

## The Case of the Counterfeit Color

*Topic:* A reader complains that he believes a service bureau is sabotaging his work. Dan investigates, with the help of some of history's most famous detectives.

*Column first appeared:* February 1996, *Computer Artist* magazine.

*Source of this file:* A revised and expanded version of the column, as it appeared in Dan's 1996 book *Makeready*. We've made the question-and-answer section of this chapter available as a second downloadable PDF.

This archive, to be released over several years, collects the columns that Dan Margulis wrote under the *Makeready* title between 1993 and 2006. In some cases the columns appear as written; in others the archive contains revised versions that appeared in later books.

*Makeready* in principle could cover anything related to graphic arts production, but it is best known for its contributions to Photoshop technique, particularly in the field of color correction. In its final years, the column was appearing in six different magazines worldwide (two in the United States).

Dan Margulis teaches small-group master classes in color correction. Information is available at <http://www.ledet.com/margulis>, which also has a selection of other articles and chapters from Dan's books, and more than a hundred edited threads from Dan's Applied Color Theory e-mail list.

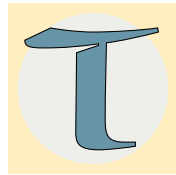
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# 3

## The Case of the Counterfeit Color

*We all know that color separators dislike computer artists. But would they actually stoop to sabotage? Don the deerstalker, get down the glass, scope out the clues...*



he mysterious words scrolled up the screen, having emerged from the electronic ether on a foreboding night, full of thunderclaps. *Can you help me flesh out a conspiracy theory I'm working on?*

What a promising start to a message! Everyone loves a conspiracy theory, and everyone loves a good detective story. I would gladly give up all my color knowledge for a few months of being Dalglish, Poirot, Wolfe. Did the stranger who sent the message know this? Let's get back to his recital of facts.

*The Theory: "traditional" color separators, threatened by encroachment of desktop systems, purposefully screw up my data when I give them a separation file made in Photoshop.*

*The Evidence: Almost without exception, files I generate look great when output at a service bureau. Bright, lively, punchy. Exactly what I expect. The same files, when run through a traditional system, look flat, drab, and washed out.*

*I do retouching for ad agency clients, and I've never had a job bounce when run at a service bureau (the plates seem to run fine at the pubs as well).*

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**Figure 3.1.** Gray component replacement (GCR) alters the balance between black and the other three inks. For each of the two color images at left, either of the black plates shown can theoretically work; if you want a heavier black, you simply reduce the other three colors in more or less equal quantities. As a practical matter, though, one of these images should take the heavier black and the other one not. Do you know which?

*Send the file to a separator, and they invariably come back with a flat proof and an explanation that the separation is inferior. Everyone feels that the “flat” proof is a poor separation, and typically the separator wants to punch up the color on the Scitex, or the client asks me to output to chrome (I work in RGB) so he can have the separator scan the chrome conventionally. Usually THIS sep looks like the one I get from the service bureau from my CMYK file (bright and punchy). Then the separator makes a few smug remarks about “artists doing seps,” and my customer thinks I don’t know what I’m doing. Any idea what gives here?*

**A press does not behave like a computer. It behaves like what it is: a powerful, fast, and dangerous combination of machines, not conducive to great precision.**

That is a fairly complete statement of the case, containing critical clues surrounded by a morass of irrelevant detail. Ellery

Queen, at this point, would issue his Challenge to the Reader, saying, “by the exercise of strict logic and irrefutable deductions from given data, it should be simple...the deductions are natural, but they require sharp and unflagging thought.”

With that in mind, gentle reader, can you now solve the case of the correspondent’s counterfeit color?

Starting off with a puzzle is a time-tested way of suckering the reader into paying attention to a boring topic. Seldom has the device been used more shamelessly than here, since the subject of this column is dot gain. So, let us temporarily set aside the question of whether the separators of this world are engaging in sharp practices against computer artists, and move to a consideration of some of the grim realities of the printing process, and how to take advantage of them for best results.

Getting good printing largely depends on understanding that a press does not behave like a computer. Rather, it behaves like what it is: a large, powerful, and dangerous combination of machines, full of cylinders, fountains, bolts, and rapidly moving gears and parts of all descriptions, all dedicated to smearing large quantities of several varieties of ink and water–alcohol solution at great speed under less than spotless conditions to paper that is flying through it at rates in the five figures of sheets per hour.

