

This article deals with a *pièce de résistance* that has been used by professionals for more than a decade: the False Profile technique developed by Dan Margulis and first detailed publicly in August 2001. For those wishing to read the original article, [click here](#). Certainly today, a technique with such a name would suggest that it is related to practices for visiting social media. Instead, it describes something that allows the manipulation of tonal ranges in a manner so efficient and configurable that it has been included as one of the basic steps of the Picture Postcard Workflow (hereinafter PPW).

Before sailing into a full description, mariners are hereby advised that the PPW uses the adjective “false” to refer to two different techniques, listed

in the Configurator panel shown as False Profile (by gamma) and False CMYK. When we speak here of a “False Profile” it refers to an ICC profile, artificially modified and assigned to an RGB image to produce a certain type of result. Strange to say, that result often cannot be said to improve appearance, quite the contrary. Although the original purpose of the False Profile as described in 2001 was to bring badly underexposed images to an acceptable level, today the most common use is to lighten with a view to later

maneuvers. When we speak instead of “False CMYK” it refers to a temporary conversion of the file to an artificial CMYK, by no means intended for actual printing, to exploit certain possibilities that only this method can offer.

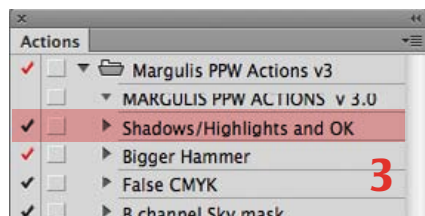
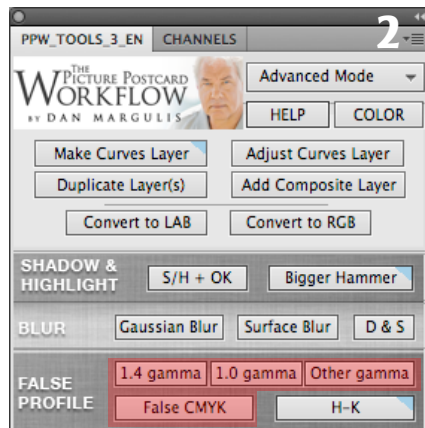
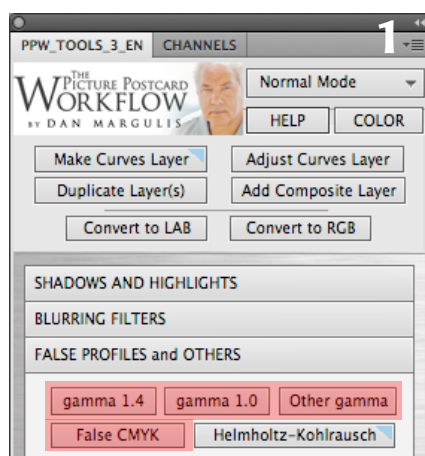
A final operational note. False Profile actions are not available in the action set that the Configurator panel accesses, for a specific PPW—related reason. Although it is possible to apply this technique manually for various purposes (as described originally by Margulis), or with pre-configured actions, the possibility of a mistake was rather high for most users. Those who choose Adobe RGB as their normal workspace should not be applying false profiles that are based on sRGB, and vice versa. Using standard procedures, this step would require about a dozen actions, each suitable for various needs based on various color profiles (sRGB, Adobe RGB, ProPhoto RGB, and so on). Since the philosophy of the PPW is that each step should be completed in the shortest possible time and with the least opportunity for error, it was decided to adopt a more sophisticated approach. This technique is applied via the PPW TOOLS panel with buttons found in the section dedicated False Profile, both in the Normal mode shown in Figure 1 and the Advanced mode of Figure 2.

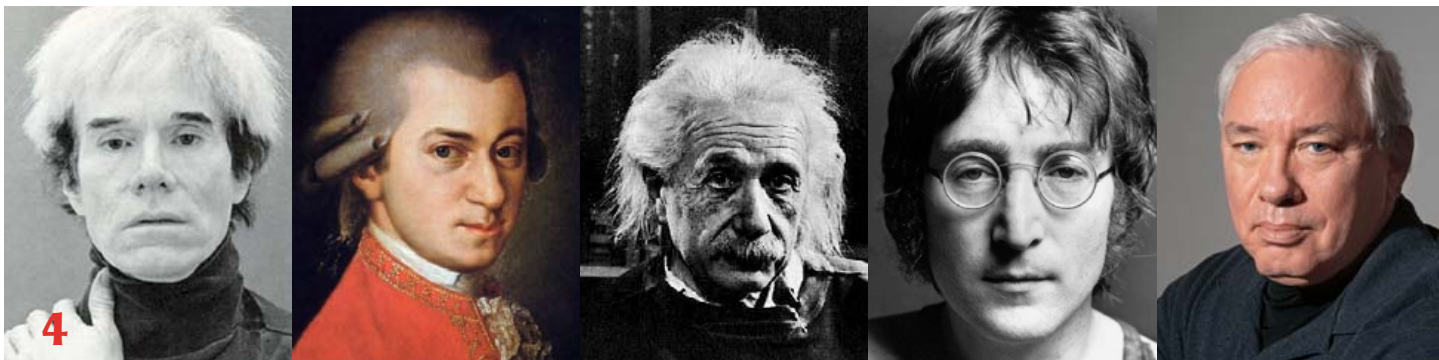
For those wishing to know the fine details of this technique, false profiles are in fact installed on your computer, which opens interesting possibilities. We will get back to this later. Just below the False Profile buttons you can find the False CMYK button. Unlike the RGB false profiles, this one is in fact an action in the standard PPW set (Figure 3). The result is the same whether the action is applied from the panel or from the Actions palette. The file is converted to a rather strange CMYK with parameters that we will study later.

In release 3 of the PPW panel (March, 2013) the function of the False Profile scripts/actions did not change from that of previous versions.

A Question Of Interpretation

Suppose that the gentlemen of Figure 4 are all native speakers of English and that I ask them to tell me the precise meaning of the word *green*. Although only the





gentleman to the right could answer in real time, if all five could answer we would surely get five different definitions. Yet the letters are the same and the word is the same. So wherein lies the difference? Obviously, in the interpretation given to the word *green*.

Now, imagine the word as expressed by one pixel in an RGB color image. Is there only one way it can be interpreted? And if not, what changes the way in which the interpretation is made?

To the first question the answer is no, because just as there are various interpretations of green, there are various interpretations of RGB values. To the second, the answer is “It depends on the definition of the RGB that we have adopted.”

In real life, a contemporary painter would give the word green a different meaning than would a musician of the eighteenth century, a singer of the beat generation, a physicist or an expert in color correction. In RGB, as in life itself, we also get very different results. It does not end there.

Suppose I say, “Dark red, but not too much” to the pictured gentlemen. How will each react *red*, or *dark*, or most especially, *not too*? And how will they treat the interaction of the three? It is clear that the more words that can be interpreted differently, the more the complications. In RGB, 180R0G0B is undoubtedly a dark red, but how *dark* and how *red* is a matter of interpretation, and each interpretation can produce different colors either on the same monitor or on different models.

Some will be displayed as lighter, others darker or more saturated, and so on. Without straying too far into the field of color management, we can say that Photoshop needs to know the meaning of the RGB values for every single pixel of our image in order to be able to show it to us correctly on a monitor. This information is defined precisely in a “dictionary” that is called an ICC profile and is written in an absolutely unambiguous language, the LAB color mode.

