Lecture 10
Visual Design

UNIVERSITY OF AUCKLAND

COMPSCI 345 / SOFTENG 350

Dr. Gerald Weber

Join Zoom Meeting
Time: Apr 28, 2020 11:00 AM Auckland, Wellington

https://auckland.zoom.us/j/96600853322?pwd=ZDlRc2RnWnE0Y3BBVEZzVWFEcllNdz09

Learning Objectives

To be able to

- Recognize and critique elements in a visual design

- Be able to discuss aspects of a visual design in teams.

- Understand Color Choices

- Understand overarching design principles

Gestalt Principles of Perception

Figure-Ground: **Basic premise**

We perceive our environment by differentiating between objects and their backgrounds

- Gestalt psychology strives to explain the factors involved in the way we group things
  - [Berlin school Kurt Koffka, Max Wertheimer, Wolfgang Kohler]

- At the heart of Gestalt psychology is the idea that we strive to find the simplest solutions to incomplete visual information (Prägnanz)
  - German for 'pithiness' / 'concise and standing out' (roughly 'precise')
  - Evolution has equipped us to discern objects (figures) from their backgrounds

Gestalt Principles of Perception

- Gestalt perception is seen as based in a set of principles:
  - Proximity
  - Similarity
  - Common Fate
  - Closure
  - Continuity
  - Area
  - Symmetry
  - Surroundedness
  - **Prägnanz**

Gestalt Principles of Perception

- **Proximity Principle –** Objects that are close to each other will be seen as belonging together
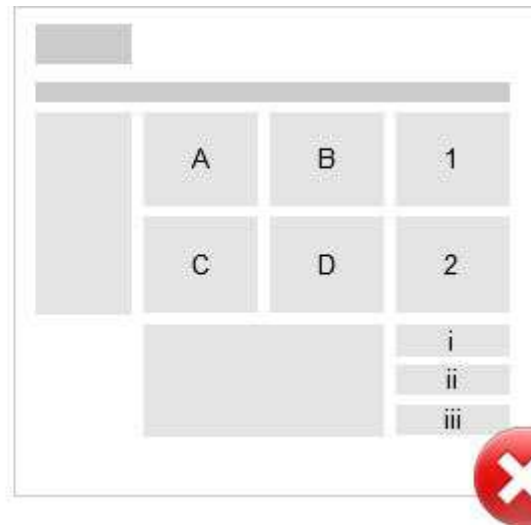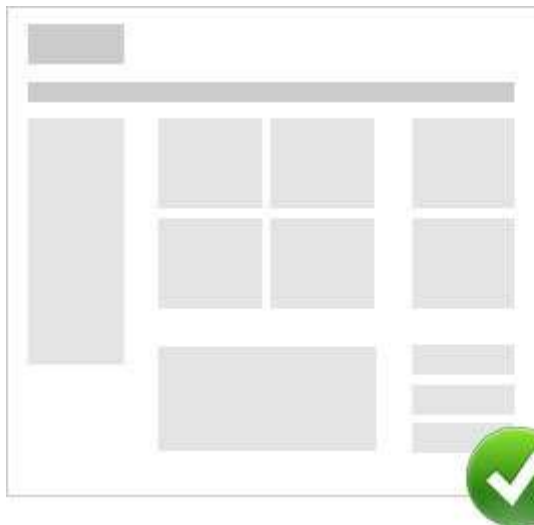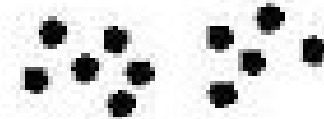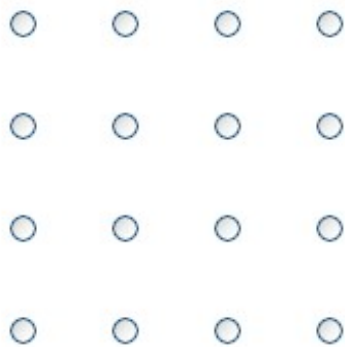
Through the proximity principle, whitespace can communicate your intended logical grouping of a screen to the user