Such a beast is not conducive to great precision.

Despite continuing quality improvements, the press is still, by far, the source of the most variability in our entire production process. Worse yet, it comes at a point where we don’t want much

variation. Consider, in the context of getting a photo into print, where we want precision and where there is a little leeway.

It is not at all necessary, to start with, for a photographer to be able to shoot exactly the same exposure tomorrow as today. Creativity is part of the process here, and we understand and accept that there will be individual differences of approach on similar shots.

The photo lab that processes the chromes, on the other hand, is not a place where we would like creativity to creep in. Instead, we want consistent, repeatable results. By and large we get them, but as with any process that involves film and chemicals, there will be some day-to-day variation.

We now proceed to scan and correct the photo, and here again some human variation is acceptable. There is a huge difference between the color range of photograph and press. If we do not compensate at this point by methods such as unsharp masking, our reproduction is going to look flat and blurry—much like what my correspondent thinks the separators are doing to him on purpose. Some tonal correction is almost always desirable, and how much this is will be decided by a human being whose judgment may vary from day to day.

At this point the finished scans are placed in a page makeup program and sent off to a RIP. These digital steps are conceptually perfect. Tomorrow's repetition of today's work ought to yield exactly and precisely the same results, unless some brain-dead user runs the photos through EfiColor one day and not the other.

The last steps before the pressroom are pulling and processing film, and then making a contract proof such as a Matchprint or Cromalin, or sometimes a digital proof such as an Iris. As with the photo lab's work, this is a place where we don't want variation. It occurs to some extent nevertheless. Cromalins made from the same film on successive days will look slightly different, and they will surely look different from Matchprints.

We call these *contract* proofs because they actually serve as the contract between client and printer as to how the finished job is supposed to look. All these proofing methods aim at duplicating what is likely to happen when ink hits paper. To lapse into lingo for a moment, they have their dot gain built in.

In principle, we would like to be able to replace the pressman with a monkey. Unlike the scanner operator, who must visualize how to take a vivid photograph into a smaller, drabber

*The incompatibility between proofing systems is getting worse, with the introduction of dye-sublimation printers that are accurate and controllable enough to be used for contract proofs. Cromalins and Matchprints are both film-based proofs, and they still don't match one another. Iris is a different kind of proofer still, a high-quality ink jet printer.*

colorspace, a pressman has a perfect map of what is expected, in the form of a proof carefully prepared to his requirements, so that he can match it without any artistic interpretation.

And yet, this whole brilliant system can fall to pieces because of the vagaries of the pressroom. Film changes with age and storage conditions; chemistry, despite the automatic replenishment systems found in graphic arts processors, also varies in potency from hour to hour. But a press? Forget about it! The type of press, the paper, the temperature; the humidity; who manufactured and who mixed the inks; what rotation they are being printed in that day; how well the units were washed, if at all, prior to running our job; how fast the press is being run; the brand of imagesetter and whether it was imaging positive or negative film; the state of the fountains and the dampening system; and, most important of all, the skill of the pressman and whether he is in a good mood that day—these are just some of the variables.

Calibrationists are wont to say that the job of the proof is to predict the press conditions. That is about as achievable as knowing what the weather will be like three weeks from next Friday. No, the job of the proof is to give the printer something to try to adjust the press to.

Asking the printer to match the unmatchable, however, is unreasonable. We cannot give him output from a color copier—which is capable of more intense colors than can be attained on press—and ask him to match it. And, if the press is as unpredictable as the weather, well, the weather is not *totally* unpredictable. I live in New Jersey, where it frequently reaches 80 degrees. I am nevertheless confident, extremely confident, that it will not do so three weeks from Friday. It never has, in February.

## **The Mystery of Dot Gain**

To say that dot gain is one of the most misunderstood topics in our industry is to indulge in a cosmic understatement. Few *printers*, let alone computer artists, have more than a fuzzy comprehension of what it is and what its ramifications are. I have had more requests from readers to write on dot gain than on any other topic relating to image reproduction, and have up until now avoided doing so for fear of making a highly confusing situation even worse. But, since this is a column of detective work, we may as well wheel out the topic here.

[Time out for a reminder. Have you already come up with a

solution to the bizarre charge of sabotage by the separator? If not, remember what Holmes said: “As a rule, the more bizarre a thing is, the less mysterious it proves to be.” Now, back to our regularly scheduled program.]

