

## DIGITAL NEGATIVES for HAND APPLIED EMULSIONS

Hand applied emulsion prints are made as contact print from negatives that are the same size as the final print. Sunlight was historically used as the light source because Ultraviolet light is needed rather than the conventional light supplied by an enlarger. Special high-output Ultraviolet light boxes can also be employed to give a more consistent and even exposure. Full size negatives can be printed onto sheet film and processed just as normal film, or negatives can be made digitally. This recipe details how to make digital negatives in a few simple steps.

### GENERAL WORKFLOW

There are only 5 mandatory steps for making a quality digital negative once you have your photographs properly tweaked.

- create a greyscale version of the photograph, properly adjusted BEFORE you apply the DigiNeg alterations!
  - covert to greyscale using the Channel Mixer
  - layer sharpen
  - adjust the levels
  - apply a contrast curve
- add previsualization layers (optional)
  - one for each medium, cyanotype, van dyke brown, etc.
- add a step wedge (optional)
- add some texture (optional)
- flip horizontal
- invert to negative
- colorize to make a 'spectral density' negative
- apply Transfer Function curve for the specific emulsion
- apply these setting to other photos (optional)
- print the picture onto transparency film with these settings

## CREATE the B&W DIGITAL PICTURE

Digital Negatives are made from Greyscale photographs. It is necessary to convert your photographs to Black & White before you do anything else. This is a subjective process that is explained in detail in the "Convert to Greyscale" handout, but here is a quick rundown of the process:

Open the photo file in Photoshop

- start with film or digital, a negative or print, B&W or color
- bring the source image into the computer
  - see the "Scanning" handout for more details...
- open the file in Photoshop
- convert the color space to Adobe(RGB) 1998 (if necessary)
- remove any black borders

Rescale the photo to print size and resolution

- use **IMAGE> IMAGE SIZE** [CMD] [SHFT] I
  - have both **RESCALE IMAGE** and **CONSTRAIN PROPORTIONS** turned on
  - set the image size **RESOLUTION** to 300 ppi *first*
  - rescale to appropriate picture size in inches
  - save immediately with another name
    - file>save as... [CMD] [SHFT] S
    - use the **TIFF** format with **LZW** compression (lossless), and Macintosh byte order

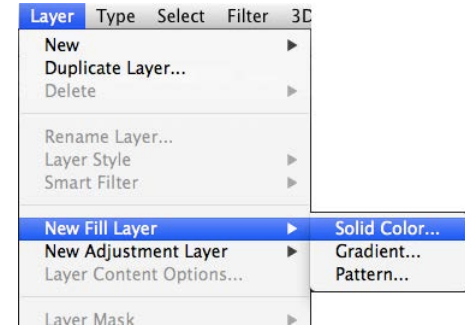
Convert any color images into Greyscale and fine tune them

- use the Black & White adjustment layer
  - adjust the sliders until the image has the desired appearance
    - see the "Greyscale Conversion" pages for more details...
- adjust the tonality to the desired appearance
  - see the "Basic Adjustments" page for more details...
- set levels with an **LEVELS** adjustment layer
  - adjust the endpoints to remove any empty tonal space
- set curves with a **CURVES** adjustment layer
  - add more contrast than for a normal print
  - pull the midpoint down a bit for a darker more dramatic look
- sharpen using layer sharpen (not Unsharp Mask)
  - see the "Layer Sharpen" page for more details...

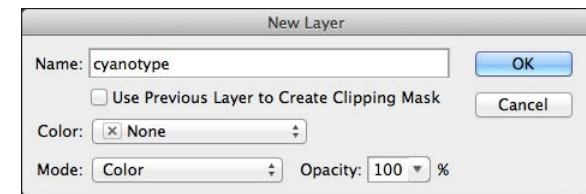
## ADD PREVISUALIZATION LAYERS (optional)

It is possible to add a color layer to see how any photograph will appear and any desired emulsion. Consult the 'Previsualization' Pages to get the exact recipes for various emulsions and toning treatments. Turn this layer on and off to previsualize how the picture will look if printed using these sensitizers. Make sure it is turned *off* when printing!

