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# ct Digital Photography

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### Video Tutorial

Adobe Photoshop  
Elements 8

### PDF eBook

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to the Next Level

### Image Processing Tools

### Photo Tools

### Plus:

100+ Film Looks  
Sample and Test  
Images

## Photoshop CS5

More than just an update

## Unleash Elements 8

Activate hidden Photoshop features

Free plug-ins inside

## Perfect Portraits

Advanced composition techniques

How to get the best from your model

## Architectural Photography

Step-by-step guide

Dream Image Quality

## High-end Lenses

Manual better than autofocus

Test: Zeiss, Leica, and Canon

## LED Flashlight Studio

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100 Free Film Look Presets on DVD

## Analog Style

Workshop: How to create your own preset looks

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## Dear Reader,

What you are holding is the first issue of a new magazine devoted to digital photography and imaging. You might be thinking "Big deal—aren't there enough magazines on the newsstands already?" Let us explain what is different about this one, and why we feel it is indeed a big deal.

First of all, *c't* magazine has a history. Published by the Heise Media Group in Hanover, Germany, *c't* has the biggest subscriber base of all digital technology journals in Europe. We have built this enormous following on 25 years of thorough, unbiased, and independent journalism. We don't broadcast industry news but we do trust our own research, knowledge, and experience to separate the signal from the noise and to get "our" news and reports out to our readers.

*c't* has always covered imaging technology, and was one of the first magazines to focus on the rapidly evolving field of digital photography. This emphasis soon led to the birth of *c't Digital Photography*, a spin-off devoted exclusively to digital imaging and photography. Starting out as a bi-annual magazine, *c't Digital Photography* is now a trusted quarterly source of relevant news articles, thorough equipment tests, and in-depth tutorials on cutting-edge imaging technology applications—all geared toward both aspiring and accomplished photographers.

For us, the next logical step was to make *c't Digital Photography* a truly international journal—we are writing about an international market, so why not offer our expertise to an international readership?

We have entered into a partnership with Rocky Nook—an innovative U.S. publisher dedicated to publishing books on the developments in photography that really matter. Heise Media Group and Rocky Nook are convinced that their mission goes beyond just reporting, and both are dedicated to promoting creativity, quality, and efficiency in today's technology-driven world.

This first issue of *c't Digital Photography* is packed with valuable information that is hard to find anywhere else, whether online or in print. Interested in new ways to use efficient LED light sources for your small studio assignments? Want to give your images the look and feel of good old Kodachrome 64, or the distinctly grainy monochrome look of Kodak Tri-X or Ilford HP5? Considering a low cost alternative to Photoshop for your image editing jobs? You'll find answers to all these questions and more in *c't Digital Photography*. You can browse it like a magazine or study our in-depth tutorials and get the whole story by reading it like a book.

We hope that this first *c't Digital Photography* will inspire you to come back and see what we have to offer in future issues. You can get the next issue at newsstands or order it online at [www.ct-digipho.com](http://www.ct-digipho.com)



Gerhard Rossbach

Publisher, Rocky Nook





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### What's New in Photoshop CS5

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Photoshop Elements 8 can do much more than you think. There are many ways to enhance its functionality, whether you want to use layers, 16-bit processing, or additional plug-ins. And all these extras are free!

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- 119 Plug-ins for Photoshop Elements

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LED flashlights are the best choice if you want to set up a flexible and reasonably priced tabletop photo studio. They don't need cords, they don't radiate heat, and they are bright and affordable. Perfect for shooting images for online auctions.

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### Free DVD

The free DVD includes a four-hour Photoshop Elements video tutorial to go with the article in this issue, and the eBook *Take Your Photography to the Next Level—From Inspiration to Image*, which is full of ideas to help you analyze and improve your photographic technique. There are also more than 30 programs and plug-ins for you to try out and keep, including a special c't version of PhotoAcute Studio 2.70. We have also included sample images from our high-end lens test and more than 100 exclusive Lightroom Presets to get you started creating your own analog-style film looks.

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## Special Edition

PhotoAcute Studio 2.70

## Video Tutorial

Adobe Photoshop Elements 8

## PDF eBook

Take Your Photography to the Next Level –  
From Inspiration to Image

## Image Processing Tools

### Windows

Artweaver Free 1.1  
Contrast Balance 1.0  
Displacement Map 1.0  
DragonFly's Sinedots Shader  
Eraser Genuine 1.01  
Flat Median 1.3  
Fotomatic 1.3v  
Free Plug-ins 1.9  
Gimp 2.6.10  
Gimp Portable 2.6.10  
Gimpshop 2.2.8  
GML Matting 0.3  
Harry's Filters 3.01

HeliosPaint 1.4.3  
HSL Plus 1.0  
Luce 1.9a  
Magic Enhancer Lite 1.0  
Noise Shampoo 1.0  
Outliner 2.0  
PaintStar 2.70  
PSPI 1.0.7  
ShiftN 3.5  
Sinedots II 1.03  
SmartCurve 2.2  
The Works Plug-In Filters 3.1v  
Xero Freeware Plug-ins 5

### Mac

Free Plug-ins 1.4  
Gimp 2.6.10  
Gimpshop 2.2.11  
HeliosPaint 1.4.3

### Linux

Gimpshop 2.2.11

## Photo Tools

### Windows

AutoStitch 2.2

AvPicFaceXmpTagger 1.7  
CombineZP  
FastStone Image Viewer 4.2  
FastStone Image Viewer Portable 4.2  
Hugin 2009.4.0  
i-Fun Viewer 8.0  
Image Inc. 1.2  
MobaPhoto 1.42  
Panorado Flyer 1.2.1.19  
Photomapper 0.7  
PhotoRec 6.11.3  
PhotoWipe 1.20

### Mac

Hugin 2010.0.0  
PhotoRec 6.11.3

### Linux

Hugin 2010.0.0  
PhotoRec 6.11.3

## Sample Images

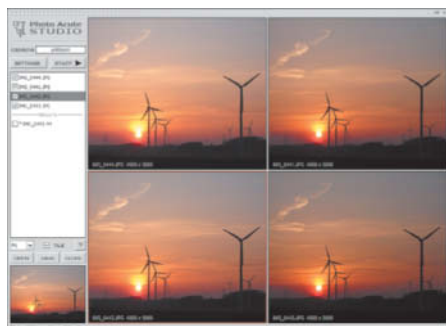
Manual Lens Test: c't Studio Test Images  
Manual Lens Test: Sample Outdoor Images

## Film Looks

100+ Film Look Presets

# DVD Highlights

The DVD's many highlights include a c't special edition of PhotoAcute Studio 2.70, a four-hour video tutorial on Photoshop Elements 8, and the PDF eBook *Take Your Photography to the Next Level*.



## PhotoAcute Studio 2.70 Special Edition

PhotoAcute Studio 2.70 creates low-noise, high-resolution (HDR) images from multiple source images, removes unwanted objects from panorama overlaps, and corrects various types of lens distortion.

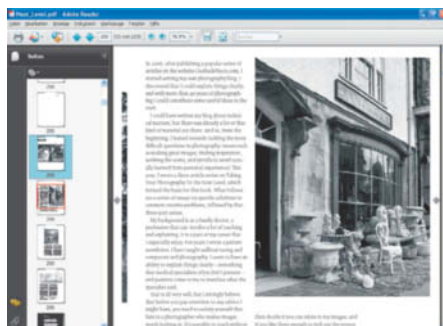
One way to significantly reduce digital image noise is to take multiple shots of your subject and to merge them into a single, lower-noise image or to a single image with higher resolution than the original pictures. The program can also produce still images from multiple video frames.

The program is easy to use: Simply drag your source files to the program window, click the Start button, and choose which functions you want to apply.

You can choose between reducing noise, increasing resolution, or aligning and cropping your images for processing using a different HDR program. The program also includes options for focus stacking, removing unwanted moving objects, and adjusting the degree to which images are rotated and cropped during alignment.

PhotoAcute also corrects lens distortion for a wide range of cameras and lenses. Once you have selected the appropriate settings, you can output the results to JPEG or DNG files.

The manufacturer is offering a 15 percent discount if you purchase the latest version of the program before 12/31/2010. The license includes updates for a 12-month period. (keh)



## Take Your Photography to the Next Level

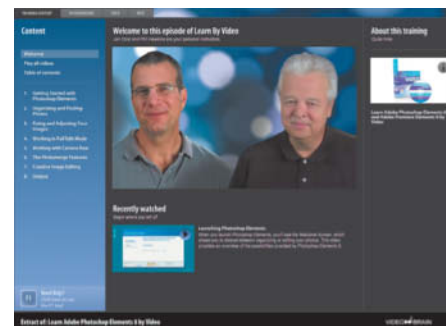
Don't just take a picture of a truck. Make an image of a truck!" From inspiration to image—George Barr's book helps advanced photographers find ways to improve their technical and aesthetic skills.

Author George Barr has been taking photos for over 40 years. This book is the cream of over 500 articles written during that time on the process of becoming a photographer.

Barr recommends honing your seeing skills by studying the work of exceptional photographers. He discusses the individual elements of an image, and goes on to discuss more than a dozen of his own shots, detailing why he chose a subject and the kind of emotional impact he wanted to achieve. The book also deals with finding subjects and choosing the ideal viewpoint. The author analyzes a real shoot, and shows us some of the intermediate results that led to a final print.

The section on composition uses sample images to detail the process of finding the right lines and pinpointing the center of interest. Barr is convinced that you should spend just as much time framing as you do composing your image.

The author concludes by discussing how to analyze your level of skill and your results, and offers specific advice on how to improve those skills. He also gives tips on where to find expert advice and forums for exchanging information. (keh)



## Video Tutorial: Photoshop Elements 8

This four-hour video tutorial by video2brain explains the entire image manipulation and management workflow using the Adobe Photoshop Elements software package.

The tutorial begins by showing you how to import, save, organize, and retrieve image files using the program's built-in tools.

The bulk of the tutorial concentrates on optimizing and adjusting images using the Organizer, Quick Fix mode, and Full Edit mode. The individual sections detail highlight and shadow correction, noise reduction, and lens error corrections. There is also a section on working with Layers, and detailed tips on workspace configuration and image resizing.

The tutorial discusses the principles and practicalities of RAW image processing, including white balance, color, and tone adjustments. The Photomerge Panorama, Group Shot, and Scene Cleaner tools are also discussed in detail. A further section deals with using filters, layer effects and layer styles.

The final section covers the program's output options, which include printing, mailing, and sharing on the Web. Users also learn how to publish their creations in a photo book and how to create custom frames.

The Flash-based tutorial is Windows and Mac-compatible and includes material for playback on iOS and GP3-based devices. (keh)



## Portfolio

# Enno Kapitza

Born in 1969 to German/Japanese parents, Enno Kapitza grew up in Japan and Germany. His multi-ethnic background strongly influences the aesthetics of his photographic work.

He began his career as a freelance photographer in 1995 after graduating from the State Academy for Photo Design in Munich. Since then, numerous jobs for noted magazines and various prizes have proved that he made the right career choice. Although he grew up in the analog era, Kapitza risked a mid-career switch to digital shooting. His portfolio includes both digital and analog images.

Enno Kapitza lives with his wife and two children near Munich.





This image was taken in a tiny pool at a health spa in Tuscany. The muddy brown water contrasts wonderfully with the little girl's skin.



I took this shot of a shelf full of silicon dolls in the apartment of a certain Mr. Tabo—a doll fetishist who owns more than 50 such “toys”. Each is life-sized and costs about \$5,000. When I first entered the apartment, I felt as if I was walking into a morgue. The floor was slippery from the baby oil Mr. Tabo uses to keep his dolls supple.



This is Bernhard Hane, who is the chief development officer at Playmobil, the manufacturer of the famous toy figures. This opportunity presented itself while we were touring the company's warehouse—I simply couldn't resist using all the toys that were lying around to frame my portrait.



The pianist Lang Lang at the Steinway piano showroom in Munich



The comedian Gerhard Polt, photographed in his apartment in Schliersee, Bavaria. He thought I was working for the local "What's On?" magazine but in fact, I was shooting for Volkswagen's customer quarterly.

## An Interview with Enno Kapitza

**Thomas Saur:** *What role does technology play in your photography?*

**Enno Kapitza:** Professional creative work that utilizes cameras and artificial light sources requires you to be thoroughly familiar with the capabilities and limits of your equipment. Now that analog film is all but dead, photographers have to know how to use RAW converters and image processors (such as Photoshop) to achieve their aims.

**Saur:** *How has the switch to digital media affected your day-to-day work?*

**Kapitza:** The rapid developments that have taken place in the digital world in the last two or three years represent an enormous challenge. I spent more than a decade working exclusively with analog equipment and developed most of my color prints in my own darkroom. Today, I realize that my technique and my visual language were both

heavily influenced by the nature of the medium. Composing an image in your mind is a much broader-based and more self-sufficient creative process than checking a tiny monitor image on the back of a camera. Back then, the image editing process began in my memory before the processed films came back from the lab but now, my daily routine of editing images and meeting client deadlines feels as if it has accelerated ten-fold. Clients simply assume that I will use all the technical aids available to save time and money—a situation that is compounded by the additional assumption that, because they are "digital", these processes don't actually cost anything. I spend much more time and money producing digital images than I ever did producing analog work. Only a few of my customers genuinely appreciate and honor the costs of producing high-quality digital images.

But the digital medium has advantages too. I no longer have to make time-consuming scans of analog images, and I save a lot of money on film when I am working on my own projects. And I can now change ISO speeds from one shot to the next without having to swap out the entire roll of film.

**Saur:** *Which shoots have made the most lasting impressions on you?*

**Kapitza:** I was lucky enough to be granted a private audience with the Dalai Lama together with a journalist friend during a job documenting Tibetan medicine in India. His entourage was of the opinion that enough photos of him already exist, and that I should limit myself to using up just two minutes of his precious time—if His Holiness was prepared to be photographed at all. In the end, the Dalai Lama's interest in technology made it possible for me to take an unusual photo of him: I had a ring flash attached to my camera, and he asked me, "What type of flash is that? I think I will have to take my glasses off so that it doesn't cause reflections." A year later, I had a second chance to photograph His Holiness, this time for GEO magazine, and I was very impressed and flattered to find that he remembered me from our previous meeting.

**Saur:** *You have enormous experience of photographing famous people. Which key aspects of your work would you most like to share with our readers?*

**Kapitza:** The most important thing is to use the available time effectively, and to remain



A morning shot in the Mongolian steppe. The nomads often allow themselves to be pulled along by their horses, which is why their boots are curved like skis.



Four synchronized swimmers from Uzbekistan at a contest in Liechtenstein. I got them to perform one of their moves on dry land and tried my best to capture their infectious good mood.

self-confident but polite while trying to respect the wishes of the person you are photographing. It is important to prepare thoroughly for opportunities that often last only a few minutes, so take time to speak to your subject's PR people, to find the right location, and to set up your gear properly. During a shoot, it is important to keep cool, to adapt to the mood of the moment, and to improvise if necessary.

**Saur:** I found the photos of the former child soldier, the comedian Gerhard Polt, and the Mongolian boy the most striking in your portfolio. What are the stories behind these images?

**Kapitza:** I came across the former child soldier in northern Uganda, sitting in the shade of a tree at midday. The ambient light was fantastic, and I used my medium format camera and a standard lens to get up close. I was using 6x7 film and I set my 110mm lens to f2.8. My reflection makes his pupils look like cat's eyes.

I photographed Gerhard Polt using available light. I was shooting in winter, but the snow outside reflected the sunlight evenly throughout the room. There was very little contrast between his face and the window behind

him, so I used a wide aperture to emphasize the contours in his face against a blurred background.

I took the picture of the Mongolian nomad boy during a shoot for Stern magazine. I was due to photograph the Mongolian president, so I had my portable flash kit with me. I used a translucent umbrella to create a film-like scene that shows little contrast between the subject and his surroundings..

**Saur:** Tell me about one of your more difficult jobs.

**Kapitza:** I was shooting a story about the love life of the Japanese for Stern. I spent two weeks in Tokyo with a journalist and an interpreter shooting day and night. It took us a long time to find the right subjects, and we ended up taking all of the most important photos in the final two days of the shoot, including the ones of Mr. Tabo and his dolls.

**Saur:** What do you like most about your job?

**Kapitza:** I like the independence and the opportunity to meet people and get into new situations, whether I am shooting portraits or for a documentary job. My camera is like a magic key to the world.

**Saur:** And what do you dislike?

**Kapitza:** My job is personally fulfilling and enriching, so negative feedback hits hard. The field of photography in general is changing too fast at the moment.

**Saur:** What makes a great photo?

**Kapitza:** A great photo is moving and awakens your curiosity. If you are working to a specific brief, a great image is one that fulfills that brief.

**Saur:** To finish, please give us a short rundown of your career.

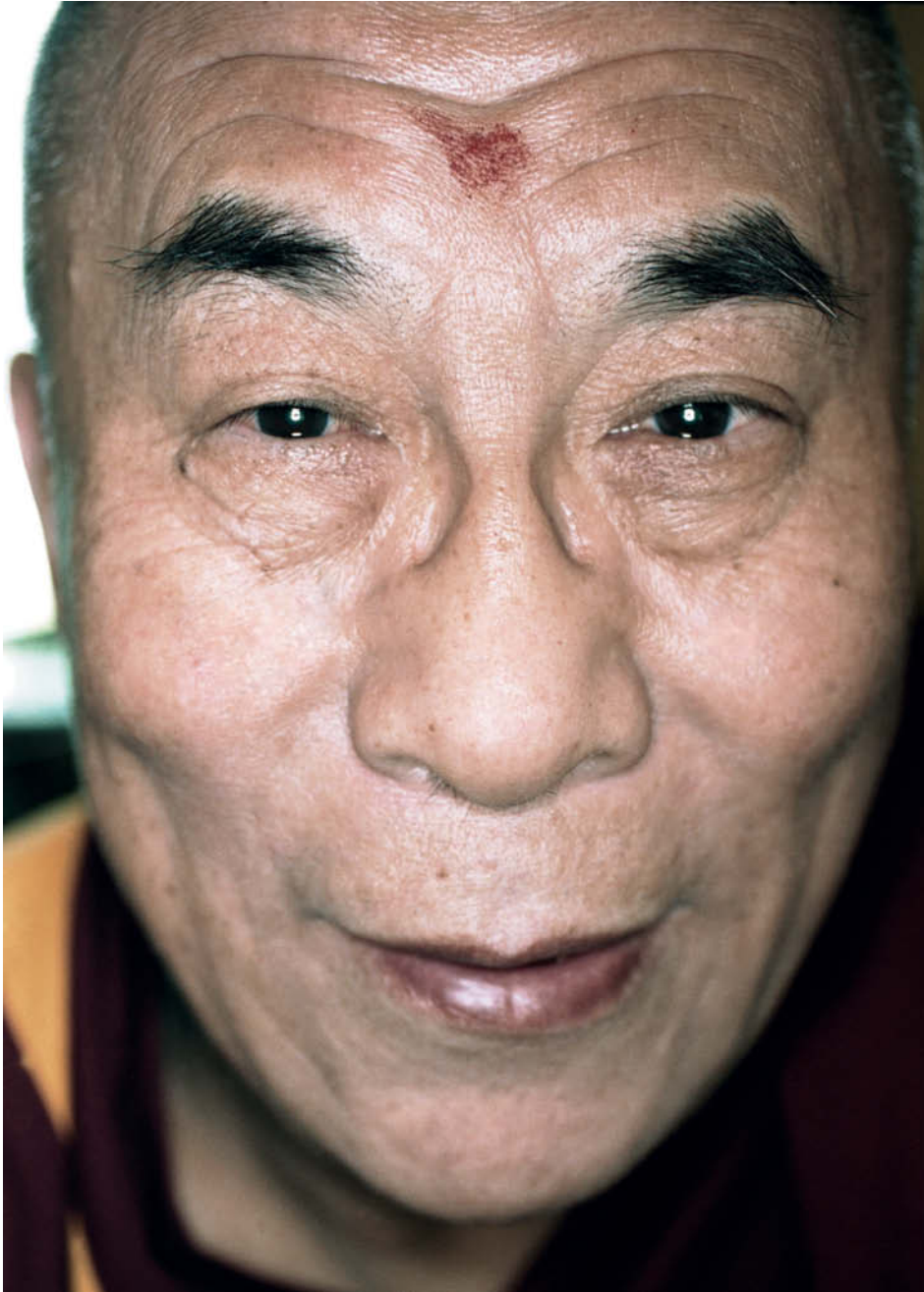
**Kapitza:** I only started taking photographs once I had finished my national service, but from then on everything developed very quickly. I finished my studies at the Academy in Munich in 1995 and immediately started work for various magazines, including *Stern*, *GEO*, *Sueddeutsche Zeitung*, and *Monocle*, as well as for a number of industrial clients. You can also find my work in various books including Taschen's *Contemporary German Photography* and *Made in Germany* and my latest coffee-table book documenting a recent tour by the punk band *Die Toten Hosen*.



I spent two days in the wilds of the Mongolian steppe during a shoot for Stern magazine. I used my portable flash kit to take this portrait with its film-like feel.

This man used to be a child soldier. I found him sheltering from the midday sun under a tree in northern Uganda. The ambient light was wonderful and I used a medium format camera fitted with a standard lens to get up close.





I took this portrait of the Dalai Lama during a private audience in Dharamsala in India in 1998. His Holiness had just finished giving a public audience to 300 people. His presence is formidable and made this a fantastic moment for me, both personally and professionally.





This is the key photo in a documentary job covering Tokyo Narita airport for *Greenpeace* magazine. The image shows a Boeing 767 flying over a Shinto shrine while coming in to land. This shrine is the last stronghold of protest against the building of a new runway.



Adrian Schulz

# Photographing **Buildings**

The sheer size and immobility of buildings makes taking pictures of them fundamentally different from all other types of photography. A successful architectural photo depends just as much on the photographer's creativity and visual interpretation as it does on the building itself. Knowledge of the basics of architectural photography can be of just as much benefit to advanced amateurs as it can to snapshot photographers on vacation.

# Equipment

Great photographers require only simple cameras to make great images, and using complex, expensive technology doesn't automatically produce great results. Nevertheless, making sure your equipment suits your individual style will make your work easier and will help you to produce satisfying results.

## Choosing a System

Your personal priorities will influence your choice of camera system. Some photographers prefer to use a light, portable camera, some spare no expense in their search for optimum image quality, and some are simply not prepared to spend excessive amounts of money on a hobby.

Due to the significant costs involved, we won't discuss digital backs for medium format and specialty cameras. This article centers on the fast-evolving, full-frame digital (or "FX") format, which is the most flexible solution for demanding architectural photographers. The format's large image sensors provide

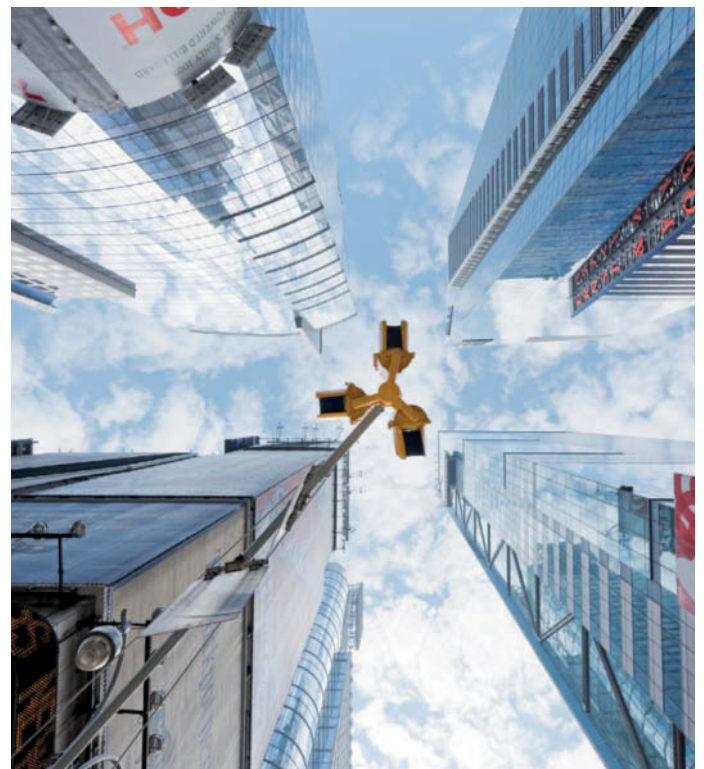
a broad dynamic range and allow you to use the full image circle of ultra-wide-angle and tilt/shift lenses designed for use with 35mm analog cameras.

For those on a more limited budget, DSLRs with smaller image sensors are also capable of producing high-quality architectural images. Many analog enthusiasts still use 35 mm, medium format, or expensive-to-run, large format cameras.

Neither analog nor digital compacts are suitable for architectural photography due to their limited wide-angle capabilities, non-interchangeable lenses, and often inadequate image quality especially at the edges of the frame.



Typically, this compact camera's limited dynamic range causes burned out highlights in the sky that cannot be corrected during image processing



Cameras with broader dynamic range can capture high-contrast situations in a more balanced fashion, and provide you with tonal value reserves for making subsequent image adjustments

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## Lenses

The lens you use determines the angle of view, the depth of field, the image sharpness you can capture, and the minimum shutter speed you can use. Lenses also produce various types of optical errors. The most important aspects of lens performance in an architectural context are **image quality** and **focal length**.

## Image Quality

Lens manufacturing processes have changed to meet the demands of digital image sensor technology, but even the most expensive



Typical optical errors—*Top left:* vignetting (circular shadows at the edges of the frame). *Top right:* chromatic aberrations cause color smears at the edges of shadows. *Below left:* this enlarged detail displays obvious edge blur. *Below right:* this image shows obvious barrel distortion.

lenses nevertheless produce some optical errors. Many camera/lens combinations can automatically compensate for some types of lens errors, but others remain visible in the final image. The most common types of image error are vignetting, chromatic aberrations, distortion, and edge blur (see the illustrations above).

Architectural photos generally require you to stop your aperture down (see the section on Camera Settings below), making lens performance at wide apertures less of an issue. Small apertures also reduce the prevalence of many common lens errors, but it is difficult to completely avoid producing chromatic aberration or edge blur. Color smears can usually be effectively eliminated during image processing, but the edges of an image often remain less sharp than its center. This effect is especially prevalent in images shot using ultra-wide-angle or cheap lenses.

Lens-based distortion occurs independently of the selected aperture, and pin-cushion and barrel distortion are especially prevalent at the extreme ends of a zoom's range.

This makes it important to leave enough free space around your subject for subsequent correction of potential distortion problems.

Remember: high-quality lenses with high-end error correction are usually expensive. An expensive lens on a cheap camera will usually produce better results than an expensive camera used with a mediocre lens.



## Focal Length

In order to capture the widest possible angle of view, architectural photographers usually use only wide-angle or ultra-wide-angle lenses—i. e., those with an equivalent focal length of 24 mm or less and a diagonal angle of view of more than 84 degrees

If all buildings simply stood on open ground, you could move freely around them and use a single, mid-range wide-angle lens to photograph them. In reality, we are

**Ultra-wide-angle lenses such as this Canon EF 14mm f/2.8 L USM cost around US\$ 2,000 and are perfectly suited to architectural applications**



Focal length range: exterior shots are best taken using lenses with focal lengths between 20 mm and 35 mm. Wider lenses (between 14 mm and 24 mm) are better for photographing interiors.

limited in our choice of camera positions by the other buildings and infrastructure that surround our subjects. In urban situations, we can only position our camera on the streets or plazas that surround the target building. The best potential camera positions are usually unreachable and street signs, street lamps, or cars often spoil the composition. The only way to remain flexible is to get nearer to a building and use an appropriately short lens. Lenses with

equivalent focal lengths of between 20 mm and 35 mm are generally suitable for exterior shots, while lenses in the range between 14 mm and 24 mm are best for shooting interiors.

### Tilt/Shift Lenses

These special lenses are capable of shifting the optical axis in relation to the image sensor plane and thus help you to adjust

perspective during shooting. Such lenses are a useful, but not essential, addition to any architectural photographer's equipment. They help you to avoid producing converging lines in your photos, which in turn reduces the need for subsequent image processing, with its associated loss of image quality.