There is no reasonable way of discussing dot gain except in conjunction with other press phenomena, all of which conspire to make life worse for us when we print our images on lousy paper. Let us, therefore, go over the reasons, of which dot gain is but one, that we should not be surprised when an image printed on, say, newsprint, fails to look like (or as good as) the same one printed on a coated sheet, or the proof, or our monitor.

When ink, or, for that matter, any kind of liquid, hits paper, a certain amount will lie on the surface but a certain amount will be absorbed into the sheet. This absorbed amount will spread away from the area where the liquid originally hit.

Generally speaking, the worse the quality of the paper, the more absorbent it is. If you would like to test this for yourself, you can do so with a cup of coffee, a magazine, and a copy of your local newspaper. Spill one drop of coffee on each periodical, and see how much wider the brown stain gets on the newsprint.

If we are printing halftone dots, with ink instead of coffee, the same thing will happen. We will perceive the dots to be larger if they are printed on poorer paper. This will make the image appear darker overall. Thus, dot gain.

Suppose we have a sample printed on a fine coated paper. What differences should we expect if we go to a lesser sheet? There are four major ones I can think of, each with a different impact—and each, in its own way, a form of dot gain.

1. **Real dot gain in the midtones.** The lesser paper will have more of it. If you are mathematically inclined, you can work out the theory that suggests that it will be most noticeable in dots that originally range between 50 and 70 percent, the midtone and three-quarter tone, in other words. On the poor paper, these tones will appear darker than on the good stock.

2. **Counter-dot gain in the shadows.** Dot gain fools the eye into believing the image is darker by removing some of the white space between dots. But what if there is not that much white space to begin with? On a poor paper we may perceive that shadow areas have become solid, with no space at all between dots. You would think that would mean deep shadow areas would seem darker on a poor paper just as the midtones

would be. It isn't true. When a *lot* of ink is hitting the paper—and in shadow areas, it is—what we perceive as darkness is based less on dot diameter than on how much of that nice glossy ink sits on the surface of the sheet instead of being absorbed. And on a fine sheet, that is what most of the ink will do, and the shadows will look *darker* than they would on newsprint, dot gain be damned.

3. **Pseudo-dot gain in the quartertones.** Although, as indicated above, dot gain is theoretically greatest in the midtones, we see it as being heavier in the quartertones. This perception is caused by an even more important factor than dot gain: the underlying color of the paper.

A poorer-quality paper usually is not as white as its more expensive counterparts. This has profound implications. Since we can't produce a color in our image lighter than the paper itself,

we are stuck with a smaller color range, and will get flatter-looking reproduction.

Starting with a grayish paper is roughly equivalent to adding, say, 10C10M10Y to whatever colors we happen to be calling for. Adding ink in equal quantities will emphasize the ink that had the lowest value in the first place.

Thus, if the color is green, the gray paper

will seem to add magenta to it; if the color is blue, it will seem to add yellow.

Professionals and color scientists usually call said lowest-value ink the *unwanted color*, or the *contaminating color*. Those terms sort of sum up its function. What it does, obviously, is make every pure color look muddier.

4. **Human dot gain throughout.** How heavily the ink flows onto the paper is obviously critical. That flow is controlled by the pressman. If it is different from what is anticipated, this will have more of an impact on the image than the other three factors put together.

An inking deviation in one or all colors can be the result of carelessness, or the pressman may be doing it on purpose. Either way, the move will probably be toward more ink, not less.

A pressman adjusts ink flow globally or in selected portions of the sheet to make the job as a whole look better. As an aid in this process, virtually all jobs will have a quality-control bar like that of Figure 3.2, which can then be read by a densitometer.

**D**ot gain can only be understood in the context of other press phenomena, all of which conspire to make our lives difficult when we print on lousy paper.

Densitometers, though, are dull, prosaic machines. They are not to be relied on for sensitive judgments, for they lack that most fundamental of human visual skills: the ability to evaluate color in context. They may be able to measure that the press sheet densities match the densities of the proof—but that doesn't mean the two will *look* alike. For that, one needs a person—and the person will make adjustments.

Whatever adjustments are made cannot isolate an element from whatever happens to be printing above and below it. Design and layout, therefore, may determine ink flow to our image. If, for example, the typeface is Baskerville or Bodoni or anything else that features thin strokes, bet on the pressman increasing black to avoid washing the letters out. The fact that this excess ink may also muddy up an image will seem to him the lesser of two evils.

