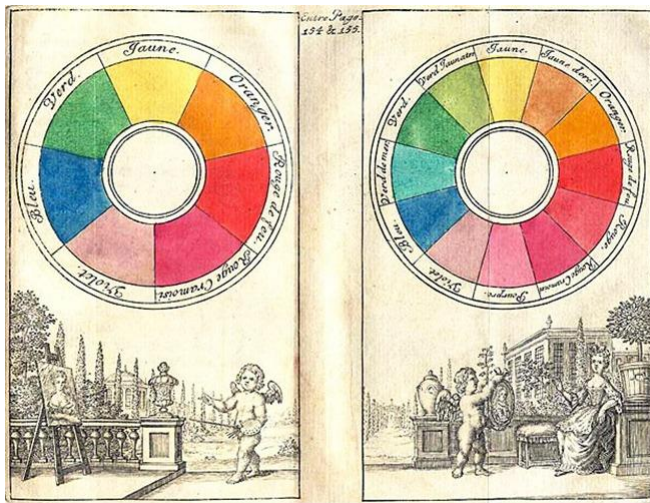


Digital Image Manipulation

Alpha Channels

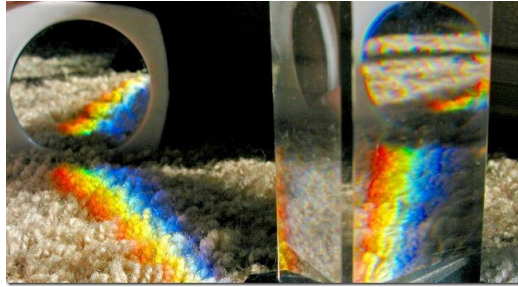


Primary Colors



Primary Colors

- Primary colors is a set of pigments that can be combined in various ratios to create every color in the visible spectrum.



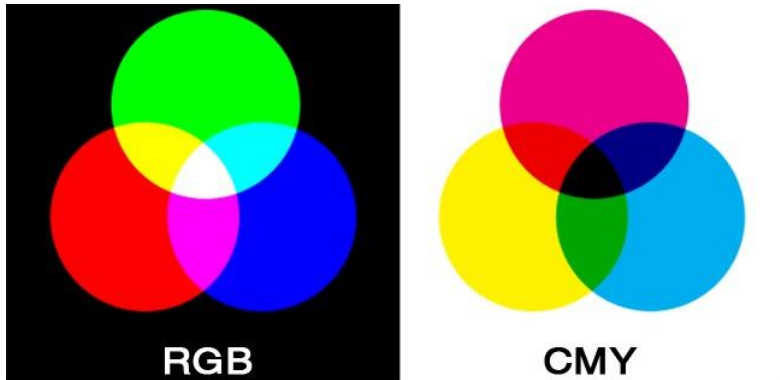
- **RGB** and **CMYK** are combinations of a different set of primary colors: the primary colors of light, and primary colors for printing.

RGB model

- Property of light is that it can also be recombined from these various wavelengths (colors) back into pure white light.
- RGB color model: combining light from Red, Green, and Blue sources, pure white light (or the illusion of it) can be achieved on computer screens.
- It is a way for images to track the amount of Red, Green and Blue light each pixel has.

CMYK model

- Cyan, Magenta, and Yellow are called the “process colors” of printing, and can be thought of as a primary set of inks. (CMYK cartridges desktop printer.)
- They combine in various amounts to create a wide range of colors, including a mixed black.
- Mixing huge quantities of three inks can become expensive, printers decided to add black as a fourth color to this set. Black ink is known as key, or keyline, hence the “K” in “CMYK”.





Do We Really Need Both?

