

PERFECTING DIGITAL TONES

NEW T-MAX 400—TEST RESULTS

SEPTEMBER/OCTOBER 2009

PHOTO Techniques

PHOTO

Techniques®

Systems & Processes for Today's Creative Photographer

Raw Conversion Tools:

Which is Best for You?

- Lightroom
- Aperture
- CaptureOne
- DxO

Getting the Most from a Lens

Choosing Before Composing

The Panasonic G1—*Start of a Mirrorless Era?*

NOISE PLUG-INS TESTED

- Neat Image Pro+
- Noiseware Pro
- Noise Ninja Pro

People in Action
PHOTO CONTEST WINNERS



Cover image by
Kevin Bowman

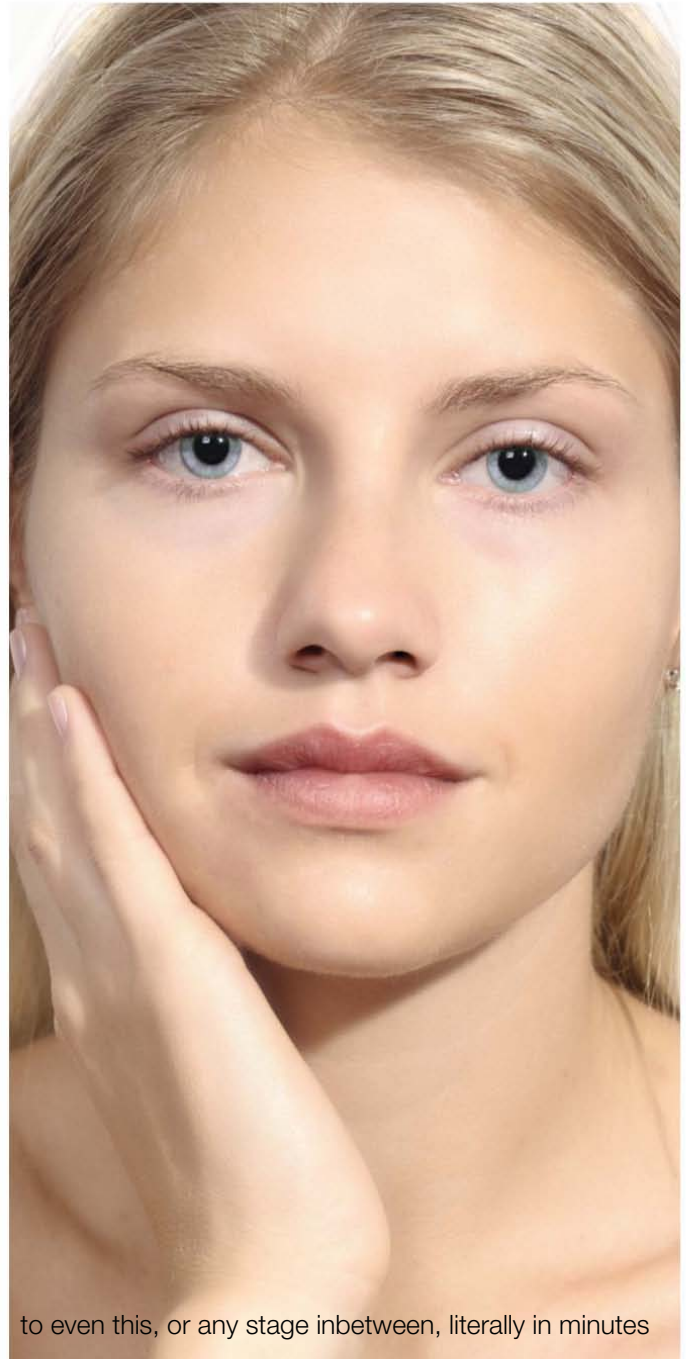
www.phototechmag.com

New PortraitProfessional Studio 9

"A great money maker for any portrait or wedding photographer"



From this...



to even this, or any stage inbetween, literally in minutes

Increase your print sales dramatically by making your subjects as attractive as they can be. Ultra quickly and easily.

New, multi award-winning professional touch-up software.
Designed specifically for photographers.
Ultra fast, Ultra easy.

10% extra discount for Photo Techniques readers by
entering the coupon **PT909** when buying online.

See the improvements in V9 for yourself. Download the free trial
www.PortraitProfessionalStudio.com

TABLE OF CONTENTS

Vol. 30, No. 5

SEPTEMBER/OCTOBER 2009

PHOTO

Techniques®

FEATURES

8 A New Look to Your Fine-Art Photographs,

BY HERBERT C. BERKHOLZ

Giving prints a deckled-edge look can help separate them from the crowd.



14 The New T-Max 400,

BY FRED NEWMAN

Tests reveal you can teach an old film new tricks.



18 Field Curvature,

BY LLOYD CHAMBERS

How to analyze and work with this ubiquitous lens problem.



23 **PORTFOLIO:** People in Action

The winners of our contest revealed.

27 Raw Conversion and Editing Software,

BY MARK DUBOVOY

The pluses and minuses of Lightroom, Aperture, and CaptureOne.



33 DxO Optics Pro: The Non-Mainstream Powerhouse of Raw,

BY PAUL SCHRANZ

Though not as well known, DxO should be considered with the heavyweights.

The cover: *Jump*

BY KEVIN BOWMAN



A Mirrorless Future? 35

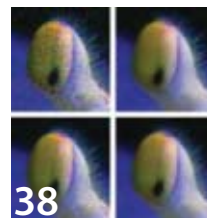
BY UWE STEINMUELLER

The Panasonic G1 leads a potential trend to digital cameras with larger sensors, interchangeable lenses, and no mirror.

Turn Down that Noise, 38

BY CTEIN

Comparing three noise-reduction programs: Neat Image, Noise Ninja, and Noiseware.



Perfecting Digital-Tone Reproduction, 44

BY DICK DICKERSON

AND SILVIA ZAWADZKI

A shortcut to better digital prints.

PHOTO Techniques Exclusive for Digital Readers

Preview and Soft Proofing in Photoshop, 49

BY TIM DALY

Discover how to get your inkjet prints to match what you see on your monitor through the use of soft proofing.

DEPARTMENTS

Editorial.....	2	Master Print Class.....	11
Photo News.....	3	Decision Time, BY BRUCE BARNBAUM	
BY JERRY O'NEILL			
New Products.....	6	Marketplace/ Ad Index.....	48
Vestal At Large.....	7		
Shock of the Old, BY DAVID VESTAL			

PHOTO Techniques (ISSN 1083-9070) is published bimonthly (every other month) by Preston Publications, Div. Preston Industries Inc., 6600 W. Touhy, Niles, IL 60714-4516. Periodicals postage paid at Chicago, IL and additional mailing offices. Copyright 2009; reproduction without permission strictly prohibited.

SUBSCRIPTIONS: U.S.: 1 Yr./\$29.99; 2 Yr./\$49.99; 3 Yr./\$69.99. Outside U.S.: 1 Yr./\$41.99; 2 Yr./\$73.99; 3 Yr./\$105.99. For new subscriptions or renewals call (866) 295-2900, or e-mail us at circulation@phototechmag.com.

READER SERVICES: Books, back issues, and collector prints may be ordered with VISA, Mastercard, or American Express by calling (866) 295-2900 Monday-Friday 8 AM to 4 PM Central Time. Or e-mail us at circulation@phototechmag.com.

POSTMASTER: Send address changes to PHOTO Techniques, P.O. Box 585, Mt. Morris, IL 61054; or e-mail us at circulation@phototechmag.com.

PRINTED IN U.S.A. BY ST. CROIX PRESS INC.

PHOTO

Techniques

Preston Publications
Div. Preston Industries, Inc.

6600 W. Touhy Ave. | Niles, IL 60714-4516
Phone (847) 647-2900 | Fax (847) 647-1155
www.phototechmag.com

PUBLISHER S. Tinsley Preston III

EDITOR Scott Lewis
slewis@phototechmag.com

COPY EDITOR Kathy Zawilenski

ADVERTISING Charles Pachter
cpachter@phototechmag.com

DIRECTOR OF MARKETING Janice Gordon

PRODUCTION Roberta Knight

ART

Lynne Anderson, *Director*
Stephanie Graffuis-Cain, *Webmaster*
Pamela Kintzel
Mila Ryk

CONTRIBUTING EDITORS

Howard Bond	Michael Reichmann
Robert Chapman	Paul R. Schranz
Ctein	John Sexton
Patrick Gainer	Abhay Sharma
Ron Jegerings	David Vestal
Bobbi Lane	Carl Weese
Jerry O'Neill	

LIST RENTAL

Statistics
Nancy Spielmann
Phone (203) 778-8700
Fax (203) 778-4839

NEWSSTAND DISTRIBUTION

Curtis Circulation Company
730 River Road, New Milford, NJ 07646-3048
(201) 634-7400 Fax: (201) 634-7499

RETAIL DISTRIBUTION

6600 W. Touhy Ave, Niles, IL 60714-4516
(847) 647-2900

SUBSCRIPTION SERVICE

P.O. Box 585, Mt. Morris, IL 61054
(866) 295-2900

Editorial contributions, letters to the editor, photos, etc. to: *PT* Edit.
Dept., 6600 W. Touhy Ave., Niles, IL 60714-4516. Material
accepted for publication subject to revision, at publisher's discretion,
to meet editorial standards/style. Unsolicited material will not be
returned unless accompanied by SASE. Payment upon publication at
prevailing rates covers all one-time publication rights, author's and/or
contributor's rights, title and/or interest in/to material including, but
not limited to photos, drawings, charts/graphs and designs, which
shall be considered as text. The act of mailing manuscripts, letters,
photos and/or material shall constitute an express warranty by the
contributor that the material is original, has not been published/
submitted elsewhere in similar form, and is in no way an infringement
upon the rights of others. Publisher makes every effort to ensure
careful handling of all photos, but is not responsible for incidental
loss/damage; submission of duplicates recommended. Mention of
any photographic formula/product does not constitute endorsement
by *PT*.

Canadian Publications Mail Agreement # 40030346
Return Undeliverable Canadian Addresses to
Station A, P.O. Box 54, Windsor, ON N9A 6J5
Email: jgordon@prestonpub.com

Printed in U.S.A. by St. Croix Press Inc.

EDITOR'S NOTE



BY SCOTT LEWIS

The Meaning of "Instant" in Photography

I'm sure that many of you have read that a group of Europeans is trying to reinvent Polaroid instant film to begin selling it again by some point this year. While others work to create smaller, better pixels, they are laboring to recreate chemistry and chemical processes. For many of us, the swift development of a Polaroid print was as close as one got to an "instant" image—until, of course, digital came along and soon had pixels flashing on camera backs. My wife and I shot most of our honeymoon pictures with a Polaroid camera; partly because we wanted to see them immediately, partly because we like the look (the soft look of a Polaroid was certainly flattering for portraits). Now those photos almost seem like relics of a bygone era.

What killed Polaroid? Largely the growth of digital photography, which has been not just in the news, but oftentimes making the news. The highest-profile recent example is in the post-election turmoil in Iran. It proved fairly easy to stop the official press with its official cameras from taking photographs of the demonstrations and violence, but when hundreds of people had cellphones with cameras, it proved impossible to stop them from capturing images (and video). Sure, the images weren't as sharp and perfect as a professional photographer would have captured, but in a chaotic and historic situation, that quickly becomes secondary to the fact that the image exists at all.

People can argue about the quality of digital in general (and cameraphones in particular), but it's difficult to argue with the speed and efficiency of taking a digital photo and getting it onto the Internet, even in the midst of a crackdown by a repressive government. However instant it seemed at the time, it's hard to imagine this working in the days of Polaroid. Hopefully we will continue to have the choice of either medium.

In closing, I want to thank everyone who entered our People in Action contest. It was very difficult to narrow it down to just a few winners. So difficult, in fact, that we are presenting some additional images beyond the official winners on our Web site at www.phototechmag.com/actioncontest. You can see the five official winners in this issue's portfolio on page 23.

Scott Lewis
Editor

PHOTO NEWS



BY JERRY O'NEILL

New Topographics show

Back in 1975 there was a landmark exhibition of photographs called New Topographics: Photographs of a Man-Altered Landscape. It became the second-most-cited photography exhibit in history, beaten only by The Family of Man, curated by Edward Steichen, which opened in 1955 at the Museum of Modern Art in New York City.

But where The Family of Man was humanistic and warm, many visitors to New Topographics felt it was cold and impersonal, and well, maybe even a little weird. After all, by the standards of the day, landscape photography might include Nicholas Nixon's excellent, perspective-corrected view-camera photo of the Boston Public Library. But what about photos of an empty parking lot, or a motel where each room was a separate "teepee" (with a TV antenna on top), or a trailer park, even if it's raked by dramatic light?

So, back in 1975, New Topographics (mounted by the George Eastman House International Museum of Photography and Film in Rochester, New York), drew comments both positive and negative. But whatever one's opinion, it was an important show that Eastman House says "signaled the emergence of a new approach to landscape photography, ultimately giving a name to a movement and style." As an example of its far-reaching effects, today—34 years later—there's an active New Topographics group on Flickr, showing "work that shows human activity and interaction within the landscape."

So the show is being recreated for an international tour by the Center for Creative Photography at the University

of Arizona (www.creativephotography.org) and George Eastman House, with a selection of more than 100 works from the original show. The 10 photographers featured in 1975, and again in the new show, are Robert Adams, Lewis Baltz, Bernd and Hilla Becher, Joe Deal, Frank Gohlke, Nicholas Nixon, John Schott, Stephen Shore, and Henry Wessel Jr. Eastman House says, "The current exhibition demonstrates both the historical significance of their photographs and the continued relevance of this work in today's culture."



Mobile Homes, Jefferson County, Colorado, 1973, by Robert Adams

George Eastman House collections.
© Robert Adams, courtesy of Fraenkel Gallery, San Francisco, and Matthew Marks Gallery, New York



View of the Boston Public Library, 1974, by Nicholas Nixon

George Eastman House collections.
© Nicholas Nixon

New Topographics is at Eastman House through September 27, meaning it closes there shortly after

REGALarkay

PROFESSIONAL PHOTOGRAPHIC & DARKROOM EQUIPMENT®

THE HOUSE OF DRYERS



THE ORIGINAL "RC" PHOTO PRINT DRYER

- * Table top operation
- * Stainless steel construction
- * Speed and temperature controls
- * Two models: 12" wide and 20" wide

THE ONE AND ONLY U.S. MADE DRUM DRYER

- * For fiber base photo prints ONLY
- * 22" wide mirror finished stainless steel drum
- * Also, a Teflon coated drum for matte prints only



ROLL OR SHEET FILM DRYING CABINETS

For dust free film drying environment

- * 4 models available for roll or cut film
- * Adjustable heat - 60 minute power control timer -
- * Interior light and windowed doors for roll film models
- * Vinyl clad or Stainless steel construction



Call or Write for a Free Catalog!
REGAL PHOTO PRODUCTS, INC.

2769 S. 34th Street - Milwaukee WI 53215
800-695-2055 Fax: 414-645-9515

PHOTO NEWS

www.cpmdelta1.com
FREE CATALOG (800) 627-0252

↑ Check out our website
→ Call Toll Free
→ **Mention this ad!**
→ Receive 20% off your order of \$100 or more!

Model 25 Temp Control
\$586.95
± 1/2 deg accuracy

Water Temp II
\$74.95

Black Out™
\$276.95

Exhaust Fan
12 x 12

FREE SHIPPING
On FedEx Orders Over \$200.00

- ABS Plastic Sinks
- Photo Drying Books
- Darkroom Safelights
- Black Out™ Vinyl
- Chemical Datatainers
- Water Temp Controls

Delta 1 Since 1972

Convertible™ Sinks
From \$379.95

Platform Insert
\$75.45

4 & 6 ft lengths
10 Year LTD Warranty

PT5609

YOUR BEST BUY IN A DENSITOMETER



YOUR BEST BUY IN AN ENLARGING METER

\$94 30 day satisfaction guarantee
5 year warrantee

DARKROOM AUTOMATION
1412 Dorsh Rd
Cleveland OH 44121
(216) 691-3954
www.darkroomautomation.com



Untitled, from the series Route 66 Motels, 1973, by John Schott

George Eastman House collections. © John Schott

you receive this issue. But it will travel to eight venues in the United States and Europe: Los Angeles County Museum of Art (Oct. 25, 2009–Jan. 3, 2010); Center for Creative Photography, University of Arizona, Tucson (Feb. 19–May 16, 2010); San Francisco Museum of Modern Art (July 17–Oct. 3, 2010); Landesgalerie Linz, Austria (Nov. 10, 2010–Jan. 9, 2011), Photographische Sammlung Stiftung Kultur, Cologne, Germany (Jan. 27–April 3, 2011); Jeu de Paume, Paris (April 11–June 12, 2011); and the Nederlands Fotomuseum Rotterdam, the



Tract House, Westminster, Colorado, 1974, by Robert Adams

George Eastman House collections. © Robert Adams, courtesy of Fraenkel Gallery, San Francisco, and Matthew Marks Gallery, New York

Netherlands (July 2–Sept. 11, 2011); and Bilbao Fine Arts Museum, Bilbao, Spain (November 2011–January 2012).

SHORT TAKE

Family surprised at Czech photo-swiping—It started with a bit of true Americana: Danielle Smith, her husband Jeff, and their two kids posed for a photograph that the family used on their Christmas card. A bit later, imagine their surprise when Danielle got an e-mail from a college friend living in Prague, the Czech capital, saying he had seen a huge blow-up of the photo in the window of a Prague grocery store. Danielle was skeptical, so to prove it, her friend took a picture

and e-mailed it to her. That convinced her—"Not only is that my family," she told National Public Radio, "that is my family life-size." She had posted the photo, in high resolution, on her Web site and "a few social networking sites," and obviously somebody had downloaded a copy. Meanwhile, the Smiths haven't received much of an apology from the grocery store. "I think at this point, our apology is that they are willing to take the photo down," says Danielle.

For additional news go to www.phototechmag.com/news.html

DXG offering \$149.99 underwater HD camcorder

It sounds hard to believe, but there's a new high-definition video camera on the market, complete with underwater housing, for less than \$150. It's from DXG, "one of the fastest growing camcorder manufacturers in the U.S."—the DXG-579VS Underwater Value Pack. (Normally the camcorder by

itself lists for \$129.99, plus \$49.99 more for the housing.) The camera allows shooting down to 15 feet. I haven't seen sample footage yet, but the specs are pretty impressive: Video resolution of 1280×720 at 30 frames per second; recording time up to 4 hours (using optional 8GB SD memory card); and 32MB of built-in



Front and back views of the DXG-579VS HD underwater camcorder.

flash memory—all powered by four AAA batteries.

Obama Time Capsule book can feature you



Here's a unique book about Barack Obama's presidential campaign—it lets you customize the book specifically for you and your family, adding personal messages and photographs. It's the creation of Rick Smolan, best known for the popular *Day in the Life* book series. Smolan says *Obama Time Capsule* is like the scrapbook his mother made for him when President Kennedy was elected. Purchasers of the book can write a dedication or post their own photograph on the back cover, but Smolan points out they can't actually put themselves into the pictures—for example, on stage with Obama—it's not like Woody Allen's 1983 movie *Zelig*, he said. Price of the customized book at amazon.com is \$64.95, and note there are no returns or cancellations, since each copy is unique. There's more info at www.theobamatimecapsule.com. ■

Jerry O'Neill has been photographing, writing, and lecturing about photography for many years. His photo credits include grip-and-grin shots for the U.S. Army, photo finishes for thoroughbred race tracks, hospital operating room photographs, and snapshots of his wife and two children.

Heliopan: SH-PMC digital/film filters eliminate reflections up to 99.9% and repel dust and moisture.



Gepe Card Safe Extreme: The better memory card protector. Holds any combo of 4 CF, SM, SD & MS cards.



Ansmann Li-Ion Digicharger: For 3.6 & 7.2V batteries. 4 adapters for 100+ battery types. Microprocessor controlled.



Great Gear, #3.

Braun Multitray Digital Slide Scanner: Scans up to 100 slides automatically into MAC or PC. 6 tray types, fire wire and USB.



Giottos Q. Ball Rocket Blaster: Blow away dust from lenses, computers; 60° tilt nozzle.



Performance and value.
973/808-9010 For dealer list,
visit www.hpmarketingcorp.com

GEPE CORPORATION

NEW PRODUCTS

JOBO Digital Picture Frames

JOBO announced a new ultra-thin and stylish digital picture frame. The new .35-inch thick NANO 7 is the first in a series of three new NANO digital picture frames to be introduced this year. The JOBO NANO 7 is available in three different versions: Basic, Pro, and Media. The NANO 7 features a 7-inch high-resolution color TFT LCD display designed to showcase digital images and user-friendly functions

such as a versatile remote control. The JOBO NANO 7 Pro and Media versions feature touch-activated buttons on the front to control all important functions. Buttons become visible by simply touching the bottom front of the digital picture frames. The NANO Media version features multimedia capabilities including viewing digital photos in slide shows along with music and video with audio. The Basic (\$74.90) features a



48×234-pixel resolution. The NANO 7 Pro (\$94.90) and NANO 7 Media (\$119) versions provide an 800×480 resolution. (www.jobo.com)

Anthropics Portrait Professional 9

Anthropics has released Portrait Professional 9, which incorporates its new ClearSkin automatic skin-enhancing technology and a new interface. The program enables skin defects such as acne, blotchiness, roughness, wrinkles, age spots, grease, and other skin problems to be

automatically removed. Anthropics says the software avoids the “featureless, plastic, over-airbrushed look that characterizes much skin touch-up.” The software uses a knowledge base of human facial shapes, and can selectively reshape faces to avoid double-chins and overly

weak or strong jaws. It can brighten or change eye color, make eyes whiter, change hair color, reshape lips, and so on. The program is available in stand-alone form, and as a PC and Mac Photoshop plug-in. (www.anthropics.com)

Photo/Graphic Edges 7

Auto FX Software launched Photo/Graphic Edges 7 Platinum Edition, software which gives users the ability to add thousands of edges, frames, and other adornments to their photos. New content includes Film Frames, Grunge Edges, and Natural Media Frames. The workflow for adding enhancements to images is simplified by hundreds of instant

preset effects and the intuitive onscreen transformation controls that let photographers lay out effects to meet their needs. New effects such as Storyboard contain photo layouts that can be used for photo books. Classic effects such as Darkroom Edges are also included with more than 350 darkroom-styled edges and transfer effects. A new collection of textures

including Mottled, Pastel Creations, and Painted Scenic give photographers a natural backdrop behind their compositions. The street price of Photo/Graphic Edges 7 Platinum Edition is \$249. Upgrades from Photo/Graphic Edges version 5 or 6 are available for \$129. (www.autofx.com)

Museo IIGS Archival Double-Sided Paper



Museo Fine Art announced the immediate availability of Museo IIGS acid-free, double-sided, fine-art inkjet paper. Museo IIGS is a 250 gsm, 15-mil thick, 100% cotton paper with an extra-smooth finish on both sides. Museo IIGS contains no optical brighteners, resulting in outstanding long-term base color

stability. Ideal for book and card making, the grain-short orientation of Museo IIGS allows for easier and cleaner scoring and folding. Museo IIGS is available in 25-sheet boxes of 11×8.5 inches, 17×11 inches, and 19×13 inches. In addition, 17×22-inch sheets are available. (www.museofineart.com)

VESTAL AT LARGE



by S. Tinsley Preston

BY DAVID VESTAL

The Shock of the Old

SOME PRINTS ARE OLD; SOME PRINTS ARE GOOD—
THEY'RE NOT ALWAYS THE SAME PRINT

"The shock of the new" is a popular cliché, but not too much of what is publicized as new and shocking lives up to its hype. I'm reminded of a night in the early 1950s when Dorothea Lange, on a visit to New York, came to Sid Grossman's class. I was one of the students. We were awed by her presence, but she showed no interest in us. She had also visited Alexey Brodovitch's more famous class, attended largely by leading fashion photographers, and here's what she said about them: "They talk a lot about shock and impact, but their pictures just squeak."

So much for the shock of the new. The shock of the old has just hit me, and it hurts more. One of the two photo art dealers who have handled my photos in recent years has left the business, and has therefore sent me a big box of "vintage prints" that I had not seen since some of them were chosen long ago for a show at the Corcoran Gallery in Washington, D.C. From that Corcoran show came a big picture book with the misleading title, *The New York School*, in which some of my pictures were treated more kindly than work by some others, so I suppose I shouldn't complain. However, there never was a New York School of photographers, just a number of people, some of whom knew each other, who worked

separately in the same city at about the same time, not as participants in a group or "school."

No prints were returned to me from the Corcoran. Jane Livingston, who had invented the imaginary NY School and put together the show and the book, delivered my prints from that show to a photographic art dealer near D.C., and that was all right with me in 1993 or whenever it was. (I looked again at the book, trying to find the date, but found no copyright page. Jane Livingston's comments in the book are dated 1992, presumably the year of the show). The prints that dealer Sandra Berler thus informally acquired, she sold now and then, and for increasing prices. Her last sales for me were of "vintage" prints (variously defined, but anyway old, not new). These went to the National Gallery in Washington, D.C. at \$4,500 each, and I was glad to get my half of that price and to have work in that collection. "Vintage" prints fetch higher prices than those that might or might not be better, but are definitely not as old, and "vintage" prints were Sandy's specialty.

On deciding to retire from the business, she called me to arrange to return the prints she had. About a week

before I wrote this, a beautifully packed, massively sealed box arrived.

I was preparing for a trip to Montana and thought I'd open it when I got back, but a postcard from Sandy urged me to open the box, in which I would find some "paperwork." Receipts or something, I thought, so I undid the outer wrappings and then unwrapped the interior box and found the paperwork, a nice note from Sandy asking me to let her know I had received the prints. She had packed them with extreme care, and prints of different sizes were fitted together to fill the inner box so that nothing could shift or be damaged in transit. So I wrote to her that the prints had arrived in good shape and thanked her for taking such excellent care of them.

The old prints are the shock

I'm still getting ready for that trip, so I haven't yet looked through all the prints. In fact, I've seen only three or four of them. Bear in mind that it's more than 17 years since I last saw any of them. The first ones I looked at now are such horrible, murky prints that I quickly put them back in their box and have decided to put off seeing the rest until I get back from the trip.

continued on page 10

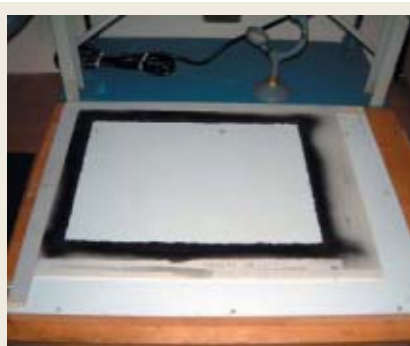
WHEN A COLLECTOR
INSISTED ON BUYING AN
OVERPRICED BAD PRINT
JUST BECAUSE IT WAS
OLD, [RALPH] STEINER
INSISTED THAT HE MUST
ACCEPT A GOOD RECENT
PRINT, TOO, AT NO
EXTRA CHARGE.

A New Look to Your

Fine Art Photographs

Giving them a deckled-edge look can help separate them from the crowd

BY HERBERT C. BURKHOLZ



A simply made and inexpensive easel allows for correct positioning of the mask over the photo paper.



The ragged- or torn-edge effect works well with black-and-white as well as color images. Notice the wooden weights along the edges to ensure firm contact of mat to print.



A mask slightly offset to compare the torn-edge effect of the mask on the finished print.

During 25 years of doing fine-art shows, I became dissatisfied with the sameness of exhibited photography. The almost endless combinations of frames and mats all had that typical straight-line cut. There was little individualism in the presentations to associate the work with the artist. There was little, if anything, unique about the framing and especially the matting. Close examination of both painters' and photographers' works eventually made me realize that presentation was everything in making an outstanding impression—which is what it takes to make a sale.

