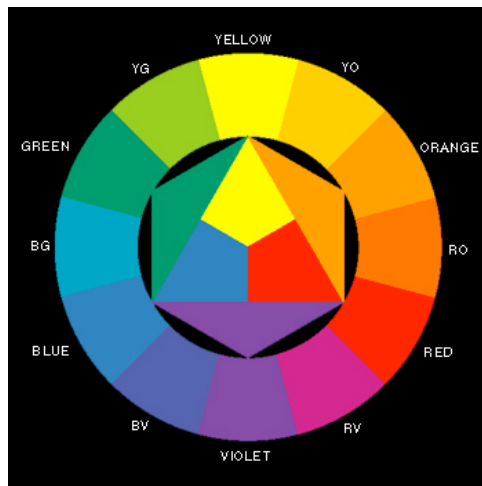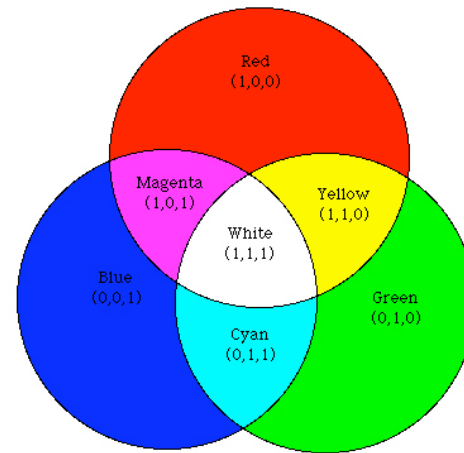# Color For Digital Artists

Subtractive Primaries:
Red, Yellow and Blue

Additive Primaries:
Red, Green and Blue

Color Systems: Subtractive

The subtractive color system is utilized in the "surface" world, when light is reflected off of the surface of a real world object, such as a painting, an apple, or fabric. A red apple appears red because all of the colors except the red hue that your eyes perceive are absorbed by the apple. In this color system, Red, Yellow and Blue are the primary colors. Primary colors cannot be mixed by any other colors. When the primaries are mixed together in the subtractive system, the resulting product is black.

Color Systems: Additive

The additive color system, using the light primaries of Red, Green, and Blue (RGB), is utilized whenever lights are mixed to produce color. This means that any screen or monitor will utilize the additive RGB color system, including computer monitors, the Internet, television monitors, and cinema screens. If you put your eye up close to the television (not actually advised), you might see blocks of red, green, and blue juxtaposed next to one another; and where red and green overlap, yellow is produced. When all three light primaries are mixed together, the resulting color is white.

Color Systems: Additive
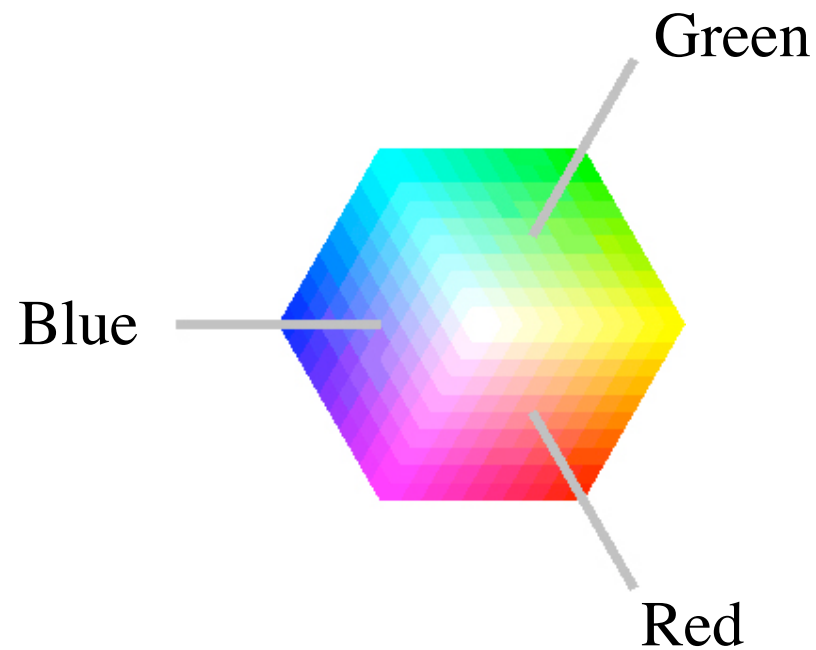
Notice that the resulting mix of colors is white, at the front edge of the cube.