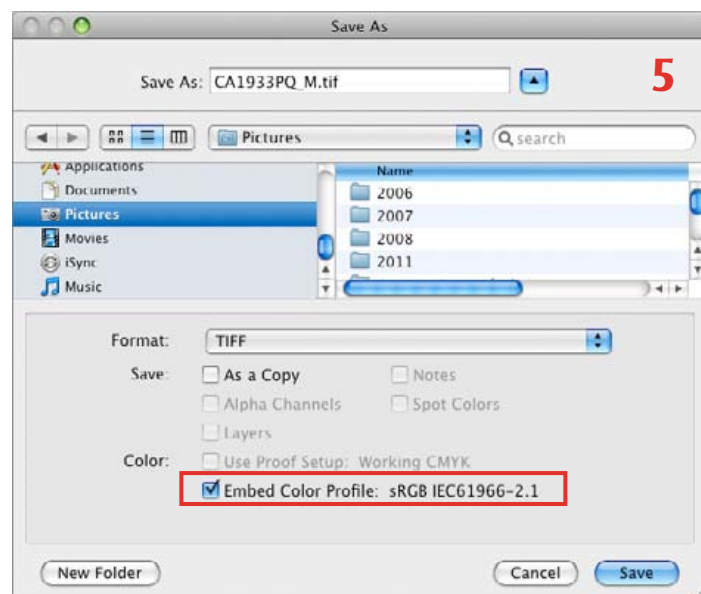
As with spoken languages, there are various types of dictionaries. Each may define the same words dif-

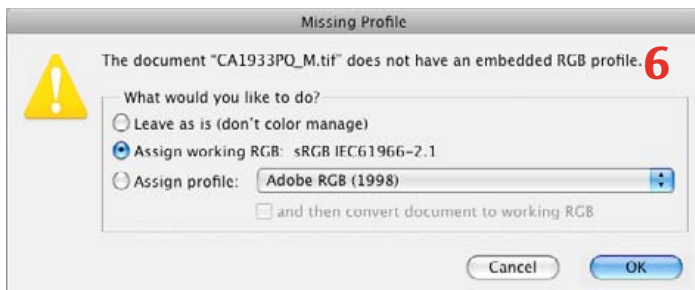
ferently. In the color world, you may already know the names of the various dictionaries that we use: sRGB, Adobe RGB, ProPhoto RGB, Apple RGB, ColorMatch RGB, and many others. In an RGB file the numeric values do not by themselves sufficiently define the colors; we need to translate them into something less ambiguous if they are to be represented correctly on a monitor or in print.

If you wish to sleep well at night, the rule is: *never save an RGB image without its own dictionary, which is to say, without attaching the RGB profile, whatever it may be*. If you don’t know what is already, pay attention to the red-bordered box in Figure 5. When checked, the named profile will be appended to your file. So far, so good, provided the rules are abided by. Let’s now discuss what happens if they are not.

In my daily adventures as a retoucher, I often receive RGB images downloaded by clients from web sources without embedded profiles, or, as they say in the trade, they are *untagged*. When opened, Photoshop has no idea how to interpret the RGB values, but it must make an interpretation nevertheless.

Let us say that, in the absence of an appended dictionary, we must assign one just the same. Therefore we must ask ourselves which is the correct dictionary





to assign (Figure 6). My own answer in this case is sRGB, because in general this is the colorspace used by image services on the web. What would have happened if I had decided to assign a different profile, such as Adobe RGB? Just to give you an idea, in Figure 7 you can see how the result changes when each of the three most commonly used RGB profiles is assumed. The original image was in fact developed in Camera Raw with sRGB named as the output profile. The version interpreted as Adobe RGB assumes the characteristics of that colorspace and therefore appears more saturated.

If I choose instead to assign ProPhoto RGB, the tomatoes become red blotches and are even lighter.

Here, for educational purposes, I was pretending not to know what the correct profile was. In some cases, however, Photoshop will make a similar choice on our behalf without notifying us. With what results? It depends on how you have defined your RGB workspace on your computer (Edit menu>Color Settings).

The key parameters are those bordered in red in Figure 8. First in importance is the profile chosen for RGB working space. Photoshop will assume that this is the correct profile for any image that has no profile embedded. If that profile corresponds to the one actually used to develop the file in Camera Raw or elsewhere, no problem. But if your chosen profile is a savage beast like ProPhoto RGB, and perhaps the images was created to be sRGB (but no such profile was appended) your fiancée's face could suffer the same fate as that of the tomatoes in the final version of Figure 7. There is no reason to risk such a disaster, is there?

We move on to other important parameters. When Photoshop encounters an image without an embedded profile, you have two options: you yourself can choose the profile to be assigned, or let Photoshop do the job on your behalf.

Given that the first seems likeliest to avoid color disasters, all you need do to activate it is to select the option Ask When Opening when there is a missing profile. Last, but not lest, still in the area of color management, you should choose Preserve Embed-

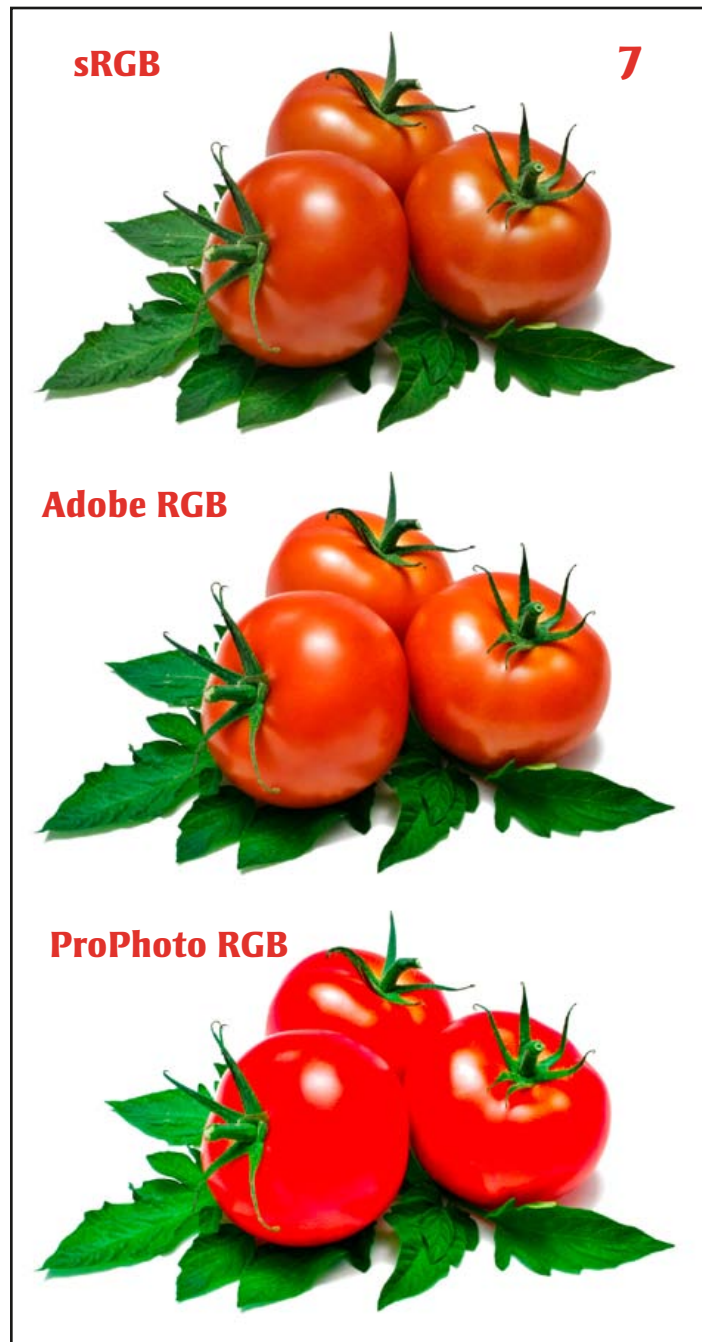
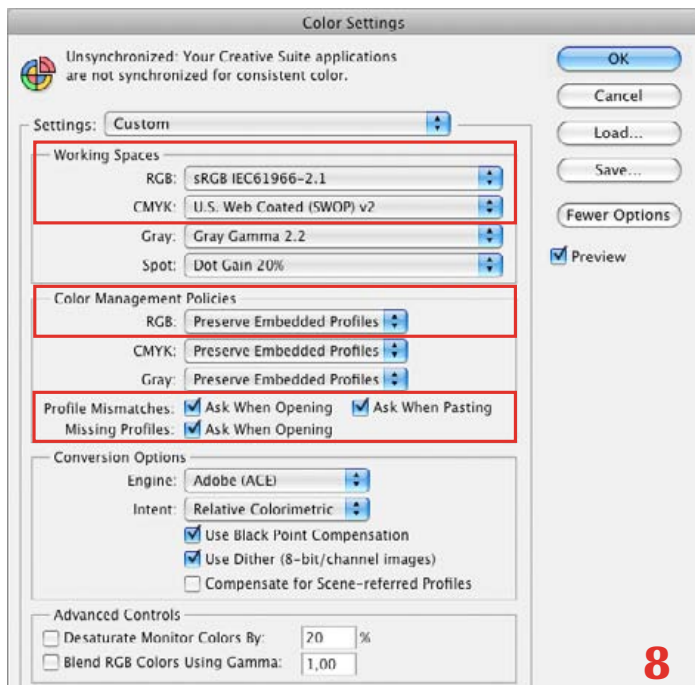