Shifting the optical axis of normal lenses would lead to obvious vignetting effects. Shift lenses produce a larger image circle



Views shot using various shift lenses and lens attachments, from left to right: 17 mm shift lens, 24 mm shift lens, 35 mm medium format lens with a shift adapter, 55 mm medium format lens with a shift adapter. All of these images were shot using a full-frame DSLR and each was shot from a different position in order to produce similar-sized results.

and can allow you to shift the optical axis by as much as 12 mm without causing adverse effects in the resulting image. The construction of tilt/shift lenses makes it impossible to incorporate autofocus mechanisms, but this is not a major disadvantage.

They also make composing your image easier, as you can frame your image more precisely from the start. Shift lenses are also useful for making multi-shot panorama images (see the section on Shooting Techniques on page 26)

Medium format lenses, with their large image circles and wide mounting flanges, are a useful alternative to conventional shift lenses and can be attached to normal DSLRs using special adapters. But here, too, there are limits to the range of lens movements you can make and the camera's mirror box will always impinge on the image at some point.

### Camera Settings

**Shutter speed** plays a secondary role in architectural photos due to the static nature of the subject. As long as you shoot using a tripod, you can use just about any shutter speed you like.

We recommend using small **apertures** to help reduce the effects of lens errors in your images. If you select an aperture value that

is too large, you run the risk of producing blur due to refraction in the light path. Aperture values between f8 and f11 usually produce satisfactory results. Due to the combination of wide-angle lenses and long subject distances, selective focus effects (produced using large apertures) are seldom used in architectural photos, but they can nevertheless be used to deliberately focus or defocus specific parts of a building for artistic reasons.

Shooting using low **ISO values** helps keep image noise to a minimum while producing maximum dynamic range, which provides you with more creative headroom when processing your images later on. Always shoot in RAW format if you can..

### Accessories

Using a **tripod** is the best way to take advantage of the static nature of buildings. A tripod allows you to use virtually any shutter speed and also to take your time composing your image. You can also choose exactly the right moment to release the shutter once any clouds, people, cars, or other image elements are in suitable positions inside or outside the frame. You can, of course, shoot architectural shots handheld, but a tripod nearly always makes things easier.

Use a heavy tripod with excess load capacity—this helps to avoid camera shake due to wind or other external influences. This is especially important if you are making multiple shots for HDR or panorama images, as here, the smallest unintentional changes in composition can spoil your results.

The **tripod head** is just as important as the tripod itself. There are various types available, including ball heads, three-way tilt heads, and fluid heads. Ball heads can be adjusted quickly and universally with a single movement, while tilt head settings are easier to fine-tune. The system you choose will depend on your personal taste and working methods, but avoid using a cheap tripod at all costs. There is nothing more frustrating than discovering later that your tripod head shifted a millimeter or two while you were shooting.

A **quick-release plate** attached to your camera makes mounting and unmounting your camera quick and easy. Nowadays, most quality tripods have their own built-in quick-release mechanisms. The Arca-Swiss quick-release system has established itself as the de facto standard in professional photographic circles. If you like to shoot in portrait format, it is worth investing in a high-quality **L-plate** that ensures that the center of gravity of your camera remains directly above the tripod head, even when it is rotated through 90 degrees.



A medium format lens attached to a conventional DSLR using a shift adapter



A quality L-plate is not cheap, but ensures that the camera's center of gravity remains located directly above the tripod head



“Real” analog or digital black-and-white effects emphasize shapes and textures, giving an image a highly individual feel

## Creative Tips

One way to creatively enhance your architectural shots is to convert them digitally to **black-and-white**. Monochrome images offer more room for creative interpretation and can be made to appear more abstract, as different colors can appear identical when they are converted to grayscale. Architectural images, with their broad surfaces and fine textures, are perfect for experimenting with this type of effect. Black-and-white images are becoming increasingly popular due to their exclusive look, which can be further enhanced by adding grain effects. Grain effects are often used deliberately as an artistic device in both analog and digital images. And by the way: most home printers produce better black-and-white prints than online print services.

**Lensbabies** are specially designed for creative use. Their flexible lens barrels allow you to create various selective focus effects in a similar way to a tilt/shift lens. This way, you can select a specific focus “sweet spot” within your image, leaving the rest of the frame



A neutral density filter extends shutter speeds and helps to portray people, cars, or other moving objects in a blurred, abstract fashion—even in bright light

blurred. Lensbabies are squarely aimed at the artistic market, and are not constructed with high optical quality in mind.

**Fixed focal length lenses** are not as flexible as zoom lenses, especially considering that their major advantage lies in their wide maximum apertures—a feature that only plays a secondary role in architectural photography. However, using just one or two fixed focal length lenses forces you to consider your camera position and composition more carefully and turns a shoot into an interesting challenge. Many adapters are available for attaching older, manual focus lenses to today’s digital cameras.

**Neutral Density filters** reduce the amount of light entering the lens, allowing you to artificially extend your shutter speed. You can use this effect to create deliberate motion blur in your architectural shots, even in bright ambient light—this is useful for reducing the prominence of cars or people in your images. Moving objects also help to make images of otherwise static subjects look more dynamic and artistic.

# Perspective Basics

**Geometrical forms are more prevalent in photographs of buildings than in any other type of image. This makes basic knowledge of perspective essential if you want to shoot successful architectural photos.**

## Perspective

A photograph transforms and projects three-dimensional space into a two-dimensional image according to the rules of perspective. A photo generally presents us with a natural-looking image by following the rules of vanishing point perspective.

Camera position and camera angle alone determine perspective, and the only way to alter the spatial relations within an image is to alter the camera position. Many people assume that the focal length of the lens also affects perspective, but this is simply not true.

## Vanishing Points

Vanishing points play an important role in the portrayal of architectural (i. e., geometrical) forms. All parallel lines that meet in the distance will intersect at the so-called “vanishing point” in a two-dimensional image. If you point your camera directly at the horizon, all the vertical lines within the frame will appear vertical in your image. This is an effect that we often utilize when photographing buildings.

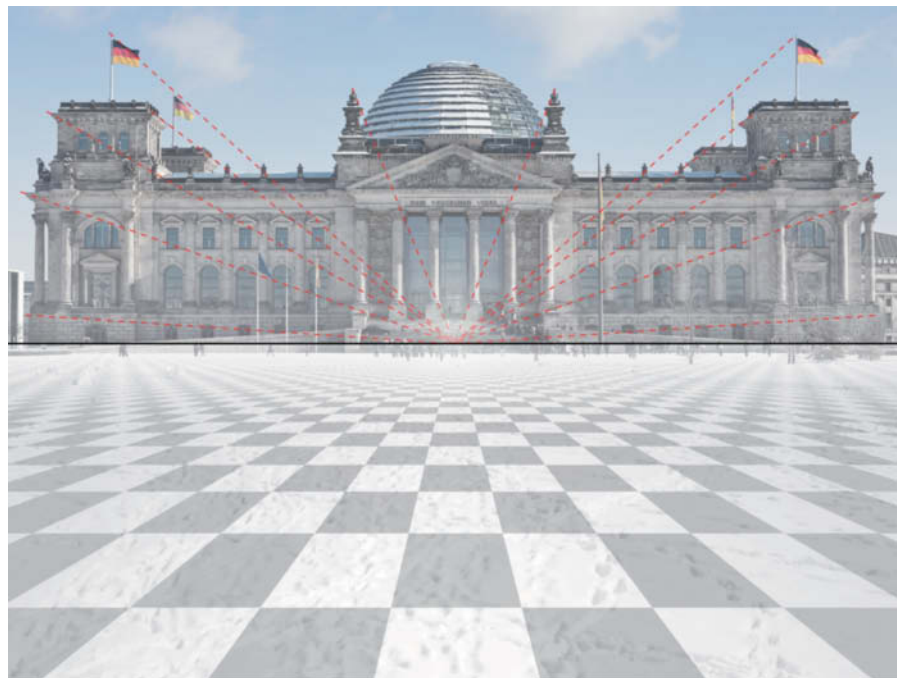
The number of vanishing points in an image has a significant effect on its appearance. In the case of one-point perspective, all third-dimension parallel lines converge to a single point in the center of the horizon. This effect is nicely illustrated by the image of the Reichstag building in Berlin (top right).

You need to stand directly in front of your subject and position your camera horizontally (and pointing at the horizon) to take pictures like this. This means that the front wall of the building you are photographing remains parallel to the image sensor plane, which keeps all the parallel lines within the building’s façade parallel in your image. This type of photo is pleasing but unspectacular, and doesn’t adequately illustrate a building’s huge, three-dimensional volume.

Two-point perspective, which furnishes an image with two separate vanishing points on the horizon, is equivalent to photographing a building from a corner rather than head-on. Here too, the camera has to be positioned horizontally, but in this case, only vertical lines appear parallel in the resulting image.

Images shot from a frog’s-eye perspective (from below) or from a bird’s-eye perspective (from above) usually have three vanishing points. Here, the camera is no longer pointed at the horizon but instead at an imaginary point above or below the horizon. These types of perspective come into play when conventional camera positions no longer allow you to capture the entire subject without tilting your camera. In this type of image, vertical lines also converge to a point above or below the horizon.

Two-point perspective images have a vivid, dynamic appearance that clearly illustrates the volume of a building but isn’t necessarily suitable for all situations.



One-point perspective, with its central vanishing point, produces harmonious-looking images

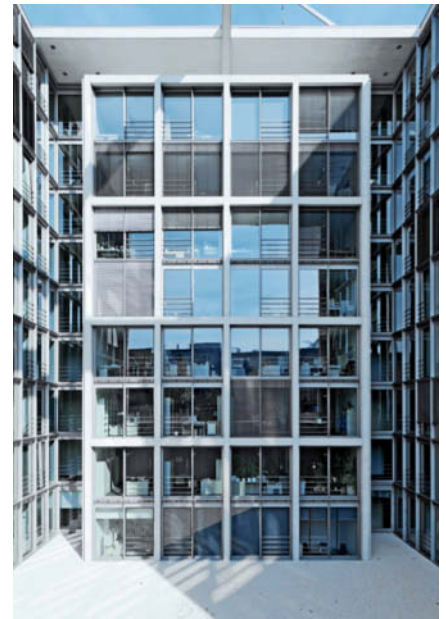


Two-point perspective (here shot from a corner of the building) produces more dynamic results





**Frog's-eye and bird's-eye perspectives are used to photograph buildings that cannot otherwise be captured in their entirety. The result is strongly converging lines.**



**Human visual perception compensates for converging lines when we view buildings in the real world. Converging lines can, however, spoil the effect of a two-dimensional image. Correcting the image digitally produces a pleasing, realistic-looking effect.**

### Converging Lines

Converging lines don't bother us when we are walking along a street, due to the close cooperation between our sense of balance and our visual perception. However, things look different when we view converging lines in two-dimensional images, as our brain immediately signals that something is wrong. Converging lines, such as the ones in the image of a glass-walled courtyard on the next page, tend to confuse the viewer and produce a jarring impression of the building. This effect sometimes makes buildings look as if they are tipping over backwards. An unwritten rule dictates that architectural photographers generally try to keep vertical lines vertical in their images. Converging lines can nevertheless be used deliberately to add drama or artistic impact to an image.

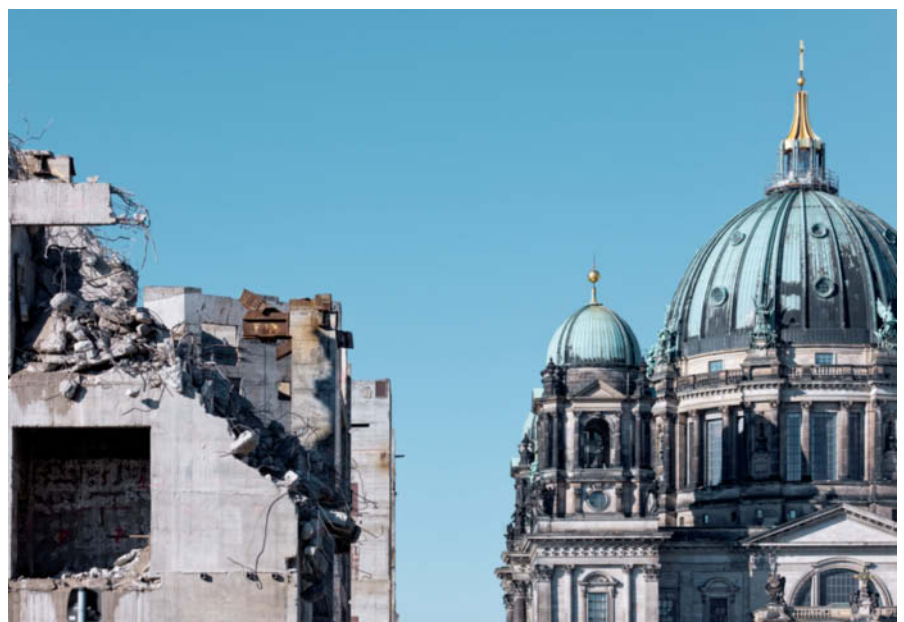
### Camera Position and its Effects on Perspective

Different camera positions produce images with differing effects. For example, if multiple objects are all positioned a long way from the camera, the distance between the objects themselves will appear foreshortened. The partially demolished (former) East German Palace of the Republic illustrated here appears to be located directly next to the Berlin cathedral (on the right).

In reality, these two buildings are a large distance apart.

If the camera is positioned very close to the subject, objects in the foreground will appear much larger than they actually are in relation to objects in the background. Spatial relations appear stretched. Experienced photographers use these types of

effects deliberately to emphasize certain aspects of a building's construction. A building looks static and solid if it is photographed from further away, but can appear much more dramatic if it is photographed from close-up. The three images here show clearly how different a building can look when shot from distances that only vary a little.



**Large subject distances compress perspective. The two buildings shown here are, in reality, a long way apart.**

# Shooting Techniques

Once you have developed a feel for situations and their characteristics, you will be able to start taking exceptional photos. Some photographers find it quite easy to pick the most interesting shooting angle, while others start a shoot with a specific idea of the required result in mind. Whatever your level of expertise, you can always improve your ability to see the photographic potential in a scene. The following sections offer a few tips and tricks to help you get the most out of your architectural photo shoots.

It is important to develop a feel for the spatial relations between objects when you are photographing buildings. You can save yourself a lot of time and trouble if you are able to estimate which shooting angle will produce the best results before setting up your gear. Grass-roots photographic knowledge is essential, especially if you want to avoid producing images with converging lines.

## How to Avoid Converging Lines

**Increase the subject distance:** if the situation allows, simply move back and use a longer lens to reframe the subject. This simple measure can help to partially or even completely eliminate converging lines if you are careful to point the optical axis of your lens directly at the horizon. You can fine-tune any remaining anomalies later on your computer. Unfortunately, there is often not enough space near a building to get far enough away. The greater the distance between camera and subject, the greater the risk of other objects getting in the way and spoiling your composition. Increasing the subject distance also compresses perspective.

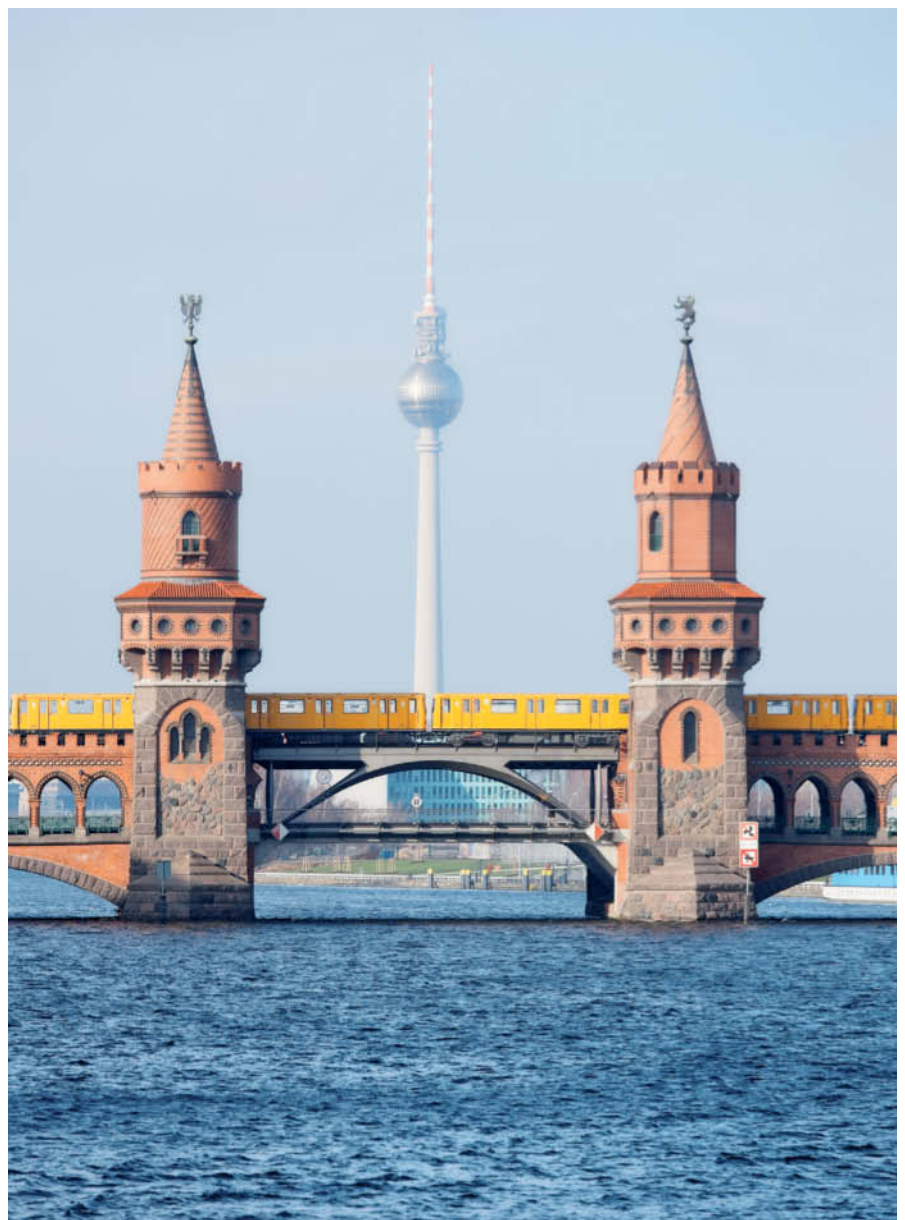
**Use a raised camera position:** a camera position halfway up the subject helps to stop vertical lines from converging. Make sure your camera's image sensor is set up parallel to the front of the subject building. You will, of course, need access to a bridge, a pedestal, or the upper floors of a building in the vicinity to make use of this technique.

It is important to have an idea of your ideal camera position before you start to set up your gear. I had to walk several hundred yards to get into position for this shot of the television tower and Oberbaum Bridge in Berlin.

**Use a short lens and shoot in portrait format:** if you have to shoot from extremely close, it can help to use a wider-angle lens than would otherwise be required to make your shot. Simply set your camera up in portrait format parallel to the ground. The

resulting photo will not contain any converging lines, but the subject will appear at the top of the frame and large portions of the ground in front of the building will be visible in the lower part of the image. This imbalance is easily corrected by cropping the image later, but produces a smaller finished image with a non-standard format.

**Digital perspective correction:** a simple technique for correcting converging lines is to deliberately distort your image using image processing tools. You can correct converging vertical lines by stretching the upper corners of your image outwards to form a trapezoid and then stretching the entire image upwards to counteract the compression effects this produces. This technique requires the computer to create artificial image data in the upper portion of your image and



**Shooting with a shift lens:** The camera is positioned parallel to the building at a neutral shift setting. Shifting the optical axis upward moves the horizon downward and includes previously hidden details in the top of the frame.

quickly reaches its technical limits if the lines you want to correct converge too strongly. It is always preferable to avoid shooting converging lines by using the other techniques described above.

**Use a tilt/shift lens:** this is the best, but also the most expensive way to produce original images without converging lines. If you have access to a tilt/shift lens, you will have less fine-tuning to do at the post-processing stage.

### How to Use a Tilt/Shift Lens

Proper use of shift lenses requires some know-how. We recommend the following method: position your camera with its image sensor exactly parallel to the front of the building and set focus with your lens in a neutral shift position. Here, loupe and live view functions are helpful (if your camera has them). You should also meter exposure at this stage, as your camera's metering system will no longer deliver accurate results once you have shifted the optical axis of the lens. Alternatively, if your camera allows, you can also judge exposure using the live view function with the mirror locked up. You can now shift the optical axis upward, making parts of the subject that were previously outside the upper edge of the frame visible in the viewfinder.

The camera and lens remain in a horizontal position. This technique produces an image with no converging lines and can be performed in exactly the same way in the opposite direction (i. e., moving the optical axis downward in order to photograph lower portions of a building). Most shift lenses also allow you to shift the optical axis sideways.

Using shift lenses always produces a certain amount of vignetting and corner blur at the extreme ends of the shift range, so avoid using the maximum shift settings if you can.

**Using a shift lens is the most elegant, but also the most expensive way to avoid shooting converging lines**



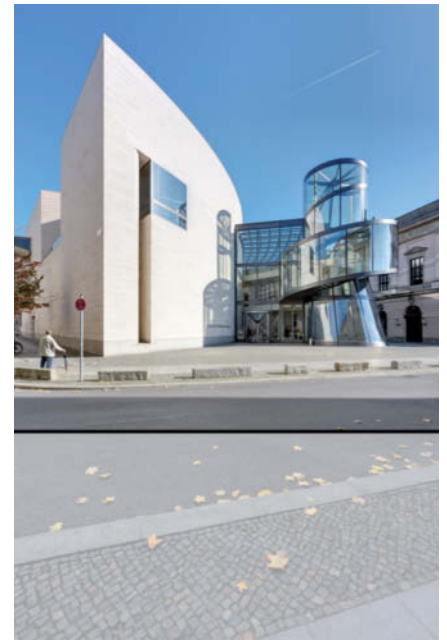


The simplest way to avoid shooting converging lines is to increase the distance between camera and subject. This is, of course, easier said than done in urban situations.

If your lens doesn't provide sufficient shift, you can also tilt the camera slightly to increase the shift effect, which keeps digital corrections—with their inherent loss of image quality—to a minimum.

You can also use a shift lens to create panorama images by taking a sequence of

shots at different shift settings. If you do this, make sure that you shoot sufficient overlap at the edges of each image to allow you to merge them effectively later on. Popular panorama formats include two landscape format images merged to form a 5:2 "wide-screen" image and three portrait format



Using an over-wide lens in portrait format also eliminates converging vertical lines, but produces an unbalanced composition that requires subsequent cropping

images next to each other, producing a 4:3 result. You can also shoot more complex sequences by rotating the shift mechanism through 30 degrees during shooting, i.e., you shoot top left and bottom right, rotate, and then shoot the top right and bottom left images, producing a 3:2 image. Merged images not only increase your angle of view, but also dramatically increase the resolution of the final image.

### Converging Lines in Indoor Scenarios

Converging lines are less of a problem in interior scenes, as image height and the height of the space you are photographing are usually more similar than they are outdoors. In indoor situations, there are usually no significant details to be found above the upper edge of the frame, making it easier to keep the camera parallel to the floor, and to avoid converging verticals. Converging lines in interior shots are even more unsettling than they are in outdoor scenes.

### Selecting Your Camera Position

The ideal shooting position depends on the type of building you are photographing, its size, and the nature of its immediate surroundings. Your own concept for the finished image will also play a role in your choice of camera position. The position of the church



Here, a raised camera position and horizontally-oriented camera have produced a pleasing image with no converging verticals

**The ideal camera position for a shot depends on the situation and the photographer's concept for the finished image**

between skyscrapers in the photo on page 29 is a good example of an effective composition.

If the depth of the space you are portraying is important to the end result, position your camera as close to the subject as possible. If, on the other hand, you want to produce a realistic-looking, documentary shot, you will need to shoot from further away in order to avoid producing extreme perspective effects.

Extreme subject distances can produce unrealistic perspective effects or cluttered images, but can nevertheless produce dynamic-looking images if used deliberately as a compositional tool.

The rule of thumb for exterior architectural shots recommends a shooting distance of one to three times the height of the building.

In order to produce realistic-looking images in indoor situations, you will often have to shoot backed up against a wall or from a suitable passageway. The most effective interior shots portray space in a tactile fashion and often include views into other rooms.

## The Relation between Focal length and Camera Position

Focal length and your choice of camera position are closely related, but are still a matter of personal taste. Some photographers choose a specific camera position and then select a suitable focal length lens, while others prefer to use a particular lens and then move the camera in order to achieve their desired composition. The latter approach is not usually a problem if you are shooting alone, but can cause friction if you are on vacation with a partner! Zoom lenses make it possible to adjust your angle of view without changing your position.

Long lenses are not often appropriate for photographing entire buildings, but their narrow angles of view do produce blurred backgrounds that effectively emphasize detail in the structure of a building, or accent textures against a uniform background, such as the sky.

Telephoto lenses can also be used to make buildings that are a long way apart to appear closer together than they are in reality.

Medium wide-angle lenses with equivalent focal lengths between 24 mm and 35

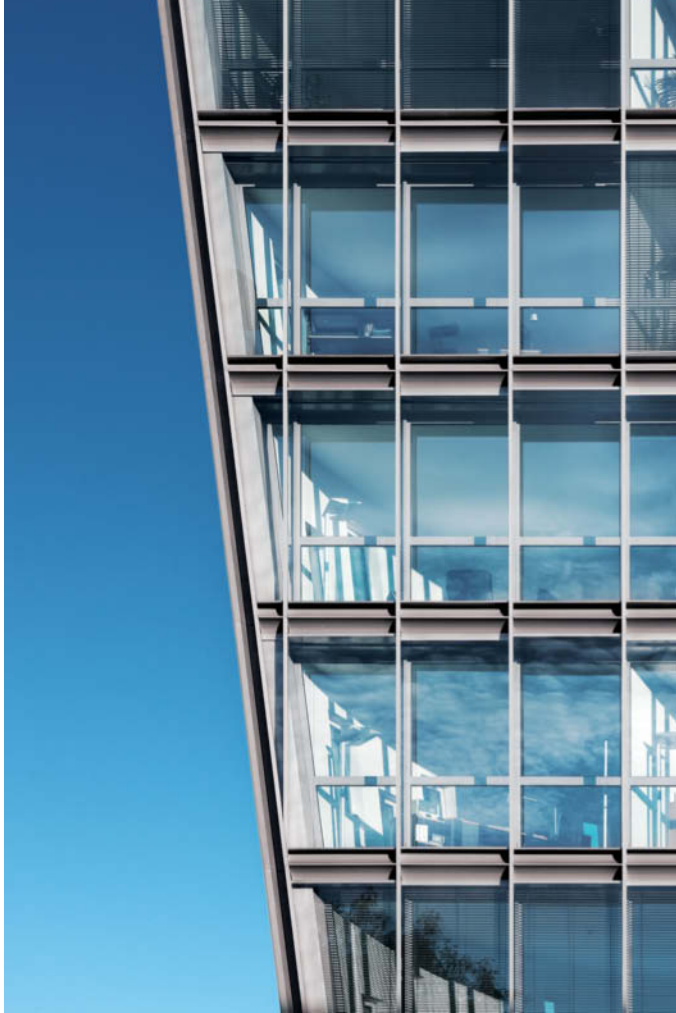


## General Information

Buildings themselves are generally copyrighted objects, but can usually be freely photographed if they are visible from

public places. Make sure you have the correct permissions before starting an exterior or interior shoot.





Here, using a telephoto lens highlights details of the building's structure against the uniform background



Long lenses make buildings that are physically far apart appear closer together

mm produce realistic-looking photographs of buildings and are among the lenses used most frequently in architectural situations. Ultra-wide-angles come into play if the photographer is extremely close to the subject or is shooting in cramped indoor conditions.