I've always liked the ragged edges found on many lithographs. It reminded me of the deckle edge that was common to snapshots many years ago. But unlike the deckle edge, which simply replaced the straight edge of the photo, the ragged edges of lithographs actually tear into the image itself. The lithograph is then fastened to the mount with anywhere from 1/2 to 1 inch of mount board showing before the mat appears. The finished look is elegant and very professional. Taking a cue from lithographs that are done in this way, I experimented with combinations of materials to construct a mask that would give me the desired effect. This technique works with both black-and-white and color prints. Two things were important. Ansel Adams spoke of chemical stain creeping into an image from the edges over time. He recommended not printing to the paper's edge, but instead keeping the image in from the edge, then trimming the edge by 1/2 to one inch, thereby removing any contamination that might have seeped into the paper from the cut edge. Just how valid that argument is, I cannot say. But printing a torn edge by way of a mask that keeps the image about an inch from the

paper's edges would certainly accomplish what Adams prescribed. The second benefit is that the photo paper's unexposed white edge provides a perfect place for the title of the image and the photographer's signature, much the same as is done with lithographs. I believe that all glossy papers available today can be written on with a Schwan Stabilo #8008 pencil (available from most art supply stores). I find it best not to have the pencil too sharp. A broad line from the pencil looks best for both title and signature.

Two relatively simple items are required. The first is a mask that will provide the ragged-edge look to your photograph. The second is a simple and inexpensive easel to aid in the perfect alignment of the mask. I will explain the construction of the easel and masks of any size up to 14×18 inches. A 14×18-inch mask uses 16×20 paper, about the largest size suitable for this technique. First, let's talk about the easel.

The masked-border technique can be used with most standard easels to make prints up to about 2 inches smaller than the capacity of the easel. When making such smaller prints, I tape the mask to the blades of the easel. However, for making larger

prints, your regular easel might not be suitable. Needed is a white Formica-covered piece of particleboard that's at least 2 inches larger than the largest print you intend to make. Such material might be found at a local building supply house or a local cabinet shop. A 1-inch wide strip of either wood or mat board needs to be glued or taped to the top edge and left-hand edge of the easel. These strips serve as the border guides to position both print and mask. I use two thicknesses of mat board that I glue together, then fasten to the edges of the Formica easel using double-stick Scotch tape.

The following instructions are based on the use of the Formica-covered easel. To construct a suitable mask using an existing easel requires dimensions that an existing easel can accommodate. The actual construction of the mask is basically the same. It's only the outer dimension of the mask that might need to be adjusted.

The first step in constructing a mask having a ragged- or torn-edge look is to determine the exact size of the final image. Consider the standard paper sizes, remembering that a minimum of 1 inch of the photo paper on all four sides must remain unexposed. The width of the paper-white border that you want to complement your image is a matter of personal taste but I like a $\frac{1}{2}$ -inch margin on most matted images.

Next, select a piece of two-ply mat board (any color) that measures 3 inches longer and 3 inches wider than the image in question. Make a cutout in this mat that is $\frac{1}{2}$ -inch larger than the intended image in both dimensions. The location of the cutout should result in a $\frac{3}{4}$ -inch margin on the left side of the mat and a second $\frac{3}{4}$ -inch margin along the top edge of the mat. The wider margins along the bottom and the right side of the mask simply add a bit more body to the mask.

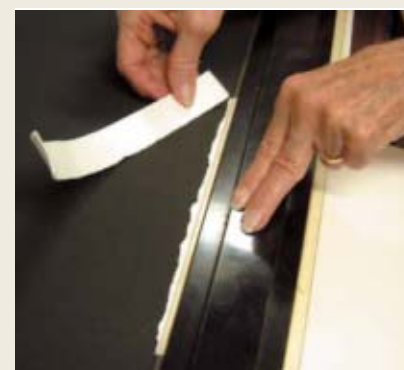
The next step is one that might require some practice. After much

experimenting with different materials, I found single-ply mat board to be best-suited to the ragged-edge effect. I get this material from a local frame shop simply by asking for scrap single-ply white mat. I've never had to buy any, as framers usually have lots of scrap. I achieve the torn-edge effect by actually tearing the single-ply mat into narrow strips. Mat materials have a "grain," if you will. That is, you might get a rather fine tear effect in one direction and a much more rugged tear that is 90° in the other direction. Experiment to see which you like best. I find that the rough tear looks best.

To begin, use a piece of mat that is long enough for your mask. Mark the two sides of the mat material "A" and "B." To make the tear, slip the mat "A" side up, under a straight edge that can be held firmly in place. Allow a full inch of mat material to show beyond the straight edge. Then simply tear the mat with your fingers along the straight edge by pulling the material upward a little at a time, and work your way from the starting point to the finish. Your fingers must begin the tear by lifting upward on the mat for no more than $\frac{1}{2}$ to $\frac{3}{4}$ inch. Then you get a new hold as close to the straight edge as possible and repeat this process until completion. The 1-inch piece that you have torn away is scrap; use the remaining torn edge under the straight edge. Again, mark the "A" and "B" sides near the torn edge. This is necessary because it's the "B" side of the torn mat that needs to come in contact with the photo paper during the exposure. Once you have experienced making a mask, you will recognize the difference and it will no longer be necessary to identify the sides. Next, cut a strip of about $1\frac{1}{2}$ inches parallel to the torn edge of the mat material. With the "A" side up, flatten the torn edge using a round plastic pen the same way you would crease a piece of paper. Repeat the above-described process until you have four strips, one for each side of the mask.



Using a piece of two-ply mat board, tear upward in short, approximately $\frac{3}{4}$ -inch increments to achieve the desired effect.



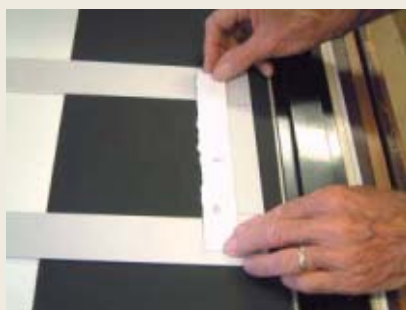
The removed strip is discarded; use the piece under the straight edge. Without flipping the stock, mark the top side as "A" and the under side as "B."



Cut a strip of about 1 inch in width. Repeat the processes until you have one finished strip for each of the four sides of the mask.



Measure $\frac{1}{4}$ -inch in from each corner to locate the position of the ragged edge.



Using glue or double-stick tape, and with the "B" side up, attach the strip using the 1/4-inch markings as your guide.



When all four strips are in place, use a piece of masking tape at each corner to prevent light leaking at the corners.



The finished look of the ragged-edge with 1/2-inch of paper white surrounded by a double mat of your choice.



Finished and framed.

Next, the position of the strips that produce the ragged edge must be marked on the mat using a sharp pencil. Measure exactly 1/4-inch in each direction from the inside corner for your mark. Then, using glue or double-stick tape, attach a strip, "B" side up, using the 1/4-inch corner marks as your guide. Two strips are wider than necessary at this point, but they will be trimmed after all gluing is completed. When all four strips are in place, use a small piece of masking tape at each corner to block light leaks at the corners of the mask. Now trim the excess from the strips to the outer edges of the mask. Finally, to be certain that no light will leak along the ragged edge of the mask, I use a fast-drying black spray paint to blacken the edges.

To use the mask, simply place your photo paper against the stops of the easel and place the mask directly over the paper, also against the stops. At this point I use four strips of 10x2-inch, 3/4-inch plywood. Place one strip on edge on each of the four sides of the mask to ensure that the mask is in firm contact with the paper and that everything is stable. You are now ready to make an exposure.

After your print has been mounted on material such as foam core, the mat should be cut so that a margin of photo paper white is shown between the ragged edge and the mat itself. Small prints might look best with no more than 3/8 inch of white. I find that most prints up to 14x18 look best with a 1/2-inch margin. This provides sufficient space for the title and a signature at the bottom of the print. I think that you will find this photo technique gives your work a whole new look. ■

Herbert Burkholz began photographing in 1948 when he became staff photographer for a resort/hotel complex in Wisconsin. Though he has attended workshops, he is primarily self-taught. His greatest interest is large-format black-and-white film. He has also taught photography at a local community college.

VESTAL AT LARGE

The Shock of the Old continued from page 7

Mind you, I obviously thought they were good when I made them. Self-deception was at work. It is clear that at least some of these photos desperately need to be reprinted, because their "vintage" examples are just awful. I can hope for a few good prints among these, but I won't try to judge them just yet. I may be less horrified later.

However, I have good inkjet prints of at least one of the photos from Sandy's box, so now I have a clue about how to print it better in silver. The silver print of that photo that I scanned to make the inkjet is a later one, not quite as good as its inkjet child, but surely less bad than the "vintage" horror in the box.

Collectors' folly

I'm sorry to say that some unwary collector or curator would be likely to pay extra for a "vintage" print just because it looks so old and badly made. That is what some people prize. If it looks really bad, so much the better, they think. They don't know any better, and few seem willing to learn.

Ralph Steiner had a partial solution. When a collector insisted on buying an overpriced bad print just because it was old, Steiner insisted that he must accept a good recent print, too, at no extra charge. The collector might never learn the difference, but Steiner himself felt better about the deal. I can understand that.

We can't make people see better than they're ready to see. In my case, at least, I see how badly I have sometimes printed in the past; and making good new prints of any photo that's worth printing will make me feel better about the shock of the old. ■

MASTER PRINTING CLASS

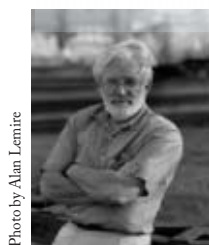


Photo by Alan Lemire

BY BRUCE BARNBAUM

Decision Time

Oftentimes one must choose the focus before composing an exposure

I always stress that two things are necessary for photographers to make a good photograph: they must have a strong rapport with the subject matter, and must understand fully how they respond to the scene at hand. When there are contradictions or crosscurrents, photographers must make a choice.

For example, suppose you want to make a photograph of a person you find interesting and wonderful, yet you also recognize that the person is downright ugly. What do you do? Do you try to boldly depict the physically ugly person (who may then come across as repulsive to the viewer)? Or do you try to make a photograph that does an end run around the ugliness and somehow depicts the attractive personality behind the hideous face? That's a tough decision. It's difficult to go both ways, though there's always an outside chance that you may pull it off.

It turns out that landscape work, which I'm primarily known for, offers equally vexing situations. Yet, just as the portrait photographer would likely find the conundrum exhilarating rather than vexing, I tend to find the crosscurrents in landscape exhilarating.

I went to Peru for the first time in April 2009 to present a workshop under the auspices of Adam Weintraub's Photo Experience program. That gave me the

opportunity to see the storied Inca ruins of Machu Picchu. I had, of course, seen many photographs of Machu Picchu, finding most of them to be similar to one another, so I had a mental picture of the area. Yet what I encountered had virtually no relation to the mental picture I had formed over the years.

Dealing with reality

Confronted with a set of surroundings that bore no resemblance to what I had expected, I immediately forgot about the former memories, and tried to deal with the actual reality before my eyes. Suffice it to say that I was overwhelmed with the reality of Machu Picchu, not only the Inca ruins themselves, but also the setting

in which they were located.

So here was the conflict for me: do I concentrate on the ruins themselves? Do I concentrate on the eye-popping setting in which they are located? Do I try to do both?

Long experience (plus way too many post cards, all made on sunny days without a cloud in the sky) told me that trying to do both would end up doing neither. So my choice was between the ruins as the primary focus or the setting as the primary focus.

Recognizing this duality is critical; failing to do so leaves you in a condition of ambivalence in which you simply are unable to make a choice. When you're in that type of situation, it's almost a foregone



STRAIGHT PRINT: *The nearby wall and distant landscape of canyons, mountains, and clouds are all visible, but muddy in tonality. The wall acts as a place for the viewer to lean on while looking out over the landscape.*

MASTER PRINTING CLASS

conclusion that you'll end up with nothing. You'll try to go both ways. You'll try to get everything of importance into every picture you take. And you'll end up getting a lot of nothing, because everything competes for the viewer's attention with equal force. It would be like a play or movie with no main actor and no supporting actors, but all actors competing for equal prominence in the story. It simply doesn't work.

Fortunately, I was there during a period of variable weather: it was alternately raining or foggy or even sunny for very brief periods. Thus, there was character. There was atmosphere. I couldn't have asked for more.

Actually, I could have asked for the gate guards to allow me in with my tripod (which they rejected, saying it was too big) and my backpack with my full complement of camera equipment (which they also rejected as being too big). So, with only my 4×5 camera, one lens, and two Grafmatic film holders (each holding six sheets of film) in my wife's carrying bag, I went in. I didn't even have my light meter. (This, of course, occurred prior to the workshop. During the workshop Adam had obtained full permission for all equipment.)

Under those circumstances, I had to find a wall on which to place the

bag, and then place the camera on the bag for some stability. Then I had to try placing the film holder into the camera without swiveling the camera, and then pull the dark slide with great care to again avoid swiveling the camera. Thus, I was severely restricted as to where I could place my camera, and how I could operate. Still, opportunities abounded.

Making the choice

I determined almost immediately that the natural surroundings were so astonishing that my primary goal would be to simply allude to the Inca ruins within the awesome landscape. In other words, I decided to include



Wall, Mountains, and Canyons, Machu Picchu, FINAL PRINT. *A fairly dramatic increase in contrast removes the muddy veil from the straight print. Small bits of dodging, primarily on the interior left side of the wall, and burning, on the top of the wall at the extreme left, was all that was necessary to finesse the tonalities into place. Suddenly the image takes on life and depth that was there at the scene but needed some artistic help to bring out in the image.*

portions of the ruins as a secondary feature to the prominence of the landscape in which they resided. It had already become clear to me that the Incas were fully aware of the spectacular nature of their surroundings, and built their most remarkable structures in locations that honored nature to the maximum extent. (I also jokingly remarked to the students in the workshop a week later that it was clear to me that the Incas were terrified of flat land.)

My first photograph shows a partial wall somewhat below the one on which I placed my camera, and the many mountains and canyons filled with fog and clouds, both above and below the level of the ruins. You can see in the straight print that a pervasive fog dominated the scene, yet it was thin enough at the instant I snapped the shutter that I could not only see the ruins immediately in front of me, I could also see the distant

mountains, canyons, and clouds. A minute before or a minute afterwards, the scene was startlingly different—perhaps nonexistent—but there was a brief moment when all was visible. I had seen parts of this as I set up my camera, then waited and hoped to see it all, if for only an instant. Nature cooperated.

The straight print shows a muddy, gray image. It was no real problem to increase the contrast, giving the entire scene not only the luminance and life that it needed, but the feeling of depth that clearly separates the nearby wall from the distant landscape.

I'm looking forward to the workshop Adam and I have planned for next year in Peru, and of course, at Machu Picchu. This year was my introduction, and although I felt overwhelmed by it all, I also felt I was on top of my game and able to work with the wonderfully conflicting feelings that I had about the place.

I hope to add to the successful images I made this year, and to work with students once again in this truly magical location. ■

Bruce Barnbaum teaches photography workshops throughout the year focusing on the art of seeing and the art of conveying your impressions of your photographed world (real or imagined). Bruce has two monographs in print, Tone Poems—Book 1, published in 2002, and Tone Poems—Book 2, published in 2005. Both are collaborative efforts, featuring a CD of classical piano music by pianist Judith Cohen. Bruce's textbook, The Art of Photography... an Approach to Personal Expression, is available in a brand new, fully revised edition 4.1 It is considered to be the finest exposition of the technical, artistic, and expressive aspects of photography available. For complete information on Bruce's books, images, or workshops, visit his Web site www.barnbaum.com or contact him at P.O.Box 1791, Granite Falls, WA 98252 USA, or at barnbaum@aol.com.



Expanding
Your
Digital World

Educational Sponsors

Canon • Adobe • Moab • Alien Skin • Giottos • Lowepro
Harman • HP Marketing • DXO • Datacolor • Microtek
PHOTO Techniques • Wacom • Lexar • Lensbaby • Imagenomic

mesillaworkshops.com
575.523.8713



Adventure-Space.com

Outdoor Adventure
Photo Contest

WINNERS' PHOTOS get
Front Page Feature on
our Adventure Website!

Got outdoor adventure photos?
Hiking, backpacking, camping, boating,
sailing, hang gliding, surfing, more.

Enter our weekly
photo contest

Simply visit & POST your photos
— we notify winners by e-mail.

www.Adventure-Space.com/PhotoContest

Who Says Film is Dead?

KODAK'S NEW T-MAX 400-2 FILM SHOWS AN OLD DOG CAN LEARN NEW TRICKS



BY FRED NEWMAN

Test image. Taken in low light, this negative is nearly as fine-grained as T-Max 100 but required a much shorter exposure time.

I was one of many surprised when Kodak announced an improved version of T-Max 400 film. I thought that T-Max 400 was a really good film and wondered how were they going to improve it—and why?

Kodak found in a 2007 survey that there was an ongoing commitment to black-and-white film. They decided to improve both the grain and sharpness of T-Max 400, and it took them 18 months to do it. Large-format photographers who used a UV light source to print platinum/palladium

were bothered by the UV dye layer on the back of the old T-Max 100 sheet film (it protected the film against static electricity). The new T-Max 400-2 is free of UV dye in both 120 and sheet film, though 35mm T-Max 400-2 does have the UV dye layer.

Testing the film

As you can imagine, I was quite excited to test this new film, and did so with both 35mm and 4x5 sheet film. All testing was done by BTZS (Beyond the Zone System) film-testing methods. A number of years ago, Phil Davis

(inventor of that system) tested nine films and five developers for an article for our *D-Max* newsletter. The two developers that came out best in those tests were Kodak D-76 and Ilford DDX. I became a big fan of Ilford DDX, which I used to test the new T-Max. First, I don't like mixing chemistry from powders and prefer diluting liquid chemistry such as DDX. Also, DDX seemed to have a higher film speed for most films than most other developers did.

I did three tests of T-Max 400-2: one of 35mm film and two of 4x5 sheet film. I also have included three older tests for comparison: T-Max 100 4x5, 35mm T-Max 400, and the older T-Max 400 4x5. In BTZS film testing, five rolls or sheets of film are contact printed using a 21-step step tablet and an enlarger light source for a specific time and light intensity. My setup has been calibrated, and my exposure for a 400-speed film is 0.4 seconds at 2 EVs. The film is then developed for 4, 5.5, 8, 11, and 16 minutes. I used a shorter sequence for the T-Max 400-2 test, because I was just looking for normal developing time and film speed.

I processed the 35mm T-Max 400-2 film in a Jobo 2500 series tank using an ATL 3 processor. I diluted DDX developer 1+9 at 75°F. I have standardized on 75° for all my processing because in Arizona, where I live, our "cold" water runs 75°–90°F in the summer.

I processed one film test in a Jobo 3010 drum, the other in 4x5 BTZS film tubes. The three comparison tests (T-Max 100 and older T-Max 400) were also processed in the Jobo 3010 drums, while the older 35mm film was processed in Jobo 2500 series drums. I always use a 5-minute water presoak with Jobo tanks, but with not with BTZS film tubes.

Whenever I try a new film and developer combination, I initially run just the 4-minute test to make sure I'm using the right dilution to produce the correct contrast. I look for a subject brightness range (SBR) of 9 stops. (A normal subject has an SBR of 7 stops, so an SBR of 9 is two stops more contrast than normal.)

Tests and results

Once I read the densities of the 21-step tablet and print and record them in the Plotter Program for PC, I can see if my dilution is correct. The Plotter Program was designed by Phil Davis and does all the analysis for you. The analysis chart for the 4-minute curve shows the SBR in the box on the right (black box with white type). The dilution of the developer is adjusted (increased dilution or decreased dilution) if necessary. My normal dilution for most films is 1+9, but I had to increase the dilution to 1+12 for the 4x5 T-Max 400-2 processed in the Jobo with a presoak. A 1+9 dilution was fine for 4x5 film processed in BTZS tubes and for the 35mm film. The two comparison tests used DDX diluted at 1+9.

Figures 1a–1f represent the curve family chart, as it summarizes the film test. The curves show the film curve for all five developing times. On each curve, small boxes show from left to right: developing time, film speed, average gradient, and SBR. For large-format film tests I like to see the SBR go from 5 to 9. Figures 2a–2f graph the SBR versus developing time in minutes. Figures 3a–3f graph SBR versus effective film speed. For a better understanding of the BTZS film testing procedure, please read the article by Phil Davis, *How to Read a Film Test*, on the BTZS.org Web site.

Notice that for the 35mm film, a flare density of 0.02 is used and there is no flare density for the 4x5 film. For roll films, you can read the normal developing time and film speed off charts 1c and 1d. So the normal developing time for the 35mm T-Max 400 (old) is 8 minutes with a film speed just a bit over 400 ($\frac{1}{6}$ stop), while for the new T-Max 400-2, 35mm is about 7 minutes, 20 seconds with a film speed of 400. I graph the average gradient versus film speed, and the average gradient versus developing time to determine the film speed and developing time. I like the idea of having a 35mm film that is a true 400-speed film, especially when you can't use a tripod (as in street photography).

For the 4x5 films, I used a flare density of 0.0 since the developing time, film speed, and reciprocity are imported into the Expo/Dev program for the Palm Pilot when using the Power Dial (both developed by Phil Davis). For more information about the Expo/Dev program go to the BTZS.org Web site and check out the software section.

The first thing I noticed in doing these tests was that the T-Max 400-2 sheet film was more contrasty than the older one—I had to increase the dilution from 1+9 to 1+12 to get similar results. Interestingly, the actual densities, film-curve shapes, and film speeds are all quite similar. There are differences but nothing significant. The T-Max 400 (old) has slightly higher densities for step 21 than the other test, but the densities of step 21 for T-Max 400-2 and T-Max 100 are quite close. Now that is impressive—having a 400-speed film with similar characteristics to a 100-speed film.

I've included two photographs taken with T-Max 400-2. I used the first one (the test image on the first page of this article) to check whether the reciprocity was similar to the older film (I used the Expo/Dev program to calculate the exposure). I was quite pleased to see the reciprocity was still the same. The exposure was done with an incident meter, and the light was extremely flat in a very dark room with an EV value of 2 for both the high and low readings, for an SBR of 5. The exposure was about 2 minutes, 30 seconds at $f/32$, and the development time was 12 minutes, 22 seconds.

The T-Max 400-2 is a winner if you are interested in night and low-light photography. If the exposure in the test
(continued on page 17H)

Figure 1. The film curve for all five developing times. The small boxes show, from left to right, developing time, film speed, average gradient, and subject brightness range.

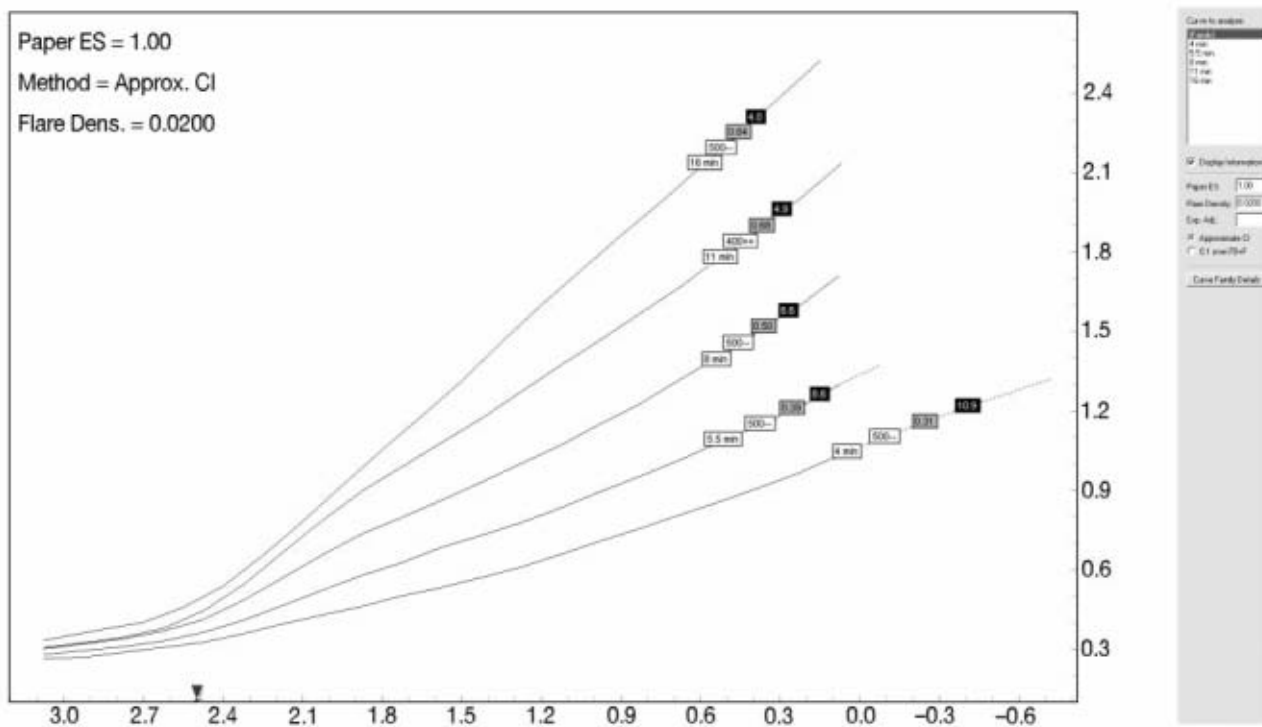


Figure 1a. T-Max 400 (old) 35mm, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.

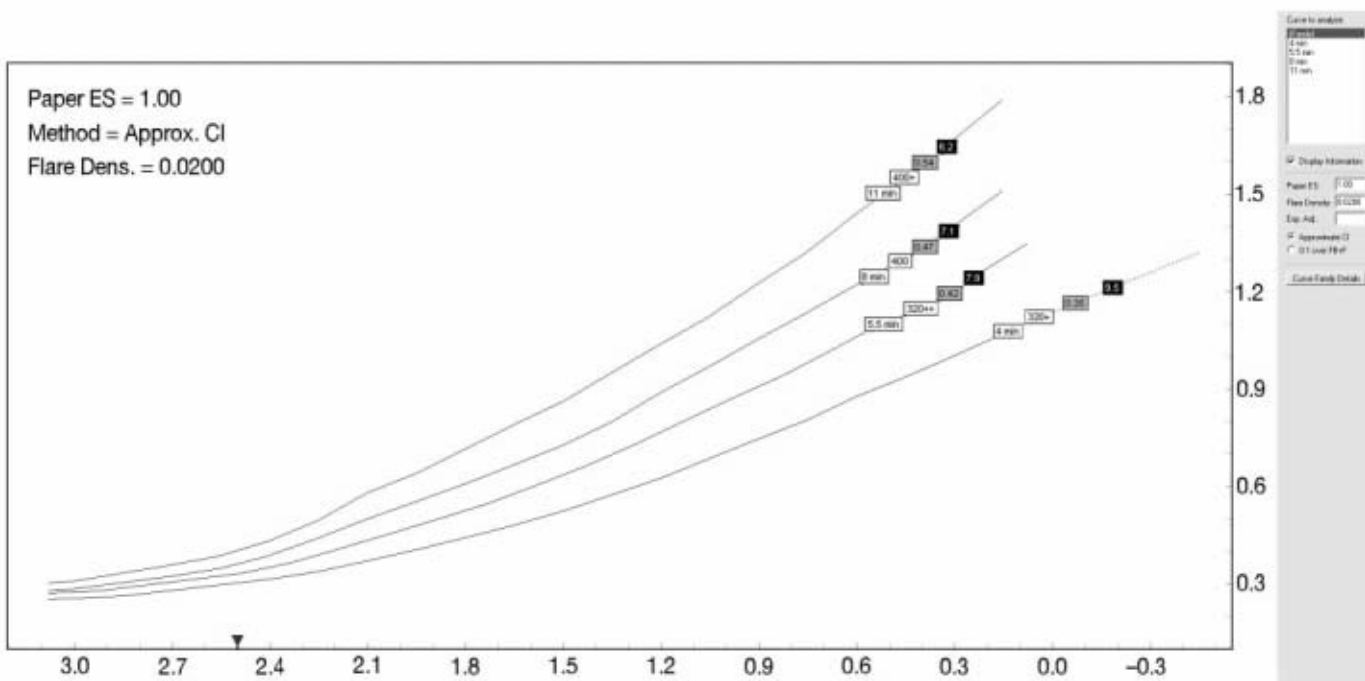


Figure 1b. T-Max 400-2 35mm, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.

