Digital Printing Workshop
Conventions in This Presentation

**Recommended**
- Recommended for Photography/Digital Printing

**Advanced**
- For the More Experienced

**Holy Grail**
- Key Component Leading to Optimal Printing Fidelity
Who am I?

Background
- Software Engineer & Photographer
- CCC Technical Operations Officer

Expertise
- Imaging Software Expert
- Workshops & Online Training

Experience
- Wide Format Printing
- Co-Principal at J&J Digital LLC

Ask me about professional imaging solutions from Nikon, Epson, Adobe, Lexjet, Google, and many others.
What Topics Will We Cover?

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- Digital Printing/Fine Art Printing
- Choosing a Printer

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- Color Management in Photoshop and Lightroom
- Soft Proofing

**Preparation**
- Tone & Color
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- Sizing & Output Resolution

**Printing**
- Print Driver
- Printing Dialogs
- Printing Workflow
- Wrap Up
Why Talk About Printing?

- What is Digital Printing?
- What is a Fine Art Print?

How-To?

- What are Profiles?
- How Should I Use the Driver?
- What is a Proper Workflow?
- How do I Get the Best Results?

Tips
What is Digital Printing?

Definition:
- Digital Printing refers to methods of printing digital-based imagery on a variety of media.

Process:
- Digitally controlled ink deposition
- Quicker turnaround
- Lower cost

Types:
- Piezoelectric
- Thermal
- Pigments, dyes & solvents
- Sublimation

Presentation:
- Matting & mounting
- Coatings
- Framing
What is a Fine Art Print?

**Quality**
- Guarantee Accurate Color
- Continuous Subtle Tonality
- Good Contrast

**Media**
- Quality Printing Substrates
- Right Paper for the Right Image
- Archival & Long Lasting

**Preparation**
- Preparing the Image
- Making the Print
- Print Finishing Options

**Print Presentation**
- Matting & Mounting
- Coatings
- Framing
What Types of Printers Are There?

**Consumer**
- Commodity
- Expensive Ink
- Often Multifunction
- HP, Canon, Epson, Others

**Prosumer**
- Dedicated Image Printers
- 13”, 17” Widths
- Epson, Canon

**Professional**
- Wide Format (24”, 44”)
- 10+ colors
- Advanced Media Capability
- Epson, Canon

HP Photosmart 7520 All-In-One $119
Epson Stylus Photo R2880: $599
Epson Stylus Pro 3880: $1295
Epson Stylus Pro 7900: $2949
Epson Stylus Pro 9900: $3995
What have the experts got to say?
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Color Theory: What is Color?

**Color**
- Perception by Human Visual System
- Objects absorb certain wavelengths and reflect back others
- Light + Object + Observer

**Additive Colors**
- Light sources of form colors by illumination
- Red, Green, Blue
- Cameras, Monitors, Projectors, Television

**Subtractive Colors**
- Uses dyes, inks, pigments to absorb certain light and reflect others
- Cyan, Magenta, Yellow
- Printing & Painting

The Visible Spectrum

Additive Colors

Subtractive Colors
What is Color Management?

Definition:
• Color Management is the Controlled or Managed Conversion Between Color Representations of Different Devices

Color Profiles
• Set of data which characterizes an input or output device according to standards (ICC)

Profile Types
• Input Profiles - Cameras, Scanners
• Display & Working Space Profiles
• Output Profiles - Printers

Printer Profiles
• Specific to Printer Ink Formulations & Media Type
Should I Calibrate My Monitor?

Why?
• Uncalibrated Colors May Have Inaccurate Brightness/Saturation
• Saves Time and $$$
• Critical for Accurate and Predictable Prints

How?
• Calibration is the Process of Getting Your Monitor Into a Well-Defined State
• Calibration: Changing Physical Parameters
• Profiling: Characterizing

Devices:
Two Camps: Colorimeter or Spectrophotometer
• X-Rite Eye One Display
• Color Munki Photo
• Colorvision Spyder
What Working Color Space Should I Use?