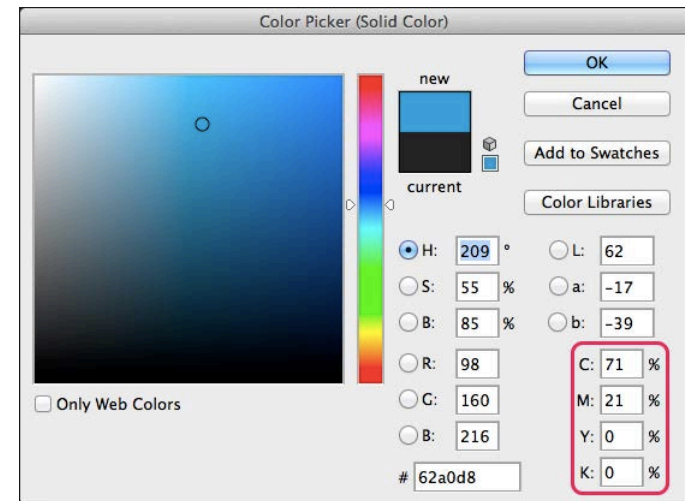
Use the FILL LAYER technique to render the picture Cyan.  
create a new Fill Layer  
use LAYER> NEW FILL LAYER> SOLID COLOR...



a New Layer dialog box will open  
name the layer 'Cyanotype'  
set MODE to COLOR  
hit [OKAY]



the Color Picker will open  
mix the Prussian Blue fill color  
set Cyan to 71  
set Magenta to 21  
set Yellow to 0  
set Black (K) to 0  
hit [OKAY]

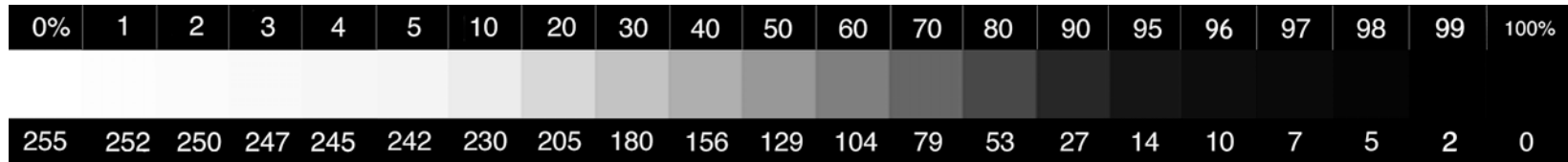


note: the Van Dyke Brown color is: C = 63, M = 71, Y = 71, K = 83

**INCLUDE a STEPWEDGE (optional)**

The exposure for each print will vary according to the way the Emulsion (sensitizer) is mixed, the way it is applied, the type of paper onto which it is applied (receiver), and the type of light source used to expose the print. The only way to ensure you are getting the proper exposure is to make a test print of a Step Wedges. This is a series of blocks that run from black to white in very exact steps.

Here is one example:



Expand the Canvas and drag a Step Wedge picture file into your picture to use as a test strip when printing.

This has to be under all the adjustment layers that are about to be applied for it to be useful.

open the Step Wedge Sample Picture at [www.berk-edu.com/hybphoto\\_home.html](http://www.berk-edu.com/hybphoto_home.html)

the file is in ZIP format, so it has to be 'un-zipped'