Figure 1 (Continued). *The film curve for all five developing times. The small boxes show, from left to right, developing time, film speed, average gradient, and subject brightness range.*

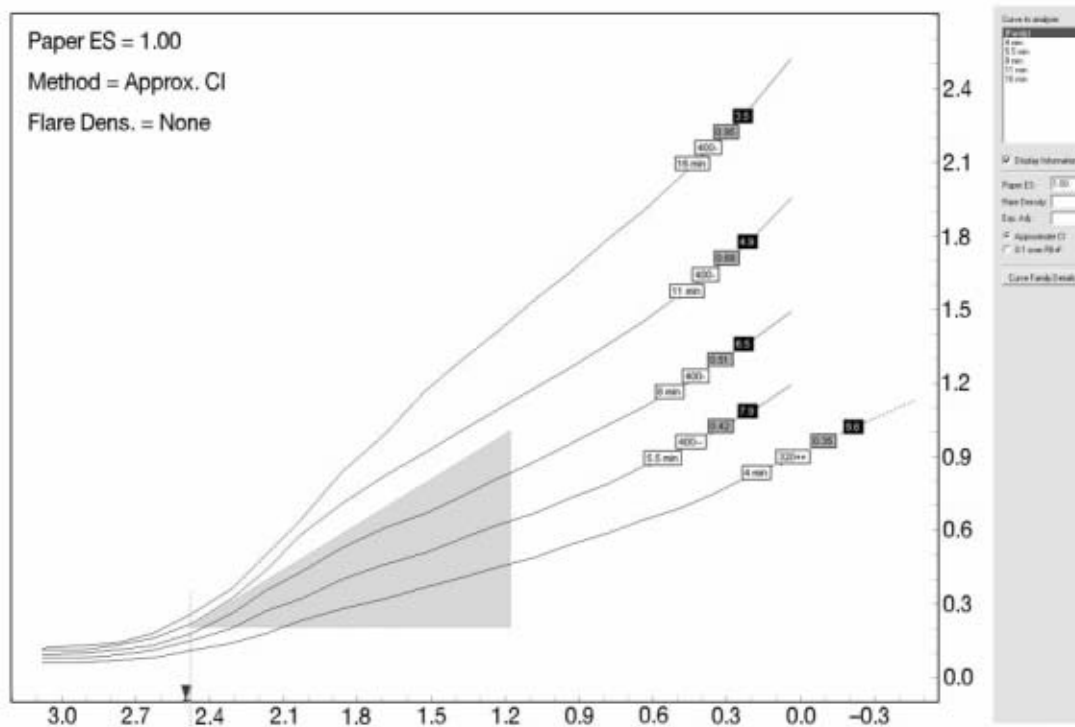


Figure 1c. *T-Max 400 (old) 4x5, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.*

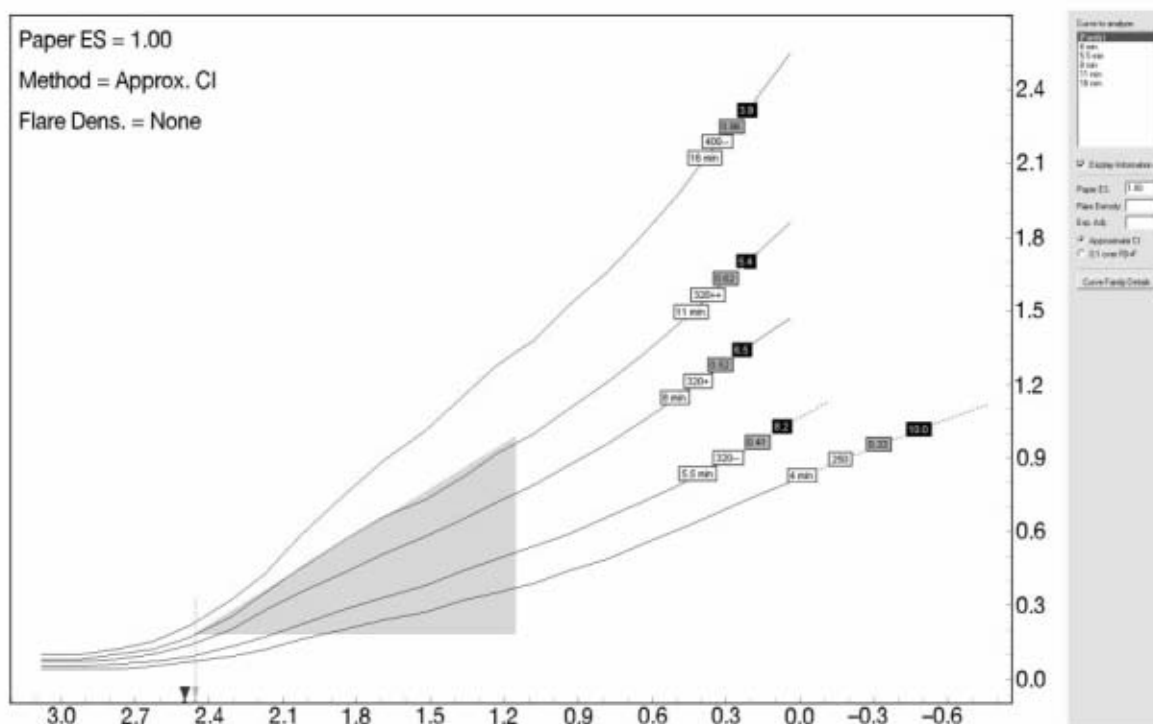


Figure 1d. *T-Max 400-2 4x5, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.*

Figure 1 (Continued). The film curve for all five developing times. The small boxes show, from left to right, developing time, film speed, average gradient, and subject brightness range.

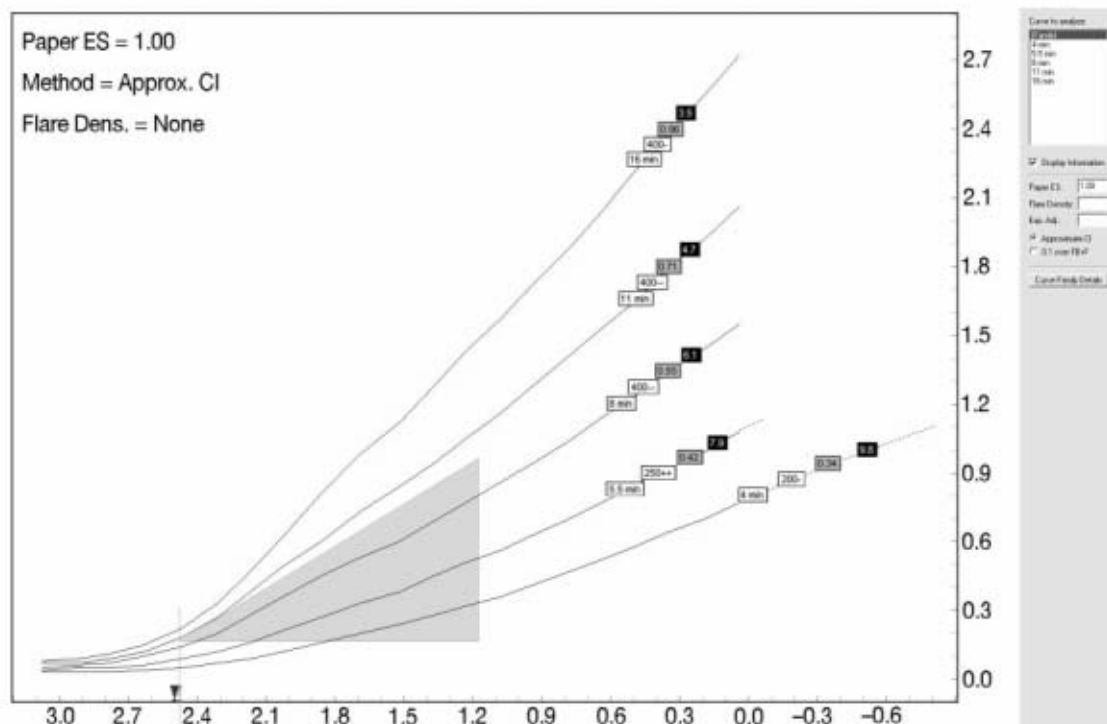


Figure 1e. T-Max 400-2 4x5, in Ilford DDX diluted 1+9 at 75°F, in BTZS tubes.

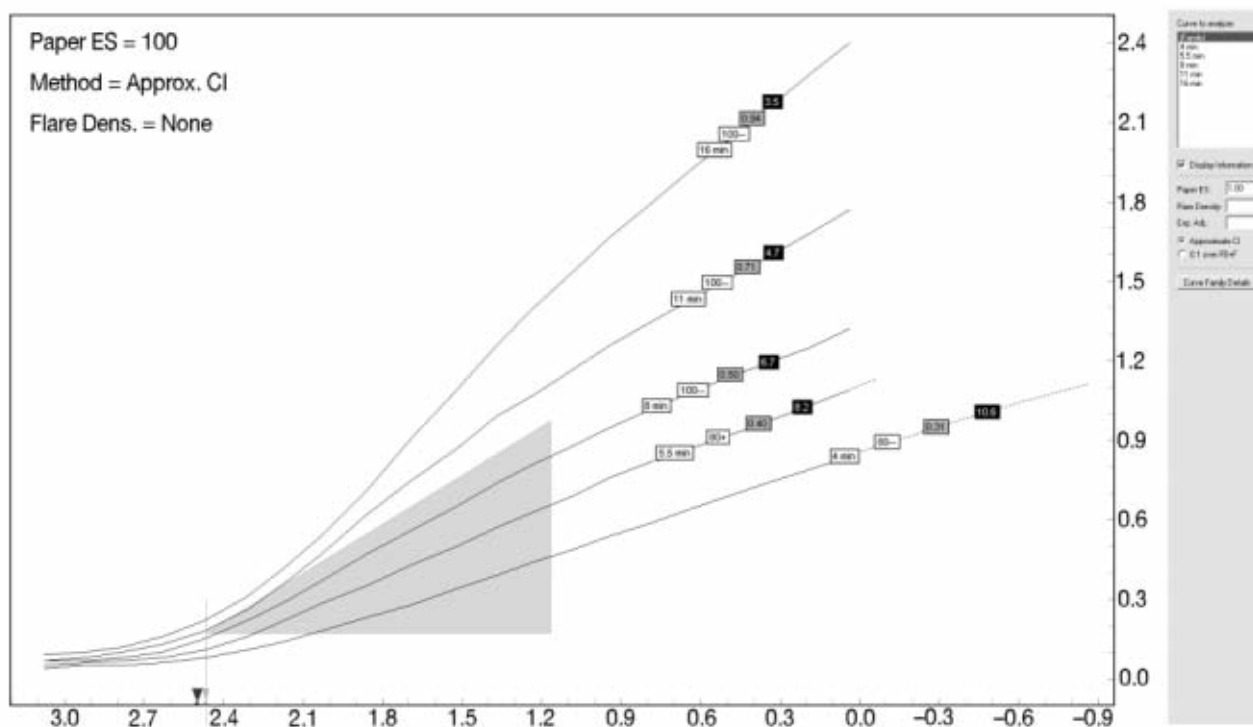


Figure 1f. T-Max 100 4x5, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.

Figure 2. Subject brightness range versus development time.

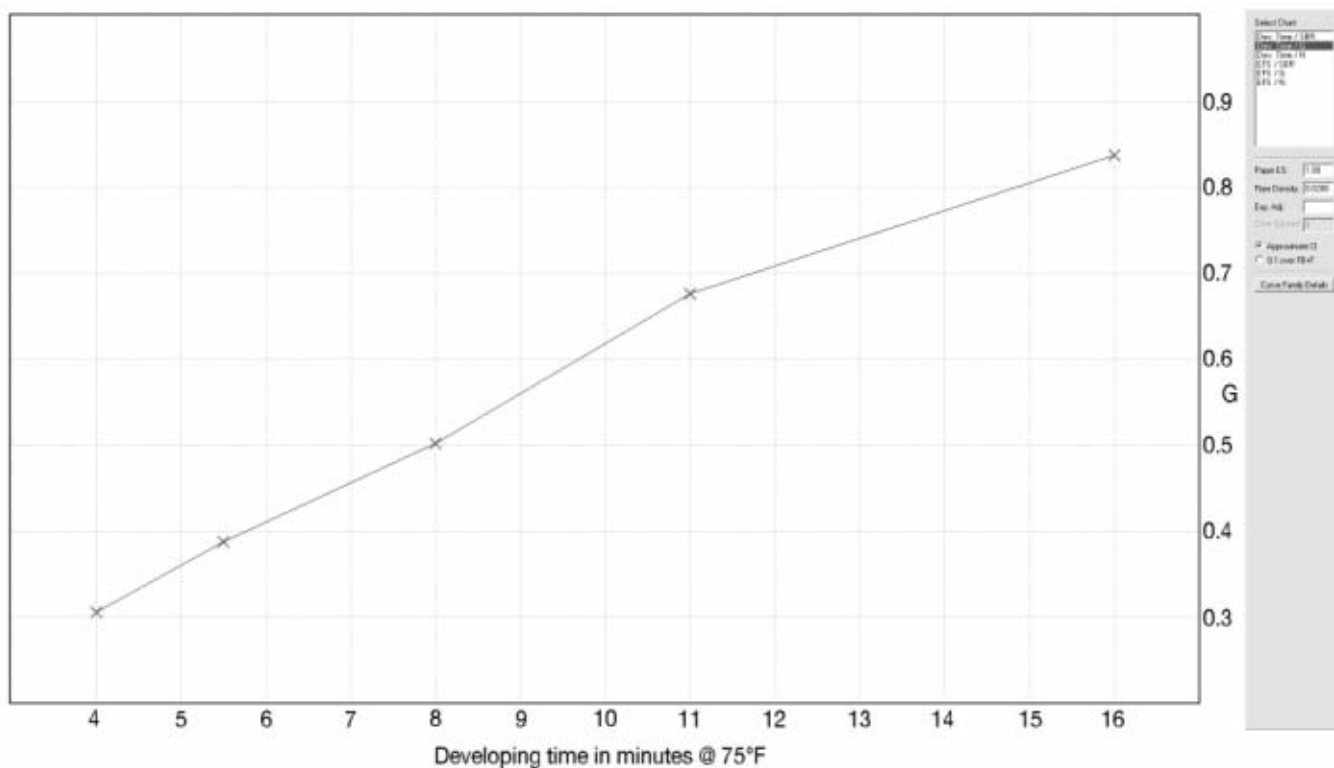


Figure 2a. T-Max 400 (old) 35mm, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.

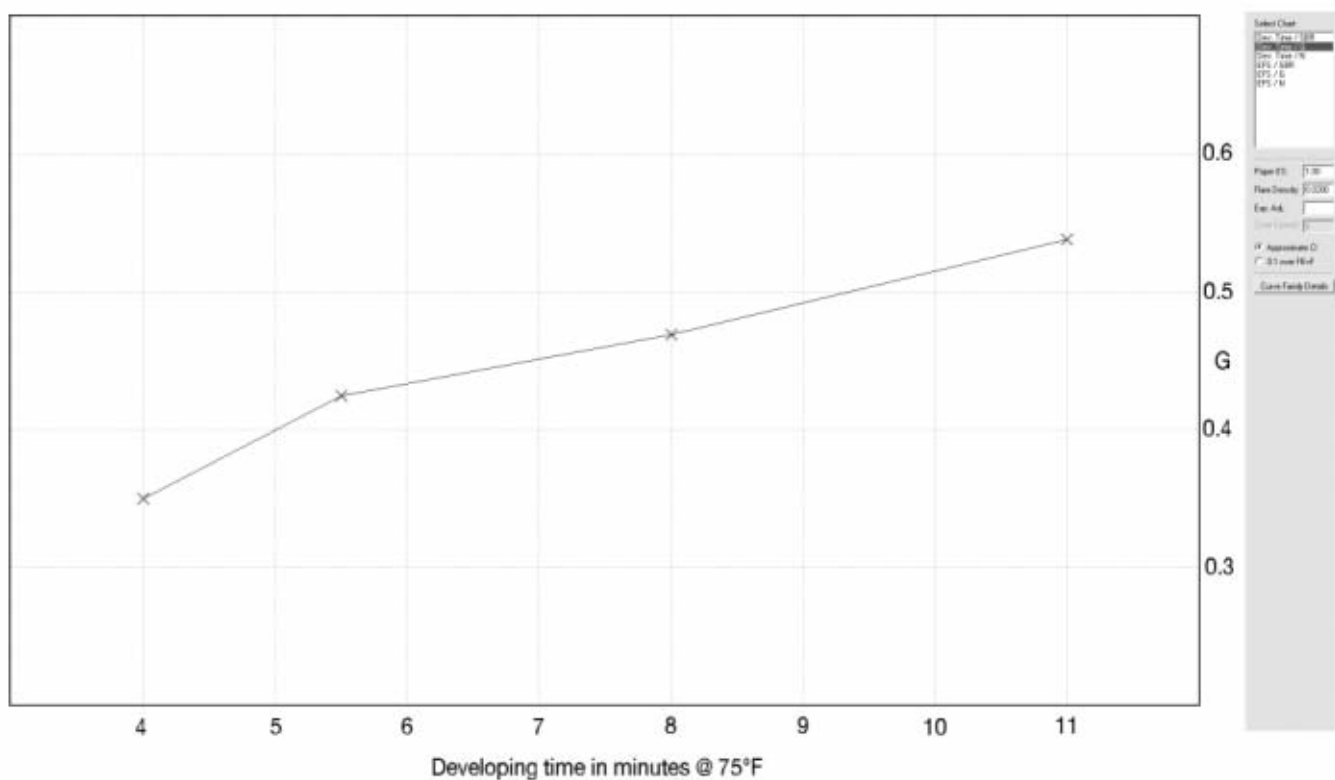


Figure 2b. T-Max 400-2 35mm, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.

Figure 2 (Continued). *Subject brightness range versus development time.*

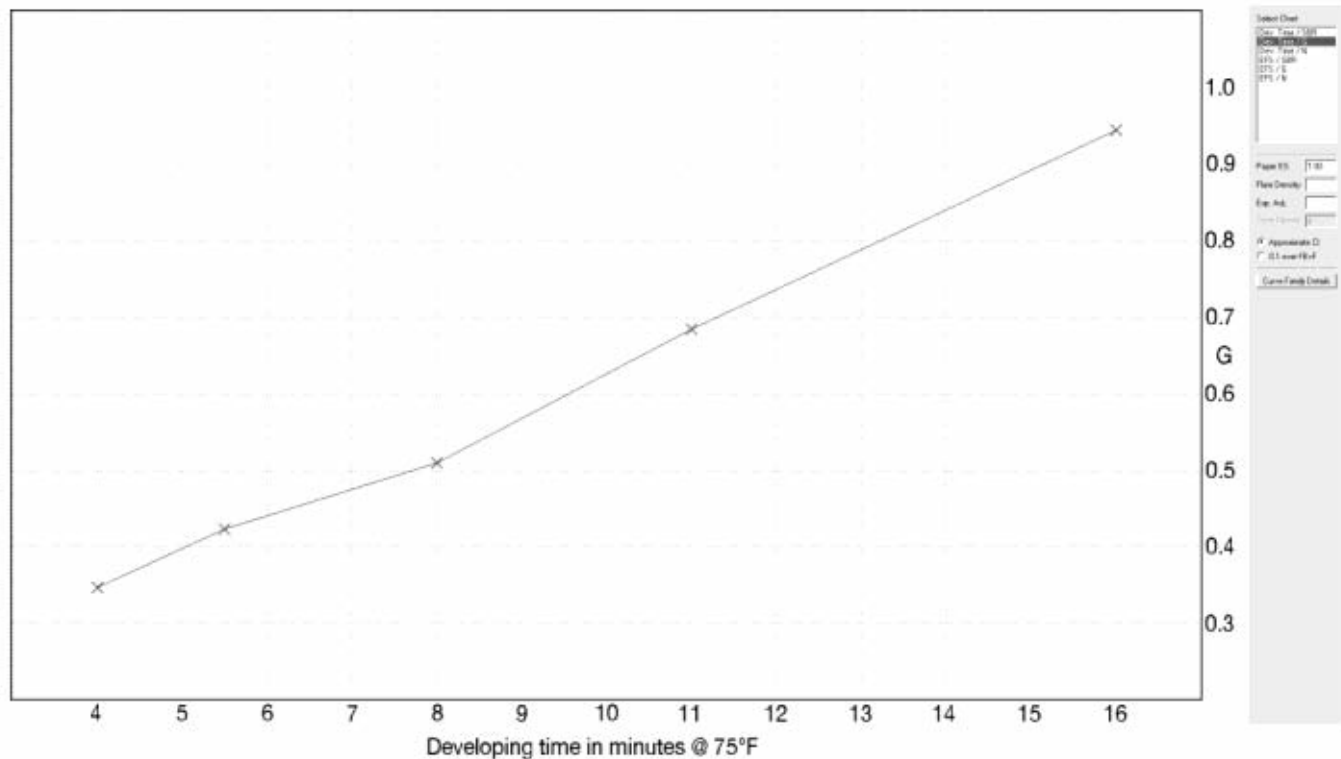


Figure 2c. *T-Max 400 (old) 4x5, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.*

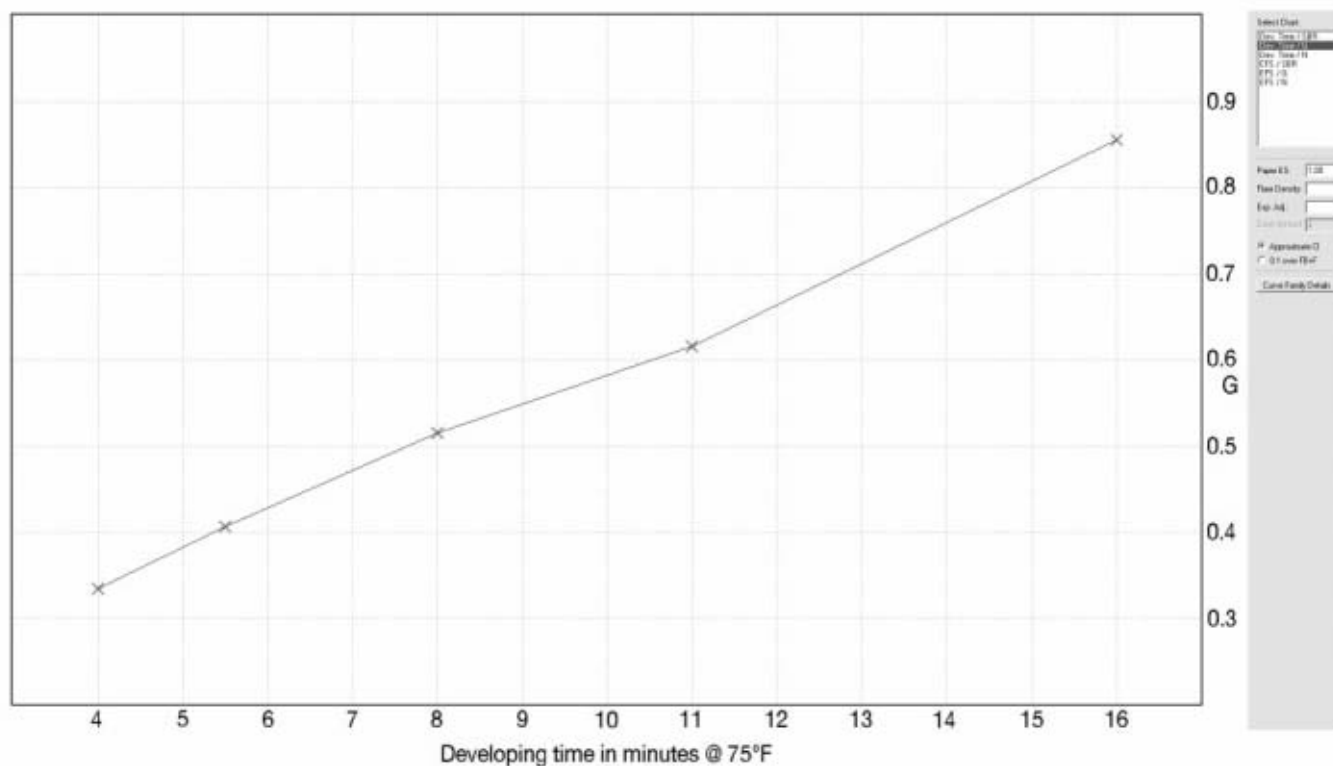


Figure 2d. *T-Max 400-2 4x5, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.*

Figure 2 (Continued). *Subject brightness range versus development time.*

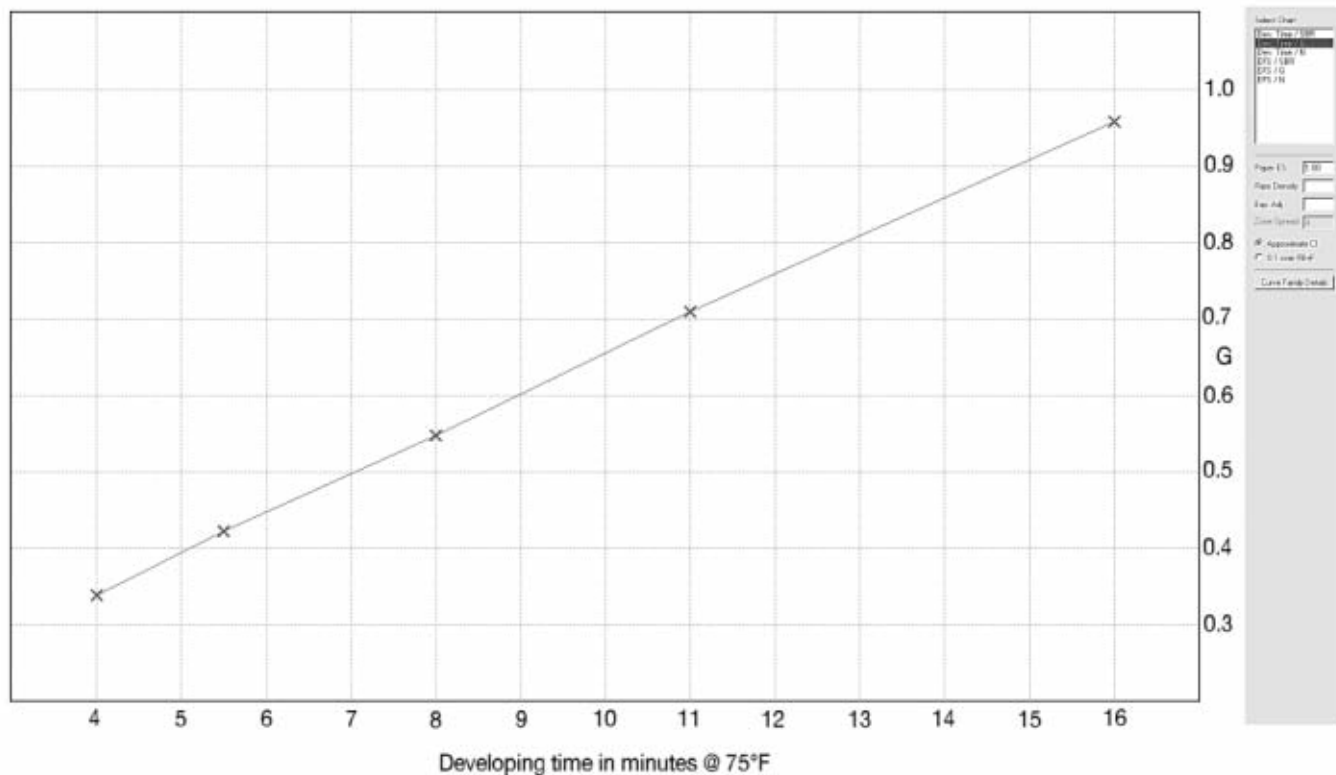


Figure 2e. *T-Max 400-2 4x5, in Ilford DDX diluted 1+9 at 75°F, BTZS tubes.*

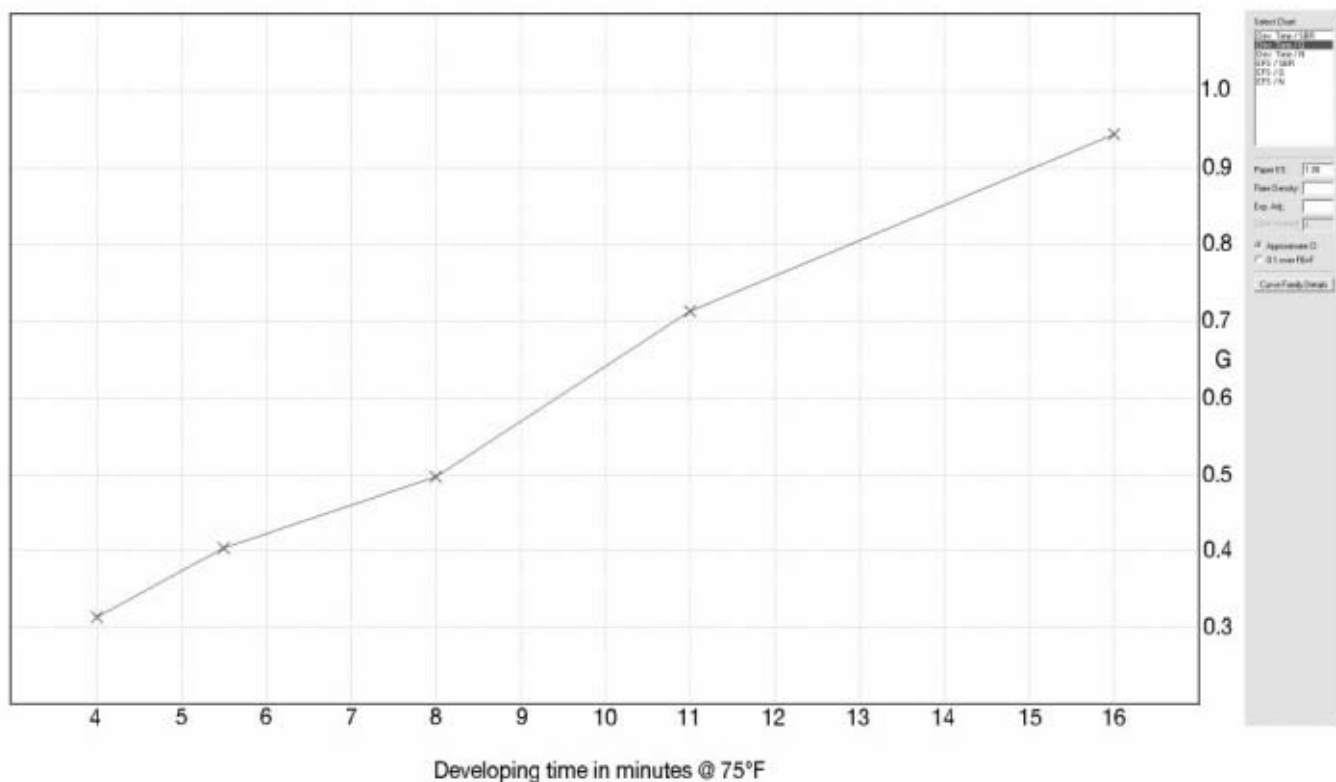


Figure 2f. *T-Max 100 4x5, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.*