**sRGB**
- Default Color Space for Many Devices and Applications
- Smallest Color Space
- Intended for Monitors, Browsers, Projectors

**Adobe RGB**
- AKA Adobe RGB (1998)
- Available on Most Cameras
- Adds More Saturated, Brighter Colors

**Pro Photo RGB**
- Larger than Adobe RGB with Even More Colors Possible
- New Professional Inks are Printing Colors in Pro Photo Range

Use either Adobe RGB or ProPhoto RGB for PS/LR when preparing images to print. You can also set your camera to Adobe RGB for JPEG capture.
How Do These Color Spaces Compare?
How Do I Set My Working Color Space?

Photoshop

- Color Settings Dialog (bottom of Edit Menu)
- Set Working RGB to Adobe or ProPhoto
- Policies - Set to Preserve Embedded Profile /Ask

Lightroom

- Lightroom Performs “Under the Hood” Color Management
- You Only Need to Specify Color Space for External Applications and the Export Module
Definition:
A printer profile specifies the available colors for a specific printer, ink and media combination.

Types:
- Pre-Built: typically available for free download from media providers
- Custom: “self-profiling” process by measuring known outputs

Uses:
- Managed Printing by Applications
- Soft Proofing to Visualize

How-To:
- Easy Right-Click install in Windows
- Specify When Printing with Additional Instructions

What is a Printer Profile?
How Do I Do Soft Proofing?

Setup
• View>Proof Setup>Custom
• Select Profile (Printer/Media)
• Select Rendering Intent
• Preserve RGB OFF
• Black Point ON

Soft Proofing uses color management to predict how your image will reproduce based on your printer and profile selection. Click the preview button to preview how your image will render.

In Most Cases Select Perceptual or Relative Colormetric Rendering
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Tone & Color in Lightroom & Camera RAW

Basic Adjustments
- White Balance
- Exposure, Contrast
- Tone: Highlights, Shadows, Whites, Blacks
- Presence: Clarity, Vibrance, Saturation

Tone Curve Panel
- Selectively Adjust Brightness in Different Areas
- Can Influence Entire Image or Individual Color Channels

Local Adjustments
- Apply to Selective Parts of the Image
- Adjustment Brush
- Graduated Filter
Optimizing Tone & Color in Photoshop

When Use PS?
- Starting with TIFF, e.g. Scan
- Advanced Masking Needed

Adjustment Layers
- Curves, Levels
- Hue/Saturation
- May other options

Selective Adjustments
- The Selections, Masks and Channels, Tools and Adjustments Available in Photoshop Allow for an Infinite Range of Image Adjustments
**When Should I Sharpen My Images?**

**Presharpening/Input Sharpening**
- In Camera
- Lightroom Import/NIK
- Also Good Time for Noise Removal

**Creative Sharpening**
- PS as main Tool

**Output Sharpening**
- Always Perform After Sizing to Final Print Size and Resolution
- Perform “Screen” for JPG Exports

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I use NIK Sharpener Pro 3.0 for Input Sharpening (with LR sharpening disabled) and Nik for final output sharpening for ultimate fine control over print sharpening.
Resolution
- Digital Images Have No Absolute Size or Resolution
- Effective Resolution of a Print Depends on Image Size
- DPI vs PPI

How Much Resolution?
- Depends on the Device
  - Display/Web — 72 PPI
  - Print — 300 PPI (Canon) or 360 (Epson)

How To
- Size Without Resampling
- Sizing With Resampling
- Use Bicubic Smoother for Enlargements, Sharper for Reduction

Pop Quiz: What is the resolution of a 3600x2400 pixel image?
Answer: It depends. 6.7’x10” = 360 PPI, 8”x12” -> 300 PPI. 13.3”x20”=180PPI, 16”x20”=150PPI.
How Large Can I Print From My Camera?

Answer: It depends on the effective resolution (PPI).

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<tr>
<td></td>
<td>150 PPI</td>
</tr>
<tr>
<td>Height</td>
<td>Width</td>
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<td>4</td>
<td>6</td>
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- PS Print Dialogs
- Printing from LR
- A Workflow

What’s Next?
What is the Print Driver?

**Definition**
- Converts Data for Printing
- Applications Can Print Without Awareness of Printer Details

**Installation**
- Download & Install the Most Recent Version
- Run Installer for Drivers and Utilities
- Ports: USB or Network

**Using the Driver**
- System Dialog
- Print Queues
- Print Properties
- Print Preferences
Print Driver Dialogs

The System Print Dialog
Start->Devices & Printers

The System Level Print Properties Dialog

The Print Queue Dialog

Printer Specific Dialog
How Do I Print From Photoshop?