Figure 7. The interpretation of an sRGB file when Adobe RGB and ProPhoto RGB are assigned.

ded Profiles so that Photoshop will continue to honor from here to eternity whatever profile is embedded in your image. The other options may be left as in Figure 8. And now that we have defined the rules, we will see how to bend them for the needs of the PPW.

Benvenuto, Signor Gamma

Although what we have seen so far illustrates that the interpretation of the RGB values is affected by the profile in many ways, the most obvious change is in color saturation. In other words, the different profiles also produce colors that can be perceived as more



brilliant, or less so.

The question, then, is whether this is a sensible way to alter or to control saturation for our own purposes? Not really, given the results. Alternative, more conventional ways are better.

However, an RGB profile hides something very precious: the *gamma* (which is not the same as the *gamut*). Simply put, the gamma is a nonlinear function, very similar to a curve, that governs the interpretation. Gamma is expressed as a number that Photoshop permits to be as low as 0.75 or as high as 3.0. The lower the value, the lighter the interpretation of the image. The conventional wisdom is that we should not change the gamma of existing profiles, such as sRGB.

But what if you could? Let's take an example. Suppose that the photo of Figure 9 was created in Camera Raw, setting the sRGB profile as a destination. This profile's gamma is 2.2, as you can see in the table of color profiles shown in this page. Assigning a different profile that did not vary in color but used a gamma of 3.0 would make the file appear darker. Indeed, exactly such a profile has been assigned to Figure 12. As you can see, the color of the inset gradient never changes, but its darkness surely does.

And what if the gamma was *lower* than the original 2.2? See for yourself. Figure 10 has been assigned a profile with gamma 1.4, and Figure 11 with gamma 1.0. Each of these alterations of the original profile appear to make the image look worse. They are not what was originally intended. For these two reasons, we tend to call them "false" profiles.

As in the article cited at the beginning, false profiles are generally used to create lighter, not darker, interpretations. Nothing prevents you from using this

Gamma values for the most popular RGB profiles

Profile	Gamma
Adobe RGB (1998)	2,2
sRGB IEC61966-2.1	2,2
ProPhoto RGB	1,8
Apple RGB	1,8
ColorMatch RGB	1,8
WideGamut RGB	2,2

technique to darken an image. It is, however, beyond the current scope of the PPW.

If you are wondering how to produce a similar False Profile for yourself, you can read the original Margulis article at [this link](#), where you can find several other possibilities. It must be conceded that the process is cumbersome and somewhat prone to error, requires manual installation of the profiles you generate into the proper folder, and last but not least, requires invoking the Assign Profile command from the Edit menu of Photoshop every time you wish to employ one. Moreover, if you assign the wrong False Profile by mistake (for example, ProPhoto RGB/1.4 gamma to a file created for sRGB) you may get the proper gamma, but not the gamut, and are likely to run into the annoying affliction that plagued the tomatoes.

This type of dangerous maneuver is not advisable in the PPW or any other sensible workflow. You won't find the opportunity to make a mess of the image in this fashion in the panel. If you must, you can destroy the image with a manual process, because the installer does in fact place a ProPhoto RGB/1.4 gamma profile in your system. The majority, I think, would prefer not to go for a stroll in this minefield if it can be avoided. Thanks to the excellent scripting work done by Giuliana Abbiati, it is unnecessary.

The PPW TOOLS panel recognizes all six of the standard RGB definitions shown in Figure 13. If you ask the panel to assign a new gamma, it instantly assigns one that corresponds to your choice of RGB. The panel's button says simply 1.4 gamma, but if the file has an embedded sRGB tag the assigned False Profile will be sRGB/1.4 gamma while if the embedded tag is Adobe RGB the assigned profile will be Adobe RGB/1.4 gamma.

Moreover, if the file is untagged (no embedded profile) or has a profile other than our basic six, the panel

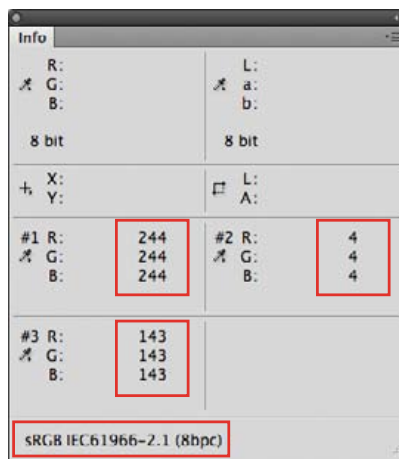
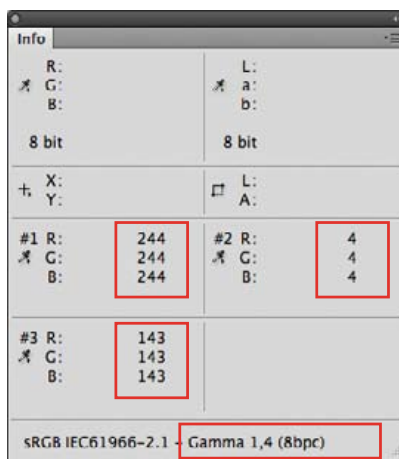
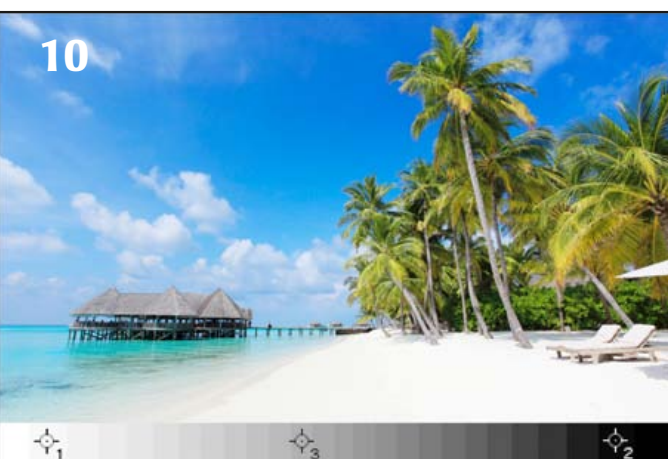


Figure 9. The original. - Figures 10, 11, and 12. How the interpretation of luminosity changes when profiles with different gammas are assigned.



asks you to choose one of the RGB profiles we have installed, and offers you a choice of working on the same file or generating a copy to which is added the suffix FP. All these options are shown in Figure 13 and are adjustable in the Preferences. Convenient, yes?

Tell Me How Many Gammas You Need

Let's talk about some important technical aspects. As you may have noticed looking at the panel at the beginning of the article, the False Profile buttons allow two gamma values only (1.4 or 1.0), certainly lower than the original which is always 2.2 or 1.8.