Figure 3. *Subject brightness range versus effective film speed.*

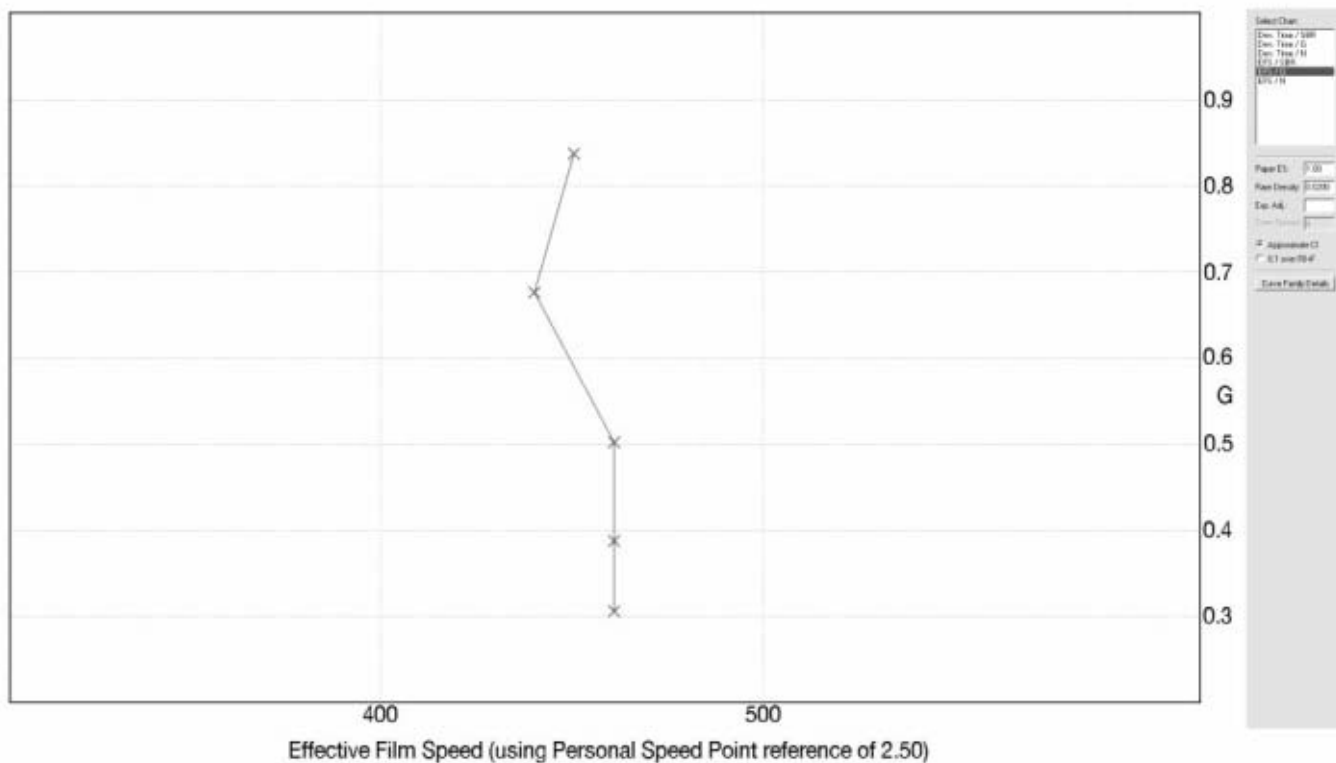


Figure 3a. *T-Max 400 (old) 35mm, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.*

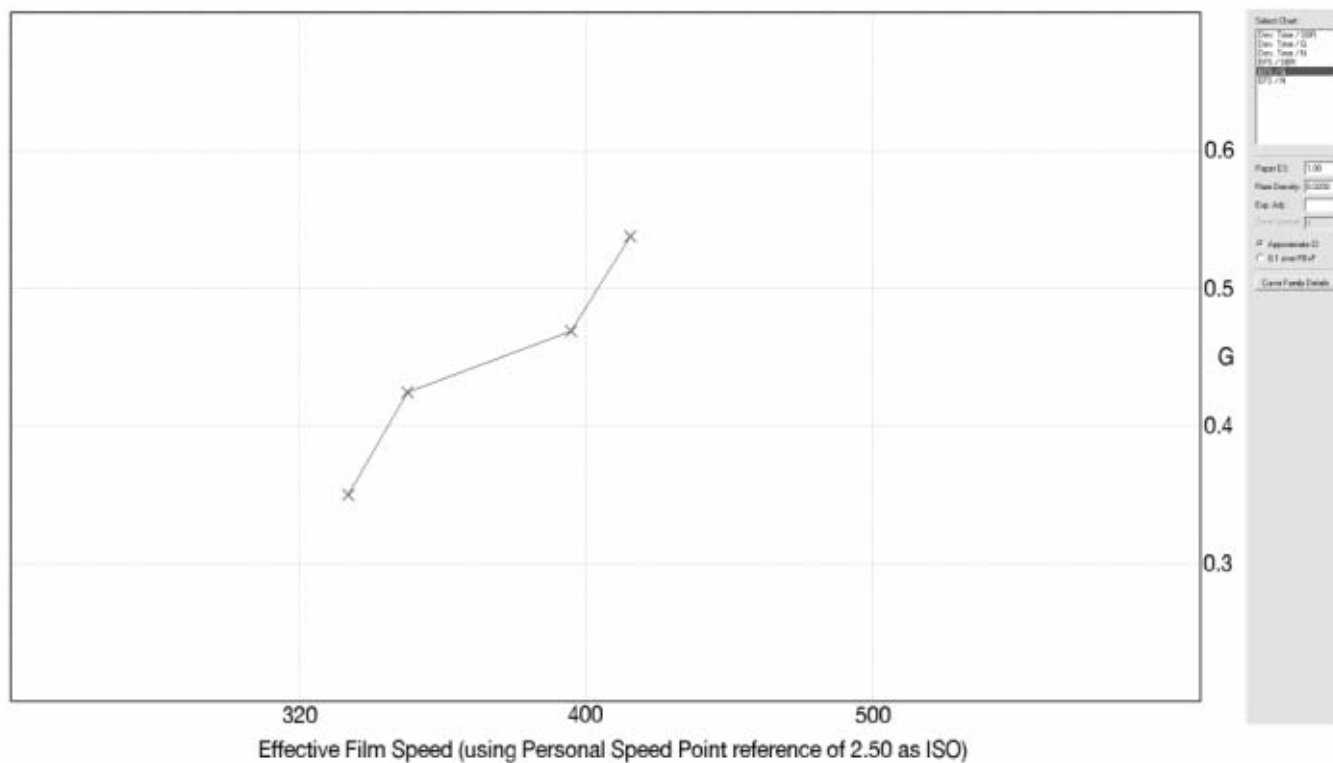


Figure 3b. *T-Max 400-2 35mm, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.*

Figure 3 (Continued). *Subject brightness range versus effective film speed.*

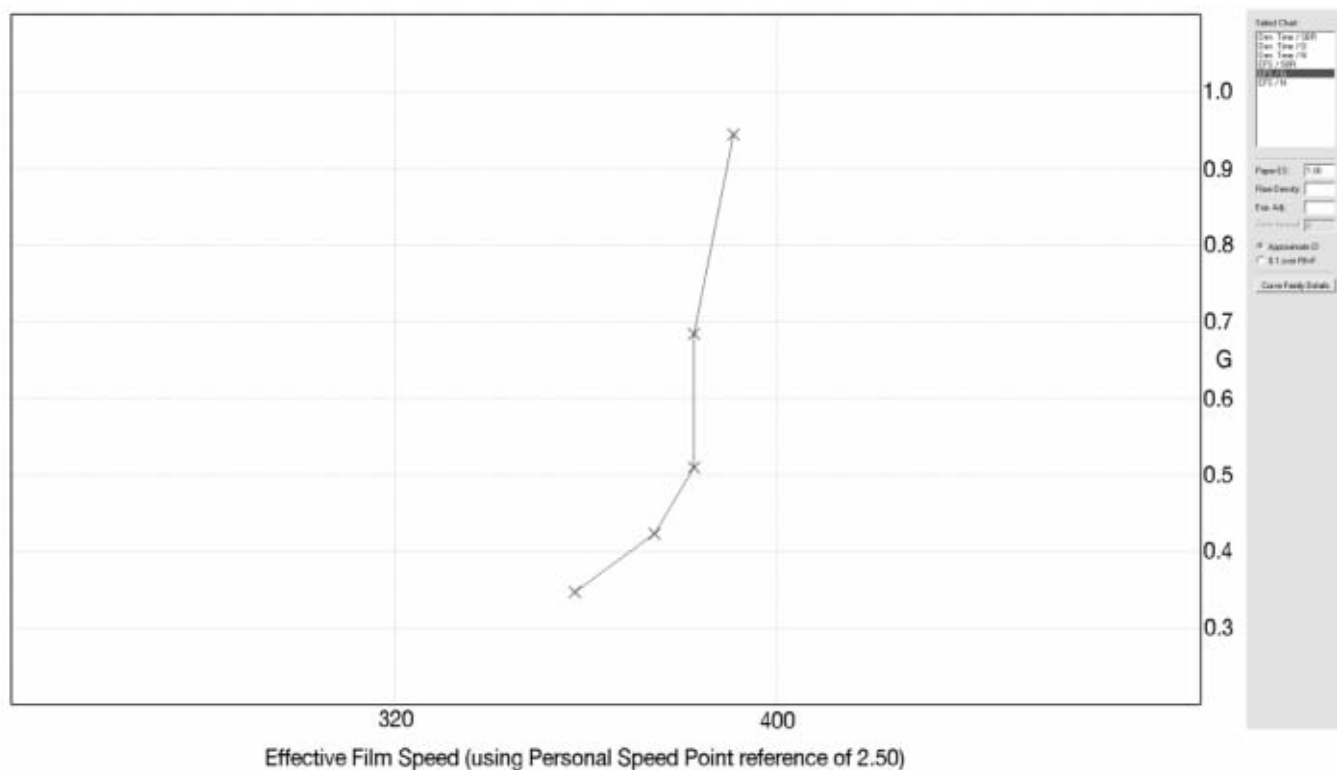


Figure 3c. for T-Max 400 (old) 4x5, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.

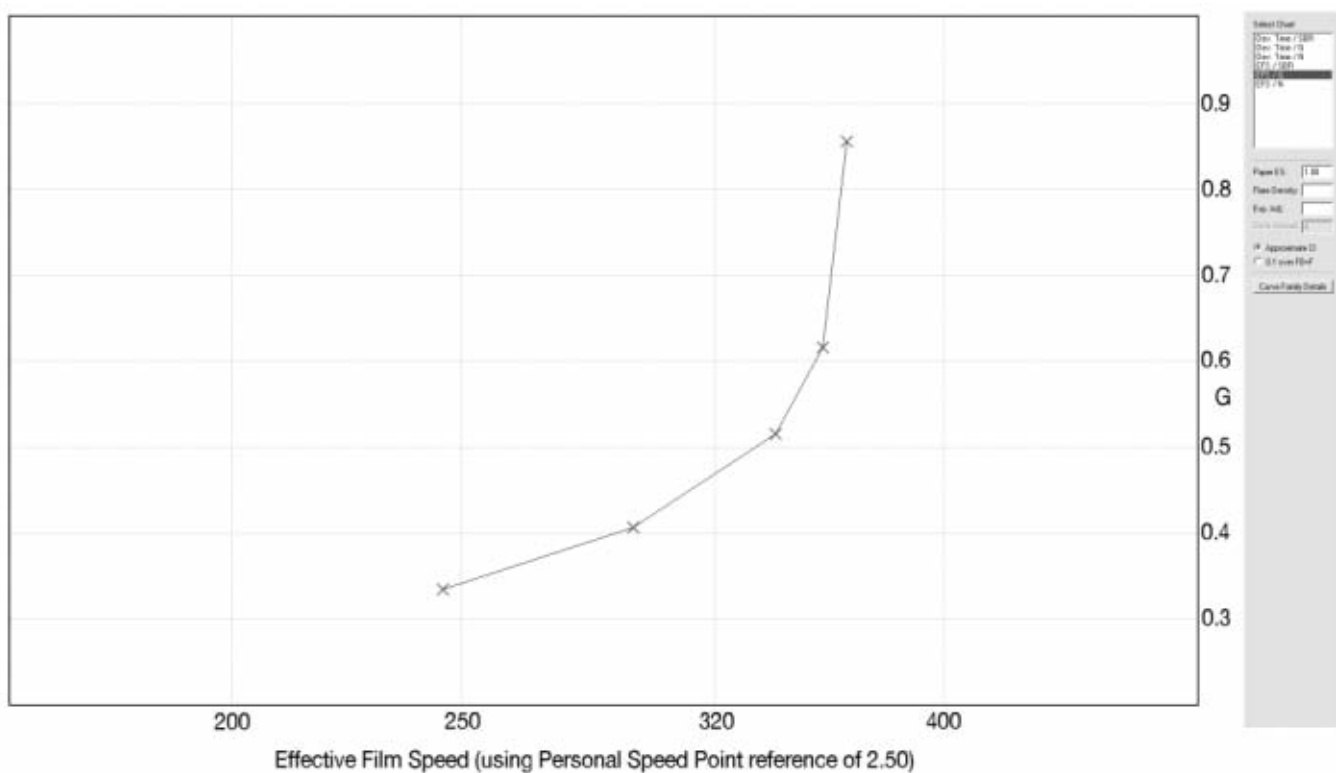


Figure 3d. T-Max 400-2 4x5, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.

Figure 3 (Continued). *Subject brightness range versus effective film speed.*

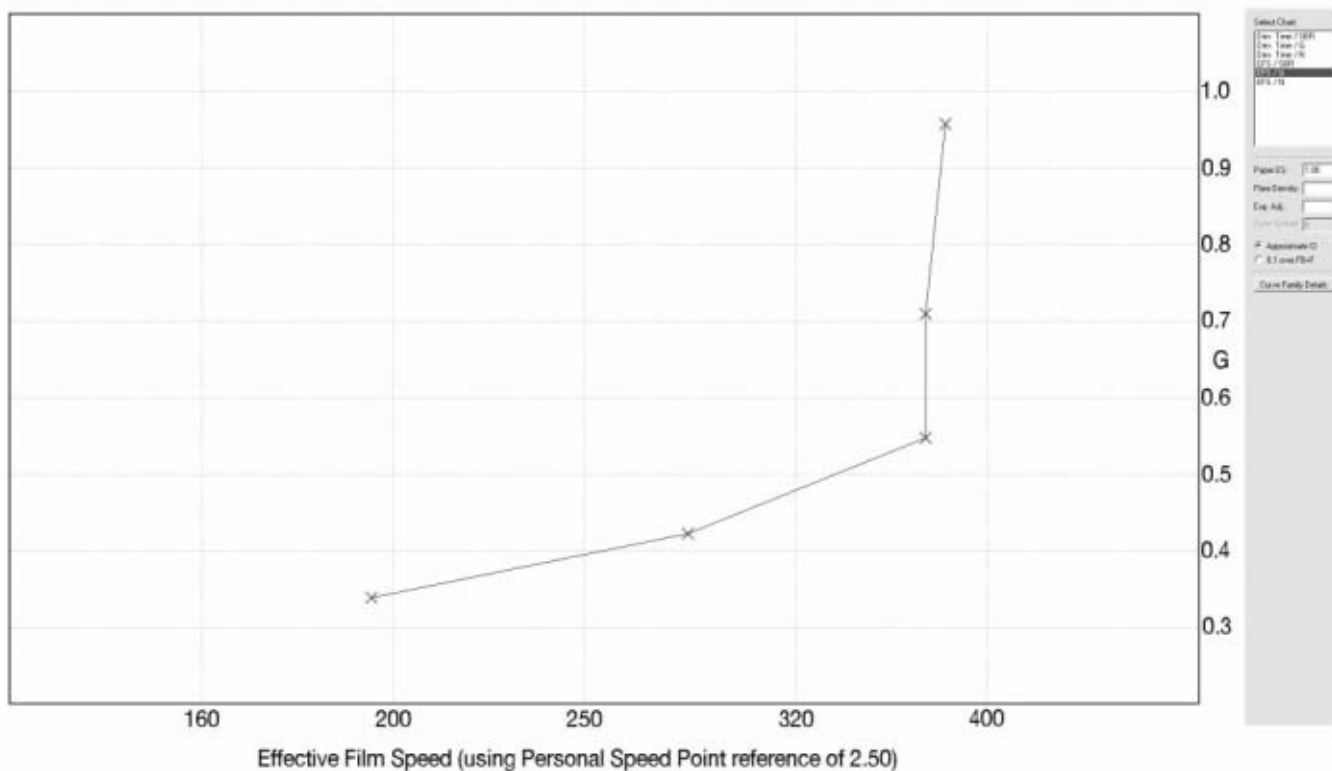


Figure 3e. *T-Max 400-2 4x5, in Ilford DDX diluted 1+9 at 75°F, in BTZS tubes.*

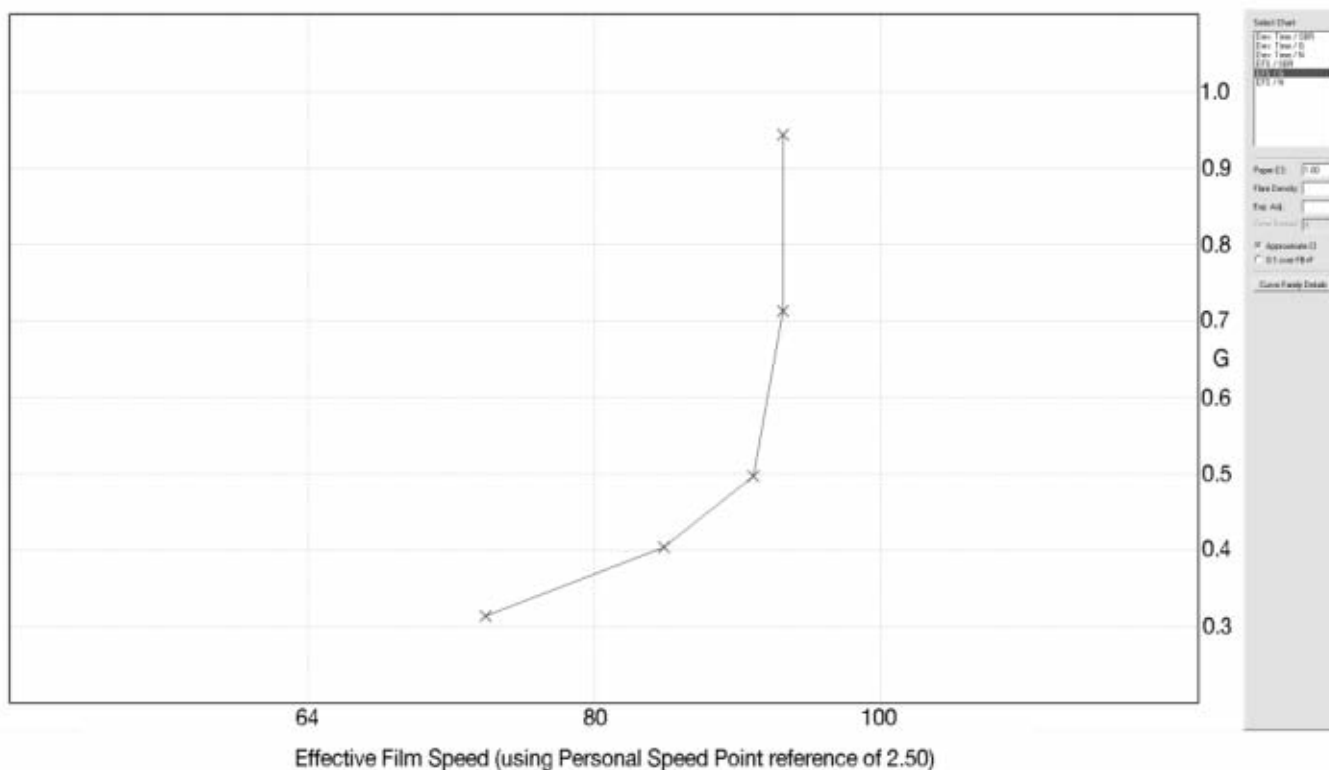


Figure 3f. *T-Max 100 4x5, in Ilford DDX diluted 1+9 at 75°F, in a Jobo drum.*



Figure 4. This image illustrates how well T-Max 400-2 deals with contrasty scenes.

image had been taken with T-Max 100, it would have been 23 minutes, 42 seconds—a lot longer than the 2 minutes, 30 seconds required with T-Max 400-2. The test image is a straight scan of the negative, with no contrast adjustments.

The other photo (Figure 4) is a contrasty scene taken in my backyard, and has an SBR of 9. The high reading was taken just below the AC plug and the low reading was taken inside the beehive fire place. This is also a straight scan of the negative.

I always look for a film and developer combination that will enable me to go from SBR 5 (two stops less contrast than normal) to SBR 9 (two stops more contrast than normal). T-Max 400-2 did that, and with a less diluted DDX developer it would be perfect to create negatives for alternative processes because it can produce high-contrast negatives with low film-base-plus-fog levels.

The first thing I noticed after taking the film out of the wash was the very clear look of the film edges. This new film has a very low film-base-plus-fog density and is very similar to T-Max 100. That's impressive. For roll-film users, it's a plus to have a film that has a lower film-base-plus-fog and reduced grain.

Conclusions

If you already like T-Max 400 film, you will like the improvements in T-Max 400-2. I recommend retesting the new T-Max 400-2, since using the same developer on the new film yielded very different results from the old T-Max 400. This also means it would be a great film for pinhole photography, where the f-stops are in the 100s and reciprocity is always a factor. The new T-Max 400-2 is a real winner and could become the primary film for both for both roll- and sheet-film users. With the improvements in sharpness, reduced film-base-plus-fog, and great reciprocity, I would say Kodak has done a great job for photographers that still love film. ■

Fred Newman is a fine-art photographer and owner of the View Camera Store, which runs BTZS workshops. He lives in Scottsdale, Arizona, with his wife Harriet, and can be contacted at the View Camera Store at fred@viewcamerastore.com or (480) 767-7105.

Field Curvature

How to analyze and work with this ubiquitous lens problem

BY LLOYD L. CHAMBERS

Field curvature can make a sharp lens look soft when the wrong assumptions are made.

Understanding how sharpness varies throughout the frame will help you get the most out of some excellent lenses that might not test well on flat (planar) test targets.

In previous articles, I've explored how diffraction and focus shift can lead to images with degraded contrast and resolution. As if that wasn't enough to think about, another confounding factor is present: field curvature. In the ideal world, a flat (planar) surface would be imaged onto a flat sensor, and a crisp image would result (a "flat field" lens).

The real world doesn't work that way for many lenses. In the real world, a desired plane of focus is imaged as a varying curve that can focus sharply in front of or behind the

sensor, or both, depending on where we look in the frame. Field curvature can also reverse, swinging alternately in front of or behind the nominal plane of focus, depending on distance from the optical center.

Field curvature is an inconvenient problem, because it calls into question the applicability of lab tests and MTF charts that measure lens performance using a flat (planar) test target. Measurements are typically presented as hard facts describing imaging performance. And so they are—for photographing flat targets at the test distance. But unless your work involves photographing perfectly flat subjects at the same distance, the sharpness of a perfectly flat surface has only a rough correlation with real-world results with three-dimensional subject matter. Some outstanding lenses test poorly due to field curvature; others test extremely well but perform poorly for infinity focus.

Field curvature can be exploited to increase the apparent depth of field when it maps nicely onto the subject matter. For example, a lens that focuses more distant edge or corner areas at the same time as it focuses closer central areas can be used to simultaneously capture a sharper, closer element and sharper, but much more distant, edges, even when wide open.

Field curvature varies with distance

Field curvature varies with distance. A lens might exhibit a flat field at close range, yet show strong field curvature near infinity. The Canon EF 14/2.8L II is one such lens, and even $f/11$ won't overcome the field curvature at infinity focus (Figure 3). Yet another lens might exhibit a mostly flat field at infinity, but show substantial field curvature at close range—the Zeiss ZF 25/2.8 Distagon is one such lens.

Such variation usually leads to erroneous conclusions about the merits of any given lens, especially in lab settings and "quick tests."



◀ **Figure 1.** Field curvature can produce some odd effects. Here, the corners in the background are just as sharp as the rice pounder at the center (possibly not visible at this small size in print). (Zeiss ZF 28/2 Distagon at $f/4$ on a Nikon D3).



Figure 2a



Figure 2b



Figure 2c



Figure 2d

Figure 2. Nikon 20mm $f/3.5$ AI-S center (a) and corner (b), focus optimized for center. Center (c) and corner (d), focus optimized for corner.

In the good old days of film, field curvature was somewhat less of an issue than today, because film has significant thickness; a small amount of field curvature still might fall within the film thickness. But with digital sensors having essentially no thickness for the photosites, even a slight error is recorded as blur. Film forgives (a little); digital forgives not at all.

The photos in Figure 2a–d show modest field curvature using the Nikon 20mm $f/3.5$ AI-S. Optimizing focus for a crisp center yields blurred corners, and optimizing focus for the corners yields a blurred center. Field

curvature is generally associated with astigmatism, which causes sagittal (radial) and tangential rays to focus at different distances; this is not obvious in these examples, but is readily apparent at intermediate focusing points that are non-optimal for centers or corners.

