Module 4: "Color Principles"

Lecture 10: "Introduction to the Science of Color"

The Lecture Contains:

- Introduction to the Science of Color
- Primary Colors: Yellow, Red and Blue (YRB)
- Secondary Colors: Orange Violet and Green (OVG)
- Primary Hues
- Secondary Hues
- Tertiary Hues

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## Introduction to the Science of Color

Elements of Design deals with- color, value, line, texture, shape, form and space. Therefore, color is one of the backbones of design and art expression. It is essential to more in depth about the science behind color and its relationship with art and design.

Sir Isaac Newton developed the first circular diagram (Color Wheel) of colors in 1666. Colors have logical arrangement that is developed by Newton. Therefore, any color wheel, that shows a logically arranged sequence of pure hues, has merit. Color pigments have three basic colors that cannot be created by any colors. These colors are known as- Primary Color (Yellow, Red and Blue). These three Primary Colors produce three Secondary Colors- Violet, Green and Orange. Color theory is based on the above science, which is known as Color Wheel. Note that *Prang Color System* is comprised of three groups of hues.


Plate 1A *The Prang/Artist's/Itten's Color Wheel*

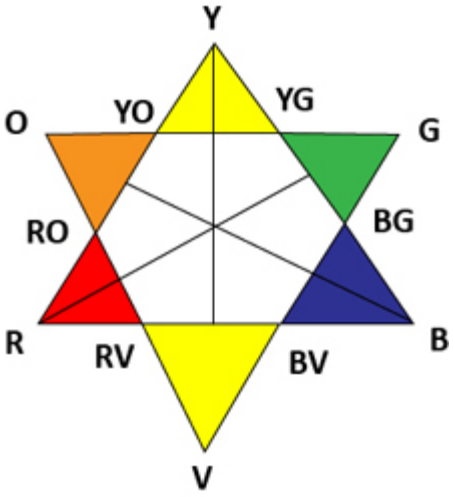


Plate 1 B Prang's Color Wheel

(Ref.Fig.1 A&B http://www.uwgb.edu/heuerc/2d/colorsystm.html ; May 30, 2012
http://en.wikipedia.org/wiki/File:Farbkreis_Itten_1961.png May 30, 2012)

Louis Prang in 1876 developed a system of color wheel based on artist's pigments is commonly known as the Artist's or Prang Color Wheel. John Itten one of the founding teachers at Bauhaus taught foundation courses and developed color wheel (plate1 A) for the artists and designer.

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## Primary Colors: Yellow, Red and Blue (YRB)

## Secondary Colors: Orange Violet and Green (OVG)

### Primary Hues

These are red, blue and yellow in the Prang color system. They are referred to as primary because (theoretically at least) they cannot be made by mixing other hues and because other hues can (again in theory) be made by mixing two of the primaries together.

### Secondary Hues

These are orange, green and violet in the Prang system. These can each be produced by mixing together two primary hues.

### Tertiary Hues

These are hues intermediary between primary and secondary hues. These are usually named and mixed by combining adjacent primary and secondary hues; e.g. red-orange is the tertiary between red and orange.

(Read more: http://www.uwgb.edu/heuerc/2d/colorsystm.html ; May 30, 2012)

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Color theory encompasses large number of definitions, concepts, and design applications. As an introduction, here are a few basic concepts.

Source Fig. 2B: http://kaufmann-mercantile.com/johannes-itten/ ; May 30, 2012)

Plate2 A The Color Wheel

Plate2 B & C Johannes Itten, 1944

Source Fig. 2B: http://kaufmann-mercantile.com/johannes-itten/ ; May 30, 2012)

A color circle, based on the Primary Colors- red, yellow, and blue, is traditional in the field of art that uses pigments. Color Wheel is a conventional circular arrangement of colors. Since Newton's time scientists and artists have studied and designed numerous variations of this concept. John Itten, while teaching at the Bauhaus, had developed exercises on color. The above color compositions (plate2 B & C) are interesting exercises that he developed based on the primary and secondary colors. The intensity of colors separate one from other and may create 'color dimensions. In his compositions it clearly shows while certain colors proceed forward some recedes back. The hues of primary and secondary colors created excellent depth field.

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