These interventions by the pressman are as predictable as they are purposeful. We can compensate for them. But what if the change in ink flow is inadvertent, a mistake? If we have no clue what the pressman is going to do, we can't adjust, can we?

Yes. Yes, indeed. With a little forethought, we *can*.

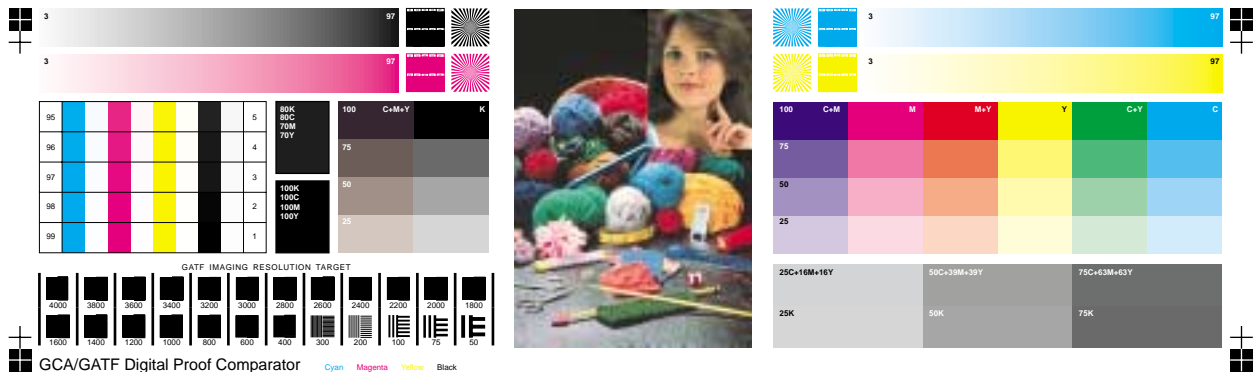
**Figure 3.2.** A pressman can use a densitometer on this quality-control swatch to find out if inks are coming down at appropriate levels, but the numbers don't tell the whole story. Many prefer just to make the picture of the young woman look good, assuming that this will compensate for intangibles such as the underlying color of the paper.

### The Photoshop Response

Of these factors, Photoshop's dot gain compensation scheme only addresses the first, which is the least important of the four.

Increasing Photoshop's dot gain setting (through Edit>Preferences>Printing Inks Setup) doesn't change the actual CMYK file, but it does alter the monitor preview. It does so by increasing the displayed midtone value, darkening the image overall.

This crude method does not really do justice to the complex interaction of factors described above. True, in a heavy dot gain



situation, the image *will* look darker overall, but that is not nearly all that will happen. Accordingly, even if you have tweaked your monitor to the point that you trust it slightly for normal commercial jobs, just raising Photoshop's dot gain setting will *not* give you an adequate preview of how a file is going to print on poor paper.

By default, Photoshop uses 20 percent dot gain. This figure is not the amount by which the dots increase in apparent size. Instead, unbelievably, it is the absolute amount that a 50 percent dot in film will appear to increase by on press. (Adobe cannot be blamed for using this absurd method of expressing dot gain; it is in fact the industry standard.) Twenty percent dot gain means, a 50 percent dot will look to the viewer like 70 percent.

**M**ost of the time, a poorer-quality paper is not as white as its more expensive counterparts. Starting with a grayish paper will make every pure color look muddier.

If 20 percent seems extreme, actually it is rather conservative. By this definition, a dot gain of less than 15 or 16 percent is unheard of even under the finest printing conditions, and 20 percent is somewhat low even for commercial sheetfed printing. 25 percent is more like it for magazines, and newspapers will be 30 percent or even higher.

These figures are subject to huge variation on any given day. SWOP, the industry-sponsored organization that suggests technical standards for publication printing and prepress, says dot gain in a magazine is typically 24 percent in cyan and magenta, 22 percent in yellow, and 28 percent in black. More ominous, though, is the uncertainty: plus or minus four points for any or all of them.

For magazine work, therefore, plan for dot gain to be anywhere from about 21 to about 29 percent. That is an enormous range, as Figure 3.3 indicates.