The images in Figure 3 are with the Canon EF 14mm $f/2.8$ II at $f/4$ on the 21MP full-frame Canon EOS 1Ds Mark III. Focus was near the center. Examination of the image shows strong blur away from the central third of the image, yet very crisp detail on the leaves at upper right, which are a

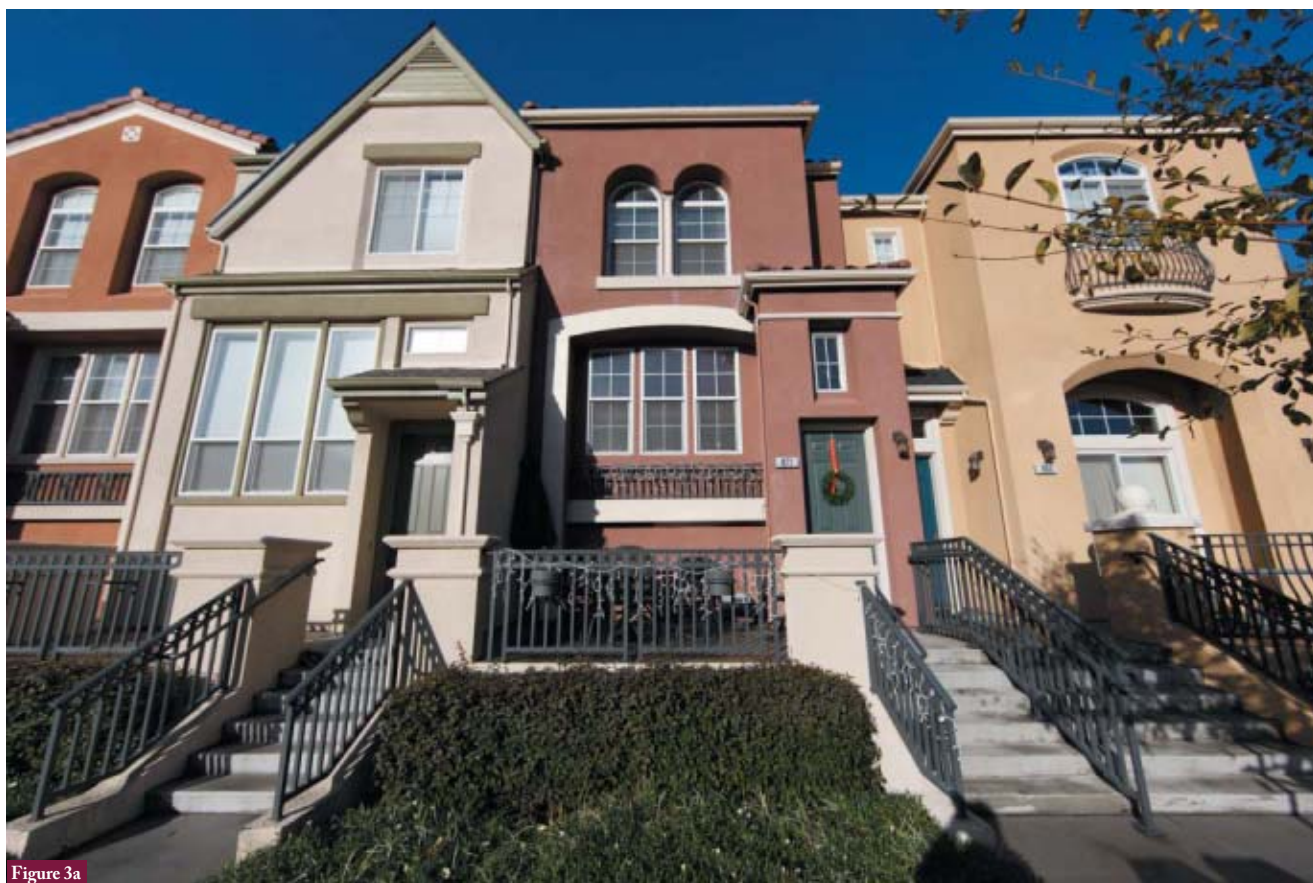


Figure 3a

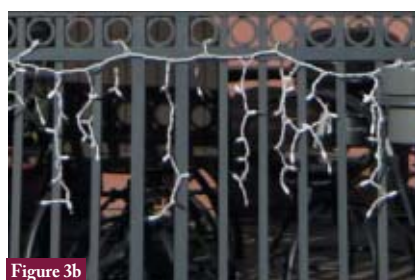


Figure 3b

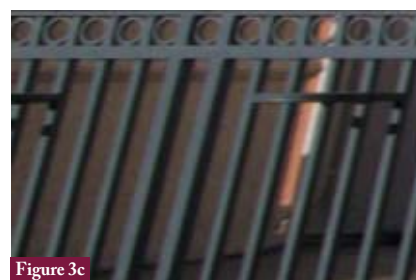


Figure 3c



Figure 3d

Figure 3. (a) The full-frame of an image shot with an EF 14/2.8 II on a Canon 1Ds Mark III at $f/4$. (b) Image center (point of focus). (c) Left edge, blurred due to field curvature. (d) Tree branches approximately 10 meters in front of image center are sharp and crisp due to field curvature.

good 30 feet (10 meters) or so in front of the focus point.

This strong field curvature cannot be overcome by stopping down, even to $f/11$. While the Canon EF 14/2.8L II exhibits a flat field at close range with outstanding performance, focusing near infinity exhibits strong field curvature and very strong blur away from the center. Focusing to infinity at center is like focusing at the bottom of a bowl, with the sharpness following the rising edges of the bowl as they get closer. This could be handy for interior shots, but makes the 14/2.8L unsuitable for many types of outdoor photography with near-infinity focus.

Optical design determines field curvature

There is no choice or workaround with field curvature—the optical design of a lens is fixed. All the photographer can do is to understand the behavior and (ideally) exploit it to advantage while avoiding compositions that are in conflict with the shape of the curvature. The variation in distance can make the puzzle all the more confusing, but once one learns to look for the clues, the way a lens behaves can be understood.

When reading MTF charts,* the dips and humps seen with some designs, particularly those from Zeiss and Leica, are typically due to field curvature—see Figure 4. In fact, some Leica designs for wide angles have very wavy MTF curves showing both strong astigmatism and field curvature; the Leica Super-Elmarit-R

15 mm $f/2.8$ ASPH is one example.

The best focus overall for across-the-frame sharpness is a compromise: adjusting focus for a neutral middle ground, then stopping down, can yield the best results (keep this in mind next time you read simplistic rules about depth of field).

The graphs in Figure 4 (courtesy of Carl Zeiss Inc., from *How to Read MTF Curves*, by Dr. H. H. Nasse) are the MTF (contrast) charts for the same lens. Figure 4b shows a large dip in MTF with the lens focused a mere 0.05mm (50 microns) differently. According to Nasse, this difference is “about the same order as conventional mechanical camera tolerances such as adjusting the AF and the focusing screen.”

Without knowing that these two graphs are from the same lens, one might conclude that Figure 4a represents an excellent lens for fine detail, and that Figure 4b represents a marginal one, albeit one with superb central sharpness and contrast. Note that field curvature is not a simple curve, but has reversals. In particular, the field curves in mid zones reverse as the edges are approached, and again as the corners are approached (frame edges are at an offset of 18mm, corners at 21mm).

Detecting field curvature

The quickest way to see field curvature without even taking a picture is to use the Live View feature

of most cameras (at maximum aperture). A test chart or newspaper taped to a wall can work well.

Using Live View, focus at center, then move towards the edges, observing image sharpness. Refocus off-center and determine if the image becomes sharper—if so, you’re seeing field curvature (assuming you’ve aligned the camera squarely to the target).

To test for focus shift with images:

1. Choose a scene that offers similar subject matter in the same desired plane of focus. See Figure 6, Pond Scene, for an example.
2. On a tripod, focus near the center, and take a picture at maximum aperture. Then focus at the edge or corner and take another picture. Be sure to use mirror lockup and a release so you don’t blur the image when using slow shutter speeds. Shoot the aperture series from wide open through $f/8$; the effect may be more obvious at intermediate apertures.
3. Process all images identically, then layer them in Photoshop or a similar program for easy click-on/click-off for comparisons. If there is field curvature, you’ll see unexpected areas of sharpness or blur, depending on placement and distance. Field curvature can be obscured by declining optical performance away from the center, so choice of subject matter is important.

The optical designs of most 50mm

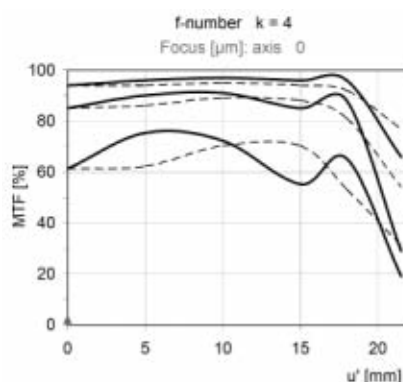


Figure 4a

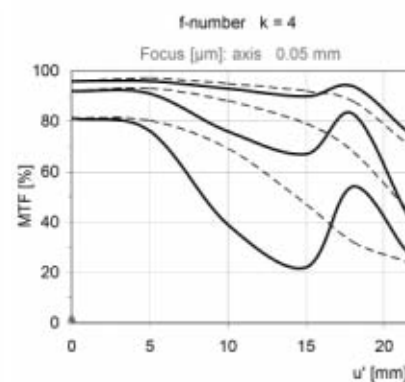


Figure 4b

Figure 4. Two graphs of focus shift and MTF performance for the same lens, focused only 0.05mm differently.

* MTF (or modulation transfer function) is contrast at a specified resolution. In a perfect (impossible) lens, pure black emerges from the lens as pure black, and pure white emerges from the lens as pure white. In a real lens, both black and white become shades of gray. MTF is typically graphed against the distance from optical center. For a lens, MTF cannot exceed 100% (perfect and impossible), while MTF of 0% means undifferentiated gray. Very high performing lenses show MTF above 60% for 40 line pairs/mm across the frame.

lenses are very similar, and nearly all show field curvature that is easily misinterpreted as a lens being “soft.” I tested eight different 50mm lenses from Nikon, Canon, Zeiss, Olympus, and Sigma, and found that all had field curvature that became obvious with the appropriate subject matter. I did so because in my testing of the Zeiss ZE 50mm $f/1.4$ Planar, I detected strange variations in image sharpness across the frame, even at $f/5.6$. At first I thought this was a bad lens, but subsequent testing of the eight 50mm lenses showed this to be common.

The photograph in Figure 5 is what prompted me to do this investigation (logos have been blurred away in this example image to avoid nasty corporate lawyers). We are interested in the horizontal stripes on the semitrailer truck (distance 30 meters or so), which are sharp at center and increasingly blurred at the edges. This is at $f/5.6$ with a Zeiss ZE 50/ 1.4 Planar on a Canon 5D Mark II. Focus was apparently too far forward, showing just how misfocus can produce puzzling results; the center is sharp from the truck to the building, but away from the center things go blurry: this is field curvature at work; the zone of sharp focus moves forward away from the center. See Figure 5 for just how strong the blur is.

At first I thought there was something wrong with the Zeiss ZE 50/ 1.4 Planar, which led me to compare it to the other 50mm lenses. The results showed that they all had similar field curvature, with the Zeiss just making it most obvious due to its otherwise outstanding image contrast.

Pond Scene

The pond scene in Figure 6 looks very strange when the whole image is viewed. A ring of sharpness extends out into the pond showing just where the field curvature occurs—sharpness peaks at about two-thirds of the way from center to corner. Even at $f/5.6$ the effect is visible and would look

quite strange in a medium-sized print: pond scum near the center is blurred, and pond scum approximately two-thirds from center is quite sharp and contrasty.

I discovered this scene by serendipity, and testing of the eight 50mm lenses showed the same interesting field curvature with all of them, as well as with other focal lengths in the 40–58mm range.

Working around field curvature

The good news is that with most lenses and subject matter you can safely ignore field curvature. But don't be surprised to find odd variations in sharpness at the same desired plane of focus.

Macro lenses typically are corrected to offer flat-field performance, at least over most of the frame. Some, like the Zeiss ZF 100mm $f/2$ Makro-Planar

offer a flat field from close up to infinity, not a small consideration for applications such as stitching images together for high resolution or panoramas.

Especially when comparing different lenses, field curvature is hugely important, because very small changes in focus can shift the sharpness/contrast drastically. In fact, comparing the same lens to *itself* can “prove” that it is both better and worse than itself, depending on very subtle shifts in focus—one reason that making real images is the only reliable way to assess lens performance and a compelling reason to be skeptical of casual lens tests you might find on the Web.

Mitigating focus shift

Here are useful working tips for detecting and mitigating focus shift

- **Study the MTF curve.** An MTF curve that is flat or slopes off gradually



Figure 5a



Figure 5b



Figure 5c

Figure 5. (a) Full frame of a scene approximately 100 feet from the camera, taken at $f/5.6$. (b) Actual pixels at center (sharp), and (c) right edge (blurry).



Figure 6a

usually indicates little or no field curvature. Astigmatism is also a strong clue. However, an MTF curve might be measured at a distance at which the lens has a relatively flat field, and neither Nikon nor Canon is clear on their measurements, so MTF is not always a reliable indicator. With Zeiss and Leica, MTF is a very good indicator of field curvature, and they indicate the test distance with the supplied MTF graphs.

- **Know your lens.** The only good way to understand your particular lens is to shoot a variety of subjects and watch what happens. Take advantage of Live View when a good subject presents itself, such as the pond in Figure 6.
- **Exploit it.** A lens whose focus shifts rearward toward the edges and corners can be focused more closely near center; this can yield surprising sharpness wide open for the distant elements. A lens whose focus shifts forward toward edges and corners can



Figure 6b



Figure 6c

Figure 6. (a) A scum-covered pond I used for testing field curvature. At $f/2.8$, (b) a crop near the left edge (sharp), and (c) center (blurry). The crops are in the same plane of focus.

be used to advantage in building interiors where the walls approach at the edges.

- **Stop down.** Usually, aperture $f/5.6$ or $f/8$ is sufficient to pull things in provided that focus is accurate to begin with.

Conclusions

Field curvature can be quite confusing until it's understood. In an ideal world, it would be something we could always ignore, but with perfectly

flat and depth-less ultra-high-resolution digital sensors, it becomes an issue with many lenses, even well stopped down. Enjoying all those megapixels in big prints means paying attention to the quirks of each lens. ■

Lloyd L. Chambers enjoys all-digital photography after shooting film for years in 35mm, 4x5, 6x7, and 617 formats. His Web site diglloyd.com offers a wealth of material on advanced photographic techniques, and his Zeiss ZF Lenses review is a reference work on those fine lenses.

Portfolio:

People in Action: **THE WINNERS**

The task was to “capture the human spirit through movement,” and many talented readers stepped up to try. Choosing winners from amongst so many strong entries was difficult; you can find some additional runners-up on our Web site at www.phototechmag.com/people_in_action.htm. In addition to the honor of winning, the First Place winner receives \$500; Second Place receives \$250; the three Honorable Mentions receive \$100 each.



1ST PLACE *Slicing through the Sunset*

By Sean Naugle

Being on a moving boat while trying to shoot water skiing proved to be a challenge. I handled the situation well and captured some water skiing action while visiting some friends in Lake Tahoe, California. The telephoto lens set at 210mm and a fast shutter speed of $\frac{1}{1600}$ second was required to achieve a sharp image. To arrive at $\frac{1}{1600}$ second, I shot at $f/5.6$ and cranked the ISO up to 1250. Panning and composing

the shot while the rider flew across the water required some practice. It took at least an hour and several hundred shots until I was able to capture the climax of the action. In addition to having the correct technical settings on the camera, the direction of light and time of day at which this shot was taken were equally important. It was captured with a Canon EOS-1D Mark III, EF 28-300mm 5.6L IS USM lens,

and a plastic trash bag for protection against splashing water.

I became interested in photography while studying film and media at University of California at San Diego. As a sophomore, I took an intro to photography class and fell in love with the subject. I transferred to Brooks Institute in Santa Barbara to get a degree in photography. More samples of my work can be seen at www.BlackOwlMedia.com.

Portfolio: CONTINUED

2ND PLACE

Barrel Racer

By Andrew Fritz

My wife and I moved to Arizona six years ago, and there are endless opportunities to make pictures of horses, people on horses, and rodeos. I enjoy the challenge of making pictures of horses and people because there are many variables associated with the speed of the events, whether it's the movement of the horses, the skill of the rider, or the luck of the photographer. These events give the photographer an opportunity to freeze the moment, and with most of my images, I attempt to give the viewer a sense of motion.

I began making black-and-white



pictures in 1980, studying at Mercer County Community College in New Jersey with photographer William Barksdale. With Bill as my mentor, I continued to study and make images of simple things that I saw. My work has been exhibited in the NJ State Museum and

Trenton Artist Workshop Association. I made the move to digital photography in 2005 and continue to hone my skill in this medium.

This picture was made with a Nikon D70, using a Nikkor 70-300 lens shot at $\frac{1}{125}$ @ $f/16$.



HONORABLE MENTION

Flashover

By Marty Exon

This picture was taken on October, 25 2008, at a training burn for the local volunteer fire department. My son is a firefighter, so I like to tag along on some of the fire calls to get some shots. There are lots of opportunities for dramatic pictures at the fires. I found that offering copies of some of the pictures to the firefighters helps make me a little more welcome, and I have been able to get a lot closer to the "action" than the general public that has to stay behind the yellow tape.

In this shot, the firefighters were on the porch looking into the house. I was in the front yard about 15 feet behind them. I was shooting a lot of pictures (thanks to digital cameras), and as the fire increased in size, it suddenly flashed overhead and out the door. This shot captures the action as the firefighter tries to cool down the fire before they can enter the room.

I used a Sony DSCR A300 with a Sony 18-200mm $f/3.5-6.3$ lens shot at $f/6.3$ at $\frac{1}{160}$ second at ISO 400 and 200mm.



HONORABLE MENTION

Reach

By Kevin Bowman

I enjoy outdoor photography, and sport and athletic events are a favorite. I particularly enjoy shooting tennis, as I've played the sport since childhood.

Reach was captured courtside during a women's tennis match at the University of Tulsa. Eyes glued to the ball and reaching for her forehand shot, the athletic extension of limbs is offset by the graceful fingers of the free hand. The player, Thalia Diaz-Barriga, won her

match, and Tulsa won the event.

Action photography of any kind requires you to be familiar with your subject. Learn how the game works, study your subject to learn their habits and anticipate their movement. Lead the action with the lens, shutter half-depressed for focus. With practice, you learn to predict the moment where the action will peak and your photo op presents itself—for a split second.

For *Reach*, I used a Nikon D3 with a Nikon 70–200mm *f*/2.8 lens. Shutter speed was $1/1250$ second, at ISO 320, with a focal length of 135mm.

For *Jump* (this issue's cover shot), I used the same camera and lens; shutter speed was $1/1600$, ISO 320, *f*/3.5, and focal length 70mm.



The model, a cheerleader for Missouri Southern State University, executed a perfect C-jump that showcased her athleticism and megawatt enthusiasm.

Portfolio: CONTINUED



HONORABLE MENTION

One Final Stride

By Waldemar Tomaszewski

This picture was taken in March 2009, at the Canada Olympic Oval in Calgary Alberta. I enjoy taking photos of athletes while they are training and in motion because you can capture the concentration and determination in their expressions. Many opportunities present themselves during serious sport training to catch emotions on the athlete's face.

In this particular shot a women's speed skater is training for the 2010 Olympics, held in Vancouver, Canada, this year. I was standing right next to the finish line at the oval and waited until her final lap to capture this photo. This shot captures the pure determination and perfect technique and form of the speed skater as she takes her final few strides towards the finish line.

I used a Nikon F2 with an 80–200mm, *f*/5.6 lens, and shot at $1/500$ second.

Which is Right for You?

Raw Conversion and Editing Software

The pluses and minuses of Aperture, Lightroom, and CaptureOne

BY MARK DUBOVOY

In my opinion, photographers should always shoot Raw—after all, if you don't, you're throwing away much of the information your camera captured. Unfortunately, there are literally hundreds of different Raw formats and dozens of Raw converters on the market. There also are a multitude of products that allow you to edit photographs out of Raw. Which should you use?

Trying to compare them all would be a massive undertaking. Although most major manufacturers have their own Raw conversion/editing software, (and there are a number of small, independent companies with Raw conversion and/or editing products), three products currently dominate the market: Apple Aperture 2, Adobe Lightroom 2, and PhaseOne CaptureOne 4. Even a comparison of only these three products is a daunting task. They are extremely sophisticated products with large amounts of tools and functions. It takes time, training, and practice to learn how to use them effectively. One could literally write a couple of books on the subject.

In spite of this, I decided to attempt a comparison based on a set of criteria that I believe will make this article useful. Before launching into the other details about this comparison, however, it is worth noting a few things.

Everything that follows is based on my experience and opinions after working extensively with all three products. I believe that the vast majority of photographers would come to similar conclusions, but there is certainly room for disagreement. Another photographer may dislike a tool I like, or feel more comfortable with a specific product for reasons other than those explored in this article. On the other hand, there are objective criteria, such as the speed to import an image or the quality of Raw conversion, where the facts speak for themselves.

Organization

All three programs offer ways to organize your image files in many different ways. You can also rate your images and include metadata, key words, copyright notices, and what not. You can search for specific images using various tools and criteria.

I do not have the space to go into all the details here, so let me just say that for me, the database organization and the related tools in Lightroom are the best of the group. In terms of organization, I would place Lightroom first, Aperture second, and CaptureOne third.

Note that unlike other editing programs (including Photoshop), all the edits in Aperture, CaptureOne, and Lightroom are non-destructive: All three programs preserve the original Raw image information intact. Instead of modifying it, they save an instruction list with the edits you want performed. When the edited file is opened, the edits in the instruction list are applied to the original Raw file and a new file is produced for display purposes, for printing, for further editing, or for export to other applications; the original data is always safe and is never touched. This also allows all three programs to produce a large number of variants of a single image without filling up your hard drive. Only the original data and the different instruction lists of edits need to be saved.

Aperture

Let's start with Aperture. As with most Apple products, the packaging, the user interface, the documentation, and the tutorials on the Apple site are superb.

It has a very slick and intuitive interface that becomes instantly natural to anyone who has used other Apple professional products. Aesthetically, it is the best interface of the three. Some of the tools in Aperture are, in my view, extremely useful, beautifully thought out, and obviously unique to Aperture. These include the Loupe tools, the Light Table tools, and the Fine Tint controls, just to mention a few.

In addition, the tools for making a book, for creating galleries in Mobile Me, and for creating Web pages are so good that if these are the main applications for your images, I would recommend Aperture as the most appropriate application for you. (Note that I am referring to relatively simple books ordered online through Apple. This is not the appropriate application for the production of complicated books or extremely high-quality fine art books.)

The software is extremely fast on my dual-processor Apple Mac Pro. It imports and processes files much faster than the other products.

Lightroom

Adobe has done a great job with Lightroom. Although somewhat different and perhaps not as aesthetically pleasing as Aperture, the user interface is also extremely user-friendly and very intuitive. I personally prefer the user interface in Lightroom. I may be biased because I have worked with Adobe products for a long time. Other users may differ with me and prefer Aperture.

Like Aperture, Lightroom has some unique tools that I find particularly useful and well thought out. These include the Targeted Adjustment Tools (TATs) that allow you to click and drag your mouse at specific points inside the image to adjust preselected parameters. I also very much like the Adjustment brushes and gradients. I find Lightroom's Vibrance and Clarity tools, as well as the printing module, to be superior to the equivalent tools in Aperture.

CaptureOne

The CaptureOne interface is the more difficult to learn of the three. However, once mastered, it is also the most flexible and powerful. This clearly is a product built for serious professionals. It is evident that CaptureOne is all about maximizing image quality while simultaneously providing effective communication with clients.

Of the three products, CaptureOne is the only one that does not have a print module. To print, one needs to export the image to another application (such as Photoshop). That is a minus, but the list of unique tools and functionality in CaptureOne is quite long and includes: a superb color editor, lens corrections (distortion, chromatic aberration, purple fringing), rendering intent, styles, lens cast calibration, skin tone tools, and output scaling that produces better scaling than using post-Raw scaling (such as bicubic, Genuine Fractals, or PhotoZoom). The customizing options, the curves tool, the histograms, and the navigator are better (in my opinion) than in Lightroom and Aperture.

Other differences

There are other key differences between the three products that will be important to some users. For instance:

- CaptureOne and Aperture allow tethered shooting, but only with specific cameras. Lightroom does not allow tethered shooting at all.
- Lightroom and CaptureOne support PhaseOne medium-format backs, but Aperture does not.
- Likewise, Aperture supports certain Hasselblad backs, but CaptureOne does not.

There are also differences between the hardware requirements for each product. Therefore, besides all the

other issues mentioned in this article, the user needs to make sure that the product supports his or her cameras, and that his or her hardware meets or exceeds the minimum hardware requirements for the product.

Table 1 lists the functions I find particularly useful and unique in each of the three products, as well as which tools and features are better implemented.

Table 1. Functions available

Aperture	Lightroom	CaptureOne
Tethering	Organization	Color Editor
Loupe Tools	TATs	Panel Customization
Quick Preview	Adjustment	BrushCurves
Making a Book	Gradient	Lens Correction
Mobile Me Gallery	Vibrance	Lens Cast Calibration
Tint Controls	Clarity	Skin Tone Tools
Vignette/De-vignette	Sharpening	Styles
Web Pages	Print Module	Process Recipes
Speed	Database	Histograms
Cloning Brush	Crop/Straighten	Output Scaling
		Navigator
		Profiles

Image quality

To me, the ultimate test is image quality. Therefore, the burning question is whether there are any differences in the quality of Raw conversion between these three products, and if so, how big are they?

The answer is that there are significant and quite visible differences in quality of the image after Raw conversion. Before I get to them, I should mention that although the interface is different, Raw conversion in Lightroom is identical to conversion in Adobe Camera Raw (ACR) in Photoshop.

I have chosen to show three representative examples. The first two images were shot with a Canon 1DsMK III. The third example was shot with a Canon 1Ds MKII (Figure 3). I also shot a WiBal calibrated gray card immediately after each exposure, and used it to set a custom accurate white balance for each image. The images were converted from Raw to 16-bit TIFFs with no sharpening or adjustments other than those mentioned. No scaling was performed.

Figure 1 is a screen shot of the Aperture user interface with a photograph of white flowers selected. I specifically chose this image because of its high dynamic range. Notice the red warnings that some highlights might be blown out.

Figure 2A shows the same photograph magnified to 100% in Aperture. Figure 2B shows the same image at



Figure 1. Aperture's interface is slick and intuitive. Notice the red warning that some highlights may be blown out.



100% in Lightroom. Note that the overexposure warnings are slightly larger in Lightroom. Figure 2C is the same image at 100% in CaptureOne. The overexposure warnings in CaptureOne are much more intense in spite of the fact that the preferences in all three programs were set the same.

I used the highlight recovery tool in each product until the warnings barely disappeared. The results are shown in Figure 3. CaptureOne clearly does a much better job of recovering detail in the highlights. Also, the contrast and color rendition of CaptureOne with no other adjustments is



Figure 2. a) The image in Figure 1 blown up to 100%. b) The same image in Lightroom—notice that the overexposure warnings are slightly larger. c) The same image in CaptureOne in which the overexposure warnings are much more noticeable.

far better than the other two products. Lightroom recovers some highlight detail. Aperture is quite poor.

It is important to note that stronger highlight-recovery

adjustments darken the highlights, but do not recover more detail.

The second example is a photograph of some very highly saturated red flowers with deep

orange tones in some areas. Highly saturated reds and oranges are usually a real challenge in photography. I imported the image into all three products, adjusted the white balance, and then performed the conversion from Raw to TIFF.

Figure 4 shows the results at 66% magnification. Aperture has a very difficult time with these deeply saturated colors. It loses the most detail in the flowers and the color does not match the original flowers. The greens also look weak. Lightroom shows very fine detail, to the point that it makes me suspect that regardless of the settings there is some sharpening going on in the background. The color is noticeably better than in Aperture, but it still misses some fine color nuances and most of the orange. CaptureOne, on the other hand, gets the color of the flowers and the color of the leaves almost perfect, and with a tiny bit of sharpening (not shown) visually matches the detail retrieval of Lightroom. I hope that magazine printing is able to show these differences.

