Colour Theory

Design’s Most Exciting Element
The importance of colour

- Colour is one of the key elements that characterises almost all products.
- Colour may be the factor that sells your product.
- Different Colours have different psychological impacts on people.
From small electronic objects to large airports, colour plays a powerful role in helping you use a tool or navigate a space.

The usability of a transportation centre depends on how easily we can find a departure gate, a baggage claim area, etc.

Bright yellow signs capture the attention of even the most weary traveller. This image demonstrates how highly visible the yellow sign is. Notice that it has to compete with wide expanses of window and the strong natural light surrounding it.
The smaller the object, the more difficult it is to find the right way to use the device.

A TV remote control, a radio, a car alarm and a food blender. Each of these objects relies on a wide variety of button controls. Each device has a control panel.

The issue is human interface design.
Colour and products

- There are three red buttons and seven white buttons.
- Why are there three red buttons?
- Are there three critical functions?
- The three red buttons definitely stand out from the rest.
- This certainly indicates that there's something more important for these three buttons than the other buttons.
Colour and products

Pause for a moment and ask what's the most important thing that you need to control in this appliance.

The most critical function is...
Colour and products
Specifying Colours

- Computer graphics: RGB, Additive
- Printing: CMYK, Subtractive
- Products: Pantone
Colour has 3 dimensions or qualities

- **Hue**
- **Saturation**
- **Brightness**
Hue

The name given to a colour.

_Hue_ is the colour reflected from or transmitted through an object. It is measured as a location on the standard colour wheel, expressed as a degree between 0° and 360°. In common use, hue is identified by the name of the colour such as red, orange, or green.
Saturation

The purity of a colour.

*Saturation*, sometimes called *chroma*, is the strength or purity of the colour. Saturation represents the amount of grey in proportion to the hue, measured as a percentage from 0% (grey) to 100% (fully saturated). On the standard colour wheel, saturation increases from the centre to the edge.
Brightness

The lightness or darkness of a colour

*Brightness* is the relative lightness or darkness of the colour, usually measured as a percentage from 0% (black) to 100% (white).
Tint

Made by adding white to a colour so that it is lighter.

HUE + WHITE = TINT
Shade

Made by adding black to a colour so that it is darker.
Neutrals

(NOT REALLY COLOURS)

- **White**: No colour
- **Black**: All colours
- **Gray**: White + Black
A GUIDE TO STUDY HOW TO CHOOSE AND COMBINE COLOURS
Primary hues

- Pure and basic
- Cannot be made from any other colours
- All other colours are made from these
- Equal distance from each other on colour wheel
Secondary colours

• Made by mixing equal amounts of 2 primary colours

• Found halfway between the primary hues on the wheel

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\begin{align*}
\text{RED} & + \text{YELLOW} = \text{ORANGE} \\
\text{YELLOW} & + \text{BLUE} = \text{GREEN} \\
\text{BLUE} & + \text{RED} = \text{VIOLET}
\end{align*}
\]
Intermediate (tertiary) hues

Made by mixing equal amounts of adjoining primary and secondary colours.
The colour wheel relations
The colour wheel can be divided into warm and cool colours
Warm colours

- Appear hot like the sun or like fire
- Give feelings of gaiety, activity or cheerfulness
- Appear to advance—they make body look larger
- Can give a nervous impression if overdone
Cool colours

- Remind us of water or sky
- Give feelings of quietness or restfulness
- Appear to recede and make body look smaller
- Can be depressing if overdone
Colour Harmony

- Harmony can be defined as a pleasing arrangement of parts, whether it be music, poetry, colour, or even an ice cream sundae.

- In visual experiences, harmony is something that is pleasing to the eye. It engages the viewer and it creates an inner sense of order, a balance in the visual experience. When something is not harmonious, it's either boring or chaotic.
Colour Harmony

- At one extreme is a visual experience that is so bland that the viewer is not engaged. The human brain will reject under-stimulating information.
- At the other extreme is a visual experience that is so overdone, so chaotic that the viewer can't stand to look at it. The human brain rejects what it can not organize, what it can not understand.
- The visual task requires that we present a logical structure.
- Colour harmony delivers visual interest and a sense of order.
Monochromatic colour scheme

This is a one-colour plan that uses different tints, shades and intensities of the colour
Analogous colour scheme

This colour scheme uses related, or neighboring colours on the colour wheel with varying values and intensities of the colours.

Usually one of the three colours predominates
Complementary colours are any two colours which are directly opposite each other, such as red and green and red-purple and yellow-green. In the illustration, there are several variations of yellow-green in the leaves and several variations of red-purple in the orchid. These opposing colours create maximum contrast and maximum stability.
Split-complementary colour scheme

This colour scheme uses three colours, one colour with the two colours on each side of its complement.
Triad colour scheme

This colour scheme combines three colours equidistant on the colour wheel and has a great deal of contrast.
Accented neutral colour scheme

This colour scheme combines white, black, gray or sometimes beige (off-white) with a bright colour accent.
Colour schemes from nature

Nature provides a perfect departure point for colour harmony. In the illustration above, red yellow and green create a harmonious design, regardless of whether this combination fits into a technical formula for colour harmony.
Observing the effects colours have on each other is the starting point for understanding the relativity of colour.

The relationship of values, saturations and the warmth or coolness of respective hues can cause noticeable differences in our perception of colour.
The moral of the story is...

- All colours are beautiful, depending on personal taste.
- If not used wisely or combined well, colour can cause products to look too gaudy or very drab.
- Harmony results when hues, values and intensities are combined in a pleasing way.
And finally...

- Remember... it’s all subjective