We should not, however, throw up our hands and say it's hopeless. We can't predict the exact temperature in February, but we can state with some certainty what it will *not* be. It will not be in the 80s. Shorts and golf shirt will not be suitable attire.

In exactly the same way that we can select our clothing intelligently for some future date, without knowing precisely what the weather will be, we can take measures in preparing our images that will cater to the likely problems that we will meet on press, without knowing specifically what they will be.

**Figure 3.3.** An industry standards group estimates magazine dot gain at between 21 and 29 percent. That's a huge range, shown top and bottom left. But in high dot gain situations, Photoshop's preview is not accurate: at bottom right, a more plausible version of how an image might look printed in a newspaper—if we don't take the steps needed to save it.



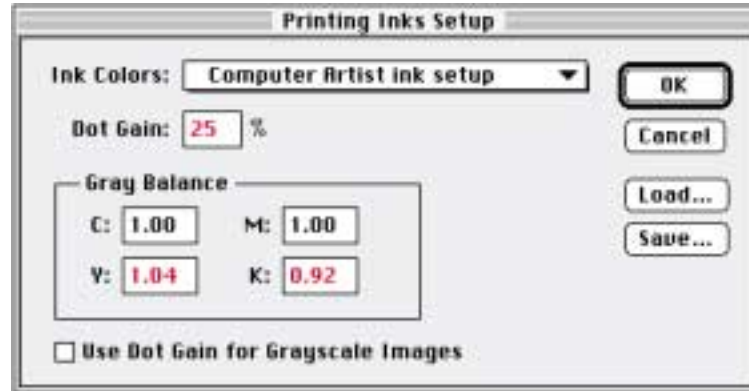
## The Artist Strikes Back

If you work for a newspaper, or otherwise have to deal with poor press conditions on a day-to-day basis, you can customize your process to a considerable extent. Here, please assume that you have not done so, and that you have a color image that you believe will print well under high-quality conditions. However, you have to prepare it for a high-dot gain situation, and you have no satisfactory means of proofing.

Given these unfortunate circumstances, here are my recommendations.

**1. Use the best Printing Inks Setup.** Photoshop treats all inks as equals for the purposes of dot gain adjustment. This is notoriously incorrect. Compensate by using the values shown in Figure 3.4, adjusting the overall gain up or down depending on what sort of printing you are doing. If you are in CMYK to begin with, this will affect only the appearance on the monitor, but if you start off in RGB or LAB, it will (favorably) affect the separation to CMYK. If you have ever thought to yourself that Photoshop gives muddy-looking separations, the

**Figure 3.4.** Photoshop's default *Printing Inks Setup* assumes that dot gain is the same in all colors. It isn't; these values should give better results for magazine work. For higher-quality applications, the overall dot gain percentage should be lower, and for newspaper work, it should be higher.



main reason is its defaults: a) the GCR setting gives more black than is customary; b) overall dot gain is assumed to be too low; c) no account is taken of the fact that dot gain will be heavier in black than the other three inks. Mix these three ingredients together, and you get mud.

**2. Drop the midtone in CMY.** In a high-dot gain situation, there will be a drastic loss of contrast in the darker ranges of the image, worse than shows up on your screen display. If nothing of importance in the image has detail in the shadows, fine. But if there is significant detail that you wish to save, lower the midtone in all colors except black. This can be done either through the Levels or the Curves command. Of course, if you know of more accurate ways to exaggerate contrast, use them by all means.

**3. Increase saturation.** Open Photoshop's Image>Adjust Hue/Saturation and add 10 to 20 points to general saturation, as in Figure 3.5. This move may be excused for being so crude by the fact that it works. Recall that Photoshop does not compensate for the underlying grayness of the paper. This means that the colors you see on the screen will be cleaner than what you get on press. Compensate by making the screen preview seem lurid.

**4. Use GCR intelligently.** GCR—the substitution of black ink for some of the CMY inks—can be an antidote for human dot gain of the unintentional kind. Although we cannot control what an incompetent pressman will do, we can make damaging our job a lot tougher for him by asking ourselves the following question: Would it be worse for this image if it prints too dark, or if it prints with a color cast?

In the frogman of Figure 3.1, too much black would be a disaster. Everything depends on holding detail in the dark areas of his suit, and if black for whatever reason comes down too

heavily quality will go to Davy Jones’s locker. Too much of some other color would not be nearly as bad, since we don’t have much color perception in objects this dark. The image of the bride, on the other hand, will be badly damaged by a color cast, and not so much by just printing darker. If a bridal gown is not supposed to be *white*, it’s hard to know what is.

