

Visual analysis of printing profiling software packages

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Objective

This is a study on how different ICC profiling software packages compare to each other, and the default SWOP profile. We compared the difference between Kodak, GretagMachbeth, Monaco, and SWOP ICC profiles when applied to an RGB test image. The visual differences and pleasingness of color were compared.

Procedure

1. Scanning

A color photograph was scanned on a Scitex Eversmart Pro scanner and assigned the Eversmart ICC input profile created with Kodak Colorflow. The file was then saved as `glove_RGB.tif`.

2. Press Profiling

Using the three different print profiles from their subsequent companies, three profiles were created for comparison to the SWOP ICC profile. Kodak ColorFlow (TF_08), GretagMachbeth Profile Maker 4.1 (TF_05), and Monaco Profiler 4 (TF_06) ICC profiles were created through their various software packages. Measurements were made on the GretagMachbeth Spectrolino Spectroscan. Identical settings were used for all three profiling packages using the RIT TAC chart (TF_10): TAC/UCR: 300, Max Black: 66%, Black Start: 25%.

3. Image Preparation

The `glove_RGB.tif` image was opened in Adobe Photoshop 7.0 using the embedded Eversmart ICC profile. It was cropped and resized so that the image was 3" wide with a spatial resolution of 300 ppi and saved as an RGB file, `glove_cropRGB.tif`.

4. ICC-based color workflow

The color settings were standardized in Photoshop for all CMYK conversions. Black Point Compensation was activated and the conversion engine was set to Adobe with relative colorimetric

and perceptual intent. Using the `glove_cropRGB.tif` image as a starting point, four copies of the image were made, then opened and converted from the RGB Eversmart working space to the subsequent Heidelberg CMYK working space using relative colorimetric and perceptual rendering intents. The eight images were then saved as ICC tagged TIFF file per profiling software package, including SWOP.

5. Output

The images with the same ICC profile, with different rendering intents were placed diagonally to each other in a QuarkXPress document giving the observer the ability to see perceptual and relative intents side by side. Figures 1-8 show all four profiles, along with each relative and perceptual intents.

Observations

Before observing the visual pleasingness of the images, the TAC was confirmed at 300%, and the max black at 66% using the Show Info palette in Photoshop. Overall, the three profiling software packages tested created similar appearance. There were no significant differences when looking at the visual pleasingness of the images in either relative colorimetric or perceptual rendering intent. The profiled images were slightly lighter than those converted using the SWOP profile. In general, all the software performed extremely well.

Inspection of ICC profiles made with different profiling software packages displayed no problems when reproducing pictorial images. All three packages performed equally. No colorimetric analysis was performed so color matching of critical colors may be a different story than reproducing pictorial color images.

Figure 1. Kodak - Relative Colorimetric



Figure 2. Kodak - Perceptual

Figure 3. GretagMacbeth - Relative Colorimetric



Figure 4. GretagMacbeth Perceptual

Figure 5. Monaco - Relative Colorimetric



Figure 6. Monaco - Perceptual

Figure 7. SWOP - Relative Colorimetric



Figure 8. SWOP - Perceptual