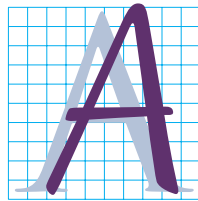


Managing Separation And Color Settings

Photoshop 6 picks up the pieces of Photoshop 5 and combines them into a single dialog. Getting good conversions with it depends on understanding a sad, paradoxical law: the more you try for perfection, the farther away from it you'll get.



American football is played on a rectangular field roughly 50 by 100 yards, exclusive of the end zones. The field in the Canadian version of the game is about 10 yards wider in each direction.

The larger field mandates certain rule changes. For one thing, Canadian teams have a twelfth player. There are only three downs, rather than four. Although the passing game is emphasized, the same plays work in both games, and the same skills differentiate the star player from the mediocre one.

A football fan therefore adjusts easily to watching either version of the sport. But suppose that the differences were much greater. Imagine a kind of football played on the side of a hill, rather than on a flat surface, and on a trapezoidal, rather than rectangular, field, with a brook and a few trees in the middle of it.

Once you realize that in such a game the set plays and strategies familiar to fans of either version would no longer necessarily work, you are well on the way to understanding why so many people have trouble making decent color separations. To be more precise, they are having trouble making the transition into CMYK.

For that matter, we are starting to need new types of separations that involve different flavors of CMYK (as for both a newspaper and an annual report) or devices that use more than four inks or toners in an effort to get snappier color.

Prepress professionals don't have a whole lot of experience in solving this problem. Until recently, most separations were done on drum scanners that converted to CMYK on the fly. An RGB file never existed, so the question of whether the CMYK file looked like the RGB never came up.

Jumping to the conclusion that making the conversion must be easy, if only one spends enough on color-measurement devices and software, various parties have hyped "solutions" which, quite predictably, the market has emphatically rejected.

These products haven't flown, but not because of a lack of sophistication or inadequate computing power. The whole concept is wrong. Those whose quest is the perfect separation algorithm are chasing rainbows, setting traps for unicorns.

Indeed, the perfect separation method is a mythical creature, but one with a substantial sting: the closer one tries to get to it, the farther away it seems to be. This chapter will try to explain why, review the changes in Photoshop 6's color settings, and suggest how to adjust them to deliver better results.

Decisions and Damage Control

Translating between colorspaces is only hard when the rules they play by are radically different. A monitor and a transparency have slightly different gamuts, but the differences in what colors can be had are small in the overall scheme of things. So it isn't difficult to create RGB files that more

or less match the chrome. It is also easy to adjust one professional digital proofing system, such as Iris, to match another, such as Approval, or to match a digital proof to a traditional film-based contract proof such as a Matchprint.

Going from RGB to CMYK is not nearly as simple. Some people say that this is because the playing field is smaller, naïvely ignoring that it is tilted as well. Let's take a quick survey of what RGB can portray that CMYK can't—and vice versa. For this, you will need your imagination. While I can tell you what colors aren't possible in CMYK, for obvious reasons, I can't *show* you.

The differences can (and should) be divided into two categories: color and contrast. Contrast is mostly a matter of how bright and how dark the white and black points are. In this area, CMYK is pretty lame. The blacks are washed out, and we can't make a white any brighter than the paper we are printing on.

Because there is less of a darkness range available, the CMYK practitioner needs to emphasize contrast. In football or hockey, a larger playing surface rewards speed and finesse, and a smaller one favors physical strength. CMYK is much the same thing, but for physical strength, read luminosity. Ogden Rood was right. It's more important to control contrast than color. The worse our printing conditions get, the more we can let the color go unmarked in the interest of getting more bite.

But the playing field, in addition to being smaller, is also weirdly shaped. The popular knock against CMYK is that it lacks the color range of RGB. In most respects, that's correct. But in others, it has more. Let's contrast the capabilities of a monitor to those of commercial printing.

The building blocks of each are different. A monitor's phosphors are red, green, and blue, highly convenient if pure red, green, or blue appears in the image. On press, red, green, and blue are each mixtures of two inks, which is a disadvantage. On the other hand, CMYK is well equipped to produce pure cyan, magenta, and yellow.

Especially yellow. It's technically the purest ink. Under good printing conditions, a stronger yellow is available than can be seen even in positive film, let alone displayed on a monitor. Solid magenta and cyan also can be as intense on paper as they are on a screen.

As these colors get lighter, however, CMYK has more trouble with them. Bubblegum pink is a shade of magenta, so you might think that you could portray it as well in print as on a monitor. No way. As colors get lighter, they get represented by smaller and smaller dots, and accordingly, larger and larger quantities of blank, featureless paper. The monitor has no such dot structure, and can create much more appetizing-looking bubble gum.

And the notorious weakness of print work is that cyan ink does not mix well with magenta. Therefore, although reds and greens in CMYK are somewhat worse than those available in RGB, the blues of CMYK are far worse.

Figure 11.1 shows one manufacturer's conception of the gamut differences, contrasting the capabilities of a monitor, normal CMYK, and a six-color process.

To summarize the differences: in CMYK we have better yellows, about the same magentas and cyans, but lousy reds, worse greens, and disastrous blues, in comparison to RGB. As the colors get lighter, everything changes in favor of RGB, except the CMYK

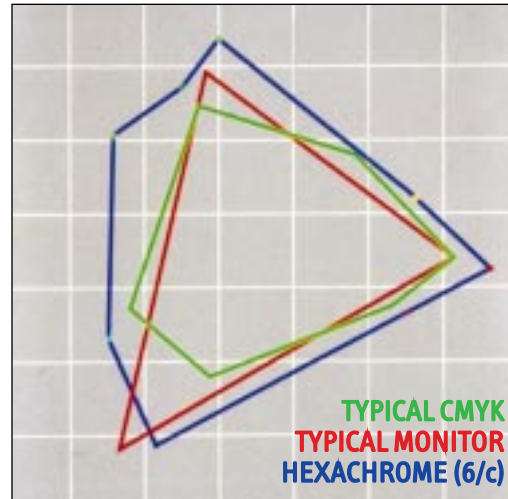


Figure 11.1 *The tilted playing field. A comparison of the gamuts of a generalized CMYK versus that of a typical monitor and of six-color printing. Note that in spite of CMYK's terrible weakness in the blue corner (lower left) it is still capable of certain colors that a monitor can't reproduce.*

disadvantage in blues is minimized. Also, CMYK lacks contrast generally.

That is a clear case of playing by different rules. When the differences are this complex, beware of anybody saying they have a foolproof conversion. They simply haven't met sufficiently talented fools.

A Question of Aesthetics

The aspen forest of Figure 11.2 speaks starkly about the injustices of CMYK. It's an outstanding image—in RGB. It loses a lot in translation to the printed page.

In the original, the sky is lighter than what you see here, but also much bluer—a nearly luminous, icy, gorgeous light blue. I have more chance of playing tackle for the Edmonton Eskimos than of reproducing that color accurately in this book.

On the other hand, part of the reason the blue is so striking in the original is that it plays off against the bright yellows of the

leaves, a CMYK strength. We are not at the limit of yellow ink yet. I can make those leaves yellower still, brighter than they were in the original. But *should I*?