Short focal length lenses make it possible to take photos in places that medium-length lenses simply don't allow, but can produce over-dramatic or unrealistic-looking perspective, especially in photos shot from close-up. You can, of course, use these effects

deliberately to produce artistic or unusual effects in your images.

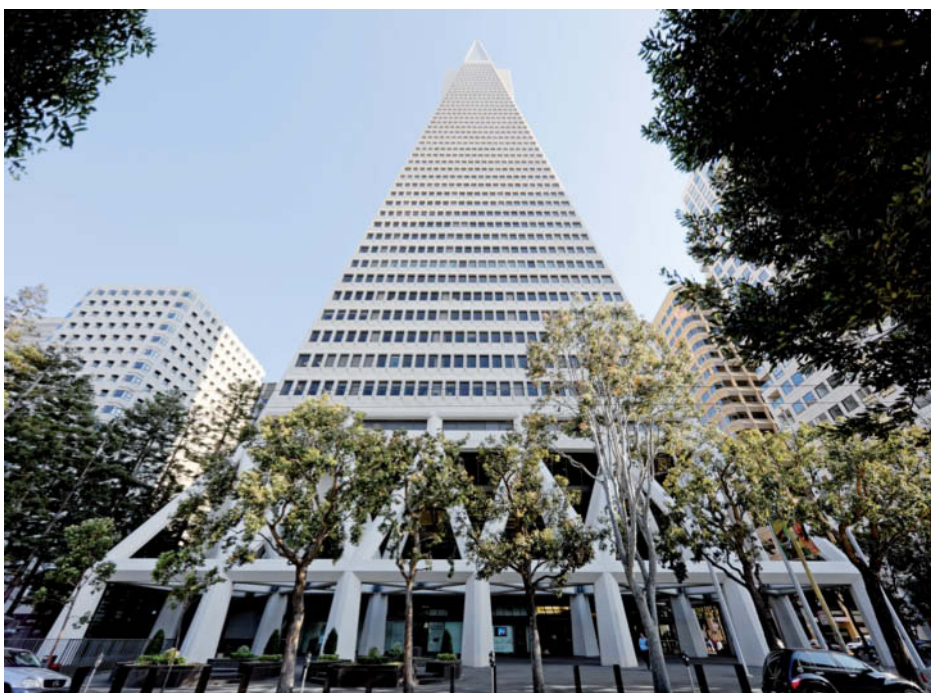
Be careful if you are using an ultra-wide-angle lens for the first time. Even the smallest horizontal deviations in camera position produce strongly converging lines, so keep an eye on your exact camera position at all times. Using a heavy, high-quality tripod will help here.

Fisheye lenses are seldom used in an architectural context because they always produce extreme barrel distortion. Fisheye lenses produce great effects for occasional creative use, but quickly lose their appeal if they are over-used.

### Shooting conditions

The success of most architectural photos depends on how you handle a given situation, yet photographer can only influence general shooting conditions to a limited extent. The most important external factors that an architectural photographer has to deal with are shadows and reflections.

An example of the dynamic type of image you can produce using ultra-wide-angle lenses



## Shadows and Reflections

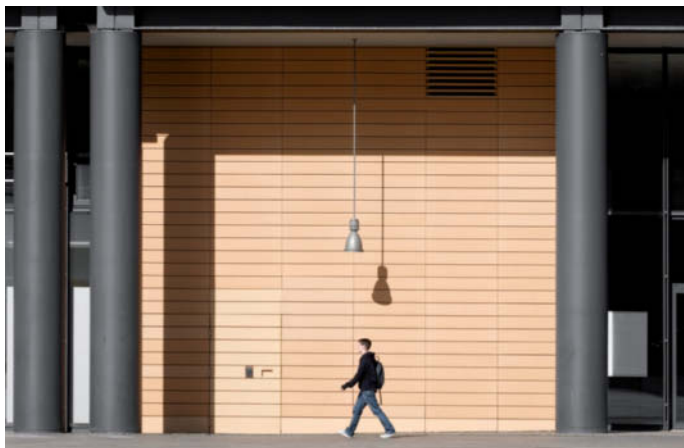
Architectural photographers have to deal with shadows cast by the subject itself as well as those produced by other objects (see the illustrations on the next page). Both types of shadow are usually caused by light from the sun. A building's own shadow is always found on its indirectly lit side. The edge of the shadow—indicated by the dotted red line in the illustration—also defines the edge of any shadows cast on the building by other objects. These can distract the viewer from a building's aesthetic effects and make correct exposure metering more difficult (see also the illustrations at the bottom of the next page).

On the other hand, hard shadows can also be used as a compositional tool. Small shadows cast by protruding or recessed features form an integral part of the façade of a building.

Things get more difficult when the sun is behind you, as this can cast an additional shadow of the photographer and/or the camera into the frame. If this is the case, try to position yourself within the building's own shadow or a shadow cast by another object. As a last resort, you can always change your camera position.

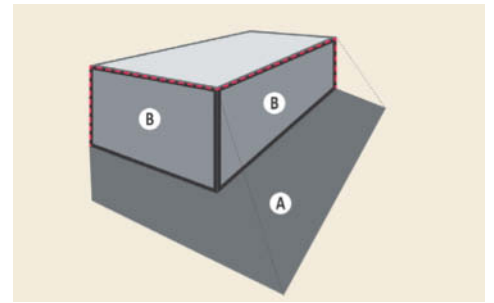
Portions of a façade that fall within a building's own shadow appear two-dimensional and show less contrast, but more detail, than elements lit by direct sunlight.

Reflections can also have positive or negative effects on a building's appearance and their prominence depends largely on the materials used in the building and how they have been put together. Reflections of other buildings in modern mirrored or glass façades are a good example of a building material that emphasizes its own nature.



Hard shadows are an integral part of the composition of this image

Façade in its own shadow (area B: on the left in the image below) and in a shadow cast by another object (area A: on the right in the image below)



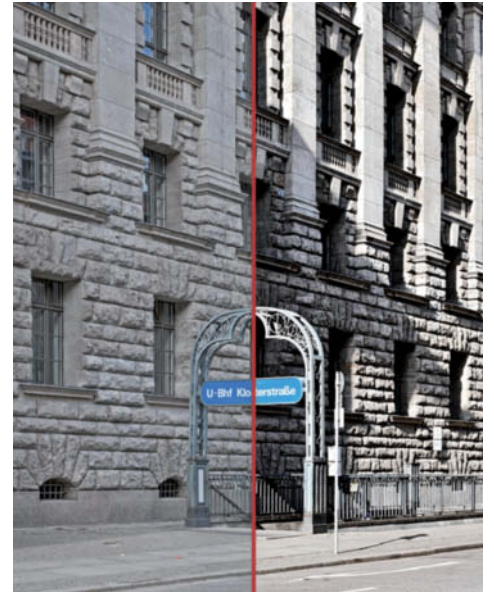
## Creative Tips

Here are a few tips and tricks for taking creative photographs of buildings:

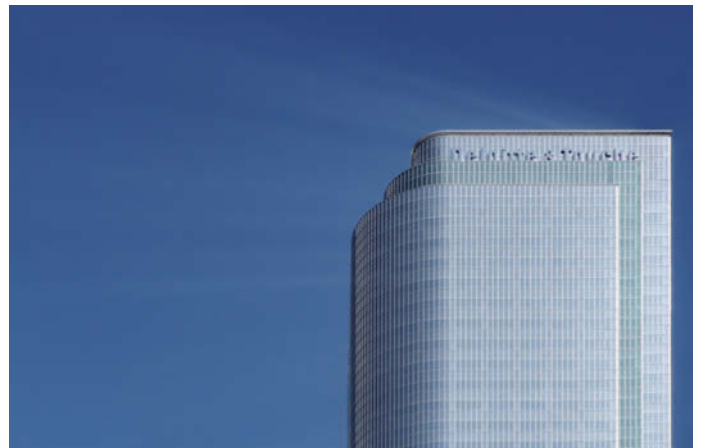
**Tilting the camera upward:** human beings generally view their surroundings horizontally and “to the front”, keeping the horizon in view. Viewing a scene looking upward creates an unusual perspective on an otherwise conventional scene. In this case, the general context is not visible and the usual spatial relations between a building and its surroundings become less clear. The sky—with its uniform texture—becomes the dominant background feature. Pointing your camera upward also allows you to rotate it without having to precisely define which direction is “up”.

**Extreme crop:** framing a shot to leave out (or emphasize) certain elements of a building is a great way to produce minimalistic or abstract images. Images like this can be used to capture multiple elements of a building in a layered fashion that bears little relation to a conventional photographic interpretation. In extreme cases, a photo is no longer recognizable as being of a building at all and fulfills a purely graphical function.

**Extreme use of reflections:** reflections can be used to produce a new view of a familiar subject, introducing a second, completely separate visual layer to an image. For example, you can use this type of effect to symbolize “old and new”, as in the image at below right. Reflections can be used to create layering, bulking, or repetition effects and, especially at night, to create images with no clear spatial dimensions.



**Image sequences:** another way to photograph buildings creatively is to take a sequence of images that give multiple images a mutual context. Our example shows a sequence with a “doors” theme. As long as the theme is clearly recognizable, materials, colors, lighting, and exposure can vary widely from image to image. Selecting the right images to display is another integral part of shooting a successful sequence.



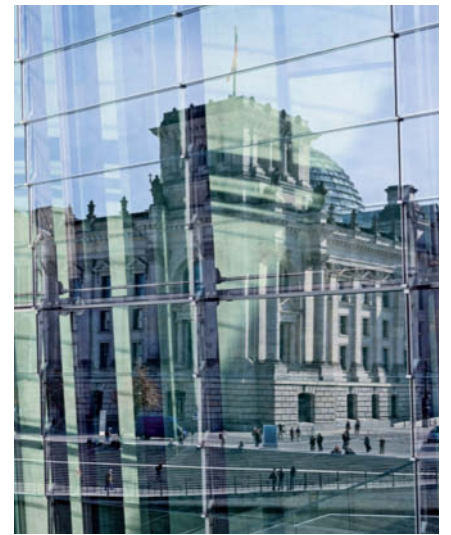
Reflections can influence the aesthetic effects of a building in positive and negative ways



**Shooting upward:** the sky creates a broad, uniform background for the converging lines of these skyscrapers



**Extreme crop:** detail shots can make buildings appear strange. In this image, the patterns and textures are more important than the actual building.



**Extreme reflection:** this reflection adds a second visual level to the image and enhances the overall effect



**Image sequence:** combining multiple images with a common theme gives individual photos a new and interesting context



## Photographing Buildings: A Brief Guide

Once you have chosen your subject, you need to **analyze** the situation and its specific characteristics:

- Which side of the building is best suited to being photographed? Where are shadows or backlight positioned? What is the weather like? What other structures characterize the surroundings?
- What specific physical structures does the building have? Are there any interesting (or irritating) reflections?
- How do you want to portray the building? In a documentary or an artistic style? Static or dynamic?



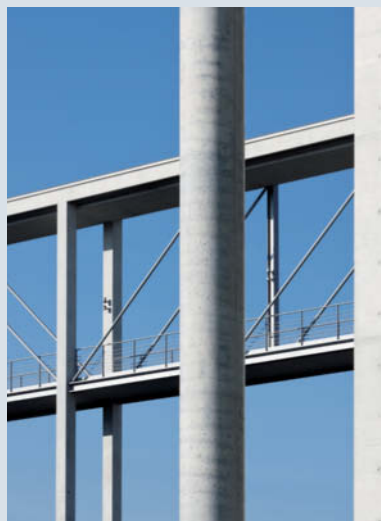
The next step involves a detailed analysis of your subject's **surroundings**:

- Which camera angle best emphasizes the building's strengths?
- Which camera positions will deliver great shots and which are less suitable?
- Which elements of the building's surroundings should you include in your shot, and which should you leave out?
- Do you want to shoot in landscape or portrait format?



The final step involves selecting your **shooting settings** and the **accessories** you will use to make the shot:

- Which accessories (tripod, filter, remote release etc.) do you need?
- Which focal length lens is best for capturing your chosen composition?
- How do you want to compose your image? With the subject in the center? Using the "golden ratio"? Or with the subject positioned toward the edge of the frame?
- How will you avoid converging lines?
- Which camera settings will produce a balanced exposure?
- What is the right moment to release the shutter? Which people, cars, or shadows are you waiting for?



# Image Processing

Image processing tools can significantly improve the overall look of your images after shooting, but require careful use in order to avoid producing over-the-top or unrealistic-looking results.

Before we started processing we used a RAW converter to adjust white balance, remove a couple of dust spots in the sky, and optimize the image a little using Fill Light and Recovery tools, resulting in a 16-bit sRGB TIFF image.

We used Adobe Photoshop CS4 to perform the following workflow on our sample image of the German Historical Museum in Berlin.

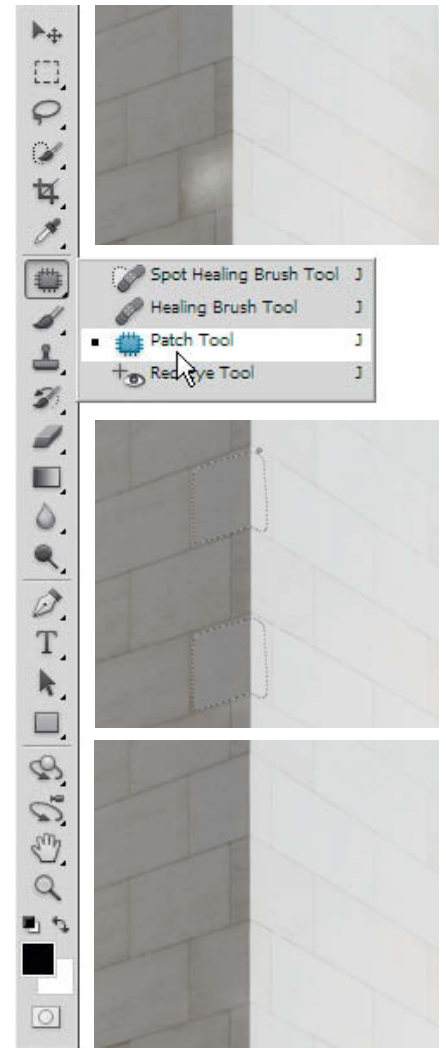
The lens we used produced no obvious distortion, so no distortion correction was necessary. The image was, however, shot handheld and is not quite level, so we applied the Photoshop Transform command to cure this. First, we dragged some guide lines out of the rulers (you can also use the Grid display in the View menu). We then turned the background layer into a transformable layer (called "Layer 0" by default) by double-clicking the layer

thumbnail in the Layers panel. We then used the Edit > Transform > Skew command to level our horizon.

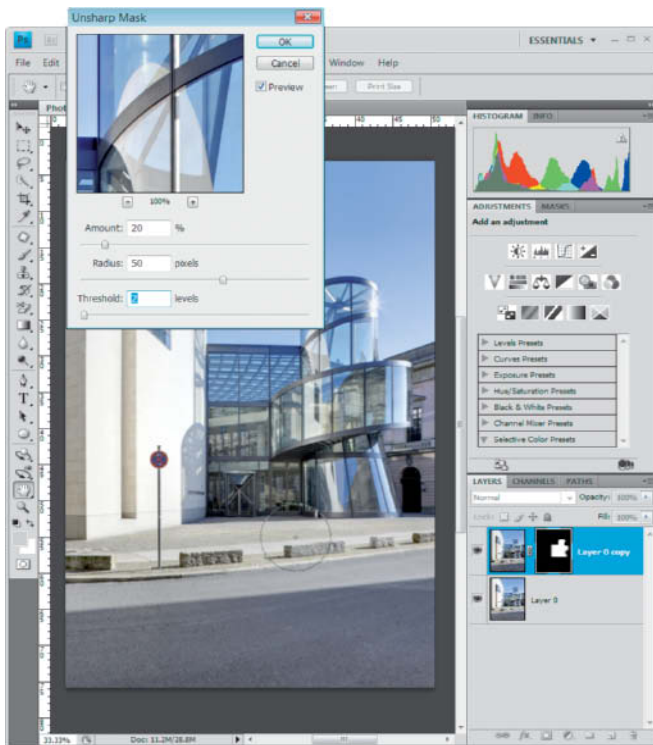
Next, we "cleaned up" the image, using the Healing Brush, Clone Stamp, and Patch tools to remove various flaws. The Patch tool was ideal for removing the reflections from the left-hand side of the façade and the leaves from the street. It works by selecting the area you want to correct and replacing this with similarly textured pixels from neighboring image areas. Here, Photoshop automatically adjusts the brightness of the transitions between old and new pixels.

We then adjusted brightness and contrast using the Curves tool. Newer versions of Photoshop create new adjustment layers for all adjustment steps (the "Curves 1" layer in this example), making it much simpler to fine-tune or delete individual adjustments without affecting the original image data. We brightened the midtones and darkened the highlights a little in order to intensify the effect of the sun's reflection. You can make these types of adjustments selectively using layer masks.

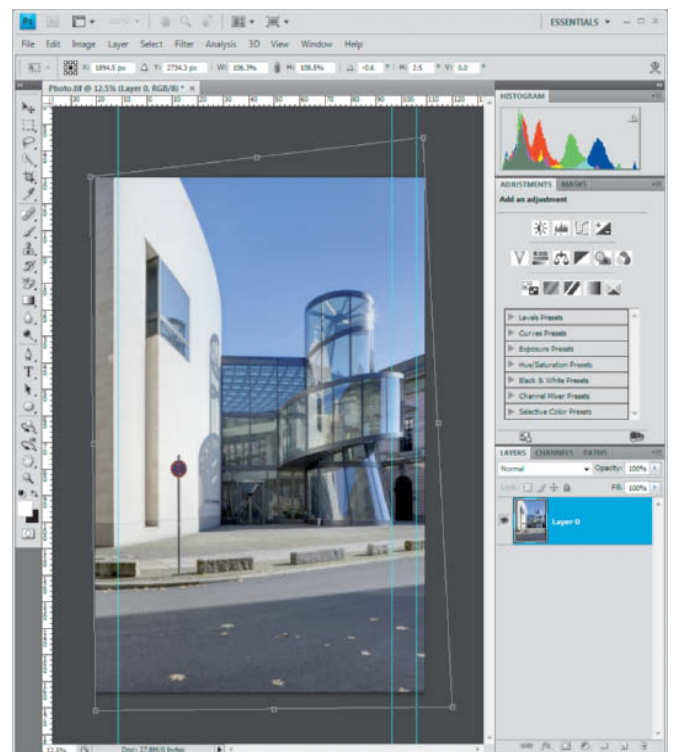
Finally, we adjusted local contrast in the glass façade by duplicating the background layer (Layer > Duplicate Layer) and applying the Unsharp Mask filter in the Filter > Sharpen menu with a high Radius value. You can



The Patch tool removed the unwanted reflections in the left-hand side of the façade



Here, we used a black brush in a new layer mask to remove the fringing caused by increasing local contrast



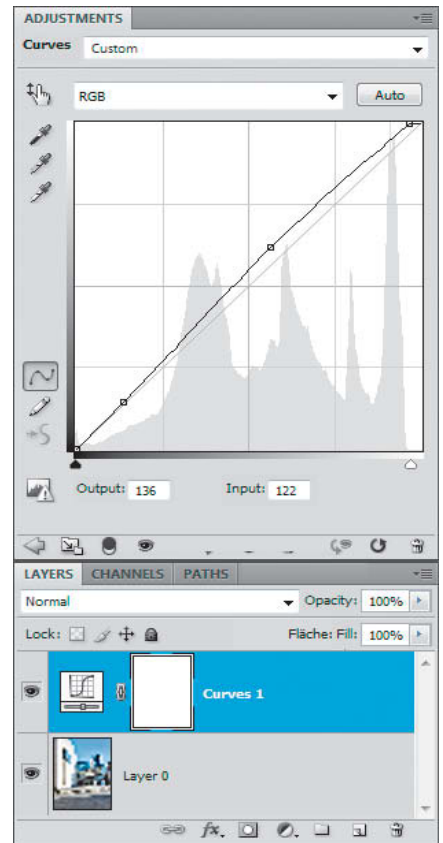
We used the Transform command to level the horizon



The original image after RAW conversion but before processing



The finished image is much "cleaner"



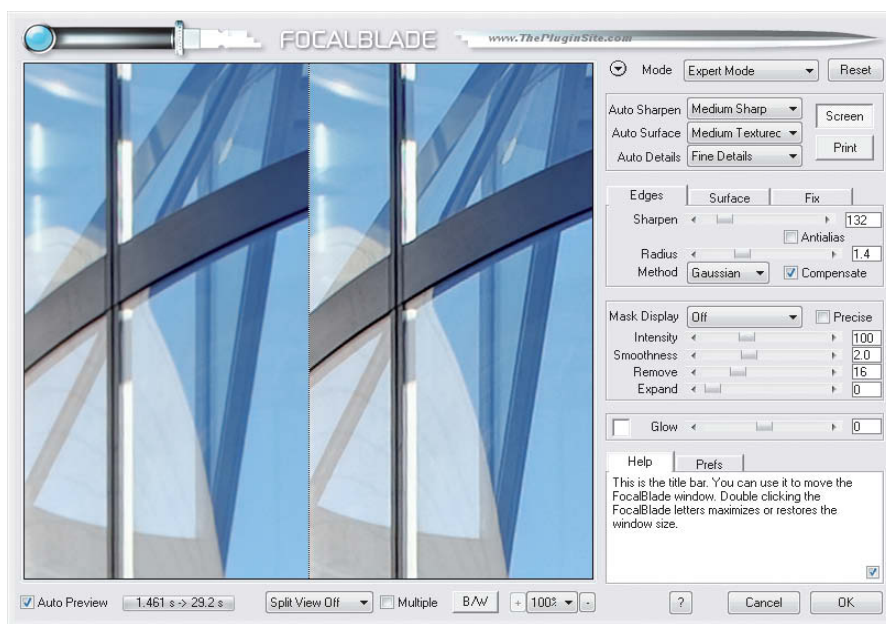
Tone curves are used to improve brightness and contrast. In our example, we slightly brightened the midtones.

and plug-ins available. We particularly like the results produced by Focalblade.

We cropped some of the street out of the finished image to keep the overall look clean and simple. (jr)

adjust the Amount slider according to taste. The only disadvantage of using this tool is that it tends to produce color smears at the high-contrast edges of large, uniform surfaces. You can, however, remove smears using the Brush tool in a new layer mask (created by clicking the button circled in red in the screenshot on the previous page). We reduced the opacity of our new layer slightly to keep the effect subtle, as over-the-top adjustments can quickly spoil an image. Once we had finished these adjustments, we flattened the image to the background layer before making some color corrections.

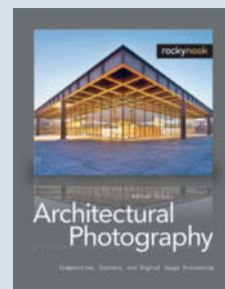
The *Photoshop* Selective Color adjustment tool can be used to make extremely precise changes to individual hues. We used the tool to reduce the slight red cast inherent in digitally-produced blue tones in the sky. We also recommend that you sharpen your image slightly once you have finished making corrections. *Photoshop's* Unsharp Mask tool produces satisfactory results if you set the Radius value to between 0.3 and 1.0 and the threshold value to between 0 and 3. Later versions of *Photoshop* also include the new Selective Sharpen tool. There are also a number of more complex sharpening tools



Specialized sharpening tools such as *FocalBlade* often produce better results than the built-in *Photoshop* tools

## Book Tip

Adrian Schulz' book *Architectural Photography* offers both aspiring amateur and advanced photographers a comprehensive overview of the practical and technical aspects of photographing buildings, and provides the reader with all the necessary knowledge for making great architectural photos.



Published by Rocky Nook, Inc., July 2009, 224 pages, US\$ 44.95



He

ad games

Successful portrait photos adhere to certain compositional rules, but the emotional and visual impact of a portrait is largely determined by the skill used to light the subject and the communication between photographer and model.





## Portrait Composition

Architectural and landscape photographers concentrate on their subject's lines and proportions in order to produce satisfactory results, and portraits too can benefit from the application of some basic compositional rules.

### The Rule of Thirds

You have to frame your image before you can further refine your composition. Try to avoid placing your subject in the center of the frame. If you are new to portrait photography, the "rule of thirds" can help you to achieve results similar to those produced by applying the mathematically more complex "golden ratio" rule. Imagine two horizontal and two vertical lines that divide the frame into nine equal sections, and then try to place the most interesting part of your subject (for example, an eye or a hand) at one of the intersections. If your image includes a horizon, this can be positioned on either of the two horizontal lines, and you should try to orient the edges of your subject to one of the vertical lines. Many cameras allow you to superimpose a thirds grid on the monitor, and image processing software often includes a thirds grid for use during cropping. Once you have gained some experience using the thirds grid, you can begin to compose images in other ways, using different proportions within the frame.

### Lines and Proportions

The photographic portrait has its origins in the world of painting, so it is worth taking



An example of how to use the rule of thirds in your composition. The subject's eye is positioned at one of the intersections in the grid. The resulting proportions produce an interesting overall look.

a look at the composition of some classical portraits as a guide. Early portrait photos were often deliberately composed to look like paintings, and it is interesting to note that the overall look of a portrait is influenced by the subject's clothing as well as the facial expressions and body language.

In the series of portraits shown here, the clothing was a defining element in the overall composition, with the jacket collar and the brim of the hat providing a frame for the subject's face. The dominant diagonal lines create tension between the dark and light areas within the image, and the resulting contrast forms a counterpoint to the finely textured face.

Keep in mind the effects the shapes in your image have. Opposed lines create tension, while diagonal lines generally produce strongly positive or negative feelings in the viewer. Lines that lead the eye from bottom left to top right are usually considered to be ascending. In the image on the right, a second diagonal line contributes to the ascending feeling, assisted by the low camera position.

### Choosing Your Position

Choose your camera position carefully. Your position relative to your subject is an emotional as well as a physical one. A low camera position elevates the subject, while a higher camera position means you are literally looking down on your subject. The portrait at top left shows that these effects can also be toned down by lighting effects and the expression on the subject's face, as well as by dominant lines within the image. Remember also, the shorter the focal length of your lens, the stronger the

perspective effects in your image will be. These rules are only intended as an aid to composition, and it is always the photographer who makes the final decision as to how the image should look. The most important rule to remember is that you are allowed to break all the other rules if it helps to produce a better image.

A low camera position was deliberately chosen to give this image a "heroic" look, and the effect is accentuated by the upward diagonal of the subject's jacket collar. Check out the enclosed, red shape formed by the subject, his hat, and his collar. The tight crop helps produce tension in the finished image.







### Creating Texture with Light

The lighting for this shot was set up with a “light soft, develop hard” idea in mind. The simple setup consisted of a softbox close to the subject on the left and an absorber on the right to give the face a dark edge. We used a normal reflector with a honeycomb

baffle to light the background from the right, creating a graduated falloff effect in the opposite direction to that produced by the main subject lighting. This helped to separate the subject graphically and texturally from the background.

