

Trapping and the Split Infinitive

Topic: An explanation of the basic concepts of trapping.

Column first appeared: August 1995, *Computer Artist* magazine.

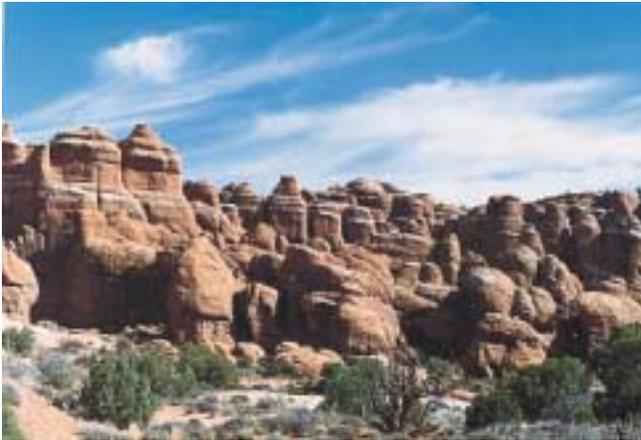
Source of this file: A revised and expanded version of the column, as it appeared in Dan's 1996 book *Makeready*.

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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The selected text overprints because of the automatic relationship between "Magenta" and "White."

Trap Information

Text: Overprint:

The selected text traps by 0.144 pt because of the automatic relationship between "Magenta" and "Indeterminate."

Trap Information

Text: Overprint:

Trapping and the Split Infinitive

Proficient graphic artists know when to build in overlap where contrasting colors intersect. Really proficient graphic artists know when it isn't necessary.



Some years ago, my very first article for *Computer Artist*, a discussion of trapping, likened trap to a hyphen. Nobody likes hyphens, I said then; they cause end-of-line hesitations and make text less readable, but doing without them would result in consequences even worse.

That was before desktop publishers began to obsess on trap, and to imagine it some kind of mystic solution to all graphic problems. The resultant misinformation and printing disasters clearly necessitate a better simile today, and I have found one.

Trap is like a split infinitive: an overrated fine point, much fussed over by purists, capable of striking the fear of seeming ignorant into the hearts of the misunderstanding majority.

In reading an essay by the great authority on grammar and usage, H. W. Fowler, I was struck by the exactness of the parallel. Substitute *trap* for *split infinitive*, and save me the trouble of paraphrasing.

“The English-speaking world,” he wrote, “may be divided into (1) those who neither know nor care what a split infinitive is; (2) those

Figure 1.1. Automated trapping can have a sting. The first set of four lines is identical to the second in terms of proximity to the photograph, so why does QuarkXPress fatten up the second four with an ugly attempt to trap? Answer, below, a slightly misplaced text box. A tiny overlap between text and picture boxes is enough to persuade QXP that the background is “Indeterminate.” By default, no doubt programmed in by someone who should have read this column, the program causes the colored type to spread.



T
R
A
P
P
I
N
G

Figure 1.2. Spreads, shrinks, and other trapping options (highly exaggerated) aimed at avoiding the white line in the “T.”

who do not know, but care very much; (3) those who know & condemn; (4) those who know & approve; & (5) those who know & distinguish.”

A Happy Folk, To Be Envied

Although readers of this magazine may be presumed to have more of an interest in trap than does the graphic arts community at large, overall Fowler is right again: “Those who neither know nor care are the vast majority, & are a happy folk, to be envied by most of the minority classes.”

Indeed, despite all the palaver about how mastery of trap is the distinguishing mark of the professional, there is a case to be made for neither knowing nor caring what it is. If you are determined to ignore trap, here is all you need to know to be able to defend your decision:

- Trap is a means of disguising problems of press registration, but in real life, most jobs do not have such problems.
- If your job is nonetheless misregistered, knowledgeable observers will see the misregistration easily whether you employ trap or not. On the other hand, a layperson may very well ignore the ugly white lines that expose a failure to trap. So, exactly who benefits here?
- The page layout programs that most professionals use take care of most simple trapping situations by default, without the operator knowing or caring what is going on.
- As discussed below, trap merely substitutes one kind of defect for another. Often enough, that kind of trade doesn’t help much.

The Deliberate Defect

Before opening fire on those who do not know what it is, but who care very much, I ask your patience while we define trap and briefly discuss when it should be used.

Trap is the willful introduction of a defect into a job, as an insurance policy against the possibility that an even worse kind of defect may occur.

In printing, each ink is laid down separately, each by a different press unit. At press speeds, it is quite difficult to keep the inks perfectly aligned with respect to one another, although good operators can keep the misregistration down to a twentieth of a millimeter or so.



Figure 1.3. Trap should be subtle enough not to call attention to itself. Here, the same techniques shown in the last three letters of Figure 1.2 are in use, but using normal trapping widths for the overlaps.

When the design of a job calls for two colors that don't have much in common to touch each other, such misregistration can be very offensive. If a cyan object is butting something magenta, and they have no undercolor in common, then if the plates are misaligned the objects will miss.

