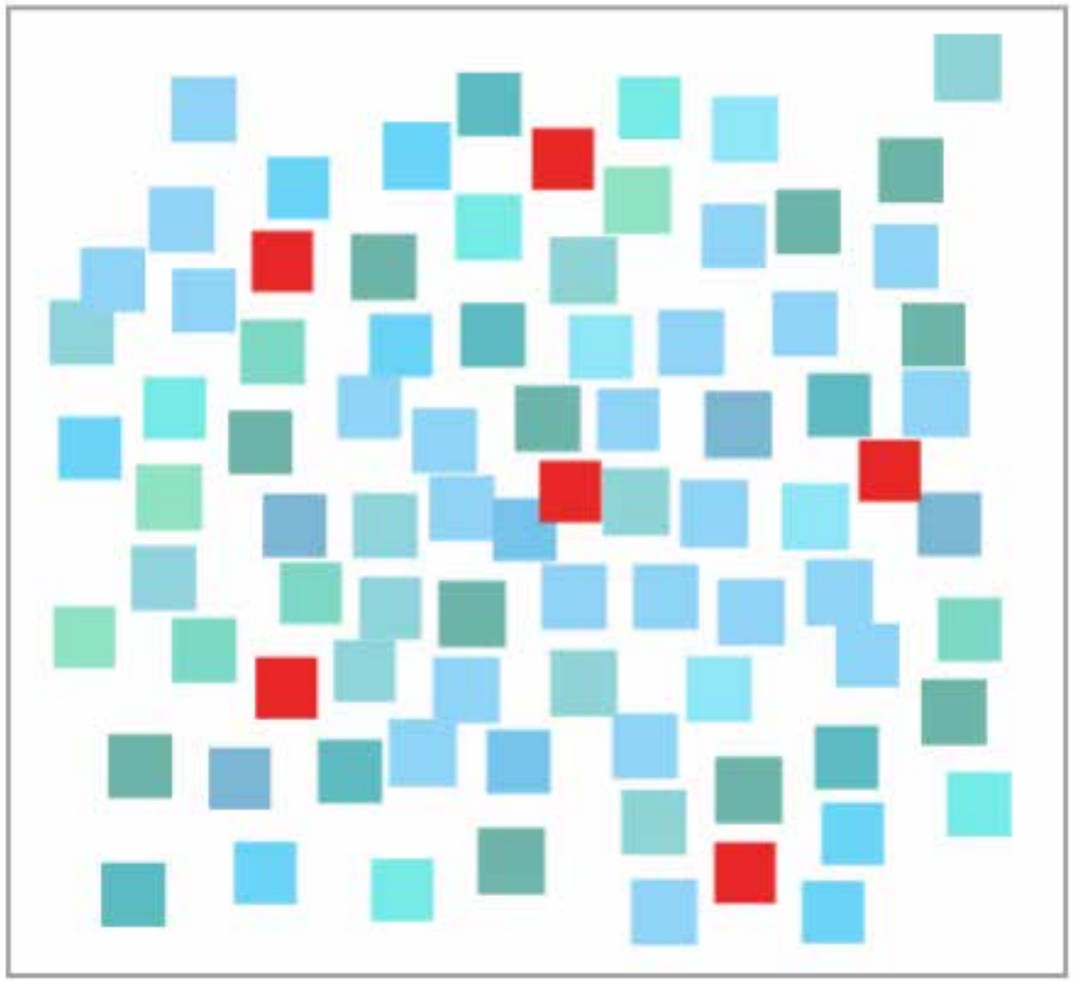

**Figure 2**. Contrast and analogy. The red squares contrast with the analogous blue-green ones.

A rainbow of colors as viewed by a person with no color vision deficiencies.

The same rainbow as viewed by a person with protanopia.

The same rainbow as viewed by a person with deuteranopia.

The same rainbow as viewed by a person with tritanopia.

# Sight Discussion: Colour

We perceive colour when the brain responds to stimuli produced when incoming light reacts with the three cone photoreceptors containing different pigments: Red, Green and Blue. So, everything we see is reduced to these colours or combinations of, which in the real and digital worlds means distinguishing between millions of incredible colours.

White is a nonspectral colour meaning it can't be generated by any single wavelength of light. White is the experience we have when all three of our cone types are activated in approximately equal proportion. (see RGB)

In short, white light is a physical entity, colour is a perception. Black and white are colours without hue.

While we have three different types of cones, we only have one type of rod and therefore can't distinguish colours in dim light; to see colour we need to compare the activity in two different classes of photoreceptors. Primates are the only mammals that aren't colourblind.

The sense of colours vibrating, dancing is the difference in wavelength sensitivity between the cone and rod system.

Luminance, or how bright or dim something appears, is analyzed separately in the brain from colour. Whether it's rods or cones that are predominantly responding determines our perception of brightness. It's easy to confuse with colour. Colour adds much of the emotional information but not the compositional information. The two are processed by different areas of the brain. (show book page 36)

### WHAT/WHERE SYSTEM

Where system: motion perception, depth perception, spacial organization, figure/ground segregation; it's colourblind

What system: object and face recognition, colour perception and is unique to primates. Our night vision, however is colourblind.

### CONSIDERATIONS IN THE DESIGN WORLD:

Edward Tufte: "…avoiding catastrophe becomes the first principle in bringing colour to information: Above all, do no harm." (Envisioning Information, Edward Tufte, Graphics Press, 1990)

Depending on the context, the use of colours can either enlighten or confuse.

Consumers judge an environment or object within 90 seconds of initial viewing and most of that assessment is based on colour.

Analogous colours, side by side on the colour wheel, can be soothing and look pleasant to the human eye. Complementary colours, opposite each other on the wheel like green and red, are high-contrast and can look very energetic on the page.

Colour harmony is something that is pleasing to the eye and a desirable goal. It both engages and provides a sense of order.

How does colour affect design?:

- colour coding enhances comprehension, association/disassociation
- improves object recognition (an orange photographed in isolation without its colour could be a grapefruit or lemon)
- enhances meaning (think of a black site with a lone but powerful colour used in the most carefully selected places)
- provides structure, hierarchy
- establishes identity (if I see bright green and rich purple combined, I will forever think of TELUS; royal blue for Bell, red for Rogers, and yellow and black for Fido. White is a very effective colour in both TELUS and Bell marketing
- provides symbolism - red = passionate, yellow = energetic, blue = serene and melancholic; beware of cultural relevance
- promotes usability - wayfinding, navigating
- communicates mood, emotion, provide "personality"

COLOUR IN THE DIGITAL WORLD:

- Blue ultramarine paint from Afghanistan was more expensive than gold; in the print world, prior to digital printing, colour was a luxury and cost money; often rationalizing colour and the number of colours was a necessary conversation with your client. Today million colour choices are available and so comprehending colour is even more valuable.
- still very difficult to achieve 'true' colour: poor monitors, lighting, glare/reflection

COLOURBLINDNESS:

With colour deficits, the ability to discriminate colours on the basis of all three attributes - hue, value, and saturation - is reduced. Designers can help to compensate for these deficits by making colours differ more dramatically in all three attributes, but particularly value.