Granted that we can't match the original or even come close, there are many ways to try to make the best of this bad situation.

Figure 11.2 Brilliant blues are the major weakness of the CMYK colorspace. The sky in the RGB original of this image is an almost luminous blue, a blue that can't be reproduced in print.



Should we:

- Tone down the yellow, to keep the relative balance with the blue?
 - Ratchet the yellow up, to accentuate the contrast between yellow and blue?
 - Wipe out any yellow or black ink in the sky, which will wipe out detail as well, yet make the sky seem bluer?
 - Increase cyan ink in the sky, to make it bluer, albeit darker?
 - Or, is the answer none of the above, but rather the image just as it appears here?
- Not too likely: this separation was done in Photoshop 5 using the default setting, which is not good for this type of image.

I've used this as a class problem, and the consensus is that the least evil approach here is to add cyan to the sky with Image: Adjust>Selective Color. That makes the sky more colorful, but darker, than the original.

Generically, though, this is a problem without a solution. Some images will look better if we make the blues darker. Others, such as the two underwater scenes shown at the end of Chapter 7, won't. Human beings make such aesthetic decisions routinely—and accurately. Profiles and other algorithms are rather bad at it.

The EIAM and the PCCM

Now, let's consider a general approach to converting a document from RGB into CMYK. I will kick off by proposing a method so preposterous that you may have trouble recognizing its intrinsic logic.

Here it is: for every RGB color that can be faithfully reproduced in CMYK, do it. For every color that can't, do something completely random, such as translate it into lime green. Because of this uncertainty, I dub this approach EIAM, which stands for Every Image an Adventure Method.

EIAM has, to put it mildly, distinct disadvantages. For example, if it is used to convert the aspen forest image, the sky will become lime green.

If this sounds very radical and unreasonable, it is, but no more so than the team it's up against. That opponent, the PCCM, tries to force the two colorspaces into the same shape, so that the brightest red, say, in RGB becomes the brightest red possible in CMYK, with all other reds being toned down to accommodate it. Often, PCCM profiles are created by software that relies on some artificial color-measurement device measuring swatches such as the one shown earlier in Figure 10.5.

Hence, the name I have chosen for it: the Politically Correct Calibrationist Method. PCCM is the wishy-washy approach of finesse and compromise, just as EIAM is the blunderbuss method of brute force and hope for the best.

Calibrationists often showcase their methods by wheeling out something like Figure 11.3 and showing what a great separation they can make out of it. Photoshop's "Olé No Moiré" and the Kodak's "Musicians" of Figure 9.8 are similar.

Not to rain on the parade, but let's have a quick analysis of the image. Critical detail exists in both highlights and shadows, there are out-of-gamut colors everywhere, there are neutral colors that must be retained, every hue is in use, there are fabric patterns prone to moiré, there are silvers and golds, and subtle shadings even in the most brilliant colors.

As of this writing, I have worked in graphic arts production for 27 years, processing perhaps a quarter of a million images coming from every imaginable source. Except in a calibration setting, I have yet to



Figure 11.3 The conventional wisdom suggests testing a separation method with an image such as this one above, which is grossly atypical of real-world work.

encounter one containing all these characteristics at once. If you wanted to create an image that is as far removed from reality as possible, as grossly atypical as human ingenuity can design, you could not do better than this one.

If you ever encounter such a monstrosity—don't hold your breath—PCCM is definitely the best way to separate it. Why a practical person should care, I have no clue.

PCCM succeeds in this once-in-a-lifetime case at a considerable price. Think about the critical color, blue. In the original RGB, there are certain blues that are simply too brilliant for CMYK. Lesser blues in this image *could* be reproduced accurately, if



we made them as blue as CMYK can. That is what EIAM, the steamroller, would do.

PCCM, the great compromiser, trying to retain a distinction between the two kinds of blues, tones both of them down—along with every other blue down the food chain.

That's fine in this particular image, but what if there were no brilliant blue in the original? Then the compromise would be pointless. We would be toning down our in-gamut blues for no reason. EIAM, which does no toning down of anything, would have a decided advantage here.

Despite its match-the-art aura, PCCM guarantees that we will *never* match the art—all colors will be toned down, and all images will look flatter than the original.

EIAM, on the other hand, is for the high roller. If the art can't be matched, catastrophe! But if it can, EIAM will do it, and in those images it will outscore PCCM.

A General Law, Sad but True

Which of these two proposed methods of separation is better depends on your definition of *better*. If the definition is, which produces more *acceptable* images, PCCM wins: it is stolid, stodgy, free from ridiculous errors, and boring.

It is also a recipe for mediocrity.

Suppose, though, that the question is, which works better *most of the time*?

Guess what! Most images don't contain

out-of-gamut colors. And for all those that don't, that silly EIAM will kick butt. How good can political correctness be, when an *absurd* method gets palpably better results on the majority of images?

EIAM *is* absurd. In real life we don't deliberately sabotage images, the way EIAM would to anything that contains an out-of-gamut color. So, if forced to choose one or the other, we have to pick PCCM, because even if we are dissatisfied with its results, we can perhaps fix them, which is more than can be said if EIAM starts dispensing lime-green pixels all over the place.

But intermediate approaches are possible—and quite practical. When confronted by an out-of-gamut color, EIAM drops back 15 yards and punts. One can, however, visualize a smarter scheme with all the advantages of EIAM. Such a method would execute a play-fake by substituting not lime green, but something closer to the actual hue. Granted, a lot of detail might vanish in these areas as a result.

With PCCM, we have acceptable color 100 percent of the time, but if its color isn't bad, neither is it good. With pure EIAM, we have a better image than PCCM maybe 60 percent of the time. The other 40 percent of cases are unacceptable, full of lime green.

The less ridiculous version of EIAM described above does better. It may beat PCCM 70 percent of the time. An additional 10 percent of the time the image will be acceptable, yet not as good as PCCM's. The remaining 20 percent will remain, well, unacceptable.

The time has now come to state the law that governs all transformations from one colorspace to another. It is a sad law, a rock-and-a-hard-place law, but an uncompromising, invariable one. Here it is:

Figure 11.4 *Real-world differences in separation method. Both sets of images were separated from the same LAB file and not corrected further. Both methods produce nearly the same darkness, but the one on the right creates slightly brighter colors. This can be an advantage if the subject's colors are fairly dull, as in the bottom images. However, it loses detail in bright colors: note the better strawberries in the top left version.*

The better the algorithm does on the typical image, the more prone it is to do something really objectionable to ones that are not typical.

Permit me to offer a translation. Our choice really depends on whether we want as many separations as possible to be good, or whether we don't want many of them to be bad. The difference explains a lot about

why people have such strong feelings about the process.

For one thing, it explains why so many people accuse Photoshop of making “bad” separations. They mean that, like its relative EIAM, Photoshop sometimes uncorks a real howler, changing blues to purples with great elan and losing detail in out-of-gamut colors. If you see enough of these stinkers,

you may think that Photoshop itself is what stinks. But all it is doing is following my law: since it generally makes good separations, it frequently makes bad ones.

