The Warren Standard

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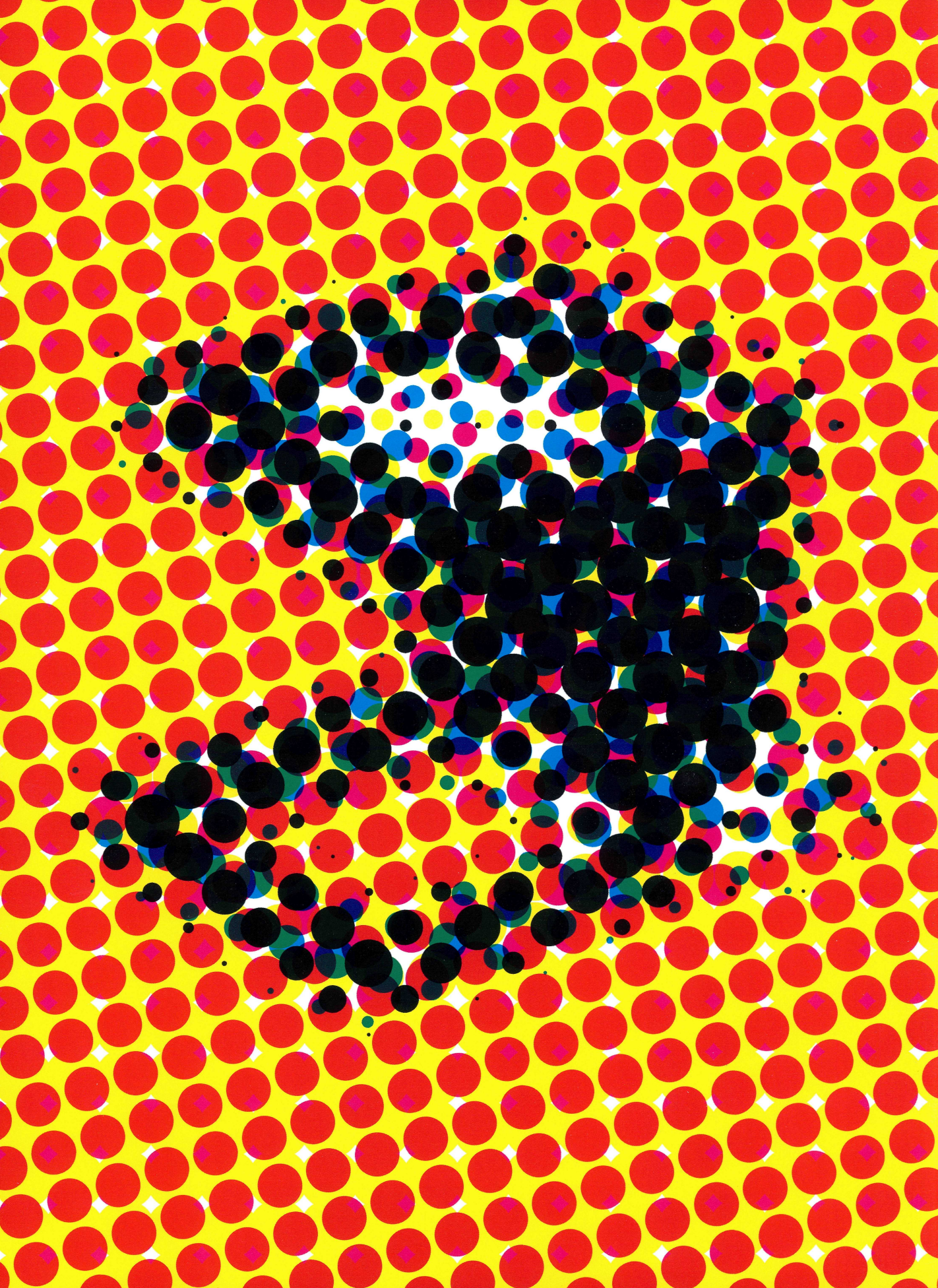
HOW TO READ A PRESS SHEET




Those of us who share a passion for printed images know what we mean when we speak about reading them.

To people outside our field, who simply look at pictures and only read words, it may seem odd.

For us, however, pictures are not passive; they are tools used to convey ideas. And the ideas they convey are affected by every shade, every nuance, and every detail (or lack thereof) that they contain.

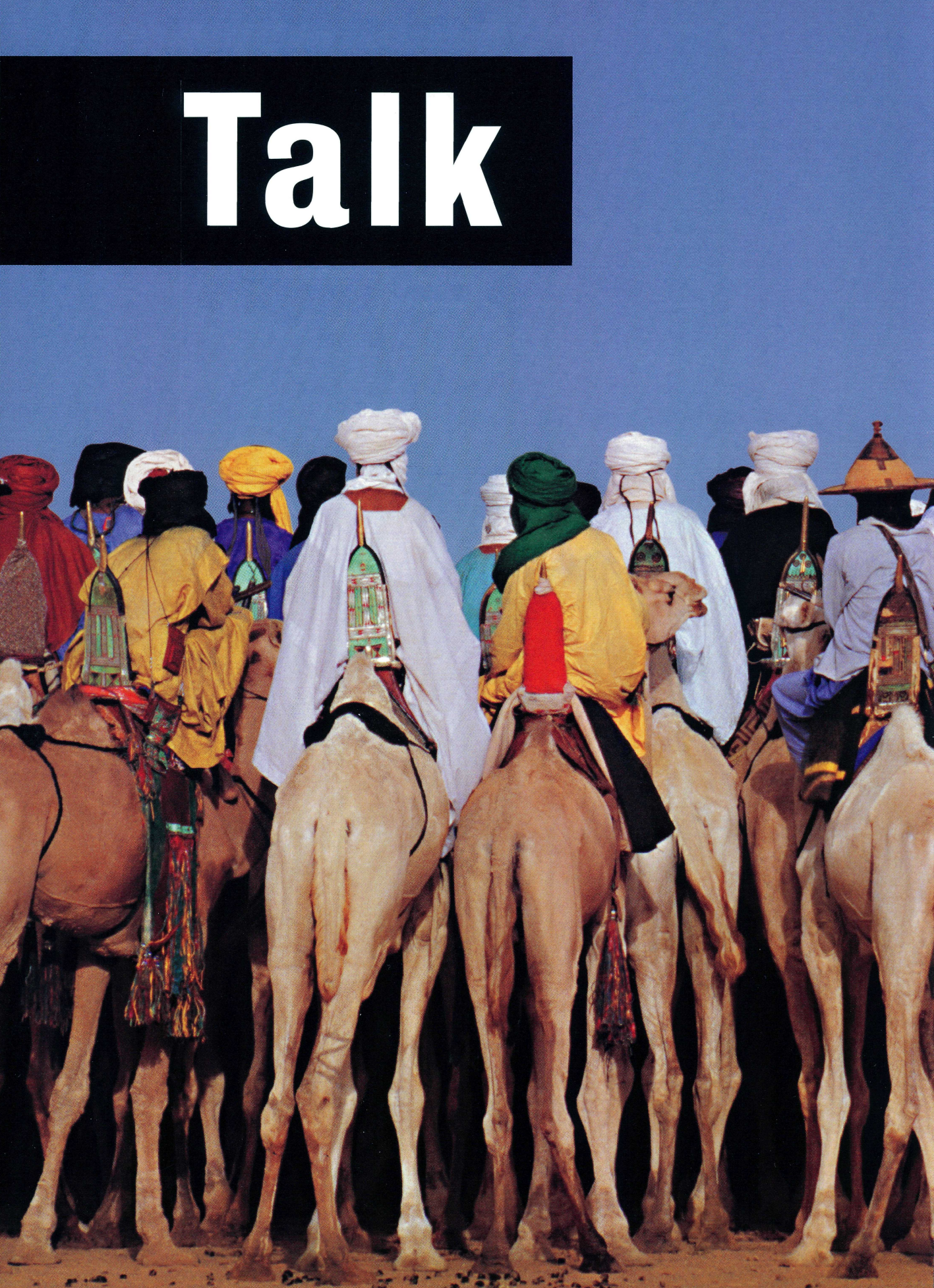
Appearing first in our heads, they show up on film (or on a monitor) and then on paper, and in that migration from idea to reality, they are transformed. Logically, the

degree to which we can control this process determines how close we come to realizing our ideas.

