

Digital Workflow

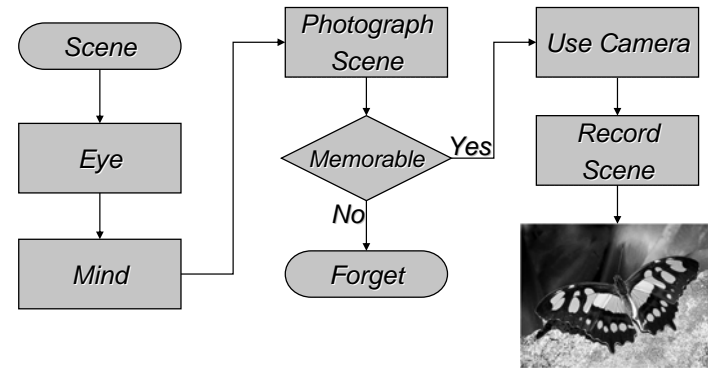
Light after the dark (room)

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by
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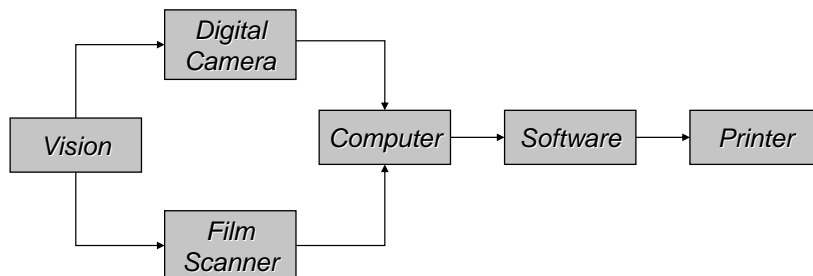
Photography

- “Photos graphos,” or writing with light



Workflow

- Digital or analog, photography moves from a vision to visual
- Translation in every step



Image

- The manifestation of a photograph
- Image is information
- We move the information from the real life through various devices to its output format
- Images are made of Red-Green-Blue in varying amounts
- But, what is “RED,” “GREEN,” or “BLUE?”

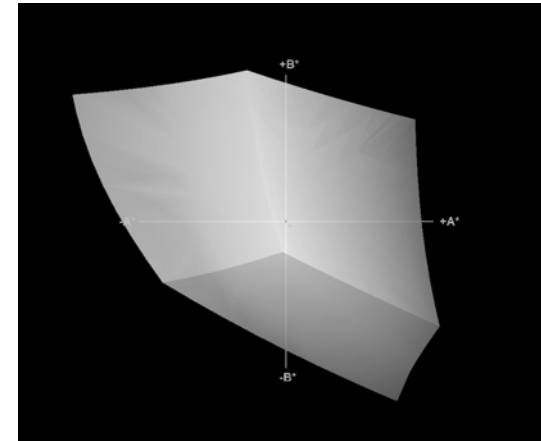
Color Management

- Every device is capable of capturing, generating, or outputting a range of colors in particular intensities
- This is called the device's "color gamut"
- Since all have different gamut, translation (transform) is necessary as the image moves from device to device
- This is done through "Color Management"

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Color Gamut

- What does a gamut look like?