In preparing this book, I put together a suite of 10 LAB images, which I separated using 15 different methods from many different sources. I expected that it would show that every method did well on certain images and not on others. What it showed more convincingly was how correct Ogden Rood was. Getting the dot gain correct is far more important than getting accurate colors. Those profiles that didn't have accurate dot gain compensation lost every time, even when they had more attractive colors. This is one reason I've added a full chapter on dot gain compensation in this edition.

Figure 11.4 compares real-world versions of EIAM and PCCM. The versions on the left use the conversion settings of a friend; the ones on the right are the ones I used for this book. The dot gains aren't the same, but they're quite similar. Because of differences we'll discuss later, his approach is more PCCM, mine is more EIAM.

Matching a Photoshop 5 Workflow

Note: there were major color changes between Photoshop 4 and 5. If you're attempting to upgrade to Photoshop 6 directly from Photoshop 4, the following methods won't work. You need to study the appropriate chapter from the previous edition of this book. It's in a PDF on the CD.

- Open Photoshop 5, and choose File: Color Settings > RGB Setup. When the dialog box appears, click “Save” and store the contents somewhere.
- Ditto with Photoshop 5's File: Color Settings > CMYK Setup. After saving the file, go to the “Dot Gain” setting. If it reads “Standard,” change it to “Curves” and click the mouse there. When the dot gain curves show up, click “Black.” Write down the curve values you find there.
- Close Photoshop 5 and open Photoshop 6. Go to Edit: Color Settings. Click the “Advanced Mode” on; if you wish, after completing these steps, you can turn it back off.
- Under Working Spaces: RGB, click on whatever's there and choose, from a list of options, Load RGB. And load the RGB Setup you saved from Photoshop 5.
- Similarly, click on Working Spaces: CMYK and load the CMYK Setup from Photoshop 5.
- Under Working Spaces: Gray, choose “Custom Dot Gain” and change the curve to whatever you found in the black curve in Photoshop 5's CMYK Setup.
- For the Color Management settings and everything below them, unless you think you know why you should do otherwise, stick with what's shown in Figure 11.5.
- Save out your settings so that you can restore everything in one fell swoop if necessary.

These images are, obviously, quite close. But if I have to pick, I'd say his settings did better on the fruits, and mine on the volcano. As predicted, his greenery is duller, but he has better shape in the strawberry and the apples.

If forced to choose only one method for both images, I'll take his. His volcano can easily be brightened up with curves. But we probably need a blend into the cyan channel to get better reds in my fruits.

I'm not switching over, though. That fruit image isn't typical. While I don't do many volcanoes, I do handle a lot of similar images. So I'll stick with my EIAM.

But it depends on the workflow. You may handle more brilliant colors than I do. Or you may feel inclined to load different settings for different kinds of image.

Photoshop 6's New Settings Box

Having finally reached the point where we discuss the future—the specifics of the color settings shown in Figure 11.5—it becomes necessary to discuss the past. Photoshop 6 comes on the heels of the most badly thought-out upgrade in the history of the graphic arts. Photoshop 5 created chaos, not by altering its color methodology, but by booby-trapping itself and by severing reliable links between Photoshop users.

In choosing what to use in Photoshop 6, we need to consider not just what is best for us, but what the rest of the world is doing. This is a complicated and difficult-

to-follow subject. If you understand the color settings of Photoshop 5, you'll yawn your way through the changes. If not (and you may be in the majority), permit me to say, for the first of several times in this chapter, I told you so. To quote *Professional Photoshop 5*:

As Santayana remarked, those who cannot remember the past are condemned to repeat it. If you find Photoshop 5's color changes incomprehensible, and look only for a quick fix, you are condemned to relive this experience at some point in your career. More likely, at several points. Photoshop 5 is not the last challenge. The principles are much more important than the implementation. Many calibrationists don't understand them, which is why their nostrums don't work. If you *do* understand them you will have little difficulty adjusting to the changes of Photoshop 5, Photoshop 6, a new type of large-format printer, or any other obstacle fortune places in your way.

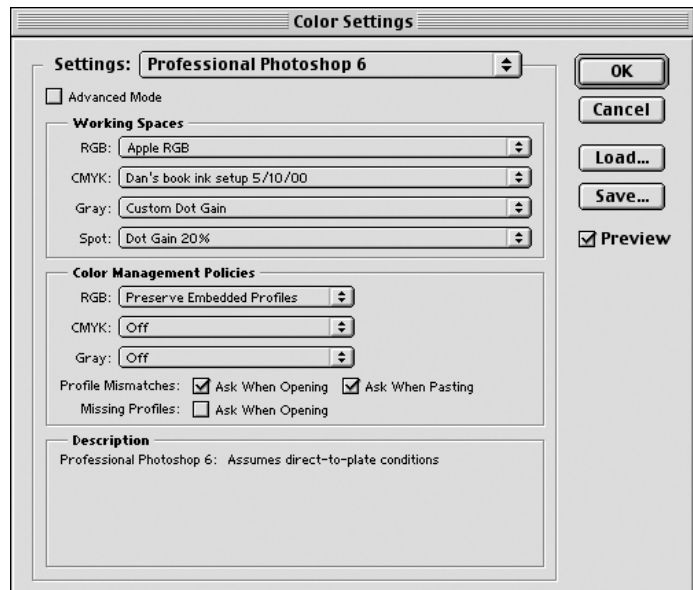


Figure 11.5 Photoshop 6's Edit: Color Settings dialog replaces no less than four dialog boxes in Photoshop 5.

* * *

Now that what I predicted has in fact come to pass—a new version with completely revised color handling—perhaps people may be more inclined to try to figure out what’s going on this time. If not, on Page 218 there is a recipe for making Photoshop 6 act like Photoshop 5, if that’s what you’re after.

You can therefore ignore the following discussion if you like, but if you’re serious about color, at some point in your life you will probably be sorry if you do.

Agreeing on a Vocabulary

Before starting this extended discussion, let’s amplify some of the concepts introduced in the last chapter.

Before we can make any conversion into CMYK, or for that matter from any color-space into any colorspace, there has to be some kind of internal definition of what colors mean. In other words, $100^R150^G200^B$, on my system, converts to $64^C24^M9^Y$. Or at least it does at the moment. Later today, it may convert to something else, because I sometimes have to change the definition of what CMYK is. It’s also possible to change the definition of what RGB is, although users rarely do this once having settled on a standard setting.

We can’t, however, change what LAB is, and this happy fact brings some order to the situation. My RGB definition somehow gives Photoshop the information that $100^R150^G200^B$ equals $66^L(9)^A(27)^B$. Then Photoshop looks to the CMYK definition to find out how to obtain that color, and we all live happily ever after.

A bright blue like $0^R0^G200^B$, however, would represent the doomsday defense. It converts to $26^L52^A(91)^B$, and Photoshop couldn’t get that over the CMYK goal line

even in a Sherman tank. The color simply doesn’t exist. So the CMYK definition invents something. The invention may deliberately force other CMYK colors *not* to match their LAB equivalents. This is the method I’ve previously called PCCM.