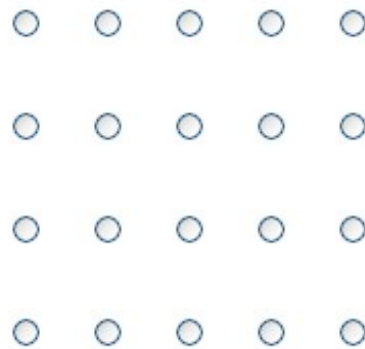https://www.nomensa.com/blog/2011/5-tips-for-effortless-layouts

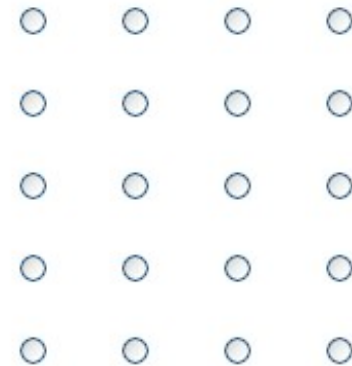# Gestalt Principles: Proximity

- Proximity examples: Our eyes are fairly sensitive in making grouping judgements based on proximity in a collection of objects
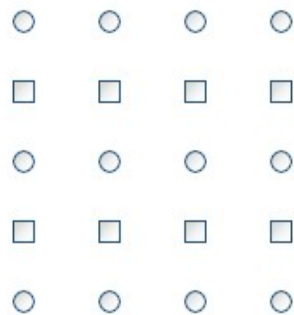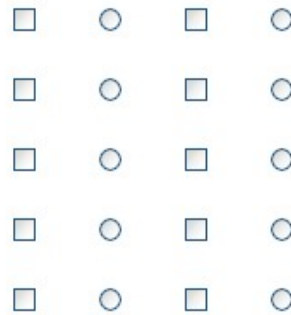
Equidistant   Horizontal Proximity   Vertical Proximity
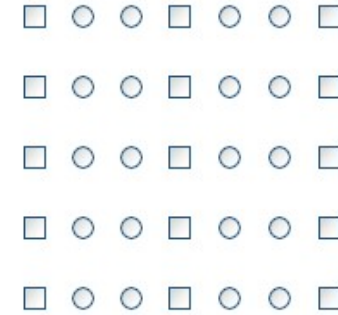
Gestalt Principles of Perception