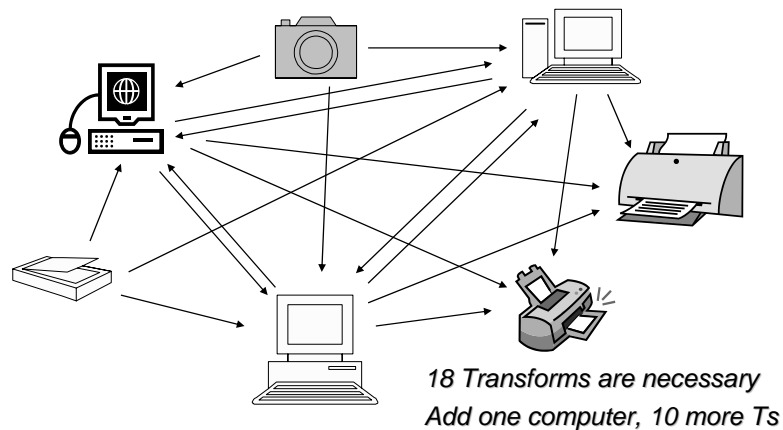


Adobe 1998

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Color management

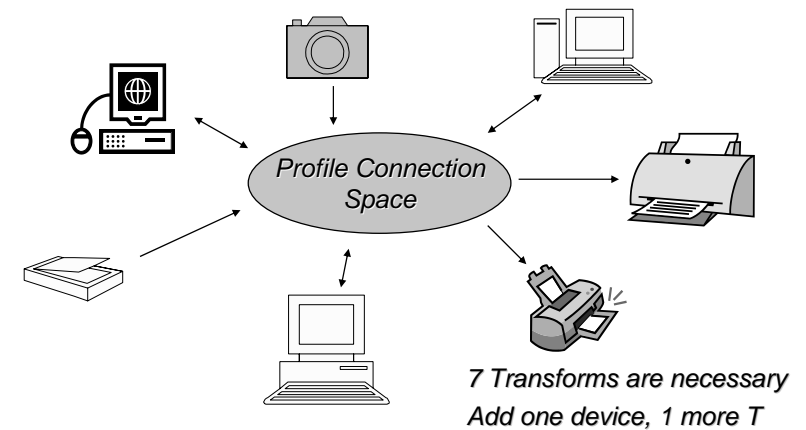
- Device dependent transform



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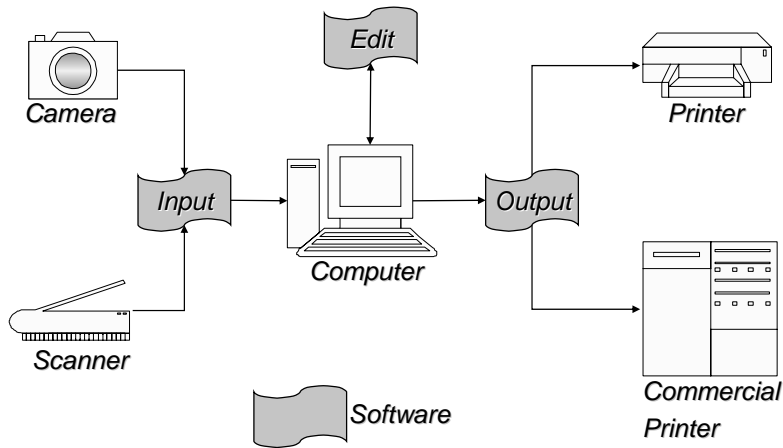
Color management

- Device independent transform



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Color management (summary)



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Color management (summary)

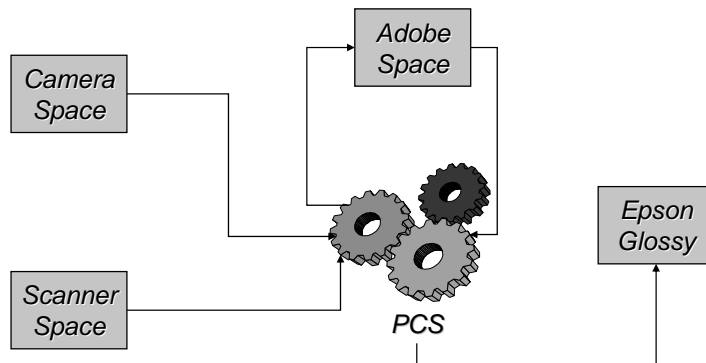
■ Color Management Module

- Converts source color space colors
- To destination color space colors
- Using the Profile Connection Space (PCS)
- PCS is device independent and in L*a*b* format