rotate or resize if necessary

expand the Canvas Size by the width of the Step Wedge

drag the Step Wedge picture into your picture

note: the Step Wedge can be trimmed off and printed on a separate piece of paper

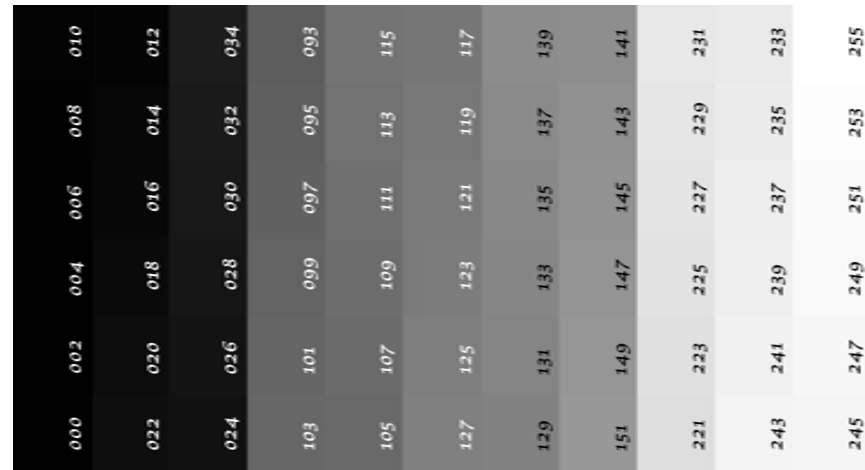
Here is another example that can be used to full-size tests.

The file is called blackWhiteGray\_test\_x353.tif

and is also available at

[www.berk-edu.com/digiPhoto\\_home.html](http://www.berk-edu.com/digiPhoto_home.html)

This file is good for finding the maximum and minimum tonal values and placing the midpoint (gamma).



## ADD SOME TEXTURE (optional)

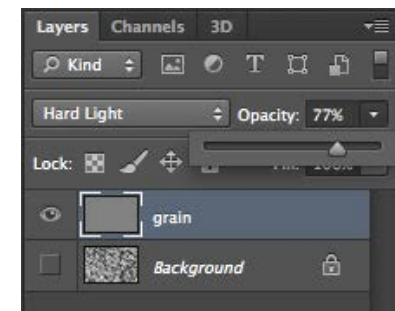
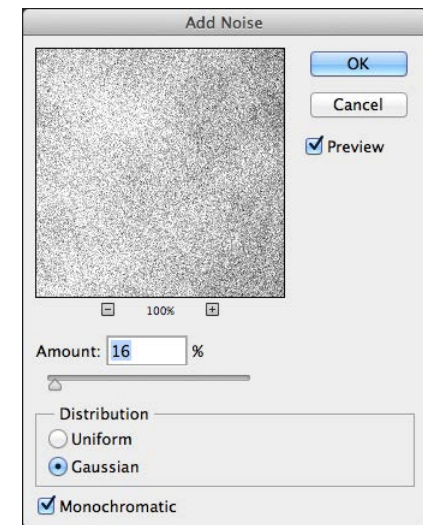
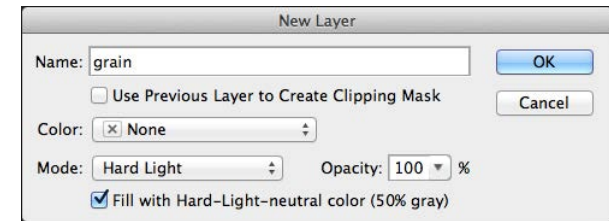
Traditional negatives are made on Litho film that is inherently grainy. The most controllable and re-editable way to do this is to add a Film Grain layer (not using the Film Grain filter).

select the **BACKGROUND** layer

add a new layer [CMD] [SHFT] N  
name it 'grain'  
set **BLENDING MODE** to **HARD LIGHT**  
**FILL** with 50% grey

fill the layer with noise  
**FILTER> NOISE> ADD NOISE**  
adjust **AMOUNT** to your satisfaction  
set **DISTRIBUTION** to **GAUSSIAN**  
turn on **MONOCHROME**