The final image is a family portrait taken in Lake Tahoe four years ago. All I did was adjust the white balance by clicking on the WiBal card; then I performed the Raw-to-TIFF conversion. The results are shown in Figure 5. The best skin tones, the best color in the grass, the best dynamic range, the most natural contrast, and the most detail are in the image processed in CaptureOne. Lightroom is second, and Aperture again comes in third with skin tones that have a somewhat yellowish, washed-out look compared to CaptureOne.

In general, regardless of what image I choose, or what adjustments I make, I can get more highlight and shadow detail, more fine detail in the mid-tones, more accurate color, more natural-looking contrast, and more fine gradations and color nuances with CaptureOne than any other Raw conversion product I have tried.



Figure 3. The highlight-recovery tool in each program was used until the highlight warnings just disappeared. **a)** Aperture doesn't recover much highlight information. **b)** Lightroom recovers a bit more than Aperture. **c)** CaptureOne does the best job of recovering highlight detail.

Which to get?

I have processed thousands of images in Lightroom and CaptureOne, and hundreds in Aperture. From my experience I have concluded that the

best image quality in Raw conversion is obtained using CaptureOne.

I have not tested CaptureOne with every camera in existence, so I should qualify the above statement by

saying that at least with Canon, PhaseOne, and Leica files this is definitely the case. I hear from other photographers that this is also the case with Nikon files, but I have not personally tested this. Given the care that PhaseOne puts into very carefully characterizing and profiling each camera, I would not be surprised if this is the case with all the cameras they support.

I also have concluded that Lightroom has the best database structure and organization, as well as some very useful adjustment tools.

It is also quite obvious that for Web-related use of images and for speed, Aperture is unmatched.

At the same time, none of the three products provide many of the fine tools and functionality available in Photoshop. So for those of us that routinely use the Photoshop tools and functionality, a trip from the Raw converter/editor to Photoshop is inevitable. (Lightroom has one small advantage in that being an Adobe product, it is more closely integrated with Photoshop.)

What can one do? Well, I want to have it all, so I have settled on the following workflow:

1. I import my Raw files into CaptureOne, where I perform all the basic adjustments such as white balance, exposure, highlight or shadow detail retrieval, contrast, curves, levels, and color editing.
2. Once I am done with these basic adjustments, I convert the Raw image to TIFF and import both the original Raw files and the TIFF files into Lightroom. This gives me access to all my files using the Lightroom database organization and corresponding tools (I always save all the original Raw files for future use as technology evolves).
3. At this point, if I need to make

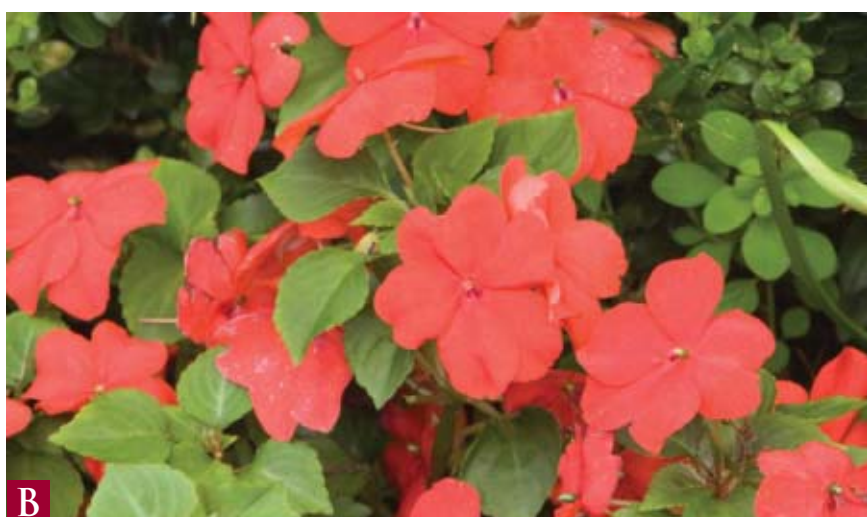
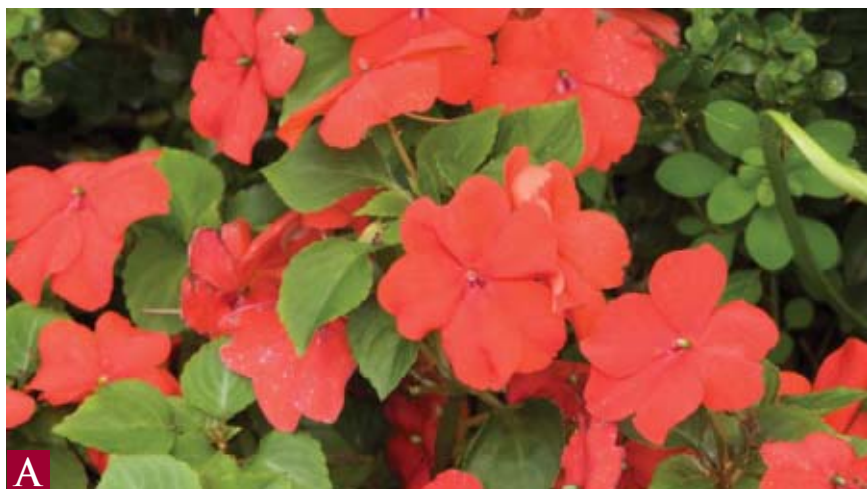


Figure 4. The results at 66% magnification. **a)** Aperture has a difficult time with the deeply saturated colors. **b)** Lightroom has better color, but some fine color nuances and most of the orange are off. **c)** CaptureOne gets the colors almost perfect.

adjustments for which the Lightroom tools are particularly suited (like clarity, vibrance, gradients, or sharpening), I make

these adjustments to the TIFF files in Lightroom.

4. After I am finished with

Lightroom, I export the edited TIFF files to Photoshop, where I perform all the final fine adjustments.

5. Before quitting Photoshop, I save the final images in Photoshop's PSD format to preserve all the layers, channels, and selections.

6. Out of habit, I usually print from Photoshop, but I can just as easily print from Lightroom.

Obviously, nothing prevents me from importing my final images into Aperture should I need to create a book or a Web gallery.

I sincerely hope that this article helps readers better understand the differences between Aperture, CaptureOne, and Lightroom. I know photographers who are delighted using only one of these products for all their work. Others use more than one of these products, either alone or in combination, in order to satisfy their specific needs. And then there are those of us that use one or more of these products and still export to a more powerful editing program such as Photoshop.

While all three products are excellent, in the end it is up to individual users to determine what is important in their work and which application or set of applications fits their needs the best.

We are truly privileged to be living in a time when these kinds of imaging tools are available to us at such a modest cost. Besides, they are so much fun to use! ■

Mark Dubovoy specializes in large-format color landscapes. He uses traditional and digital printing methods, and his photographs can be found at the San Francisco Museum of Modern Art, the Monterey Museum of Art, the Berkeley Art Museum, and the National Museum of Contemporary Art in Mexico City. He has a Ph.D. in physics from U.C. Berkeley.



Figure 5. This image tests skin tones. **a)** Aperture's skin tones seem a bit yellowish and washed out. **b)** Lightroom did a decent but not exemplary job. **c)** CaptureOne again had the best tones, as well as the best dynamic range and detail.

Review:

The Non-Mainstream Powerhouse of Raw: DxO Optics Pro

BY PAUL SCHRANZ

In the realm of quality Raw-conversion software, I believe DxO Optics Pro deserves far more attention than it gets. This is a powerful program that offers more accuracy than general converters and some unique qualities that make it a truly worthwhile investment. The three major strengths of DxO Optics Pro are its specific camera/lens combination analysis, its pre-conversion geometry corrections, and its excellent demosaicizing algorithm.

DxO (www.dxo.com/us/photo) is based on modules. In translating a Raw file, it considers all of the characteristics of a specific camera body, the unique qualities of a specific lens attached to that body, and an image's metadata—especially focal length—to create a highly accurate conversion. Once images are imported into a project, DxO can apply this information as a batch process when you click

the Process Now button. This yields an extremely high-quality overall conversion, one specific to your equipment, rather than a vanilla one that treats all camera/lens images identically. In fact, DxO 5.3.4 now includes more than 1,400 camera/lens module combinations. Updates for new cameras are offered fairly regularly as new equipment is released. In addition to the major manufacturers, DxO also offers specific modules for Sigma and Tamron lenses and advanced point-and-shoots such as the Canon G10.

DxO works with any JPEG file and any supported camera sensor for Raw, though many of the pro benefits of DxO exist only for the Raw format. It outputs to JPEG, TIFF, and DNG formats.

The program comes in two versions: Standard (\$145) and Elite (\$270). The Standard version includes fewer



Figure 1. Before and after DxO conversion using Geometry Correction.

body/lens combinations, while the Elite version includes the full and expanding library.

Workflow

If you decide to go beyond the batch processing of the body/lens combination (and you should), you will edit by using the thumbnails under the Select tab. Choose only the images that you want to treat with DxO's more extensive professional controls. Clicking Add Items places selected images in the filmstrip. The filmstrip remains a constant source of image access in all stages of processing.

Each thumbnail has selection and response icons that allow you to select images for further processing or to simply hold them in the project. You also will receive information if a module is missing or if metadata focus information is missing. If it is, go to the Prepare tab and then the Geometry palette, where you can manually set focus distance. A circle with a line through it indicates an image is not supported and cannot be processed.

Selected images can be edited further by clicking on the Prepare tab, which brings up control panels on the right. However, unlike other programs, which often list all of the controls at one time (compacted or expanded), DxO uses a series of graphic icons that open specific panels related to the corrections or enhancements you want to make. The panels comprise Metadata, Light Control, Color Control, Histogram, Geometry Control, and Details, and include user presets. I find this offers a much easier and faster workflow than one that requires sliding up and down an extended array of control panels.

Control Panels

The first time I saw the Geometry Control feature, I was amazed; it makes all of the supported lenses essentially shift lenses. Three sliders, plus a zoom and crop function, work on the proxy image to apply geometric correction to the Raw file on export (See Figure 1). This reduces the stretching of pixels common in post-conversion parallel correction.

When software has corrected an image's geometry, one usually needs to crop out/remove fall-off areas. However, Auto-Crop accomplishes this as the geometric corrections are applied. You can also alter an image while using the auto-cropping application.

DxO's Color Control is powerful. Not only does it use color-rendering profiles unique to the camera sensor, it also offers a multi-point color-balance system. This allows you to give images a more realistic and pleasing overall color balance, rather than a generic, single-point, objective-only application. You also can add film grain by using the supplemental DxO FilmPack (\$70).

The other area in which DxO excels is demosaicizing images shot in low light. A nice benefit of Raw is that this process keeps improving as the company devises new algorithms.

DxO's demosaicizing process looks at the relationship of pixels farther than the nearest neighbor, farther than five pixels—the program looks at a radius of more than 10 pixels. As the megapixel size of cameras increases, this approach makes more sense. DxO's demosaicizing process seeks repeated patterns in an image, so that the formula used for demosaicizing is driven by image content, rather than simply using a library of preset algorithms. As a result, conversion artifacts, particularly in low light, are significantly minimized. Digital noise is visually lower—the company claims two full stops lower. While I can't objectively prove that, I can visually confirm that the noise created by a 1600 ISO image is significantly less pronounced than I've found using other Raw converters.

Process

Having decided how to process an image (or group of images), you select which to convert by clicking on the Process tab. Selected images are then shown in the queue, while output options appear on the left. A significant feature in the Pro version is the ability to create various output formats for JPEGs, TIFFs, and DNGs, which can be applied in sequence to any image in the queue. For a single image, you can create several different qualities of JPEG, or 8-bit or 16-bit TIFF, at different resolutions, and an additional DNG for a library archive. There is also a smooth file-exchange relationship between DxO Optics Pro and Adobe Lightroom. Keep in mind that DxO conversion is amazingly accurate, but it is not particularly fast.

The last step in the DxO process is a review process that allows you to compare your pre-converted image with the post-converted file.

DxO's research can benefit you whether you buy the program or not: DxO recently launched a Web site (www.dxomark.com) that published the analysis and data from tests the company conducted on specific camera-body sensors. These tests were the result of information measured directly from the Raw image, as opposed to making judgments on a post-Raw converted image. The tests included actual ISO sensitivity, speed-to-noise ratio, dynamic range, tonal range, color depth and sensitivity spectrum, and metamorphism. The test results give consumers an objective look at what each sensor is capable of. A qualitative-value numbering system is applied, and cameras are ranked by performance.

DxO Optics Pro is an excellent conversion program that yields optimum results. Give it serious consideration if you're looking for a high-end primary or auxiliary program for use with another digital imaging program. ■

Paul Schranz, a PT contributing editor, is a professor emeritus at Governors State University in Illinois. He lives in New Mexico, where he is director of the Preston Contemporary Art Center and runs the Mesilla Digital Imaging Workshops.



Hollister Orchard

A Mirrorless Future?

The Panasonic G1 leads a potential trend to digital cameras with larger sensors, interchangeable lenses, and no mirror

BY UWE STEINMUELLER

In late 2008, Panasonic launched the Lumix G1, the first of a new breed: cameras with larger-sized sensors (compared to compact cameras), interchangeable lenses—and no mirror. You may say that the classic rangefinder is such a camera. True, but the usefulness of rangefinder cameras stops in the low telephoto range because the viewfinder crop gets too small; also, because you're not looking through the lens, parallax can be a problem. Even at wider angles you often need extra viewfinders to cover the angle of view. (Single lens reflex cameras [SLRs] don't share this problem because they offer a view directly through the lens.) Unfortunately, the mirror is not only a solution—it's also a major problem.

- Mirror-slap produces noise
- Mirror-slap introduces shake (I consider this one of the major drawbacks of using a mirror)
- Manual focus is not the strength of this system
- Because of the mirror, wide-angle lenses have to be designed differently (as retrofocus lenses) to allow the space for the mirror. This makes them bigger, but it also seems as if it is more difficult to produce top-quality wide-angle lenses.
- The lenses and cameras get more bulky because of the inclusion of the mirror box and retrofocus lenses.

Rangefinders and SLRs were the two main systems to allow viewfinders on cameras (I am not talking about view cameras here). The digital world

changed this a lot. Most consumer fixed-lens cameras use the LCD as the only framing device. There is an entire generation of new photographers that may never use a classic optical viewfinder (be it rangefinder or DSLR). Focusing is very often left to the camera's autofocus system. The beauty of this system is that the LCD can show exactly what the camera sensor sees. Why was this first implemented in point-and-shoot cameras? Because using the sensor for focusing and preview introduces heat that degrades the image quality with older sensors. Most DSLRs now feature live preview/video, which means they have to deal with the heat issue, but it is less of a problem today.

In the end, many photographers (myself very much included) want to use an eye-level viewfinder. So how can a viewfinder be implemented differently in the digital era? The solution is the electronic viewfinder (EVF). Unfortunately, most EVFs today are no real match for a good optical viewfinder, but to me, it seems just a matter of future engineering advances. I recently looked through an EVF on an RED film camera and it displayed a great image, though it was also very bulky.

Manual focus can be excellent with EVFs because the EVF can show a magnified portion of the scene and focusing is very easy (even on today's best DSLRs you cannot beat manual focus using live preview).

Digital SLRs also use a mirror box, but for a different purpose—autofocus. Consumer cameras use so-called contrast focus, which works from the sensor's data. Today nearly all contrast-focus systems are slower than their DSLR equivalents.

Micro Four Thirds system

In mid 2008, Olympus and Panasonic, the main companies behind the Four Thirds standard, announced a new Micro Four Thirds standard. It has the same-size sensor

as Four Thirds, but the design is without any mirror box. At Photokina 2008, Panasonic launched the first camera following the Micro Four Thirds standard: the Lumix G1. (Olympus recently launched the second Micro Four Thirds, the E-P1.) Actually, I think the G1 is even more interesting as a camera that shows what we should be expecting in the future from Panasonic and Olympus, as well as their competition.

Here are some of the promises of the new Micro Four Thirds standard:

- Smaller-sized cameras and lenses
- Less weight
- Improved EVFs (or none)
- Improved contrast focus
- Larger sensors than compact cameras
- Fast handling like DSLRs
- Video capability

While the G1 is smaller than all digital SLRs (though some Olympus cameras get close) it is not a compact camera by any means. When you look at a set that includes the G1 with two lenses (14–45mm and 45–200mm, which cover a range of 28–400mm in 35mm terms), the size and weight benefits show very well. The Panasonic-kit lenses are even image-stabilized (more later).

I now carry the Lumix G1 with these two lenses nearly all the time as my light travel kit.

The G1's EVF is clearly a major step forward from all the other camera EVFs I have seen so far. A large DSLR's optical viewfinder provides a still clearer picture but it doesn't provide that great support for manual focusing. The G1 has the first camera EVF that I can live with. At the Photo Marketing Association (PMA) 2009 conference, I looked through a competitor's EVF and it seemed poor in comparison. Clearly Panasonic raised the bar for camera EVFs. As always there is some engineering left to improve.



Figure 1. A Panasonic G1 (left) compared to an Olympus E-3.



Figure 2. A G1 (left) compared to a Canon G9/10.



Figure 3. A G1 with two lenses.

Focus and sensor

The autofocus on the G1 works very well, though not as fast as the best digital SLRs. This is only true with the two kit lenses so far. Some Olympus lenses work in AF but are much slower than the Panasonic lenses. The contrast AF relies on some lens features and the new Panasonic lenses are designed for it. Because Four Thirds lenses have firmware in the lens, some features can be improved later. In fact, Olympus offered firmware updates for some of its lenses so they could work better with the G1 (via a Four Thirds to Micro Four Thirds adapter).

The sensors for the Micro Four Thirds system are much larger than common point-and-shoot sensors, which translates into less noise. Conversely, the usual APS-C sensors and full-frame 35mm sensors are still bigger and create less noise.

The handling of the G1 is excellent and matches good DSLRs. It has good startup time and fast reaction on the shutter due to good AF performance. The G1 features a large swivel LCD that is one of the best in its class (matching the very good Olympus swivel LCDs).

Lens selection

Why would you want interchangeable lenses in the first place? Either you limit the focal range for a zoom or you create so-called “super” zooms (range 10x or higher). The higher the zoom range the lower the image quality. There is no way that, for quality photography, one lens can do it all for everybody. Making zooms with wider apertures also would lead to very bulky designs.

Right now only two dedicated lenses for the Micro Four Thirds system are available. These are both consumer-grade lenses and don't allow the G1 to show what is possible with its sensor. Two more lenses were announced at PMA 2009. One is a 7–14mm *f*/4 lens, which is small and has an great range of 14–28mm in 35mm terms. This is an amazing wide-angle range. I have used the much bigger Olympus 7–14mm *f*/4 lens and just love it. I have to see the quality and also the price to make a proper judgment. But this an interesting lens indeed.

The other lens is a 14–140mm *f*/4–5.8 lens—an attractive range, but the quality remains to be seen. Normally 10x zooms are a major compromise. Still, this lens is very unique because it is built to support video on the new GH1. Panasonic says that this lens features continuous *f*-stops, which provide finer exposure adjustments if moving the video camera. It also should be silent, a benefit given that



San Juan Bautista Stable (using a Leica 50mm M lens).

video also records sound.

On the other hand, the G1 is the only camera that allows nearly all other lenses from other camera systems to be mounted via adapters. Even classic or new Leica M-mount lenses can be attached and work just fine in manual focus.

Note: some of the wide-angle M-mount lenses may produce blurred corners, likely due to a flat angle of light toward the sensor.

Image stabilization

Unfortunately, Olympus and Panasonic use different strategies for image stabilization. Panasonic has it built into its lenses (the Mega Optical Image Stabilizer), while Olympus uses anti-shake sensors. This means that the Panasonic image-stabilization lenses won't stabilize on the Olympus cameras, though a photographer could still use them with image stabilization if Olympus implements sensor anti-shake in their first Micro Four Thirds camera. Alternatively, the excellent Olympus zooms can be attached to the G1 (via a Four Thirds-to-Micro Four Thirds adapter), but don't have IS support.

On another note, clearly the new trend is making hybrid cameras that function as still and video cameras at the same time. The G1 does not support any video, but Panasonic will

soon ship the Lumix GH1, which has all the features of the G1 and supports 1080/24p and 720/60p video. Panasonic even designed the new 14–140mm *f*/4–5.8 lens to feature continuous aperture and silent operation to allow a better video performance.

Conclusion

I find the development of the Micro Four Thirds system and especially the G1/GH1 quite exciting. We need to see more good lenses though. If this were so exciting wouldn't the competition have some answers? At PMA 2009, Samsung showed an early concept camera called Samsung NX that follows the same path. Unfortunately, Samsung hasn't joined the Four Thirds standard and instead has created its own APS-C-based camera. I predict that Nikon and Canon will follow this year or next with their own proprietary solutions. In the long run, the days of cameras with mirrors may be numbered. ■

Uwe Steinmueller is a fine-art photographer and the publisher/editor of Digital Outback Photo (www.outbackphoto.com), an online photography magazine. He has written numerous books on printing, Raw processing, and digital workflow for fine-art photographers.

Turn Down that

Noise

COMPARING THREE NOISE-REDUCTION PROGRAMS—WHICH IS RIGHT FOR YOU?

BY CTEIN

I regularly use several general purpose noise-reduction programs to reduce the noise in my digital camera photographs, my film scans, and in the print scans I do as part of my restoration business. Noise reduction in all its varied forms is a staple of my work. I've tested many and settled on three: Neat Image Pro+, Noise Ninja Pro, and NoiseWare Professional. (I did not test or investigate noise-reduction programs that use camera-specific profiles, of which there are many.) All are available as Photoshop plug-ins and stand-alone apps.

I use all three often enough to say they all have their merits. They all also have substantial differences, and you may very well find that one or more of them suit you not at all, or that one is so perfect for your needs that you don't need to bother with the rest. It's one of those cases where your mileage almost surely will differ from mine.

Customizability matters as much or more to me than the program's default behavior and just what noise-reduction algorithms it uses. I'm always running into situations that require me to customize the noise-reduction settings to get the very best results, so how well a program lets me do that is extremely important to me.

Overly aggressive noise reduction tends to make everything look like it's made of vinyl—smooth, shiny, sharp edged, and completely lacking in surface texture. The plastic look does not appeal to me at all. In almost every case, I didn't care for the results I got using the software's default settings. Most of the time, it was because the plug-in worked too well! It so thoroughly obliterated noise that it wiped out too much fine detail and produced that "vinyl" look that I want to avoid. Hence, simple raw noise-reduction horsepower is a poor measure of quality; I care about how much noise I can eliminate without overly compromising subtle photographic detail.

I tested my three programs on three different cases: a low-noise, low-ISO digital photograph, an extremely noisy high-ISO digital photograph, and low-to-medium-noisy color negative film scans. Before I discuss their performance, here are summary descriptions of the three programs, in alphabetical order:

Neat Image Pro+

Neat Image (www.neatimage.com, Figure 1) was surprisingly easy to use, considering how many control settings there are to play with. I barely had to glance at the quick-start instructions before diving in. That's not an argument against reading the 60-page manual (you'll get a lot more out of the program if you do); rather, it's a compliment on how well Neat Image is designed. Controls have pop-up windows that give explanations of how to use them when you mouse over them.

To generate its noise profile, Neat Image analyzes a

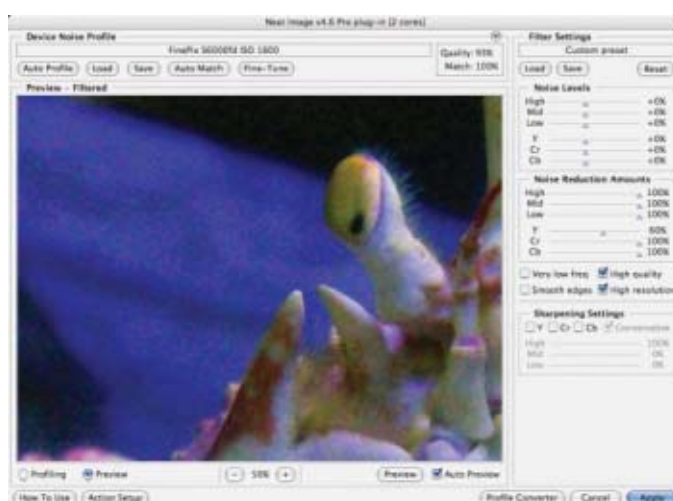


Figure 1. This is the control panel for Neat Image, showing the default filter settings. Mousing over the different controls brings up information boxes telling you how to use them. Neat Image includes a number of setting presets you can experiment with as starting points.

small portion of the image that is free from true subject detail to determine the grain and noise characteristics. If you don't like its automatic selection you can move the selection box to a more appropriate location. Neat Image only analyzes one area in detail, but the Fine Tune button refines that profile based on the entire image.

When you preview the profile's effects, you can alter the filter settings with separate sets of controls for low-, medium-, and high-spatial-frequencies. I frequently find it invaluable to be able to control how much noise reduction and post-reduction sharpening gets applied to different spatial frequencies. You can save the noise profile and settings if you want to use them on a series of similar photographs or experiment with a bunch of different settings to see which ones give you the most attractive final result.

Noiseware Professional Bundle

What impresses me most about Noiseware Professional



Figure 2. Noiseware incorporates an extremely elaborate set of controls that I only touch on in this review. Along with six different control sets (Color Range is shown), there's a set of Profile options and controls (lower right) and parameter-bracketing previews (bracketed sharpening settings are shown).

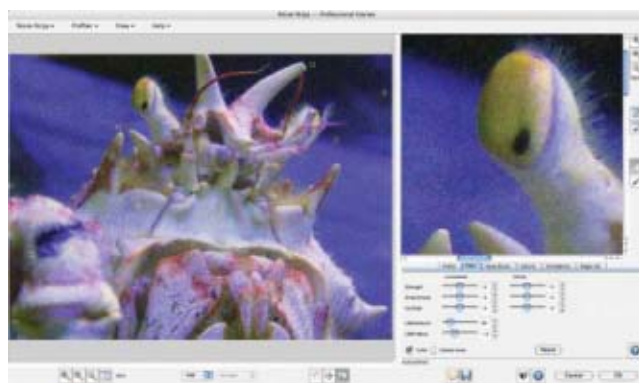


Figure 3. Noise Ninja is a popular noise-reduction program because it's so simple to use and frequently produces very good results with minimal work. It automatically selects which areas of the photograph to analyze (yellow squares shown here) but you can manually choose what regions to analyze when automatic analysis doesn't work well (see Figure 10). It lacks sophisticated filter controls, however.

NONE OF THE PLUG-INS COULD ENTIRELY SUPPRESS THE NOISE WITHOUT SACRIFICING EXCESSIVE AMOUNTS OF DETAIL, BUT THEY ALL TOOK IT DOWN TO A BEARABLE LEVEL.

(www.imagenomic.com/nwpg.aspx) is the huge amount of control it gives me over how noise reduction gets applied. You *will* need to read the manual on this one to use the program to its best advantage. It offers many, many controls for controlling noise reduction. Its best feature is "parameter bracketing," which lets you select any one of the controls and automatically generate up to seven preview tabs with different values for that parameter. Figure 2 shows tabs that bracketed the sharpening strength.

This eliminates most of my trial-and-error fiddling. Comparing bracketed previews allows me to quickly decide what the best setting is for a parameter. Once I settle that parameter, I can pick a different one to bracket around and generate a new set of previews that incorporates the control settings I've established so far. In addition, there seem to be an unlimited number of undos, should I start fiddling with settings more casually.

Of all the noise-reduction tools I've played with, I feel this one gives me the most direct and flexible influence over the results. Because I have superior control over its behavior, I often get better results with Noiseware than any other noise-reduction program I've tried.

Noise Ninja Pro

Noise Ninja (www.picturecode.com/index.htm) is something of a standard in the field, especially amongst digital photographers, because it's very good at creating noise profiles for equipment like digital cameras and scanners. I use it because it often does a good job of noise reduction straight out of the box. The help manual for the program includes a 30-second guide to using it, which is actually sufficient in many cases. The five-minute guide will probably tell you more than you need to know, and hardly any of you will ever read the whole manual.

Noise Ninja (Figure 3) automatically multi-samples the photograph, usually with excellent judgment, but I recommend that you read the sections in the manual on how to manually profile a photograph and use the Brush tool. They're not difficult to use, but you'll want to use them most effectively.



