

# Why soft proofing may not always work

**Why it is important to learn to manage your expectations when using soft proofing in Lightroom**

Soft proofing is an important new feature in Lightroom 4. While it is great that we now have the ability to preview a print or color space change output, it does help to have a basic kind of understanding of how soft proofing is meant to work and how the limitations of the equipment you use may cause soft proofing to appear not to work as expected.

## Why soft proofing may not always work

I suppose it may seem odd that in talking up the usefulness of soft proofing in Lightroom I should choose to highlight its limitations and in particular show an example of an image where soft proofing doesn't work as expected. But I believe that by drawing attention to an image where soft proofing appears to fail one can gain a better insight into how color management can only ever be as reliable as the equipment you are working with and how even the best computer displays may occasionally be unable to show all the printable colors on the screen. The following exercise will also be of practical benefit to those people who are still using standard gamut LCD displays and the limitations of using such hardware when previewing wide color gamut images. Those people who are using high-end LCD displays (with an Adobe RGB gamut) will find that soft proofing for CMYK output will be highly effective: this is one of the key selling points of such displays. However, when soft proofing to an RGB inkjet the flaws that I highlight in this article here will sometimes be an issue. Briefly, these are to do with the limitations of the display itself and how truthful the display preview actually is. There are colors that can be displayed, but can't be printed (this where soft proofing can help). But also, there are colors that can't be displayed, but can be printed (this is where soft proofing may appear to fail).

The image I chose for this demo (**Figure 1**) is one that I have used before when discussing soft proofing. This is because the colors in the master raw image fall well outside the gamut of the display and printer. And here I mean that the colors are so rich that not even the most expensive LCD can show these on the display. Nor can the widest gamut printer reproduce all these colors either. This means that when trying to edit this image on a display, you are kind of working blind because you are editing the colors on a device that's incapable of reproducing them. Furthermore, when printing this image one is unable to preview how it will print because the gamut of the inkjet printer is going to be different to that of the display.

To demonstrate this, I prepared three different TIFF versions of the master image shown in Figure 1. These have been saved as 16-bit ProPhoto RGB images (so that the entire color gamut is preserved) and made available for download from the book website. The first image was created using a default Vibrance setting of zero. With this version it is likely that the blue colors will appear clipped on the display. With the -50 Vibrance version you should see improved tonal contrast in the display image, while the deepest colors should appear just as rich as the first version. This is because the Vibrance reduction that I applied in Lightroom smoothly compressed the gamut of the original to produce a color rich version with improved tonal detail. The third version was rendered using a -80 Vibrance setting. This too should show improved tonal contrast, but the colors have been compressed further. If you are using a good quality display that is capable of showing the Adobe RGB gamut, then I reckon you'll pick the -50 Vibrance image as the one that looks the best. If you are using a standard sRGB LCD display I