This is because the assignment of a False Profile isn't intended to lighten a dark original; it is rather a preventive move aimed at changing luminosity, contrast and saturation in the view of further optimization in the next phases. The choice of 1.4 and 1.0 as gamma

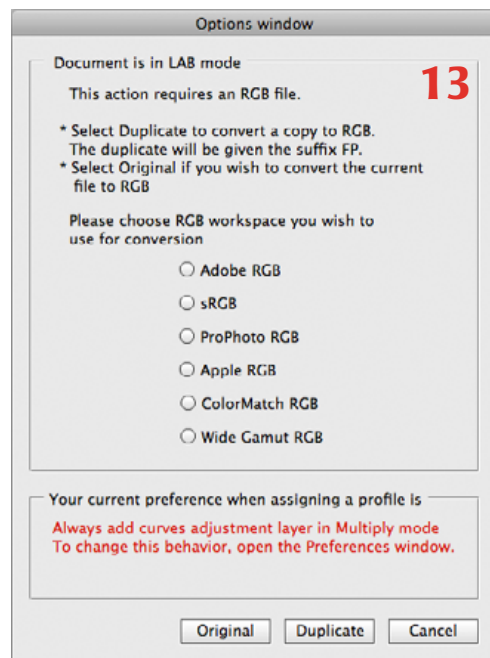
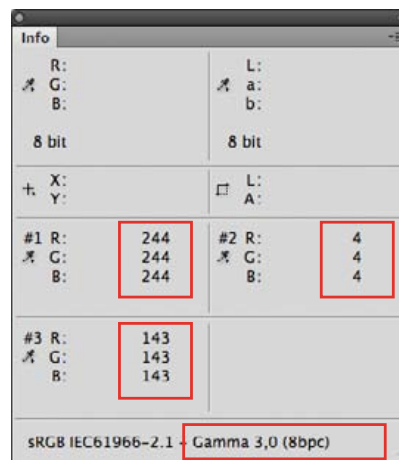
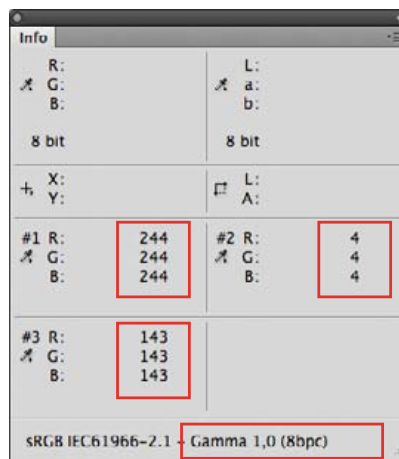
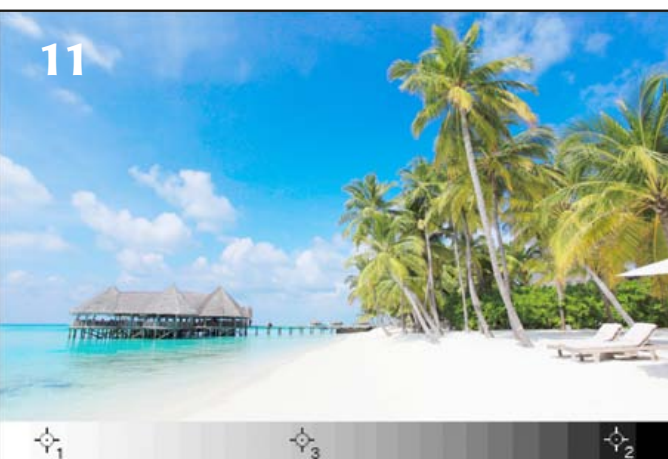




Figure 14. The free panel False Profile created by Giuliana Abbiati and specifically dedicated to False Profiles.

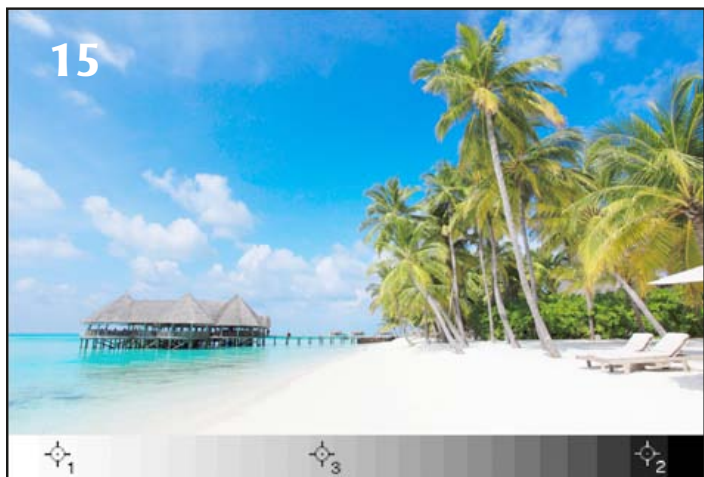
values is not random and, based on Margulis' experience, it should be enough to cover most cases. If you should want to use the False Profile for other purposes, or want to exploit different gamma values, it is enough to click on the Other gamma button and, if you don't have it installed already, you will be invited to download a free and very useful panel entirely dedicated to False Profiles, again created by Giuliana Abbiati. Its name is obviously False Profile Plus and is available on the web site of the Roberto Bigano Group at the following link: <http://www.bigano.com/index.php/en/freeware.html>.

Once the panel is installed you'll have as many as false profiles you may wish to use, together with additional gamma values that can be changed continuously with a slider, as shown in Figure 14. This, I think, should cover also the needs of the most exigent False Profile mavens.

Assign Or Convert?

Another important technical aspect is connected to color profiles proper, and full explanations may cause different reactions in Photoshop users—from hives to splitting migraine.

When we assign a False Profile (or a different profile than the original) the RGB numbers in our file don't change, but appearance does, as we've seen. As long as our file has the False Profile assigned, the situation remains as stated. This is a risky condition, though,



because a False Profile has nothing in common with a standard color profile.

If an RGB file of such kind should end in the hands of some printer who knows what Color Management means, maybe you wouldn't have problems. But if it should go to someone who knows nothing about the subject, disaster would be guaranteed. How do you solve the problem?

Easy—with a complementary operation: a conversion to a standard RGB profile (Edit > Convert to Profile...) or a conversion towards another colorspace like LAB or CMYK. In Figure 15 you can see the result of this operation. Figure 11, which had a false profile using sRGB primary color values but with gamma 1.0 assigned, was converted again to standard sRGB. If you look carefully, the appearance of the image has not changed, but the color samplers in the Info palette have. This means that the RGB values were changed to adapt them to the visualization dictated by the False Profile before the conversion.

From this moment on the file can be passed on to anyone without fear. We're going to proceed along the road of false profiles in order to see the other steps reserved for us by the PPW.

Profile Wins, Profile Loses

After all this talk about false profiles let's get to the main scope of this technique: lightening the interpretation of an image.

The question comes naturally: couldn't we do the same with a simple curve? In theory, yes; in practice the curve needed to mime a False Profile is not simple at all. Look at Figure 16. It is a very dark original which screams for some detail in the jacket. In Figure 17 I assigned a False Profile with gamma 1.0 because 1.4 was not enough to recover detail. In Figure 18 I tried to simulate the same intervention with a curve. The curve I used is not one of those you can make

with one point or so, and anyway it doesn't give the same result. Notice how the color of the jacket is turning purple and how the detail in the right part is less than the version with the False Profile, while the

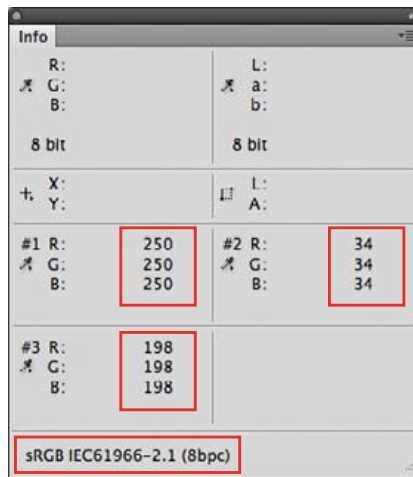


Figure 15. Figure 11 converted back to standard sRGB.

shirt and the face are lighter—which means we lost detail there, as well. What does this mean? Surely that the curve I used, based on three points, can't match the effect of the False Profile. There are sophisticated ways to produce much more complex curves and this may yield success, yet the sad news is that you would repeat the operation for every gamma in every RGB colorspace you need to simulate. It takes a lot more time to implement such practices than it would to correct a stack of images with the PPW, therefore I think it's maybe better to list an alternative.

