

Basics to Fine Art Printing and Mounting for Exhibition

Umbrella Program Agenda

9Aug17 – Basics to Image Ready for Printing

- Definitions, Concepts, Tools
- Workflow Preparing Image for Printing

16Aug17 – Getting Your Image on Media

23Aug17 – Mounting for Exhibition

- Single and Double Matt Cutting
- Archival Mounting for Exhibition

Dry mounted, Hinged and Corners (Print Salons)

Print Maker Mentoring Group Members will assist
in first prints and ongoing advice:

Norm Beaudette, Tom Briere, Jim Coutre,
Meyer Franklin, Tab, (additional volunteers?)

Jan/Feb 2018 DUG – Fine Art Media Selection and
Comparison by the Print Maker Mentors

Note: Jim Coutre's detailed presentation notes are available in PDF for download

Let's "See" and "Share" the Beauty of Your Art

Who would rather have a 12, 16, 21, 24, or 36MP camera than a 1.5MP camera? ... Why?

Likely answer –

- acquisition syndrome or
- more and higher quality details in your images and you wish to "see" them

Digital Salon images – significant reductions in resolution, tonality and color gamut vs your camera's RAW capture

- maximum 1.5MP (1400x1050 pixels) resolution vs 12 to 36MP
- 8 bit color depth (tonality) vs 16 or 14 bit camera captured
- sRGB color space significantly lower color than camera RAW

Prints – can be full resolution rich in details and beautiful color depth with smooth gradients/transitions

- 16 bit color
- high percentage of Adobe or ProPhoto RGB gamuts
- on beautiful media

Do wish your image viewers to feel that they are immersed in your image sharing fully the splendor you saw? **Of Course**

Does your monitor reasonably correlate to camera capture? **Depends**

Does your monitor limit what you can print? **Absolutely NOT!**

Some basics:

Definitions

- Pixel – the smallest unit of an image
- PPI – Pixels per inch
- Dot is the smallest element of a Print generated by a printer
- DPI – dots per inch
- Resolution or Size means the Pixel dimensions Width x Height
- Crop is an aspect ratio of Width x Height without a unit of measure when properly understood and used
- Output Cropped Image Size could be
 - in Pixels or
 - in Inches if the Resolution in PPI is also given
- Print size means Width x Height in pixels or inches at a Resolution in PPI, pixels per inch (note: not dpi, dots per inch)
- Gamut is a three-dimensional envelope containing the colors

Each Pixel is one color comprised of Red, Blue, and Green sensor data

- Thus 8 bit per color channel means the Pixel is a 24 bit depth
- Thus 16 bit per color channel means a Pixel is a 48 bit depth
- Several dots are required to properly print each pixel
- Each dot size can be varied based upon specific printer

Color Bit Depth

- 8 bits per color channel – yields 16 million color possibilities
- 16 bits per color channel – yields 256 times the 8 bit color depth

RGB Color Space for screen viewing or prints

- sRGB - smallest color gamut
- Adobe RGB – larger than sRGB gamut
- ProPhoto RGB – larger than Adobe RGB

Types of Photo Printers

- Lambda C – color lasers activating light sensitive emulsions typically called “Photographic” prints with 8 bit sRGB color space
- Dye Printers – typical of multifunction office/home desk top printers using 3 dye colors and Black
- Inkjet Printers – some are dye based, 3 colors plus Black
- Photo and Pro Photo Inkjet Printers - “Pigment” based ink sets from 5 to 11 inks for example:
 - Epson 2200 Stylus Photo – 8 inks, 7 used at a time - PK, MK, C, LC, Y, LK, , M, LM – this is not a Pro printer
 - Epson 3880 Stylus Pro – 9 inks, 8 used at a time – PK, MK, C, LC, Y, LK, LLK, VM, VLM
 - Epson 4900 Stylus Pro – 11 inks, 10 used at a time - PK, MK, C, LC, Y, LK, LLK, VM, VLM, O, G
 - Canon Pixma Pro 100 – 8 inks – C, M, Y, Photo C, Photo M, Light Gray, Gray, Black
- Ink sets are matched to their respective printer models
- Printable Color Gamut is brand, model and ink set dependent
- The Pro Photo printers with larger ink sets and/or newest HDR ink sets are more capable in details, color and density output

Papers/Media

- Fiber based (cotton rag) media use Matt Black, MK, ink
 - some examples are: Enhanced Matte, Fine Art,

- have a soft or textured surface
- vary in color gamut (usually less than resin coated)
- Resin coated media use Photo Black, PK, ink
 - some examples are: Glossy, Semi-gloss, Luster
 - have the largest color gamuts

Printer “Native Internal Pixel Resolution”

