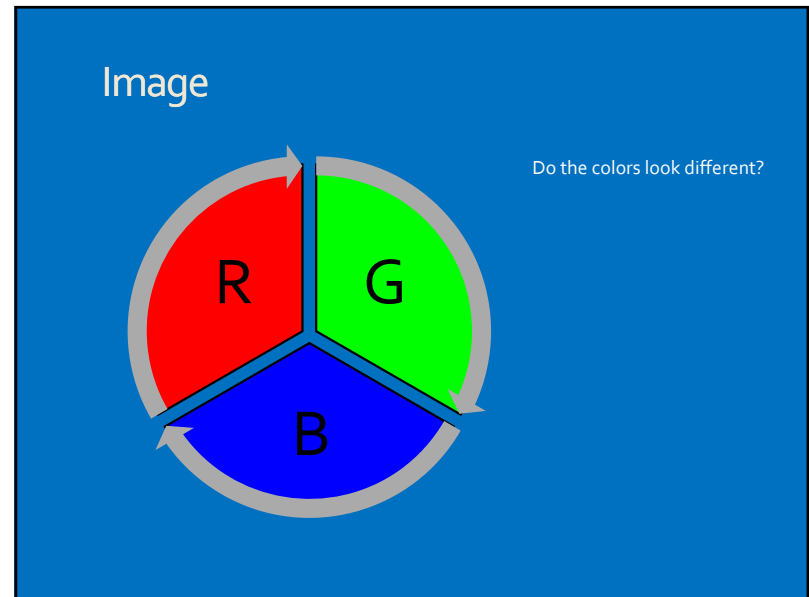
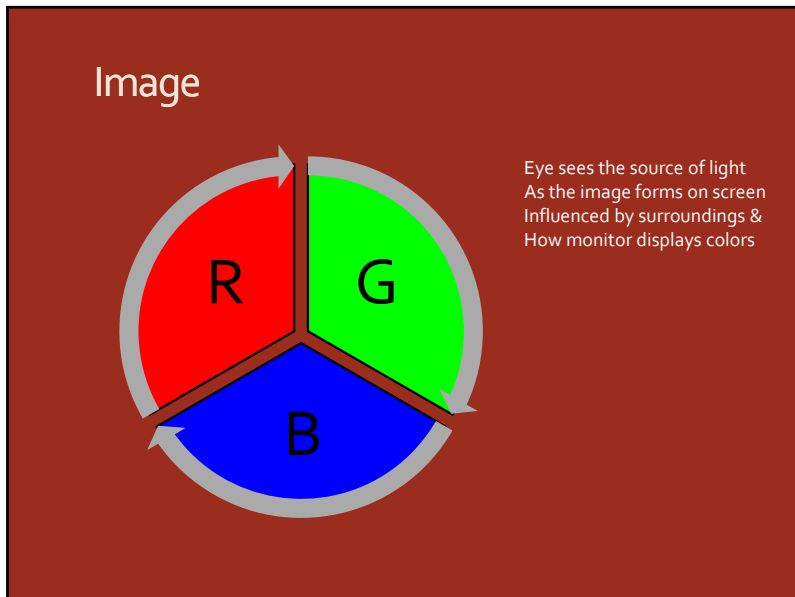
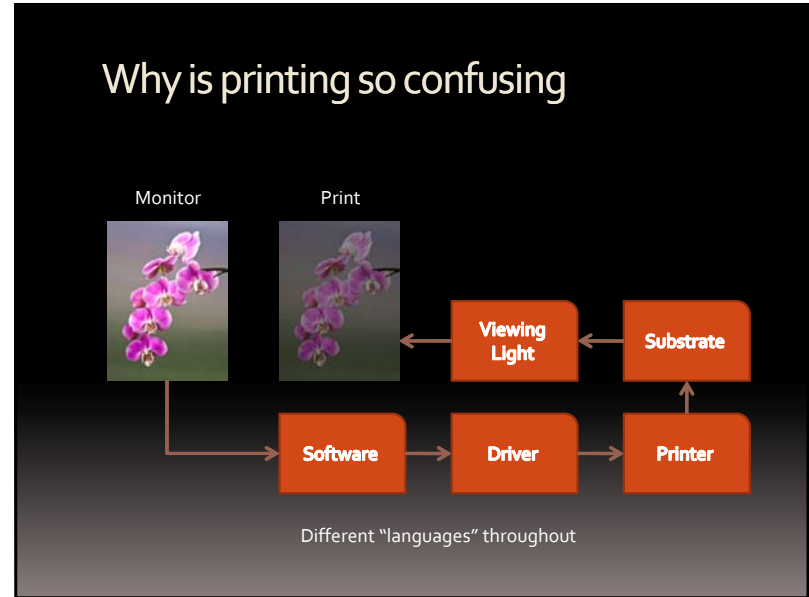
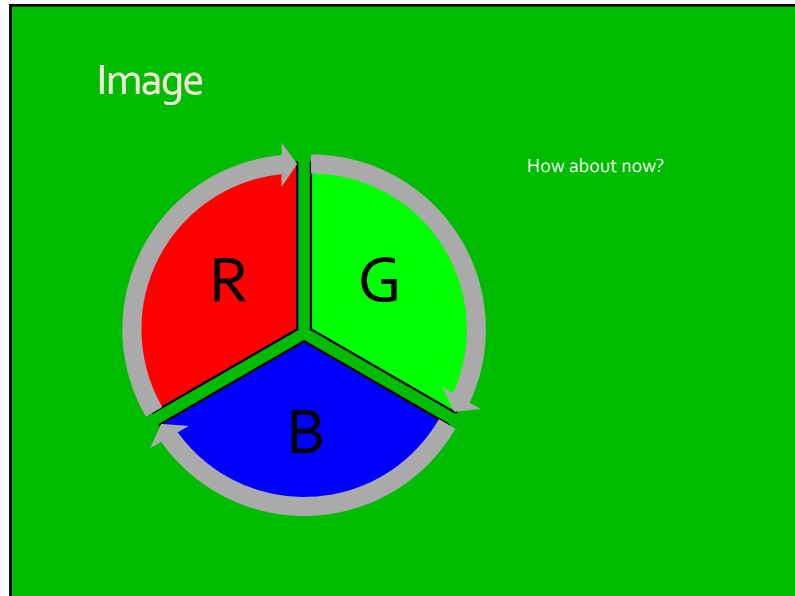