So—may I introduce to you the third contestant in this competition. Ladies and Gentlemen, enter the Exposure command, which has a slider to set gamma which in Figure 19 was set to a value of 2.2 as shown



in Figure 20. But let's take one step at a time.

In the Exposure command, the value of the Gamma parameter is indeed a ratio of two different values of gamma, as I'll soon make clear. The default value is 1.00 and the

overall range spans from 0.01 to 9.99. Lower values correspond to a darker image, and higher values to a lighter image. If you want to make a correction similar to the gamma of the False Profile, you need to play a bit with mathematics, a subject very familiar to my friend Marco Olivotto. After a long examination of this command, I agree with him that the formula is as follows: $value\ to\ choose = gamma\ of\ the\ profile / gamma\ to\ imitate$.

The only area where a difference is evident is in the deepest shadows; such difference may be significant or it may not. Let's state this better. If I have an original tagged with a profile whose native gamma is 2.2 (e.g. sRGB) and need to imitate a False Profile with gamma 1.0, the division would yield $2.2 / 1.0 = 2.2$, and

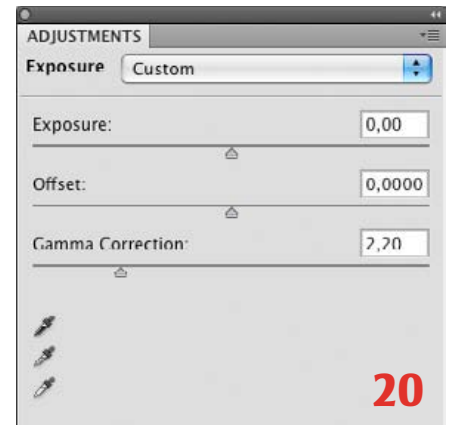


Figure 20. The dialog window of the Exposure Command.

Figure 16. The original - **Figure 17.** A version obtained with the false profile at gamma 1.0. - **Figure 18.** An attempt to simulate figure 17 with a curve. - **Figure 19.** A version created with the Exposure Command at gamma 2.2

I should set the Gamma parameter in the Exposure command to 2.2. If the division were $2.2/2.2 = 1.0$ the simulated gamma would be identical to the original, and indeed the default is actually 1.0 which doesn't bring any change to the image.

If you feel you need a painkiller, wait, because the division has been easy so far. What happens for intermediate gammas? The division is more complex, of course. If you need to simulate a False Profile with a 1.4 gamma, it becomes $2.2/1.4=1.57142857$. Photoshop can't accept so many decimals, and we are therefore stuck with two figures.

All this to say that the simulation of a False Profile with the Exposure command is not exactly like Auto Tone, and therefore I don't really want to compute all the intermediate values for the various gammas which I might conceivably like to assign to an image. Now, the question: at identical gamma, which technique is the best? By comparing Figures 17 and 19 I'd say Figure 19 wins, that is, the Exposure command, because there's more detail in the right part of the jacket and less of a purple cast in the shadows. Therefore, in theory, Exposure 1, False Profile 0. Let's try again.

As we enter the cave of false profiles, a truly bad and yet very famous original comes to the rescue. Its name is Gypsum Sinkhole and it is located in the Capitol Reef National Park of Utah. It is a chasm of great geological interest, often visited by tourists, who are attracted by its depth and try to photograph this exceptional natural phenomenon in spite of the lack of lighting.

The result is often very close to what you see in Figure 21. The version in Figure 22 was produced with a False Profile with a gamma of 1.0 in an attempt to see some kind of detail in the abyss. Figure 23 was obtained with the Exposure command with a gamma of 2.2 in order to simulate the same profile.

Which is the winner? It seems to me that the False Profile version is more legible and has more texture in the rocks which are now finally visible. I also tried to push the gamma further in the version obtained with the Exposure Command, but I couldn't recover much: it would only get lighter and lose the texture. Therefore the score between the two



Figure 21 - The original. - **Figure 22**. A version made with a false profile at 1.0 gamma. - **Figure 23**. A version made with the Exposure command at 2.2 gamma.

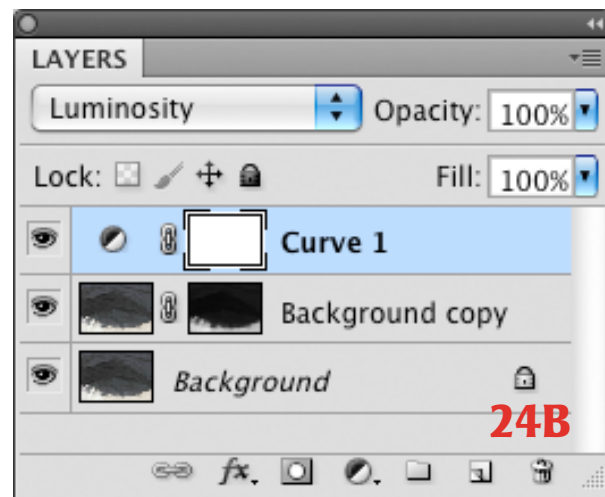


Figure 24A. A version made from version 22 with the technique of straightforward multiplication. - **Figure 24B.** The necessary layers to produce Figure 24A.

techniques is a draw, 1-1. What does this mean? Nothing final, I'm afraid, for a number of reasons.

The first of these is that the False Profile and the Exposure command don't produce exactly the same results, although they look alike. When there are values very close to pure black, Exposure may work better. In other cases the False Profile wins. In general, it has been seen that the statistics seem to favor the False Profile also because decent images with dark areas very close to pure black are quite rare. That's why you don't find an Exposure button in the PPW panel. Still, nothing should stop you from seeing what this alternative command has to offer in more critical cases.

The Straightforward Multiplication

While I was assigning the False Profile to the image of Figure 21, my daughter passed by the computer and asked me: can't we have the grass of Figure 21 with the detail of figure 22 and make it all a little darker? She was unaware that she was asking for one of the signature routines of the PPW. When in our image we have such a big problem in the shadows, the False Profile brings us back on the track in a few seconds as far as the shadows are concerned, but we then need to recover the lighter areas correctly. It is not a problem here, given that the lights and shadows are very distinguishable from each other.

The technique is that described in the PPW manual in the fifth step, variation one, with some slight change. I took Figure 22, which I obtained with a false profile at 1.0 gamma. I converted it to standard sRGB and then applied Shadows/Highlights with the typical parameters of the PPW to induce a slight improvement. I then duplicated the background layer, changed its blending mode to Multiply and added

a layer mask. I applied the composite RGB from the Merged layers to the mask, to which I then applied Gaussian blur by 20 pixels or so. Finally, a curve to get the contrast right so that the shadows are back to normal levels. You can see the result in Figure 24A. The necessary layers are shown in Figure 24B. I dare say there's no comparison to the original. Which are the keystones of this correction? The False Profile, for sure, and then the multiplication of the layer. Images like this seem difficult to correct, but they never are unless there is no information at all in the shadows. Moreover this photograph doesn't have a peculiar artistic value. So the False Profile with multiplication becomes a good remedy which takes very little time. And this is just the start.

Saturation, Listen Up!

I previously stated that the main scope of the False Profile is to lighten the interpretation of the image. Correct, but there's more to it. Lightening is vital when we are in serious trouble with the shadows, but in other images there are some useful and fantastic byproducts of this technique.

The picture in Figure 25 was taken on a sunny day which made the flowers very bright and colorful. The version you see here has already gone through the first steps of the PPW: curves in Color Mode to solve color problems, blending of RGB channels on a layer in Luminosity Mode, a Curve Adjustment layer also in Luminosity mode and Shadows/Highlights applied via the corresponding button on the panel.