◀ **Figure 4.** This low-noise digital photograph covers an extreme subject luminance range (11 stops), which provides a good test of any noise-reduction program's ability to handle different noise levels in the same image. Noise-reduction programs at their default settings usually erase too much subtle photographic detail. The enlargements at the bottom of this photograph show the original photograph on the left and the default noise reduction with Noiseware on the right. The weave in the chair's fabric abruptly disappears in some places, instead of fading naturally. See Figures 5 and 6 for detailed results.

Noise Ninja would be my favorite program if it gave me more control over how the noise reduction gets applied. For instance, it lacks controls to let me readily fine-tune noise reduction as a function of tone or spatial frequency.

The tests

The low-noise digital photograph is from a Fuji Finepix S100fs 11MP camera at ISO 100. I chose the scene to push the full 11-stop exposure range of this camera; it also turned out to be an excellent test of the trade-off between fine detail and noise. Not surprisingly, the degree and quality of noise varied hugely with the tonal level in the scene, from nearly none in the highlights to moderate in the deepest shadows (Figure 4).

Figures 4b and c illustrate the problem with too-aggressive default settings. The noise is gone, but so is too much of the texture in the fabric on the back of the chair; when the contrast drops below a certain level, it simply disappears in an unnatural-looking way. Figures 5 and 6 show the



◀ **Figure 5.** The big problem with this photograph was achieving a satisfactory level of noise reduction without seriously damaging the finest detail. From top to bottom, these are the best results I got using Neat Image, Noiseware, and Noise Ninja. Noise Ninja did the best job of holding down the grain without producing noticeable dropouts in the fabric texture (with its default settings, yet!), with Neat Image placing second.

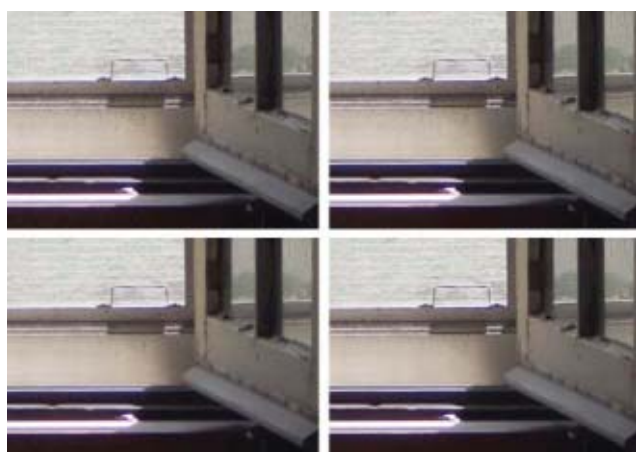


Figure 6. Highlights tell a different story. Upper left is the unprocessed photograph, upper right is Neat Image, lower left is Noiseware, and lower right is Noise Ninja. Noise Ninja sacrifices the most fine detail in the wooden window frame. The other two programs hold that much better. Neat Image would probably be the best compromise choice on this photograph.

best results I got with Neat Image, Noiseware, and Noise Ninja in the shadows and the highlights. In this single test case, Noise Ninja performed best with its default settings. The other two programs performed better with custom settings, shown in Figure 7.

Overall, all three did famously, but the default Noise Ninja retained nicer shadow detail than the other two programs. On the other hand, it did a poorer job holding detail in the light midtones and highlights, where Noiseware was superior.

My high-noise test photo came from a Fuji Finepix S6000fd 6 MP camera at EI 6400 under very unfavorable lighting for color (Figure 8). This may be worse than any photo you'll ever have to deal with, which is why I chose it for my tests. In this situation, none of the plug-ins produced acceptable results at their default settings. Neat Image and Noiseware suppressed almost all the fine detail, leaving a foggy-looking image; oppositely, Noise Ninja had a great deal of trouble automatically detecting the noise and eliminating it.

Custom settings (Figure 9) did a much better job. None of the plug-ins could entirely suppress the noise without sacrificing excessive amounts of detail, but they all took it down to a bearable level. Noiseware arguably did the best job of suppressing grain and retaining real texture, as a result of massive customization of its settings (Figure 10). Noise Ninja did a much better job once I manually selected the regions for it to profile, but it still did the poorest job of the three. Not visible in Figure 9 is how the plug-ins handled the very-low-frequency chroma noise in the broad background areas: Noiseware eliminated it almost entirely, while Noise Ninja dealt with it poorly.

Finally there's the matter of film scans, a subject of

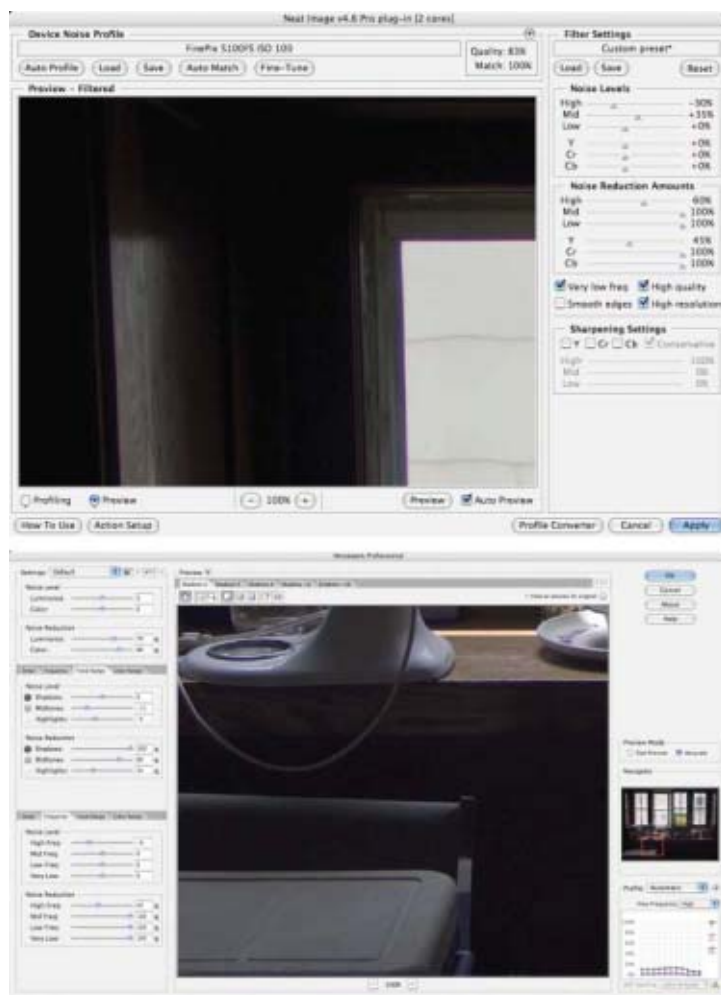


Figure 7. Here are the custom settings I used with Neat Image and Noiseware on Figure 4. With Neat Image, I reduced the effect the program had on high spatial frequencies and dialed back the total amount of noise reduction. In Noiseware, I scaled back high-frequency noise reduction and reduced the amount of noise reduction in the midtones and highlights.



Figure 8. A monstrous case of noise. This EI 6400 photograph contains huge amounts of luminance and chroma noise, exacerbated by the fact that the fluorescent lighting in the aquarium tank wasn't anything like the color balance the camera sensor wanted to deal with.

considerable importance to me as I have a substantial body of work on film. I tried all three plug-ins on several different photographs and didn't get anything like consistent results. Even with the best custom-refining of settings, each of the three plug-ins proved markedly superior in some cases and substantially inferior in others.

Neat Image, in a few cases, produced better results with its default settings than the other two plug-ins did with customized profiles. Usually its results look pretty good "out of the box." Conversely, there were some photographs, like Figure 11, where it did the least satisfactory job of all three plug-ins.

Noise Ninja was easily confused by complicated film images; much as with the high-ISO digital photograph, it had trouble automatically finding the best areas of the photograph to build a profile from. It did much, much better if I selected the area manually. Then it often produced excellent results with less fussing than the other two programs. On the other hand, some scans gave it problems no matter what; it never did a satisfactory job of minimizing the highlight noise in Figure 11 unless I turned the strength high enough to seriously degrade fine detail.

The great adaptability of Noiseware meant that it was less likely to leave some noise unreduced or completely wipe out fine detail. With the other two plug-ins, there would

frequently be some tonal values or some region of the color space where they didn't function very well. Conversely, Noiseware rarely produced overall better results. There were always exceptions, however; Figures 11 and 12 represent a case where I feel that Noiseware did the best job of holding

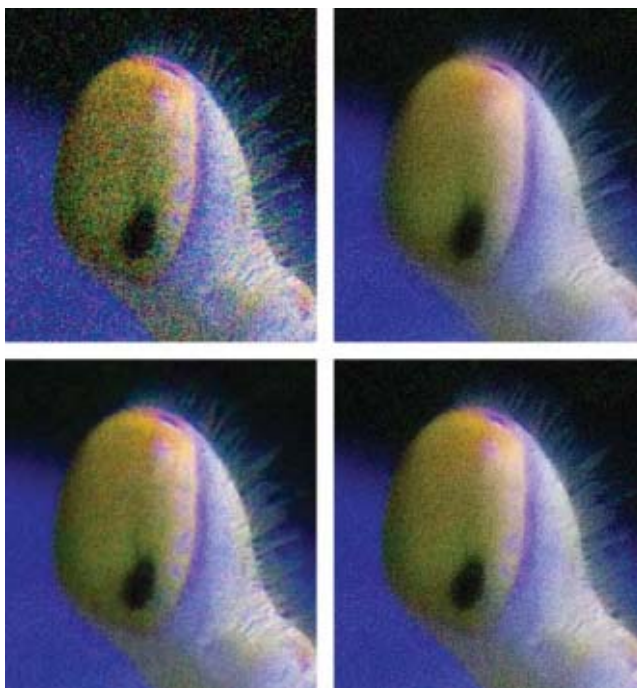


Figure 9. Customized results from all three programs. Upper left is the unprocessed photograph, upper right is Neat Image, lower left is Noiseware, and lower right is Noise Ninja. Each of them has their strengths and weaknesses, but overall Noiseware did the best job of suppressing noise, especially large-scale chroma noise (not visible in this extreme close-up) while retaining some sense of texture and detail in the eye stalk.

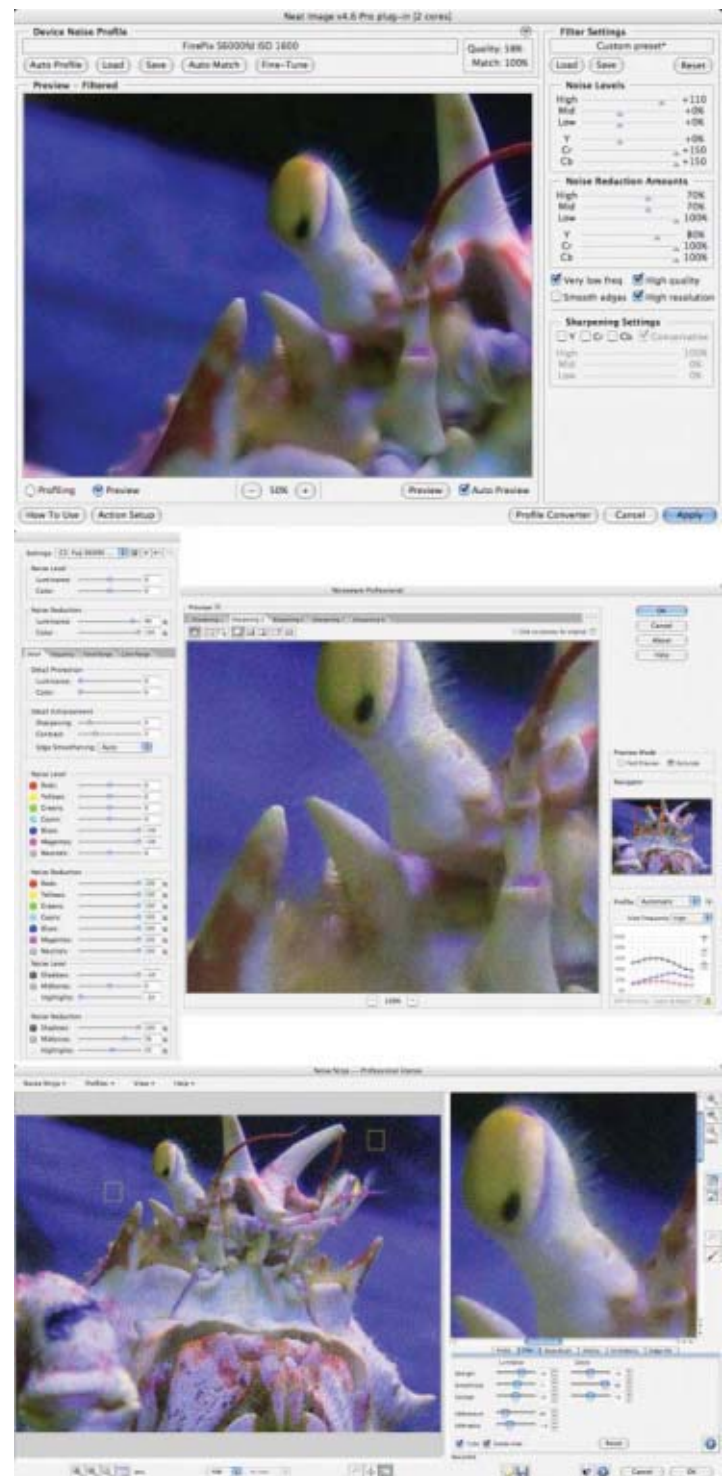


Figure 10. My customized control settings for Figure 9. Note in particular how many different types of controls I used in Noiseware to get the garbage under control. I used manual profiling to select which parts of the image Noise Ninja should concentrate on.



◀ **Figure 11.** *This medium-format color negative scan proved challenging for all three plug-ins; the noise varies considerably with color and there's a lot of noise in the delicate highlights that is difficult to suppress without wiping out the detail.*

the visual qualities of the original while reducing the amount of grain.

Well, I doubt that you expected me to come to some sort of definitive conclusion about the superior program. After all, I said at the beginning that I used all three of these regularly. What I think sets them apart is the very different sorts of controls they give you over noise reduction. Collectively, there's just about no noise problem I can't tackle. ■

Ctein has been a writer and fine printmaker for 30 years, and is one of the few remaining expert dye transfer printers. His books DIGITAL RESTORATION and POST EXPOSURE—Advanced Techniques for the Photographic Printer, are available from Focal Press. Autographed copies may be purchased and his photographic work can be seen online at ctein.com.



Figure 12. *From left to right: the unprocessed scan, Neat Image, Noiseware, and Noise Ninja. Noise Ninja had trouble getting rid of the highlight noise; Neat Image dealt with it better but lost quite a bit of sharpness. All around, Noiseware did the best job on this photograph, although it couldn't suppress noise in the reds as well as Noise Ninja.*

PHOTOGRAPHY MYTHS

BY DICK DICKERSON & SILVIA ZAWADZKI

Perfecting Digital-Tone Reproduction

A SHORTCUT TO BETTER DIGITAL PRINTS



In the July/August 2009 issue of *PT*, we discussed the Ideal Tone-Reproduction Curve, a product of research conducted more than a half century ago that identifies, for a scene element of any luminance value, the shade of gray (reflection density) at which it is “best” reproduced in a black-and-white print. We also raised the question of how readily this ideal tone-curve is achieved in a purely digital workflow—the subject of the present article.

▲ *Photoshop and an understanding of the Ideal Tone-Reproduction Curve allow photographers to force an image to print out with an “ideal” tonal spread. Unfortunately, it proved hard to illustrate that in a magazine. Scanning the “ideal” print would add the scanner’s curve to the equation, and the process of printing the magazine itself adds another curve. The only place you can genuinely “see” ideal tone reproduction is in an original print.*

With the magic of Photoshop, any kind of tone reproduction can, of course, be realized with exacting precision. But what is inherent to digital in the absence of any manipulations? To answer this, we created a tone-reproduction curve for comparison with the ideal, using an inexpensive digital camera, inkjet printer, and photo-quality inkjet paper—no adjustments to the JPEG prior to printing, no printing profiles, just a

straight print of an as-captured image.

Creation of this digital tone-reproduction curve first requires construction of a camera’s characteristic curve as explained in the March/April 2009 edition’s Characteristic Curves for Digital Cameras. That article described how to characterize a digital camera in terms of the relation between camera exposure and brightness value (BV, on a scale of 0 to 255) of the resultant

image on screen. The curve derives from photographing a uniform card, such as an 18% gray card, over a wide range of exposures, spaced in one-stop increments, sufficient to create a series of frames ranging from BV= 0 to BV= 255 and plotting their BVs in one-stop increments on an arbitrary Log E axis. This graph serves as a reconnect between the world of digital and the characteristic curves we knew in the silver era. In the digital world it is also known as an opto-electronic conversion function (OECF) and is discussed extensively in ISO 14524:1999(E).

Camera characteristics

Figure 1 illustrates the characteristic curve unique to the camera we used for the experiments described in this article. We then used the data from this curve to construct a new image in Photoshop, illustrated in Figure 2. This image contains a series of patches having the same BVs as the data points in our camera curve (Figure 1). Select a printer, paper, and printer settings, print this image, and read the reflection density of each patch with a densitometer. Plot those densities against the same arbitrary Log E axis used previously and the result is a tone-reproduction curve for that specific combination of camera, printer, paper, and both camera and printer settings. Note that in this and the following two graphs we have subtracted Dmin from all density readings prior to plotting them. We did this to avoid the visual confusion of graphs being vertically offset due to differences in Dmin.

So does it look anything like the Ideal Tone-Reproduction Curve that resulted from that decades-old research in the wet darkroom? Plot the ideal curve on the same graph as the new digital-tone curve. Adjust its position horizontally such that the actual and ideal curves overlap as much as possible through the middle grays. This is what we have done in Figure 3. We were frankly rather astonished at the agreement, especially given that we had used a combination of a rather inexpensive camera, printer, and paper to generate our digital-tone curve. The treatment of midtones, ideal versus digital, is almost indistinguishable. Digital highlights are lighter than ideal as is to be expected from an inexpensive camera of limited dynamic range. There are differences in the shadow end of the scale, which are largely attributable to the difference in maximum densities for the two curves. As noted in the previous issue's discussion of the ideal curve, such differences are of little significance.

In truth, this was not the only camera-printer-paper combination we looked at. But it did afford tone reproduction closer to the ideal curve than any other combination. Several others were moderately close to the result in Figure 3, but a disturbing number, even some incorporating the printer and paper manufacturer's recommended printing profiles, were really rather bizarre.

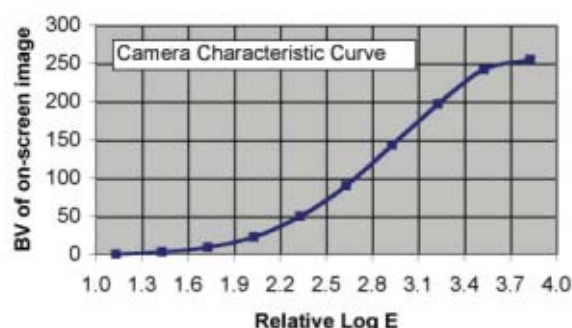


Figure 1. Camera BV-Log E curve.

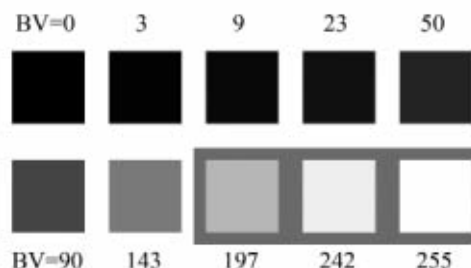


Figure 2. Tone reproduction image.

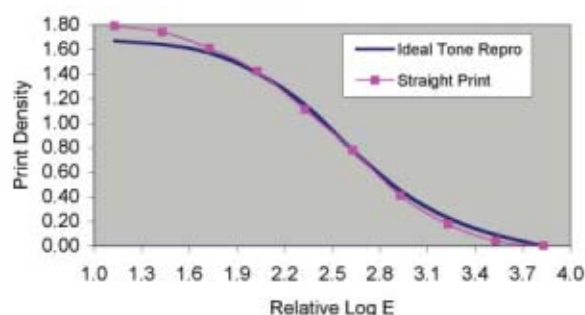


Figure 3. Tone reproduction of straight print versus ideal.

Could the good fit illustrated in Figure 3 be made even better? And would it serve as a path to better prints? Indeed, it is possible to make a single adjustment in Photoshop's Curves dialog to secure a tone reproduction that is a nearly perfect match to the ideal. To do this we need one more piece of information, that being the relation between screen image BV and print density.

The former is the same set of numbers (BV's) that appear in Figure 2. The latter is the set of print densities that resulted from printing Figure 2. Plot one against the other as illustrated in Figure 4 to create a tool that allows any density mismatches, actual vs. ideal, to be converted to BV mismatches, the values needed to create a correction curve in Photoshop. Carefully compare the two curves, actual and ideal, of Figure 3, jot down any density mismatches, and use Figure 4 to convert them to BV mismatches. Open an

PHOTOGRAPHY MYTHS

image as well as a Curves dialog box in Photoshop and insert some points on the curve. Type an original BV (the one that yielded the “wrong” print density) in a point’s Input box, and in the Output box enter the new value of BV that will force the correct print density. Save this curve. Applied to any image captured with the same camera, printed with the present printer and paper, it will always produce a print with “ideal tone reproduction.” We applied this correction curve to our image of Figure 2 and reprinted it. The results are displayed in Figure 5. The solid curve is once again that for Ideal Tone Reproduction; the data points are the densities read off of the corrected print.

Curves and their consequences

At this point we were eager to set the curves aside and explore their pictorial consequences. We selected an assortment of outdoor images, both pure scenics and people pictures, made with the camera referenced here in auto-program and normal contrast modes. After conversion to grayscale, we printed them both with and without benefit of the adjustment curve and compared the pairs side by side. Conclusion? We felt the prints made with the Curves adjustment to force the ideal tone reproduction defined by those researchers of yesteryear were consistently superior to unadjusted straight prints.

Of course, who is to say that original ideal tone curve

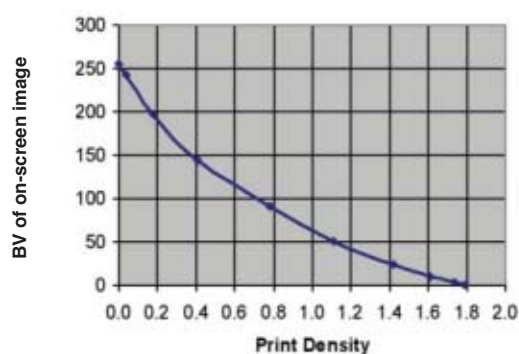


Figure 4. Relating screen image brightness to print density.

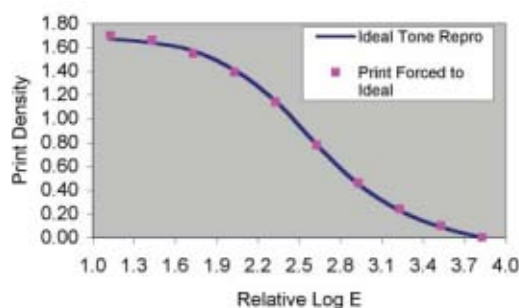


Figure 5. Forcing ideal tone reproduction.

from so many years ago is really ideal? The ability of those researchers to illustrate various curves in their quest for the ideal was constrained to a degree by the photographic materials available to them. Perhaps with a film or paper of slightly different curve shape they would have come to a slightly different conclusion? Then there is the whole issue of cultural preferences. A few years back we attended a photo show in Moscow and were struck by how dark and ponderous all the exhibition prints were to our eyes. The classic ideal curve may well be very close to ideal for many, but it is likely not a universal standard.

These thoughts prompted us to explore some variations on the presumably ideal curve with attention focused on the midtones those earlier researchers noted as especially significant. Figure 6 again displays the ideal curve (dotted), and it is flanked by a pair of hand-drawn curves that slightly raise and lower the middle portion of the ideal curve. Using the procedures described above, we created curves in Photoshop that would force these modified tonal relations on prints and again reprinted the image of Figure 2. The solid curves in Figure 6 are the ones we sketched by hand; the data points represent the actual densities read off our new pair of prints. Satisfied we could force these alternative tonal responses with our new adjustment curves, we applied both of them to the same assortment of images as before. Prints representing Figure 6’s lower curve were, in our estimation, uniformly inferior to those reflecting the ideal curve. Prints with the upper curve, however, suggested that something between it and the ideal would furnish better prints than the ideal for about half of the images. We recognize that our limited evaluation involved only a few prints, whereas the original research of long ago involved 170 scenes, so we do not suggest that a curve slightly higher in the midtones truly represents an all-purpose improvement.

So what do we take away from this exercise?

- The Ideal Tone-Reproduction Curve as defined many years ago remains perfectly valid today, in our eyes.
- A digital workflow, absent all image manipulation, can, even with inexpensive equipment, deliver prints

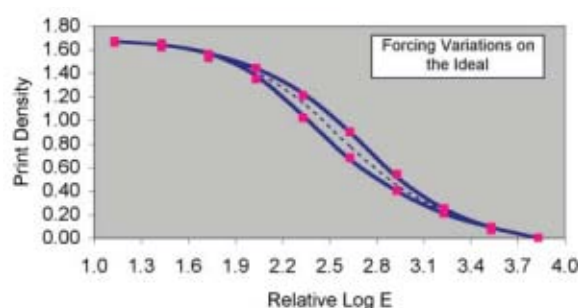


Figure 6. Exploring alternatives to the ideal curve.

surprisingly consistent with the ideal curve.

- At the same time, we looked at many printer-paper combinations which were disappointingly far removed from the ideal.
- To the extent a particular camera-printer-paper combination misses the ideal for tone reproduction, a correction curve can be created in Photoshop to force the ideal tonality.

New correction method

Lastly, the correction curves we built to compel ideal tone reproduction with various cameras and papers open the door to an alternative way of working. Our usual workflow with a new image ultimately destined for printing is to open it in Photoshop, immediately apply adjustments as we visually deem appropriate, then print it—hoping WYSIWYG (what-you-see-is-what-you-get) prevails and we

like the print. Our new alternative is to open the new image, apply the appropriate standard correction curve to it, make a print, and use our assessment of this print's appearance to decide what kind of further image manipulation in Photoshop is indicated. This approach feels more like the good old days when we would make a properly exposed straight print of a new negative and mark it up with a grease pencil to identify areas for burning, dodging, hot spotting, and so on.

Readers who might like to pursue these tactics with their own cameras, printers, and papers need a copy of the Ideal Tone-Reproduction Curve to serve as a reference. In the table in Figure 7 we present a listing of data points for construction of this curve. This example is specific to a curve with a maximum density of 1.67. Should you prefer a different value of Dmax, our July/August 2009 column

Figure 7. Ideal Tone Reproduction

Relative Log E	Print Density
3.83	0.00
3.53	0.09
3.23	0.23
2.93	0.45
2.63	0.78
2.33	1.15
2.03	1.41
1.73	1.57
1.43	1.64
1.13	1.67

noted that the ideal curve pertained to a variety of Dmax values, the first seven data points of the table being common to all of them.

Dick Dickerson and Silvia Zawadzki are retired Kodak black-and-white product builders who have authored numerous articles for PT. They can be contacted at querybw1@aol.com. Dick and Silvia reside in Rochester, NY.

PHOTO Techniques is branching out

Join our lively discussions



PHOTO Techniques magazine
discussion group



search PHOTO Techniques magazine



e-newsletter

Sign up to receive valuable tips at
www.phototechmag.com

Check out **PHOTO Techniques**
digital version
at
www.phototechmag.com

MARKETPLACE

To advertise in *Marketplace* call: Charles Pachter 847-647-2900 Ext. 1331

Photo Safari trips around Colorado, the West and around the world. Fascinating places, landscapes, nature and people.