The craft of printing has a language all its own. The process demands reading images diligently, and learning to communicate so that others can see the same things.

This issue of *The Warren Standard* is devoted to helping bring more control to the process of printing images on paper. It is the culmination of all our experience in printing, combined with input and advice from the best technologists in the printing field. If you've been reading press sheets for years, then we hope this serves as a useful tool to help you teach others. If you feel that there are still some things you might learn, we hope this helps you to realize all of your best ideas on paper. Please read on.

Talk

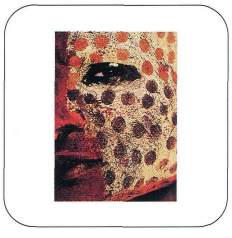


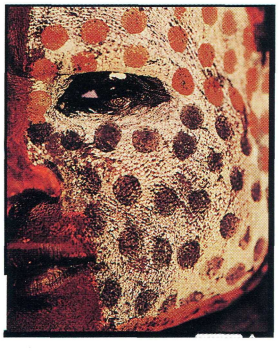
THE BEST FIRST STEP IN PRINTING ANY JOB IS TO ESTABLISH COMMUNICATION WITH YOUR PRINTER EARLY ON IN THE PROCESS. TAKE THE TIME TO TALK ABOUT THE OBVIOUS ISSUES, LIKE YOUR SPECS FOR THE JOB, BUDGETS, AND DEADLINES. BUT ALSO MAKE SURE YOU TALK ABOUT SOME OF THE MORE INTERPRETIVE ISSUES, LIKE YOUR VISION FOR THE PIECE—WHAT KIND OF IMPACT YOU WANT, AND WHAT YOU WANT THE TACTILE FINISHED PRODUCT TO FEEL LIKE IN SOMEONE'S HAND.

HAVE A DISCUSSION ABOUT YOUR IMAGES. HOW CAN YOU BEST ACHIEVE THE EFFECT YOU WANT, AND WHAT ARE REALISTIC EXPECTATIONS AS YOU MOVE FROM TRANSPARENCY OR DIGITAL FILE TO PAPER? WHAT ARE YOUR OPTIONS FOR SIZES OR TYPES OF SCREENING TECHNOLOGIES, AND HOW WILL THEY IMPACT THE FINAL IMAGE? FIND OUT IF THERE ARE ANY PARTICULAR CHALLENGES THAT YOUR PRINTER ANTICIPATES IN GIVING YOU THE EFFECT YOU WANT.

THERE ARE MANY FACTORS THAT CAN AFFECT THE IMAGES IN YOUR FINISHED PIECE. THE FOLLOWING SECTION PROVIDES A BRIEF OVERVIEW OF THE MOST COMMON ONES. HOWEVER, SINCE EVERY JOB IS DIFFERENT, DON'T SKIP THE IMPORTANT STEP OF SITTING DOWN WITH YOUR PRINTER TO TALK ABOUT THE UNIQUE OPPORTUNITIES AND CHALLENGES THAT YOUR JOB PRESENTS.

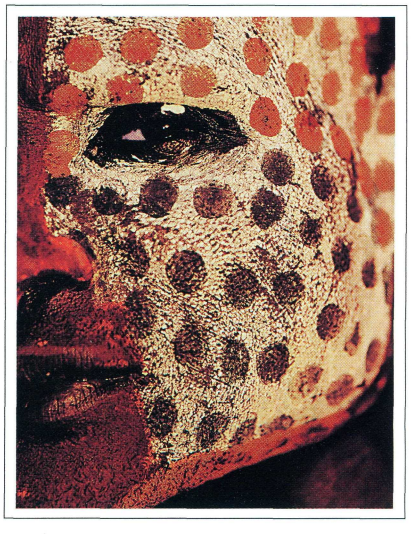
THE ORIGINAL





Shown here (not actual size), a 35mm slide, 4x5" transparency, color print, and digital image.

Clearly, what you provide the printer to start with has the greatest impact on what you'll get back. The variables in originals include color balance, exposure, grain, sharpness, detail, the size of both the original and the finished image, and, based on the type of film emulsion used, the level of color saturation. Transparencies differ from prints in that a transparency has a greater tonal range. In other words, the tonal range in a color print is already compressed. The good news is that it is therefore easier to match on press. Images that are created digitally vary widely in the amount of detail, or resolution, they contain, depending on the memory and quality of the digital camera used.

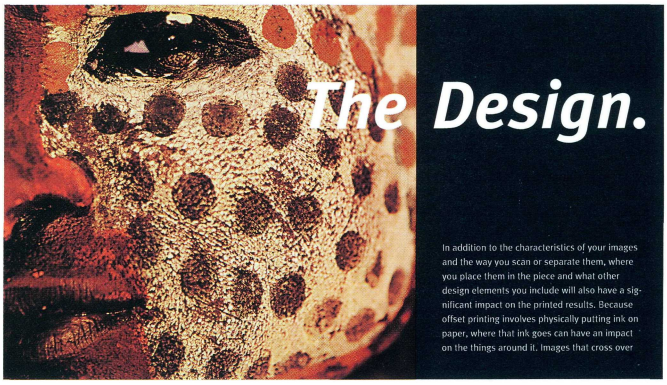


Above, an image separated into the four process colors.

COLOR SEPARATIONS

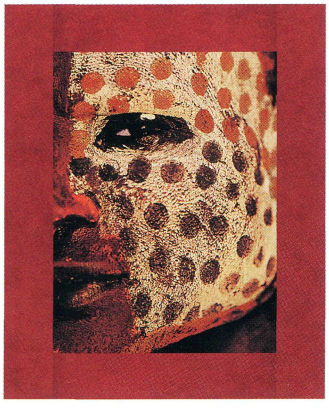
Color separation is a highly complex, technical process that requires significant technological skill and craftsmanship, and volumes of material have already been written on it. We've included a brief list of valuable references in the back of this book, if you'd like to do more reading.

The variations in scanning that impact the final result are resolution, tone compression, color balance, contrast, screening methods such as traditional line screen or stochastic, and the number of colors (four vs. five or six or even eight) into which the image is separated.



THE DESIGN

In addition to the characteristics of your images and the way you scan or separate them, where you place them in the piece and what other design elements you include will also have a significant effect on the printed results. Because offset printing involves physically putting ink on paper, where that ink goes can have an impact on the things around it. Images that cross over both pages in a spread, those that follow behind each other on the press sheet, and delicate neutral photos in combination with bright, saturated, or dark ones can, if not planned for, change the way your images look on press.



Mechanical ghost

An effect called mechanical ghosting can occur when ink is unevenly deposited in a particular area. This can sometimes be caused by the layout of the signature, but at other times it is a function of design. For example, a flat color border on four sides of an image will use up more ink on the two vertical sides as it goes through the press than on the top and bottom horizontal ones. This can cause the vertical portions to be lighter than the horizontal one at the far end of the border.

Decisions that you make between special flat colors and screen tints for backgrounds or type also need to be made with your color images in mind. Design elements or background colors that must be consistent from page to page can create problems if it means compromising on the color images that appear with them. Virtually all of these issues can be avoided with advance planning, and are further confirmation of the need to communicate early in the process.