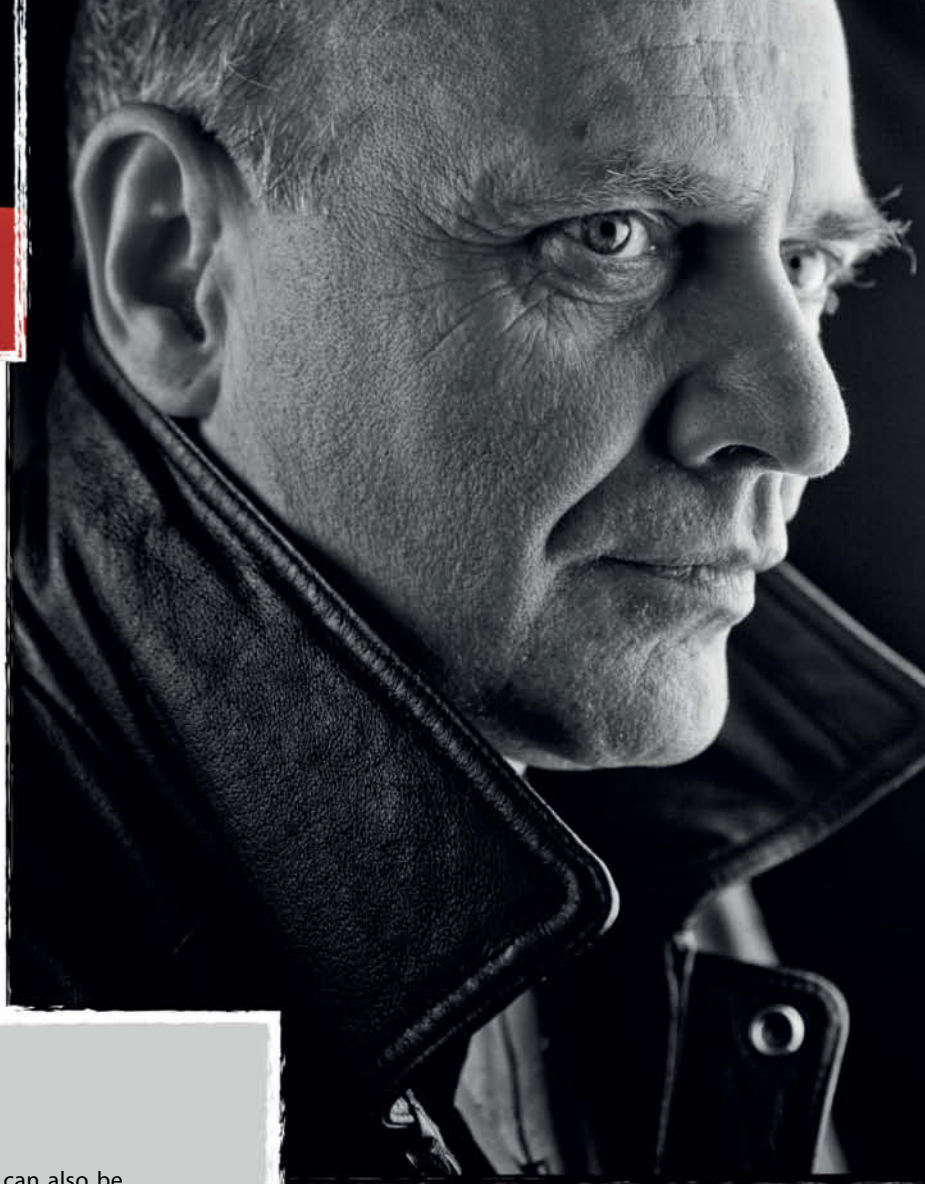






### Crosslighting

This setup consisted of two main lights positioned diametrically opposite to one another. The flash on the left was fired through a white umbrella and a softbox was placed to the subject's right. This type of setup is called "crosslighting", creates a highly defined look with fine textures and skin imperfections showing up strongly. Crosslighting should be used with care, as the effects it produces are not always flattering!

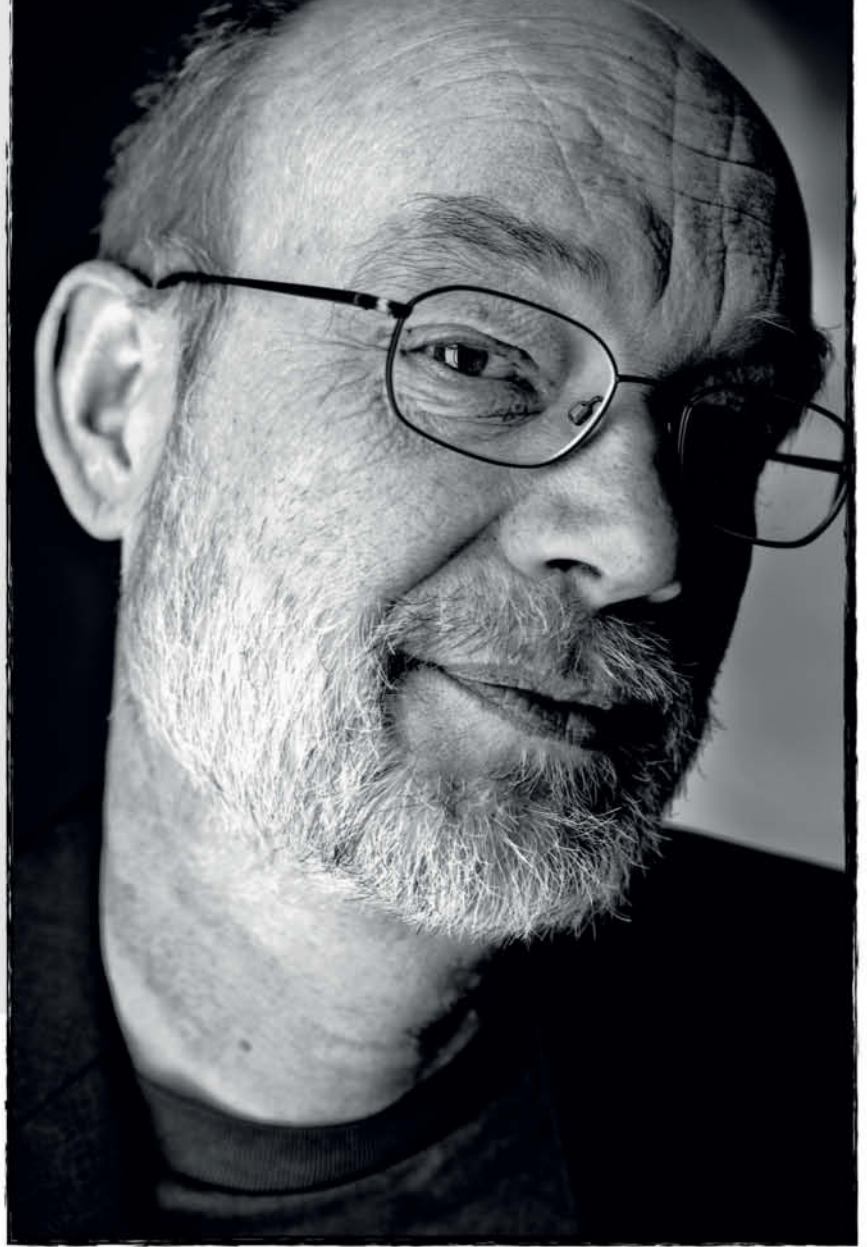


### The Emotional Effect of Light

Light can be flattering, but it can also be ruthlessly revealing.

The lighting in classic Hollywood movies was always set up to enhance the effect of the characters concerned. Stars were always bathed in an aura of glamorous, white light, while the baddies were given much harsher treatment.

"Hard" light accentuates facial expressions, and facial shadows can make a portrait subject look mysterious and inscrutable. Crosslighting effects can make a character appear ambiguous or shifty, and lighting a face from below always produces a devilish effect.



## Different Aspects of a Subject's Personality

Taking portraits is a way of getting to know your subject more closely and, ideally, helps a subject to learn about himself too. The communication between photographer and subject is important, and can only really function properly in a relaxed atmosphere. Make sure you take enough breaks and keep a close eye on your subject's personal characteristics throughout the shoot. Release the shutter without warning, ideally when the subject is not expecting it. The best portraits are made when the subject is no longer aware of the camera at all.

### Fake Shots

If your subject appears tense and your photos look artificial as a result, it can help to use the following technique: announce your shot and release the shutter very obviously. Once your subject has relaxed after the shot, you can press the shutter button again immediately (and as casually as possible) to catch him unawares. If you practice this technique a little, you will find that the second shot is often the better one.

### Distract Your Subject

If your subject is too aware of the camera, you can try some distracting tactics. Speak to your subject while you are shooting or ask questions that require him to think about something other than being photographed.

### Change Positions

Long portrait shoots can cause visible tension in a subject. Instead of letting him know that he looks tense, help him to relax by getting him to move between shots. Simple tricks like suggesting he drink a glass of water can help a lot.

### As for Tension in the Photographer

Closing your eyes and relaxing your shoulders and arms can ease tension, and try not to lose your sense of humor during a shoot—laughter is the best relaxation therapy of all!

### Deliberate Tension

Tension can also be a useful component of a portrait if it is used deliberately to produce expressive results. You can create tension using eye contact or even by deliberately provoking your subject.

A successful portrait session often results in a whole series of images that show many different aspects of the subject's character.





### Distinct Outlines

Here, the main light was pointed directly at the subject. A black cardboard box was used to provide a distinct, dark background, and helped to underscore the contrast in the subject's face.

### Give Yourself a Choice

Try to shoot a number of different variants for each shot. This screenshot of a digital contact sheet clearly shows the differences that slight variations in camera position or the subject's expression can make to the final image. Sometimes it's just as difficult to choose the right image as it is to shoot your photos in the first place.

Many image management programs allow you to rate your images during the sorting process. Try to remain spontaneous while sorting, but also let a day or two pass before making your final selection.





**The Right Look**

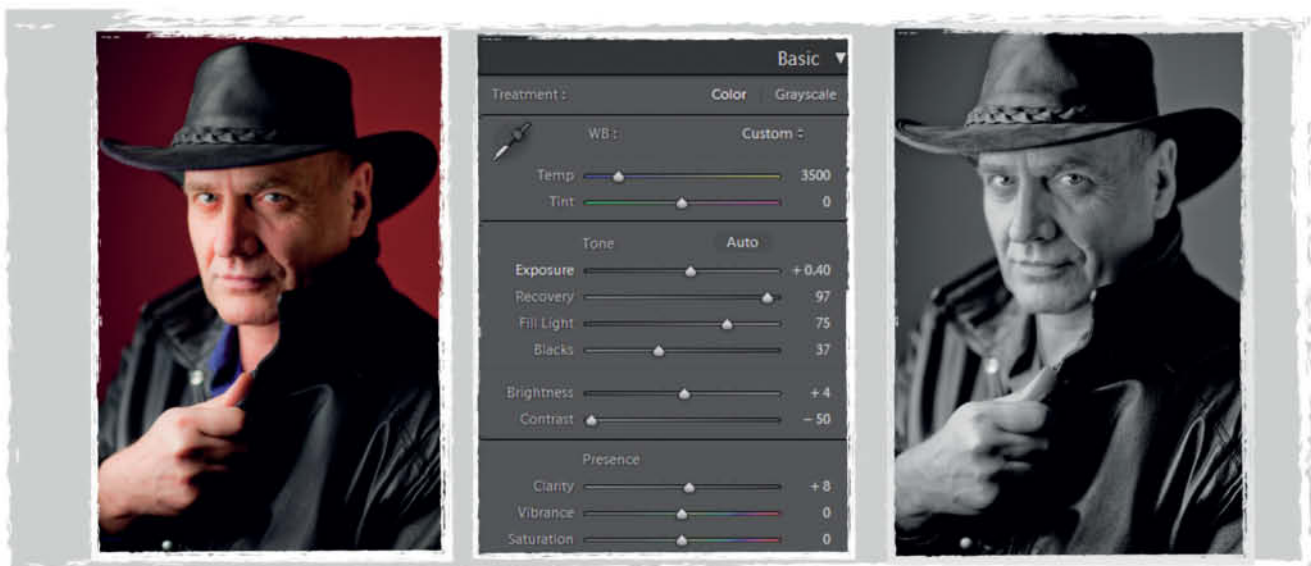
The hard, overexposed feel in this shot is reminiscent of a classic, cross-processed analog look.



### Gradation

Color, contrast, and tonal values are also important in creating the final look of a portrait. In the analog past, the choice of film and development technique determined the look of the finished image. Nowadays, the settings you make in your RAW editor or your image processing software make the critical difference

to the look and feel of your results. Once you have decided whether you want to produce a color or monochrome rendition of your image, you will also need to adjust the image's tone curves. If the original image is good enough, a little manipulation can produce a punchy, characterful portrait.



### Maximum Tonal Range

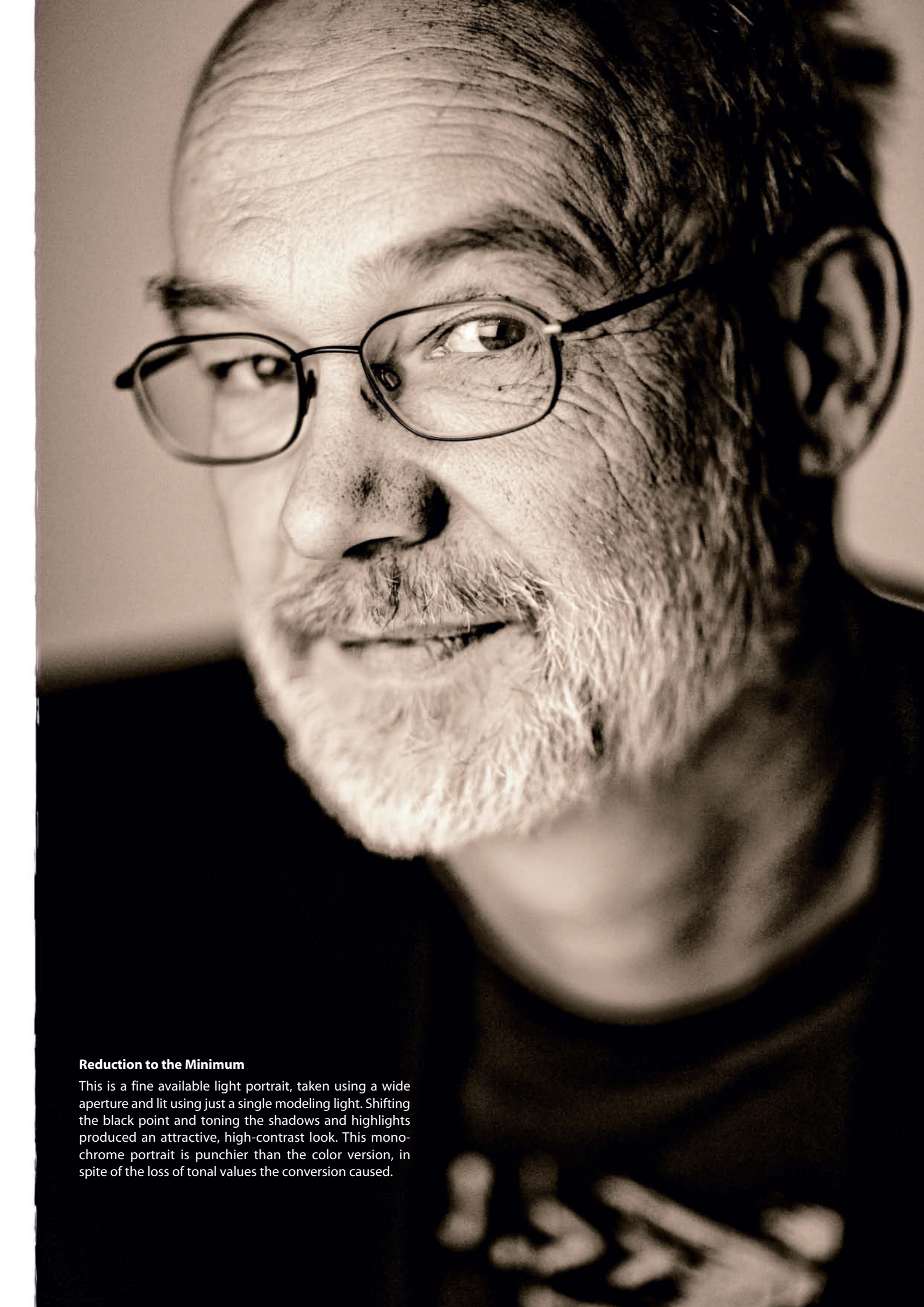
An example of a portrait with a broad range of tonal values: The original photos were shot in RAW format and the RGB files were converted to black-and-white using *Photoshop Lightroom*. The color values and the Darks and highlights were adjusted successively until all the grayscale tones showed good detail. *Lightroom's* "Fill Light"

and "Recovery" sliders were particularly useful here. We tried to preserve as many tonal values as possible in the monochrome image by recovering the highlights and lightening the shadows. We compensated for the resulting loss of contrast by shifting the black point a little to the right.

### About the Author:

Thomas Saur was born in 1966 and lives in Duesseldorf, Germany. He is an art director, photographer, and image manipulator, and is responsible for the design of a number of magazines. He regularly contributes to various specialist magazines on the themes of photography and image processing.

Contact: [foto@tsamedien.de](mailto:foto@tsamedien.de), [www.tsamedien.de/foto](http://www.tsamedien.de/foto)



### **Reduction to the Minimum**

This is a fine available light portrait, taken using a wide aperture and lit using just a single modeling light. Shifting the black point and toning the shadows and highlights produced an attractive, high-contrast look. This monochrome portrait is punchier than the color version, in spite of the loss of tonal values the conversion caused.



Thomas Saur

Digital Camera

# Manual Lens

Autofocus lens performance is not keeping pace with advances in camera and image sensor technology, giving manual focus lenses an unexpected new lease of life. We tested some old (and some newer) manual lenses manufactured by Zeiss and Leica, and compared them with Canon's current autofocus offerings.







I ncreasing numbers of advanced photographers are ignoring the autofocus functionality built into their DSLRs, preferring to focus manually. Fast, fixed focal length, manual-focus lenses attached to DSLRs using adapter rings are capable of producing previously undreamed-of image quality. Leica invented the 35mm format and Zeiss, whose customers include many Hollywood studios and NASA, were the originators of modern lens geometry. Lenses from both companies have a reputation for high optical and build quality and are once again enjoying widespread popularity.

### Image Quality Depends on Adapter Quality

The new wave of interest in manual lenses has brought with it a rash of new adapters. Many

Chinese eBay items appear to offer better value than their counterparts manufactured by established companies like Novoflex, Voigtländer, Panasonic, or Leica, with prices starting at around US\$15 compared with the US\$200 and more you can spend on better-known brands. Because micrometer tolerances can make an appreciable difference to the quality of your results, high build quality is essential in an adapter, and the cheaper adapters we tested simply weren't up to scratch. Some didn't allow us to focus a lens to infinity, resulting in blurred sunsets and frustration, while some cheaper adapters had so much play that the lens was actually in danger of falling off the camera. Novoflex adapters produce consistently good results, so we used these for our test. Using adapters also nixes automatic aperture control, so you will have to meter exposure in either aperture-priority or manual

mode. Adapters usually make it impossible to transfer Exif data from the lens to the camera, although some newer models have glued-on programmable chips that work around the problem. Again, we advise caution if you are looking at cheaper adapters, as some chips are not securely fixed and can end up falling off inside the camera body. Some adapters also have a focus-assist chip that causes the in-focus light in your camera's viewfinder to blink when the correct focus distance has been set. Not all lenses can be attached to all camera bodies, but adapters are available for most combinations (see table).

### Which Lenses Can I Use?

A manual focus lens must have an image circle large enough to completely cover your image sensor's surface, which is always the case if you use 35mm system lenses with a DSLR that has a smaller than full-frame image sensor. Your choice of lenses will be limited by the depth of your camera's lens flange – i.e., the distance between the lens mount and the image sensor. If the physical thickness of your adapter does not compensate for the flange depth of your lens, you will not be able to focus to infinity. There is a list of lens flange depths available at the website listed at [1].

Many medium format lenses can be effectively adapted for use with various types of SLR. Although they are large and unwieldy, medium format lenses produce a large image circle that makes them adaptable for use as shift lenses with smaller format cameras. The Hartblei Company ([www.hartblei.com](http://www.hartblei.com)) specializes in adapting and modifying Zeiss medium format lenses. The widest choice of adaptable lenses is available for cameras with relatively low flange depths, such as the Canon range, where the flange depth measures just 44 mm.

### Micro Four Thirds – a Dream Format

Flange depth is an even shallower 20 mm in mirrorless Micro Four Thirds (MFT) format cameras, making it (theoretically) possible to mount just about any 35mm lens on an MFT camera. The M-series lenses manufactured by Zeiss and Voigtländer are especially popular due to their compact size and uncompromising image quality. Remember, the 2x crop factor doubles the effective focal length of a 35mm lens if you mount it on an MFT camera. This reduces the number of effective wide-angle lenses you can choose from, but opens up a whole new world of combinations at telephoto focal lengths. For example, the ama-

Manual lens adapter rings



Another alternative is to permanently attach an appropriate replacement mount, such as those manufactured by Leitax [3], to your camera. If you are unsure about using replacement mounts or adapters, we suggest you take a look at the new Zeiss Z-series lenses, which are available in various fixed focal lengths with built-in Pentax (ZK), Nikon (ZF & ZF.2), and Canon (ZE) mounts. These specially-built lenses are capable of transferring data between camera and lens, making it possible to make full use of your camera's automatic exposure and flash control systems. In April, Zeiss announced the new Compact Prime (CP.2) series of interchangeable-mount cinema lenses designed for use with PL-system movie or Canon and Nikon DSLR cameras. The available focal lengths range from 18 to 85 mm and lens features include normalized bayonets, identical focus and aperture controls, and extra-long focus travel. Voigtländer, too, has recently expanded its range of lenses to include some dedicated DSLR models.

Tips and Tricks for Manual Focusing

Focusing manually using an optical viewfinder requires practice. In analog times, the thickness of the film emulsion compensated for fine focusing errors – a margin for error

zingly bright 50mm Leica Noctilux becomes a 100mm f0.95 telephoto when used with an MFT camera. We will be testing this dream combo in a future issue.

mirror. For the brave, the reward is the opportunity to use some of Leica's best lens geometries with a modern DSLR, while the downside of this type of tinkering is that modifying your camera nullifies its warranty.

Using Leica Lenses

Steadily rising prices are a sure sign of the digital revival that pre-owned Leica 35mm lenses are currently enjoying. One drawback of some Leica lenses, especially wide-angles, is the unusually long distance between the rear lens elements and the lens flange. This can cause serious damage to a DSLR mirror, so check your measurements carefully before using an untried camera/lens combination. There is a Leica lens compatibility list available on the Internet at [2].

If you want to use Leica lenses with a Canon DSLR, you are safe in the medium to telephoto range, and some of the older R-series wide-angles (see the test following this article) can also be used without risking damage to your camera. A few of the newer, optically superior 21mm, 28mm, and 35/1.4mm lenses don't fit on the Canon EOS 5D Mark II that we used for our test, making their extremely high image quality the preserve of Leica, Four Thirds, and Micro Four Thirds users. For compatibility, please see link [2] in 'Useful Links'.

Some photographers have been known to modify their lenses or even their camera's

Lens Adapter Compatibility								
Lens System \ Camera System	Canon EOS	Four Thirds	Micro Four Thirds	Nikon	Olympus OM	Samsung NX	Sony Alpha/Minolta MD	
Canon FD	2 (WL, FC), 4 (WL)	2	1, 10 (Ray)			1	2 (mL)	
Contax/Yashica	2 (AFB), 8, 10	1, 2 (FC), 10	1, 10 (Ray)			1		
Exacta		10						
Hasselblad	1, 2	1	1	1	1	1	1	
Leica M			1, 10 (Voi)					
Leica R	1, 2 (FC), 3, 8, 10, 11 (FC)	1, 2 (FC)	1, 10 (Ray)			1	2	
M39	2 (nN)	2 (CO)					2 (CO)	
M42	1, 2 (FC), 3, 4, 10, 11 (FC)	1, 2 (FC), 3, 10	1			1	2 (FC)	
Mamiya 645	1	1	1	1	1	1	1	
Minolta MD	2	2, 10	1			1	2 (WL)	
Nikon F	1, 2 (FC), 3, 8, 10, 11 (FC)	1, 2 (FC), 3, 10	1, 10 (Voi)			1	2 (WL)	
Olympus OM	3, 10, 11 (FC)	1, 2 (FC), 3, 5	1, 10 (Ray)			1		
Pentax Six		2					2	
Pentax 6x7	1	1	1	1	1	1	1	
Pentax K	2, 10	1, 2 (FC), 10	1, 10 (Voi)			1	2, 7	
Rollei QBM	2	10						
Sony Alpha/Minolta AF			1			1		
T2	2, 4, 6	1, 2 (FC)	1	2, 6	6	1	2, 6	

1: Novoflex, 2: Enjoyyourcamera, 3: B.I.G., 4: Hama, 5: Olympus, 6: Soligor, 7: Samsung, 8: Zoerk (www.zoerk.com), 10: www.cameraquest.com, 11: happypagehk on eBay, WL: with lens, FC: with focus confirmation, CO: close-up only, Voi: Voigtländer, Ray: Rayqual

that is simply not available to digital photographers. Tactile feedback from the focus ring on manual lenses makes focusing easier, but judging sharpness using the standard focusing screen built into most cameras can be quite difficult.

Many initial attempts at manual focusing, especially using bright lenses, end in disappointment. But don't give up! The following sections list a few useful tips and tricks to help you focus precisely.

### ► Adjust your viewfinder eyepiece

Make sure your viewfinder eyepiece is set to the correct diopter value for your eye.

### ► Use a replacement focusing screen

The rise of autofocus has seen an equivalent decline in the use of high-quality focusing screens in DSLRs. A microprism or split-screen focusing screen is a great aid to manual focusing. Most quality DSLRs allow you to swap out your focusing screen and most photo stores carry a range of replacement screens for Nikon and Canon DSLRs.



The Hoodman HoodLoupe provides an enlarged view of your camera's display, making precise manual focus adjustments much easier

### ► Use the focus indicator

Zeiss Z-Series lenses and adapters with built-in focus confirm chips work in tandem with your camera's autofocus systems. An indicator light blinks when the selected focus area is in focus. With a little practice, you will be able to apply this technique quickly and precisely.

### ► Focus using Live View

Live View displays the image data exactly as it is captured by the image sensor, and is thus the most accurate focusing reference. Live View displays can usually be zoomed to provide further focusing accuracy. Some camera functions are not available in Live View mode (especially in Canon models), so we recommend that you always update your camera firmware to the latest available version in order to take advantage of the latest features and functionalities.

### ► CD magnifiers

The LCDs built into most cameras have sufficient resolution to make using a magnifier practical. The Hoodman HoodLoupe 3.0 (US\$79.99, [www.hoodmanusa.com](http://www.hoodmanusa.com)) is one of the better models on the market. Once you have got used to mounting and using a loupe, it is probably the most effective way to judge depth of field and ensure that you focus accurately.

### ► Eyepiece magnifiers

Originally designed for use in macrophotographic situations, most eyepiece magnifiers crop the viewfinder image and only magnify the inner image circle, making them less suitable for general focusing purposes.

## The Bottom Line

It is now possible to use a great many older and current manual focus lenses with a wide range of digital cameras, but some questions still remain: Does the difference to the results justify the extra effort and expense involved? Can high-quality European manufacturing really compete with mass-produced Asian high-tech? Is there any truth in the rumors that modern lens quality simply isn't comparable to that of older, manual lenses? We compared 20 wide-angle, standard, and short telephoto lenses manufactured by Zeiss and Leica with their modern, autofocus counterparts. You can read our sometimes surprising results on the following pages.