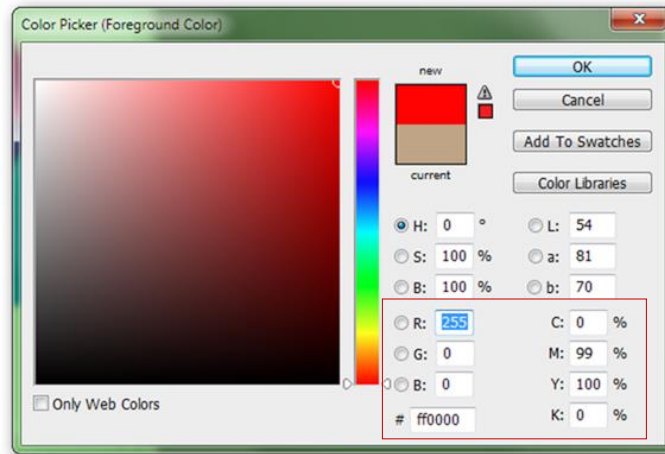
- RGB and CMYK files each are used to solve their own individual problems.
- RGB files work with a model that is based **around light**, which means they are ideal image file formats for **on-screen and web based design**—formats that will only be viewed through light projecting monitors or televisions.



Do We Really Need Both?

- Meanwhile, CMYK is the preferred color model when working directly for **four color process print**. It is possible for a designer to work in RGB files, but it doesn't make sense to work with colors that can't be printed.
- Working with CMYK can help **eliminate the color shifts and various problems** when translating an RGB document to a printed CMYK color gamut.

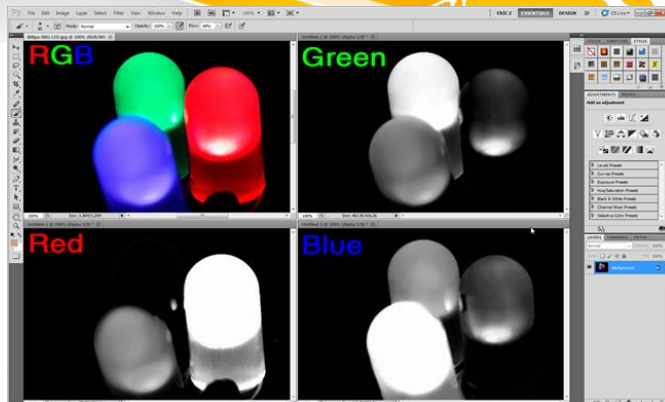
What Does All This Have to Do with Image Channels?



- In a common 24 bit RGB image file, images are essentially made of three smaller 8 bit files.
- These smaller files are the image's channels, and they have a range of 256 values, ranging from 0 – 255.
- This in can be seen in Photoshop's color picker, with values broken down between Red, Green, and Blue on the left, and Cyan, Magenta, Yellow, and Keyline (black) on the right.

What the value range means?

- Each color channel represents the amount of light (RGB) or simulated ink (CMYK) each isolated color needs to combine to create the digital image.



- Green bulb is the brightest in the green channel because it takes more bright green light to create an image of a glowing green bulb.
- Those combinations of single color, 256 color images combine color information to create millions of color tints, hues, and shades in every garden variety RGB JPG or CMYK Photoshop file.



Alpha Channel

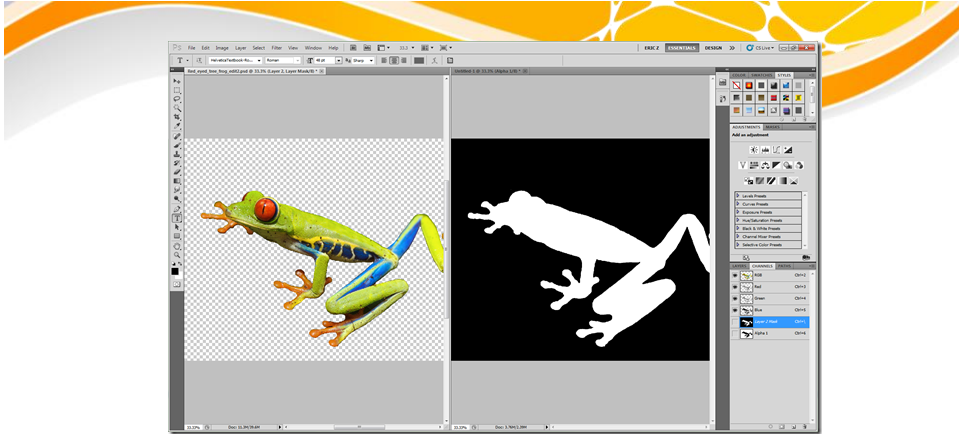
Image files (notably, like PNG) contain more image information in an extra channel.