**Printer Setup**
- Select Printer
- Set Media Type, Quality, Media Source (sheet or roll) and Paper Size
- TURN OFF COLOR MGMT IN THE DRIVER

**Color Management**
- PS MANAGES COLOR
- Select Correct Profile
- Black Point Compensation ON

**Position and Size**
- Recommend 100% (pre-size in Image Size)
- Note: Some printers do edge printing for only certain paper widths.
Checklist: General Preparation

1. Install Printer and Driver
2. Install Printer Profile(s)
3. Calibrate and Use Working Profiles
Workflow: From Capture to Print

1. Capture: Raw or Raw + JPG
2. RAW Presharpening: LR, Camera RAW, Nik, etc.
3. Noise Removal
4. Tone and Color: LR, Camera RAW
5. Creative Editing: PS
6. Creative Sharpening: PS
7. Save Master Image
8. Output Sizing
9. Output Sharpening
10. Soft Proofing
11. Print Image
Checklist: How Do I Not Screw Up?

Color Management
- Make Sure Only the Application is Managing Color — Not Printer
- Export to sRGB for sharing
- Calibrate display

Profiles
- Use the Correct Profile and Make Sure Printer is Set Correctly for Matte or Photo Black
- Soft Proof using Printer Profile

Printing Options
- Black Point Compensation ON
- Size your image appropriate for your printer

Quality
- Use Only Manufacturer’s Inks and Quality Media
- Calibrate Frequently
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Where Can I Learn More?

2014
Fine Art Digital Photography Workshop Hands-On with Stephen Johnson

Stephen Johnson • Photographer

The Fine Art Printing Workshop with Stephen Johnson

Four Days of Hands-On Printing Instruction

Students come in from all across the country for this class....

Great Teaching
Real World Experience
Individualized Instruction

With our Digital Mac Photo Lab each station has its own:

• Mac Intel Duo Core computer
• 21 inch Eizo LCD display
• 10 13x19-Epson printers
• 10 Spectrophotometers for Printer Profiling
• Monitor Calibrator for each system
• Network Connection to large-format printers
• 5000k-6500k Print Viewing lights at each workstation

Topics Include:

• Digital Printing Technologies
• Monitor Calibration

http://www.sjphoto.com/print_wspHOPH3.html

2014
The Fine Art of Digital Printing Workshop, Seminars, DVDs – Capstone, Haber, Naish Editions, Brooks Institute of Photography The Fine Art of Digital Printing

Workshop
April 26-29, 2013
Brooks Institute, Santa Barbara, CA

Seminars
The Fine Art of Digital Printing Seminar is coming to a city near you.

You could win one of these great giveaways – Adobe Photoshop CS6 & Lightroom 4, Ooma Tel, Sony, Nikon, Epson Color without limits!

DVD
Explains the DVD's to preserve our content. Watch video preview online.

Looking for the ultimate digital printmaking workshop?

This premier workshop is the chance of a lifetime. Learn from two master digital print makers at the same time, fresh off their highly successful tour in the Epson Print Academy, in The Fine Art of Digital Printing. The workshop will be held in the state-of-the-art labs of today’s premier photographic educational institutions.

This workshop will expose you to a world of possibilities. The workshop teaches printing fundamental and practices from a traditional to digital and expose you to a world of new possibilities. You’ll see, use, and evaluate the latest Epson printers, ink, papers, and profiles. An integrative approach to using Adobe products, Photoshop, Corel Raw, Bridge, and Lightroom will all be detailed and practiced.

By the end of the week you will have mastered a fine art workflow, understand how it differs from others, and learn a variety of techniques and tools that will help improve and refine both your digital files and prints. You’ll leave with finished prints and the knowledge you need to get the results you’re looking for when you return home. You’ll also have a vast expanded art of possibilities for making images.

Topics include:

• Color managed workflow from input to output
• Adobe Bridge, Camera Raw, Lightroom, Photoshop
• RFW conversions
• Stylized color adjustment strategies
• Black and white conversions and toning solutions
• Local contrast and masking
• Sharpening
• Resampling

You’ll also get reviews of your work from both John Paul and Mac.

http://www.fineartofdigitalprinting.com/