We take the bomb out of the pressman’s hands, therefore, by using GCR in the lighter image, but not in the darker.

5. **When in doubt, assume the worst.** The pressman is more likely to run the inks too heavy than too light. If he sees a washed-out image, he is *sure* to do it, a nice safety belt for us. Cater to it by assuming a dot gain that’s on the heavy side. For magazines, use 25 percent.

**Figure 3.5.** *If the paper is not very white, more than contrast gets lost. If the paper is gray, the impact is similar to adding small, but equal, amounts of all three CMY inks to the image. And if equal amounts are added to all three inks, whichever of the three was weakest to begin with will be helped the most. The weakest ink is the contaminating, or unwanted, color. Therefore, if the paper is gray, every color will appear dirtier overall on paper—but it won’t on your monitor, since Photoshop doesn’t alter its display to compensate for paper color. Therefore, assume that your monitor is showing you cleaner colors than you will get, and clean them up more. Increasing saturation, right, is a crude but effective way of doing this.*

## J’Accuse!

The time has now come to name the culprit. You remember: the correspondent accused separators of sabotage, since his files seemed to look much better when a service bureau handled them.

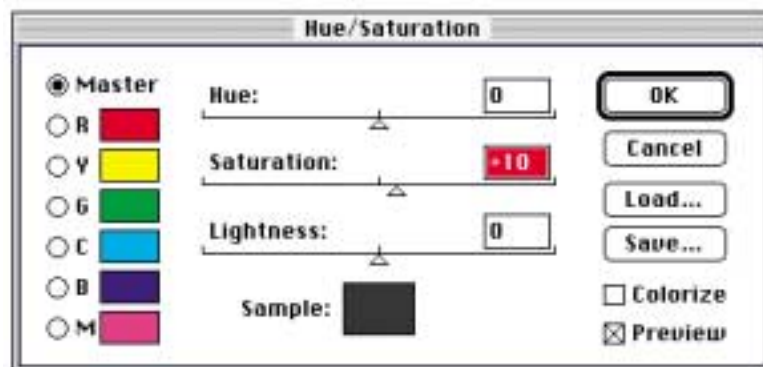
I will resist the temptation to call this case “elementary,” and cut to the chase. The printer did it.

Say *what?*

How can this be? How, and why, did *he* get involved?

“If a thing could only have been done one way, and if only one person could have done it that way,” replies Lord Peter Wimsey, “then you’ve got your criminal, motive or no motive.”

Confronted with work from the separator that looks much worse than the service bureau’s, the writer suspects the obvious, that somehow the files were the victim of foul play at the separator. Not too likely, in my opinion: in the Scitex workflow,



such sabotage would be quite inconvenient, not to mention dangerous as all get-out. Additionally, since the writer appears to use more than one separator, this theory would require a wildly improbable conspiracy. When we hear hoofbeats in the distance, we detectives think horses, not zebras.

The writer said, "*the plates seem to run fine at the pubs as well.*"

"At such moments," says Poirot, "the brain should be working feverishly, not sinking into sluggish repose. The mental activity, it is so interesting, so stimulating. The employment of the little grey cells is a mental pleasure. They and they only can be trusted to lead one through fog to the truth."

When I heard about the pubs, I knew that the printer was guilty. And my proof? Well, the proof is the proof, in this case.

How do you think the writer came to his conclusion that the separator's work was worse, by consulting a crystal ball, or what? Of course not! He believed the evidence of his own eyes, examining the contract proofs from both sources. His mistake was in believing that the two proofs were in any way comparable, and that is how the color-killer got away.

Contract proofs have to behave like presses if printers are to be able to match them. Manufacturers therefore build in a compensation for dot gain, so that the color in their proofs becomes heavier than in the film, just as happens on press.

*By default, though, the proof is calibrated to commercial printing on good paper.* The base paper of the proof is a brilliant white. Dot gain, although there, is low.

This is the kind of proof that, I deduce, the printer asked the separator *not* to supply, because it would not be possible to match it under publication conditions.

For magazine and lower-quality work, such a proof leads to overoptimism on the part of the client. The printed result is fated to be flat and disappointing by comparison. One can't ask the printer to achieve a color whiter than the paper.