An alpha channel is a color component that represents the degree of transparency/ opacity of a color (i.e., the red, green and blue channels). It is also a grayscale channel where levels of white and black determine varying degrees of transparency applied to the color channels during compositing.



Alpha Channel

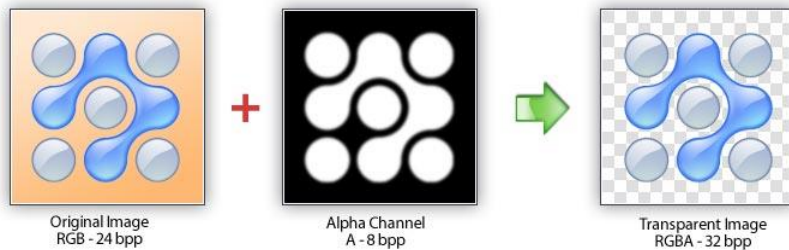
This channel is essentially no different than an RGB or CMYK channel, with 256 shades of gray representing the image areas. However, Alpha channels have one crucial difference: they **denote transparency, not color information**. Each pixel in an image contains color information and additional data in the alpha channel with a value between 0 and 1. 0 means no coverage information (transparent) and 1 means pixels is opaque.

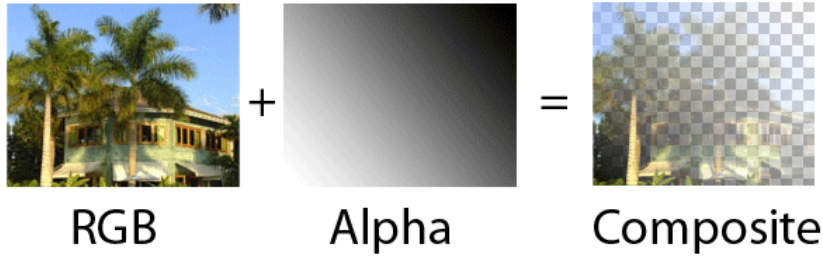


The image illustrated above shows the composite RGB image on the left, with information from the alpha channel shown on the right. Wherever there is white, the image is opaque. Where there is black, it is perfectly clear, like a transparent PNG.



Use of Alpha Channel to create Transparent Image

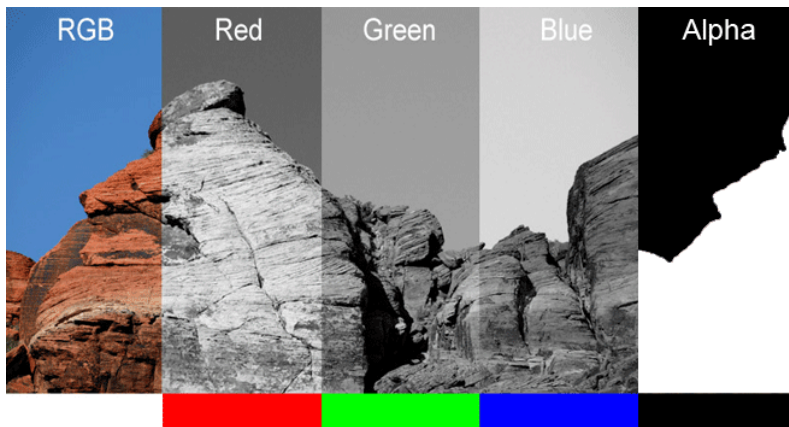




- The shades of gray in between allow for transparency beyond a simple “on” and “off” switch.