Jonsheppardphotography.com
970-949-9131
P.O. Box 18101 Avon, CO. 81620

OMNI-BOUNCE
Used by Professionals around the world, to achieve soft natural lighting with most of the popular brand flash units. Ideal for wide angle shots, macro work, portraits and news coverage. Custom mounting with no Velcro required. Specify your strobe when ordering.
Only: \$19.95 + \$2.50 shipping. Visa & Mastercard
STO-FEN PRODUCTS • 800-538-0730
P.O. Box 7609, Santa Cruz, CA 95061, USA
www.stofen.com



Antec, Inc
Chemicals & Laboratory
Supplies for Businesses,
Photography, Schools and
Hobbyists.

"We specialize in small quantities"

All major credit cards and
PayPal accepted.

(502) 636-5176
Fax (502) 635-2352
Website: www.kyantec.com
E-Mail: info@kyantec.com

721 Bergman Street
Louisville, KY 40203

Subscribe to
PHOTO Techniques
on the Web
www.phototechmag.com

preston contemporary art center



2009 Summer Exhibition
Friday, July 10 – Sunday, September 27, 2009

Artists

Myriam Lozada-Jarvis
Arturo Loya
Diane McGregor
John Ochs
Allison Renshaw

1755 Avenida de Mercado, Mesilla, NM 88046
575-523-8713

www.prestoncontemporaryart.com



RIES TRIPODS

200 years of
Weston family experience
Edward • Brett • Cole • Kim

See Kim Weston's photography at:
www.kimweston.com

RIES TRIPODS & HEADS
Tel: 206-842-9558 • www.riestripod.com

AD INDEX

Adorama Camera, Inc.	C3
www.adorama.com	
Adventure-Space.com	13
www.Adventure-Space.com/PhotoContest	
Alien Skin Software	C4
www.alienskin.com	
Antec, Inc.	48
www.kyantec.com	
Anthropics Technology Ltd.	C2
www.PortraitProfessional.com	
Darkroom Automation, Inc.	4
www.darkroomautomation.com	
Delta 1/C.P.M., Inc.	4
www.cpmdelta1.com	
HP Marketing Corp.	5
www.hpmarketingcorp.com	
Jon Sheppard Photography	48
www.jonsheppardphotography.com	
Mesilla Digital Imaging Workshops	13
www.mesillaworkshops.com	
Preston Contemporary Art Center	48
www.prestoncontemporaryart.com	
Preston Publications	47
www.phototechmag.com	
Regal Photo Products, Inc.	3
Ries Industries	48
www.riestripod.com	
Sto-Fen Products	48
www.stofen.com	

Searching for Serious Photographers

PHOTO Techniques (PT) is conducting a search among its readers for serious photographers whose technical expertise, artistic vision, and philosophy demonstrate a commitment to photographic excellence. Selected photographers will be featured in future *PT* promotional materials that let our advertisers know something about our readers. You will be doing us a voluntary unpaid favor that will be greatly appreciated.

Interested readers should visit www.phototechmag.com/serious to download a form for submission and to see a sample promotion. Please submit your entry with complete contact information including telephone number, email address, a biographical sketch, a short statement explaining your involvement in photography, the importance of high-quality equipment in your work, and how *PT* helps you perfect your craft. Please include several samples of your work.

THE ULTIMATE IN PHOTO SHOPPING: adorama.com

14 Day Money Back GUARANTEE Please check our website for details



FREE
Shipping

On Thousands
Of Products
See our web site



DIGITAL PRINTERS



WIDE FORMAT STYLUS PRO 7880

Portrait ED, 24"
Wide 8 Color
UltraChrome
K3 Inkjet
Printer, w/One
USB 2.0 & One
10/100 BaseT
Ethernet Interface



SCANNERS

EPSON® Perfection V750-M

Pro Photo
Flatbed
Scanner



Check Our
Web Site For
The Complete
Line of Epson
Scanners

Canon



PIXMA Pro9000 Mark II

Photo Inkjet 8 Color Printer with USB
& Direct Print Port Interfaces, Supports
Fine Art 13" x 19", f/Mac & Windows.

hp HEWLETT
PACKARD
Photosmart B9180



13" Photo Inkjet Printer with USB &
Ethernet Interfaces, Mac & Windows

Kodak
Easyshare ESP 5



All-In-One Inkjet
Printer with USB Interface
for Mac and Windows

hiti S420



Passport Photo Printer with
2.5" LCD Controller & USB Interface,
403 x 403 DPI, for Mac & Windows.

Nikon.
Super Coolscan
5000-ED

35mm
Film
Scanner
with USB
2.0
Interface



Canon
CANOSCAN 5600F

Flatbed
Scanner, 4800
x 9600 dpi,
8.5" x 11.7",
USB 2.0
Interface for
Windows
and Mac OS



IRAIUN
PHOTO TECHNIK

Multimag 4000

for 35mm Transparencies, with
Digital Ice Technology,
USB & Firewire
Interface,
for Mac &
Windows.



PACIFIC IMAGE
ELECTRONICS

PrimeFilm 7250 Pro3

35mm Film
Scanner
7200dpi
USB 2.0 &
Firewire Interface



[VuPoint]
Solutions

PS-C500

Solutions PS-C500-VP Photo Digital
Flat Bed Scanner with 2.0 USB
Interface, Scans up to 5" x 7" Photos,
for Windows.



**MAKE SURE to check our
web site for a full line of:**

- MP3 Players
- GPS
- Cell Phones
- Computers
- Home Office
- Astronomy
- Video
- Optics
- Printers
- Etc.



WWW.ADORAMA.COM

INK JET PAPER

**PREMIUM INKJET PAPER
AT ECONOMICAL PRICES**

Improve the output of your inkjet printer and the appearance of those treasured memories!
Choose a top quality high-grade inkjet paper that will never let you down.
Whether you select a ProJet paper for everyday use or one of the ProJet Elite papers with over
20 special surfaces, we have a paper that will make you proud of every image you print.
Although all your photos will look like a million, only you will know how much you saved!

Some of our popular surfaces include:

- | | |
|-------------------------|---|
| Double Sided Matte | Royal Satin.....Portraits |
| Double Sided Card Stock | Linen Texture.....Portraits and Fashion |
| Photo Gloss | Velvet Smooth.....Fine Art |
| Double Sided Glossy | Silver Mirror.....Metallic Shots |

SIZES FROM: 4x6" up to 17x22" Sheets and in Rolls

For a complete listing and prices **WWW.ADORAMA.COM**

ProJet



Customer Relations: 800-815-0702 • 212-741-0466
Mon-Thurs. 9-4:30, Fri. 9-1, EST
FAX # 212-463-7223

ADORAMA INC.
Source for the **Educated Photographer**

STORE: 212-675-6789
Store & Mail Order Hours: Mon.-Thurs. 9-7:30pm
• Fri to 3:30 (Store till 2:00) • Sun. 9:30-5:30



beautiful enlargements

beauty Blow Up 2 is a Photoshop plug-in that produces enlargements dramatically sharper than any other software, especially Photoshop! Simulated texture and film grain keep your photo looking natural even when you need an extreme enlargement. Blow Up 2 can even clean up JPEG compression artifacts when a client insists on using a low quality source image.

brains Blow Up 2 simplifies all aspects of preparing photos for printing. Cropping and resizing at the same time are easily handled by presets for common output sizes. Batch processing is built in and simple to use. Sharpening adapts to match the degree of enlargement and paper type.

technology Blow Up 2 takes advantage of multi-processor and multi-core systems to make rendering go as fast as possible. Blow Up 2 can handle the most sophisticated images demanding professionals can throw at it, including CMYK color space, 32-bits/channel HDR images, and output up to 300,000 pixels on a side.

VISIT www.alienskin.com FOR INFO, EXAMPLES, AND A FULLY FUNCTIONAL 30-DAY DEMO.

© 2009 Alien Skin Software, LLC. All rights reserved. Blow Up and Alien Skin Software are registered trademarks of Alien Skin Software, LLC. All other trademarks, including Photoshop, are trademarks of their respective owners.

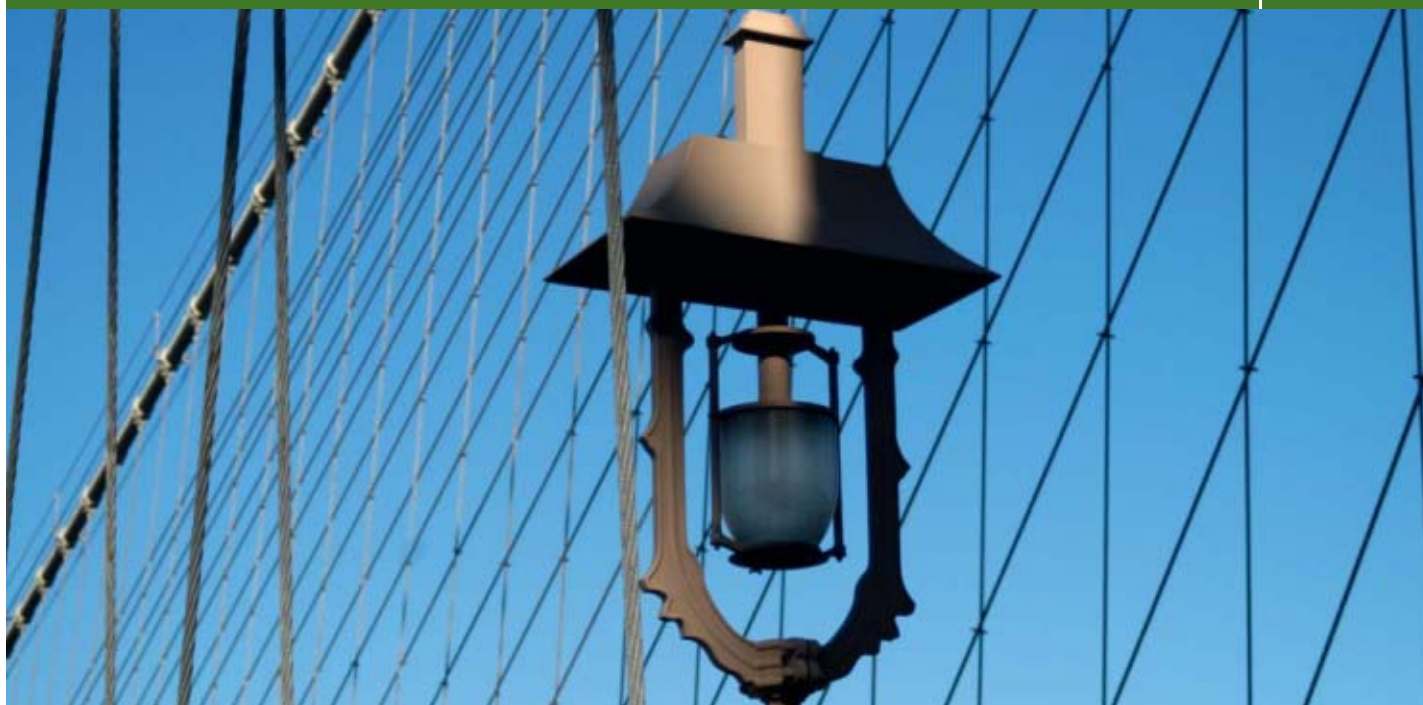


BLOW UP

Exclusive for *PHOTO Techniques* Digital Readers

We're delighted this issue to provide our digital readers with an excerpt from the book *Printing with Adobe Photoshop CS4*, by Tim Daly, published by Focal Press. The article offers valuable tips for getting inkjet prints that look like what you see on your monitor through the use of soft proofing.

* CHAPTER 13



Preview and Soft Proofing

Soft-Proofing Essentials

If you're constantly disappointed by inkjet prints that don't look anything like the image on your monitor, you should use CS4's soft-proofing functions.

In digital photography, one of the hardest issues to resolve is the difference between the image displayed on your monitor and the same image printed out from your desktop inkjet. Although created from exactly the same data, they are presented via two very different kinds of device: the transmitted light of a monitor and the reflected light of a print. In short, never the two shall meet.

If you'd rather not gaze into a crystal ball to foretell your printed outcomes, there is a much more sensible way of keeping sight of the end, but you need to remember the golden rule of accurate printing: proofing and preview

*Printed with permission from Focal Press, a division of Elsevier. Copyright 2009.
"Printing with Adobe Photoshop CS4" by Tim Daly. For more information about this title and other similar books, please visit www.focalpress.com/photoshop.

Printing with Adobe Photoshop CS4



This example shows a vivid color image (top), which printed out with much less color saturation (bottom). Using Photoshop's soft-proofing tools can really help you to predict unexpected changes before wasting expensive ink and paper.

equals prediction. So, if you are confident that your monitor calibration technique is presenting a neutral colored work surface, you'll be pleased to know that Photoshop can be used as an accurate tool to predict how your print will emerge. Developed from the cost-conscious world of lithographic printing, the method of soft proofing allows you to see into the future and save the waste of ink, paper, and valuable time. Before the advent of soft proofing, the only way that lithographic colors could be tested was by making a handful of test prints called wet proofs.

As you edit your way through a complex creative imaging project, your visual senses are fully aware at all times of the job that needs to be done. Yet, although your imaging application can tell what kind of printer it's targeting, how can it best prepare your file if it doesn't know the kind of ink or paper combination that you are intending to use? With such a wide range of print media now available, giving very different end results from the same image file, it's essential that you and your application can package your file for best performance.

Most reproduction shortfalls occur in the blue/purple parts of the spectrum, as CMYK inks can't match the vivid values of RGB.

Called a soft proof, this innovative feature in Photoshop creates a virtual or simulated prediction of the final paper print that is displayed on your screen for the ultimate convenience. Found in recent versions of Photoshop 7 and CS, the function is an enhancement of the much more basic CMYK preview mode, which has been present in the application over the last 10 years. To say that working in the RGB color mode is like saying ignorance is bliss might be looking at it too simplistically, but it can give you a false sense of security to think that all your color work in RGB will effortlessly translate to your printers available color palette, because it won't.

In CS4, the Proof Colors view enables you to have the best of both worlds: you can still work unhindered in full color palette RGB mode, but your visual results on-screen will be adjusted to predict the likely outcome on your chosen printer, paper, and ink combination. In short, if the rich purple filter effect that you've added to a sky won't print out on the kind of paper you are using, your monitor image under Proof Colors view won't let you see what you're not going to get.

With most input and output devices sold with their own unique color profiles to help manage the accurate translation of color from one to the next, you'll be surprised to know that there are profiles available for specific printer, ink,

Preview and Soft Proofing



and paper combinations. Even more amazing is the news is that you probably already have a few loaded into your imaging application without knowing it.

With printer manufacturers keen to facilitate the use of their brands of paper and ink, so output profiles are provided as part of any standard printer software. Loaded invisibly into Photoshop each time a new bit of printer software is installed on your machine, these profiles are there to provide extra help as you work. Providing that you keep within the range of media combinations supported by the profiles, you can always get an accurate monitor simulation of the likely end result. For third-party media manufacturers whose profiles are not carried with printer software, such as Lyson or Hahnemuhle, many offer free profiles to accompany your printing from their Web sites as tiny downloads for your convenience.

In use, you'll detect very little color change if you are working with a soft proof for shiny bright white papers and standard inksets, but this changes dramatically when pigment inks and no shiny media profiles are used. Best of all, if you enjoy experimenting with print on very absorbent media such as archival cotton surfaces, you can prepare your file with the right tonal range to suit the media by doing all your editing with the Proof Colors setting left switched on. Preparing your files with lighter midtones and much less dense shadows can really help to make your final print display more detail and more atmosphere.

Printing with Adobe Photoshop CS4



Proofing and Ink Type

The more inks you have in your printer, the more colors you are able to mix on your chosen printing paper. The new High Dynamic Range inks from Epson provide a super-wide range where very little colors are “lost” through the soft proof.

Basic inkjets with three or five colors will display significant differences between the nonproofed RGB image and the same image under soft-proofed conditions.



Setting Up the Soft-Proof Function

Open your image and do View > Proof Setup and then choose the Custom option. You’ll notice other options below, based on CMYK litho, but these are intended for use only by commercial printers.

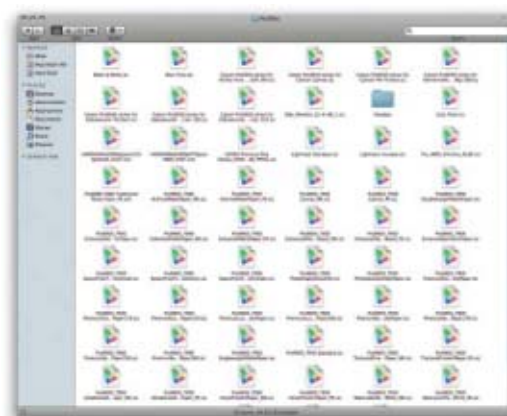
Choose Your Profile

Click and hold the Profile Pop-up menu until the entire list pops up on your desktop. Scroll down and opt for the printer and paper profile combos. This example was set to an Epson 9900 printer with Velvet Fine Art paper.

Preview and Soft Proofing

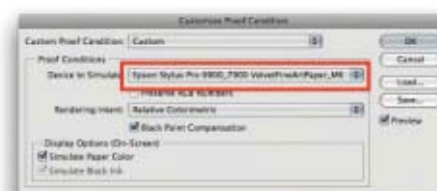
Output Profile Location

Many output profiles are loaded automatically when a new printer driver is installed. On an Apple OSX system, the profiles are loaded into the Library > ColorSync > Profiles folder, as shown right. Unfortunately, there are also a whole load of other profiles in there, too, including generic color spaces and monitor profiles.



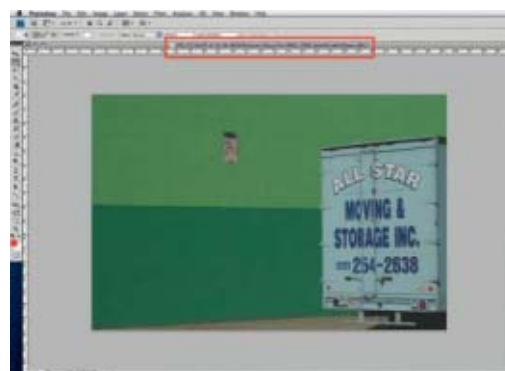
Choose Your Settings

Make your dialog box look like this. Deselect Preserve Color Numbers option if checked, and set the Intent to Relative Colorimetric, the most commonly used method for photographs. Finally, choose Paper White and Black Point Compensation.



Viewing the Soft Proof

Once completed, press OK and your dialog will disappear, leaving you with the proof visible on-screen. These two examples below show the same image under different proofing conditions. Below left is without the Proof Colors options and below right shows it switched on. The difference is enormous.



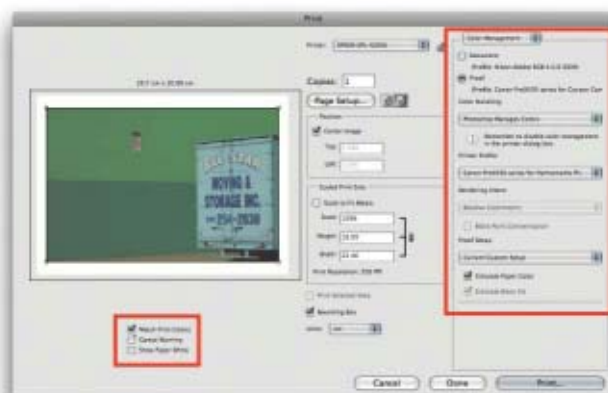
Printing with Adobe Photoshop CS4

Switching the Soft-Proof Option On and Off

With the View > Proof Colors function not set up, the desktop image is now shown with a completely different color balance and much reduced white highlight. The highlight change has accounted for the softer white of the target paper rather than the full-on white of your monitor screen. To view your soft proof, do a Ctrl/Command + Y to turn it on and the same to turn it off again, perhaps when working on a different project aimed at different paper. If you forget if it's switched on or off, then take a look at the top of the image window. Once selected, the name of the profile will be shown next to your document name following a forward slash.

Match Print Colors Option in the Print Dialog

In CS4, you can also view the same soft proof in the Print dialog, by choosing the Match Print Colors option, as shown below.



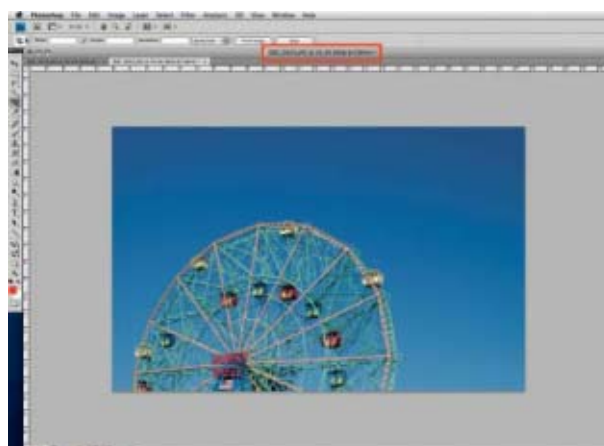
Preview and Soft Proofing

Proofing in Working CMYK View

If you need to work in the true CMYK mode, you'll notice that many of Photoshop's functions and features become unavailable. Yet, there's a simple way around editing files for CMYK output: simply use the CMYK Proof mode. In this way of working, your image file remains in the RGB color space throughout but is constantly previewed as the likely results of final CMYK conversion. Document sizes remain unaltered and you have all the access to Photoshop's editing tools from creatively processing your image files. CMYK files are drawn from a much smaller color palette compared to RGB, and this frequently causes disappointing repro results. With the proof function in use, your image won't display a color or saturation value that can't be be matched in the CMYK color mode.

To set this soft-proof view up, choose View > Proof Setup > Working CMYK. The image will now be displayed as a soft proof tied to the CMYK variant that you have set up in CS4's Color Settings, in this example US Web Uncoated, as shown right.

Like desktop printer profiles, colors under the Working CMYK will appear more muted.



Printing with Adobe Photoshop CS4

Gamut

If your printouts never look as good as they do on the monitor, it's probably because you are trying to achieve the impossible.

A computer monitor displays color in a fundamentally different way to the way a printer outputs colored ink on paper. The monitor transmits richly saturated colored light via RGB phosphors, but printouts reflect less vivid colors. Each station in the capture, processing, and output of a digital photo has its own unique range of colors called a gamut, better imagined as a palette. When an image is transferred from one stage to another, colors can reproduce with less saturation than expected or even translated into different color altogether. If you've frequently been disappointed by the difference between printout and display, it's because you are trying to exceed the range or gamut of your ink and paper combination. Yet, by using Photoshop's Gamut warning functions, you can make a better prediction of potential mistakes before you waste paper and ink. Photoshop allows you to increase the color saturation of an image very simply, but this will never translate to your printouts with the same intensity. These overambitious colors are detected by switching on the Gamut Warning option found in the View menu. Once switched on, the Gamut Warning option is left on for the duration of your work in progress and works by tagging all colors unlikely to print as they appear, a drab gray color. This gray is not embedded in your image file but acts purely as a marker and won't print out. As you work steadily throughout your project, the Gamut Warning will show up only when you try and stretch color saturation or use special color palettes such as the Pantone ranges, which frequently can't be reproduced by inkjet printers. It's a much better idea to have the Gamut Warning selected from the outset, because smaller problems can be dealt with on the spot rather than trying to tackle an insurmountable problem at the very end of your work. In addition to marking problem colors, Photoshop also offers several methods of changing these colors into values that will print out properly. For this project, we will use the Replace Color dialog found under the Image > Adjustments menu.

Preview and Soft Proofing

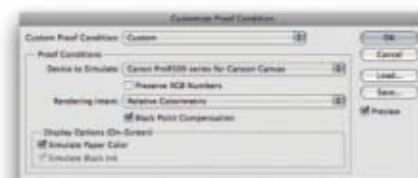
Switching the Warning On

Open your image and before making any color balance corrections or color enhancements, turn on the Gamut Warning, found under the View menu.



Remember What You Are Proofing To

The Gamut warning tags out-of-range colors, but this is always linked to your current choice in the Proof Setup menu. In this case, the Device to Simulate is a Canon Pro9500 with Canson Canvas.

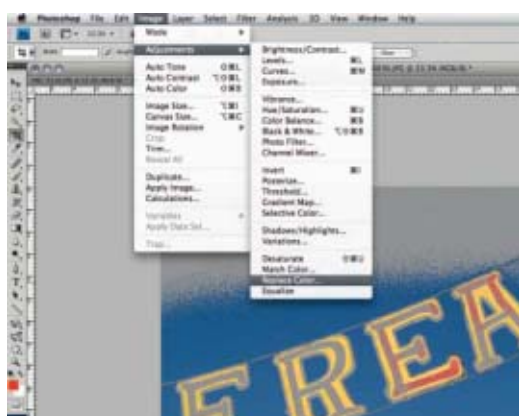


View the Out-of-Range Colors

When the Gamut Warning is switched on, every color that lies outside the range of your chosen printer/paper/ink combination will be tagged with a gray color, as shown right.

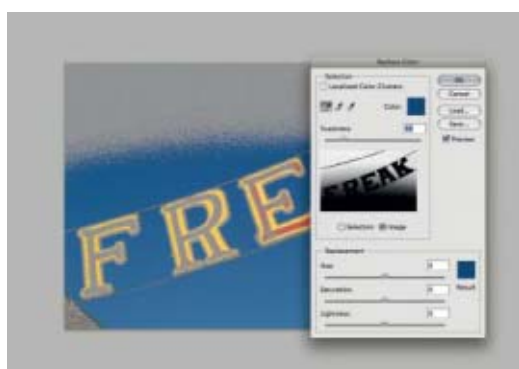


Printing with Adobe Photoshop CS4

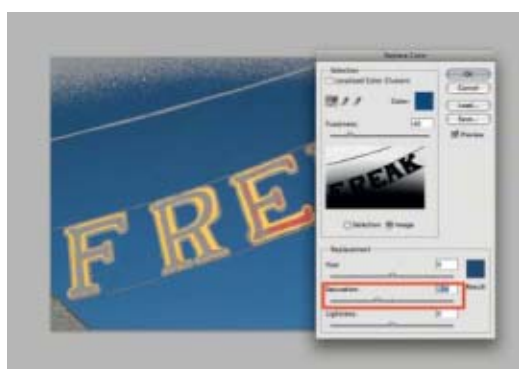


Curing the Problem

Open the Replace Color dialog and move it to one side of your desktop, so that you can see the tagged colors.



Use the dropper tool and click into the gray area of your image, and then push the Fuzziness slider until all of the gray has been selected.

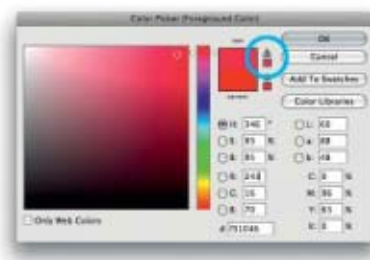


Next, move the Saturation slider to the left and watch the gray marker disappear. Click OK. If you haven't managed to remove all the gray, return to the Replace Color dialog and repeat the process, but this time sampling a different gray area. To remove the marker from the reds, Hue, Saturation, and Lightness sliders were moved slightly until the warning disappeared. Once removed, what you see is what will print.

Preview and Soft Proofing

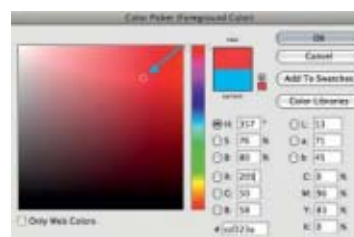
Choosing Safer Colors from the Picker

If you want to work with printer-safe colors at the end of a brush, you can use another of Photoshop's Gamut functions found in the Color Picker dialog box. When searching for colors that will print as you see them on-screen, make a normal selection by clicking into the color box. If a tiny red triangle appears, shown here inside a blue circle, this means your selection is out of gamut.



Modifying Your Choice to Fit in Gamut

You can change this into the nearest printable value by clicking on the tiny triangle itself. This shoots your selection circle into a new position.



Gamut Warning in the Print Dialog

In CS4, you can now view the same gamut warning in the Print dialog but without the facility to edit out your differences. ■



Tim Daly, who studied photography at the Royal College of Art in London, has become a well-known writer on digital photography and digital printing. Tim has worked as a professional photographer for many blue-chip clients and national newspapers, and has exhibited his work at major UK and European galleries. A lecturer in photo-imaging for 20 years, he combines his knowledge of teaching and learning with an infectious enthusiasm for his subject. Tim is currently senior lecturer in photography at the University of Chester and an Ilford/Harman Masterclass leader. He also runs Photocollege, the online learning center for photo-imaging.