Accordingly, all of the manufacturers of contract proofs offer other options. The base can be white (commercial), off-white (pub), or gray (newsprint). The dot gain can be established as low, moderate, or heavy. Magazine printing presumptively has off-white paper and moderate to heavy dot gain.

A separator works more closely with the printer than a service bureau does, and often is told by the printer what kind of proof to make. The service bureau may not even know that its

client intends to use his color in a magazine. Unless specifically told otherwise, a service bureau will make a commercial proof.

The separator, on the other hand, will keep the printer happy by providing a pub proof for what it knows to be publication work. Compared to the service bureau's, it will indeed look "flat, drab, and washed out"—just as any image on pub paper will, next to one that appears on stock twice as expensive.

The service bureau's proof looks nicer, but the separator's proof is the one that reflects reality.

So, there is no conspiracy among the separators, but we may have to credit the separator's derisive remarks about "artists doing seps." If the separator can "punch the color up on the Scitex" and get better results than what we supplied, well, then, what we supplied must not have been so hot.

The poorer the quality of printing, the more important pre-press skill becomes. Compensating for heavy dot gain is an art. The better separators can squeeze every ounce of contrast out of an image. But it isn't because they have a Scitex system; it's because they are doing something similar to what I have suggested here. It is skill, not equipment. If their work is better than ours, let us tip our hats, and resolve to do better next time.

In color correction, each image is its own mystery. The best color detectives find clues, draw the logical conclusions, take the necessary steps. Conspiracy theories are unnecessary, extraneous, pointless. The true solutions are out there, waiting for us to discover them. ●

## Afterword

Calibrationists and computer artists alike are very reluctant to accept how much variation there is in offset printing. If you are one of these skeptics who thinks that a press is merely an overgrown version of a composite color printer, and just as easily managed, I have arranged a small demonstration.

Some of the pictures in this book print in more than one place. Image-setting, processing, and platemaking

conditions should be virtually identical, as are the digital files. The press is the only variable. Two of the seal pictures in Figure 2.6 are repeated in Figure 2.7. These figures fall on the same press signature, which means they were printed at the same time by the same press crew. I still expect differences.

The two variants of the little girl in Figure 6.3 also appear in the Epilogue, as images D and F. These *don't* fall on the

same signature, and I am betting on even more variation, vastly more than you would get on any any two competing brands of contract proof, or for that matter, than between the alternate versions shown in Figure 6.1, which are *not* identical, yet have the advantage of appearing directly below one another, so that whatever ink settings are in use for one will affect the other.

We'll see what happens. My money, as I say, is on substantial differences. The images look identical on the contract proofs, of course.

Every printer realizes the futility of trying to predict exactly how a given press is going to behave on a given day. Calibrationists do not; they scurry about with densitometers, swatch books, and various other moonbeam-catchers, developing a "profile" of a given press, which promptly changes drastically during the next washup or whenever the next shift takes over.

It is one thing to accept the notion that the pressrun is a crapshoot, and quite another to bet on the shooter rolling a 13. This is why standards like SWOP exist, almost as a least common denominator approach to the process, trying to ensure matchable proofs.

Everybody knows that a toner-based color copier is worthless as a contract proofer, but recent advances in dye-sublimation printers have made it possible for many of us to own devices that are in principle capable of contract-proof kind of quality. With this availability (they are around \$15,000, at this writing, plus \$5 to \$10 materials cost per proof, still much cheaper than a tradi-

tional film proof) comes responsibility. The object is not to make a pretty proof but a realistic one, one the printer can match. That usually requires tweaking.

The column's point that we should expect accuracy and repeatability in the proof and not the press is very old, but well worth repeating. Always shoot for perfection in the agreed-upon proof—but if you can take an educated guess at how the press is likely to *vary* from the proof, so much the better.

The correspondent's point is a good one, too. We have reached a time when a number of parties who never used to compete with one another are now doing so. The correspondent thinks that the separators feel threatened by his work. Well, what does he want them to do, give him a kiss? Independent computer artists *are* competitors to color separators in today's world.

I have known some pretty disreputable dealings by separators and service bureaus in my time, but have never encountered actual sabotage. On the other hand, how much difference is there between sabotage and turning a blind eye to obvious problems? If the service bureau sees a typo in a client-supplied file, chances are it will get fixed. But how many separators will step in when their clients include horrifically bad images?