PHOTOGRAPHIC PRINTING WORKFLOW

A. Cemal Ekin, PhD
February 23, 2010
PSRI, Warwick





What is "red?"

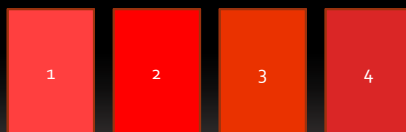
- Take a look at the following, which is red?



The answer is: None!

Imagine

- I give you the paint cans below and ask you to paint the wall "Red"
- The potential for error is obvious



Using numbers will eliminate the error
"Paint with #2"

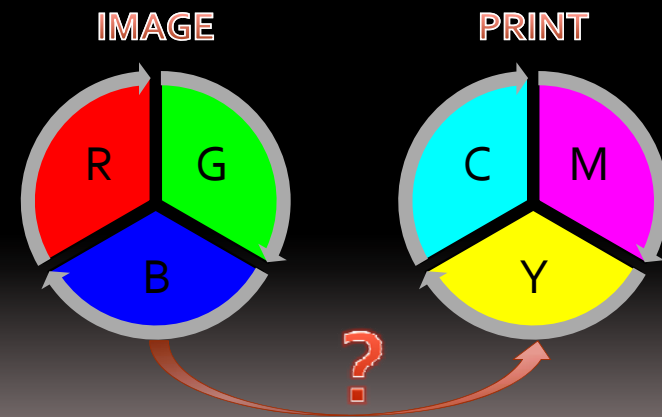
Software

- Image is displayed and adjusted in a software
- How much color language does it know?
- How much color can it define and use?
- Surprise:
 - Photoshop works in grayscale!
 - For our convenience, it displays color

Printer

- Essentially a very precise spray can
- Uses “subtractive color” model and
- Secondary colors, Cyan, Magenta, Yellow
- To punch the blacks, it adds black to above
- Problem:
 - RGB needs to be converted to CMYK

Two color models (not spaces)



Translation of color

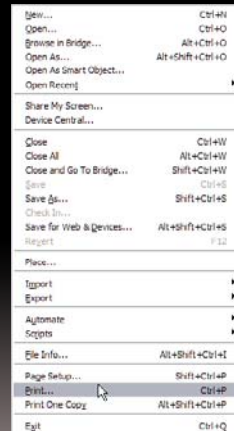
- One of the most critical steps to do right
- You may allow:
 - Photoshop do the translation, or
 - Printer do the translation, but
 - Not both at the same time