THE PAPER

Paper has an enormous impact on the final printed results of your images—not only on their color, but on their sharpness, print contrast, level of gloss, and detail. The variables that should be considered when choosing paper are: the brightness and whiteness of the unprinted stock; its smoothness and flatness; the type of surface you want (gloss, dull, silk, matte, etc.); the printed ink gloss (and how much it differs from the unprinted gloss of the sheet); and, obviously, the weight and opacity of the paper. It is always a good idea to look at printed samples of the paper you are considering as well as unprinted samples, and it's always a great idea to choose a Sappi grade.

THE SIGNATURE

Your printer has various options when he or she lays out your job on the press sheet. The number of pages, the finished size, and the press size are all important factors to consider. So are the types of images and your design. The printer must balance finding the most efficient and economical layout for your job (one that will use the paper and press time most economically) with one that avoids any problems with color contingencies on press. Some of the common choices for signature layout are diagrammed below.

The diagrams below illustrate saddle stitch and perfect bound signatures in both conventional and color perfect formats. In the color perfect versions, images precede and follow duplicate images, so that color can be maximized for that image without sacrificing quality on others. As shown, color perfect layouts require more signatures for the same number of pages.

Conventional Saddle Stitch: 16-page form as two right angle 8's.

Form 1 front

11	6	1	16
10	7	4	13

Form 1 back

15	2	5	12
14	3	8	9

Color Perfect Saddle Stitch: 16-page form as two double-parallel 8's.

Form 1 front

16	1	4	13
16	1	4	13

Form 1 back

14	3	2	15
14	3	2	15

Form 2 front

12	5	8	9
12	5	8	9

Form 2 back

10	7	6	11
10	7	6	11

Conventional Perfect Bind: 16-page form as two stacking 8's.

Form 1 front

15	10	1	8
14	11	4	5

Form 1 back

7	2	9	16
6	3	12	13

Color Perfect Perfect Bind: 16-page form as two double-parallel 8's.

Form 1 front

8	1	4	5
8	1	4	5

Form 1 back

6	3	2	7
6	3	2	7

Form 2 front

16	9	12	13
16	9	12	13

Form 2 back

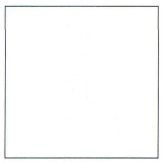
14	11	10	15
14	11	10	15

Spot Gloss

Spot Matte

Overall Gloss

Overall Matte



Tinted

Aqueous

AQUEOUS AND VARNISH COATINGS

Coatings and varnishes can not only protect a printed piece, they can enhance the images and add a level of tactile richness not otherwise possible. The options for where and how you use these coatings are almost endless. They include choices of finish, from high gloss to matte and dull, and techniques for application that range from flat coverage to halftone and from clear to tinted.

While varnishes are oil-based, aqueous coatings are water-based, which means that they dry faster than varnish and don't yellow with age. Generally, they are used as an overall coating, since there are limitations with fit and trapping.

A CHECKLIST

In addition to the variables outlined above, there are some other typical questions that need to be answered in your initial discussions with your printer. We've compiled a brief checklist.

- Once the delivery date has been established, what is the interim production schedule?
- When does the printer need the files and color artwork?
- Does the artwork need to be released before the electronic mechanicals so the printer can begin separations?
- Does the printer have all of the fonts included in your piece? Will you need to forward the fonts?
- What are the requirements for preparation of the electronic files?
- Does the piece need to be shrink-wrapped or require any other special packaging that will take additional time from the schedule?
- Does it have to match an existing product or another printed piece?
- Can the piece be printed in four color? What are the risks to the images and any areas to be made from tints?
- Are there any crossovers that will present special problems?
- What kinds of coatings are desired or required, and will these necessitate a second pass?
- Do the images being reproduced present any special difficulties themselves?
- Does the layout of the book present any color conflicts?
- Does the layout present problems in terms of running the kind of color density you'll need?
- Do these issues require running the job color perfect for more control and better quality? What does this do to your budget and schedule?


Listen

IT IS FREQUENTLY A SOURCE OF FRUSTRATION FOR DESIGNERS AND PRINTERS ALIKE WHEN THERE IS AN ASSUMPTION THAT A TRANSPARENCY CAN BE MATCHED EXACTLY IN A PROOF OR ON PAPER. MORE THAN ANY OTHER ASPECT OF THE PRINTING PROCESS, THE TRANSLATION OF AN IMAGE FROM TRANSPARENCY TO PAPER IS FRAUGHT WITH MISUNDERSTANDING.

KNOWING THE PHYSICAL DIFFERENCES BETWEEN TRANSPARENCIES, VARIOUS TYPES OF PROOFS, AND PAPER AND INK IS CRITICAL TO ACHIEVING THE EFFECT YOU WANT. EACH OF THESE MEDIUMS CREATES IMAGES IN DIFFERENT WAYS, AND THEREFORE EACH VARIES IN ITS ABILITY TO RECORD COLOR.

THERE ARE A VARIETY OF PROOFING METHODS AVAILABLE TODAY, AND EACH CHOICE IS SOMEWHAT DIFFERENT. YOUR PRINTER HAS CHOSEN THE PROOFING MEDIUM THAT WORKS BEST WITHIN HIS OR HER WORKFLOW SYSTEM, AND COMES THE CLOSEST TO ILLUSTRATING WHAT THE PRINTED RESULTS WILL BE. IN BOTH ANALOG AND DIGITAL PROOFING METHODS, LOW-END SYSTEMS ARE USED AS AN INEXPENSIVE DOUBLE-CHECK FOR COLOR BREAKS, AND HIGH-END SYSTEMS ARE USED FOR COLOR APPROVALS. NONE OF THEM, HOWEVER, CAN DUPLICATE THE FINAL RESULT PERFECTLY.

PROOF TYPES

Listed below are the most commonly used proofing systems, with a brief description of each.

SINGLE-COLOR PAPER PROOFS i.e., blueprints or bluelines, are used to check copy, type, size and position of all images, artwork, pagination, etc.

PRESS PROOFS use paper and ink as a medium, and are literally printed on an offset press. Press proofs also allow viewing of the images on the paper stock on which they will ultimately appear. Because they are more expensive and time-consuming to produce, they are generally used only when the effect cannot be simulated off-press.

ANALOG PROOFS are generally laminates, which are made by exposing light-sensitive material through film.

DIGITAL PROOFS are created using a variety of technologies. Dye-sublimation and laser ablation proofs use either light (laser) or heat (thermal) to transfer material onto a carrier. Ink jet proofs are made by spraying small droplets of colored liquid directly onto paper. *Electrostatic* proofs are created by affixing charged particles of powder directly onto paper.

TONE COMPRESSION

Outdoors, on a sunny day, the ratio (or difference) between the lightest tone we can see and the darkest can be as high as 1,000 to 1. For example, that means that between the lightest part of a cloud and the darkest area of black, there is a range of 1,000 to 1. That's what our eyes perceive.

To put things in perspective, film and photographic paper reduce this ratio to 100 to 1, and usually much less. Halftone screening, separating, and printing reduce it still further—to a maximum of 20 to 1.