**Figure 1** *This shows the image that I will be using to highlight where soft proofing can sometimes appear to fail.*

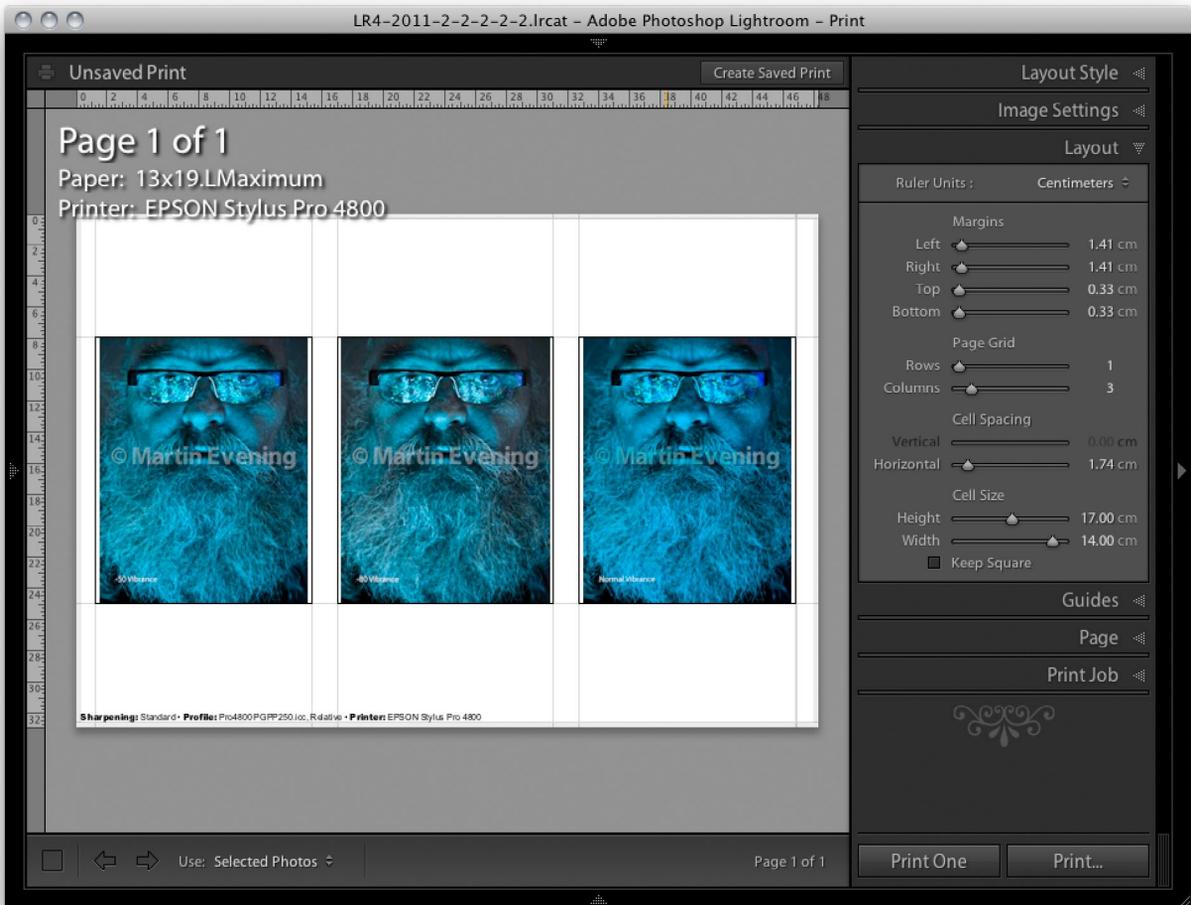
suspect it may be a toss up between this and the -80 Vibrance image as to which looks best on your display.

You will need to download these files and import them into Lightroom (as shown below). From there I suggest you print these photos out and analyze the TIFF originals (viewing them in the Develop module with the soft proofing enabled and disabled) to see how the display previews compare with the prints you have just made.

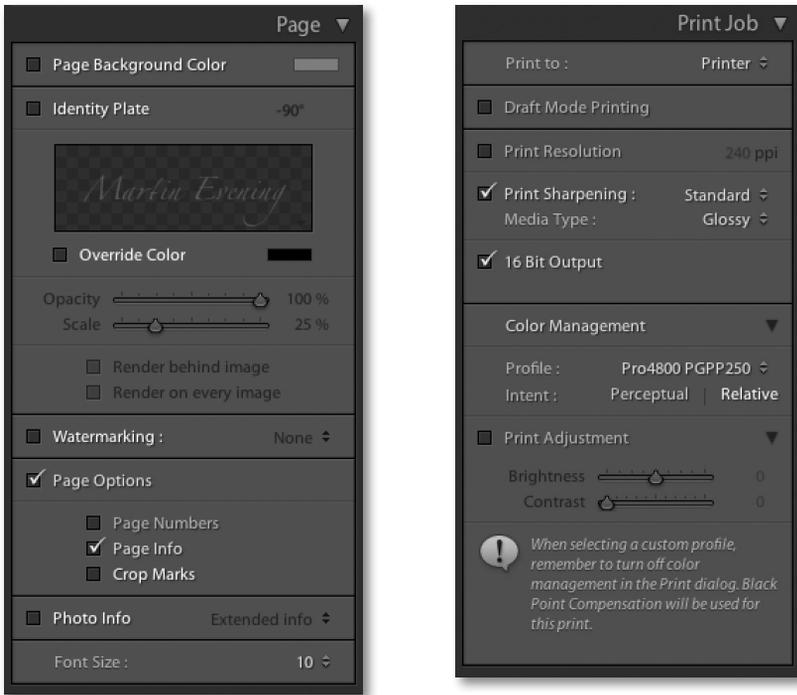
If you don't mind using up a few sheets of paper to make some print tests, I think you'll find this exercise useful. Here are the steps that I suggest you follow.