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Color management example

- PCS connects all color spaces, something like a Rosetta Stone of color



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Translation is needed

- Not only in color gamut but also in
- File format, like RAW-to-TIFF
- Size and resolution, down and up sampling or change in PPI information
- If the methods of this translation are not under the control of the photographer, the end results will be highly unpredictable and frustrating

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Capture decisions

- Camera capture
 - Capture maximum information
 - Use minimal in-camera processing
 - Color management if applicable
- Scanner capture
 - Scan film or print
 - Capture maximum information
 - Use minimal in-scanner processing
 - Color management

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Capture decisions

- Camera settings I use
 - Slowest ISO usable (100,) less noise
 - Normal or low contrast, more info capture
 - Lowest sharpening, do it in controlled steps in workflow
 - Normal or low saturation, more info capture
 - White balance, if camera supports it. Otherwise, leave on "Auto."
 - When the situation allows, include a gray card in one frame

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Scanner decisions

- Scanner settings I use (film or flatbed)
 - Profile the scanner, known behavior
 - Warm up the scanner for 30 minutes
 - No scanner adjustments, apply profile
 - Capture highest optical resolution
 - Clean the film and flatbed glass
 - No color profile while scanning, apply it in Photoshop

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RAW Conversion

- RAW format has no image, just information as captured by the sensor
- Needs to be translated to a visible format
- It is like developing film and needs developing tools, software
- Unlike developing film, RAW conversion can be repeated as many times as needed

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RAW Conversion Tools

- Some cameras bundle software
- Some require activation after a trial period
- Bundled software usually is very good but not very user-friendly
- Third-party software
 - Using the bundled software engine with a friendlier interface
 - Proprietary conversion engine and interface

RAW Conversion Tools

- I have used all of the below software with very good results
 - Breeze Browser, www.breezesys.com
Uses the camera software SDK but adds more. About \$50, good value

RAW Conversion Tools

- I have used all of the below software with very good results
 - PhaseOne, C1 DSLR, www.rawworkflow.com
Comes in three flavors, \$100-500. Excellent conversion engine, good interface and adjustments

RAW Conversion Tools

- I have used all of the below software with very good results
 - Photoshop RAW, www.adobe.com
Comes with CS but add-on to v.7. Very good, integrated with Photoshop, launch from file browser, free if you have Photoshop CS

RAW Conversion Decisions

- White-balance, for neutral colors
- Exposure, brightness, contrast
 - Just like selecting a developer with possibly push or pull processing, normal or high-contrast developing
- Destination color space
 - Select a rich color space to retain the information. Can be later converted to others. I use Adobe 1998 but ProPhoto is probably better.

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RAW Conversion Decisions

- Capture sharpening
 - Mild amount of sharpening to bring some of the detail back. I do this often after the conversion in Photoshop
- Resizing
 - If the software supports on-the-fly up sampling while converting from RAW to a visible format, do it here
 - It uses numbers rather than pixels to scale
 - If unsure, leave the original size

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RAW Conversion Decisions

- Pixels-per-inch, AKA resolution
 - Pixels-per-inch is a piece of information in the image file
 - Not critically important, but decide now for workflow standardization purposes
 - Can be changed with no penalty unless the pixel dimensions of the image are changed

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Hardware decisions

- Set monitor to high color and resolution
- Monitor calibration and profiling
 - Calibration: adjust the device to get a desired result, contrast, brightness, color, etc.
 - Profiling: Recording a device's current behavior
- Periodic calibration and profiling is recommended
 - Monthly is good, weekly is better, daily is for the paranoid

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Hardware decisions

- **Computer system, PC or Mac (Oh, no!)**
 - They are both excellent systems with advantages and disadvantages
 - Use what is comfortable and affordable for you
 - Your computer will not make your photographs better or worse