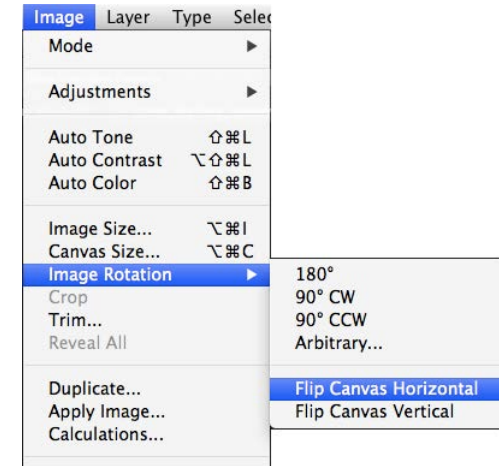
adjust the **OPACITY** of the layer  
to get desired effect (subtle)



## CONVERT to NEGATIVE FORMAT

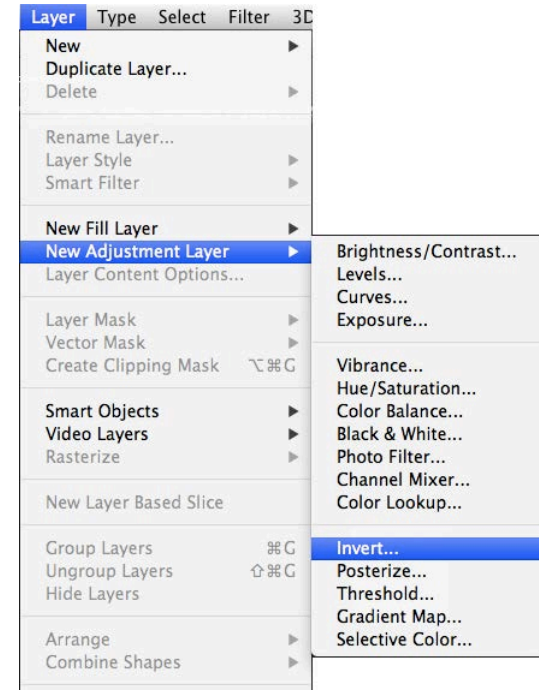
### FLIP the PICTURE

The negative is turned face down to print emulsion to emulsion, so you must flip the photo.  
flip horizontal using **IMAGE> ROTATE> FLIP HORIZONTAL**



### INVERT the TONALITY

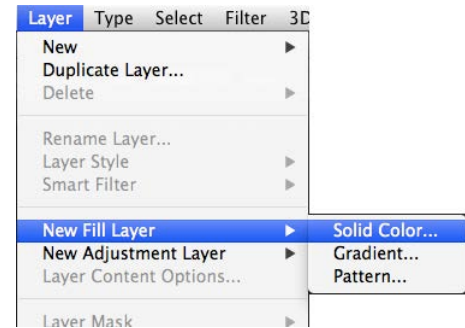
The picture must be made into a negative.  
use an Adjustment Layer so it can be turned off later to double-check  
use **LAYER>ADJUSTMENT LAYER> INVERT...**



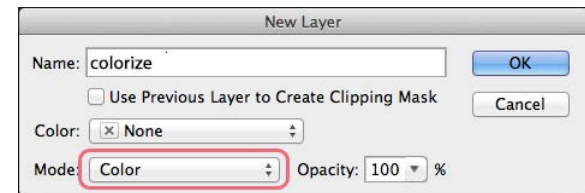
## COLORIZE to CREATE a SPECTRAL DENSITY NEGATIVE

The black ink in a digital printer does not block all the light coming through the Digital Negative. It is better to use an amber color that acts like a filter for UV light. This is called a 'Spectral Density Negative' and has a better masking capability.

add a Fill Layer using a Solid Color  
use LAYER> NEW FILL LAYER> SOLID COLOR...