Now it's ready for the next moves. I wouldn't use the Bigger Hammer because there is no big difference here between light and dark areas. Therefore in theory we might go to LAB for the Modern Man from Mars and

25



Figure 25. This image has already gone through the first steps of the PPW (Curves in Color mode, Channel blending, Curves in Luminosity Mode, Shadows/Highlights) and is therefore ready for the next moves.

Figure 26. A version created applying Color Boost and Modern Man from Mars to Figure 25.

26



27



Figure 27. A version created assigning a false profile at 1.4 gamma to Figure 25.

Figure 28. A Multiply layer was applied to the version with the false profile at 1.4 gamma of figure 27, masked by the composite RGB and blurred by about 30 pixels.

28



Color Boost actions, either separately or in the combined form we call MMM + CB. A selection to create more color variation in the water and the mountains, a click in the panel on the MMM + CB button and we're done. You can see the result in Figure 26. Not too bad, you may say; but we can do better, I reply. In the first place the red flowers are too saturated and the Color Boost layer should therefore be masked to reduce its intensity. Moreover, other flowers have suffered the same fate, as did the green hedge on the left. If you consider that the Color Boost layer was left at the default Opacity of 30%, you realize we have a problem: an excessive color boost that is difficult to handle. And here's where the False Profile comes into play.

If we assign to Figure 25 a False Profile at 1.4 gamma, we obtain Figure 27. Now everything's lighter but we may not realize that the image is less saturated, as well. This is good, if we think of what we're going to do in LAB. But, of course, there's more. If you click False Profile at 1.4 gamma button in the PPW panel, you'll notice something strange: at the end of the action the image gets darker rather than lighter as one may expect. This result depends on the fact that a Curves adjustment layer was created and put in Multiply mode at 100% opacity, which compensates the lightening due to the False Profile.

The reason is easy: try clicking on the mask and apply (via Apply Image) the grayscale version made by the RGB composite, and blur it by about 20-30 pixels. We obtain Figure 28. If you can't see the difference, trust me: it's there and it causes an improvement of detail or, if you prefer, local contrast, given that global contrast doesn't change that much.

Now, if we try again to enter LAB and launch MMM + CB with the same selection as before, the result will surely be more saturated than Figure 28, but contrast won't have changed very much. A nice S-curve in the Endpoint Adjustment layer to recover contrast and the result is Figure 29. Check it against Figure 26 and you'll notice that the current one has more texture and shape. Saturation is more controlled in the flowers and the hedge although in this version the Color Boost layer is set at around 40% opacity instead of 30% like it happened in Figure 26.

Someone may suggest that an identical result may be obtained with a curve, starting from Figure 26. Sorry, I don't think so. The tonal range was too close to the edge to do it, especially in the shadows. What we were able to do through the False Profile was lighten Figure 25, compress the tonal range with a local enhancement through the blurred multiplication, and ease the intensity of colors at the same time before the

Figure 29. The final version after applying MMM + CB on Figure 27. How much does this differ from Figure 26?



Color Boost in LAB. Don't you think all this is too much to ask of a single curve?

One Bad Turn Deserves Another

Now that we're acquainted with the False Profile we begin to understand that in images which contain very colored objects, the False Profile and multiplication allow us to get to LAB with a file which offers more room for maneuver with respect to both color boost and contrast. Figure 30 is slightly different from the previous one because it doesn't contain many colored objects. The main color here is the green in different intensities. Like the previous picture, this one has already gone through the first steps of the PPW—color, luminosity, Shadows/Highlights—so we can move forward.

Images like this where the greenery is dark and the water light desperately call for the Bigger Hammer. See it applied in all its power in Figure 31 with a serious improvement of the detail in the water and in the dark parts of the trees. After assigning a False Profile with gamma 1.4 the image appears like Figure 32. Before we go further, though, I need to introduce another “false” that can occasionally be very precious: False CMYK. To better understand the importance of this move, a small reminder about the structure of a CMYK image is needed.

The Role Of The False Black

Unlike RGB, where all colors have unique values, the CMYK file structure can change significantly and yet maintain the same colors. We are not talking about Black Magic—or maybe yes, literally—because of the great importance of the role of black ink.

When colors are made only with two of the 4C inks, for example a bright green as 60c100y, we have no other way to render it because it is made by two primary colors, respectively cyan and yellow. But if we had a darker green we would have different choices. A 60c30m100y0k green is surely darker because it has a magenta component which, being the opponent of the green, causes a reduction in saturation as well as lightness. We could get essentially the same result by adding black rather than magenta.

Accordingly, 53c20m95y14k is approximately the same as 50c15m94y20k or 40c0m91y35k. The only difference is amount of black which replaces magenta (and partly the other two colors as well) in order to darken and desaturate green. To make a long story short, we can say that when a color in CMYK is expressed from more than two primary colors it contains a grey component, which can be replaced by a



certain percentage of black. The management of this component is termed GCR, which stands for “Gray Component Replacement” and basically produces the following results: the higher GCR is, the more black ink will be found in less saturated colors. It is obvious that almost neutral colors are good candidates for this, as well. They can be composed by a combination of CMY and/or K, and the same goes for the shadows which are not saturated in general. Here's why in the black channel we find in different measures neutral tones, darker areas and the grey component of the less bright and pure colors. If you have another migraine, here's a clarifying example.

In Figure 33 you can see a black channel generated from a conversion to CMYK of Figure 32 (which was obtained with a False Profile at 1.4 gamma) with a Medium GCR and a limit for black ink of 70%. As you can see, only the darker and more neutral areas of the image are visible in this channel—the rocks and the shadows under the trees, for instance. All the brilliant colors, like the lawn in the background, and the bright ones as the water, are not present. A similar black will never be seen in a manual of how to prepare files for