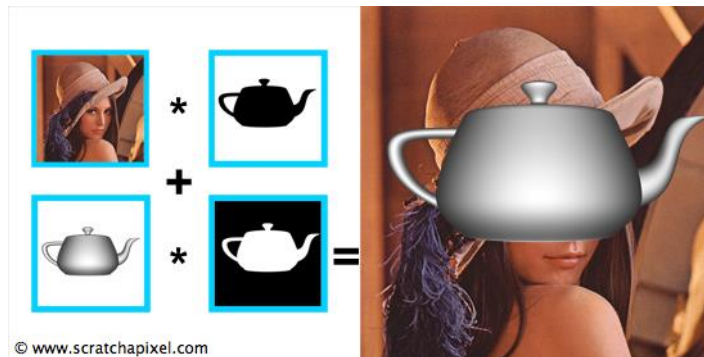


Channels



Alpha Compositing

- Alpha compositing is the process of combining an image with a background to create the appearance of partial or full transparency.



Compositing Procedure

- 1. Extract Sprites (e.g using Intelligent Scissors in Photoshop)



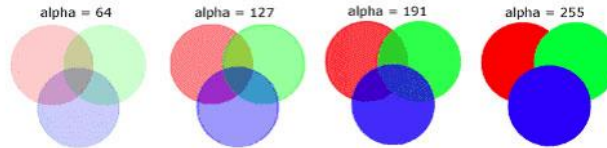
- 2. Blend them into the composite (in the right order)



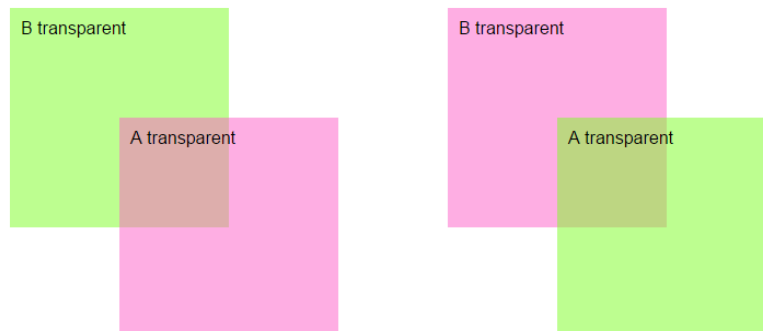
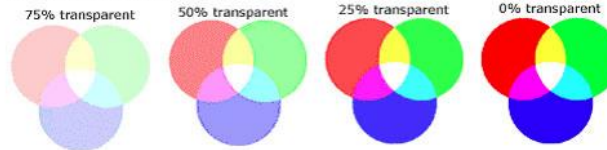
Alpha Blending

- Alpha blending is the process of combining a translucent foreground color with a background color, thereby producing a new blended color.

Alpha Blend - three layers over white. Blend order: Red, Green, and Blue



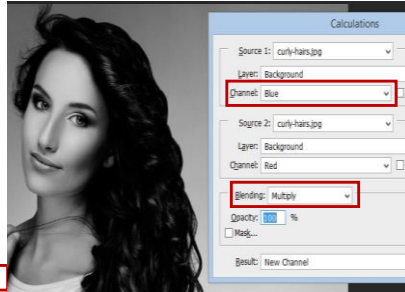
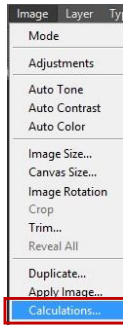
'Real' World Blending Simulation



Step to alpha channel



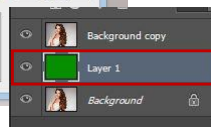
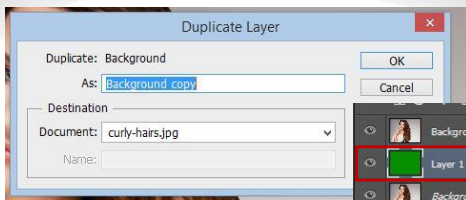
1) Insert your image