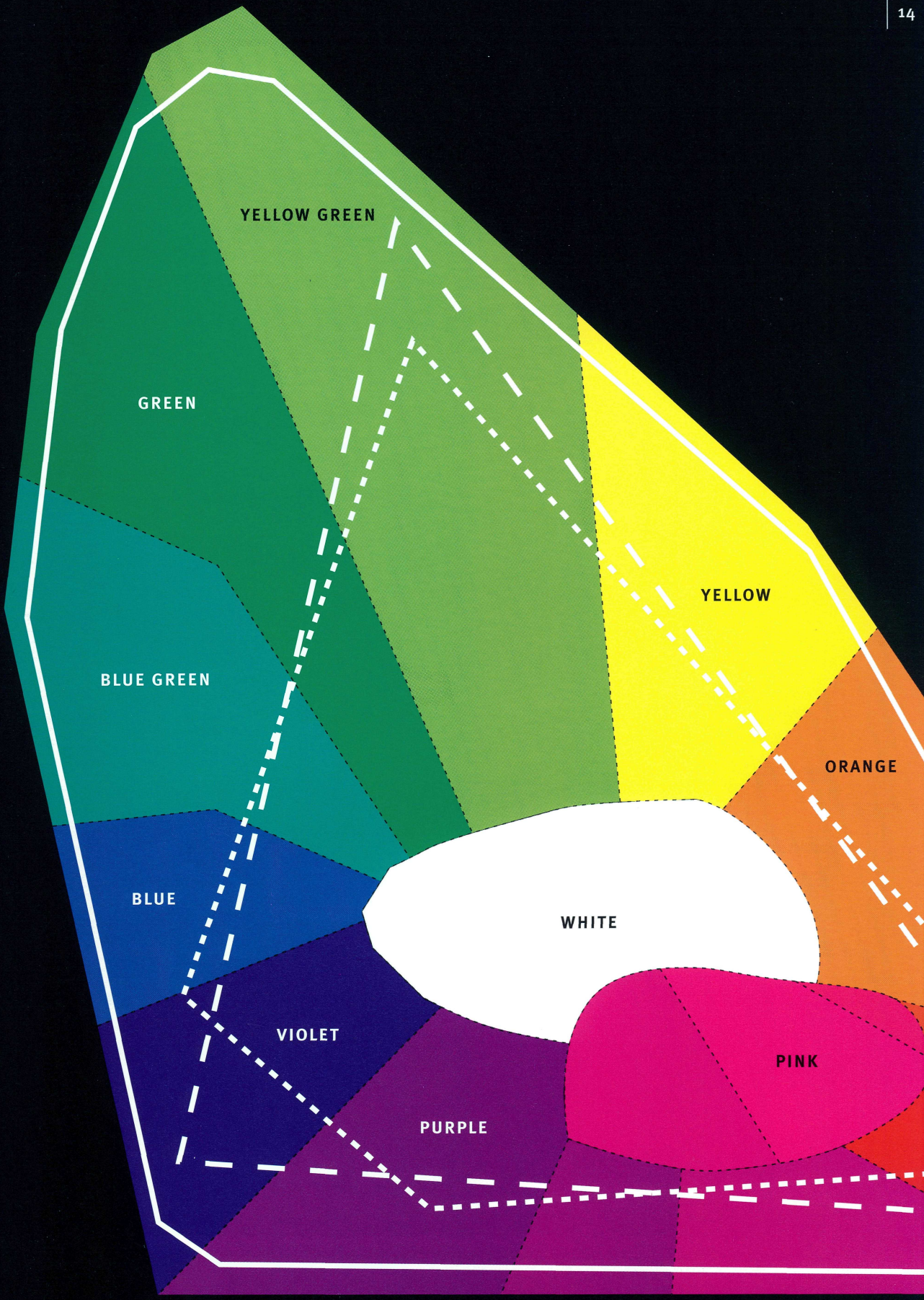
This reduction is called process tone compression. Literally, it is the number of tones that remain in the final reproduction of an image that create tonal range. Of the factors that determine tonal range, two are critically important.

The first is the difference between the brightness of the unprinted paper and the maximum ink density. These become the two ends of the range, since no highlight can be brighter than the paper on which it's printed, and no shadow can be denser than a solid black.

Although compression is a factor in the reproduction of every photograph, its effects can be minimized. When using duotones, tritones, and quadratones, which produce extremely deep shadows with multiple impressions of ink, you can increase the midtone details within the tonal range. The same principle applies to four-color process work.

The second factor is screen ruling. The finer the line screen, the more dots an image contains and therefore the greater the number of tones you can create, as long as the resolution of the scanned image is high enough to begin with.

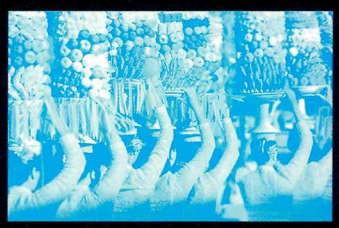
While we cannot replicate here what your eye can see in nature, we have demonstrated the impact of tone compression in the same ratio that it occurs as described in the text.

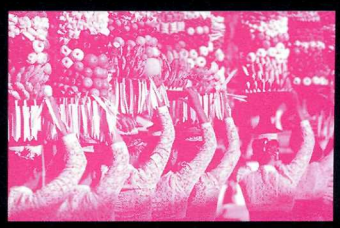

YELLOW GREEN
GREEN
YELLOW
BLUE GREEN
ORANGE
BLUE
WHITE
VIOLET
PINK
PURPLE

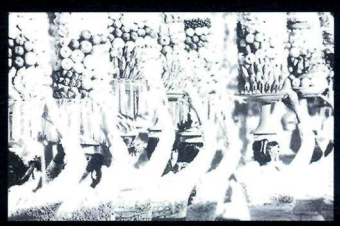
COMPRESSION CHART

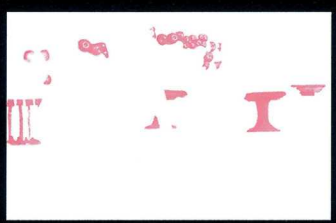
This illustration, called a compression chart, is a graphic representation of the color reproduction capabilities of photographic film, a computer monitor, and a printing press. Each of these mediums creates color in a different way. You can see that the transparency is capable of reproducing a greater color range than either the monitor or the press. And, some colors are more easily reproduced than others. This is just one of the ways that the differences between original and reproduction can be quantified, helping both understanding and communication.

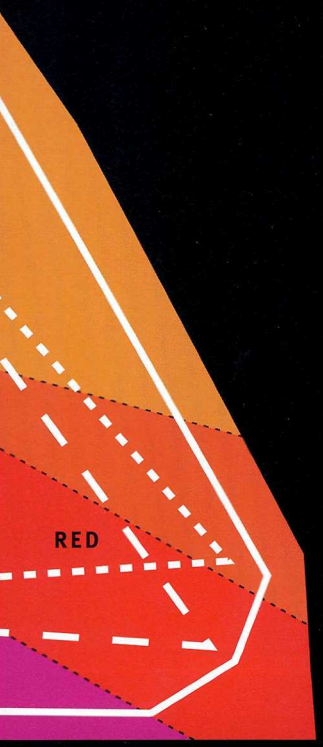
In some cases, where more exact fidelity to the transparency is critical, images can be separated using more than the normal four process colors, or an additional bump color. As demonstrated below and on pages 18 and 19, a special match red was used to enhance portions of this image.