In this case, I think the correspondent is guilty and the separator not, but the real crime is the lack of trust between vendor and client that allowed the idea of sabotage to germinate. And the development of trust is very much the responsibility of both parties. ●

## Jargon Watch

**ad agency** Advertising agencies are notoriously the most finicky and unreasonable clients for prepress work.

**Baskerville** Descriptive of certain typefaces designed in the late eighteenth century by John Baskerville. Baskerville types have some thin areas and are rather difficult to print, especially in smaller sizes. Samples are shown in Column 10.

**Bodoni** Descriptive of certain typefaces designed in the early nineteenth century by Giambattista Bodoni. Bodoni types feature extreme contrast between the thick and thin areas of their strokes. They have traditionally been nightmarish for printers to cope with. See discussion in Columns 10 and 11.

**calibrationist** One who is more willing to believe a densitometer reading than his eyes.

**chrome** Photography in positive film form, especially if taken by a professional.

**CMYK** Cyan, magenta, yellow, and black, the inks used on press, but also a major colorspace used in electronic imaging applications.

**contact proof** Often confused with *contract proof*, a contact proof is one produced by direct exposure to final film. Contact proofs are normally used to show position only, such as the blue- and brownlines used in book publishing. In black and white work, some types of contact proof are used to show halftone quality as well.

**contract proof** A color proof of

sufficient quality that printers will accept it as a valid predictor of what will happen on press. As the column points out, there are many different flavors of contract proof. They vary in whiteness of paper as well as the amount of dot gain they predict.

**Cromalin** A major brand name of film-based contract proof, marketed by DuPont.

**densitometer** Device that measures the amount of reflected or transmitted light. Often used to guarantee that film or similar output is being processed under correct conditions.

**EfiColor** An ill-fated color management system chiefly known for being included as a default in QuarkXPress 3. Most users delete it as being unnecessary and in many cases damaging.

**GCR** Gray component replacement, the substitution of black ink for more or less equal values of cyan, magenta, and yellow.

**LAB** Also known as CIELAB or L\*a\*b\*, Photoshop's native colorspace. Its uses in color correction are explored in Column 7 of this book.

**Matchprint** Major brand of contract proof, marketed by Imation Corp.

**midtone** Areas of an image channel that are roughly halfway between light and dark; sometimes used specifically to mean the midpoint of a reproduction curve.

**Photo CD** Image format developed by Kodak. Although it is possible for images scanned from other sources to

appear in Photo CD format, ordinarily Photo CDs have been digitized with a proprietary Kodak scanner. See Column 4 for techniques for working with Photo CD images.

**quarternone** Areas of an image channel that fall roughly halfway between a highlight and a midtone, that is, at about 25 percent ink coverage on press.

**RGB** Red, green, and blue, the colors of light to which human vision is principally sensitive; also, a major color-space for electronic imaging.

**RIP** Raster Image Processor, hardware or software that drives an image-setter or other output device by converting incoming image data (usually PostScript) to the pixel-by-pixel structure that is needed.

**saturation** Measure of a color's purity. Can be visualized as the relative presence or absence of the opposite color. For example, a brick and a fire engine are the same color, red, but the brick is much less saturated. On press, that would mean the brick has a far higher percentage of the opposite color, cyan, than the fire engine does.

**Scitex** The leading vendor in high-end prepress, manufacturer of workstations, imagetters and many other professional products; a favorite of many separators. "The Scitex" as used in this

column means the separator's Scitex retouching workstation.

**separator** A company specializing in the production of color separations and related services.

**service bureau** A company specializing in film output and supporting services for electronic files supplied by its clients. The line between service bureau and separator has become rather murky. A separator probably, but not always, has more expensive equipment, more experienced personnel, a better reputation for quality, and higher prices than a service bureau. Separators often work directly with the printer of a job; service bureaus do this rarely.

**shadow** The darkest neutral areas of an image, sometimes used in color correction to mean the single darkest such area.

**SWOP** Specifications for Web Offset Publications, a set of standards and technical rules followed by many printers, web and otherwise.

**three-quarternone** Areas of an image channel that fall roughly halfway between a midtone and a shadow.

**web** Descriptive of the presses designed for high-volume printing. Web presses are fed by continuous rolls of paper as opposed to sheets, and can run at vastly faster speeds than sheetfed presses.