These definitions of RGB and CMYK, which are changeable although many people never change them, are known to the cognoscenti as *profiles*. Sometimes the term *ICC profiles* is used to describe profiles generated by specialized software or purchased from vendors. The term is misleading, though, because all Photoshop profiles comply with the ICC specification. Every time we convert from RGB to CMYK, we’re using two ICC profiles, like it or not.

Interestingly, these profiles permit conversions not just between colorspaces but between variants of them: we can convert one kind of RGB to another kind, thus changing the RGB numbers but not the LAB equivalent. An example of this is the “convert on open” option that created havoc when Photoshop 5 shipped. More constructive, in Chapter 6 we were able to change black generation for the better in certain images by means of a profile-based CMYK to CMYK conversion.

A further variation: traditionally, when we send someone a file, if the file calls for a value of, say, $64^C24^M9^Y$, that’s the value we want to get on output, understanding that those values will *look* different under different output circumstances.

A long-time suggestion of what I call the *Conventional Color Management Wisdom* is that a better way to do things would be for the file to somehow carry the LAB equivalents as well, opening the possibility that down the line somebody might do a CMYK-to-CMYK conversion, giving us the colors

we really wanted but were too stupid to ask for. The term commonly used for this is a file with an *embedded profile*, which is rather confusing. I prefer to say a *tagged file*, and will do so throughout this chapter.

The aforementioned CCMW is a composite of the views of half a dozen or so of the most prominent advocates of this technology, gleaned from their public writings and speeches. These people think a lot more about color than the world at large, which is a benefit; they tend to lack practical production experience, which is a minus; and most of them have a financial stake in the success of color management, which may affect certain of their views but would have no bearing on others.

I offer these views as what you would be likely to encounter elsewhere if you look for people who seem to know what they're talking about. More often than not, the CCMW agrees with me; in some notorious cases, we disagree; in several cases there isn't a CCMW as such because its constituents don't agree with one another. There are also certain areas in which the CCMW has changed its mind; I refer to these as CCMW 2000 views.

And with that introduction, let's consider the Color Settings options, what they have been, what they now are, and what you should set them at.

RGB: Out of One, Many

With the advent of cheap, high-quality digital cameras and desktop scanners, it has become impossible for CMYK-centrists to maintain a hands-off attitude toward RGB. The decision for what to put in RGB Working Space, nee RGB Setup, is more important than it used to be.

First, though, examine Figure 11.6 and

decide, which two versions are the closest to one another?

- **The choices.** The concept of RGB is not a static one. $150^R150^G150^B$ will always be a gray, but exactly how dark that gray is is up for discussion. $250^R150^G150^B$ is definitely a red, but how vivid the red is needs further clarification.

Click on RGB Working Space, and the four RGBs of Figure 11.6 will pop up. If Advanced Mode is checked, you'll see umpty-nine more, but these four are now officially preferred. I started with an LAB file, which I then converted into Apple RGB. Figure 11.6A is therefore the most accurate rendition of the LAB file. The others were created by changing the RGB setting while this Apple RGB file was open on the screen.

In real life, this would never happen. We'd change the setting *before* converting to RGB. Photoshop would compensate for the variations in the RGB definition each time, and we'd wind up with four files that looked alike on the screen and that would separate to CMYK almost identically.

The RGB *numbers*, however, would be different. This means, if we sent these four identical-looking RGB files to an RGB output device, we'd likely get four different results. Furthermore, if we open RGB files from other sources into different RGB definitions, we'll get different-looking results *unless* we convert the colors—change the color data—into our RGB as we open them.

You have doubtless answered the initial question by saying that Figures 11.6A and 11.6D are the closest. 11.6D is ColorMatch RGB. Its colors are slightly more intense than in Apple RGB, but it's about the same darkness.

The other two are darker. Figure 11.6C is sRGB, which is close to Apple RGB for color.



Figure 11.6B is Adobe RGB, which was erroneously called SMPTE-240M in Photoshop 5.0. It has the most vivid colors of the four.

- **The history.** Before Photoshop 5, the standard was—loosely—Apple RGB. The others could only have been accessed by typing in numbers, hardly the sort of thing a non-expert would do.

Technically, however, everyone's Apple RGB was slightly different. Conversions to CMYK took account of settings pertaining to one's monitor; therefore, identical files would not separate identically from different machines. However, the variation would usually be less even than the difference between Figures 11.5A and 11.5D.

Believing for some reason that this slight ambiguity was a major problem, Adobe made sRGB the default in Photoshop 5, and gave users eight other unambiguous RGBs to choose from if they didn't like it.

- **What happened.** RGB users went nuts. Anybody using RGB as output to, say, an Epson printer found that their workflow had been trashed, as did those who were handing off RGB files to service bureaus and printers.

Everyone who could figure out what was happening ran away from sRGB as if it were a poisonous snake, but they ran in all directions. Panicked users could be found with almost any definition *except* sRGB.

As time went on, serious users began to converge on three options: Apple RGB (or some variant loaded directly from Photoshop 4), ColorMatch RGB, or Adobe RGB.

Figure 11.6 *The colors Photoshop perceives in an RGB file depend on the definition of RGB. The RGB values in each of these files were identical before separation, but Photoshop was told that version A was in Apple RGB, B in Adobe RGB, C in sRGB, and D in ColorMatch RGB.*

This is why Adobe changed the menu in Photoshop 6 to favor these three (plus sRGB) and this is why I don't take the space to discuss other RGB options in this book.

- **The postmortem.** The CCMW believes in wider-gamut RGBs. Its adherents were accordingly outraged by the sRGB default, which they declared was unusable. I declared this also, but have since changed my mind. Having played more with it, I don't think its smaller gamut is nearly the problem others do. The reason it was such a bad choice for default was that it wiped out a system where everyone's RGB was approximately the same and replaced it with chaos. This is the only aspect of Photoshop 5 that I would say was foolish enough to qualify as calibrationism.

For its part, the CCMW has also modified its position. At first, several vendors and some writers took the view that nine competing RGB definitions weren't enough and propounded their own, each of which was claimed to give even better results. As it became clear that the market welcomed additional RGB definitions about as much as an epidemic of venereal disease, the CCMW adjusted. Several adherents have now suggested that only Adobe RGB and ColorMatch RGB should have been added as options. CCMW 2000 prefers Adobe RGB, but accepts ColorMatch RGB as a reasonable alternative in view of the high likelihood of color management snafus. If your file is in ColorMatch RGB and somebody opens and saves it in Photoshop 4, it's not great but it's no tragedy. With Adobe RGB, a ruined job is the likely result.