Complementary & Analogous
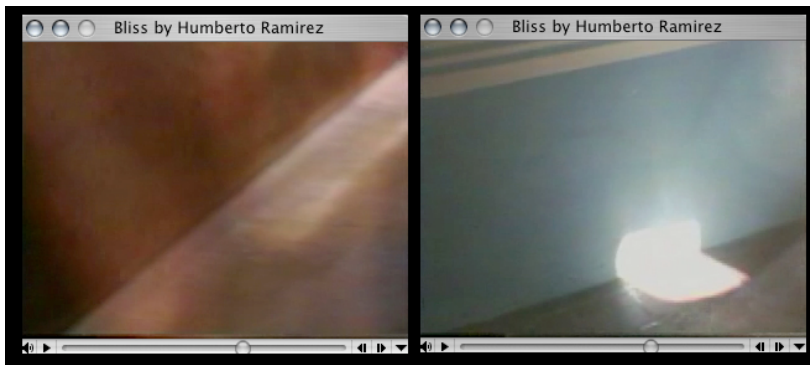
Complementary colors may be used within the same frame in a static image, or they may appear frame after frame within a piece that occurs over time, such as the experimental video, Bliss, by Humberto Ramirez.

b. 1958, Chile

Brian Jungen's sculptures, which use an analogous color scheme, are on display at The New Museum, NYC, through December 31, 2005.

b. 1970, Vancouver

Printing: RGB vs. CMYK

RGB color mode is always used in the digital arena as we are dealing with color that is produced by light. However, when the artist is ready to print, she must consider which color mode to use when setting up her digital file. RGB is often used for printing on ink-jet printers (like the Epson Stylus in the computer lab). The best rule is to always ask the printer technician which color mode to use when setting up the file to be printed. The CMYK color mode is used when artists make prints using a four-color printing press.

NOTE: In regards to file size, CMYK uses four separate color channels while RGB uses only three. The same file represented in the two different modes will be 1/4 larger in terms of file size when it is expressed in CMYK mode.

Gamut

There is a great difference between colors that are produced by light and colors that are mixed in a painter's palette. When colors are generated by the mixture of red, green, and blue lights, there is a potential for many colors to be created that can be seen digitally but which can not be printed on paper. These colors are referred to as colors that are "out of gamut". In the demonstration that follows, I will demonstrate how to know if a color you have selected is out of gamut, how to use the Color Picker, the Color Sliders, and how to save colors in the swatches palette (which might be considered similar to a painter saving a swatch of mixed color).

Art Is… Color Wheel Project

Each student will receive an analogous color scheme to work within, as well as a digital template. The student must create a collage based on the theme "Art Is..." Students may only use examples from the history of art within the collage (see the following web sites for image files). Students may not alter the colors of the art works, but may add color to the background or negative spaces within the collage. At least three images must be used in the composition. Finally, text may be used from the definition of "Art" on Wikipedia.com, or students may use their own words. In class we will composite the color wheel, so remember that while you are working individually, you are part of a team!

Art Is… Color Wheel Project

Contemporary Art

http://www.ica.org.uk/
http://www.moma.org/
http://www.newmuseum.org/
http://www.mcachicago.org/

Video Art

http://www.post-videoart.com/
http://www.vdb.org/
http://www.cinematicfilm.com/
http://davidsonsfiles.org/Exhibitions.html

Contemporary African American Art

http://www.tfaoi.com/aa/2aa/2aa292.htm
http://www.blackrefer.com/arts_culture_ad1.html
http://www.dusablemuseum.org/
http://www.si.edu/resource/faq/nmah/afroam.htm

Contemporary Latin American Art

http://www.lib.unc.edu/art/latinoart/exhibitcats.html
http://www.molaa.com/
http://info.anu.edu.au/mac/Drill_Hall_Gallery/Program_2002.asp
http://www.modernart.ie/en/page_75159.htm
http://www.blantonmuseum.org/collections_section/latin_american.html
http://www.lib.unc.edu/reference/instruction/Span54a.html

African American Art History

http://www.princetonol.com/groups/iad/lessons/middle/afri-am.htm

Meso and Latin American Art History

http://witcombe.sbc.edu/ARTHamericasoceania.html
http://www.metmuseum.org/toah/ht/09/sa/ht09sa.htm

Mexican Art History

http://www.mexonline.com/cultart.htm
http://www.ancientmexico.com/
http://www.mexconnect.com/mex_/history/historyindex.html

History of Western Art

http://www.metmuseum.org/toah/splash.htm
http://www.huntfor.com/arthistory/

*These are a few of the resources available. Try finding references that appeal to you using advanced searching techniques on the Internet.