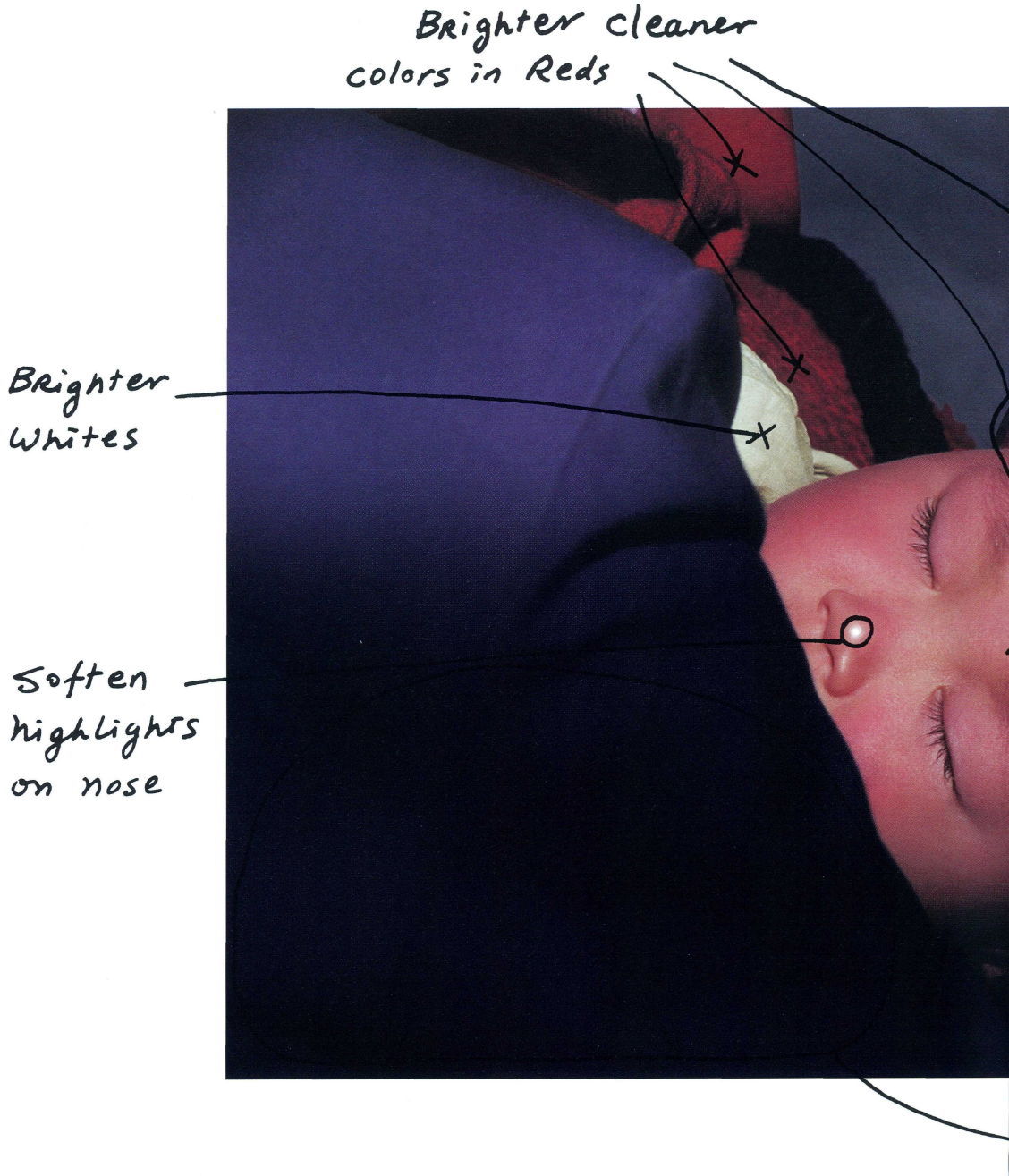
Photographic Film

Monitor

Printing Press

MARKING UP A PROOF

Often, it isn't possible to be in the same room with your printer when going over color proofs. If you aren't in the same room, at least make sure that you are in the same *kind* of room. It's essential that you and your printer are viewing the originals and the proofs in a controlled and consistent lighting situation. A "color room," with light boxes, overhead lights, and walls that meet the specified 5000K ANSI* standards, is critical when discussing or looking at color long distance. The environment in



*American National Standards Institute

which color is viewed can change it dramatically, as you can tell by looking at the same image under natural and fluorescent light.
In addition, how well you articulate the corrections you're looking for determines whether or not you'll get the changes you want. As we know by now, things like "match the chrome" don't really give the printer much to go on. Here, we indicate some of the most common requests, in language that the printer can understand and execute.


See

THE PRESSROOM

YOU'VE APPROVED THE COLOR PROOFS, SIGNED OFF ON A BLUEPRINT, AND YOU'RE IN THE PRESSROOM READY TO ROLL. BY THIS TIME, IF YOU AND YOUR PRINT SALESPERSON HAVE COVERED ALL THE BASES AND MADE THE NECESSARY CHANGES AND CORRECTIONS, THE PRESS OK SHOULD BE FAST, FUN, AND UNEVENTFUL.

START BY ESTABLISHING RAPPORT WITH THE PRESSMAN. HE IS THERE BECAUSE OF HIS EXPERTISE IN UNDERSTANDING THE CAPABILITIES OF THE PRESS HE'S RUNNING, AND HOW TO GET WHAT YOU WANT ON PAPER. MORE THAN LIKELY, HE KNOWS MORE THAN YOU DO ABOUT HOW TO RUN COLOR AND MAKE CHANGES, SO DON'T BE AFRAID TO ASK HIS ADVICE RATHER THAN TELLING HIM HOW TO DO THINGS.

STEP BY STEP TO APPROVAL

Make sure you have all the materials you'll need on hand, such as blueprints, final color proofs, and any additional back-up materials.

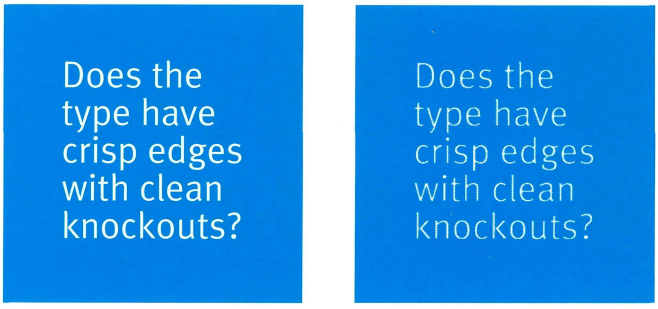
THE READER SHEET First, make sure you have a "reader sheet." This is a makeready sheet that is not for final color, but can be used for proofing content.

On the reader sheet, look for copy changes that were made on the blueprint, design elements, and the position of art and type. Also, check paper weight and finish to make sure they are correct.

The photo above is normal, the one to the right illustrates a hot spot on the baby's cheek.

Broken Type

SHEET TWO This is your opportunity to check print quality. Is the color right? Are the flesh tones realistic? Is it in register? Does the type have crisp edges with clean knockouts? Check for hot spots, broken type, scratches, and dirt.



Reverse type should not "fill in." It should be clean and consistent in weight, with type printed on white paper.

Take your time on this sheet. Don't try to do everything at once. Take stock of your overall impression, and then study each element. Use a printers' loupe to check traps and registration. Compare the sheet to your color proofs and, understanding that they will probably not match perfectly, make sure that the effect is the one you want. Speak to the pressman or your salesperson about your concerns and make adjustments together. Take a moment and try to look at the proof as if you've never seen the original. That's the way your audience will see it.

As a rule, it's always better to tell the printer what you want, or what you want to change, rather than telling him how to do it. For example, you can say that an area "looks too red," and let the printer decide what the cause of that is. If you tell him to take red out, you may find out when it's gone that the problem was actually that there was not enough blue or yellow. Let the printer use his expertise to solve problems. And keep in mind that it's always better to make a series of small shifts rather than big ones.

Ask the printer to take a densitometer reading, so that you have a baseline reading to start with. Densitometers measure the amount of each color that you are running, and the readings are taken from the color bars at intervals across the length of the sheet to check color consistency.

This printers' loupe has a 10x magnification.

SUBSEQUENT SHEETS Always number the sheets as soon as you get them. Check for the improvements that you've discussed with the printer, and compare the new sheet with the last one.

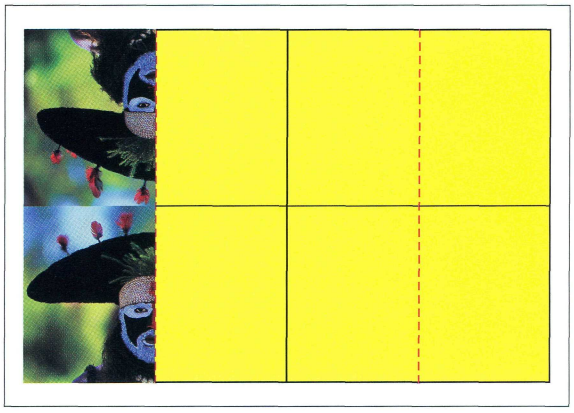
Ask for new densitometer readings to compare the colors, since some colors may shift as they dry.