The result is shown in Figure 1.2. In the T, the cyan plate is deliberately misregistered, causing an unsightly white line on one side, and a less noticeable dark one on the other.

If we are afraid that something like this will occur on press (and we should be) there is an elegant solution. If we make the cyan T slightly larger than the hole in the magenta background, there should be an area of overlap everywhere. Even if the job is misregistered there will be enough safety margin that the white line will not appear.

That is a nifty dodge, a skillful way of eliminating a bad problem in favor of a much smaller one—in an isolated case. It is not an excuse for prostrating oneself before the altar of trap. Pure cyan and pure magenta don't hit each other that often. Before deciding that trap is needed, ask yourself what defect you are trying to insure yourself against. Then ask if doing so is really worth building in a different defect. It will be only if one of the potential defects is far worse than the other, as it was in the T.

The R is defined as 70C60M25Y. As the background is solid magenta, a white line is impossible: there is at least 60 percent magenta everywhere. The worst possible case, obviously, would be a line of 60M falling between the blue foreground and the magenta background. Such a prospect does not seem sufficiently fearsome to me to make matters worse by trapping.

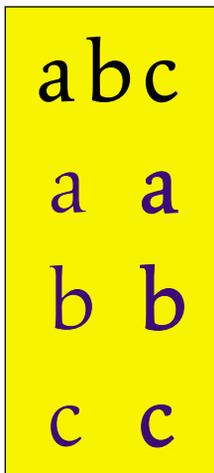
The A is even clearer. It is now 100C100M. There is no hole in the magenta plate at all. One of the plates could be a quarter of a mile out of register for all we care. Wherever the cyan ink falls on the background, there we will get a perfect A, no white lines, no dark lines, no problem, unless, of course, we are using some kind of automated trapping program that decides to take action against this phantom foe.

The two Ps are prepared once with trap, once without. Which looks better? This is a challenge for the printer of this book. Will the dreaded white line appear?

The final three letters of Figure 1.2 show, in exaggerated form, our three trapping options; in Figure 1.3 they are shown with the slight trap (.2 point in this case) we would normally use.



Figure 1.4. One book on QuarkXPress, using purple and yellow as its example colors, gets fouled up and hides the trap in the lighter of the two colors, rather than the darker. Here, an illustration of why that approach is disastrously wrong. At top above and at left below, the overlap is properly put into the purple; at bottom above and right below, it goes, as this author would have it, into the yellow.



This is in addition to the two obvious alternatives: no trap at all (a *knock-out*) or the brute-force method of ignoring the background and printing the foreground color right on top of it (an *overprint*, generally used when the foreground color is black or something else very dark.)

The I shows a *spread*. That is, the letter expands so that the overlap is in the background. This is the correct approach when, as here, the background is darker than the letter. We'd like to hide the overlap, so we conceal it in the darker of the two colors.

The N is a *shrink* (or *choke*); the hole in the background gets smaller as the letter stays the same. This should be used when the background is the lighter of the two colors, but it is wrong here.

Traditionally, trapping was done in film by strippers, and the options were limited to the above two. The electronic age has given us some others, one of which is shown in G. The trap is divided between the two objects. This can help if neither is much darker than the other. Also, the colors are toned down in the overlap area, making the trapping line seem less obtrusive.

The sad truth is that around half of all professional strippers do not understand when to trap. Considering the amount of verbiage wasted on trapping nowadays, one might think electronic artists would do better. Not so. To verify the level of knowledge on the subject, I selected at random three of the many general books on QuarkXPress, which has a much-ballyhooed automated trapping feature. I reasoned that, in view of all the fuss, the authors would have to try to explain trap, but that, in doing so, they might betray some white holes, as it were, in their own experience.

The Naked Emperors

If you are a novice QXP user, and expect to learn from a book what this trapping stuff is all about, here is what's in store for you.

Book X, of the randomly chosen three, briefly discusses the arguments for trapping. There follows a color section of several pages, showing how trapping allegedly works, using purple and

yellow as the two colors, which, since they have nothing in common, are just as good a choice as magenta and cyan.

All of the example traps printed in this book are backwards. Everything that spread should have shrunk, and vice versa. Instead of hiding his traps in the purple, the author “hid” them in the yellow, as in Figure 1.4. This is an example of the cure being worse than the disease. No trap at all would have been better, much better, than putting the overlap in the yellow.

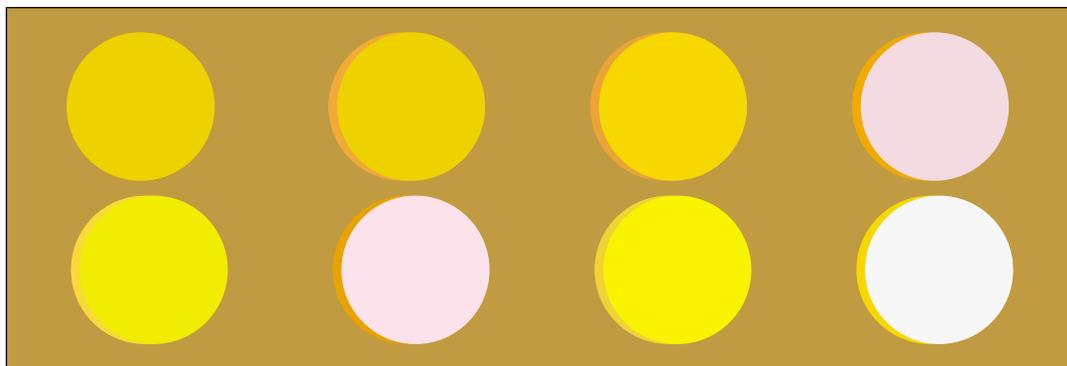
Book Y makes more sense. We’re back to magenta and cyan; the reader is invited to create a large magenta headline on a cyan background. The author then explains that, as cyan is the lighter of the two colors, QXP will shrink, rather than spread, the type.