- **Similarity Principle** – Objects that have similar visual characteristics, such as size, shape or color will be seen as a group and therefore related
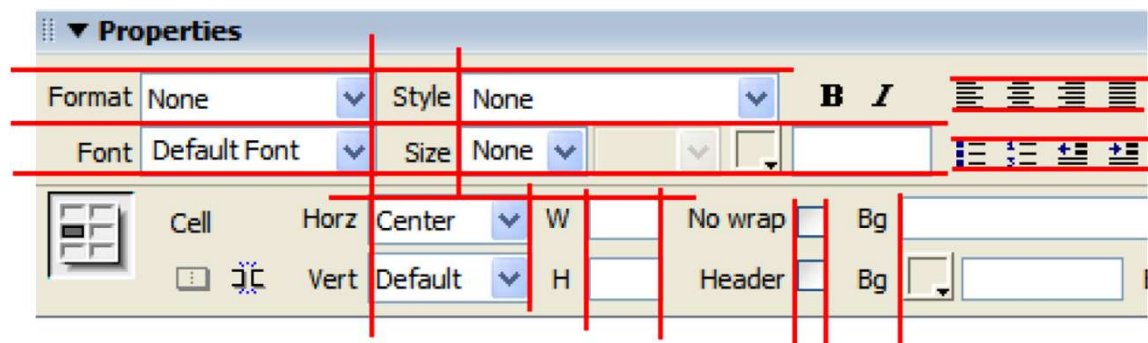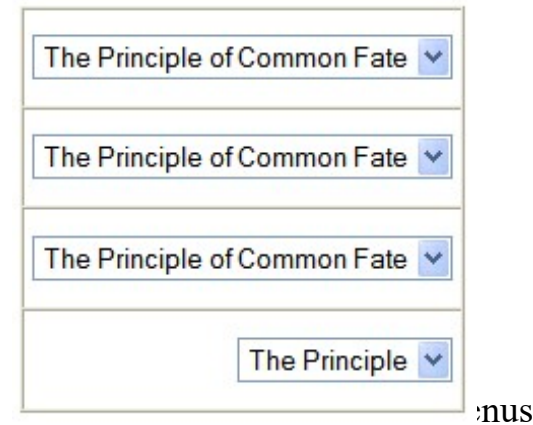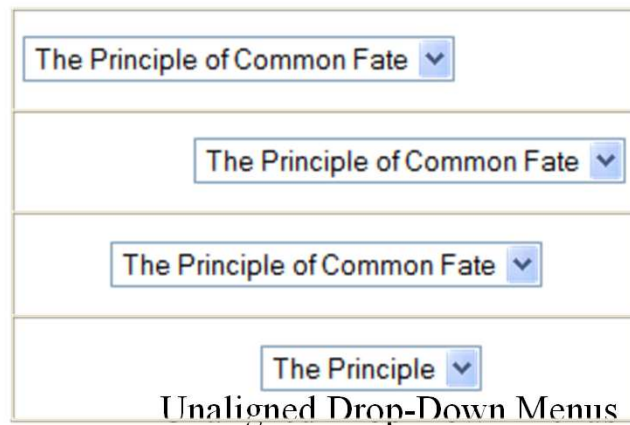
Rows of Similar Objects Columns of Similar Objects Grouped Columns

Gestalt Principles of Perception

- **Common Fate Principle** – Objects that 'move' together (sharing a beginning and/or a direction and/or an end) are seen as related

The Principle of Common Fate

The Principle of Common Fate

The Principle of Common Fate

The Principle

Unaligned Drop-Down Menus

The Principle of Common Fate

The Principle of Common Fate

The Principle of Common Fate

The Principle

A lot of different 'fates' leads to the perception of high visual complexity

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Gestalt Principles of Perception

- **Continuity Principle** – We tend to see things as smooth, continuous representations rather than abrupt changes

More continuity examples

- We see two lines crossing more readily than four lines meeting in the middle because of the continuity (vertically and horizontally)

- If you did *not* mean to lead the user to see the left and right, or top and bottom, to have a strong relationship, then this isn't a good layout!
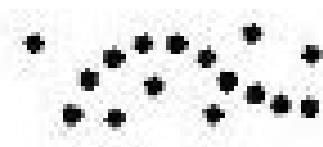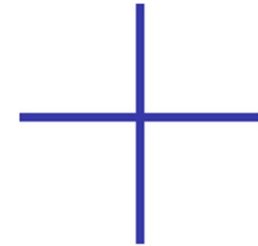
- Our eye naturally follows the implied curve and thus groups together those objects along it

Gestalt Principles of Perception

- **Closure Principle** – We tend to see things as complete objects even though there may be gaps in the shape of the objects

][   ][   ][

[   ] [   ] [   ] [

Viewer's perception completes a shape (us humans want to perceive objects)

http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinc.htm

Gestalt Principles of Perception

- **Continuity Principle** – We tend to see things as smooth, continuous representations rather than abrupt changes

- **Closure Principle** – We tend to see things as complete objects even though there may be gaps in the shape of the objects

  - Occlusion: We can see three black dots of which parts are hidden, occluded, by a white triangle in the front.
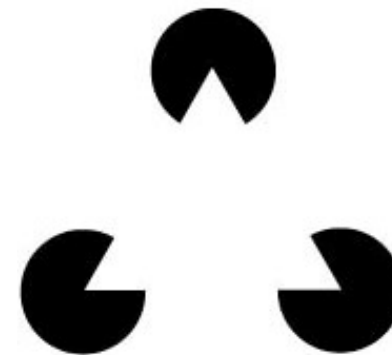
Gestalt Principles of Perception