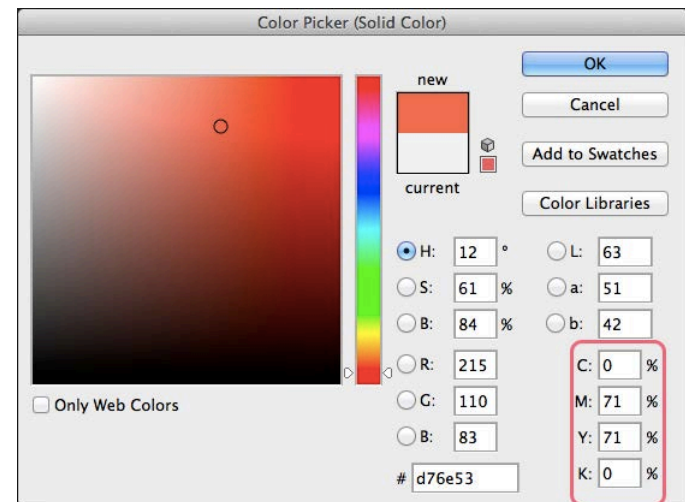


the New Layer dialog box will open  
set name to 'colorize'  
set mode to color \*critical step  
leave opacity at 100% (default)  
hit [OKAY] or the [RETURN] key



the Color Picker (Solid Color) dialog box will open  
create an Amber Mask color to block UV light  
set Cyan to 0  
set Magenta to 71  
set Yellow to 71  
set Black to 0  
hit [OKAY]

tip: place the cursor in the C: box,  
type 0, hit the [TAB] key, type 71, hit [TAB],  
type 71 again, hit [TAB], type 0, hit [RETURN] – done!



## APPLY a TRANSFER FUNCTION using a CURVES ADJUSTMENT LAYER

The tonal range of any hand-applied emulsion is smaller than that of a digital negative. It is necessary therefore, to adjust the final output range of the digital negative so the tonal range is optimized. The shadows should produce deep shadows but should not be so dark as to lose shadow detail. The highlights should be bright but should never be paper white. When there is no detail in either the shadows or highlights then there is no image. Dead shadows and blown-out highlights are not good creative options. They will be seen a poorly printed prints.

There can be several Output Adjustment Layers, one for each emulsion and these can be turned on and off separately as needed.

These must be the *topmost layers* in the stack

because the colorize layer will subtly alter the density of the picture.

This step assumes that the output levels of the photograph have already been adjusted.

Adjust the overall tonal range

add a new Curves adjustment layer using **LAYER> NEW ADJUSTMENT LAYER> CURVES...**

or use the Adjustment Layer Picker at the bottom of the Layers Palette (shown here>)

name the layer with the emulsion name

set the number of divisions to 10

hold the [OPT] key and click inside the curve area

set the output levels to new lower values

New Cyanotype : (endpoint values = 10% ~ 90%)

set the shadow output value to 26

set the highlight output value to 229

Van Dyke Brown : (endpoint values = 15% ~ 85%)

set the shadow output value to 38

set the highlight output value to 217

Raise the contrast to make up for the reduced contrast of the liquid emulsions.

lock the midtone value

by placing a control point dead center

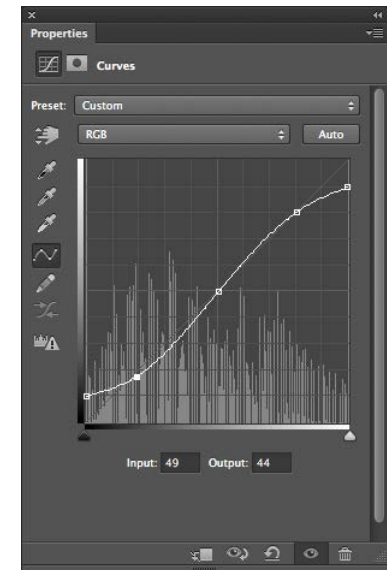
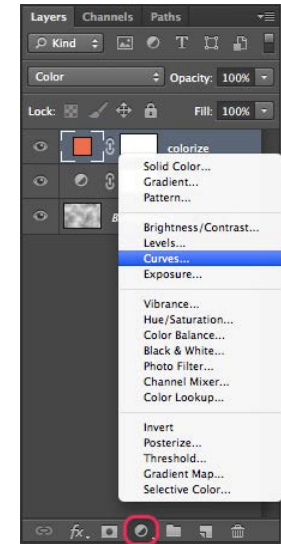
raise the highlight intensity

by dragging a control point upward

lower the shadow intensity

by dragging a control point downward

These values may have to be adjusted differently for each individual picture!