That is certainly what we would *like* it to do, but as QXP is unable to shrink type (it can shrink other objects) it would treat magenta on cyan exactly as it would cyan on magenta: it would, incorrectly, spread the trap equally between them. The author should have advised readers to make the headline in an illustration program, where one can assign an overprinting cyan stroke to the magenta text. Import such a headline into the page-layout program, and the problem goes away.

Book Z, tired of magenta-cyan and yellow-purple examples, gives us something tricky: a 0C20M100Y5K foreground object against a background of 30C50M90Y.

Such complexity is not easy on the readers. With all four inks in play, QXP does some fancy footwork and comes up with some, shall we say, interesting solutions. The authors try manfully to explain, then give up, saying, “If you don’t understand this, read the last few paragraphs over several times. If you still don’t understand it, then give up and believe us when we tell you that it’s a really good thing.”

Figure 1.5. Another QuarkXPress book suggests that trapping is necessary if 0C20M100Y5K meets 30C50M90Y. The graphic below, showing every way that combination can misregister, suggests that the authors should read their Fowler.



Personally, I could read those paragraphs several *hundred* times before understanding why trapping these two colors is a good thing. Think about it. The lightest color that can possibly appear is 20M90Y. Ergo, nothing terrible can happen, trap or no. An artificial overlap is a Maginot Line erected against a pacific and weaponless enemy.

Although misregistration always results in two separate defects, trap will not be a palliative unless one of the defects is far worse than the other.

Figure 1.5 shows why: although misregistration always results in two separate defects, trap will not be a palliative unless one of the defects is far worse than the other. There are seven different ways that this combination can misregister, but none of them meet this test.

Rather than the paragraph quoted above, the authors might have considered the following substitute, from Fowler.

“Those who do not know but do care, who would as soon be caught putting their knives in their mouths as splitting an infinitive, but have hazy notions of what constitutes that deplorable breach of etiquette...betray by their practice that their aversion to the split infinitive springs not from instinctive good taste, but from tame acceptance of the misinterpreted opinion of others; for they will subject their sentences to the queerest distortions, all to escape imaginary split infinitives.”

To Know and Approve...

Such is the public appetite for trapping “solutions” that all five of the major DTP programs (QXP, PageMaker, Illustrator, Free-Hand, and Photoshop) now have automated methods. Left to their own devices, all except Photoshop overtrap considerably, yet all have their uses.

Until recently, art generated in one of the illustration programs had to be trapped manually, using strokes on objects. That is still a good way if, unlike the authors cited above, you know what you’re doing, since it avoids pointless traps and gives greater control. Automatic trapping filters do, however, make it easier when one object abuts several different backgrounds.

Such multiple backgrounds pose a particular problem for QXP and PageMaker. If one background is darker and one lighter than the foreground, both programs give up, but QXP gives up in a ridiculous way, by spreading the foreground object. Worse,