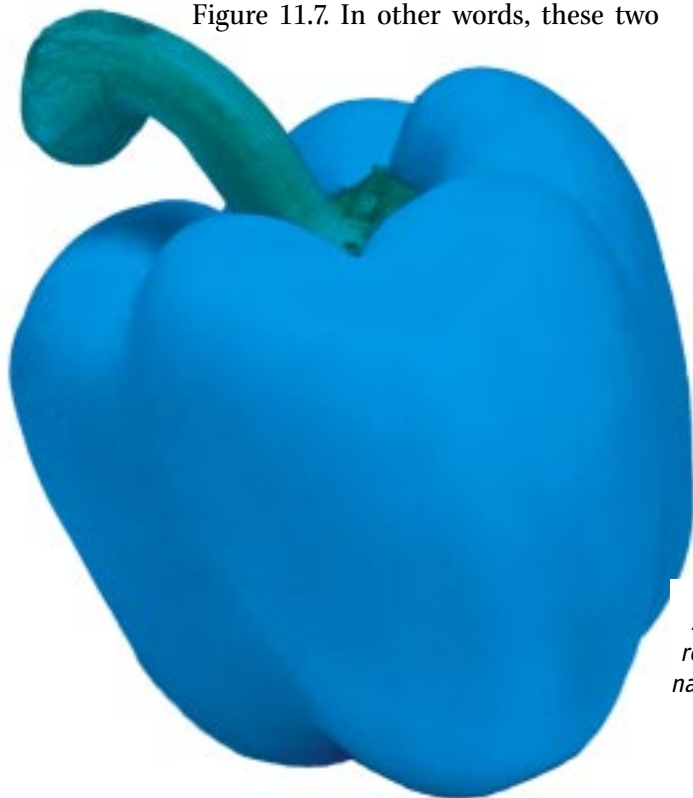
I suspect that eventually the CCMW will evolve to the point that it will understand that in this area, agreement is better than disagreement. I don't endorse sRGB, but if

everyone in the world used sRGB, that would be a far superior state of affairs to today's sorry one. I reiterate a statement from *Professional Photoshop 5*: "To trash a nearly universal standard in favor of such an every-man-for-himself situation is a blunder, no matter the rationale. But to replace it in the name of device independence, that takes a calibrationist."

- **The "right" way.** For those who know the secrets of color correction, the practical difference between using Apple RGB and ColorMatch RGB is nil. The impact of using one of the others is slight.

That said, the technically best choice of RGB depends a lot on the destination of the work.

If your eventual output is CMYK, ignore the whinings of the CCMW about limited-gamut RGBs. The alleged problem is that both Apple RGB and sRGB can't produce a fully saturated cyan, such as that shown in Figure 11.7. In other words, these two



RGBs can't specify a color that would convert to more than 90% and less than 10%.

This sounds quite horrible, but it's only another example of the CCMW falling victim to its lack of practical experience. You've never seen a pepper this color, nor almost anything else. Such a pure cyan doesn't exist in real life, except very occasionally in fashion work.

This goes back to Emily Dickinson's theories of non-random distributions of colors. Magentas as pure as the cyan pepper are also rare, but certain flowers qualify. Pure yellows occur in bananas, fashion work, and this pepper, had I not swapped the cyan and yellow plates. And pure reds, greens, and blues crop up like weeds. But pure cyans, no, unless you're trying to process a picture of the front cover of this book, which contains a color bar. Handle such images case-by-case.

If going to CMYK, the wide-gamut RGBs actually get in the way of someone who knows curves. The more colors that aren't in the CMYK gamut to begin with, the more the separation process has to guess. It will often guess wrong, as it did in Figure 11.2.

The higher-gamma (darker) RGBs emphasize distinctions in the shadows at the expense of the highlights. It's conceivable that this could help certain later corrections. Correcting for shadow detail, however, is a strength of CMYK. The problem in CMYK is retention of highlight detail, which is why one so often has to resort to channel blending.

There are two technical reasons. First, the black channel is always temptingly rich

Figure 11.7 Mathematical purists condemn Apple RGB and sRGB because they have no way of representing the brilliant cyan of this pepper. In nature, however, this color is practically nonexistent.

in shadow detail that can be exploited. Second, the compensation for dot gain that occurs during separation has a similar effect to the gamma correction in RGB: it emphasizes shadows and hurts highlights.

Neither of these factors exists in RGB. This is perhaps the only area in which there's a big difference between generic RGB and generic CMYK: in RGB, it's hard to work the shadows; in CMYK, it's the highlights. Consequently, Adobe RGB and sRGB are better choices if most of your work is done in RGB. If you work or output primarily in CMYK, Adobe RGB, despite having been anointed the prepress default in Photoshop 6, is actually a bit worse than sRGB. But ColorMatch or Apple RGB is better than either.

- **The practical way.** Every few weeks, some color discussion group features wailing and gnashing of teeth on the part of a user of Adobe RGB who was foolish enough to pass an RGB file on to a service provider who had never heard of Adobe RGB and had all color management turned off, thus guaranteeing a nearly colorless result.

The CCMW waxes wroth when this occurs. The service provider is called all kinds of names, great sympathy is expressed for the victim, other service providers are warned that resistance is futile, and everyone waits for the next victim to fall into the trap so that the fun can begin again.

The practical person, however, accepts the world the way it is. For better or worse, most service providers have declined to learn much about this methodology. Many would make the same error.

While it's fun to blame people, it's even more fun when the job is done correctly the first time. If you feel there's an advantage to using Adobe RGB, fine, but defend yourself

by converting your files to LAB before handing them off to others, and request that others do the same before giving you *their* RGB files.

The recommendations for the practical person, therefore, are:

For work primarily aimed at CMYK: Use ColorMatch or Apple RGB.

Work primarily aimed at non-Web RGB: If you are certain that your workflow won't let anyone convert (or fail to convert) it improperly later, use Adobe RGB. If not, use ColorMatch RGB.

Work aimed at the Web: If you believe your audience is primarily Macintosh-based, use Apple RGB, otherwise sRGB.

- **The future.** This is the one area where changes in Photoshop 6 will make things worse. Instead of a single default—sRGB—the new version has four: sRGB for the default labeled “Web” and Adobe RGB for three others labeled “Prepress.”

The knee-jerk reaction of many hardcore CMYK types is going to be to choose one of the prepress options, look down the dialog box, observe those provocative words *Color Management Policies* and immediately turn everything off, not realizing that the presence of Adobe RGB changes everything.

Given the plethora of RGB practices, when a stranger's file arrives bearing a tag, it's anybody's guess as to whether the tag means anything. If the tag says sRGB, that is particularly true. Up until now, however, an Adobe RGB tag could be given a little more credence; the fact that a user intentionally chose Adobe RGB has been a slight indication of awareness of what this process is about. Furthermore, if we pass on a conservative-RGB file to someone else, the chances of that somebody else destroying it

by the proven method of opening it into Adobe RGB without converting it have been pretty poor—up until now.

Whether you like a profiled workflow or not, the enemy is the nonuser who may misapply the technology to ruin your files. A legacy of the Photoshop 5 adventure is a large volume of such nonusers. This is likely to continue for years to come. It will remain dangerous for some time to pass *any* RGB files to strangers. The intelligent solution, which we'll see more and more of, is for users to convert their own files to LAB before passing them on, and letting the next person reconvert to RGB if necessary.

CMYK: Back to Basics

The CMYK setting hasn't had quite the tortured past of its RGB counterpart, but it's had its share of controversy.