- **The Area Principle** – Objects with small area tend to be seen as the figure, not the ground (also called the smallness principle)

Gestalt Principles of Perception

- **Symmetry Principle** – Symmetrical figures tend to be seen as complete figures that form around their middle

Translation   Reflection   Rotation

Gestalt Principles of Perception

- **Surroundedness Principle –** An area that is surrounded will be seen as the figure and the area that surrounds will be seen as the ground

Gestalt Principles of Perception

- **Prägnanz Principle –** As an overarching principle, we tend to perceive things based on the simplest and most stable or complete interpretation.

The 'face' stands out because…

1. The shadows give the elements Similarity and Common Fate in being raised an equal distance from the background

2. The yellow background Surrounds the figure and the yellow has much greater Area

3. Central placement tends to be Dominant (esp. with no other competition to draw our eye)

4. Evolution equips us to see faces!

Prägnanz examples

- If the Gestalt principles are in conflict, the viewer can get an unsatisfactory tension as they search for the 'pithiest' solution.
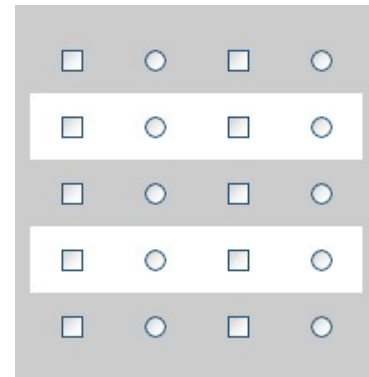
Surroundedness and Area in conflict with the Similarity of shape

Gestalt Principles of Perception

- All Gestalt principles together are important for our perception of objects, groups, figure an ground

  - Prägnanz
  - Proximity
  - Similarity
  - Common Fate
  - Closure
  - Continuity
  - Area
  - Symmetry
  - Surroundedness

What guides a design?

Design Principles

- Principles of design are concepts used to organize or arrange the components in a design
- We are going to review 3 principles:
  - Balance
  - Emphasis
  - Unity

Principles

Balance

- The distribution of the optical weight in an interface

  Perception that some objects appear heavier than others, e.g.:

  - Larger objects.
  - Cluster of small objects
  - Objects with strong, intense colors.

- The balance in screen design is achieved by providing an equal 'weight' of screen elements, left and right, top and bottom.

Text

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt
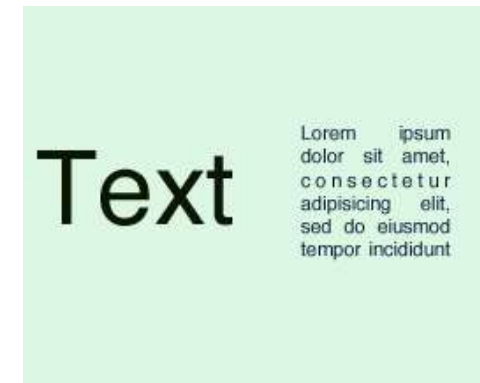
Principles

Balance

There are two common systems for achieving balance:

- **Symmetry -** a mirror image
  - Symmetry can occur in any orientation as long as the elements are the same on either side of the central axis.
  - Also called **formal balance because a form (formula) is used**
- **Asymmetry -** without symmetry
  - Also known as **informal balance.**
  - used to describe a kind of balance that does not rely on symmetry.
  - Used if two or more fundamentally different parts have to be balanced.
  - There are no precise rules or limits with asymmetrical balance. It can be achieved by careful placement of objects and the use of other organizational devices (like figure/ground in **Gestalt principles**).
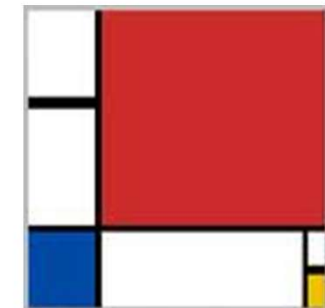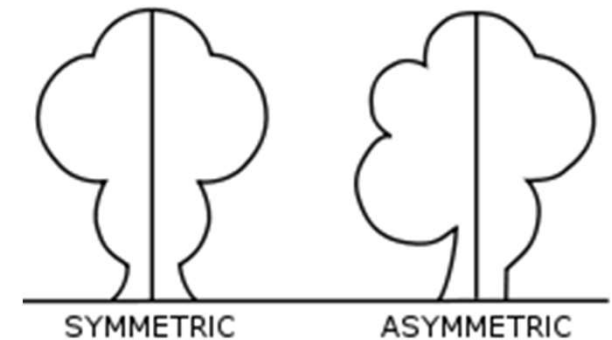
Mondrian achieves a subtle asymmetrical balance in his compositions.

Gestalt Principles of Perception

- **Symmetry Principle** – Symmetrical figures tend to be seen as complete figures that form around their middle

Translation   Reflection   Rotation
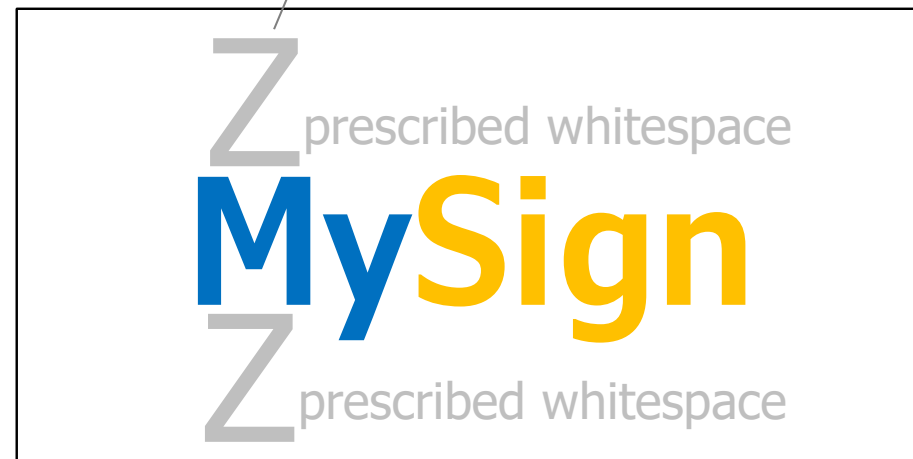
Principles

Emphasis

- There are three major methods for controlling emphasis in a visual image:

  - **Contrast**

  - Placement
    - Central vision is dominant

  - Isolation
   - Dominance of things emphasized by standing alone / apart
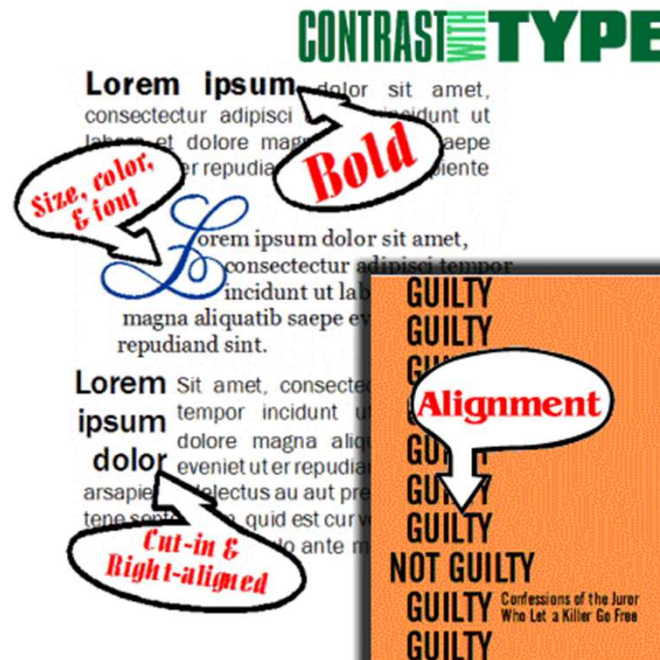
'Contrast' in this sense doesn't have to be restricted to dark v. light

Principles

Emphasis

- There are three major methods for controlling emphasis in a visual image:
  - Contrast
  - **Placement**
    - **Central vision is dominant**
  - Isolation
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Central Placement on
a Title Page

Principles

Emphasis

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MySign

Principles

Emphasis

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    - **Dominance of things empha-sized by standing alone / apart**

Whitespace measure given as a letter as measure, typical for text Logo design.