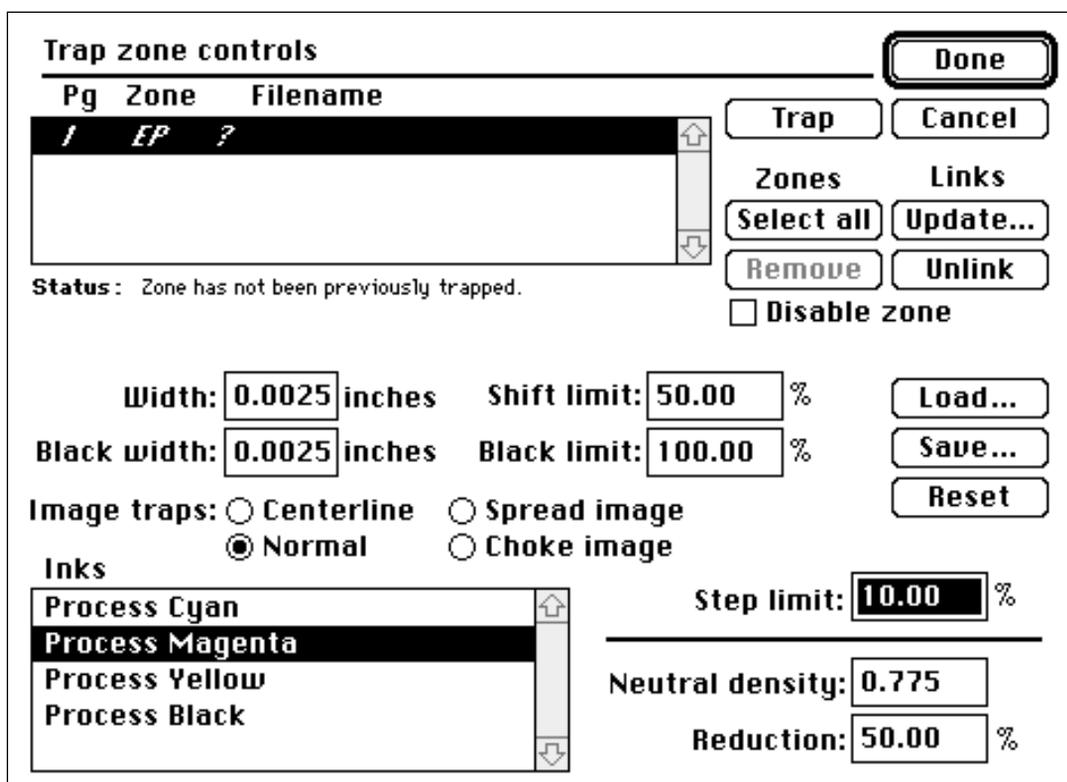


Figure 1.6. Dedicated trapping programs, such as Luminous Corp.'s TrapWise (above) cater to most trapping possibilities, but are compute-intensive and cost thousands of dollars apiece.

considering the amount of artwork we need to place, the presence of any graphic behind a QXP object will provoke a spread.

Suppose we want a line of type in some color or another and that we set it in a text box with no background. If we are precise, nothing will go wrong, because QXP ignores white backgrounds. But let the text box drift a little, so that a point or two of it inadvertently overlaps a picture box, as shown in Figure 1.1, and prepare to be punished. Although the background is still white, QXP doesn't know it. It calls it "indeterminate," and spreads the type to compensate. Which is, incidentally, usually wrong. If the type actually were to knock out of the image in Figure 1.1 the yellow type should probably spread to the extent that it intersects the blue sky, but the others should not, and even the yellow is an exceptional case. An intelligent user can and should turn this absurd default feature off.

Three expensive, compute-intensive standalone trapping applications, aimed at service bureaus and other volume users, also have a presence. Luminous Corp.'s TrapWise, Scitex's Full AutoFrame, and DK&A Trapper are currently the only methods

by which one can trap to a vignette. They also, as you can see in Figure 1.6, have the controls over thickness of trap, shrinking vs. spreading, weight of the overlap, and minimum difference between the two colors, that a thinking artist might want.

...or Condemn

Some years back, I gave up trapping for Lent. Since I do not appreciate white holes between colors any more than the most doctrinaire of trapping aficionados, this required a certain change in my mindset, but once I began, it turned out not to be onerous at all, and, with the exception of jobs with more than four colors, I have not designed anything that required a trap since then.

Savvy designers already know to avoid certain color choices. On the screen, it seems so easy to make small type cyan on a magenta background. Doing this, however, is a good way to get a printer to refuse your job. There is no way of resolving the trapping problem. If the type gets spread, it will seem too bold; if it gets shrunk, it will become purple rather than cyan. Accordingly, designing in this way is an outright error, as much as a typo or a blown-out highlight.

Figure 1.7. *At first blush, this appears to be a trapping problem, since the gray, which is a tint of black, has nothing in common with either the purple or the light blue. But, with proper handling, there is no need for a trap at all.*



Similarly, unless you or your service bureau has access to TrapWise or one of its competitors, you can't use a gradation that collides with some radically different color.

In Figure 1.7, you will perceive either a major trapping problem, or an opportunity to use common sense.

There are three colors here, including a gradation. The blue color is mostly cyan with a little magenta. The purple is mostly magenta with a little cyan. If these two colors were butting one another, trap would be unnecessary, but, as the devil would have it, each one butts a gray that is almost entirely composed of black.

In accord with the aforementioned religious practice, I have left the thing untrapped here, hoping the printer would get it right. If I had decided to trap, I would have had to face four major problems:

- It is far from obvious whether the gray border should spread into the blue background, or vice versa.
- Because the blue and gray are both so light, any trapping line will seem relatively obvious. I might have to use some sort of semi-trap, making the overlap consist of toned-down versions of both colors.
- Whatever method I use to trap the blue-gray intersections in the larger logos may not work for the smaller one at the bottom left of Figure 1.7: it may make the gray rule around that one seem smaller than it should be.
- The purple gradient needs to spread in some areas where it hits the gray and shrink in others.

With the help of TrapWise and a reasonably powerful computer, these problems can be solved by brute force. If you would rather use finesse (or if you have given up trapping for Lent) the following approach may seem more appealing.

The gray is currently defined as 7C4MoY30K, accounting for its bluish tinge. In Photoshop, open a small LAB file and fill it with this color. Go to Edit: Preferences>Separation Setup and change Black Generation to None. Set the Info palette to read CMYK, and read the value of the filled color to see how Photoshop would construct it without the use of any black. It's still the same gray—but now the numbers are 35C24M20Y.