Environment

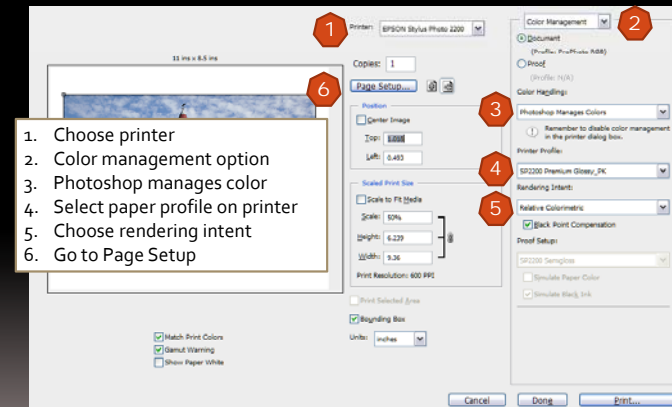
- Must do
 - Calibrate and profile your monitor
 - Have reasonably consistent illumination
 - No direct light on your monitor
- Should do
 - Do not work in a very colorful environment
 - Work in a large gamut color space ProPhoto
 - Work in 16 bit

Photoshop Nondestructive Editing

- Have an exit strategy in all your edits: layers
- Size and sharpen your image for print
- When ready to print, go to "File/Print"

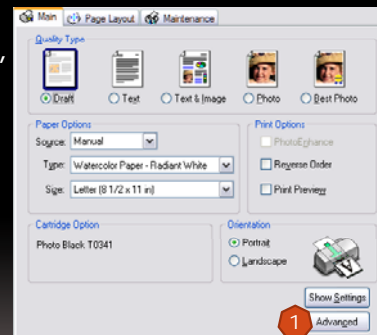


Photoshop print dialog



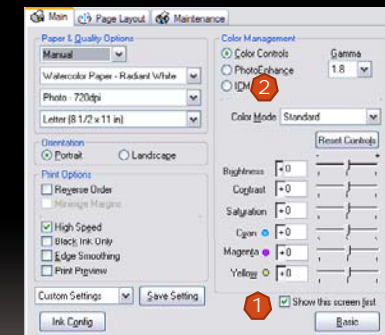
Forget "Basic" setup

- If you see this
 - Click on "Advanced"



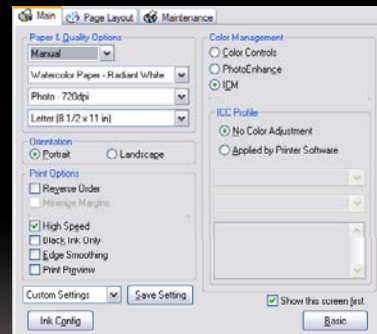
Use Advanced Printer Controls

- Put check mark to set as default
- Click on the radio button next to ICM to reveal options



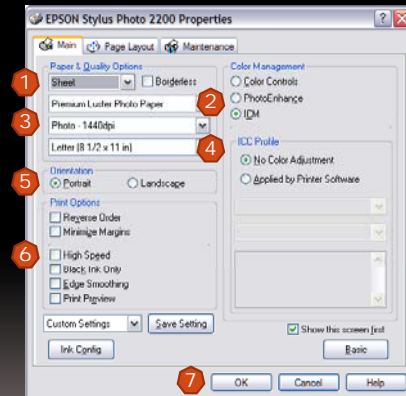
Turn off printer color management

- Click on the radio button next to "No Color Adjustment", MUST do



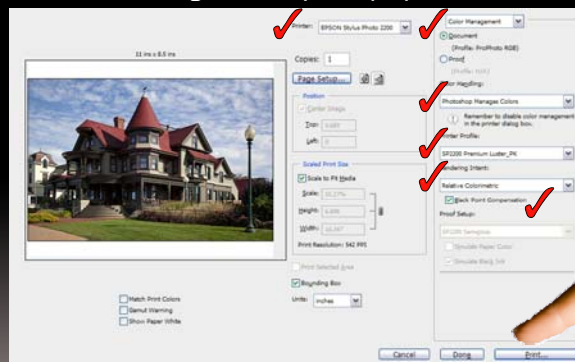
Settings

- Pay attention to
 - Paper feed
 - Paper type
 - Output resolution
 - Paper size
 - Paper orientation
 - High Speed
 - Optionally, save settings