Zprescribed whitespace

MySign

Zprescribed whitespace

Principles

Unity

- All parts of our design have some commonality so that they are perceived as a whole

http://dualiman.deviantart.com/art/Aesthetic-2-Unity-in-Diversity-329284616
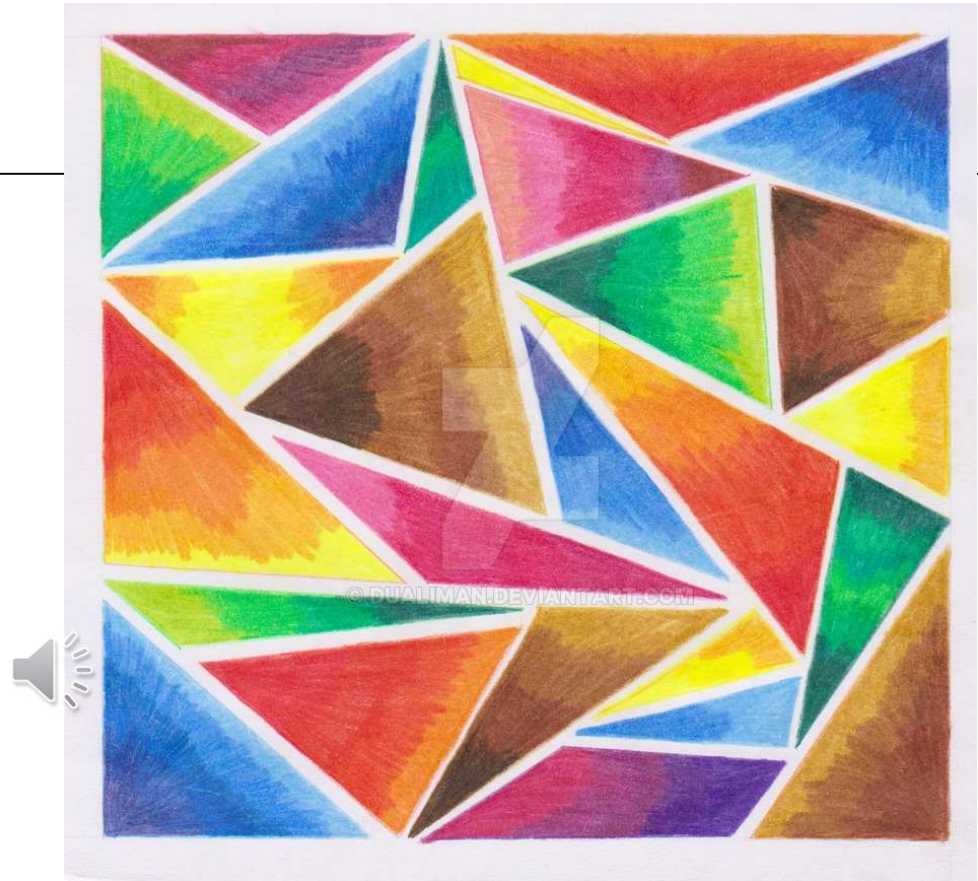
Applying Principles

- The design principles and the Gestalt principles of perception can guide the design process.

- Vocabulary for communication in teams.
- Use for review during project progress.
- Discussion along different dimensions

- The principles do not "compute" a solution, they facilitate the solution finding
  - for ourselves and in teams.