## Useful Links

### Manufacturers:

[www.zeiss.com](http://www.zeiss.com) > Camera and Cine Lenses

<http://us.leica-camera.com/photography/>

### A comprehensive list of Leica lenses that helps identify and combine serial numbers with the year of manufacture:

[www.overgaard.dk/leica\\_lens\\_compendium.html](http://www.overgaard.dk/leica_lens_compendium.html)

### Websites:

[www.mflenses.com](http://www.mflenses.com)

[www.l-camera-forum.com/leica-forum/digitalforum](http://www.l-camera-forum.com/leica-forum/digitalforum)

[www.imx.nl/photo/](http://www.imx.nl/photo/)

[www.pebbleplace.com](http://www.pebbleplace.com)

[www.l-camera-forum.com/leica-wiki.en/index.php/Main\\_Page](http://www.l-camera-forum.com/leica-wiki.en/index.php/Main_Page)

[forum.manualfocus.org/](http://forum.manualfocus.org/)

### Various reviews, including some for Leica and Zeiss:

[www.srlensreview.com/web/](http://www.srlensreview.com/web/)

[www.stevhuffphotos.com/Steve\\_Huff\\_Photos/STEVE\\_HUFF\\_PHOTOS\\_\\_.html](http://www.stevhuffphotos.com/Steve_Huff_Photos/STEVE_HUFF_PHOTOS__.html)

### Comprehensive Zeiss lens reviews (some for a fee):

<http://diglloyd.com/index.html>

### A thread that includes sample images shot using manual lenses and DSLRs:

<http://photography-on-the.net/forum/showthread.php?t=644277&highlight=leica+apo>

### Links mentioned in the article text:

[1] [www.photoethnography.com/Classic\\_Cameras/index-frameset.html?Lens-adapters.html~mainFrame](http://www.photoethnography.com/Classic_Cameras/index-frameset.html?Lens-adapters.html~mainFrame)

[2] [www.pebbleplace.com/Personal/Leica\\_db.html](http://www.pebbleplace.com/Personal/Leica_db.html)

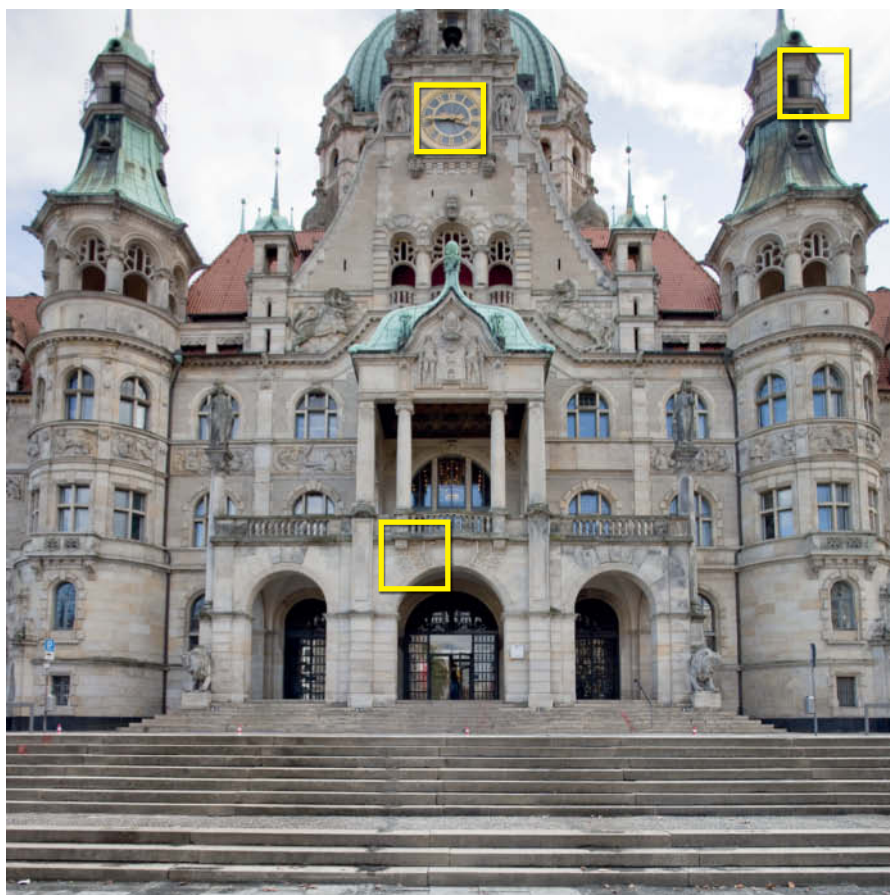
[3] [www.leitax.com/Leica-lens-for-Canon-cameras.html](http://www.leitax.com/Leica-lens-for-Canon-cameras.html)



This image was made using an old Leica Elmarit-R 90mm f2.8 lens bought very cheaply second-hand. Note the high-contrast lion's head door-knocker in the foreground and the well-defined background blur at top left. This is a very good example of the famous, deeply three-dimensional Leica look.

# Lens Test

## Manual vs. Autofocus



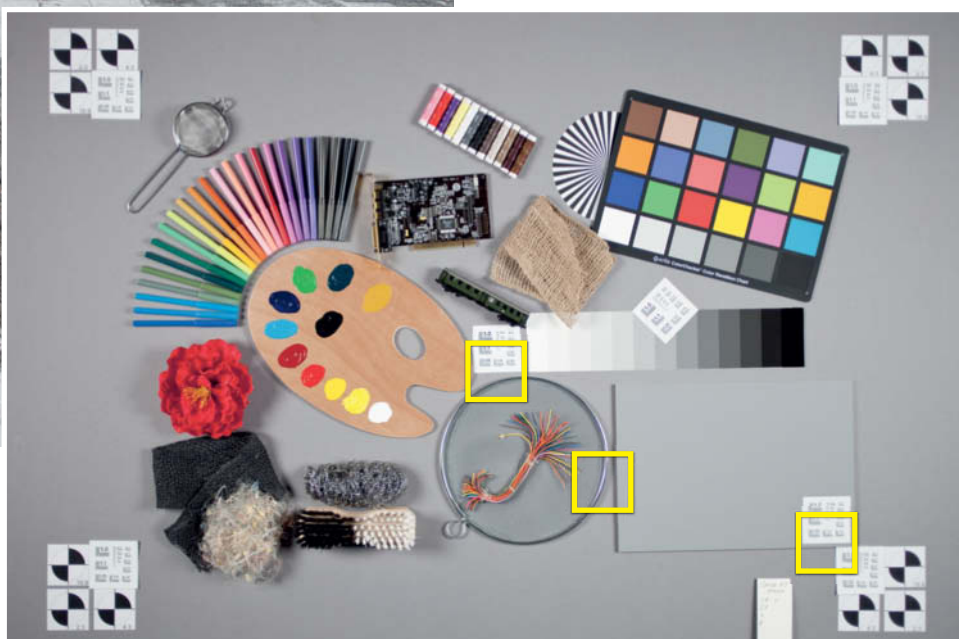
For our test, we compared Canon, Leica, and Zeiss lenses mounted on a 21-megapixel, full-frame Canon EOS 5D Mark II. We used a Novoflex adapter to mount the Leica lenses. The Zeiss ZE-series lenses have built-in Canon mounts. All test shots were taken from a tripod with the mirror locked up, and we used a Hoodman HoodLoupe to focus via Live View. We would like to thank Meister Camera Hamburg ([www.meistercamera.com](http://www.meistercamera.com)) for giving us access to many of the Leica lenses we tested.

Because some of the tested lenses are pre-owned, the results are not necessarily applicable to the entire lens series. Changing lighting for the exterior shots made some comparisons more difficult, and the manufacturing tolerances in some of the autofocus lenses made using the manual focus ring a bit of an adventure! Focus shift also hampered our experiments with some of the brighter lenses. All in all, we consider our findings to be more of a field report made under realistic, everyday shooting conditions than a hard-core, lab-grade test. At various points in the test, we use additional photos to underscore our evaluations. We have included all 105 original test images in the Sample Images folder on this issue's free DVD so you can judge the results for yourself.

**Exterior shots: we used the front of the Hanover town hall as the subject for our wide-angle shots, where the backlit situation made the scene quite difficult to shoot. We looked at sample details from the edges and the center of each image made using the 21mm, 28mm, and 35mm lenses.**



Our test scene: we shot our artificially-lit test image uncropped and used a range of details to judge the quality of the test lenses





## Canon EF 20mm f2.8 USM

This lens was not as good as the other Canon wide-angles we tested, showing obvious vignetting at maximum aperture. It still shows weakness even when stopped down to f8 and cropped. The lens is compact and well-constructed, and is suitable for less demanding applications. If you use a high-resolution, full-frame camera, you should look for alternatives.

### Canon EF 20mm f2.8 USM

Focal length	20 mm
Aperture range	f2.8 – f22
Angle of view (horiz./vert./diag.)	84° / 62° / 94°
Construction	11 elements in 9 groups
# of aperture blades	5
Closest focus distance	0.25 m
Maximum reproduction ratio	0.14



## Leica 21mm f4 Super-Angulon

This is an old lens, built in 1968. It is compact and solidly constructed with a square sunshade. Edge detail at maximum aperture is basically unusable, but we didn't have a second lens from the same series to check whether ours was a dud. Reproduction is soft and diffuse with severe vignetting and distortion at the edges of the frame. At f8, center detail is usable but edge detail is still poor.

### Leica 21mm f4 Super-Angulon

Focal length	21 mm
Aperture range	f4.0 – f22
Angle of view (horiz./vert./diag.)	n/a
# of aperture blades	9 elements in 9 groups
Blendenlamellen (Anzahl)	n/a
Closest focus distance	0.3 m
Maximum reproduction ratio	n/a



Center sharpness

Edge sharpness

Detail

Center

Edge

Detail

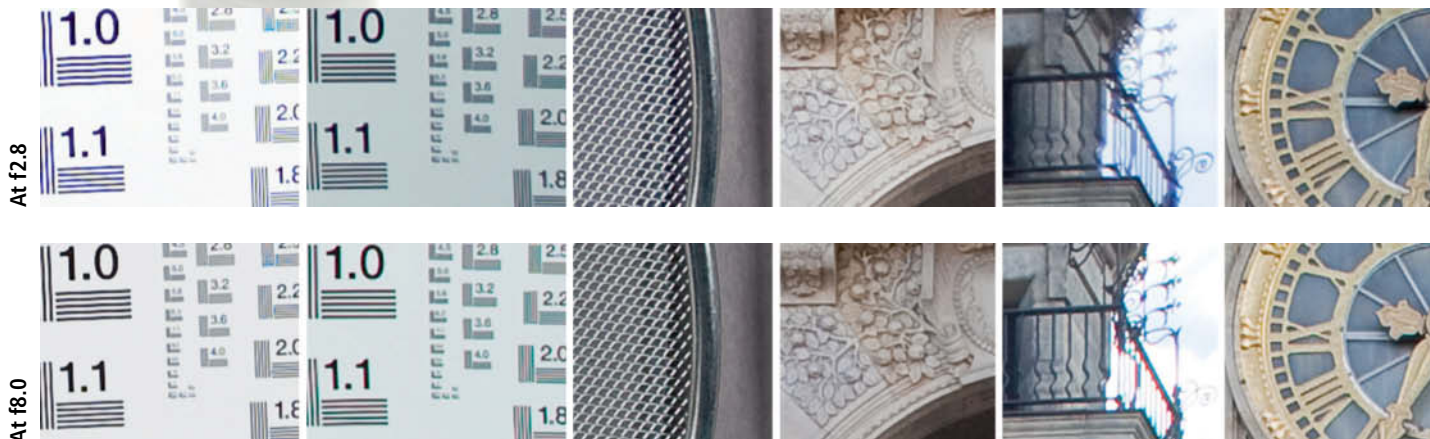


## Zeiss Distagon T\* 21mm f2.8 ZE

An excellent quality ultra-wide-angle lens that shows very little distortion or vignetting at maximum aperture. Even when the lens is wide open, sharpness is excellent in the center and very good at the edges of the frame. Stopped down sharpness and contrast are consistently good over the whole frame. Floating element construction ensures great close-up results. All this and very good highlight handling make this lens unrivalled in the wide-angle arena.

### Zeiss Distagon T\* 21mm f2.8 ZE

Focal length	21 mm
Aperture range	f2.8 – f22
Angle of view (horiz./vert./diag.)	81° / – / 90°
Construction	16 elements in 13 groups
# of aperture blades	n/a
Closest focus distance	0.22 mm
Maximum reproduction ratio	n/a

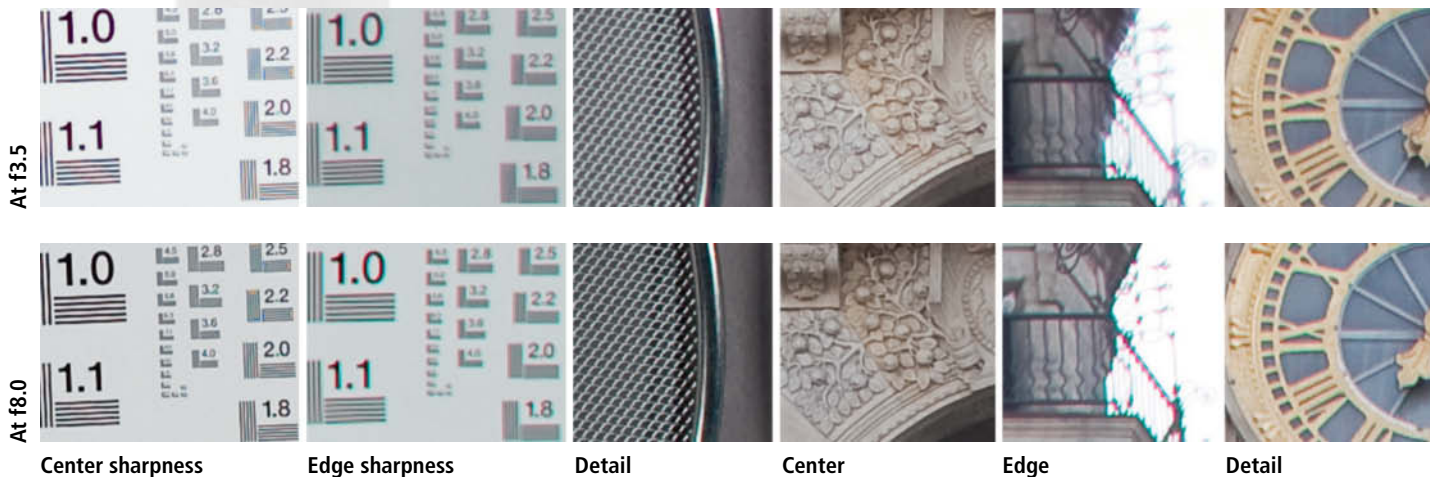


## Canon 24mm f3.5 TS-E

Unfortunately, Canon sent us the old version of this professional tilt/shift lens. Like all perspective correction lenses, this one is only available in a manual focus version. Center reproduction is very good and edge reproduction acceptable wide open. Stopping down improves performance but this lens still isn't among the best of the bunch. Its geometry is designed to produce a large image circle, but edge performance was disappointing, even stopped down. In general, this "pro" lens didn't live up to our expectations.

### Canon 24mm f3.5 TS-E

Focal length	24 mm
Aperture range	f3.5 – f22
Angle of view (horiz./vert./diag.)	74° / 53° / 84°
Construction	16 elements in 11 groups
# of aperture blades	8
Closest focus distance	0.21 m
Maximum reproduction ratio	0.34







## Canon EF 16-35mm f2.8L II USM

This is a good quality water and dust resistant zoom lens. Center sharpness is fine at all apertures, but quality tails off toward the edges of the frame at maximum aperture. The 16mm setting produces visible distortion, which lessens toward the 28mm mark. At f8 and smaller, the lens produces consistently high-contrast detail over virtually the whole frame. Only the extreme edges remain below Zeiss standards at all apertures. The lens tends to lose highlight detail in backlit situations.

### Canon EF 16-35mm f2.8L II USM

Focal length	16–35 mm
Aperture range	f2.8–f22
Angle of view (horiz./vert./diag.)	98°–54° / 74°–38° / 108°–63°
Construction	16 elements in 12 groups
# of aperture blades	7
Closest focus distance	0.28 m
Maximum reproduction ratio	0.22 (at 35mm setting)



The top left corner of our test image at maximum aperture. From left to right: Canon 24mm TS-E, Canon 16–35mm, Zeiss 21mm ZE. The superiority of the Zeiss lens is obvious.

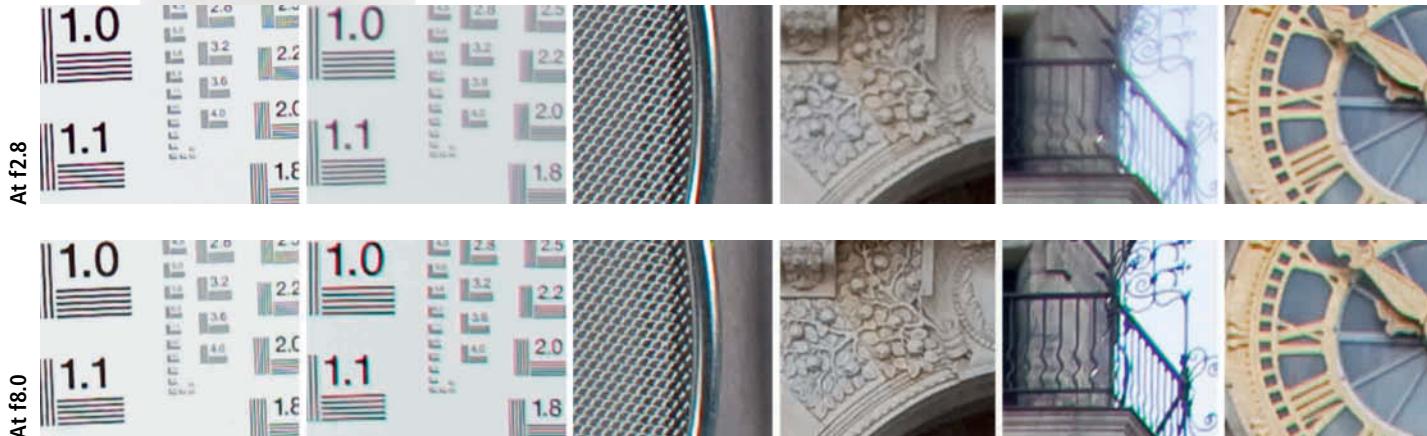


## Canon EF 28mm f1.8 USM

Here, detail is patchy at full aperture, and shows vignetting and slight diffusion. The edges of the frame are soft and tend to wash out. Center performance is good and edge performance acceptable at f8. At a first glance, the lens produces usable results, but a quick comparison with the results produced by the equivalent Zeiss model makes it clear how much potential detail is missing. This is a good lens for use with smaller image sensors.

### Canon EF 28mm f1.8 USM

Focal length	28 mm
Aperture range	f1.8 – f22
Angle of view (horiz./vert./diag.)	65° / 46° / 75°
Construction	10 elements in 9 groups
# of aperture blades	7
Closest focus distance	0.25 m
Maximum reproduction ratio	0.18

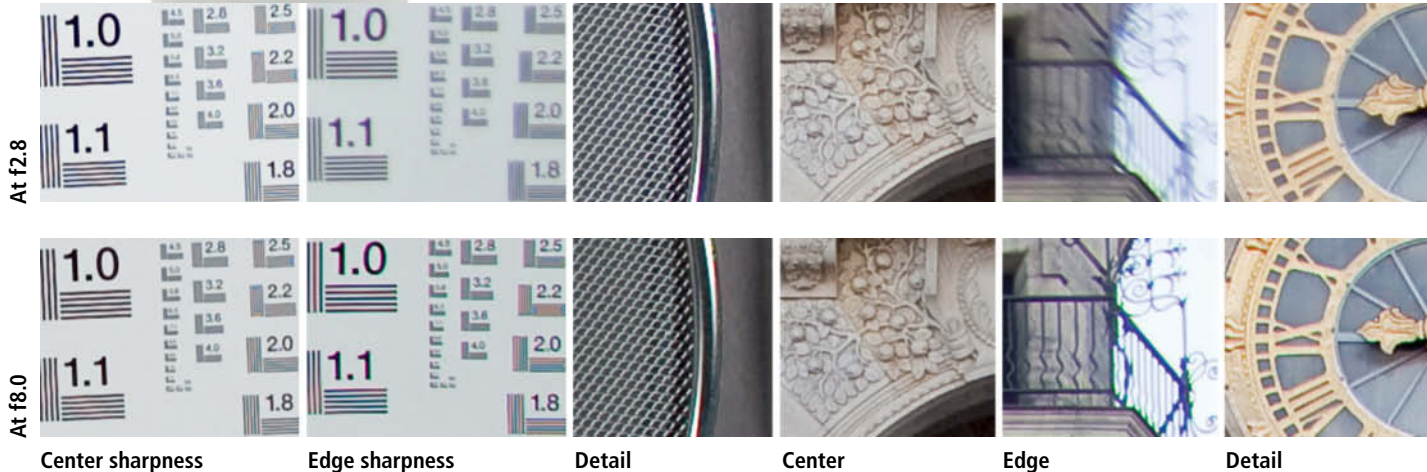


## Zeiss Distagon T\* 28mm f2.8 ZE

This lens produces very little distortion and excellent overall results. Vignetting is visible wide open. Center performance is really excellent at f8, producing very fine microcontrast. Detail is good, but some fringing is visible at backlit edges. This lens is almost (but not quite) as compelling as its 21mm cousin.

### Zeiss Distagon T\* 28mm f2 ZE

Focal length	28 mm
Aperture range	f2.0 – f22
Angle of view (horiz./vert./diag.)	65° / – / 74°
Construction	10 elements in 8 groups
# of aperture blades	n/a
Closest focus distance	0.24 m
Maximum reproduction ratio	n/a



Center sharpness

Edge sharpness

Detail

Center

Edge

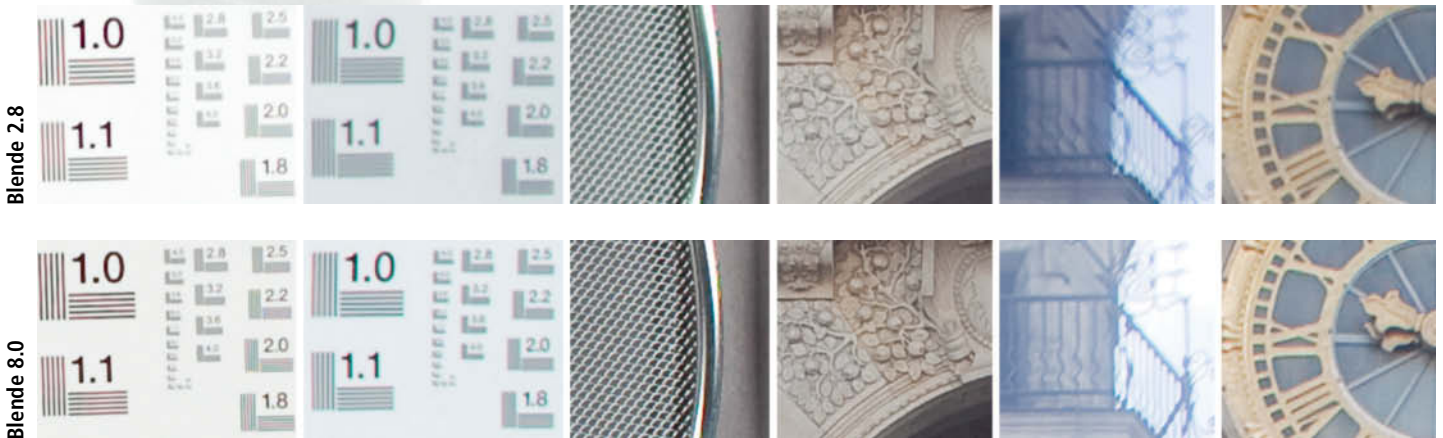
Detail



## Leica Elmarit 28mm f2.8

This lens was built in 1968. It is compact and solidly built with a square sunshade. Edge performance at maximum aperture is poor and is just usable at f8. The lens reproduced our studio test shot best stopped right down, but had difficulties producing acceptable outdoor results. Outdoor contrast was weak and backlit detail was diffuse. Our test lens did not live up to its reputation.

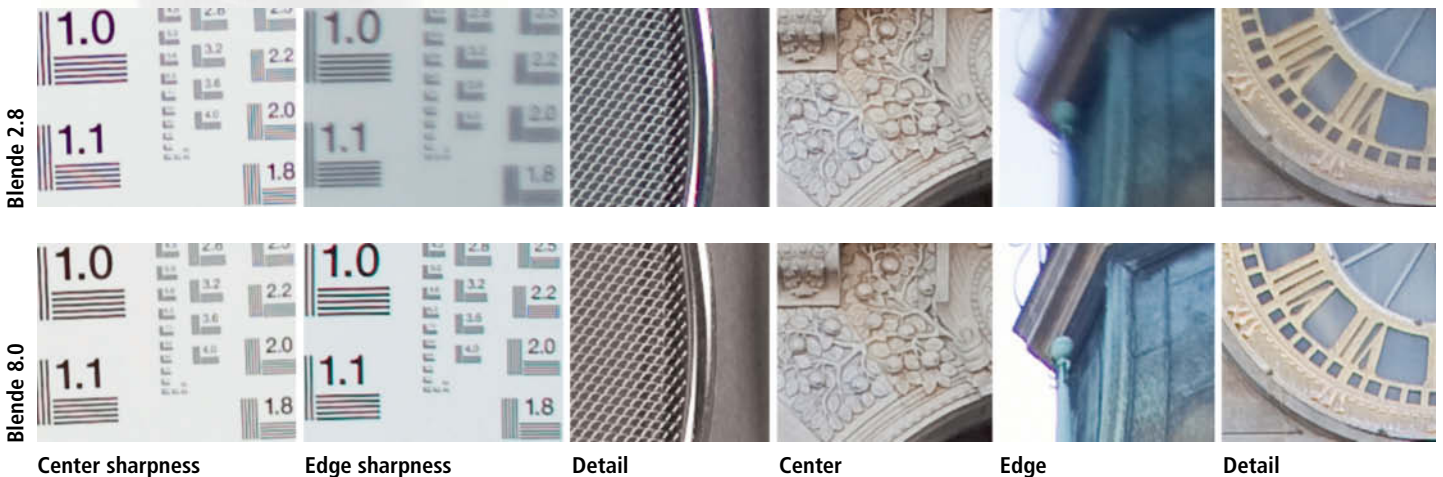
Leica 28mm f2.8 Elmarit	
Focal length	28 mm
Aperture range	f2.8 – f22
Angle of view (horiz./vert./diag.)	n/a
Construction	8 elements in 7 groups
# of aperture blades	6
Closest focus distance	0.3 m
Maximum reproduction ratio	n/a



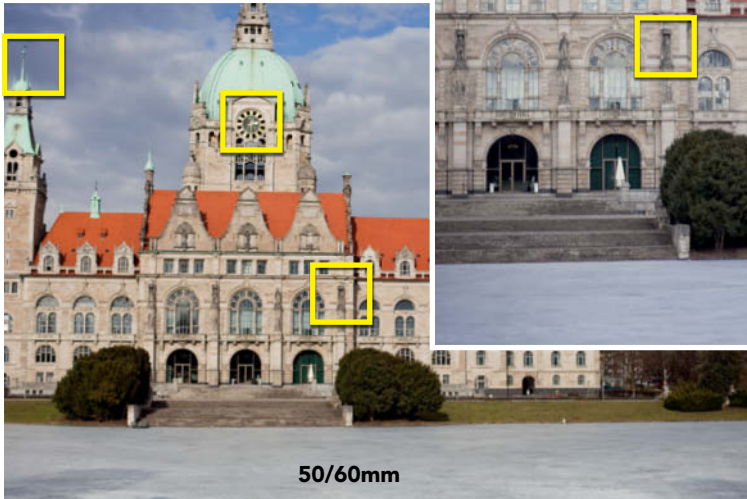
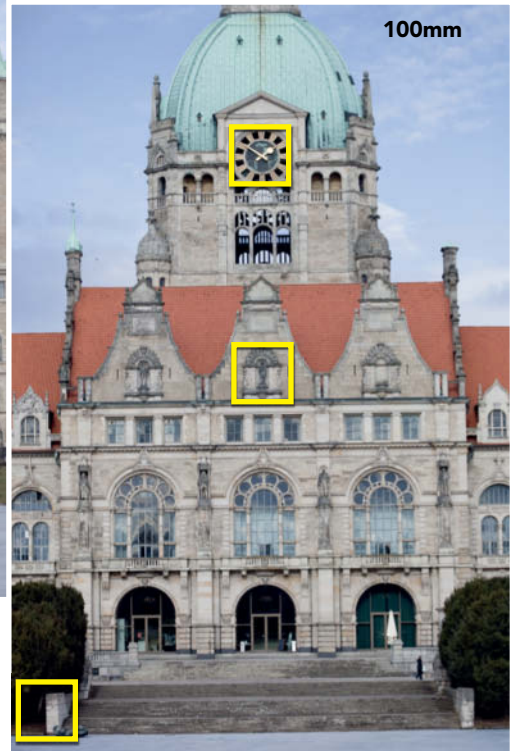
## Leica Elmarit 35 mm f2.8

This lens was built in 1973 and, like the other older Leica lenses, is solidly built and has a square sunshade with rounded corners. Center sharpness is excellent, while sharpness drops off a little at the edges of the frame. The exterior results are extremely good at smaller apertures and again, only the extreme edges show slight optical deficits. Detail and definition are great, making this lens a real alternative to most of its modern, autofocus rivals.

