week::five

Pixels & Resolution

The Pixel
- o The building blocks of a raster image

Understanding Resolution
- o While in digital format:
  - ▪ Defined in pixels per inch (ppi)
- o When Printed:
  - ▪ Defined as dots per inch (dpi)
- o Pixel size vs. Printing size
  - ▪ An image's pixel size is independent from its printing size.
  - ▪ Printing size is only used when printing an image.
  - ▪ While viewing an image on screen, only pixel size matters.
- o Image resolution vs. Printer resolution
- o Sample output device resolutions
  - ▪ Computer monitors and web graphics average 72 to 106 ppi
  - ▪ Laser printers range between 300 to 1200 dpi
  - ▪ Inkjet printers range from 300 to 5760 dpi
  - ▪ High-end imagesetters and film output average 2400 dpi
- o Resolution and File Size

The lower the resolution...	The higher the resolution...
The smaller the file size	The larger the file size
The quicker an image prints	The longer it takes an image to print
The more detail that is lost	Often, but not always, a better image

- o It's important to find the right resolution for the job.
- o Keep file size low, but not so low that you sacrifice image quality
- o Page 57 of the Photoshop QuickStart Guide contains an excellent chart comparing file size and PPI.

Recommended Resolutions:
- o Recommended PPI is based on the final print/display size of an image.

Image Type	Resolution
Line art (bitmaps)	600 ppi
Photographs for professional printing	300 ppi
Photographs for standard printers	150 – 200 ppi
Web graphics (jpeg or gif)	72 ppi

- o It's often best to size your image in Photoshop first before bringing it into another application.

Color Spaces

Color Spaces in Photoshop
- o Each color space in Photoshop has a different purpose.
- o Some provide only two colors to work with, while others provide access to over 16.7 million different colors.
- o Color space comparison:

Color Space	Bits per Pixel	File Size*	Use
Bitmapped (line art)	1 bit	31 Kb	Line art
Grayscale	8 bits	244 Kb	B/W Photography
Duotone	8 bits	244 Kb	Spot-color printing
Index Color	8 bits	244 Kb	Web imagery
RGB Color	24 bits	732 Kb	Web photos & consumer printers; Working files
CMYK Color	32 bits	977 Kb	Professional color printing
Lab Color	24 bits	732 Kb	Editing in Photoshop

* File size is based on a 500-pixel by 500-pixel canvas in Photoshop.

Channels
- o Photoshop uses channels to provide advanced access to the different components of an image.
- o In general a channel is composed of one or more 8-bit grayscale images.
  - ▪ RGB uses three 8-bit channels: One each for Red, Green and Blue.
  - ▪ CMYK used four 8-bit channels: One each for Cyan, Magenta, Yellow and Black.
  - ▪ Bitmapped and Index images contain a single channel that is tailored to their particular color spaces.
- o To cycle through in Photoshop:
  - ▪ Command-~, Command-1, Command-2, Command-3, Command-4

Color Gamut
- o Gamut is the range of colors a device can output.
- o What is *out of gamut* mean?

Color Printing

Primary Printing Inks
- o CMYK: <u>C</u>yan, <u>M</u>agenta, <u>Y</u>ellow and Blac<u>K</u>

Two Different Worlds - *Professional* output and *Consumer* output
- o RGB imagery is good for ink jet printing and some laser printing.
- o CMYK imagery is a must for high-end printing and proofing; generally requires a program like Photoshop.
- o All color printers use at least the CMYK inks.
  - ▪ Some new printers use an additional two or more colors to create more detailed images.

Photoshop

History

Overview
- o Work area
- o Tools
  - ▪ Tear-off tools
  - ▪ Keyboard shortcuts
  - ▪ Hover tool tips
- o Menus
- o Palettes
  - ▪ Customization
- o The File Browser
- o Views
  - ▪ Navigator Palette: Window > Navigator
  - ▪ Hand tool (H)
  - ▪ Actual Pixels: Command-Option-0
  - ▪ Fit to Window: Command-0
  - ▪ Zoom in/out: Command-+ and Command-–

Artwork Area Setup
- o Creating a New Document
  - ▪ Resolution
  - ▪ Color Modes
  - ▪ Contents
- o The Canvas Size and Image Size dialog boxes:
  - ▪ **Canvas Size:** Controls the size of the art board but does not alter the artwork itself.
  - ▪ **Image Size:** Manipulates the size of the artwork, altering existing pixel data according to the provided settings.