Colour

Additive and subtractive Colour model

- 1. **Additive:** for mixing coloured emitted light, e.g. on an emitting screen/projector. The three primary colours are matching our cone cells:
  - **Red**
  - **Green**
  - **Blue**
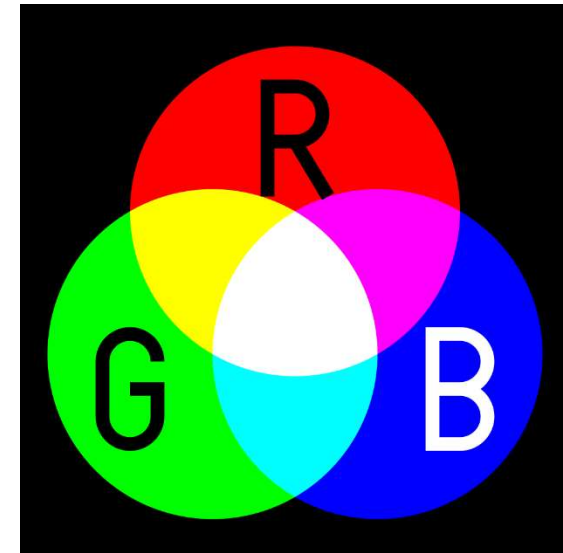
- 2. **Subtractive**: for mixing (preferrably transparent) paints, dyes: subtractive since they take light out. Primary colours:
  - **Cyan**: filters out red
  - **Magenta**: filters out green
  - **Yellow**: filters out blue
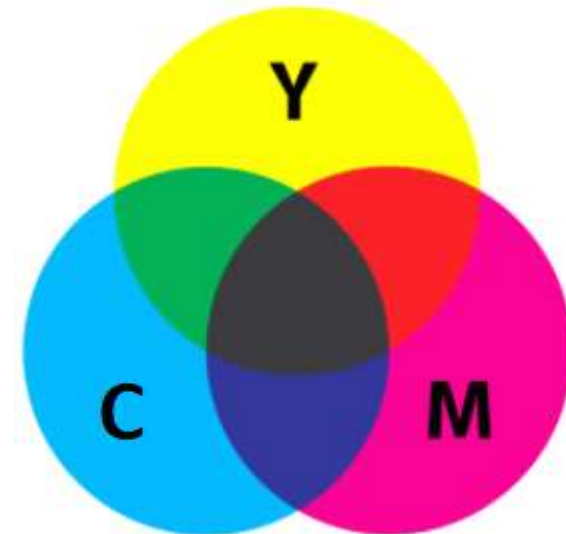
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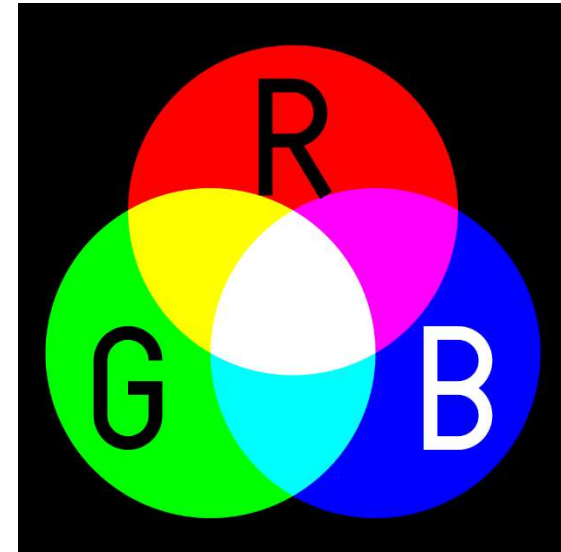
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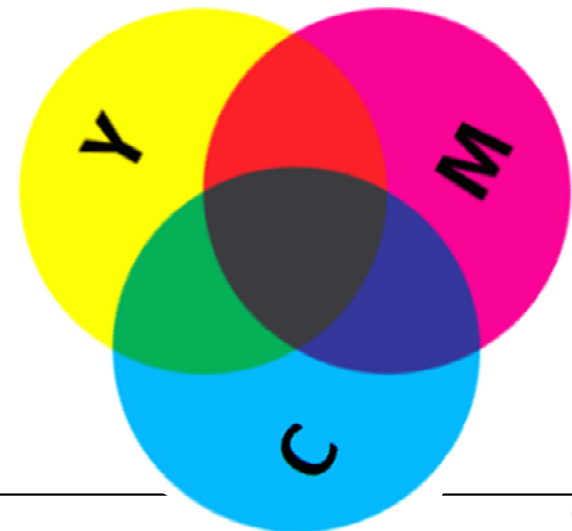
Hue: Colour wheel