## **APPLY ADJUSTMENT LAYERS to OTHER PHOTOGRAPHS**

When you have completed this process for one image these layers can easily be transferred to another one.  
Simply select ALL Adjustment layers and DRAG them to any other picture file.  
Turn the appropriate layers on or off to Previsualize or Make a Negative.

You will most likely have to readjust the Channel Mixer to get the best B&W Conversion,  
but all the other alterations are the same! This is even easier than creating an Action.  
unstack the photographs to be used  
drag them off the Tab Bar at the top of the Photoshop window  
select all adjustment layers in the finished photo  
[SHIFT-CLICK] on each layer to be copied  
drag all layers to the other photograph  
turn on / off whichever layers will display the desired effect  
readjust the Black & White adjustment layer to get the best B&W photo

## **PRINT the NEGATIVE**

Print onto professional-grade Transparency Film, not the cheap stuff. Use only a high-quality Overhead Transparency Film such as PictoRico OHP Transparency Film, InkPress Transparency Film, or Arista Transparency Film from Freestyle.  
print onto the textured side of the transparent film  
place the cut corner into the upper right corner (PictoRico only)  
rotate the page in Page Setup (if necessary)  
to print vertical picture on a vertical page,  
or a horizontal picture on a horizontal page

### **PRINTER SETTINGS for Digital Negatives**

Print on an Epson 3800 or 4880 using Photo Black Ink (not Matte Black).  
See the 'Printing Digital Negatives on Epson Printers' handout for more details.

## PHOTOSHOP CONTROLS

### PRINT SETTINGS

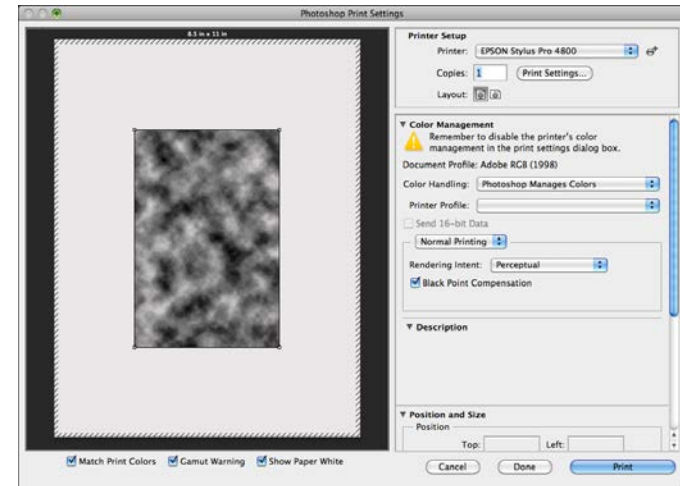
open the PHOTOSHOP PRINT SETTINGS dialog box

[CMD] P

### PRINTER SETUP dialog box

select the appropriate PRINTER  
(there should only be one  
for any Printing Computer)  
keep the number of COPIES at 1  
select the LAYOUT,  
portrait or landscape,  
using the buttons

open the PRINT SETTINGS window  
with [PRINT SETTINGS...] button  
a new PRINT window will open



### PRINT dialog box

the PRINTER should already be set  
the PRESET can be STANDARD  
unless you often use the same paper...

