

# Proofing and Printing Under Color Management

By Robert Lay

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This tutorial is written for the beginner who has never prepared an image for print under the Adobe Color Management System and the soft proofing capabilities of PhotoshopCS2.

Soft Proofing is a method by which the user is given a preview of how the image will look when printed, and that preview will be displayed on the screen as a window in Photoshop. Based on what the user sees in that proofing preview and based on what the user sees in his reference copy of how the image *should* look, certain editing opportunities are available to make the proof image look more like the reference copy. Through such a process, the user is assisted in the creation of a printed image that is as close as possible to what was seen on the screen in the form of the reference copy.

Before we can describe the operational procedures for Proofing or Printing under Color Management, we should first look at how PhotoshopCS2 should be configured. The two areas that must be properly set up initially are **Edit->Color Settings** and **View->Proof Setup**. Rather than provide a comprehensive discussion of all of the options in these two areas, we will base our Tutorial on the following configurations:

Under **Edit->Color Setting, Settings**: select *North America General Purpose 2*. This will set **sRGB** as the RGB working space and **U.S. Web Coated (SWOP) v2** as the CMYK working space, as well as a set of conservative Color Management Policies.

The Proof Setup must be configured for the destination, whether it is a Commercial Printer or Service Bureau requiring CMYK or a home/office inkjet printer (RGB). It is beyond the scope of this tutorial to give advice for each and every possible destination. For purposes of this tutorial we will assume two separate possibilities – a CMYK profile (for a commercial printing lab) and a specific RGB profile for a home/office inkjet printer.

To follow this tutorial under the assumption that you will be sending a CMYK file to a Commercial Printer or Service Bureau, use **View->Proof Setup** and check "*Working CMYK*". That should set *U.S. Web Coated (SWOP) v2* as the destination profile for purposes of soft proofing with **View->Proof Color**. Note that in the real world situation, you may also build your own custom CMYK printer profile (See Additional Notes – Custom CMYK Printer Profile).

To follow this tutorial under the assumption that you will be printing directly to a home/office inkjet printer, use **View->Proof Setup** select "*Custom*" and pick a printer

profile appropriate for your printer from the pick list. In our example we will assume an Epson 2200 profile based on Arches-Infinity Smooth paper (2200\_AISmooth.icm). Following the instructions for that profile, we uncheck the checkbox “*Preserve RGB Numbers*”, set the **Rendering Intent** as *Perceptual*, turn on *Black Point Compensation* and turn off *Simulate Paper Color* and *Simulate Black Ink*. When the Custom configuration is completed, save it under an appropriate name (we saved ours under the name *Arches\_Infinity*). Note that the Arches Infinity Corporation issued this profile and its instructions for use prior to the introduction of PhotoshopCS2 (v 9.0).

The choice of this particular profile is entirely arbitrary. You can pick any profile you like. We picked this one only because it’s a commonly available quality printer, and we need a specific entry for the purpose of providing an unambiguous environment for the tutorial – thus enhancing your ability to follow the steps at your computer.

With Proof Setup configurations established we can go through a step-by-step scenario of preparing an image for proofing, actually doing the proofing, editing to improve the proofed image, and finally, printing with **File->Print with Preview**. This tutorial will not provide any details of the delivery of image files to a Commercial Printer or Service Bureau other than to say that the CMYK mode image files developed during this tutorial would be ready for delivery.

### ***Preparing the Image for Proofing***

It does not matter from where your image originated, or what file format it has, or whether it is in 8 bit or 16 bit mode, but it should not be in Camera RAW format. Camera Raw images must first be processed to one of the other file formats, such as .PSD, JPG, TIF, etc.

In order to be ready for use in this tutorial, the image window title bar should show "RGB" mode (not CMYK) in parentheses. Ideally, the image will already be prepared for printing insofar as the sizing (in pixels) and cropping are concerned. With such an image opened, you are ready to proceed to the actual soft proofing phase.

### ***The Proofing***

Once the soft proofing configuration is set up properly, Soft Proofing consists of creating a reference copy of the working version and then using **View->Proof Color** or **Ctrl-Y** to toggle between the normal view and the Proof Color view.

First, make sure that **View->Proof Color** is not already checked. If it is, just select it again to disable it.