- Epson Pro printers 360ppi (each color has 360 nozzles)
- Canon Pro printers 300ppi
- Other input file resolutions result in printer resizing the file

Printers label the DPI capability choices as dots across the page width x dots down the page (vertical/length)

- Epson – for example 720x1440, 1440x1440, 2880x1440 DPI
- Canon – up to 4800x2400 DPI
- The printer DPI selected should always be a whole number when dividing the second (vertical) DPI by the Native Resolution

Monitor/Panel

- Various resolutions w x h vary with aspect ratio, monitor size and definition (1280x1600, 1920x1200, 1400x1050, HD, FHD, etc)
- No longer 72 ppi density, generally ~96 to 100+ ppi
- Price points generally increase with resolution, color gamut, brightness, contrast, uniformity across the entire screen, etc.
- Display Color Gamut (larger Gamuts are more expensive):
 - Most monitors can display the full 8 bit sRGB color space
 - Some can display up to Adobe RGB gamut
 - Some extend gamut to a portion of the ProPhoto RGB gamut

- The larger the color gamut display capability, the more beautiful images will look on screen and when properly calibrated/profiled, the closer your print will match to screen

Best Practice Workflow attributes with Lightroom (LR) or Photoshop (PS), Adobe Camera RAW (ACR) – these provide the same RAW processing engine in different user interfaces

- Color Managed Workflow - the most significant step you can make to obtain consistent beautiful output files is to **“calibrate/profile your monitor”** (irrespective of monitor’s color gamut limits)
- Capture files in RAW, largest files (color space is determined in development)
- Develop RAW in 16 bit ProPhoto RGB non-destructively
 - Lightroom (ACR), Photoshop Adobe Camera Raw, or alternative RAW developers of your choice
 - Basic sliders: Color Temperature, Tint, Exposure, Contrast (only in rare circumstances), Highlights, Shadows, White Point, Black Point, Clarity, Vibrance, Saturation, Lens Profile, Distortion, perhaps some Dehazing, your Camera specific profile (vs Adobe’s profiles)
 - RAW sharpen only
 - Dust spot removal
 - Local adjustments such as gradients and adjustment brushes
 - Do Not use Adobe B&W conversion in RAW development (you can do better after all other post processing inclusive of pixel processing to make the optimal Color Image, then convert through your favorite method or LR’s B&W)

- If image captures were JPEGs, 8 bit and color space is baked in as well as compression and all those other contrast, saturation, sharpening, etc. settings in your camera at time of capture. Changing bit depth and color space later will not do any good, but you can still make some image adjustments if not too gross
- Save/export your files in 16 bit as TIFFs or PSDs (PSDs are not compatible with all other applications or very large PS files) for retention as a full resolution image and further pixel processing
- Additional Pixel based post processing as desired
- B&W conversion if desired – plug-ins, HSL, LR's B&W, etc.
- Flatten your file and save again as full resolution

Output Production

- Determine output file specs
 - Color space, Bit depth, maximum file size (MB's)
 - Print size in inches at resolution ppi or Digital file resolution (size) in Pixels
- Convert to Color Space and Bit Depth
- Soft Proof for Output intended media/printer combination profile, Perceptual vs Relative for best looking to your eyes and intent
- Soft Proof media for out-of-gamut
- Readjust Pixel based post processing if necessary
- Flatten your file (save copy for multiple crop comparison)
- Crop for output size
- Output Sharpen for size, media/printer profile, and print quality and carefully inspect for artifacts – adjust/correct as needed, perhaps best adjusted in pre-flatten file state
- I suggest saving an “As Printed” digital copy of your output file

Retail Printing

- Most request 8 bit sRGB color space at 300ppi (they may not even print full sRGB or may resize your file, -so specifically ask for their native resolution and color space and provide that instead)
- Some retail printers may say Adobe RGB and/or 16 bit is okay, however they may do the conversions of both – this should be avoided, you make the conversion if not really a 16 bit Adobe RGB print process
- Some Commercial Color Labs offer competition/exhibition printing and color adjustment – so ask specifically for specs
- Commercial color labs and some retail printers will provide printer profiles (for their media) and test digital files and printed images.

Printing on your Photo or a Pro Photo printer

- Check your printer's capability specs
- If possible print 16 bit color depth
- Print the largest capable Color Space
- Use manufacturer's media/printer profile or generate your own
- Do not let the printer manage color
- Set your desire photo quality level (dpi w x h, speed, and bi-directional or not)
- The Epson Pro 3880 is:
 - 16 bit capable
 - Prints almost all Adobe RGB and portions of ProPhoto RGB
 - Automatically changes PK/MK for media being used

NVPC, an Epson 3880 is available 24x7 at October Farm – you pay cash for ink or ink plus media (several media types and sizes available)