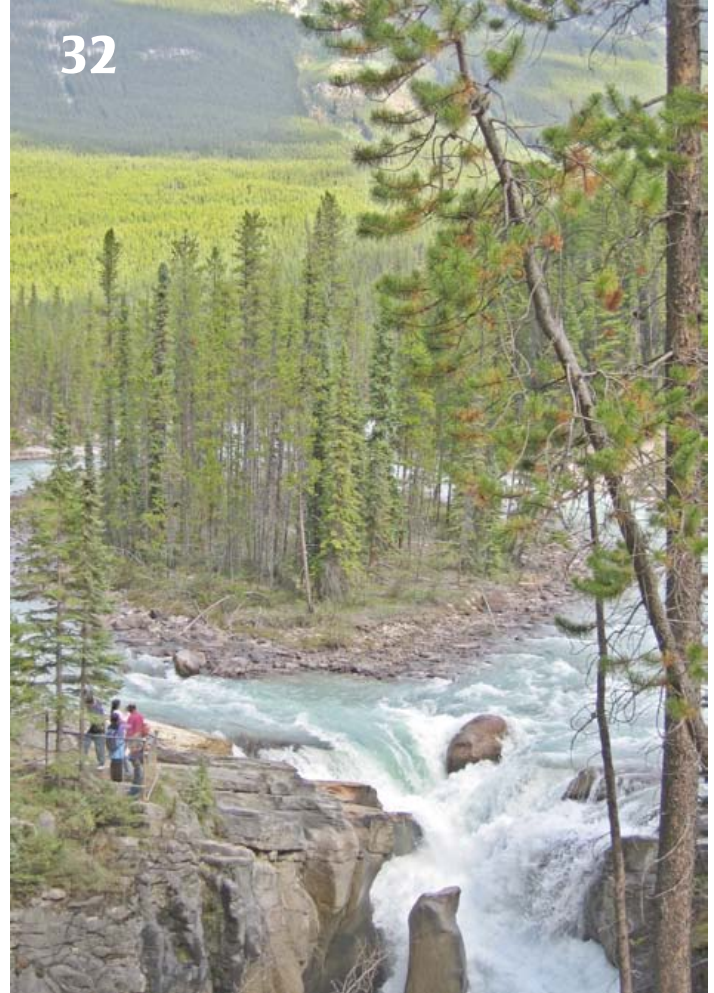
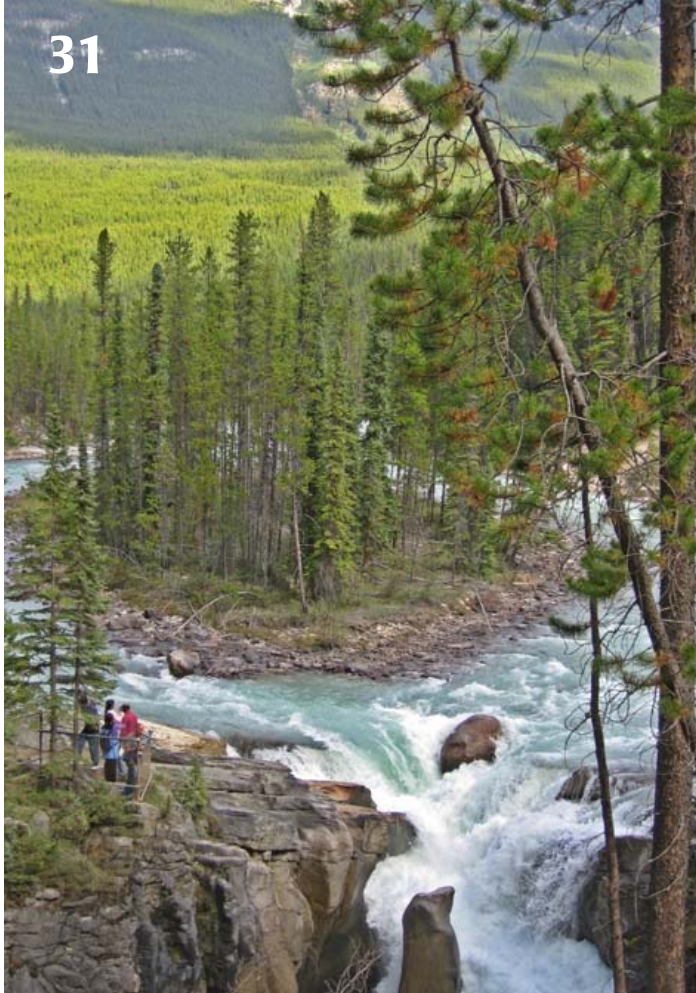
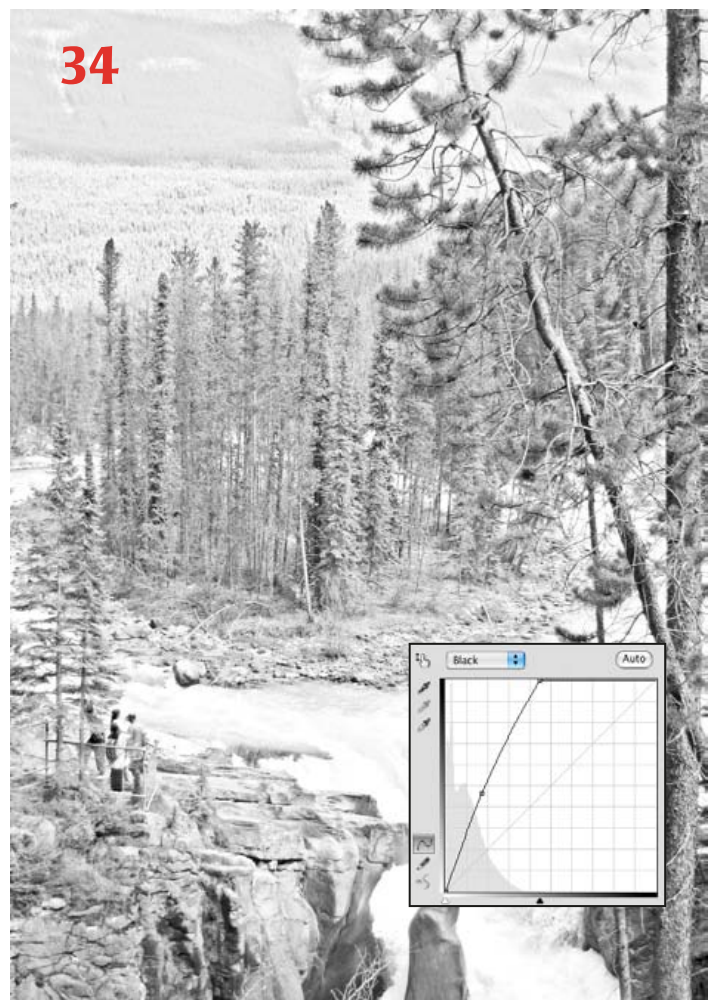


Figure 31. The result after applying the Bigger Hammer action. - **Figure 32.** Here's how Figure 31 looks after assigning a false profile with gamma 1.4. - **Figure 33.** The Black channel made by the action False CMYK. - **Figure 34.** The Black channel after the inset curve.



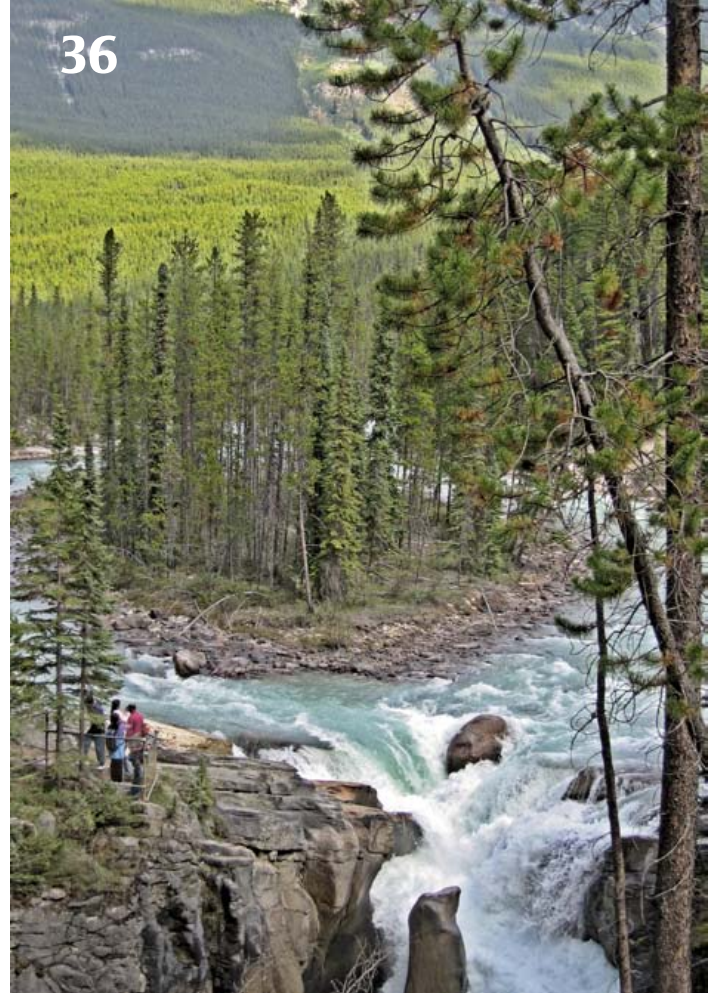
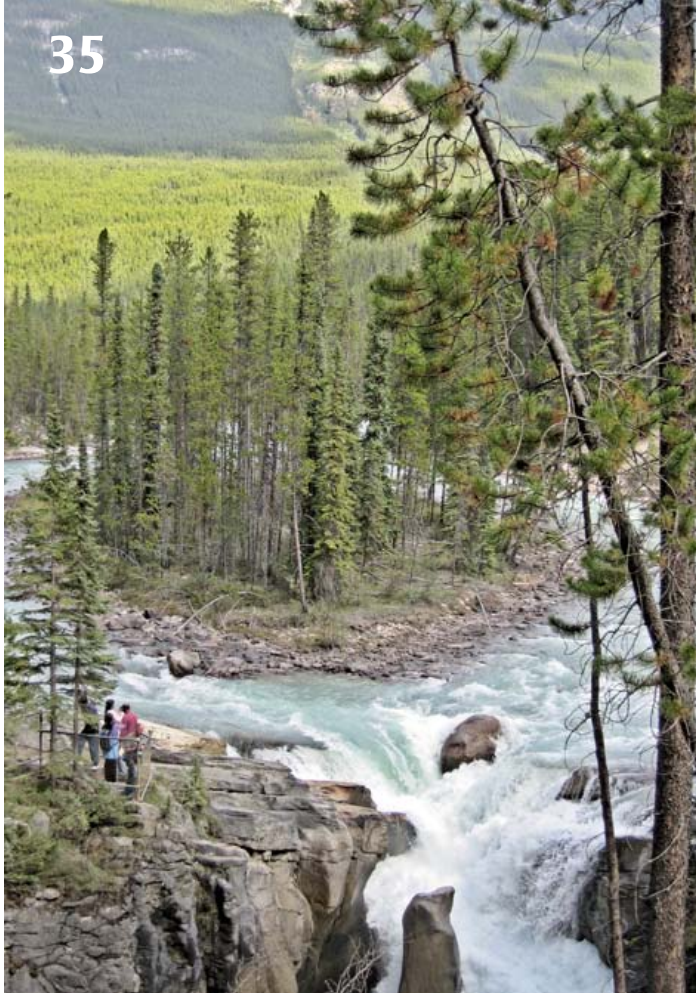