- **In the colour wheel the primary colours of each system are secondary colours of the other system, these six colours are placed 60 degrees apart from the neighbours.**

- 1. **Additive:** emitted light
  - **Red**
  - **Green**
  - **Blue**

- 2. **Subtractive**: for mixing paints:
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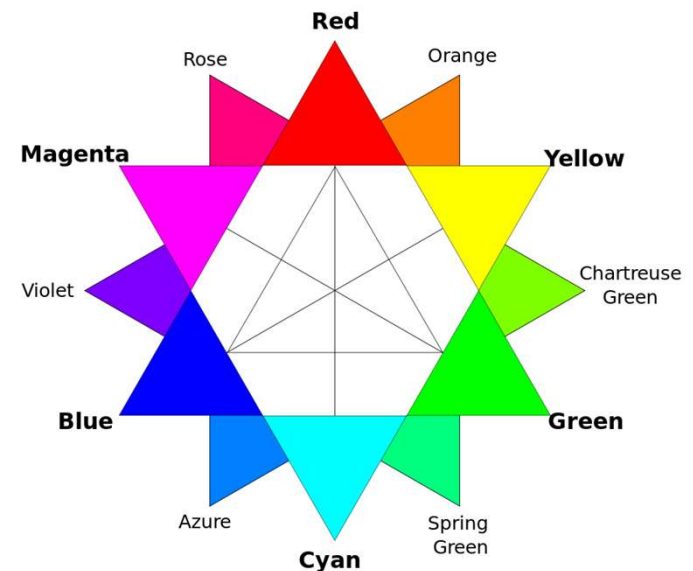
Colour Schemes: Analogous & Complimentary

■ **Analogous**

- ■ Colours that are adjacent on the colour wheel.
  - ■ The hues may vary in value.
  - ■ Analogous colour schemes look harmonious

Analogous

http://www.richardancheta.com/html/decoration/STAIR-FAUX-FINISH-PAINTING-DECORATION/stair-faux-

EARTH TONES

https://nz.pinterest.com/explore/earth-tone-bedroom/

This one's still kind of exciting because it's on the 'hot' part of the colour wheel and the saturation is very high

Monochrome example

- Many interfaces are white background whatever the scheme

Some rich shades and dark greys add character

And now it is Blue

Analogous and Complimentary (contd.)

Complimentary

- Colours that are located opposite on the colour wheel such as red and green, yellow and purple, or orange and blue

Complementary

http://www.digitalscrapbooking.co.za/modules.php?name=News&file=article&sid=11

Complementary colours produce an exciting, dynamic pattern.

http://freshome.com/2012/12/06/20-creative-color-schemes-inspired-by-the-color-wheel/

http://www.cristinacolli.com/27-examples-of-successful-colour-schemes/

Making it work with saturation

Pure Blue with black font…. Not so good!

Lecture notes

- Gestalt principles of perception classify different ways how we perceive groupings and objects in a visual design.

- We have to make sure that what we want to be perceived is perceived.

- Overarching design principles of Balance, Emphasis and Unity allow us to complete a design.

- Colour can add unity, emphasis or just aesthetic value, but has to be used judiciously:

- Colour schemes guide our colour choices.

- The principles do not mechanically determine a solution but facilitate the solution finding process, for ourselves and in teams.