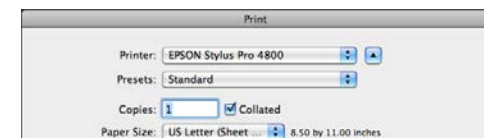
COPIES should already be set

PAPER SIZE is selected from a drop-down menu

the size of the margins is *critical* here – they should all be the same size  
use US Letter (Sheet Maximum), or  
use a custom 8.5 x 11" centered,  
or a custom 13 x 19" centered

If using a custom or non-standard paper size,  
use the Managing Custom Paper Sizes dialog box  
to define the desired paper size and it equal borders.

[for instructions, please refer to the '[Custom Paper Sizes](#)' document]



## PRINT SETTINGS/ BASIC submenu

### PAGE SETUP

use SHEET MAXIMUM

to give access to the full printing area on all sides

PAPER TRAY is the source

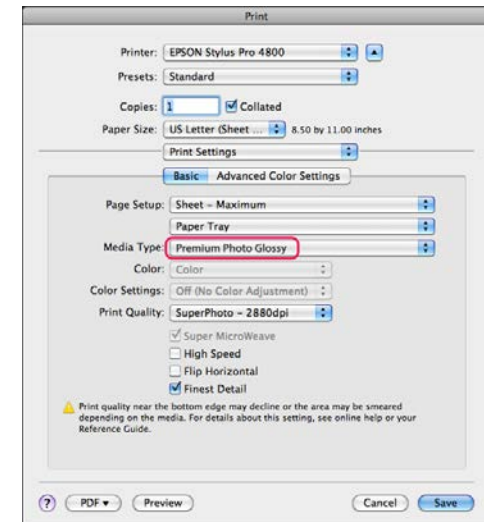
set MEDIA TYPE to **PREMIUM PHOTO GLOSSY**  
from the drop-down menus

set PRINT QUALITY to

SuperPHOTO – 1440 dpi

use HIGH SPEED for a work print

hit [SAVE] to return to PRINT Menu



## COLOR MANAGEMENT dialog box

Adjust the following settings in the Color Management section of the Print Settings window:

DOCUMENT PROFILE should already

have been set in Photoshop  
to Adobe RGB (1998)

set COLOR HANDLING to

Photoshop Manages Colors

select the correct PRINTER PROFILE

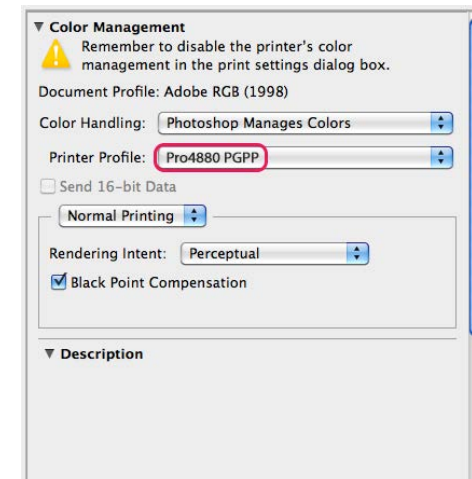
use **Pro38 PGPP or Pro4880 PGPP (Epson Premium Photo Glossy)**

this is also *critical* for proper tonal balance

note: this generic profile for Epson Premium Glossy paper  
works well for all brands of Transparency film.

It puts the maximum amount of ink onto the paper,  
which is what is desired for Transparencies.

note: there are, in addition, specific profiles for Pictorico 4880,  
and Inkpress 3800 and 4880 that can be used.



## NORMAL PRINTING submenu

RENDERING INTENT is usually set to **PERCEPTUAL**

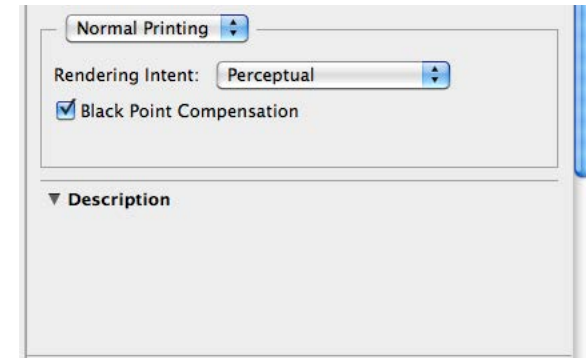
The next most often used intent is

**RELATIVE COLORIMETRIC.**

There are 4 types of Rendering Intent.