Double-check any tints or neutral areas for shifts in color, or unevenness in color, within a tint area or within the same image, especially for a crossover.

Check match (flat) colors against drawdowns or previous sheets.

Don't be afraid to fold or cut the sheet so you can lay the images next to each other from sheet to sheet.

Check crossovers for color and alignment.



When a double page image is not the center spread, the two halves will likely not be together on the press sheet. This is called a crossover. Care must be taken to match the two halves as they will appear when bound. It is best to cut each sheet so you can line up the image in its finished form to check it for color and alignment.

Confirm which areas will have protective coatings.

Check the consistency of density and color on type or other repeated design elements. (Check for consistency from page to page and sheet to sheet on subsequent ok'd sheets within the same job as well.)

Have a sheet ruled to confirm how it will fold, perforate, and trim. Make sure all the margins are correct. Check the position of the back-up when you're running the second side of a sheet.

Ask to have a sheet folded and trimmed to size.

Check for hickeys.

Hickey

Take another fresh look at the whole sheet. Make sure the changes you've been making in one critical area haven't impacted other parts of the sheet. Look at it from an angle; you may catch something you hadn't seen before.

Take additional densitometer readings: magenta and cyan should be about equal. Yellow should be weaker. Black should be the heaviest.

SIGNING OFF When you like it, sign it. Keep an ok'd sheet to bring back to your office. On a multi-form job, you'll want to have all your ok sheets available at press to compare with the current press form.

Ask the printer to record densitometer readings, then to run 500 or 1,000 sheets and check the color again. You'll be able to see how images clean up and color "settles in." Modern presses are designed to run fast, and you will generally see a much cleaner sheet once the press gets up to speed.

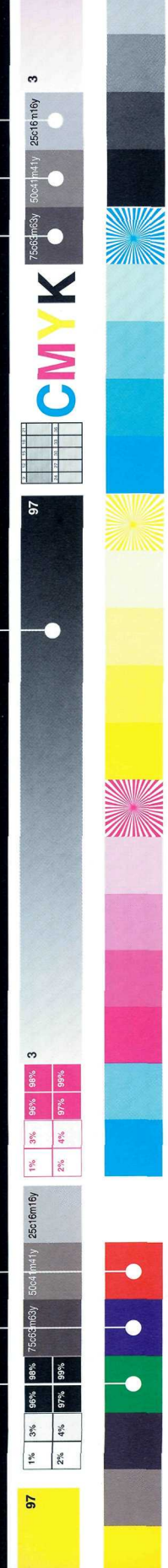
Congratulate yourself and go on to the next form.

‡

These three squares check gray balance in various tonal ranges, specifically quarter tone, midtone, and three-quarter tone.

For each of the three process colors, these bars are used to check the smoothness of gradations—in this case, from 3% to 97%.

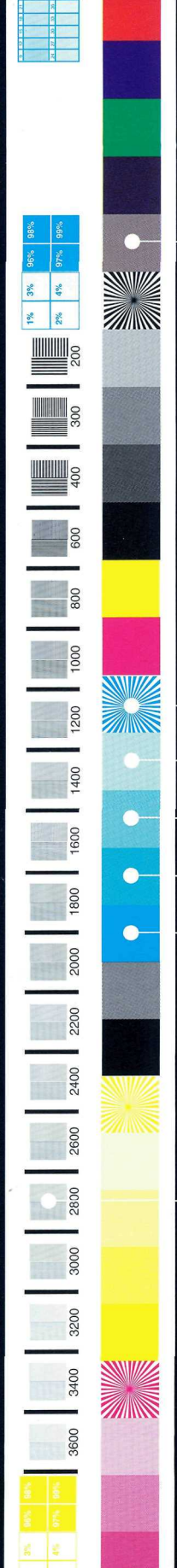
This series of squares is created by running solid process colors over each other. 100% cyan and 100% yellow create green, 100% yellow and 100% magenta create red, and 100% magenta and 100% cyan create purple. They are used to check the solid traps. Trapping has two meanings in the printers' world. One refers to the fit or position of two areas of color, and the other refers to the way the ink traps—or lies over or under the other colors. These bars, while they would indicate registration, are used to isolate the ink lay.



‡ The color bars represented on these pages have been customized by a commercial printer. These color bars include elements found on a standard color bar as well as additional elements created by the printer to maximize the testing equipment.

THE COLOR BAR

The color bar is a guide for the printer—used to check density, registration, color balance, and trapping. While it takes up very little space on the sheet, each element in the color bar serves a purpose, and it is packed with important information. The bar extends along the tail edge of the sheet as it goes through the press, so that readings can be taken along the entire length for consistency.

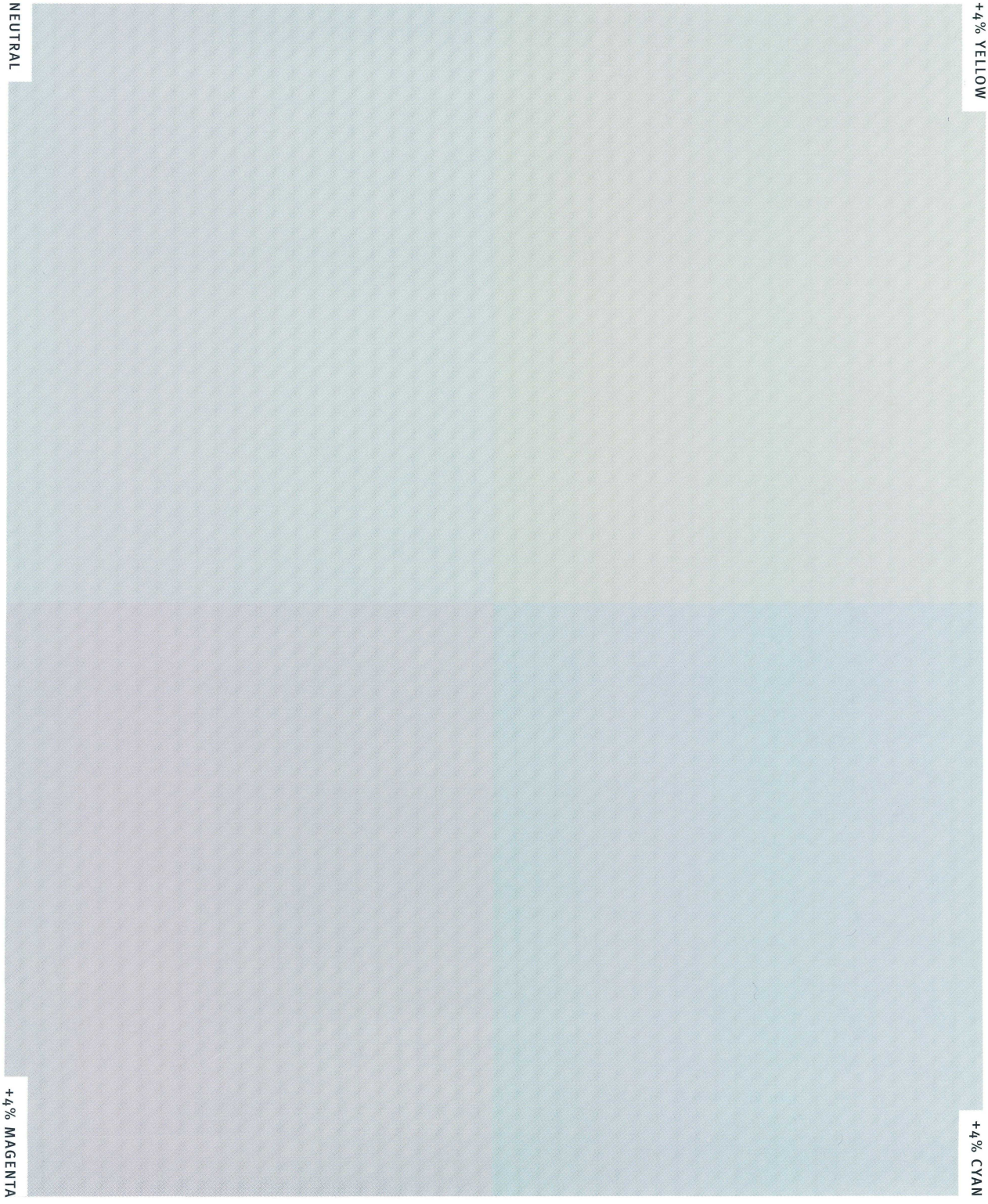


When the overall balance of magenta, cyan, and yellow is correct, the combined colors create a neutral gray. In this square, 50% cyan, 41% magenta, and 41% yellow are used.