Figure 35. How the image looks after working on the Black channel as shown in Figure 34. - Figure 36. As Figure 35 but with a multiplication masked by the luminosity of the image itself. - Figure 37. The final version with the Lab color boost compared the original in Figure 30.



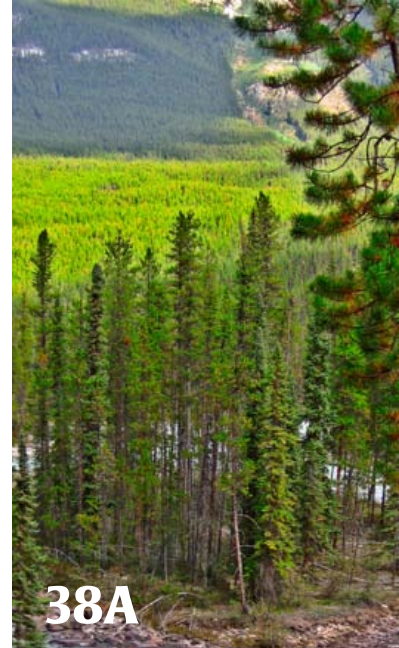


Figure 38. An alternate version made from Figure 30 but without assigning the False Profile and the use of False CMYK. - On the right, some details of Figures 37 and 38 compared.

commercial printing: in fact it's been created just to allow a certain kind of PPW maneuver.

This CMYK separation is not useful to any printer. It is a sort of false conversion which we only use to exploit a precious channel—the famous Bogus Black. The reason for the name Bogus Black can be uncovered in an interesting note by Dan Margulis at the end of this article. What we are interested in now is that this is the separation you obtain by clicking the False CMYK button in the PPW panel. Let's see how we can exploit it best.

Adding black to a CMYK separation through greater use of GCR doesn't make the image much different except for printing variation if they happen to be sent to press. Now, let's take the black generated with the Medium GCR of False CMYK. Because of the structure of this channel, its intervention is only necessary to lightly darken the shadows and the less saturated colors of the image. What would happen if this were a

much heavier black? We would certainly have darker shadows, but we would also desaturate all the less brilliant colors in the picture, because boosting the neutral component in any color is equivalent to desaturate it, in practice—and black is neutral by definition. Therefore, if I applied a curve to this black, I might darken and desaturate the shadows and the darkest areas in the greenery, and create a more obvious difference with the brighter areas.

In Figure 34 you can see the curve I used and the result of its application on the black channel. After this intervention the image appears like Figure 35. Notice that its shadows are deeper than Figure 32, and it looks more gray except for the more brilliant colors like the lawn (don't be fooled by the enhanced detail in that area). It also lost some consistency in the lightest areas at the water. No problem; by now we know that a multiplication may bring things back on the track.

After a conversion to RGB I duplicated the layer and put it in Multiply mode. A layer mask on this layer received the RGB composite, blurred as usual, which yields Figure 36. The water got back its detail thanks to the luminosity mask (the RGB composite) applied to the layer, and now we are ready for the final touch.

A quick selection which includes part of the lawn and the trees, and a click on the CB + MMM button in the panel. The final result is the one in figure 37. Next to it, a copy of the original to make it easy for you to check one against the other.

Apart from the difference in detail, it is interesting to notice how saturation is very well controlled and natural, and we also have a good color variation—not just because of Man from Mars. In order to make a comparison, Figure 38 was made with the same moves as Figure 37 except for those connected to the false RGB and CMYK profiles. Although the Color Boost layer has a lower opacity in this version, the colors get out of hand as you can also see in the A and B details of the two figures.

Conclusions

The PPW's aim is images with strong detail and inspiring and yet controlled color. To get there it is often necessary to proceed carefully without being afraid to sabotage an apparently good image in preparation for subsequent moves which are more sophisticated and effective.

The use of the RGB False Profile in combination with the False CMYK allows us to have a better control of colors and obtain better results in the latest LAB phase. The use of Bogus Black allows us to do this, but it is not the only alternative. For instance, rather than applying a curve as I did in Figure 34 one may apply the Bogus Black in Multiply mode to the RGB file, yielding a similar result. The risk in this case is that the shadows in the image may plug a bit, but the idea behind the operation is the same: creating a saturation variation which allows a better chromatic contrast in order to obtain an image with more natural colors.

Finally, also in the False Profile section of the PPW TOOLS panel you will find another alternative, the action inspired by and named after the Helmholtz-Kohlrausch effect, which tries to do something similar, that is keeping the less saturated colors toned down in order to produce even better results in some cases.

Whether this is a better alternative with respect to the Bogus Black is something that needs to be proven, given the very experimental character of this

technique. My personal suggestion is that you should study the subject in depth in the relevant article in this documentation set, written by Marco Olivotto.

So far, it is sure that the adjective “false” sounds no more like a “fake” as it brings a more natural, yet “true”, result by controlling in a better way the most saturated and pure colors of our images. It's counterintuitive, but it works. At least in color correction.

A NOTE ON BOGUS BLACK

The meaning of the term “Bogus Black” is interesting and comes from a nice story, as described by Dan Margulis.

«The term has a historical meaning in US graphic arts. Back when newspapers were set in hot metal, their advertising typography was so poor that many agencies decided that they would purchase their own machines and submit their own mats ready for letterpress reproduction. The typesetting unions at the newspapers were very opposed to this, and refused to accept the supplied materials. A job-saving agreement was reached. The agencies' materials would be accepted and run in the newspaper, however, the newspaper's own typesetters would re-typeset everything—and then throw their work away. This practice, which persisted for decades, was known as “setting bogus”.»

CREDITS

Thanks to Stefano Peruzzi for allowing the usage of the picture of the man in suit and tie.

The picture of the Gypsum Sinkhole is by Dan Margulis. The picture of Sunwapta Falls is by Lulin Reutens. The picture of the tomatoes comes from the Shutterstock image bank, and the one of the tropical beach from iStockPhoto. The picture of the Lugano lake is mine.

Special thanks to Dan Margulis for getting me involved in this project and for his precious support in the writing of this article and in all my educational activities in the field of color correction.

Sincere thanks to Marco Olivotto for his contribution to this article and the research inside the dark bowels of the Exposure commands and the mathematics at work behind the scenes in Photoshop's.

Last but not least, special thanks to my family who supports me with infinite patience in my professional career.