Armed with this information, we can now throw the Photoshop file away and substitute the three-color gray values for the predominantly black ones in our art file.

The purple color has more of both cyan and magenta than the gray does, so where the two colors hit, the minimum shared color is 35C24M. The blue color has only 20 percent magenta, so the minimum is a few points lower. Either way, the minimum is so close to the gray that it would make no sense to build in artificial overlaps to guard against its appearance.

The inexperienced artist recoils from a graphic with as many potential problems as this one. This is trap at its most terrifying. And yet, with a little forethought, *this file does not have to be trapped at all.*

To Know and Distinguish

The theme of substituting the CMY colors for black is a recurrent one in trap avoidance. This is especially so when designers specify process equivalents of PMS colors. The Pantone Matching System, as a rule, favors the use of black ink when possible. Often, that will cause trapping problems that can be eliminated with the dodge described above.

Many such maneuvers exist, provided we are not intimidated. As long as we remember that trap is not neat or keen in and of itself, but is instead a dreary desirability in a few isolated situations, we will be safe.

Before burying your artwork under an avalanche of useless traps, look at the minimum values of each color, and ask yourself, what is the worst that can possibly happen if I don't trap? If the worst that can happen is white, or is a color vastly lighter than either of the two colors that are butting, then ask yourself, is there a way of reorganizing the colors? If the answer is no, you may well have found a situation where it pays to accept the technical defect that trapping is.

If you work with QuarkXPress, be careful when large text overprints a picture box, as in Figure 1.1. Ordinarily, QXP will spread such type, and ordinarily, it is wrong to do so, though this will depend on the character of the picture. The offending type can manually be set to overprint or to knock out using QXP's Trap Information dialog box.

Be aware that trap is not the only misregistration problem that can plague unwary designers. Attempting to print small light-colored or white type on a multicolor background is a lot worse than printing without trap: it is too likely that misregistration will result in the type becoming illegible.

It is hard to know whether editors or printers are the more dangerous and unpredictable group. Prudence dictates not handing either one a stick of dynamite in the belief they are unlikely to decide to light the fuse.

As writer, I happen to be one of those who knows and approves of split infinitives. I split them freely in *Computer Artist*. But with an unknown editor, I avoid not only split infinitives but anything that might be mistaken for one. As designers, when dealing with an unknown printer, similar caution is advisable. After all, if we meet someone who doesn't know what trapping is, but cares very much about it, the last thing we need is to tempt that person to start tinkering with our files. ●

Afterword

In one of the Ps in Figure 1.2, I flouted good practice when I left it untrapped. Obviously, I can't predict whether the printer of this book will have such good control of register that no white line will appear. For what it's worth, when it appeared in *Computer Artist* I got away with it, as I would expect to in most professional contexts.

The fact that one normally gets away with it does not, as some service bureaus who make a lot of money running their clients' files through TrapWise think, mean that I am anti-trap. Quite the contrary. If you are the art director of *Wired* magazine, or otherwise are in the habit of having radically different colors butt one another, I certainly advocate trapping them. Furthermore, except in rare instances I advocate doing it yourself, rather than letting an automated program have at it.

Lack of trap alone will not ruin a job. Half-baked measures may. If you

"hide" your traps in the wrong half of a yellow-purple combination, as the author did in Figure 1.4, you will be far worse off than if you throw up your hands and ignore trap altogether.

Similarly, if you don't understand why black type should overprint a color background, some day you are going to try to take yellow type and overprint it on a purple background, and then you *will* have a ruined job and a printer who is going to insist on being paid for it.

In addition to the screams from service bureaus, I took grief about this column from those who thought I should have included specific rules for when to trap and how wide to make the overlaps. That might have been nice, but if readers get a basic understanding of the topic, that will eliminate the huge majority of trapping disasters. Like so many of the concepts in this book, the idea of trap is simple, as long as you realize it is neither a panacea nor a bogeyman. ●

Jargon Watch

choke See *shrink*.

gradient See *vignette*.

knockout Where a foreground object meets its background exactly, without any overlap. Used when trap is considered unnecessary, as in the initial S on page 27. The brown letter *knocks out* of the two background colors.

misregistration The reason trap is desirable. Since each ink is laid down by a different part of the press, it is conceivable, nay likely, that all the cyan, say, may come down slightly to the left of where it is supposed to.

overprint Where an object prints over a background without knocking any of it out, ordinarily used when the object is black or very dark and will not be altered by the underlying color. In the Dialog Box text opposite, the black type *overprints* the light brown background.