Leica 35mm f2.8 Elmarit	
Focal length	35 mm
Aperture range	f2.8 – f22
Angle of view (horiz./vert./diag.)	- / - / 64°
Construction	7 elements in 6 groups
# of aperture blades	n/a
Closest focus distance	0.3 m
Maximum reproduction ratio	n/a



We made our standard and telephoto test shots at the back of the Hanover town hall. The center, edge, and detail crops we used to analyze the results are framed in yellow.



## Canon EF 50mm f2.5 Compact Macro

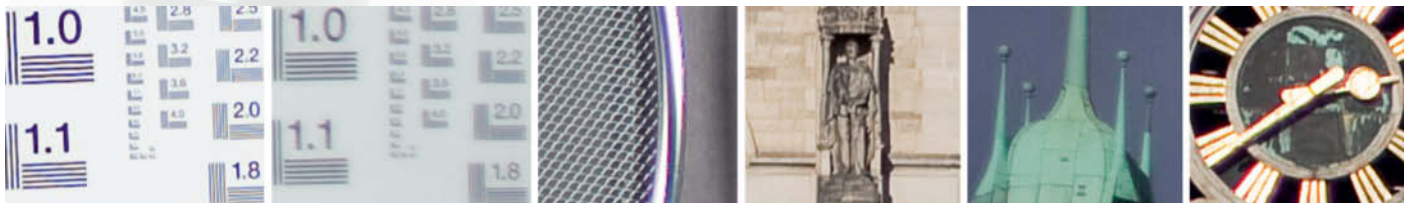
This Canon macro lens has trouble producing adequate edge contrast and detail at maximum aperture. Things look a lot better at f4, and at f8, the whole frame is reproduced nicely, especially close up. Performance is only really adequate stopped down—an acceptable compromise in a macro lens.

### Canon EF 50mm f2.5 Compact Macro

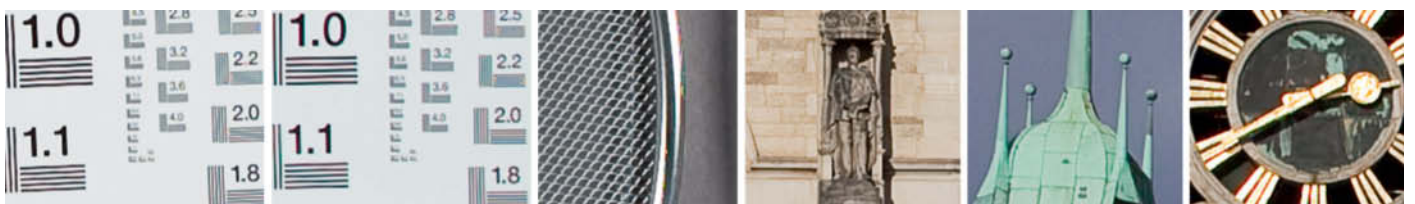
Focal length	50 mm
Aperture range	f2.5 – f32
Angle of view (horiz./vert./diag.)	40° / 27° / 46°
Construction	9 elements in 8 groups
# of aperture blades	6
Closest focus distance	0.23 m
Maximum reproduction ratio	0.5



At f2.8



At f8.0



Center sharpness

Edge sharpness

Detail

Center

Edge

Detail

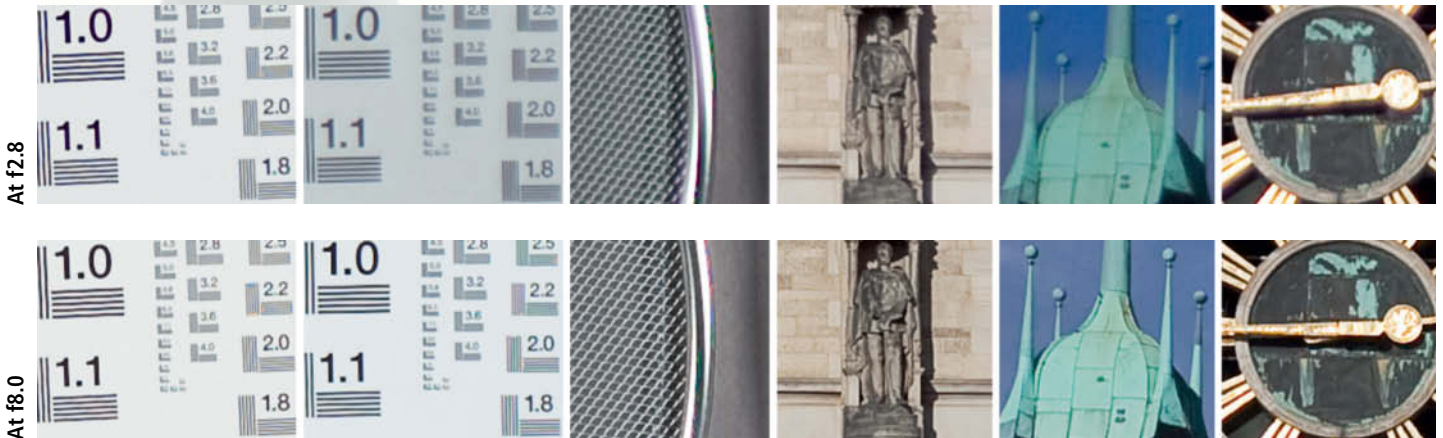


## Leica f2.8 60mm Macro-Elmarit

Built in 1968, our test lens showed distinct signs of wear but nevertheless produced great test results. Edge sharpness was not fantastic at maximum aperture, but overall performance increased quickly just one or two stops later. The lens produced pleasing bokeh and convincing detail with very good microcontrast. Color reproduction was excellent at all but the largest apertures.

### Leica Macro-Elmarit 1:2.8 60 mm

Brennweite	61 mm
Blendenbereich	f2.8 – f22
Bildwinkel (hor./vert./diag.)	33° / 23° / 40°
optischer Aufbau	6 elements in 5 groups
Blendenlamellen (Anzahl)	n/a
Naheinstellgrenze	0.27 m
größter Abbildungsmaßstab	0.5



## Zeiss Makro-Planar T\* 50mm f2.0 ZE

This lens is optically superior to its wide-aperture cousin and is one of the few lenses in our test that showed no real weakness at all. Performance is good wide open and faultless from f2.8 on. Stopping down further increases sharpness and improves micro-contrast over the whole frame. Build quality is superb and the lens has suitably long focus travel, making focusing precise, but not always fast enough for taking snapshots. Color reproduction is warm and bokeh effects are very pleasing. The lens produces

clear, vivid images, even in difficult light, and we recommend it unreservedly.

### Zeiss Makro-Planar T\* 50mm f2.0 ZE

Focal length	50 mm
Aperture range	f2.0 – f22
Angle of view (horiz./vert./diag.)	38° / – / 45°
Construction	8 elements in 6 groups
# of aperture blades	n/a
Closest focus distance	0.24 m
Maximum reproduction ratio	n/a



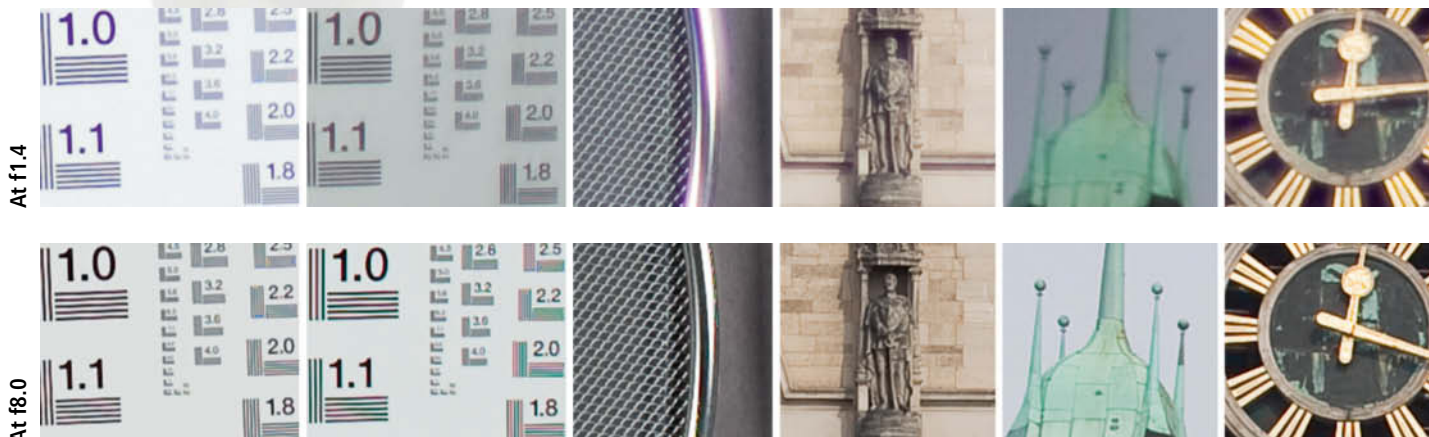


## Canon EF 50mm f1.4 USM

This is a light, compact lens made mostly out of plastic, and looks appropriately cheap. The focus ring has too much play and too little travel for precise focusing. General reproduction is poor at maximum aperture and includes obvious vignetting. Performance is much better at smaller apertures and produces pleasing bokeh when stopped right down. This lens is not up to Leica or Zeiss standards, but acceptable for the price.

### Canon EF 50mm f1.4 USM

Focal length	50 mm
Aperture range	f1.4 – f22
Angle of view (horiz./vert./diag.)	40° / 27° / 46°
Construction	7 elements in 6 groups
# of aperture blades	8
Closest focus distance	0.45 m
Maximum reproduction ratio	0.15

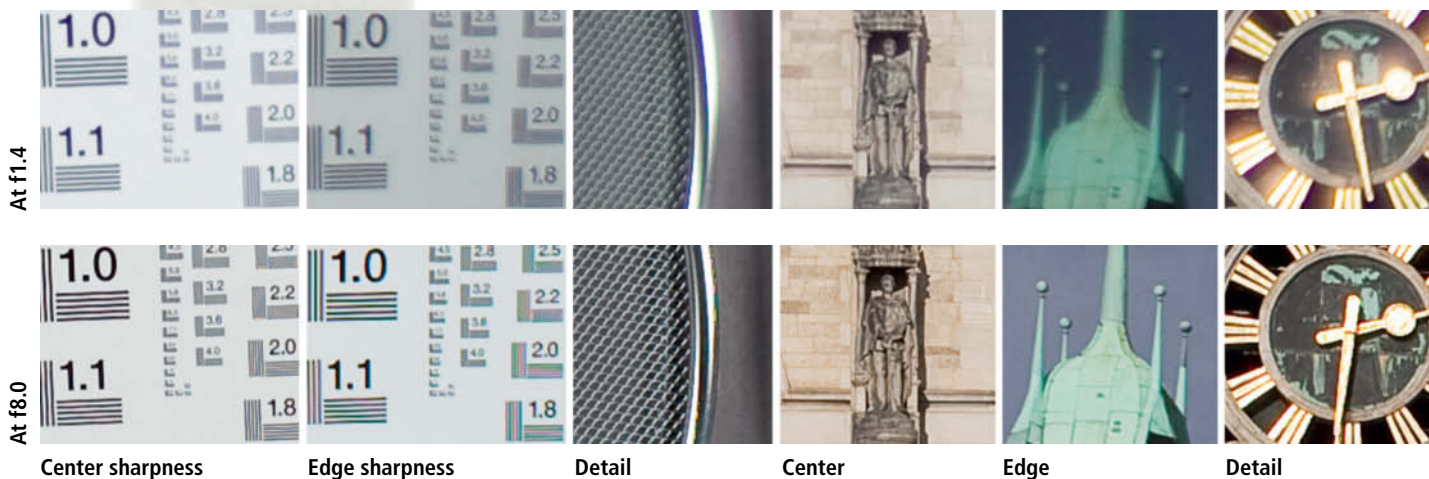


## Zeiss Planar T\* 50mm f1.4 ZE

This lens has the usual excellent Zeiss build quality but produces soft detail and visible vignetting at maximum aperture, making it inferior to the comparable Canon. This lens is only really suitable for shooting portraits and has to be stopped right down in order to produce edge definition better than that of the competition. A paradoxical lens that is weakest in the areas it was designed to excel in.

### Zeiss Planar T\* 50mm f1.4 ZE

Focal length	50 mm
Aperture range	f1.4 – f16
Angle of view (horiz./vert./diag.)	38° / – / 45°
Construction	7 elements in 6 groups
# of aperture blades	n/a
Closest focus distance	0.45 m
Maximum reproduction ratio	n/a



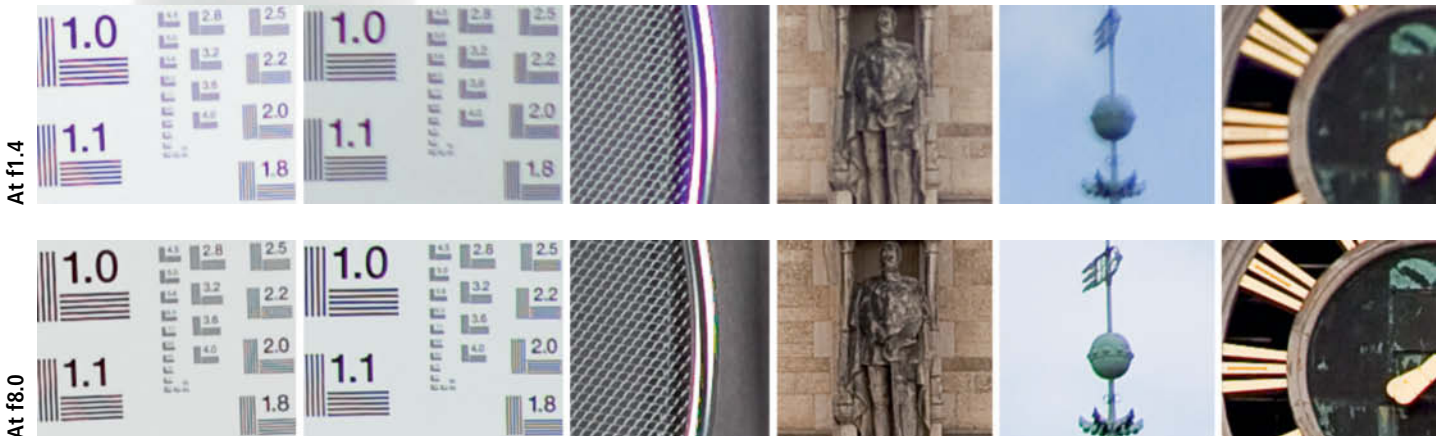


## Zeiss Planar T\* 85mm f1.4 ZE

This lens disappoints when compared directly with other Zeiss offerings. It produces obvious chromatic aberrations, and edge sharpness is only adequate at maximum aperture. Up to f2, the soft look this lens produces is more suitable for portrait shots, but performance improves with smaller apertures and reproduction is generally excellent at f8. The differences between this lens and its much older Contax equivalent are surprisingly small.

### Zeiss Planar T\* 85mm f1.4 ZE

Focal length	85 mm
Aperture range	f1.4 – f16
Angle of view (horiz./vert./diag.)	24° / – / 29°
Construction	6 elements in 5 groups
# of aperture blades	n/a
Closest focus distance	1.0 m
Maximum reproduction ratio	n/a



## Canon EF 85mm f1.2L II USM

This is a big, heavy, high-quality lens that produces great detail right across the aperture range. The slight chromatic aberrations it produces are acceptable, given the very wide maximum aperture. All lens errors disappear below f2.8. Set to f1.4, this lens is just as good as its wide-aperture competitors and is directly comparable with the Zeiss and Leica macros at minimum aperture. The overall picture is rounded out with excellent bokeh and the best depth of field blur of all the lenses we tested.

### Canon EF 85mm f1.2L II USM

Focal length	85 mm
Aperture range	f1.2 – f16
Angle of view (horiz./vert./diag.)	24° / 16° / 29°
Construction	8 elements in 7 groups
# of aperture blades	8
Closest focus distance	0.95 m
Maximum reproduction ratio	0.11





## Zeiss Contax Planar T\* 85mm f1.4

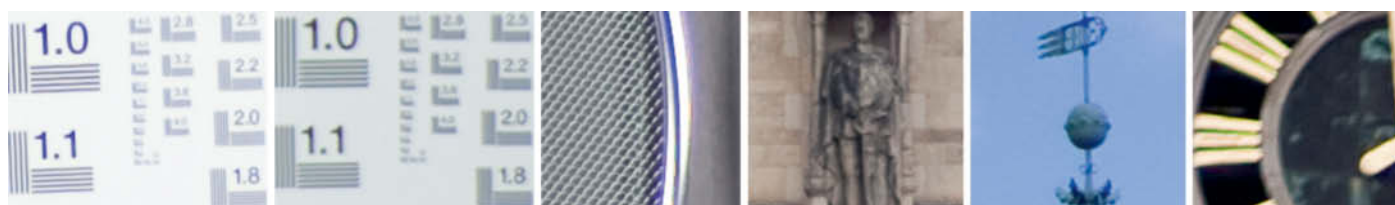
This old Zeiss-Contax lens with its adapter seems to be just as good as the new Zeiss version. It shows only slightly less edge sharpness at maximum aperture, but produces much less chromatic aberration. The lens has the same soft look at wide apertures as its newer cousin, but its performance improves the same way with each further stop down the scale. Performance at f8 is excellent. If you are prepared to deal with its slightly more complicated handling, a used lens of this type is a great value alternative to the new Zeiss version. If you own this lens, it is worth

experimenting with different adapters to see which produces the best results.

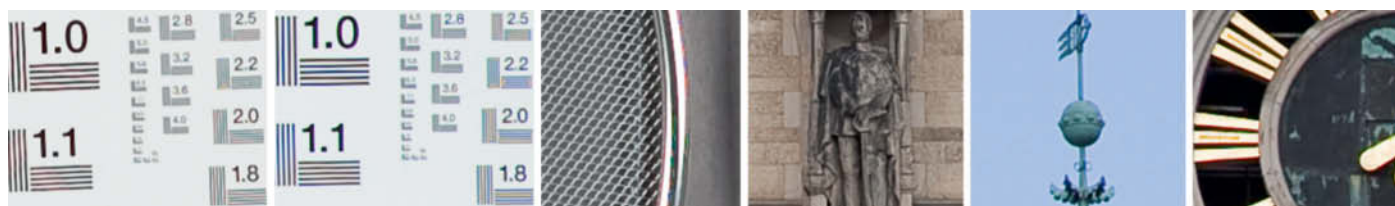
### Zeiss Contax Planar T\* 85mm f1.4

Focal length	85 mm
Aperture range	f1.4 – f16
Angle of view (horiz./vert./diag.)	– / – / 29°
Construction	6 elements in 5 groups
# of aperture blades	8
Closest focus distance	1.0 m
Maximum reproduction ratio	n/a

At f1.4



At f8.0



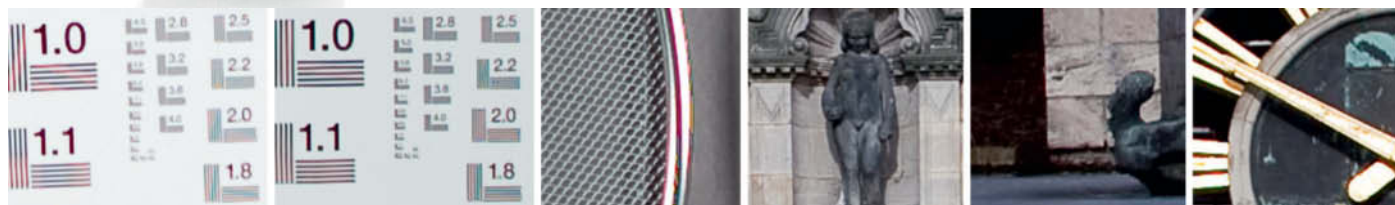
## Canon EF 100mm f2.8 Macro USM

Canon was unable to lend us the new, image-stabilized version of this lens, so we tested the older USM version instead. Performance was fine at maximum aperture, showing only slight chromatic aberration and slight image quality drop-off at the edges of the frame. These problems disappear at smaller apertures. We can wholeheartedly recommend this lens for use with full-frame cameras.

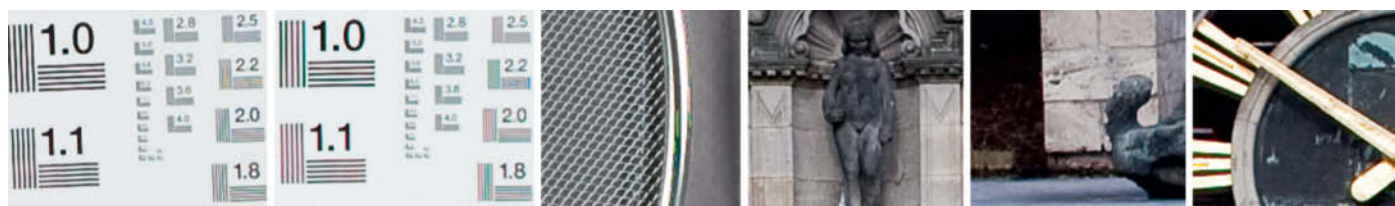
### Canon EF 100mm f2.8 Macro USM

Focal length	100 mm
Aperture range	f2.8 – f32
Angle of view (horiz./vert./diag.)	20° / 14° / 24°
Construction	12 elements in 8 groups
# of aperture blades	8
Closest focus distance	0.31 m
Maximum reproduction ratio	1

At f2.8



At f8.0



Center sharpness

Edge sharpness

Detail

Center

Edge

Detail



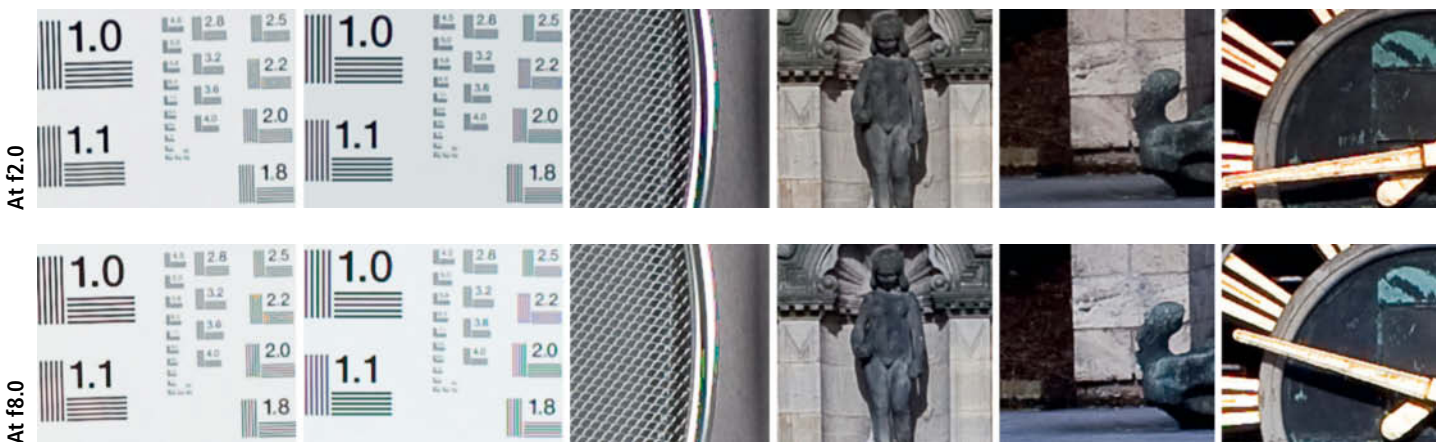


## Leica 100 mm f2.8 Apo-Macro-Elmarit-R

This is the current version, built in 1998. The lens has excellent build quality, but is quite heavy. It also has a built-in, slide-out sunshade. The Apo-Elmarit still deserves its reputation as a reference lens, producing sharp, high-contrast detail throughout the whole aperture range and across the entire frame. Image quality deteriorates – although only slightly – at very small apertures due to the unavoidable internal refraction these cause. The apochromatically corrected glass completely eliminates color errors at all apertures. Focusing is reliable and extremely precise.

### Leica 100mm f2.8 Apo-Macro-Elmarit-R

Focal length	100 mm
Aperture range	f2.2 – f22
Angle of view (horiz./vert./diag.)	20° / 14° / 24°
Construction	8 elements in 6 groups
# of aperture blades	n/a
Closest focus distance	0.45 m
Maximum reproduction ratio	0.5

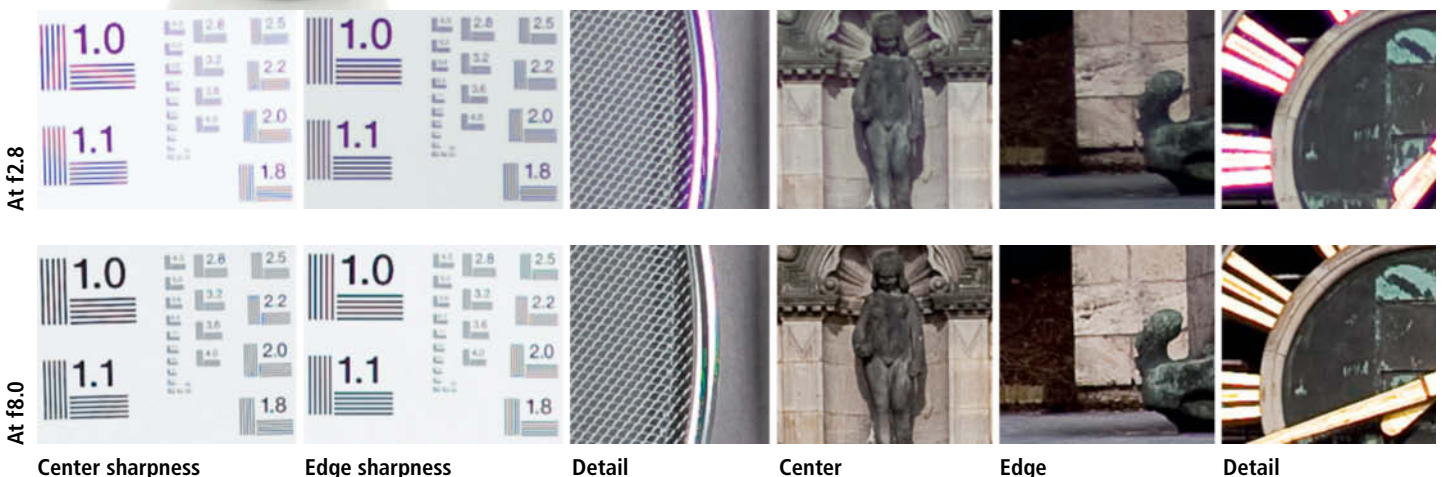


## Zeiss Makro-Planar T\* 100mm f2 ZE

This lens produces excellent detail and micro-contrast across the whole aperture range. Only the chromatic aberrations it produces wide open spoil its otherwise excellent performance. We found slightly more color errors than we did using the 100mm Leica, but this doesn't spoil the overall warm color reproduction or the very pleasing bokeh.

### Zeiss Macro Planar T\* 100mm f2 ZE

Focal length	100 mm
Aperture range	f2.0 – f22
Angle of view (horiz./vert./diag.)	21° / – / 25°
Construction	9 elements in 8 groups
# of aperture blades	n/a
Closest focus distance	0,44 m
Maximum reproduction ratio	0,5



# Results

## Color Reproduction

The Leica lenses we tested all tend to produce somewhat cooler colors, while the Zeiss lenses tend to produce a warmer overall look than their Canon counterparts.