Art Is… Color Wheel Project
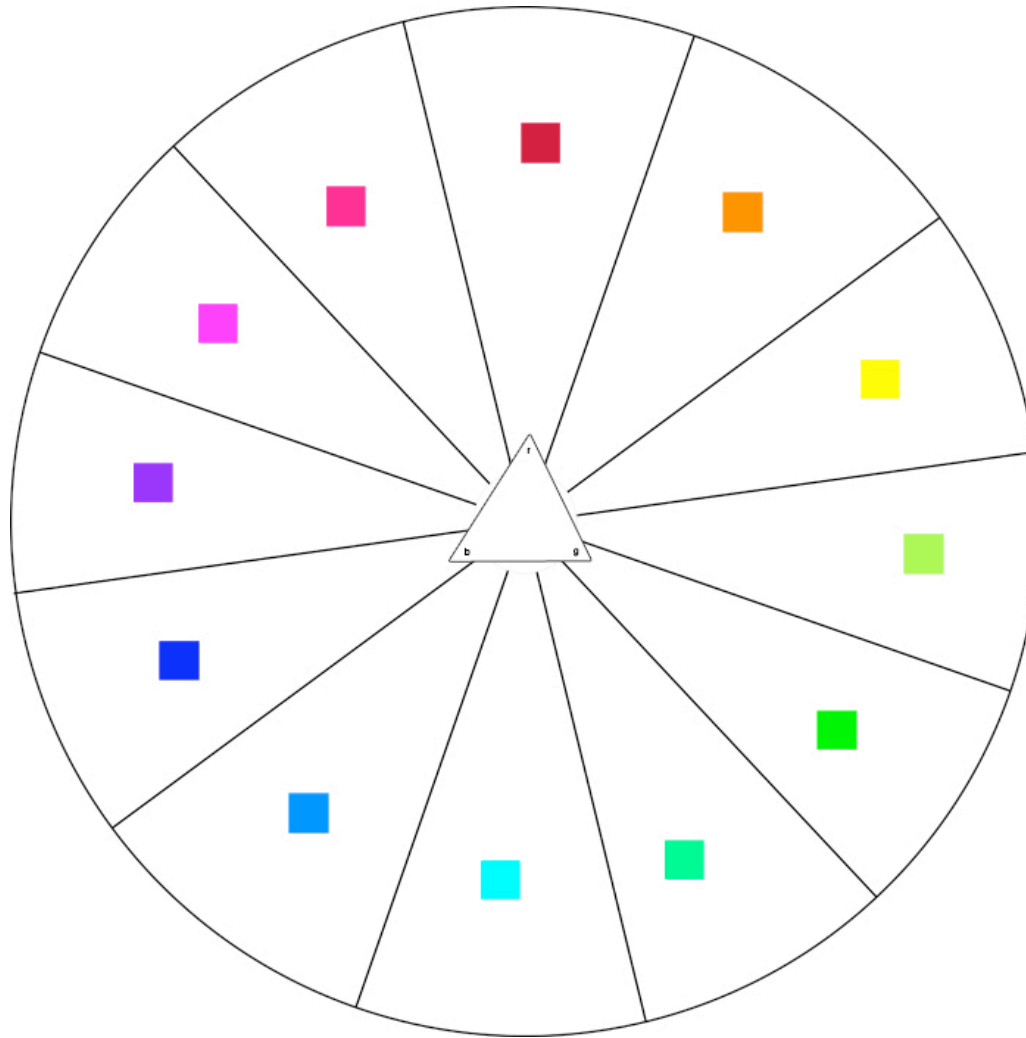
*This is the color wheel template each student will receive.

List of Terms:

This lesson covered the following terms, which students should be able to use properly for the midterm exam:

RYB, RGB, CMYK
Additive Color System
Subtractive Color System
Complementary Colors
Analogous Colors
Gamut
Color Picker
Color Sliders
Swatches

What's Next?

In the next lesson we will cover the following topics:

Atoms versus Bytes
Bytes, Bits, Bit Depth, File Formats: Jpeg, Gif, Tif, EPS
Save for Web, Indexed Color Mode