Pantone Matching System Industry standard color specification method, used by printers to give formulations for inks and by designers to indicate what colors they want: PMS 186 would, for example, be a rose red.

shrink Where the size of the hole in the background object is slightly reduced, so that an area of overlap occurs inside the foreground object. Used when trap is needed and the foreground object is darker than the background.

split infinitive In English, basic verbs are defined to include the word *to*; thus, the infinitive form of the most common verb is *to be*. Certain grammarians insist that no third word should ever be suffered to be inserted between the *to* and the verb, although it has been standard English to do just that for several hundred years. Nevertheless, split infinitives are frowned on by most publishers, much to the annoyance of the present author. Fowler describes those who neither know nor care what a split infinitive is to be a “happy folk” because “‘to really understand’ comes readier to their lips & pens than ‘really to understand,’ they see no reason why they should not say it (small blame to them, since reasons are not their critics’ strong point), & they do say it, to the discomfort of some among us, but not to their own.”

spread Where the size of the foreground object is slightly increased, without increasing the hole in the background that accommodates it. Therefore, an overlap will occur in the background, but not in the original foreground object. This technique is used when trap is desired and the background is darker than the foreground object.

vignette Also known as a graduation, fountain, gradient, or blend, a gradual, continuous transition from one color to another, as in the purple in Figure 1.7.

Dialog Box

For a concept as simple as trapping is, it certainly has been able to delude a lot of people, including some of my fellow authors, into thinking that it is unfathomably deep. Accordingly, this column's revelation that trapping *can* be understood by the intelligent layperson, and in fact is frequently unnecessary, was treated by many readers as a revelation. This piece generated more positive response than any I have ever written, save the one on correcting a Photo CD image, Column 4 in this book.

The more one gets into trapping, though, the more sticky a subject it can become. To balance things a bit, let's visit with a couple of users who deal with scenarios more troublesome than those mentioned in the column.

First, a look at a trapping problem that has become more and more common. Nowadays we frequently print with fifth and/or sixth inks in addition to the normal CMYK on press. Often this is because the extra color is that of a corporate logo or some other known color. But more and more, art directors are using the extra spot colors in significant design elements, creating screen angling and trapping problems, among others.

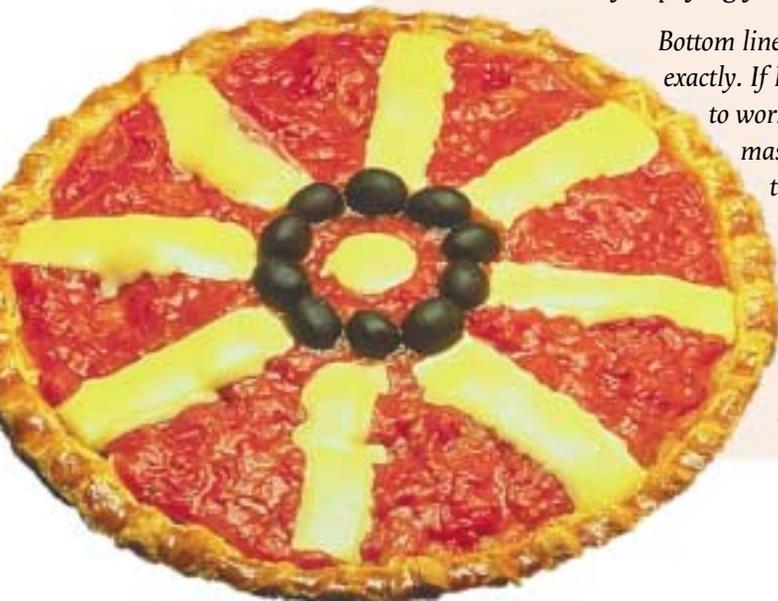
As the column points out, CMYK images, at least photographic ones, are normally self-trapping, in that the picture will have enough in common with whatever touches it that no artificial overlap will be needed. But what if it has nothing whatsoever in common with the thing that touches it? The following correspondent is wrestling with a silhouetted CMYK image that has to rest on a fifth-color background.

If you are sophisticated enough to take in all that follows, you may well be capable of raising a different objection. If I am that good, you may sneer, why can't I avoid trap altogether by seamlessly incorporating the fifth ink into the CMYK image, using color replacement principles?

Well, as a matter of fact, I *can*, and have, done so, but it isn't always possible. So, let's assume that, in the following case, the writer has twelve different versions of his job, and has to paste his silhouetted photo on top of twelve different spot colors. So there! Now, down to business.

Trapping headaches: a silhouetted photograph that butts a fifth color

Figure 1.8. When a color photo butts another colored object, trap is rarely necessary. The pizza's crust has more of every ink than the tan background does. It is therefore impossible for a white line to occur between the two. If, on the other hand, the background were not a CMYK mixture but rather a true fifth color, then the pizza would have nothing in common with it, and some means of trapping would have to be devised.



I have a small scan of a pizza. It is a CMYK Photo-shop EPS file. It imports into Quark with a clipping path and sits on a spot color back-

ground. Obviously if I do nothing, it won't trap to the background, it will simply butt the fifth color, and will cause problems on press.

You should be concerning yourself with a general solution to this problem. The fact that you have a simple shape, the pizza, is deluding you into thinking that a clipping path is going to help you. If instead, you had a person's head, with an irregular hairline, a clipping path approach would be out of the question.