- **The choices.** All CMYK definitions are now found on the same menu, recognizing that all are actually ICC profiles, even those created with what most of us know as Photoshop's built-in color engine.
- **The history.** There hasn't been much cosmetic change in the interface. Photoshop 5 combined two menus from previous versions into one, CMYK Setup, which became Custom CMYK in Photoshop 6.

Photoshop 5, however, changed the crucial dot gain definition. It left the default dot gain numbers alone, but changed their meaning. The change was not documented.

It also permitted use of third-party ICC profiles for the conversion into CMYK, but did not provide a means of editing them.

- **What happened.** CMYK users went nuts. For no apparent reason, separations began to come out much lighter than before. Many, unable to figure out what had happened, temporarily returned to Photo-

shop 4. Others blamed the dot gain problem on ICC color management, which had nothing to do with it.

- **The postmortem.** The CCMW was as appalled by the dot gain booby trap as any other rational observer. It expected, however, that many more people would adopt custom profiles than actually did, and eventually reached the correct conclusion that few would do so unless the ability to tweak them was included in Photoshop.
- **The “right” way.** Once the dot gain contretemps played itself out, people reverted to past practices. As a result, there's currently little to discuss here, particularly in comparison to the RGB situation.

None of the default offerings in Photoshop 6's Color Settings gives an adequate separation. One has to become comfortable with changing the Custom CMYK dialog. This complicated topic was largely hashed out in Chapter 6 on pages 106 and 107. But as a footnote to the EIAM *v.* PCCM discussion, I'll briefly discuss editing the Ink Colors table of Figure 11.8.

We access that table in Custom CMYK by changing “Ink Colors” to “Custom.” If you've never changed these previously, they'll be Photoshop's SWOP Coated set.

The numbers come up in the xyY color-space, which presumably is Greek to you. Fortunately, a checkbox allows us to convert them to the more familiar LAB.

The Photoshop separation method was cobbled together many years ago and has many eccentricities. Actual measurements of what your inks read have little value. But certain tweaks may help certain people.

Photoshop default separations are close to EIAM. They do well with mundane images, but crash and burn when given bright colors that are out of the CMYK gamut.

If brilliant, saturated colors are an important part of your work, you may wish to change the ink values to be more pure. This would be done by moving all the A and B numbers (except the bottom three) further from zero: positive numbers more positive, negatives more negative.

This persuades Photoshop that fewer colors are out of gamut, and that everything is more colorful than previously. This will produce a slightly duller overall look, but more detail in the saturated colors.

In short, it will move you in the direction of PCCM. This is the method used by my friend in Figure 11.4. Neither of us use standard ink definitions, but his assume purer inks than mine.

In *Professional Photoshop 5*, I discussed at length some of the potential advantages of using separation methods prepared by third-party profiling software. Among these were the ability to create eccentric seps that would, say, emphasize green and blue but not red (a realtor might want this). Also, there was a case to be made for loading such profiles for previewing purposes, mainly because they allow us to fake a non-white background where necessary.

- **The practical way.** With most CMYK users sticking to traditional methods, there aren't as many traps to fall into as in RGB. So the practical user is limited to looking for more efficient options among the various new tools. One is shown in Figure 11.9.

I recently had occasion to prepare a small color brochure for a lecture. I wanted to use certain images I had previously used in magazines, but this brochure was to be printed on a color copier. Output from this copier looks no more like a magazine than Doug Flutie looks like Abraham Lincoln, so I was in a spot. I could have just guessed

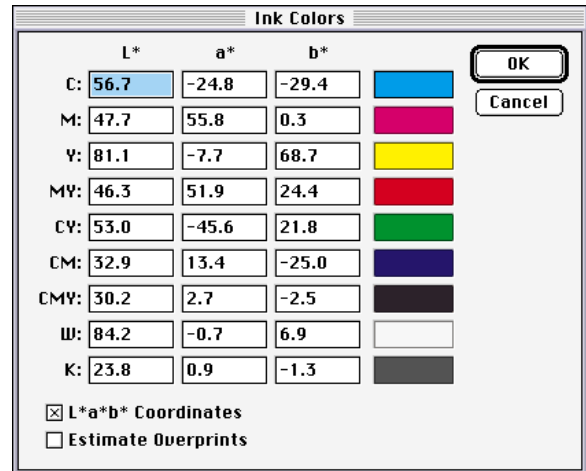


Figure 11.8 Photoshop's separation method relies on its profiles of the four inks and what happens when they overlap one another. Edit these values at your own risk.

that the copier would print much darker, and lightened the files to compensate, but the copier's owner provided a more effective solution.

He gave me a copy of his CMYK settings. As it happens, he was using a profile that he created using third-party software, but this makes no difference; he could have been using Custom CMYK.

Having loaded this profile into my computer, the old-fashioned way would have been to convert all of my images into LAB, using my own CMYK settings. Then, I would have changed the color settings to his CMYK, and reconverted everything and saved it under a new name.

Photoshop 6 saves a step. I opened the files, and changed each in Image: Mode> Convert to Profile.

- **The future.** Adobe's failure to include a full-fledged ICC profile editor in Photoshop 6 guarantees that the traditional Photoshop separation engine will remain dominant. The serious user needs to be able to make quick changes in black generation,

at least. A method that requires exiting Photoshop to tweak the profile is not going to fly.

There will be a peripheral role for well-prepared third-party profiles, mostly to cater to output devices such as inkjet printers and high-speed color copiers.

Printers and service bureaus will likely continue to be hostile to the CCMW for many years to come. They have an inordinate impact on the practices of the general public. If all the service providers say that color management doesn't work, it really doesn't matter whether they're right.

A More Adult Way to Play Tag

The ability to embed a tag indicating what our intentions were at the time we created the file sounds like a fine idea. In the real world, the possibility that someone or something may make unauthorized

changes to the color based on that information makes the topic a bit spicier.

- **The choices.** Photoshop 6 is what Photoshop 5 should have been. We now have the ability to tag or untag files individually each time we save them, without having to change our color settings each time. When a tagged file comes to us, we can ignore the tag, use it to convert the file into our own CMYK or RGB, or, in a major development, retain the tag.

Also new in Photoshop 6: we can, with Image: Mode>Assign Profile, put any arbitrary tag into a file. The Image: Mode>Convert to Profile command, unlike its Photoshop 5 predecessor, Image: Mode>Profile to Profile, allows us to embed the *correct* tag should we decide to convert a file.

- **The history.** The ability to embed and read ICC tags didn't exist in Photoshop before the 1998 release of Photoshop 5.

Figure 11.9 Practical profile use. The version at right is the desired color, but it was necessary to print the picture on a color copier for other purposes. The owner of the copier provided a CMYK profile, and the Convert to Profile command transformed the image into the version at the left, too light for this book. On the copier, however, it produced a result acceptably close to that shown on the right here.



Its defaults were not just to embed the tags, but upon opening incoming files (including files prepared in previous versions of Photoshop) to convert the data into whatever CMYK or RGB Setup called for.

- **What happened.** The entire Photoshop user base went nuts.

Service providers universally condemned the new settings and urged clients to turn them off. A few actually refused for a time to accept files prepared in Photoshop 5. Some inhouse operations forbade their freelancers to use the program. In a magazine article, I called Photoshop 5 “a major disservice to the industry.” Adobe customer support was flooded with calls; online newsgroups saw an unprecedented level of namecalling and Adobe-bashing.