Bars with patterns in them, called slur targets, are used to check for ink slurring or movement of the sheet, blanket, or plate on press. There is always one per color, since each needs to be considered separately.

These squares are made from solids and screens of the same color at 100%, 75%, 50%, and 25%. The printer uses this area to ensure that the dot gain measures are within a certain level of tolerance. Please see the glossary for more details.

Resolution lines (you'll need your own printers' loupe to see them) replicate various resolutions from 3600 to 200. These allow the printer to check the resolution ability of the film, proof, plate, and press.



As you stand in front of a printing press that may be bigger than your house, it can be startling to realize just how delicate a process this is. The smallest shifts or variations—anywhere along the process—can have enormous impact on the page.

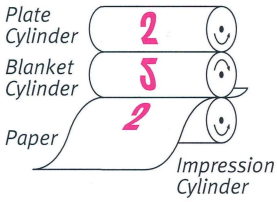
In some instances, your subject matter may be completely unforgiving. When you are printing subtle colors or grays, as this demonstration shows, even a 4% variation in dot gain from one sheet or one part of a sheet to another creates havoc. It's important to understand going into a job that these

subtleties are simply more difficult to control, and less forgiving, than other types of subjects.

Quadratone, or four-color black and white images, are also easily impacted by very slight shifts to the gray balance.

The same point can be made in this comparison of a neutral or delicate image with an extremely saturated one. In the neutral photograph the 4% shifts to the gray balance shown here make a significant difference.

In an image made up of strong, saturated colors with no critical gray balance, these same shifts in color balance can hardly be noticed.



5000K Lighting
Light measuring 5000 degrees Kelvin (the color temperature of bright daylight). A component of industry-standard viewing conditions for inspecting transparencies, comps, proofs, and press sheets.

Aqueous Coating
A water-based alternative to varnish for protecting and enhancing print. May be applied in-line (on press) as a gloss, satin, or dull coating. Fast-drying, durable, and non-yellowing.

Blanket
The rubber-coated pad covering the intermediate cylinder of a lithographic press. An inked, reversed image is transferred—or *offset*—from this blanket cylinder, resulting in a right-reading impression on the press sheet.

Blueprint (proof)
A one-color photographic proof for checking design elements and page position. Ensures correct folding, trimming, and other bindery operations. Commonly called *bluelines,* or simply *blues.*

Brightness/Shade
A descriptive characteristic of color, *brightness* also refers to the amount of light reflected from the surface of paper (or ink). A measure of a color's value, *shade* also describes the process of darkening a color by adding black or a complementary color.

Bump Color
Also known as *touch plate.* Adds a special color, or accents a color within a specific image area, for reaching optimal color match. Commonly used to achieve bright reds.

CMYK/Process Color
Acronym for the four-color process model for printing via four separate plates. The process-color method allows wide-spectrum reproduction by mixing ink combinations of the three subtractive primaries— cyan, magenta and yellow—plus black for increased tone control. Overprinting these transparent inks creates the optical illusion of full color.

Color Balance
The combination of process colors used to reproduce the colors of an original image or object. Process colors are in balance when perceived as true to the original, with no undesirable casts or incorrect hues.

Color Bars
Patches of solid, patterned, and tinted inks on the tail edges of press sheets. These quality control devices permit the measurement of variables such as color balance and registration, trapping, print density, dot gain, and slur.

Color Perfect
An imposition format used to increase the precision of critical color match by eliminating in-line color compromises. Forms include duplicate pages imposed to run behind each other on the press sheet for improved color control.

Color Proofs
Non-printed reproductions of color art produced by printers to closely approximate final printed color.

Contrast
The differences in tonal gradation between an image's highlight and shadow areas—the greater the range, the higher the contrast.

Crop (Crop Marks)
The portions of an image to be reproduced, as indicated by vertical and horizontal corner lines.

Crossover
Artwork (image, text, or screen tint) that continues across to the facing page of a publication.

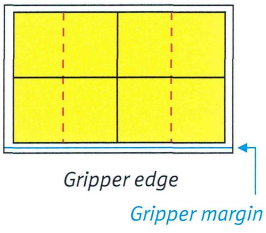
Cylinder
Part of a system of large rollers on an offset lithography press. The plate cylinder transfers an image onto the blanket cylinder, which is then offset onto a press sheet passing between the blanket and impression cylinders.

Densitometer
A photoelectronic device for measuring the reflection densities of print (or the transmission densities of film).

Density
An image's opacity—a measure of which determines the relative thickness of ink on press.

Dot Gain
Halftone dot growth causing darkened tones and colors, as well as reduced shadow contrast. *Mechanical dot gain*—the amount of ink absorbed into the body of a sheet—is affected by film, plate, and press processes, as well as by paper and ink selection.

Glossary



Drawdown
A method of proofing inks for special color matches, whereby a thin sample layer of ink is drawn down upon the surface of a specified sheet for evaluation.

Duotone
The technique of reproducing a black-and-white photograph as a tonally enhanced, two-color halftone.

Felt & Wire
By contacting the paper machine's felt blanket rather than the wire during papermaking, a sheet's top, or felt side, results in a smoother printing surface than its opposing wire side.

Folio
Page numbers in publishing— evens on the left, odds on the right.

Gray Balance
The halftone dot values of cyan, magenta, and yellow required to produce a neutral gray. Used as a quality control measure for achieving proper color balance.

Gripper Edge
The leading edge of a sheet, held by metal gripper "fingers" during offset printing. The gripper margin allows the sheet to pass through the press without affecting the image area.

Gutter
The combined inner margins of a publication's facing pages.

Hickeys
Print defects caused by foreign matter on the blanket or plate. Often appear in areas of solid ink coverage as dark specks surrounded by light rings of non-printed stock.

Imposition
Page arrangement into signature layouts, as defined by factors such as number of pages, press size, sheet size, and bindery considerations. Ensures correct sequential assembly when printed and bound.

Makeready
Procedures required to prepare a press for printing. Includes all adjustments necessary to produce a satisfactory press sheet for the customer— from mounting and packing plates to ink control and image register.

Match Color
In printing, the duplication of a specified color by using either multiple process colors or special flat colors. Match colors may be defined by supplied samples or by numbers from color matching systems.

Moiré
Unacceptable visual patterns within halftones and screen tints caused by misaligned screens or imprecise register. Also caused by optical pattern conflicts between images and halftone dots, as well as between halftone screens and prescreened pieces.

Mottle
The result of uneven ink absorption on poorly formed paper surfaces, this spotty variation in color or gloss appears most often in large solid or tint areas.

Off-line
Production operations conducted out-of-process rather than *in-line* (on-press), such as die-cutting or the application of special coatings via dedicated equipment.