Back in Photoshop

- Review settings, load your paper, click "Print"



Print Problems

- Banding:
 - Check high speed setting, turn off if on
 - Check nozzle, clean nozzles
- Ink beading:
 - Printed on wrong side of paper

Print Problems

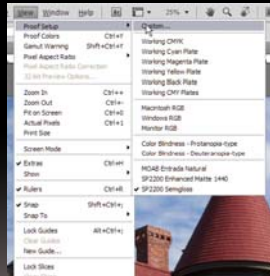
- Pale colors:
 - Wrong paper selection
 - Poor or no monitor calibration
- Wrong colors:
 - Double color managed
 - Clogged nozzle
- Partial image printed:
 - Wrong paper size

Proofing

- Ekin's rule #1: The ultimate print does not come on the first try
- Ekin's rule #2: Nobody can change rule #1
- Proofing is necessary
 - Soft proofing in Photoshop, an approximation
 - Hard proofing, printed on the actual printer
 - MUST DO: record keeping of settings
 - Add output adjustment layers as needed

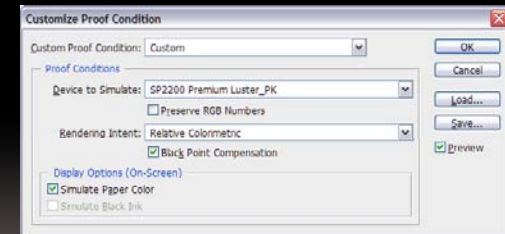
Soft Proofing

- An on-screen approximation of the output
- Useful to see out of gamut colors
- Process
 - Set up
 - View
 - Gamut Warning



Soft Proof Setup

- Pick the printer/paper
- Save it with a name, use over again



Proof strategy

- Blocked shadows?
- Too much or too little saturation?
- Too warm or too cool?
- Instead of multiple prints, a tip I learned from John Paul Caponigro works well

Bracket Proofing

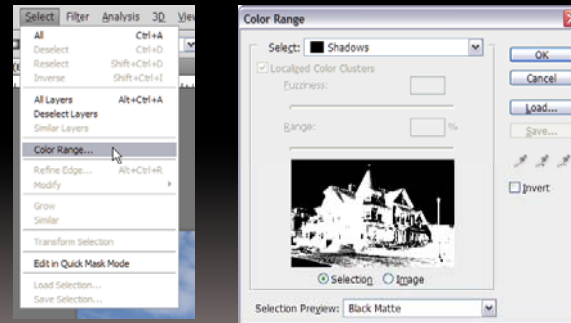
- Create the needed adjustment layer, say H&S
- Aggressively adjust, go overboard
- Add a layer mask
- Fill with gradient black to white
- Print a copy, choose the part you like
- Fill the entire mask with the gray shade of that spot
- Here is how to do it ...

Localized Adjustments

- Sometime we may need to open shadows or control highlights
- This involves using a mask for the adjustment layer
- Can we still create a multi strip proof?
- Of course we can!

Localized Adjustments

- Say I want to open the shadows, but how much?



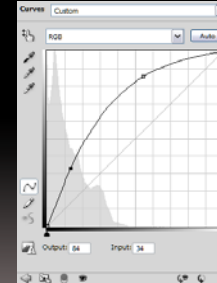
Shadows selected

- Adjustment layer will work on the selection



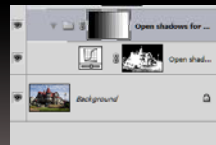
Add Adjustment Layer

- Add curves layer (levels will work too)
- Aggressively open the shadows



Add a Second Mask, Really?

- Yes really
- Target the new curves layer, press Ctrl-G
- A new group is created, name it properly
- Now add a layer mask to the group
- Fill with gradient B&W
- Posterize
- Print



Summary

- If you do not adjust your expectations you cannot adjust your output
 - It will not be right on the first try, that's OK
 - Calibrate your monitor, you must!
 - Adjust environment, light, color
 - Editing workflow, nondestructive, layers
 - Proofing, soft proof, hard proof
 - Proper viewing illumination, use right light

May your prints have the best gamut
And shine with the best D-max

Thank you