Another way to recognize that **View->Proof Color** is active is that the active image will have both **RGB** and **/CMYK** in parentheses in the title bar (if you are following the CMYK path). If you are following the path for home/office attached printer, **RGB** and **/Arches\_Infinity** will be in the title bar (the specific name of the **RGB** proofing profile

will be whatever you named it when you saved your Custom choice above). For the “normal” view (Proof Color not active), the title bar only shows the RGB mode designator.

In order to proof the image (view it as it will look when printed), we must first copy or duplicate it in such a way as to have a "reference" copy for comparisons as we make edits to the image. The reason for additional edits is that when we proof the image, we may see that it is no longer like our reference and changes are required to keep the image looking like the reference copy. In order to make the duplicate (reference copy), use **Image->Duplicate** and name and save that copy any way you like, but leave it open and alongside of the original image.

Now we can actually "proof" the image, but in order to do so, we must be careful to click on the original image in order that the original image, not the duplicate or reference copy is active. Then, immediately select **View->Proof Color** (or use the shortcut **Ctrl-Y**). The original image will *probably* change appearance in some noticeable way.

If you are on the path to generate a CMYK file for a Commercial Printer or Service Bureau, the odds are that you will see significant change in the Proof Color view in comparison with the reference copy. Conversely, if you are on the path to print directly to a home/office attached inkjet printer, you may or may not see any changes. In fact, if the working RGB space and the destination color space are the same, it would be virtually impossible for the Proof Color view to be different from the reference copy. It should be noted that even though we have configured the working space for this tutorial to be sRGB, our candidate image file could have a different embedded profile. Note that our Color Management Policies (as part of “*North America General Purpose 2*”) are to *Preserve Embedded Profiles*.

In our tutorial, we have purposely established sRGB as the working space and have purposely configured for a destination color space of “2200\_AISmooth” in order to be sure that there is a noticeable difference encountered with the Proof Color view. However, we did not require the reader to use any particular embedded profile. In fact, you could be using an image with any profile, including no profile, so long as it is in RGB mode. Therefore, as you view the Proof Color, it may or may not show a change, but unless you have an embedded profile that happens to match the chosen destination profile (2200\_AISmooth), it is most likely that you will see a change.

Assuming that there is some undesired change in the image when soft proofed (**Proof Color**), we will now perform any necessary edits.

### ***Editing to Improve the Proofed Image***

In order to edit the image in such a way that what you see in the "proofing" is the same as what you see in the reference copy, it is necessary to leave the original image in the **Proof Color** mode while applying adjustment layers and to continuously monitor the effect of the changes with regard to whether or not they are bringing the **Proof Color**

view of the original image into correspondence with the reference copy, or not. To this end, it is recommended that you apply each of the edits using separate adjustment layers. That will facilitate one's ability to easily switch a given adjustment "in" and "out" in order to evaluate its effect. Remember that during this editing phase, the original image can be toggled back and forth between the **Proof Color** mode and the "normal" mode using **Ctrl-Y**, and that when comparing against the reference copy, we want the **Proof Color** view to ultimately look the same as the reference copy.

Using the Layers palette, use **Create New Fill or Adjustment Layer** and choose from the pick-list any one of the many tools, such as *Color Balance* or *Brightness/Contrast*, and make whatever adjustments are appropriate.

Repeat the process of adding another adjustment layer and adjustment tool until all necessary edits are completed and you are satisfied that the original image in **Proof Color** mode looks like the reference copy.

At the completion of this editing mode, depending upon which path you are following, we can either proceed to the actual printing of the image or we can use **Image->Mode->CMYK Color** and save the image in whatever format is appropriate for your Commercial Printer or Service Bureau. However, in either case, it is recommended that the edited image be saved separately from the original so that the edits for this particular destination device are preserved as a separate file from the original.

If your objective is a **CMYK** file to be delivered to a Commercial Printer or Service Bureau, then you are finished, except for the actual delivery of the file(s).

The reference copy of the original can be discarded.

The remainder of this tutorial is relevant only to the home/office attached printer.

### ***Printing with File->Print with Preview***

This paragraph is relevant only for those who are following the path to printing on a home/office inkjet printer that accepts RGB images (as opposed to CMYK images). For purposes of this tutorial, we have chosen the **Epson 2200** printer and a profile for that printer using *Arches Infinity Smooth* paper, just for purposes of example. Your choice of printer and paper should be whatever is appropriate for your installed hardware. If you do not have the correct printer drivers installed or if you do not have profiles for that printer and the papers you intend to use, then you must either acquire them or take a default path, as will be discussed later.