## Wide-angle Lenses

Canon's wide-angle lenses do not fully illuminate the outermost corners of the Canon full-frame image sensor, producing edge artifacts that cannot be eliminated during processing. We do, however, recommend the 16–35mm zoom for use with smaller sensors.

We were disappointed that Canon wasn't able to lend us the current version of their professional 35mm tilt/shift lens, although the results produced by the Zeiss 21mm are better anyway. Our tests showed that even an interpolated, cropped detail of a Zeiss image was sharper than the shifted Canon version. We assume that the new version of the Canon lens will produce better results.

Neither the 21mm nor the 28mm Leica lenses did a convincing job with our 21-megapixel camera, and only the Zeiss really did justice to the large, high-resolution sensor. The 21mm ZE was a clear winner in this segment, producing spectacular results with great definition in spite of its very wide angle of view. Our testers also liked the 28mm Zeiss ZE. In the 35mm arena, the almost 40-year-old Leica produced astonishingly good results.

## Standard Lenses

The differences in quality between manual and autofocus standard lenses are not as great. Only the near-perfect 50mm Zeiss, with its excellent microcontrast and wonderful bokeh, is a reason to cold-shoulder the autofocus option. For use at smaller apertures, the good value 60mm Leica macro is a fine option that produces images with their own unique look. The f1.4 Canon performed better than its cheap appearance led us to expect, although it only really starts to perform at f1.8 and lower.

## Telephoto Lenses

We found the performance of the two bright (f1.4) Zeiss telephotos disappointing. Both lenses are well built and are certainly suitable for portrait use, where the results depend on soft bokeh rather than extremely precise detail. Performance improves dramatically beyond f5.6. As already mentioned, a used Zeiss-Contax makes a good value alternative to a new Zeiss ZE lens.

The 85mm L-Canon proves that you can produce high-quality images at wide apertures. This lens is a great choice for available light photography, but comes at a significant price. It is interesting to note that the focus ring adjusts focus via the camera's autofocus system rather than directly. This makes manual focusing smooth and fast but the absence of the tactile precision of a

purely mechanical lens is very noticeable. We recommend that you switch autofocus on when using this lens.

All of the 100mm macro lenses we tested produced great results. The bright, easy-to-use Zeiss would have taken the prize had it not had a tendency to produce chromatic aberrations. In the end, the Leica's uncompromising quality, even as a repro lens, proves its supremacy and gives it the edge over the others.

## Conclusions

Manual lenses are definitely the best alternative for demanding wide-angle photographers. In this segment, the Zeiss ZE lenses are state-of-the-art. The manual advantage is less obvious in longer lenses, but if absolute image quality is important to you, we recommend you test some of these lenses for yourself.

Apart from the older Leicas, most of the manual test lenses performed better than their autofocus counterparts. The exception was the 85mm Canon, which produced clearly better results than its manual rivals. If you plan to acquire an older lens for use with an adapter, make some test shots before you buy.



Taken with the Canon 24mm TS-E in its shifted position



The same detail, shot using the Zeiss 21mm and subsequently enlarged



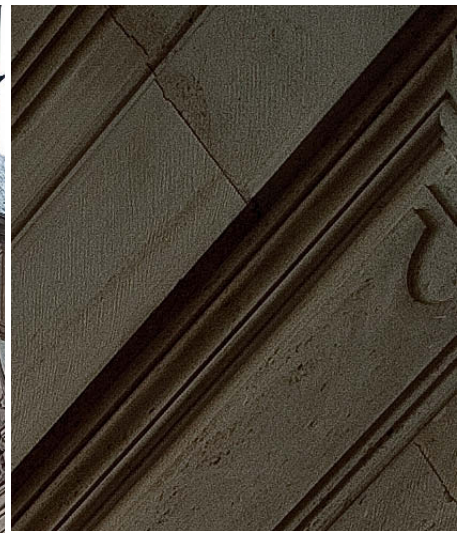
This handheld shot taken with the Zeiss ZE 50mm Macro at maximum aperture displays great microcontrast and very nice bokeh





Image Courtesy of the City of Hanover

The interior of the Hanover town hall, shot using the Zeiss 21mm ZE



The Zeiss 21mm ZE produces great detail across the entire frame. The highlights in the window frames and the chandelier are detailed and not at all washed out. Edges and fine textures are reproduced cleanly, even at the outermost edges of the frame.

## Reasons to "Go Manual"

### Zeiss und Leica in everyday use

Various reports had led us to believe that the 21mm and 28mm Leica lenses would perform better than they did. We used three different adapters to eliminate the discrepancies a substandard adapter can produce, but neither lens met our expectations. It is possible that we were just unlucky and that our test lenses had suffered damage that was not externally visible but that had nevertheless knocked some lens elements off-center. Physical damage is a problem that users of modern plastic lenses will have to deal with more often than owners of older, more solidly built lenses.

Leica's reputation for high build quality is impressively underscored by the 35mm and 100mm Apo-Elmarit lenses, although some Leica brand lenses—the 28mm in our test, for example—are in fact manufactured by Schneider Kreuznach. The fact that older lenses were designed for use with the more forgiving medium of film make them prone to producing optical errors that image sensors pick up more easily. If you are planning to acquire a used lens, either make some test shots before you buy or make sure the dealer will allow you to return a lens if it produces substandard results.

The Leica R-system is no longer being developed and these lenses are now only available pre-owned, so if you are lucky, you can pick up a bargain for use with an

adapter. We recommend the Novoflex Leica adapter, in spite of its somewhat unstable locking lever. There is a wide range of Leica focal lengths available, and many newer lenses—especially wide-angles—have new geometries that make them at least as good as similar Zeiss offerings. The problem with many Leica lenses is that they are difficult to mount on DSLRs without making serious modifications to the mount, the camera mirror, or both. Compatible Leica telephotos are easier to find. The legendary Apo 180mm f2.0, Apo-Summicron 90mm f2.0 ASPH, and the longer Apo-Telyt series still produce unparalleled results.

The compact Leica M-series lenses are especially well suited to use with Micro Four Thirds and other mirrorless systems. The Zeiss ZE lenses are much easier to use than adapter-based systems, and usually allow you to control the aperture via the camera and transfer lens Exif data to the camera's electronics. The Z-series lenses also support viewfinder focus indicator functionality, which makes focusing easier once you are familiar with the necessary hand/eye coordination. Zeiss Z-series lenses are not cheap, but offer quality that justifies the expense.

### The Manual Lens Look

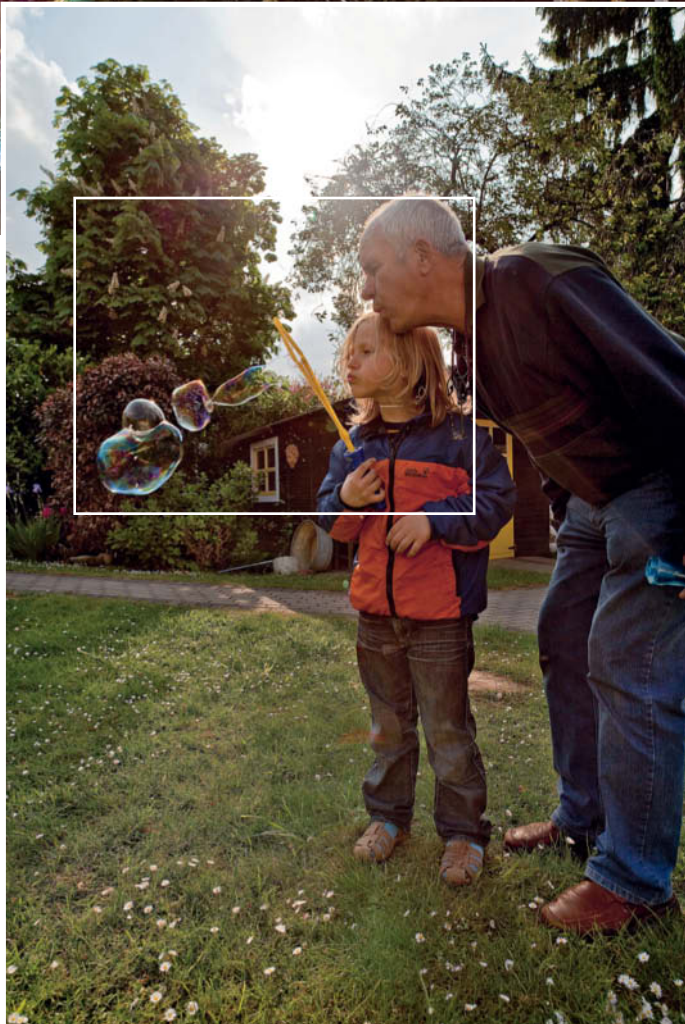
Manual lenses really come into their own in everyday photographic situations. The high definition and precise detail that Leica and

Zeiss lenses produce cannot be reproduced on a test bench. Some of our trickier test shots underscore these qualities and some of the resulting images are of a quality that we would expect from a medium format camera.

Some reasons for this extremely high quality could be the manufacturer's own build tolerances, the extreme efforts made to reduce internal reflections, or reduced lens play due to the lack of additional autofocus elements. Whatever the reasons, the behavior of our test lenses in backlit situations speaks volumes about the quality of the products. While the Canon wide-angles all show washed-out edges, the Zeiss lenses all produce consistently good edge detail, albeit with accompanying color fringes that have to be removed at the image processing stage.

### Bokeh

The different ways lenses reproduce out-of-focus background detail is another reason why many digital photographers have begun experimenting with manual lenses. We were surprised—not only by the differences in bokeh produced by our Leica and Zeiss test lenses, but also by the amount of background detail that modern lenses obviously miss. Today, manual lenses are helping to realize the true photographic potential of large, high-resolution image sensors



Once again, this detail enlargement from a shot made with the 21mm Zeiss shows extremely fine detail. The child's hair and the leaves in the background are extraordinarily well defined in spite of the strong backlight.

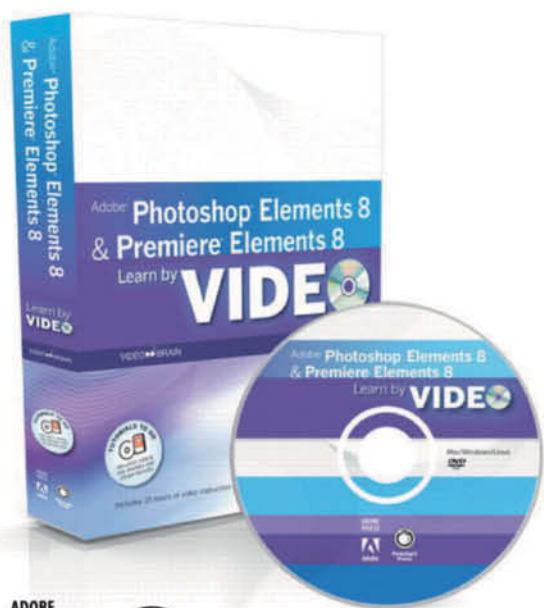
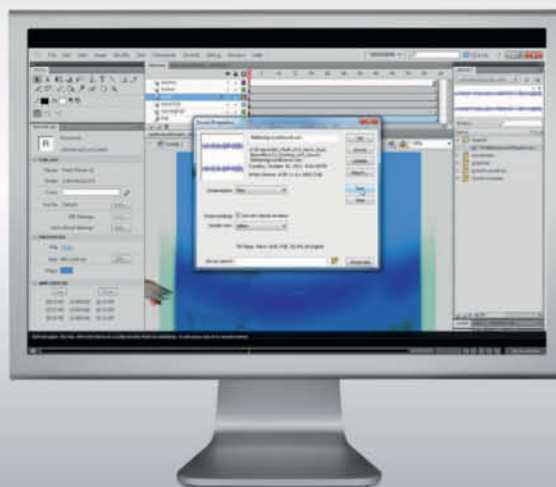
"Taking photos with manual lenses was a lot of fun once I got used to the different working style. The whole photographic process slowed down and the view through the viewfinder forced me to look at my subject more carefully, and to take more care framing and focusing my shots. All in all, the manual aspect turns taking photos back into a considered creative act."

*(The author's opinion after spending three months using manual lenses)*

**ct**

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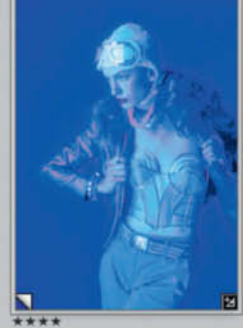
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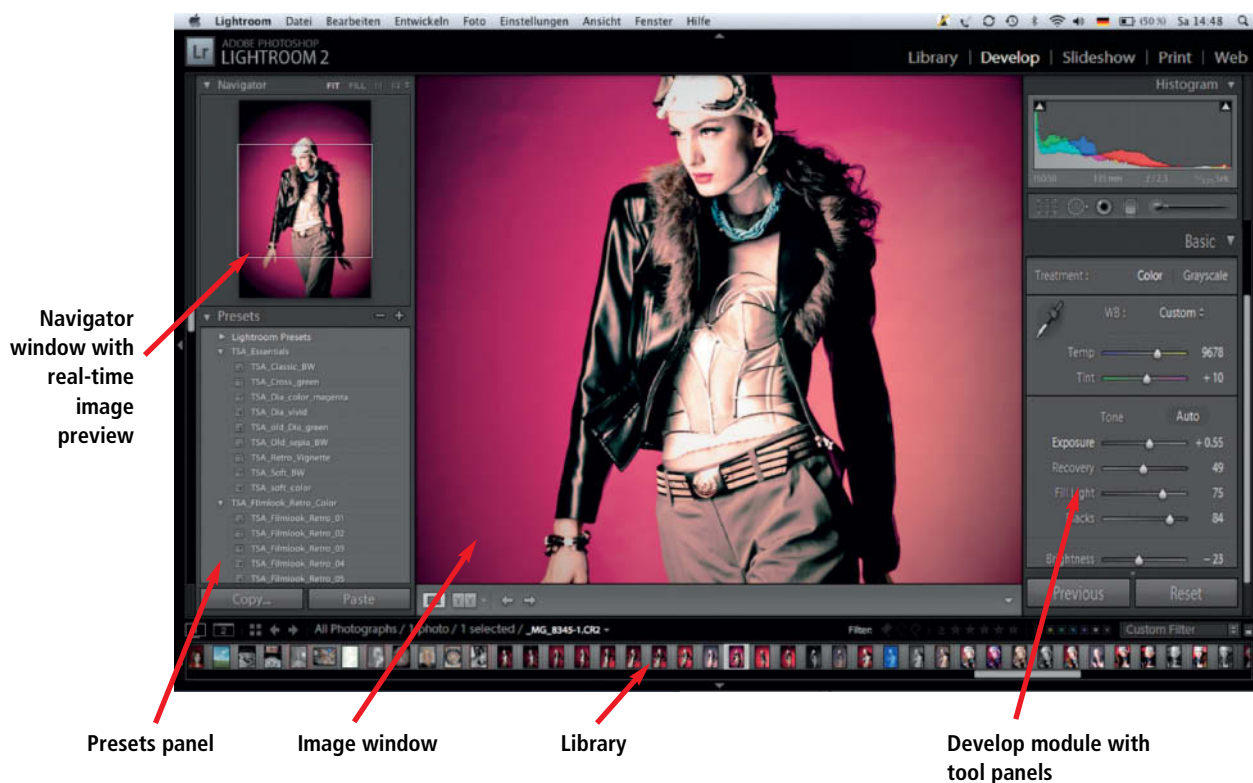
# Creating Your Own Preset Looks

## in Photoshop Lightroom

In the past, the optical or chemical tricks that professional photographers and camera operators used to create their own special look were often their best-kept secret. Nowadays, modern image processing software—such as Adobe's Photoshop Lightroom—gives ambitious photographers all the tools they need to create their own, highly personal looks.







### Creating a Look Using Photoshop Lightroom

The current version of *Photoshop Lightroom* includes a wide range of tools for manipulating RAW image files in ways that go far beyond the possibilities offered by an analog photo lab. Used creatively, the

software can help create familiar or completely new looks for your images.

#### Shooting Formats

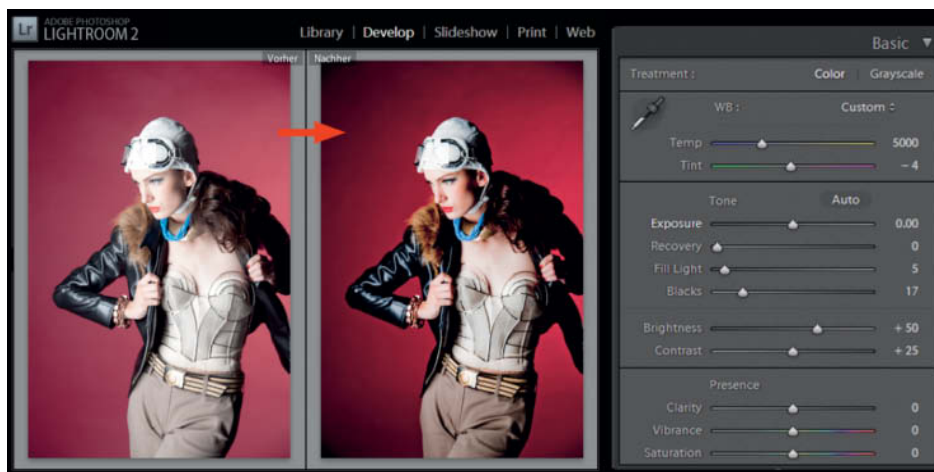
The basis of every finished image is the original photo, and I strongly recommend

that you always shoot in RAW format. Strictly speaking, the steps I am going to describe can just as well be applied to JPG image files, but the results will be of much lower quality.

At a first glance, RAW images generally appear somewhat bland and lifeless, but they can nevertheless be manipulated in a much more targeted fashion than JPG images that have already been pre-processed by the camera's firmware. JPG images are intrinsically lossy, especially if you use the camera's built-in functionality to adjust contrast or sharpness, or if you apply camera presets such as "Retro", "Monochrome", or "Vivid" while shooting. Any pixel information or tonal values that are manipulated during shooting cannot be recreated in their original form using software.

RAW format image files are the best choice, as they contain virtually all the information captured by the sensor during the exposure. If your camera doesn't support RAW shooting, setting the camera to shoot neutral, non-sharpened, low-contrast images will provide you with the best material for subsequent optimization on your computer.

One of Lightroom's best features is that all processing steps are non-destructive.



The Blacks slider can be used to quickly and simply increase the contrast and general impact of your image

This means that, should you make a mistake, you can undo every individual processing step without affecting the quality of your image. The original image file also remains unchanged, and you can even save your processing steps separately in an XML file. This saves disk space and ensures high-quality results.

### The Lightroom Workspace

The *Lightroom* user interface is divided into five modules called Library, Develop, Slide-show, Print, and Web.

On the following pages, we will be concentrating on the Develop module. When the Develop module is activated, you will see two vertical palettes arranged to the left and right of the image preview window. These can be shown or hidden using the Tab key, leaving more space on the desktop for the image preview. The left-hand palette contains a small preview window for quick image navigation and the Presets panel, where we will be saving and adjusting the looks we are going to create during this workshop. The Snapshot and History panels are located beneath the Presets panel.

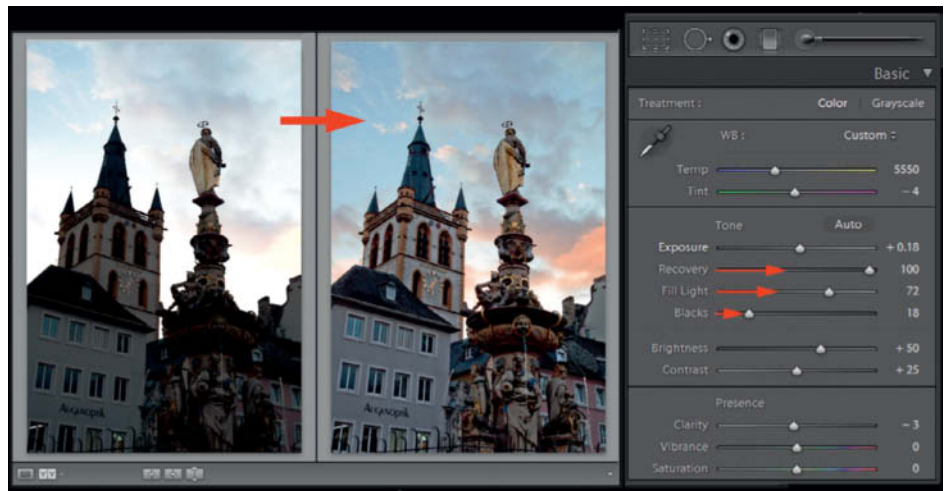
The right-hand palette contains various image processing panels with countless tools for manipulating your images. Let's start by looking at the Basic panel.

### Exposure and Brightness

The sliders in this panel do exactly what they say. Once you have set global brightness, you can adjust the contrast in your image. You can also give your image a little more brilliance by shifting the Shadows slider in the Tone Curve panel slightly to the right. This not only increases luminance, but also intensifies the colors. If this doesn't fit with your intentions, you can always reduce saturation slightly to compensate.

If you want to emphasize shadow and highlight detail, you can also extend the contrast range of your image, but you will probably then have to shift the Fill Light slider a little to the right in order to preserve shadow detail. The Recovery slider can be used to restore burned-out highlights, such as an over-bright sky. These corrections are all very similar to the standard adjustments often made in analog photo labs.

Unfortunately, *Lightroom* tends to produce some edge artifacts when you adjust contrast for high-contrast subjects.



The dynamic range in this image was too broad. We used the Fill Light and Recovery sliders to counteract this, resulting in the building appearing brighter and the clouds looking more dramatic and three-dimensional.



This highly magnified detail of the image above shows the edge artifacts that a significant increase in contrast can cause.

We know Adobe can do better, and the Shadow/Highlight slider in *Photoshop* produce cleaner results. An additional radius adjustment (like the one built into *Photoshop*) could help to regulate these types of anomalies.

The distribution of tonal values can also be adjusted using the parametric curve in the Tone Curve panel. This tool is basically identical to its *Photoshop* cousin, although its handling is slightly different. Here, you can adjust the curve using four sliders called Highlights, Darks, Lights, and Shadows. This approach is very useful in certain situations and, by adjusting only the Lights

and Darks sliders, allows you to increase image contrast without losing shadow or highlight detail. It requires a lot more experience and know-how to make similar adjustments using *Photoshop*'s point-based Curves tool.

### Using Clarity Settings to Optimize Portraits

The Clarity slider provides a fascinating way to influence the look of an image, providing functionality similar to that of a wide-area "Sharpen" or "Soft Focus" filter. The tool also uses a larger radius than the





The Clarity slider can be used to change the look of a portrait from a soft glow right up to a hard-edged, almost solarized look.



Negative Clarity values can make candid portraits more flattering too

Sharpen and Detail filters, leaving fine detail virtually untouched. If you shift the Clarity slider all the way to the left, you produce a soft, overexposed effect that is great for portraits. The further you shift the

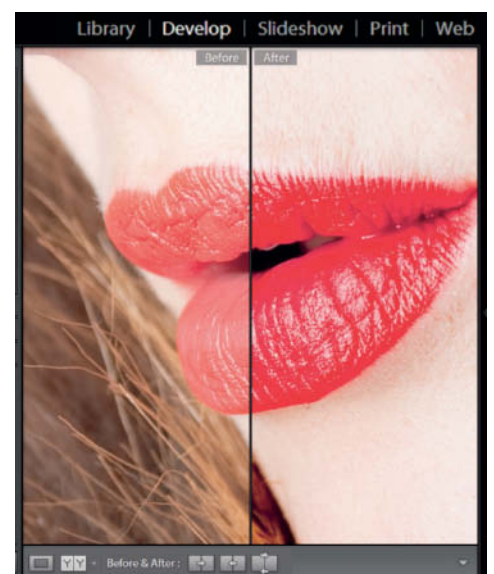
slider to the right, the harder the contours become and, at the extreme right-hand end of the scale, your image can end up looking almost like a woodcut print. If combined with a grayscale effect, this filter produces images with hard edges that look a lot like push-processed monochrome prints. You need to be careful when applying this effect in large doses, and it is best suited to highly detailed landscapes or character portraits. Be warned—high Clarity values emphasize skin imperfections, and low Clarity values are much better for producing flattering portraits or for glamour work. Slight shifts to left or right of center produce effects similar to those produced if you use a soft focus or a particularly sharp lens while shooting. The contrast slider produces a different effect, due to the fact that it functions globally and doesn't just affect edge detail.

## Colors

*Lightroom* includes so many different ways to manipulate colors that to describe them all would go way beyond the scope of this article. I hope to whet your appetite with the small selection described here. You can adjust color temperature (essentially white balance) in the Basic panel using the dropdown list of presets located to the right of the “WB” symbol. Most users select either

“As Shot” or “Auto”, but you can also select settings for most other conventional light sources (such as “Daylight”, “Cloudy”, “Tungsten” etc.).

You can use the White Balance Selector tool located in the upper left corner of the panel to select a color to use as a reference



The “Before/After” button in the toolbar allows you to quickly judge the effects your adjustments will have



The Targeted Adjustment tool allows you to adjust individual colors—here the blue of the sky—by dragging the mouse up or down through the appropriate part of the image.

white point, and it is definitely worth experimenting with different reference colors to see what new looks you can produce. If you deliberately select a non-white color as your white balance reference, all colors in the image will be shifted accordingly. You can then fine-tune your results using the Temp and Tint sliders.

The lower part of the Basic panel contains the global Saturation slider, which adjusts all colors to the same degree, irrespective of whether they are more or less saturated to begin with. High color saturation values can cause saturation overflow and tonal clipping. The Vibrance

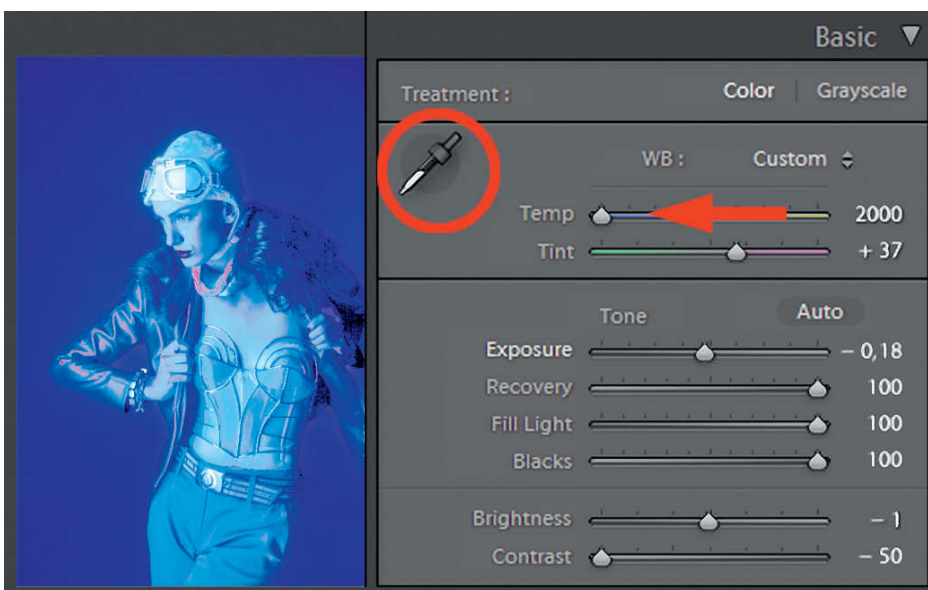
slider is located above the Saturation slider and offers a slightly less severe way to increase image saturation. This tool increases saturation for highly saturated colors less than for less saturated colors, and is especially kind to skin tones. Using Vibrance intensifies colors in a balanced way.