One year later, Photoshop 5 had still not completely supplanted previous versions, a rarity. However, the market finally realized that, properly configured, Photoshop 5 would not bite, and adoption was rapid in the latter half of 1999.

Some users, mainly photographers, began to use third-party profiles, mainly as a way to calibrate their proofers. But that’s about it for the experiment. Some people embed tags for philosophical reasons, but workflows that depend on embedded tags are at this point nonexistent. Service providers continue to recommend against any workflow involving conversions. Few if any honor tags unless their client specifically instructs them to do so.

- **The postmortem.** The CCMW has been fragmented throughout this experience. Most adherents were delirious with joy when Photoshop 5 came out, but author Bruce Fraser, a prominent historical supporter of color management, correctly stated at the time that the release had made

rocket science out of fairly simple concepts, and that many users would be baffled. Other hardliners, however, blasted users for being too lazy to read the manuals, Adobe’s documentation for being inadequate, and service providers for being too set in their ways to adopt anything new.

That view has changed. CCMW 2000 has come to agree that the convert-on-open default was a big mistake. Also, it has backed off somewhat on the question of embedding tags. RGB tags are generally thought desirable. Grayscale tags are not, owing to various reported problems and a lack of any real benefit. CCMW 2000 is of two minds on the question of CMYK tags. It likes the idea in principle, but understands that most of the CMYK world doesn’t, and that attempting to ram it down people’s throats may be counterproductive.

The CCMW also has finally concluded, or is at least on the verge of doing so, that its ideas are going nowhere unless implementing them gets a lot simpler. While this new attitude is welcome, I cannot resist a final quote from the last edition of this book:

...considering that you, as a reader of this book, identify yourself as being well above average in sophistication, let me ask you: how easy do *you* find the material in this chapter? This entire area has proven itself much too difficult for the typical user. For people who do not understand the theory behind it, mistakes are inevitable.

- **The “right” way.** In a perfect world, all files are tagged, since in a perfect world a tag is never misused by an ignoramus of the human or machine variety.

As for whether to honor tags in files presented to us by strangers, Photoshop 5 offered us the choice of death by hanging or

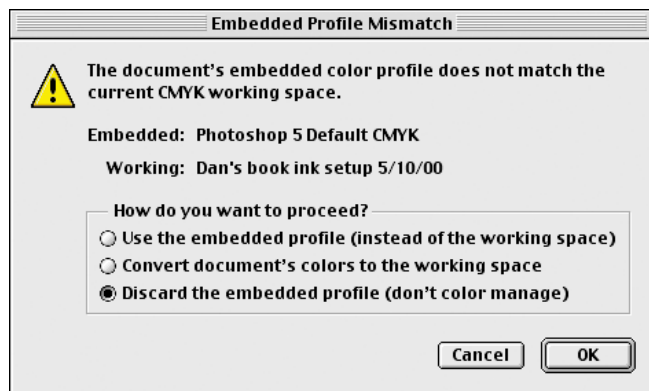


Figure 11.10 When “Ask When Opening” is checked in Color Settings, this dialog appears when opening a stranger’s tagged file. Photoshop 6, for the first time, allows retaining the tag, which is almost always the right thing to do in RGB. If the incoming file is CMYK, sometimes it will make sense to retain the tag, but in many if not most cases it should be discarded.

by poison. If we ignored the tag, a dissatisfied client could have some color management yahoo condemn us on every online newsgroup. If we trusted the tag and converted the colors, a dissatisfied client could produce affidavits from the best service providers in the country stating that tags are known to cause warts, Hodgkins Disease, and hemorrhoids, and that reputable concerns always ignore them.

If we had opened and saved the client’s file without converting it, it would then have incorrectly gotten *our* tag, or no tag at all, depending upon our settings. The only way to resave it with the *client’s* tag intact would have been to change settings in two different Photoshop 5 dialogs. Most operations rightfully declined to do this—too much chance of destroying a series of future jobs by forgetting to change the settings back afterward.

Photoshop 6 corrects this horror. We can still convert if we like or ignore if we like. But most of the time we should do the obvious, *maintain* the tag, especially if the

file is RGB. In Photoshop 6, one file can be open in Apple RGB and another in Adobe RGB. If we open and save somebody else’s image, the tag won’t change.

- **The practical way.** Even if you are anti-color management, you should check “Ask When Opening” rather than “Ignore.” If somebody hands you a tagged file, it’s a good idea to know it. What you choose to do at that point is another story.

Retaining the tags in an RGB file supplied by a stranger seems to me to be a no-brainer. CMYK files don’t have such an easy answer.

Retaining the profile has the advantage—or disadvantage, depending on your workflow—that it overrides our current monitor settings, and theoretically displays the image as it would have appeared on the stranger’s monitor. The chances that it actually does this are slim to none, but the point is that it won’t look the same on our monitor as if we had opened it without retaining the tag.

In RGB, that’s unlikely to hurt. In CMYK, it might. If we’ve got a nice Custom CMYK loaded that’s accurate for our printing conditions, retaining the tag will override that and we won’t see the file as it will print. For some people that’s a problem and for others it isn’t. For me, it makes sense to discard the tag most of the time. The good thing, though, is that I don’t have to do it *all* of the time. If “Ask When Opening” is checked and a tagged file comes in, the dialog of Figure 11.10 pops up, with my usual preference—trash the tag—preselected. But if for some reason I decide to keep the tag on this particular file, it’s a one-click operation.

Embedding tags ourselves continues to be a two-edged sword. Unless you are one of

the few people in the world with a workflow that absolutely depends on the presence of the tag, you need to ask whether the potential gain of tagging the file outweighs the risk of doing so. Having had two major jobs ruined myself by faulty tag management elsewhere, I can assure you that it's not risk-free. A file saved without a tag is less likely to be converted by mistake.

Of my two disasters, one was human error, abetted by the design of Photoshop 5. I was reprinting an older job, and forgot that the files had been prepared in Photoshop 4. Since Photoshop 4 files *can't* contain tags, as opposed to later versions, where tags are optional, the later versions treat them differently. They can be set up to convert the colors of all such "legacy" files immediately upon opening, the assumptions to be used in this conversion being specified by the user. The boneheads who worked my job had specified that Photoshop 5 was to assume that "legacy" files had been prepared for newspaper printing, which was unfortunate for me, as mine had been prepared for magazines.

The other disaster, I can't explain. Somebody opened and recropped my files, in doing so carelessly embedding an incorrect tag. This should not have made a difference, as the tag was not that far off from what I intended, and the workflow didn't call for any conversions.

And yet one happened, a big one, apparently automatically, possibly in the page layout application, possibly in the RIP, I don't know, nor does the supplier, nor will anyone else ever know.

Color-handling programs are complex and subject to all kinds of bugs. Photoshop itself goes through an exhaustive beta-testing period, with thousands of reasonably

expert users reporting any irregularity, and still the shipping versions usually have minor flaws.