My solution was to open the scan of the pizza, convert to grayscale, then resample the image to 1200 dpi, select the clipping path, convert the path to a selection, and stroke the selection with an 8-pixel stroke. (I calculated 8 pixels at 1200 dpi would give me exactly double the final trap amount I needed, and used this doubled amount since half the stroke will sit on the same colored background and is lost anyways, only half sits on the image.) Then I killed the path, converted this grayscale image to a bitmap (with 50% threshold, keeping at 1200 dpi) image, and saved it as a TIFF. Then I took the pizza picture box in Quark, duplicated it in the same spot, imported the stroked path image into exactly the same coordinates, and colored it the same color as the spot color and manually made it overprint. Whew!!!

This sounds like a fun way to spend an afternoon. I hope somebody is paying you for all this time.

Bottom line is that it almost works, but not exactly. If I make the stroke really big, it seems to work, but the fatness of the stroke only masks that it doesn't REALLY work at the fineness that it needs to for a proper trap.

I also tried duplicating the effort above without resampling to 1200 dpi, leaving it at 300, and using only a 2-pixel stroke. Same problem.

What appears on film is a nicely stroked path which seems to fit the image, but isn't in registration. If I line up the films by eye and ignore the registration marks, I can pretty much make it fit. But if I line up the register marks, or (since our imagesetter punches the film) I lay it on the pins, it winds up being out by about a point.

When dealing with photographic images, we rarely have to worry about trap. Figure 1.8 illustrates why. The background box behind the type is oC8M1oY2K. The crust of the pizza varies but it always has around twice as much yellow and magenta as the background. Therefore, no matter how far out of register this gets, the absolutely lightest color that can possibly appear is the color of the background. There are people in this world who'd look at it and panic and send it to their service bureau to run through Trap-Wise. We will leave them to their phobia and their checkwriting.

If the background is *not* composed of CMYK inks and instead is a true fifth color—and that is happening more and more these days—then we indeed have a trapping problem, a white line waiting to arise and bite us.

The following is the method I have used and if it is cumbersome (though not as much so as the method you are now using without success) at least it works. It relies on replacing part of the fifth-color background with a new Photoshop file. As long as Photoshop names the color exactly the same as the page layout program, this will be seamless and invisible to the viewer. This also eliminates the need for a clipping path.

The best way by far to handle this is with a plug-in, such as PlateMaker, ICISS, or Co-Co, that allows Photoshop to save a five-channel file. Then, all one need do is create a fifth plate in the manner described below, and place the file.

In the absence of such a plug-in, you can still make it work with the following kludgy technique, illustrated in Figure 1.9. This will cause the background to shrink into the image, which is normally correct. It can, however, easily be adjusted to make the image spread into the background, if that is desired.

1. Save a copy of the silhouetted file. Select the entire yellow channel and delete it. You should now have a picture of a blue pizza (top left of Figure 1.9).
2. Load the path and select the pizza. Apply a curve to it that

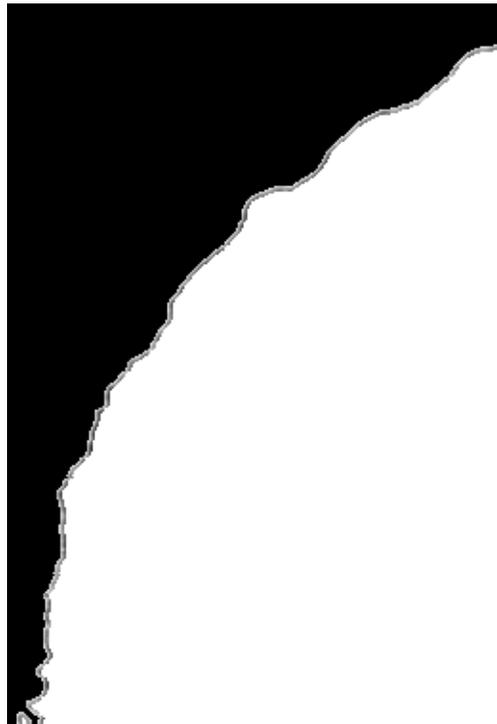
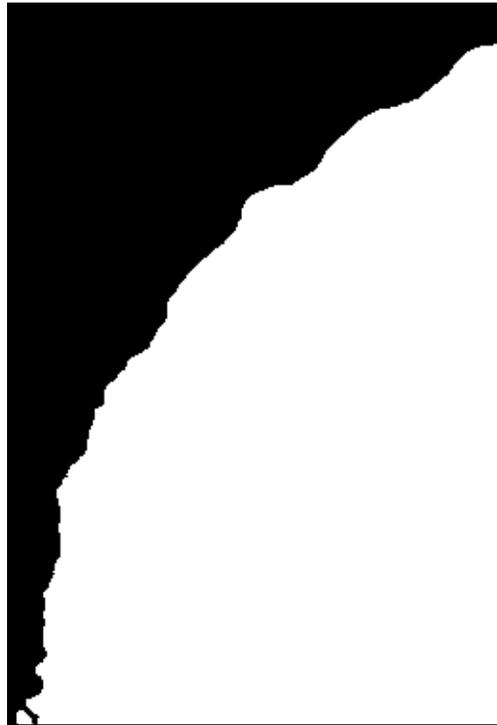