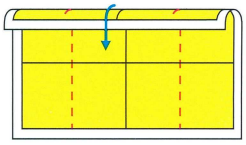
Offset Spray
A dry spray of powdered starch at delivery end of press used to separate freshly printed sheets with a fine layer of particles, thus allowing the ink to dry and avoiding undesirable offsetting.

Offsetting
A print quality problem where wet ink from a freshly printed sheet is transferred to the sheet above or below it in the delivery pile. Also called *offset*, or *setoff*.

Opacity
A paper's translucency, or the degree to which it minimizes print show-through from the opposite side. Also describes the degree to which an ink covers a substrate (or other inks).

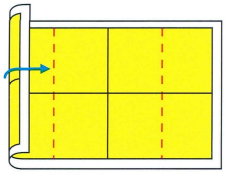
Paper Grain
The alignment of fibers along the direction of flow in papermaking. In *grain-long* paper, fibers run parallel to the sheet's length, while *grain-short* follows the width. Generally, registration is easier to control, folds are cleaner, and binding stronger when running with the grain.

Pass
The passage of a press sheet through all printing units.



Gripper edge

Work-and-tumble



Gripper edge

Work-and-turn

Register/Register Marks
Precision print alignment relative to the edge of the sheet, and to corresponding graphic elements (including separations). Small cross-hair targets on mechanicals and film help to ensure accurate register on flats, plates, and press sheets.

Second Pass/Dry Pass
The extra passage of a sheet through the press for additional color impressions or coating applications.

Scuffing
Undesirable print abrasions caused by surface wear or rough handling. Particularly problematic in packaging, scuffing may be minimized with scuff-proof inks, varnishes, and other coatings.

Sheetfed
A press accommodating individual sheets rather than the paper rolls required of higher-volume web presses. Sheetfed presses facilitate makeready and minimize paper spoilage, and the feeder mechanism accepts a wider range of paper stock.

Sheetwise
An imposition method utilizing different plates for each side of the press sheet. The sheet is turned over for printing the back side on a second pass, without changing the gripper edge.

Signature
A folded sheet of paper—printed on both sides—for use in a publication. Signatures are produced in four-page increments, up to 64 pages. In common practice, the term also refers to any press sheet to be folded and bound.

Slur
A printing defect caused by movement of the sheet, blanket, or plate on press, resulting in elongated, blurred (or slurred) halftone dots and fine line distortion.

Tints
Screen tints are created by specifying percentages of solid (or flat) ink colors. Lighter, less dense colors and shading effects may be simulated by this uniform pattern of dots, similar to halftones. *Tint* also refers to the changing of a color's hue by adding color or extender to the ink.

Units (On-press Printing Units)
Self-contained color stations on multi-color presses. Each includes a separate inking, dampening, and printing system for a single process or special color, varnish, or other coating.

Varnish
A clear-coat liquid sealer that overprints ink and paper to protect against scratches and scuffing, increase longevity, and enhance image appearance and impact. Can be gloss or dull.

Wash Up
The process of cleaning ink and dampening solutions from press components (such as plates, rollers, and fountains), for changing colors or preparing for a new print job.

Work-and-tumble
A press imposition using the same plate for printing both sides of a press sheet, where the sheet is tumbled end-to-end for second-pass printing on the back. Because the gripper edge is changed and press adjustments made, this method is rarely used when precise register is critical.

Work-and-turn
An imposition method utilizing the same plate for printing both sides of a press sheet, where the *back-up,* or second side, is printed by turning the sheet over—from left to right. This method provides better register than work-and-tumble by maintaining the same gripper edge.

COLOR SEPARATIONS REFERENCE LIST

- AGFA. *A Guide to Color Separation: Digital Color Prepress Volume Two.* Los Angeles, CA. Anderson Lithograph, 1995.
- Field, Gary G. *Color and Its Reproduction.* United States. Graphic Arts Technical Foundation, 1992.
- Green, Phil. *Understanding Digital Color.* United States. Graphic Arts Technical Foundation, 1995.
- Romano, Frank J. *Pocket Guide to Digital Prepress.* United States. Delmar Publishers, 1996.
- Southworth, Miles and Southworth, Donna. *Pocket Guide to Color Reproduction, Communication and Control, 3.1 Edition.* United States. Graphic Arts Publishing, 1995.

PRODUCTION NOTES

PRINTING

Printed in the USA on 6-color and 8-color 40" presses at 8,000 impressions per hour. Electronic mechanicals were supplied.

TYPOGRAPHY

News Gothic BT Light, Roman, and Bold; Meta Plus Normal, Medium, and Bold; and Bureau Grotesque Three Seven.

PHOTOGRAPHY

The photographs in this book are the work of Eric Meola as part of an extensive personal project and forthcoming book, sponsored by Kodak, entitled *The Last Places on Earth*. Shot in Burma, New Guinea, and Africa, they represent Eric's lifelong interest in disappearing cultures. All images were scanned at 175 line screen.

PAPER AND INK SEQUENCE

Strobe Gloss Cover 100lb./270gsm

Outside covers: Black, cyan, magenta, yellow, special match blue, and spot gloss varnish

Inside front cover: Black, cyan, magenta, yellow, and overall gloss varnish

Inside back cover: Black, cyan, magenta, and yellow

Strobe Gloss 100lb./148gsm

Page 1: Black (40% screen of cyan under solid black) and spot gloss varnish

Page 2: Black (40% screen of cyan under solid black), magenta, yellow, and overall gloss varnish

Page 3: Two hits of cyan (40% screen of cyan under solid cyan) and overall gloss varnish

Page 4: Black, cyan, magenta, yellow, and overall gloss varnish (40% screen of cyan under solid black for copy bar)

Page 5: Black, cyan, magenta, yellow, and overall gloss varnish

Pages 6, 7, 8, 26, 27, 28, and 29: Black, cyan, magenta, yellow, and spot gloss varnish

Page 25: Black, cyan, magenta, yellow, and spot gloss varnish (40% screen of cyan under solid black)

Page 30: Black, cyan, magenta, and yellow

Pages 31 and 32: Black, cyan, magenta, yellow, and spot gloss varnish

Strobe Silk 100lb./148gsm

Page 9: Black, cyan, magenta, yellow, spot gloss varnish, spot matte varnish, spot tinted gloss varnish, and spot aqueous coating

Page 10: Black, cyan, magenta, yellow, and overall gloss varnish (40% screen of cyan under solid black for copy bar)

Page 11: Black, cyan, magenta, yellow, and overall gloss varnish

Pages 12, 16, 17, 20, and 22: Black, cyan, magenta, yellow, and spot gloss varnish

Page 13: Black, cyan, magenta, and spot gloss varnish

Page 14: Black, cyan, magenta, yellow, and overall gloss varnish

Page 15: Black, cyan, magenta, yellow, special match red, and spot gloss varnish

Page 18: Black, cyan, magenta, yellow, special match red, and overall gloss varnish

Page 19: Black, cyan, magenta, yellow, special match red, and overall gloss varnish (40% screen of cyan under solid black for copy bar)

Page 21: Black, two hits of cyan (40% screen of cyan under solid cyan in copy blocks), magenta, yellow, and spot gloss varnish

Page 23: Black and spot gloss varnish

Page 24: Black, cyan, magenta, yellow, and spot gloss varnish (40% screen of cyan under solid black)

Strobe Gloss is available in 80lb./118gsm and 100lb./148gsm text; 80lb./216 gsm, 100lb./270gsm, and 120lb./325gsm cover.

Strobe Dull is available in 80lb./118gsm and 100lb./148gsm text; 80lb./216gsm, 100lb./270gsm, and 120lb./325gsm cover.

Strobe Silk is available in 80lb./118gsm and 100lb./148gsm text; 80lb./216 gsm and 100lb./270gsm cover.

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