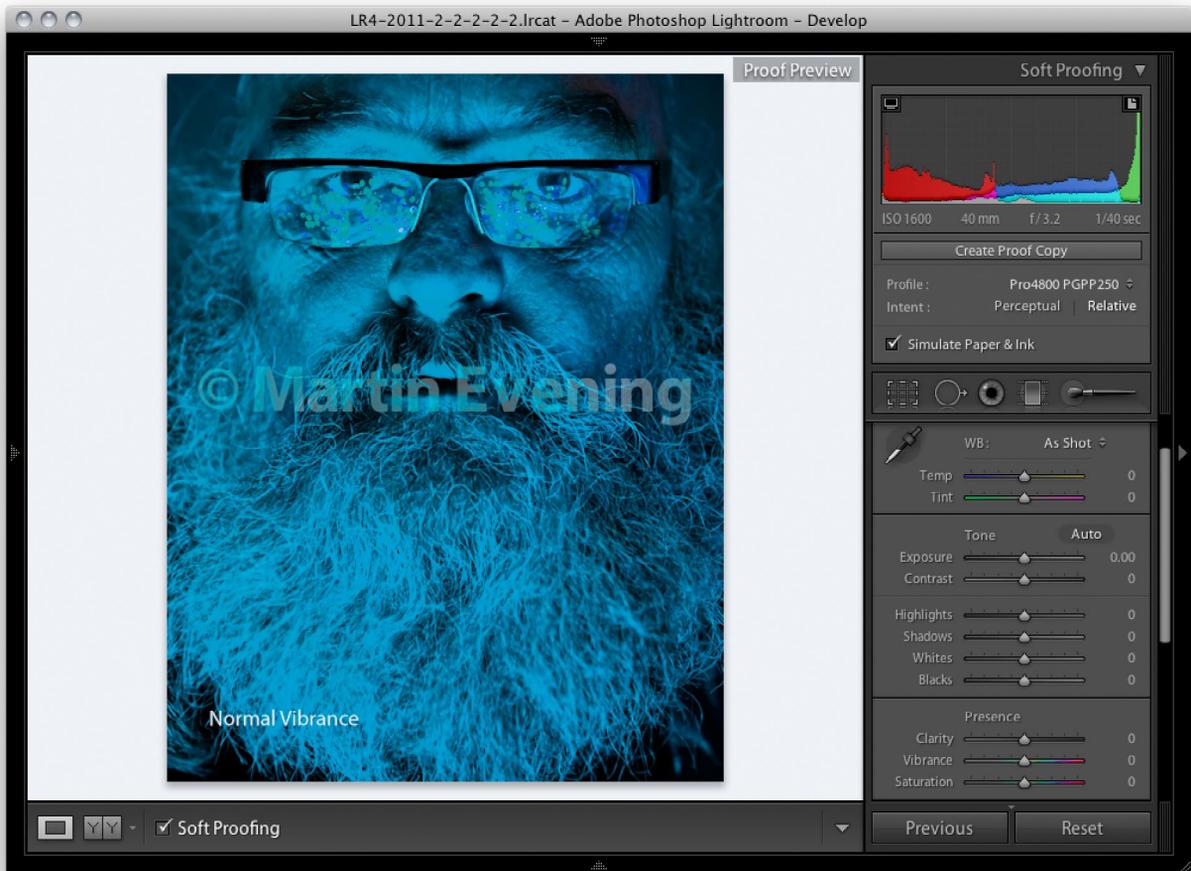
**1.** To begin with, I took the three image files that you can download from the [www.thelightroombook.com](http://www.thelightroombook.com) website and imported these into Lightroom. It is important to point out here is not to apply any image adjustments on import, such as an auto tone setting.



2. Now go to the Print module and adjust the Layout panel settings so that you are able to make a print with all three images ganged up on a single page. i.e. adjust the Page grid so that you have 1 column and 3 rows. Remember, the individual photos are actually not that big, so I suggest that you limit the paper size to A3+ (13" x 19") and limit the individual cell size to 14 x 17 cm. You will also need to establish the correct Page Setup and Print settings, as you would do normally, to take into account things like the media type that will be used and the desired print quality setting. Since you will be letting Lightroom manage the colors, make sure that color management is disabled in the system print dialog settings.



**3.** In the Page panel under the Page Options section, check the Page Info box. This will add the Lightroom Print module Print Job panel settings to the bottom of the printed page. In the Print Job panel check the Print Sharpening options as shown here and select "Standard". In the Color Management section you will need to select an appropriate printer profile that matches the media you are going to be printing with and choose either a Perceptual or Relative rendering intent. For the purposes of this exercise I recommend you make one test print using Perceptual and one using Relative. Basically, you just need to follow the usual procedures here for producing a print output from Lightroom.