When opening **Print with Preview** the active image file is shown positioned in the preview box. Make sure that it is the correct image! The initial step would be to use **Position** and **Scaled Print Size** frames to scale and position the image for printing on the paper that was specified in **File->Page Setup**. However, for purposes of this tutorial, it is irrelevant how the image is scaled and positioned.

If the Print dialog is not expanded to show all options, use the "More Options" button. The lower half of the dialogue will be in one of two views - "**Output**" or "**Color Management**". We will not be concerned with any of the settings in the **Output** frame, although there are options on that view that you may want to use for registration symbols, etc.

Choose the **Color Management** view! Note that the layout of these options in CS2 is different from PhotoshopCS v 8.0!

### **Method A – Printing from the Profile in Proof Setup**

In the **Color Management** frame choose "Proof" in the Print sub-frame. Notice that when you select the "Proof" radio button, it enables a drop down list called "Proof Setup Preset:". If it is not already selected, choose the Custom configuration that you saved under an arbitrary name, above (we called ours *Arches\_Infinity*). Once that is properly selected the correct profile should also be displayed alongside the "Proof" radio button in parentheses.

In the Options sub-frame choose "*Let Photoshop Determine Colors*" and also pick the printer profile that was chosen in **View->Proof Setup** – namely, *2200\_AISmooth.icm*. In our case that leads to the Rendering Intent and Black Point Compensation controls being disabled – remember, we already set those options in the setup we called *Arches\_Infinity*.

The file is now ready to print. However, this is only one of two possible methods in **Print with Preview**.

### **Method B – Printing from the Embedded Profile of the Image**

The other method is to use the **Document** radio button instead of the **Proof** radio button. This method uses the embedded profile in the image itself instead of converting to the proofing profile.

Change the radio button selection to **Document** and observe that several changes occur. First, the embedded profile of your image is displayed in parentheses alongside the radio button. In addition, the drop down list **Proof Setup Preset** is disabled and the **Rendering Intent** and **Black Point Compensation** controls are enabled. The **Simulate Paper Color** and **Simulate Black Ink** options are also disabled.

We must now pick a profile from the **Printer Profile** pick-list, and again, it should be *2200\_AISmooth.icm*. According to the instructions from Arches Infinity Corporation, the Black Point Compensation should be on and the Rendering Intent can be your choice of Relative Colorimetric or Perceptual.

Even though the profile supplier of our arbitrarily chosen printer profile recommends the "Proof" method, above, the only real difference between Method A and Method B is the

question of where you incorporate your choices of **Rendering Intent, Black Point Compensation** options.

### **Method C – No Printer Specific Profile Available**

When you have to print to a printer for which no profile is available, stick with the embedded RGB profile embedded in the image document. In other words, set up per **Method B**, above and pick the same profile as is embedded in the document from the pick-list in “**Options, Printer Profile:**”.

## **Additional Notes:**

### ***Custom CMYK Working Spaces***

It is a simple matter to create one’s own custom CMYK working space instead of using one of the canned profiles listed in the **Edit-Color Settings, Working Spaces, CMYK:** pick-list.

Simply choose *Custom CMYK...* from that pick-list and the dialogue window that opens will allow you to choose Ink Colors, individual Dot Gain Curves for C, M, Y, and K, and various Separation options. Give that profile a unique name and it will then become a member of the list of profiles available for a custom Color Setting, which should also be uniquely named.

Note that in a Windows XP environment, custom color settings are saved in .csf files which are under the specific user’s account name. (E.g., C:\Documents and Settings\yourname\Application Data\Adobe\Color\Settings)

### ***Transfer Button***

In order to provide individual CMYK adjustments via separate transfer curves, you can use the **Transfer** button on the *Output* view of **File-Print with Preview**.

Note that we do not recommend use of this feature.

Open the **File->Print with Preview** dialogue and select *Output* view, if it is in *Color Management* view.

Press the **Transfer...** button.

Use the curve or the table of points to determine a transfer characteristic to be applied during printing.

Note that the CMY and K channels can each have their own unique transfer characteristic curve.

Save it under a unique name for future use.

Make sure it is loaded for any printing where you want that transfer characteristic applied.

If you save the file that was open while you specified the transfer curve, then that curve becomes embedded in that file and would apply whenever **Print with Preview** is used.