Few use the sorts of workflows we are talking about, especially in the CMYK world. So, testing is inadequate. One recent version of ColorSync, Apple's enabling mechanism for color management, turned tagged files into negatives when they were placed in PageMaker. ColorSync 3.0, which shipped in early 2000, had several serious glitches. One sometimes turned screen displays bright yellow when the monitor tag was changed. Another, when a file was saved as a TIFF with a tag originating from certain vendors, prevented Photoshop from ever opening the file again.

There are not exactly minor issues. And if bugs as blatant as these can slip through, one can only imagine what other land mines may be lurking, waiting for us to step on them.

For these reasons, I would recommend against embedding tags in CMYK files, unless you have a particular reason to do it. One such reason is inherent in the left side of Figure 11.9.

If a CMYK file has no tag, one assumes it is set up for "SWOP." This is a vague term, but decades of experience have shown that the market feels little need for more precision. The deer at the right of Figure 11.9 will print slightly darker in most SWOP contexts than it does here—but acceptably so.

The left side is another story. That file is an accident waiting to happen if somebody picks it up and thinks it's a normal CMYK file. The chances of this are slim, but why take a chance? I've therefore warned the next user by naming it !HP_Only!_deer.tif.

I've also tagged the file. This hypothetical person who picks up the file in three

years may know from the name that something's up. But she'll have to take a guess at what that something is if there's no tag.

For the right-hand version, if I embed a tag and it gets ignored, it's no big deal, but if the tag gets misused, it's a major problem. The left-hand version, though, is the opposite. If the tag gets ignored, *that's* what's deadly. If the tag gets misused, I'm no worse off. So, I tag one, but not the other.

For similar reasons, if I used Adobe RGB, I'd tag every RGB file. It's all part of the pattern of driving defensively. For files that never leave our premises, it makes no difference whether they're tagged or not. We have to consider the possibility that they'll fall into the hands of strangers. If it would be almost as bad for the stranger to ignore the tag as it would be to misuse it, then the tag belongs there.

- **The future.** The sensible changes of Photoshop 6 will help, but still, for the next few years, nobody is going to be able to rely on tags in files that come from strangers. Plus, certain hardware and software combinations will occasionally create havoc for those few who embed tags. For these reasons, few large operations, especially those who interact with outsiders, will want to have much to do with a tagged workflow.

One possibility is that service providers will start making their separation method available to their clients, as mine did with Figure 11.9. This step is strongly advocated by the CCMW, and I endorse it myself.

I question, however, whether this is going to occur. Many CMYK-oriented operations consider the separation method of little importance, as they intend to correct everything afterwards anyway. Others are disinclined to let the competition know what they think their dot gain is. Most of

all, however, printers and service bureaus could have done this ever since Photoshop 2, which is almost 10 years ago. The fact that the practice has never yet taken off doesn't speak well for the chances it will.

Filling In the Blanks

There are two other straightforward options in the Color Settings dialog. If you want to use a custom setting here, Advanced Mode has to be checked.

- **Gray (Grayscale).** The default is 20% dot gain for grayscale images, which is fair enough, but if you have a good Custom CMYK, you should just take the gray dot gain setting from that and plug it in here, using the Custom Dot Gain option.
- **Spot Colors.** The default is again 20%, and I would leave this alone: spot inks often have higher dot gains than process inks. In *Professional Photoshop 5*, there was a whole chapter on the problems of fifth colors. For space reasons, we've omitted it this time, but a PDF of the chapter is on your CD.

An Overrated Topic

For all the aggravation this topic has caused users, and for all the hype expended on it, its importance is much overrated. One method is better on certain images and another on others, but most of the time, the exact method is almost irrelevant.

The volcano of Figure 11.4 is a perfect example. The two competing versions are quite different—but neither is good enough. Both need to be corrected both for color and to add contrast to the hills surrounding the crater.

In doing so, it does not make the slightest difference which of the versions we start with. The correction techniques would be identical on the two. Only the numbers on



MANAGING THE COLOR SETTINGS

- ✓ CMYK and RGB have very different color gamuts. CMYK has better yellows and sometimes better magentas. As against that, it has very poor blues. Because of these differences, a perfect separation algorithm is a contradiction in terms.
- ✓ The better a separation method is at handling exceptional situations, the worse it will be on the average image. Conversely, the better the method does on average images, the more likely it is to do something really bad on occasion.
- ✓ Photoshop 6 corrects many of the serious color handling errors of Photoshop 5. Four dialogs are combined into one, Color Settings. Also, a new command, Convert to Profile, is very flexible and eliminates a lot of possibilities for error.
- ✓ U.S. service providers are generally hostile to workflows involving tags and conversions. When supplying files to them, or to any stranger, you should not assume that your tags will be honored unless you have made your wishes clear.
- ✓ Unlike Photoshop 5, which offered a grab bag of RGB definitions, Photoshop 6 suggests only four. Those skilled in color correction will get close to the same results with any, assuming no color management mistakes along the way.
- ✓ Because the RGB definitions are so different and adoption of proper workflows so spotty, it's currently very dangerous to hand off RGB files to strangers. Convert them to LAB first, and let the stranger reconvert to RGB.
- ✓ Certain users can benefit from the use of embedded profiles. If you aren't sure you're one of them, you probably aren't. In that case, you are probably better off disabling Photoshop's color management.
- ✓ A disadvantage of separating with third-party profiles is that changes in black generation or small tweaks to the algorithm are time-consuming and require special software, which at the moment is rather expensive.
- ✓ Retaining an incoming file's tags, a new option in Photoshop 6, is generally the right thing to do in RGB. As it impacts monitor display, it can be wrong in CMYK.
- ✓ For knowledgeable users, the exact method of separation—except for black generation—is nearly irrelevant. Almost all images will still need later correction, and small variations in the initial file won't make a difference in quality.

the curves would vary. Neither would be in any way more difficult than the other. Neither would take more time. Neither would have the smallest advantage in quality once we were done.

Even in the four versions of Figure 11.6, which differ from one another far more than any sensible separation methods would, the impact of the difference, to a skilled retoucher, is nil.

There is no point in avoiding the easy changes that make the separation more accurate, such as increasing Photoshop's dot gain adjustment when separating an image for use in a newspaper. But an accurate separation only goes so far.

If there really were one best way to convert into CMYK, it would have been discovered a long time ago. Meanwhile, there are many reasonable variations within Photoshop and elsewhere. If you don't much care about image quality, it won't much matter

which one you use. If you do care, and if you know the right way to get there—well, then it won't matter much, either.

The way it will matter, unfortunately, is if somebody screws up a color setting along the way and destroys the job. This is the major reason for all the controversy when the new capabilities were introduced in Photoshop 5: limited opportunities for gain, unbridled ones for disaster.

The sensible changes in Photoshop 6's color handling are a test for the responsible user. When Photoshop 5 came out, I was quite sure of what would happen. This time, it's a bit dicier. Will the users take advantage of the relatively painless new features, like Convert to Profile, and the new options in Color Settings? Or will they, disgusted by Photoshop 5, immediately turn all color management off and move on?

You've got the ball now. Let's see if you can run with it.