If you hold the mouse over the button, the description of each will appear in the **DESCRIPTION** box below.

turn on  **BLACK POINT COMPENSATION**



## POSITION and SIZE dialog box

The size of the print should have already been set and the print optimized in

Photoshop before opening these dialog boxes,

as described in the "[Preparing Photos for Printing](#)" document.

*note: You may have to scroll down to get to this section of the dialog box.*

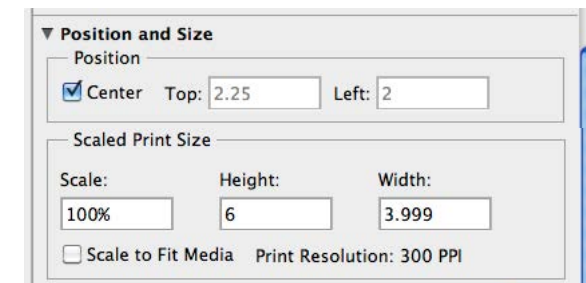
set the **POSITION** to  **CENTER**

do not adjust **SCALE, HEIGHT** or **WIDTH**

the scale should always be 100%

you should certainly **NOT** be cropping

do not hit **SCALE TO FIT MEDIA**

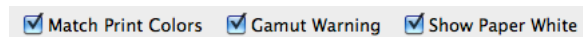


## ACTIVATE the SOFT PROOFING CONTROLS

there are 3 small buttons under the image

turn on [  **MATCH PRINT COLORS**] [  **GAMUT WARNING**] [  **SHOW PAPER WHITE**]

this will allow the screen to apply the profile to the image to give you a better idea of how the print will look on the targeted paper



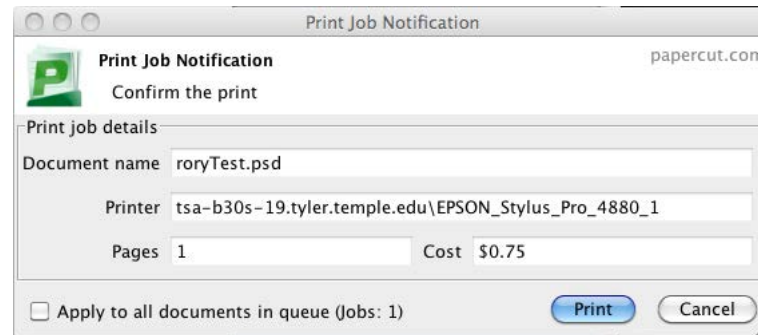
## PRINT

hit [**PRINT**] to begin the actual printing process

## PAPER CUT – Print Management System

The PaperCut system keeps track of all jobs and charges your account for the ink that is used.

eventually the PaperCut Print Job Notification dialog box will open  
click on the [PRINT] button to execute the print  
note: the [RETURN/ENTER] key will not work in this instance



### PaperCut Use:

Go to the Media Output Center in Tyler Room 202 to setup a PaperCut account.  
Sign in to your TU account once in the Lab in which you will be printing  
so PaperCut will direct the funds to the proper Lab account.

Add money to your Diamond Dollars Account on-line, on any computer.  
Go to the Media Output Center and transfer money from your Diamond Dollars account to your PaperCut account.

Media Output Center hours are Monday – Friday, 9 AM to 5 PM,  
Plan ahead, especially if you will be printing in the evenings.

### PaperCut Tips:

There is no cash refund from your PaperCut account. Plan wisely since any balances on your account at the end of the semester will not be refunded.  
Students may trade and transfer funds between each other's accounts.