

BEGINNING DIGITAL PHOTOGRAPHY
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WEEK 3 NOTES: COLOR, FILE TYPES, WHITE BALANCE, OTHER TECHNICAL STUFF

TECHNICAL BLATHER

- Tonight is highly technical
- Bear with me, it's important
- Even if you work intuitively, you will need to know this stuff
- We'll be getting to the art of photography soon, I promise :)

ISO AND NOISE

- The higher the ISO, the less light you need for proper exposure
- The higher the ISO, the more noise will be apparent in your image
- Noise is most noticeable in shadow areas
- Every camera exhibits noise differently
- If you underexpose, noise will be more apparent

WHITE BALANCE

- Light comes in a huge range of colors
- Our eyes/brain do their best to make us see "white" regardless of the light's actual color
- By itself, the camera can't do that - it sees the actual color of the light
- So the camera has the WB function to compensate for the color of the light, and make it appear white

WB CONTINUED

- There really isn't any pure "White" light out there.
- Daylight is blue
- Indoor artificial light is usually yellow or green
- To make these situations appear "white" the camera adds the opposite color to cancel it out

WB (3)

- So - if the light is blue, the camera adds yellow
- If the light is yellow, the camera adds blue
- If the light is green, the camera adds magenta

WB (4)

- We've been using automatic white balance
- You may well want to continue to do so
- You also probably have the following options: Daylight, Cloudy, Shade, Incandescent, Fluorescent, Flash, Custom
- If you are unhappy with the color you get on auto, try the setting that corresponds to your shooting environment.

WB (5)

- Custom WB is a little different
- It allows you to set WB based on the actual color of light in any situation
- How you set it depends on your specific camera, so you will need to check the manual.
- Usually it involves shooting a pure white object, and fiddling with the menus a bit.

SOME DIGITAL BASICS

- All digital photographs are made up of pixels
- Each pixel is one dot of color
- "Megapixel" is a marketing term, what matters is the resolution of your file (how many pixels across by how many down)

MORE ABOUT PIXELS

- Each pixel's color information is stored as a series of bits
- The more bits are used, the more variation can be represented
- Math - each bit doubles the amount of possible information (powers of two)
- Three primary colors - Red, Green, Blue

RGB AND BIT-DEPTH

- Your color images are stored in three channels - red, green and blue
- By combining these three channels together, you can make a full-color image

- Each channel is stored as a b/w image with either 256 or 4096 shades of grey
- Referred to as either 8-bit (256) or 12-bit (4096)

BIT DEPTH

- Combining the channels gives you full-color
- 8-bit channels = 16.7 million possible colors
- 12-bit channels = 68 billion possible colors
- Practically speaking, the advantage of 12-bit channels is that the files can endure more editing

8-BIT

- Pro
 - Relatively small filesize
 - Highly compatible
 - Can be saved as JPG
- Con
 - Limited editing possibilities
 - Files degrade easily

12-BIT

- Pro:
 - Maximum color fidelity
 - Maximum editing possibilities
- Con:
 - Only compatible with some programs
 - Takes up a lot of space
 - Requires more RAM for Photoshop

DIGITAL CAMERA FILES

- Three main types of files from digital cameras
 - JPEG

- TIFF
- RAW

JPEG

- JPEG is a compressed format, and uses lossy compression
- What this means is that the JPEG file throws away data that it thinks isn't important
- Pro:
 - Small file sizes
 - Easy/fast to work with
 - Doesn't need to be processed
 - Highly compatible
- Con:
 - Lossy
 - 8-bit
 - Difficult to edit

TIFF

- TIFF is a lossless format
- It is the standard within the graphics industry
- Pro:
 - Industry standard for high-end work
 - Doesn't need to be processed
 - Highly compatible
- Con:
 - HUGE files
 - Slow to work with
 - 8-bit
 - Difficult to edit
- I urge you NOT to shoot in TIFF mode

RAW

- RAW is the actual unprocessed data captured by the sensor
- Every camera stores it differently (NEF, ORF, CRW, CR2, MRW, RAF...)
- Pro:
 - Highest possible quality
 - Fully editable post-capture
 - 12-bit (some cameras are 14-bit)
- Con:
 - Large file size
 - Must be processed
 - Often needs special software
 - Learning curve

HISTOGRAMS 2

- The histogram is a graph of your picture
- The right is white
- The left is black

- Everything else is varying shades of grey
- The higher the graph, the more pixels of that tone there are in your image
- Most of the world, most of the detail, is in the midtones somewhere

INKJET PRINTING

- Use high-quality paper and OEM inks
 - Ilford Smooth Gloss/Smooth Pearl
 - Epson Heavyweight Matte
- Make sure you choose the right paper setting for your paper
- Print at “photo” or 1440 resolution (or higher)

INKJET PRINTING 2

- It is very important that you print from Photoshop or another color managed application
- Make sure you are using the correct profile for your printer
- Make sure you choose “No color adjustment” in your printer driver

PRINT DIALOG

- sRGB = source
- Print space = your printer profile

PROFILES

- Every printer/paper combo needs its own profile
- Most printers come with a set
- Most 3rd party papers have downloadable profiles
- This is similar on Windows, but you will need to learn the specifics yourself

PRINTING TIPS

- There are resources on my blog
- Check the “Making Fine Prints” link
- And “Intro to ICC Profiles”
- This can get complex, but it is important for making good inkjet prints. Worth a read if you are into that sort of thing.