2) Image-->calc - Channel: blue; Blending: multiply

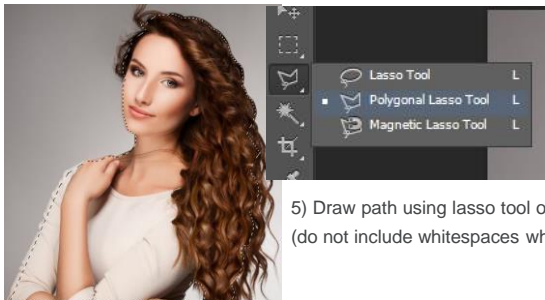


3) Channels - untick Alpha 1 and tick RGB

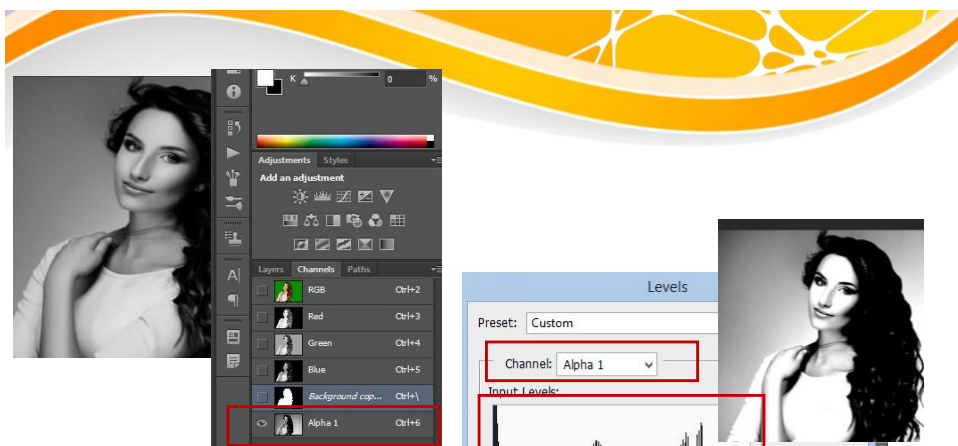
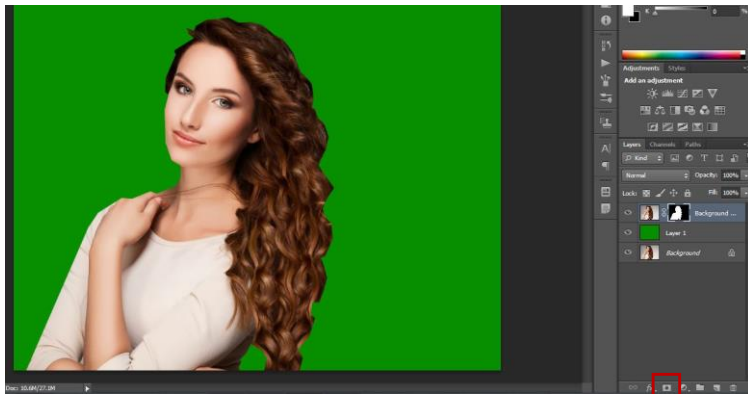


solid layer (usually green color)