Figure 1.9. *Opposite, procedure for trapping a silhouetted image to a lighter fifth color. Starting with the pizza of Figure 1.8, Top left: all yellow is deleted from the image. Center left: cyan and magenta are increased throughout, so as to make a harder edge on the pizza. Bottom left: the white background is selected and replaced with solid yellow. Top right, an enlarged look at the new yellow channel, with a hard edge where it hits the pizza. At this point, the bottom left image is run through Photoshop's Trap filter. This creates a soft-edged overlap in the yellow channel, shown bottom right. The ridiculous-looking blue pizza at bottom left can now be discarded, except for its yellow channel, which will eventually become the fifth color.*

forces the minimum value of magenta and cyan to 25 percent, so that the edges of the silhouette become very hard and pronounced. (Center of Figure 1.9.)

3. Deselect the foreground. Set the magic wand tool to a tolerance of 32, and click into the background. This should result in a selection that is a perfect butt to the hard silhouette edges, yet also hits any stray light pixels on the edge.

4. Replace the selected area with solid yellow, so that the pizza is a muddy blue and the background is yellow.

5. Run this document through Photoshop's Trap filter. This will give a nice, soft trap that will vary in darkness with the darkness of the pizza's crust—not that objectionable stroking path.

6. The resulting yellow channel is now a perfect rendition of what you want your fifth-color plate to look like. If you have one of the plug-ins that allows a fifth Photoshop plate, simply copy this channel into your fifth channel of the original CMYK document, place and print. If not, the kludgy workaround continues as follows.

7. Take the trapped yellow channel and paste it into a new grayscale document of the same size. You can now throw away the CMYK file with the blue pizza.

8. Change the document from Mode: Grayscale to Mode: Duotone. Whatever the two colors are that come up as defaults, change the names of one of them to Black and the other to Background Color or whatever the name of the color in your page layout document is. Change the curve for the black plate to null, i.e. all values become zero. Change the curve for the Background Color plate to default, so that this plate will be identical to the original grayscale channel. Save this duotone document as EPS.

9. Take the original CMYK document and paste it, without a clipping path, in your page layout document in whatever position you have chosen for it. Note the exact parameters, and now place the duotone document, again without a clipping path in exactly those same parameters.

10. Bring the CMYK file to the front, hiding the duotone, and save.

11. Print the CMYK plates only, without the fifth color.

12. Delete the CMYK image (but do not save the file) and print the Background Color plate only. ●

Concepts are fine, but how about giving us some hard numbers?

I LOVE your articles— BUUUUT...When you did the article on trapping you didn't take the final step and give a couple of suggested,

ballpark, trap amounts. I know it's a can of worms, but people want hard NUMBERS.

Well, I can hardly have done that without explaining how to trap in the various programs, which I wasn't inclined to do. I saw it as more of a basic-concept article. The problem I've been seeing so much of recently is not people like yourself who have good ideas of what to do, but people who are so buffaloed by the whole concept that they assume that *any* multicolor job has to go to a service bureau and be run through TrapWise.

Yes, I design so there are screens in common. Yes, I send it through the Scitex [for Full AutoFrame trapping] if it's complex. But yes, I still need manual trapping when I send simple 2- and 3-color jobs straight through the imagesetter.

Here are various suggestions I've gathered over the years:

The amount of trap needed for a funky quick print shop working on offset paper is .4 point.

The amount needed for your basic 2 color press is .23 point.

(I took the difference between a service bureau that says their standard default on the Scitex is .22 point. or .08 mm, and a good 2-color printer who told me .25 point.)

For coated stock on a great press with good operators, I suggest .15 point.

(This is the difference between the .16 point that my color house normally uses and several magazines that use .144 point.)

Flexographic printers and silk screeners may want as much as 1 point trap.

These are basically very reasonable numbers. Personally I like to use slightly smaller traps than what you are indicating, but both of us favor values slightly lower than the figures that are most frequently recommended.

And don't forget to double all amounts if you're doing overprinting strokes in Illustrator.

Correct. Vector-art programs such as Illustrator and FreeHand center their strokes on the outside border of the object, so only half of the stroke will fall in the area where we are trying to create overlaps.

Some advice I got from a service bureau about trapping in Quark years ago is still good: Turn trapping OFF in your Quark preferences, and trap only the items you really need to through the dialog box. That way there are no accidentally fat letters.

There is a case to be made for that, though in a complicated job I find it easier to just go in and correct the few things that are wrong.

A magazine I read recommended varying trap thickness with line screen as follows:

<i>Line screen</i>	<i>Trap Amount</i>
<i>85 line</i>	<i>.5 point</i>
<i>100</i>	<i>.35 point</i>
<i>133</i>	<i>.3 point</i>
<i>150</i>	<i>.25 point</i>
<i>200</i>	<i>.2 point</i>

There is no technical reason to vary thickness with screen ruling, except the inferential one that a higher line screen implies better printing conditions and better printing conditions imply less misregistration. Therefore, I am rather skeptical (for a change) of incorporating this complication. ●