**4.** Now, the intention of this exercise is not to make any Develop adjustments to tweak the image at the soft proofing stage, but to highlight the potential disparity between what the soft proof is showing you and what the printer is actually producing. So rather than soft proofing before printing, I suggest you make the prints first, as shown in the previous steps. Next, go to the Develop module to enable soft proofing and see how each of the three images compare with the printed result. Make sure that the profile selected matches the one you had just selected in the Print module Print Job panel and that the "Simulate Paper & Ink" option is checked. Note that you can easily switch between the Relative and Perceptual rendering intents. This will allow you to compare the effectiveness of the Develop module preview with the associated "Relative" and "Perceptual" prints.

## What this exercise should show you

When you print out the three photos, you may see quite a difference between the prints and the soft proof previews. There are four variations to take into account here. Firstly, there are the differences in the files themselves and how they were processed in Lightroom. In this example this amounted solely to a variation in the Vibrance adjustment that was applied to each version of the master image. Then there is the printer model and media used to make the print output (the most effective way to carry out this test is to print to a high gloss paper). The choice of rendering intent will have an impact when making the print output (when choosing Perceptual or Relative). And lastly, you are testing the effectiveness and reliability of what the display preview is capable of showing.

In print at least, this exercise will show the following: that applying a reduced Vibrance setting makes quite a difference to the photograph's appearance. At the normal setting you should see a flatter looking image, even though the colors will be at their most saturated. At the -50 and -80 Vibrance setting you should see more detail and contrast. The choice of rendering intent should make a difference, but this will vary from image to image. In some instances the difference may be quite noticeable and this can be seen when adjusting the soft proof preview. In other instances, such as when printing out this particular sample image, the rendering intent choice doesn't make a lot of difference. With this example, when looking at the Normal Vibrance image, the shades of magenta color on the sides of the face and nose appear more saturated in the Relative print version. With the -50 and -80 Vibrance images there is virtually no difference.

Now compare the soft proof preview with the prints you have produced, comparing each with the Relative and Perceptual rendering intents. On my system (where I use a high quality NEC display with an Adobe RGB gamut) I don't see a lot of difference between the Perceptual and Relative rendering intent previews. This tells me, on my system at least, that the soft proofing is unable to proof the Normal Vibrance image correctly. Looking at the -50 and -80 Vibrance printed versions I would say I like the -50 Vibrance image best. The Soft proofing display in the Develop module does give me a better indication here of what to expect tonally, but I reckon the print still has slightly richer blues that the display is able to show me.

Finally, using a twin display setup I was able to view the same images in Lightroom on a standard LCD display and this confirms what one would expect, that the image displayed on a standard LCD is even less accurate and less able to display the deep blue colors correctly. The soft proofing here begins to work OK on the -80 image, but the -50 Vibrance image appears less accurate compared to when it was viewed on the NEC Adobe RGB display.

## Conclusion

As you will have gathered, the image I chose to use for this particular demo is very much the exception in terms of the disparity of what is seen on the display and what is seen in print. The results you see and the interpretations you make may differ from my own because your display and printer will be different. But whatever the equipment you are using, you should definitely see some noticeable differences between the display and print output. Basically, this soft proof exercise is intended to show that the image you see on the display can only be as truthful as the display hardware and that if there are colors the display can't see, but the printer can, then this will explain why certain colors may sometimes appear different when printed. This won't be a failing of the color management system, but, rather, a consequence of the limitations of the hardware used as part of the color proofing process. It may be the case that the gamut of the printer is such that certain deep colors, which can't be seen on the display, can still be printed.

For everyday work soft proofing provides you with the opportunity to accurately preview how the vast majority of images will appear when printed. By enabling soft proofing you can eliminate some of the surprises and have the opportunity to make fine-tuned corrections to help improve the appearance of the printed image without having to waste lots of paper and ink in a trial and error process.

Successful soft proofing also depends on you having decent viewing hardware to view the images with in the first place. Most LCDs are limited in the range of colors that they can show you compared to what can actually be reproduced in CMYK or on a desktop inkjet. However, the soft proofing process does at least allow you to get a fairly accurate idea of the tonality of the print output and make effective compensatory adjustments to the contrast.

If you are aware of the above limitations and how certain images like the one used in this exercise cannot be soft proofed so easily, this will give you a better understanding of the color management process and why some colors may appear different in print. If you are aware of what is happening and the reasons for this, you'll in future be less likely to assume something is wrong with your profiles or display calibration. This exercise also shows that reducing the Saturation or Vibrance in brightly colored originals can be a good way to recover more detail in tricky images like the one used here.