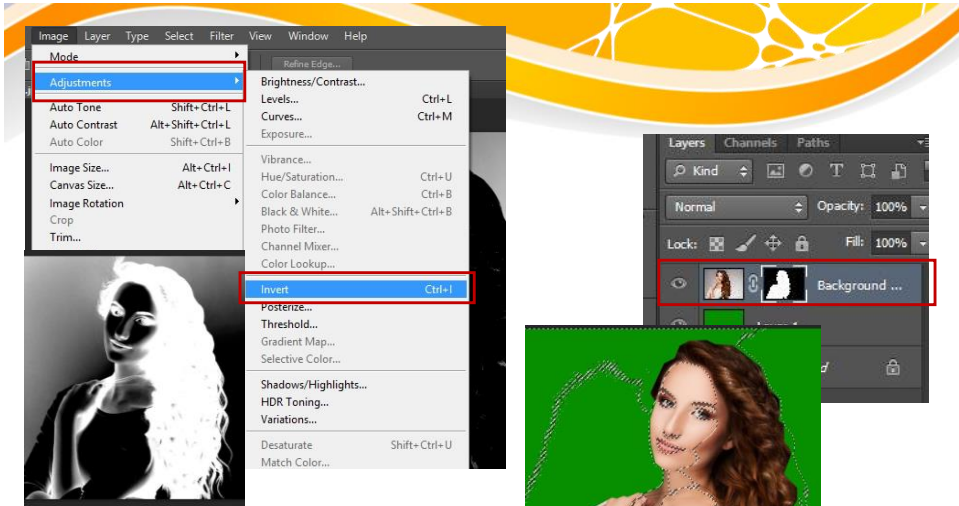
4) Layers - Duplicate background layer; new solid layer (alt+del) and move solid layer below the duplicate layer



5) Draw path using lasso tool or Polygonal Lasso tool (do not include whitespaces when pathing); save workpath



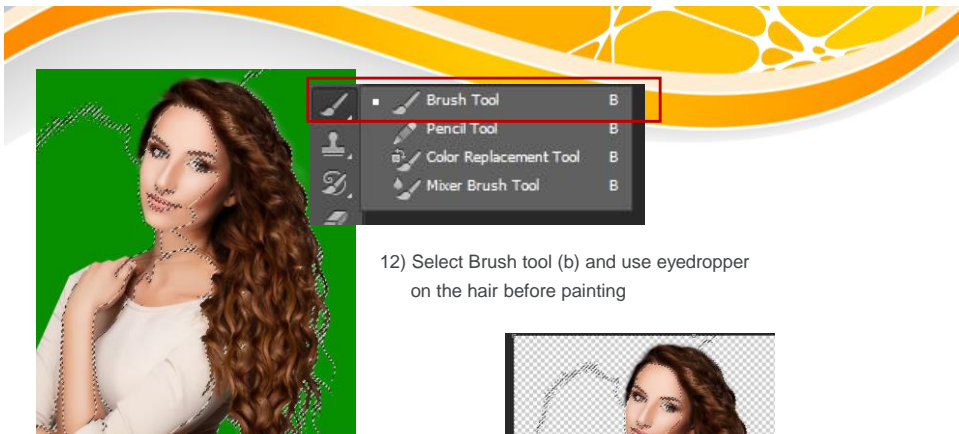
9) Image --> adjustments --> Levels
- Move first and second arrow to right, third arrow to left
(balance black and white)



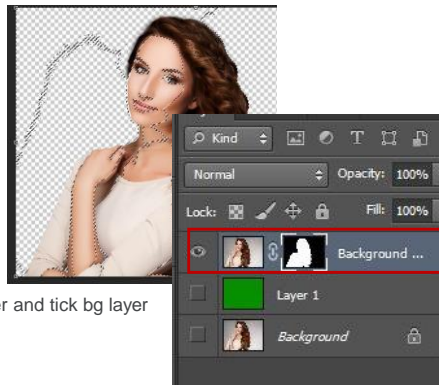
10) Image --> adjustments --> invert (ctrl+i)
 Ctrl+click on alpha layer thumbnail



11) Layers - select duplicate layer (b&w thumbnail)



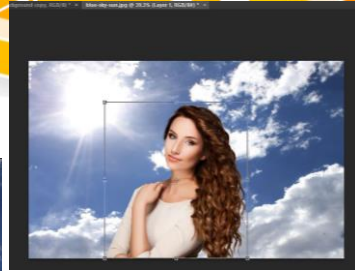
12) Select Brush tool (b) and use eyedropper on the hair before painting



13) Hide solid layer and tick by layer



15) Completed!



14) Using selection tool, layer via copy