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Hardware decisions

- **If you will spend money go for (speaking for PCs)**
 - Add more memory
 - Add a separate scratch disk
 - Add a good 2-D video card, expensive 3-D cards have no benefit in Photoshop
 - Upgrade to a faster processor
 - Install a faster disk drive

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Software decisions

- **Build your software tool kit**
 - **Photo editing and filters**
Photoshop family is popular and powerful but others may be perfectly satisfactory
 - **Viewing**
Quick (relatively speaking) and convenient way of looking at photographs
 - **Digital asset management (DAM)**
Cataloging, searching, organizing, backing up
 - **Backup**

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Photoshop Setup

- **Screen layout**
 - Maximum screen usage
 - Remove unused panels
 - Dock panels for auto positioning and sizing
 - Let's take a quick look

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Photoshop Setup

■ Color settings

- Control how color management will behave
- From the menu, select “Edit/Color settings”



Let's take a look

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Photoshop settings

■ Control the behavior of many Photoshop functions and tools

- Let's take a look

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Open an image file

- If different color space or no color space, Photoshop will warn and offer to convert to working color space
 - Use the embedded profile if it is different, you can always convert it later

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Inspect the image

- Is it a VIP (Very Important Photograph?)
 - If it is a must-have image I call it a VIP. Others may or may not be used.
 - If it is a VIP, start with fixing blemishes and as you do that, look at the image closely and get a feel for it. Then move to the next step
 - If it is not a VIP move on to inspecting channels and histograms

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Inspect the image

- Review the histograms.
 - Is there clipping, if so, how serious is it?
 - How much information is in channel?
 - How much noise can you see in each of the channels

Image adjustments

- Remove color cast
- Adjust luminosity
- Adjust color saturation
- Crop if necessary
- Resize to the desired output size and resolution
- Save as a copy leaving the original intact

Image adjustments

- Apply input sharpening, a low level sharpening to pull together the detail lost in digitizing
 - Use a non destructive filter like PhotoKit or
 - Merge all layers onto a blank layer and apply a low level sharpening to that
 - Did I say save the image?
Ctrl-S will do, thank you very much

Image adjustments

- Apply output sharpening
- Sharpening amount and method depends on how the output will be viewed
 - Screen output needs gentle sharpening
 - Print output requires much heavier sharpening to the extent that it looks over sharpened on the screen
 - There are sharpening plug-ins but the unsharp mask of Photoshop is eminently capable

Image adjustments

- View the image 100% and going one screen at a time, inspect the image for exaggerated blemishes because of sharpening
- Use your favorite touch up tools to repair them
- Do edge burning
- Now you are ready to print

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Print output

- Printers, like other devices have color characteristics and profiles
- Printer profiles are much more stable than display profiles
- Printers need different profiles for different papers and/or inks
- Output needs to be color-managed, but with great care. Double management often occurs with unpredictable results

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Print output

- When the image is ready for outputting to your printer make sure double color management does not occur
 - Photoshop wants to manage the color that goes to the printer
 - Printer wants to manage color that comes from Photoshop
 - You have to tell one of them “Shut Up!”

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Print output

- Select from the Photoshop menu “File/Print with preview” option



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Print output

- Click on the “Page setup” button
- In the dialog box, click on the “Printer” button
- In the new dialog box, select the printer and click on the button “Properties” which will bring the printer driver controls
- Select the correct paper, size, dpi
- Make sure to disable the color management and click OK

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Print output

- When you return to the Photoshop Print with preview window, make sure that the print space still shows the paper that you selected and the rendering intent is relative colorimetric
- Click on Print
- And let it RIP

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Viewing prints

- Although dry to touch, most prints need curing of the inks, be gentle
- Let the print dry for at least an hour before critically evaluating
- Use a daylight balanced light source since the quality of light varies
- When satisfied with the results, make a note of the process
- Give yourself a pat on the back! You are good!

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Thank you

May the
gamut be
with you

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