### Targeted Color Manipulation

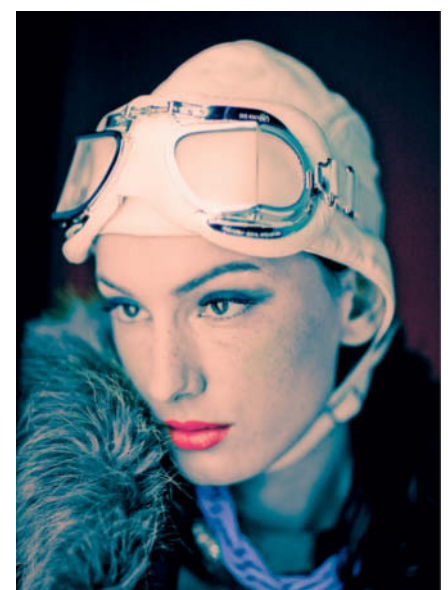
The adjustments we have addressed so far all have a global effect on the color temperature and overall color balance in an image. If you want to target and adjust

individual colors (for example, the blue of the sky) you will need to switch to the HSL/Color/Grayscale panel. The color panel can be used to adjust hue, saturation, and luminance for each major color channel. The HSL panel offers the same adjustments approached from a different angle, allowing you to adjust hue, saturation, and luminance separately for each individual tone.

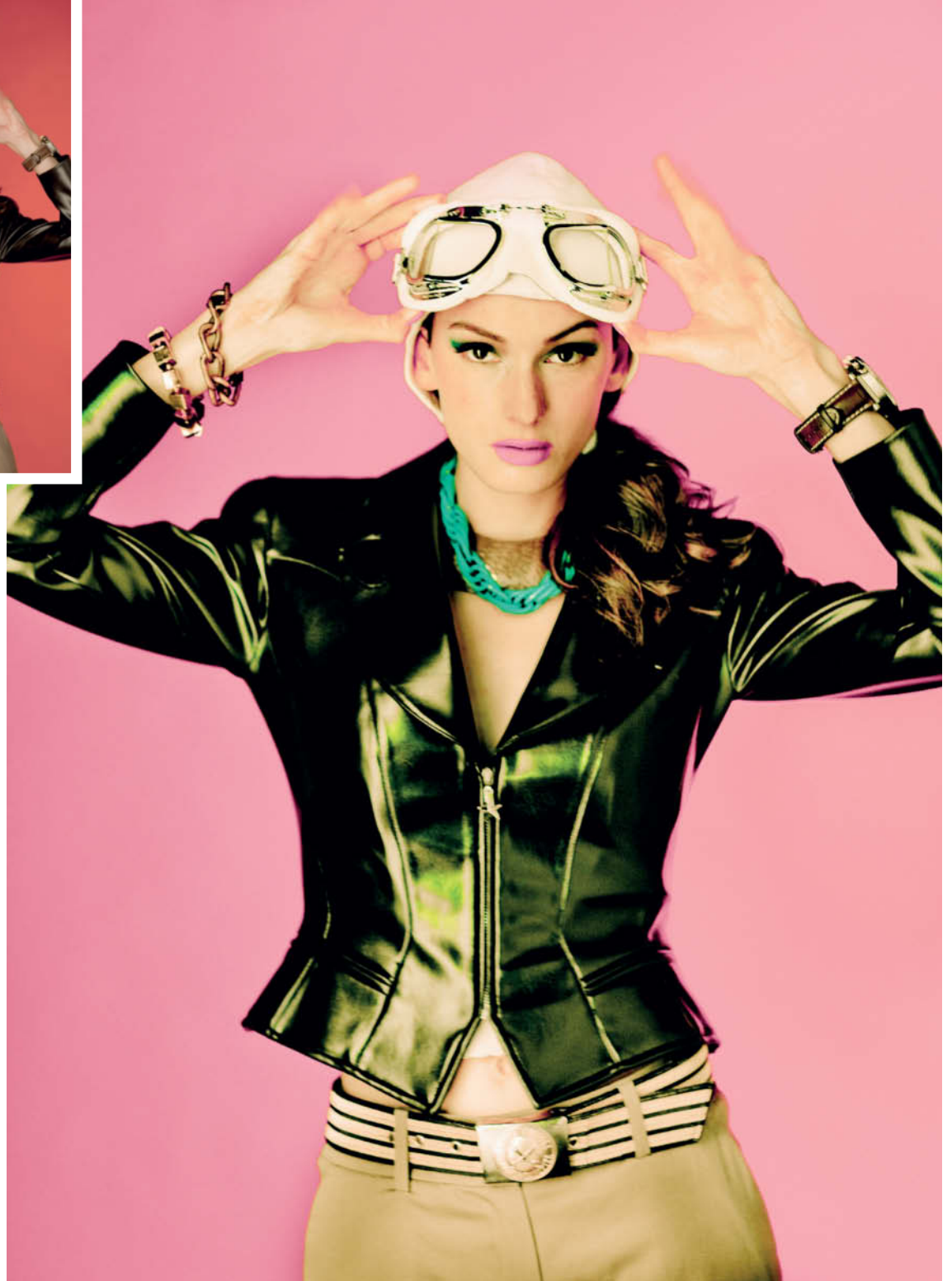
The HSL panel also includes the very useful Targeted Adjustment tool. Clicking on the circle symbol in the upper left corner of the panel activates the tool, which you can then drag to the part of the image



We created this blue look by experimenting with the White Balance Selector tool. A little additional manual correction completed the new image.



Fake colors, great look



Here, we altered the colors using the Targeted Adjustment tool. This a simple way to create really impressive effects, as a comparison with the original image (above) shows.

you want to adjust. In our example, we want to adjust the blue of the sky. Clicking on the color you want to adjust selects exactly that color automatically. Dragging the cursor up or down then adjusts the hue of all similar colors within the image, and the panel sliders are adjusted automatically to correspond with any changes you make. You can adjust saturation and luminance of individual colors in the same

way. This is an intuitive and simple way to try out alternative colorways. Once you have finished making adjustments, a single click on the Targeted Adjustment symbol deactivates the tool.

### Grayscale Images

A black-and-white photo is more than just a de-saturated color image. The emulsions

that classic monochrome films are made of have differing sensitivities to different parts of the visible spectrum. The different sensitivity of panchromatic and orthochromatic films combined with the use of various color filters enhances the multifaceted effects black-and-white images can have.

A bland color photo often makes an interesting and impactful monochrome



A monochrome look with low Clarity values

image once it has been converted. While you are working in the HSL/Color/Grayscale panel, pressing the “V” key toggles between grayscale and color versions of the active image. In order to perform targeted adjustments to a grayscale image, it is best to switch to the Grayscale Mix tool in the HSL/Color/Grayscale panel. Once selected, the panel displays the sliders for adjusting the individual grayscale channels. This is

where you can control how the individual colors in the source image are converted into grayscale tone values, similar to the way a monochrome film records different color tones.

This panel also displays the small but marvelous Targeted Adjustment symbol. If we activate the tool in a part of our sample image that contains sky, dragging the cursor downward reduces the bright-

ness of original blue color. This action also reduces the sensitivity for all blue tones within the image, as you can confirm by looking at the Blue slider, which automatically moves to the left. Our sky is now darker and provides a much more dramatic backdrop for the clouds. In the old, analog world, using an orange filter on the camera lens caused the same effect as the one we have just produced, with subtractive color mixing making the filter’s complementary color appear darker.

You can adjust the other tones in an image (such as the greens of vegetation or skin tones) in the same way, although the new mood that the image takes on might require you to make additional adjustments to exposure, brightness, contrast, or clarity. The interplay between the settings we have described provides an almost inexhaustible range of possibilities for changing the look of your image. It is, however, a good idea to periodically zoom into a 100% view to check whether your more extreme adjustments have produced any unwanted image artifacts. The individual color channels in a camera’s sensor can produce different levels of noise which can affect the look of your image. You can use the Noise Reduction tool in the Detail panel to counteract some noise effects if you adjust both the Luminance and Color sliders. Sensor noise can even produce a grain-like effect in black-and-white mode but, if this is the case, I recommend that you experiment with higher Amount and Detail values (with lower Radius settings) in the Sharpening panel rather than applying noise reduction.

### Home-made Grain

Monochrome conversions of low-sensitivity digital images often appear somewhat bland. You can counteract this blandness by applying an analog grain effect to your image during post-processing.

Unfortunately, a grain tool is only due to be introduced in the next (3.0) version of Lightroom, so we have included some grain-based Photoshop actions for you to experiment with on this issue’s free DVD. The actions can be found in the Film Looks folder and are compatible with Photoshop version CS2 and later. You can load the actions into the Action palette using the “Action > Load” command and, once you have loaded your image in Photoshop and applied the action, you can regulate the intensity of the grain





The Targeted Adjustment tool is also available in grayscale mode and allows you to adjust the color sensitivity of individual grayscale tones in a very intuitive way.

effect by adjusting the transparency of the grain layer. You can also apply a scan of a real negative to an image using a Photoshop "Overlay" layer or using one of the programs or plug-ins described in the article on page 90.

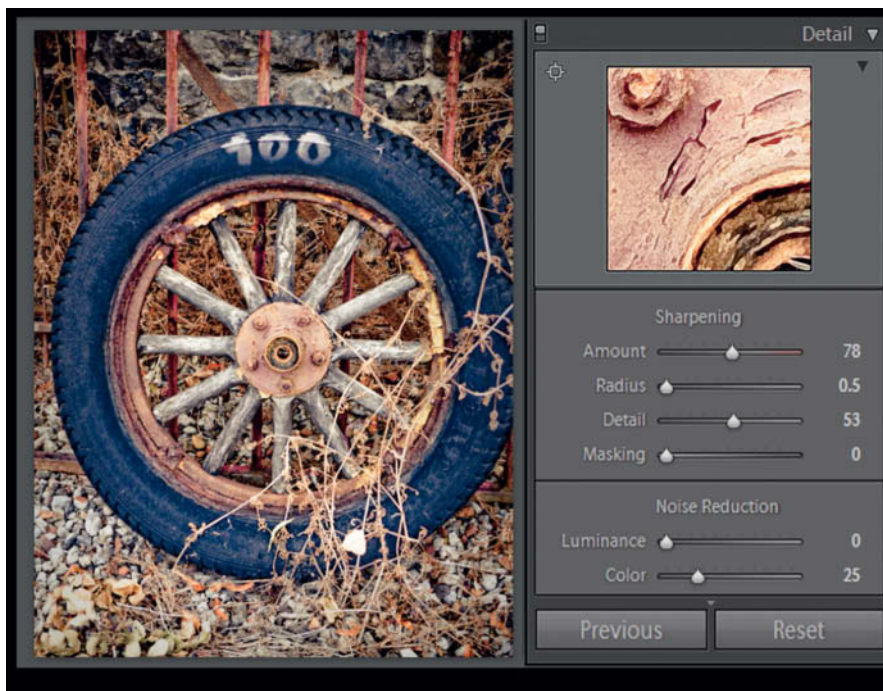
### The Split Toning Panel

This panel is also a great tool for creating your own color and grayscale photo looks. The panel allows you to adjust shadow and highlight color independently and

it is definitely worth spending some time familiarizing yourself with the different effects that differing shadow and highlight tones and saturation values can have. The Balance slider also helps you to strike the right compromise between your shadow



For this image, the conversion to high-contrast monochrome is a great improvement.



Sharpness and noise can be adjusted in the Detail panel. *Photoshop* is better than *Lightroom* for performing targeted sharpening.

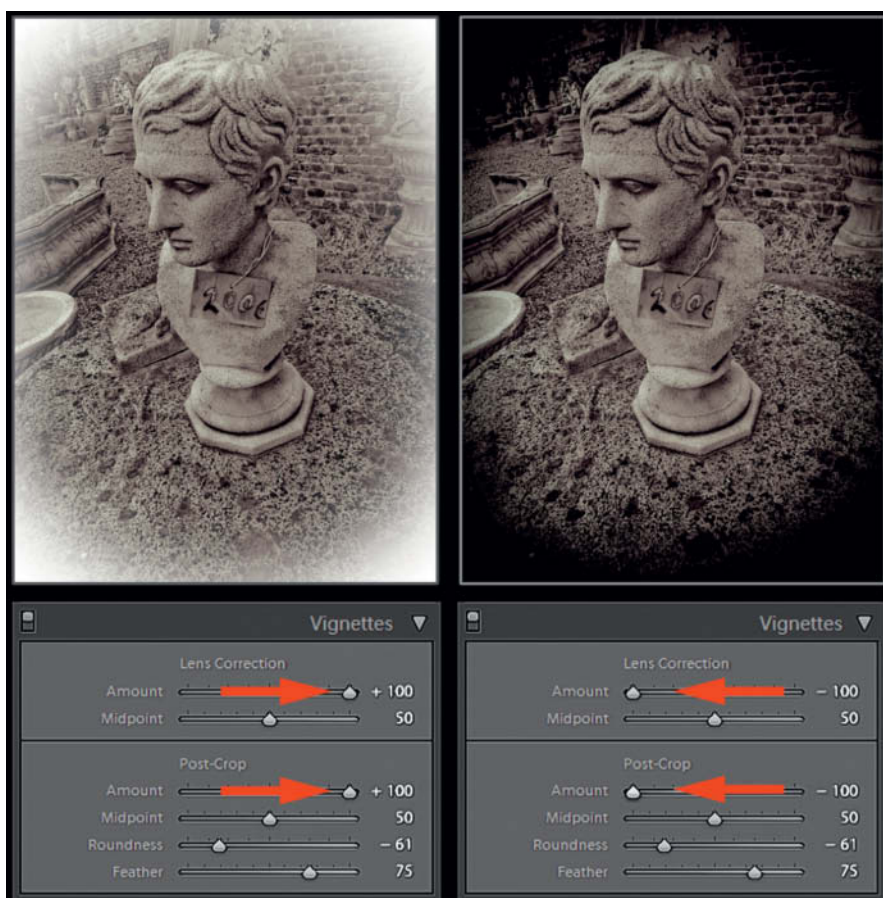
and highlight settings. When applied to color images, Split Toning can produce very pleasing color casts that are often reminiscent of retro-style film looks. If you use Split Toning on grayscale images you can produce just about any tone you can imagine as well as more familiar toning effects such as sepia, cyan, or selenium.

### Using Vignettes to Create a Retro Look

In addition to using color shifts and grayscale tones to produce retro looks, you can also use the Vignettes panel to give your images a nostalgic look and feel. Negative vignette values darken the edges of your image and produce an effect similar to those caused by old, non-corrected lenses, while positive values brighten the edges of the image area.

### Selective Processing using Brushes and Gradients

You can use the Adjustment Brush and Graduated Filter tools (located in the Tool Strip above the Adjustment Panels) to selectively apply adjustments to exposure, brightness, contrast, saturation, clarity, sharpness, and color to your image. The brush strokes and gradients you draw serve as masks for the effects you apply, and you only need a little painting skill to achieve some really fascinating effects. For example, applying negative clarity and sharpness values to the edges of an image simulates a look very much like that produced by old photographic lenses.

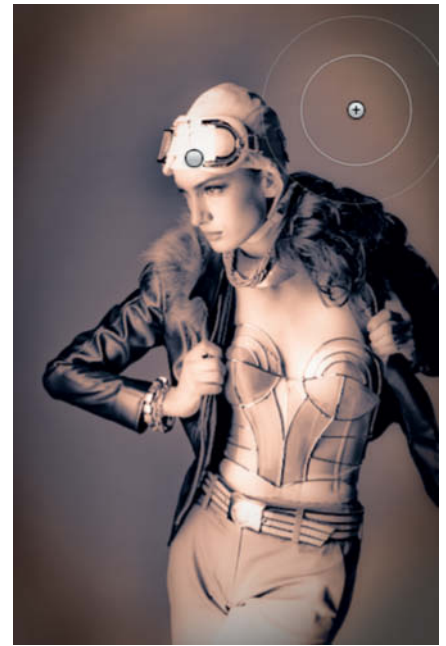
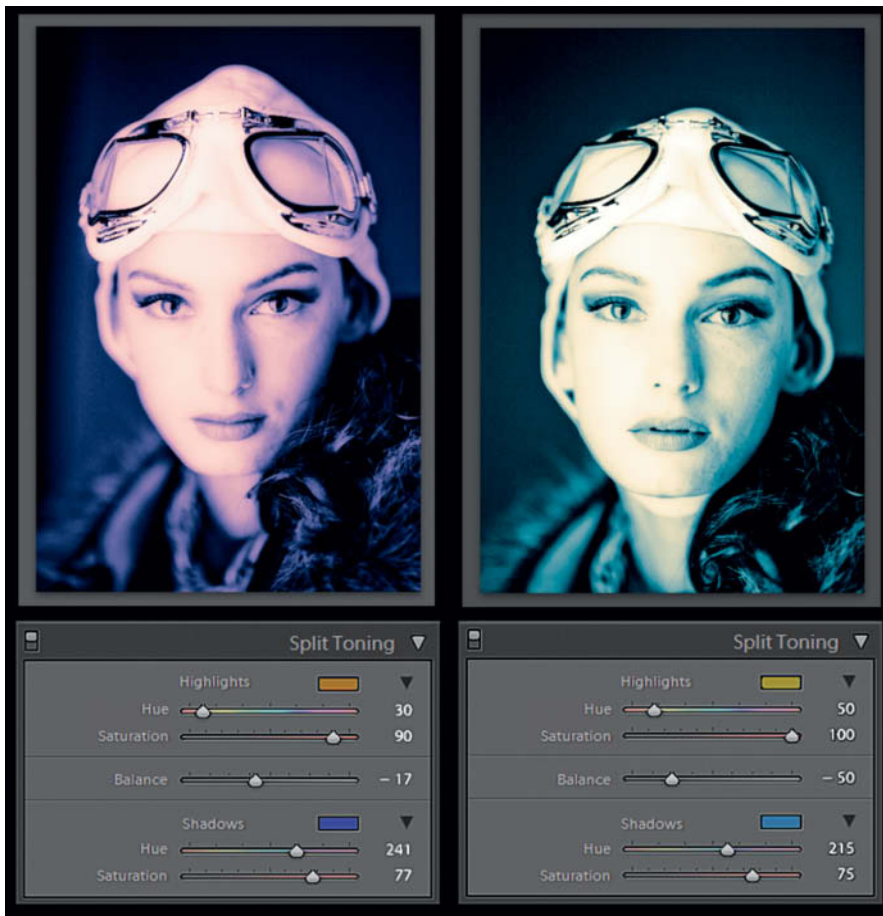


Both positive and negative vignette effects produce a pleasing nostalgic feel.

### Saving and Managing Your Own Looks

The Presets panel is located beneath the Navigator window, and clicking on the “+” symbol in the upper right corner opens the New Develop Preset dialog which you can then use to name and save your current settings. If you don’t select a new folder when saving a preset, the program automatically saves your preset to the “User Presets” folder.

In order to retain an overview of your work, we recommend that you create new folders with meaningful names for each new project. It is also important to activate appropriate settings for inclusion



The Adjustment Brush and the Graduated Filter tool can be used to “paint” settings directly into the image.

cross-processing or pseudo-solarization were discovered by accident in the lab.

And remember: the program’s non-destructive architecture means you needn’t be afraid of making mistakes.

## Our Preset Looks on DVD

The Film Looks folder on this issue’s free DVD includes more than 100 Lightroom Develop Presets for you to try out. These presets were created for images shot using various cameras and can produce varying results, depending on the image size, the RAW format used, and the subject of your image. Our presets are all open source, so you can use them as a starting point for your own experiments too.

If you create a particularly interesting version for your camera or image type, please feel free to send it to me at [foto@tsamedien.de](mailto:foto@tsamedien.de). We will present the best looks at [www.tsamedien.de/foto](http://www.tsamedien.de/foto) and offer them to our readers for download. The following pages include samples of some of the looks you can find on the free DVD. (ae/rez)

The base color in this image is determined by the balance between the split highlight and shadow tones.

in your preset. If you want to duplicate your look exactly for other images, click the “Check All” button, but you can also uncheck certain parameters if you want to keep particular settings flexible in future images. Once you have clicked the “Create” button, your look will appear in the Presets panel in the folder you selected above.

The Navigator window above the Presets panel shows a real-time preview of your look, applied to the active image. This allows you to quickly get an idea of how each preset will affect your image before applying it.

You can also import the looks included on this issue’s free DVD by right-clicking (or for Mac, Control-clicking) on one of the Presets folders and selecting the “Import...” command from the context menu that pops up. You can import multiple presets, but not multiple folders.

If you want to import multiple folders, you can do this by copying them to the “Lightroom > Develop Presets” folder using operating system commands.

## Using Your Preset Looks

Experienced Lightroom users keep a stock of useful presets loaded so that they can quickly and easily apply the appropriate virtual emulsion to a shoot. You can also apply a look to multiple images by selecting them in the Library and applying the appropriate preset using the “Develop Settings” command in the context menu.

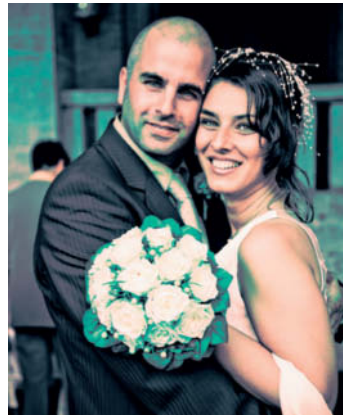
The context menu also includes a “Create Virtual Copies” command that allows you to save and manage different versions of your image without using extra disk space.

## Conclusions

Today’s creative photographers will revel in the almost unlimited image manipulation options offered by Lightroom 2.6. It is well worth spreading your wings a little, especially in light of the fact that many well-known analog film looks such as



01\_TSA\_Classic\_bw



02\_TSA\_Cross\_green



03\_TSA\_Dia\_color\_magenta



04\_TSA\_Dia\_vivid



05\_TSA\_old\_Dia\_green



06\_TSA\_Old\_sepia\_BW



07\_TSA\_Retro\_Vignette



08\_TSA\_Soft\_BW



09\_TSA\_soft\_color

**TSA\_Filmlook\_Essentials:**

A selection of some of the most useful looks and presets, some of which also appear in the collections that follow



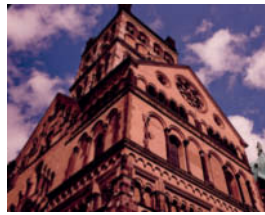
The source image



01\_TSA\_Filmlook\_colorS



02\_TSA\_Filmlook\_colorS



03\_TSA\_Filmlook\_colorS



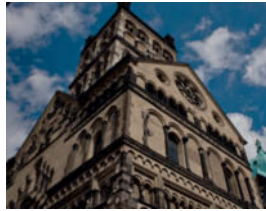
04\_TSA\_Filmlook\_colorS



05\_TSA\_Filmlook\_colorS



07\_TSA\_Filmlook\_colorS



08\_TSA\_Filmlook\_colorS



09\_TSA\_Filmlook\_colorS



10\_TSA\_Filmlook\_colorS



11\_TSA\_Filmlook\_colorS



12\_TSA\_Filmlook\_colorS



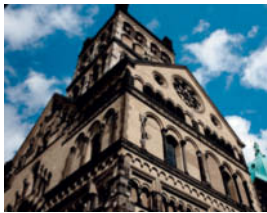
13\_TSA\_Filmlook\_colorS



14\_TSA\_Filmlook\_colorS



15\_TSA\_Filmlook\_colorS



16\_TSA\_Filmlook\_colorS



17\_TSA\_Filmlook\_colorS



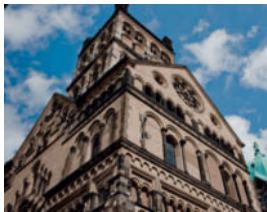
18\_TSA\_Filmlook\_colorS



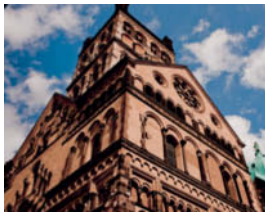
20\_TSA\_Filmlook\_colorS



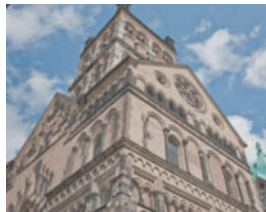
21\_TSA\_Filmlook\_colorS



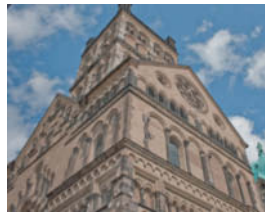
22\_TSA\_Filmlook\_colorS



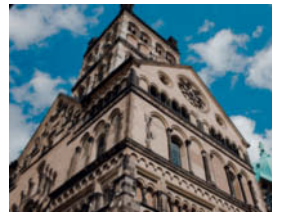
23\_TSA\_Filmlook\_colorS



24\_TSA\_Filmlook\_colorS



25\_TSA\_Filmlook\_colorS



26\_TSA\_Filmlook\_colorS

**TSA\_Filmlook\_colorS:**  
A collection of different combinations of (realistic) color and contrast settings



The source image



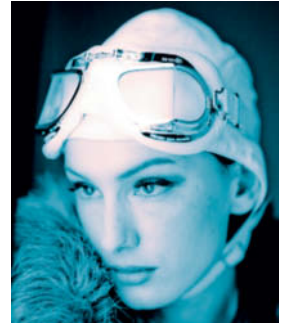
01\_TSA\_Filmlook\_coloFX



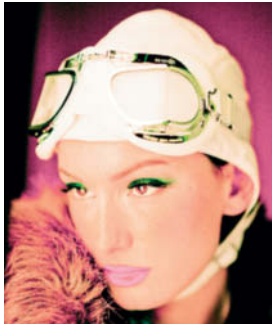
02\_TSA\_Filmlook\_coloFX



03\_TSA\_Filmlook\_coloFX



04\_TSA\_Filmlook\_coloFX



05\_TSA\_Filmlook\_coloFX



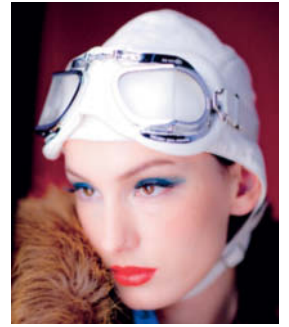
06\_TSA\_Filmlook\_coloFX



07\_TSA\_Filmlook\_coloFX



08\_TSA\_Filmlook\_coloFX



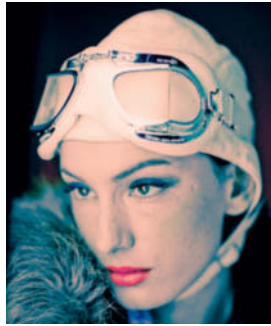
09\_TSA\_Filmlook\_coloFX



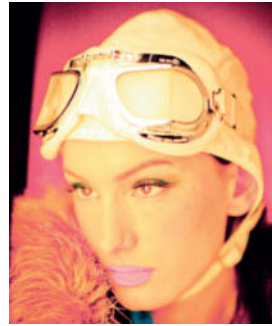
10\_TSA\_Filmlook\_coloFX



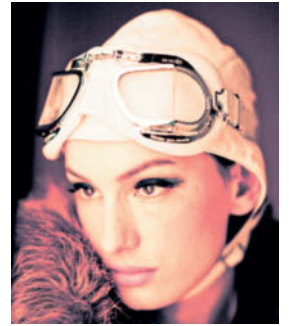
11\_TSA\_Filmlook\_coloFX



12\_TSA\_Filmlook\_coloFX



13\_TSA\_Filmlook\_coloFX



14\_TSA\_Filmlook\_coloFX



15\_TSA\_Filmlook\_coloFX



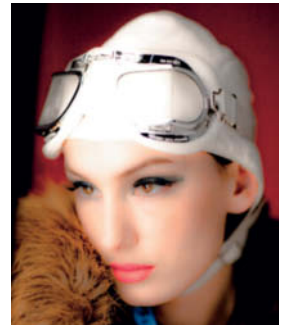
16\_TSA\_Filmlook\_coloFX



17\_TSA\_Filmlook\_coloFX



18\_TSA\_Filmlook\_coloFX



19\_TSA\_Filmlook\_coloFX

**TSA\_Filmlook\_colorFX:**  
Extreme color effects, including cross-processing, neon, pop art etc.



The source image



01\_TSA\_Filmlook\_BW



02\_TSA\_Filmlook\_BW



03\_TSA\_Filmlook\_BW



04\_TSA\_Filmlook\_BW



06\_TSA\_Filmlook\_BW



09\_TSA\_Filmlook\_BW



10\_TSA\_Filmlook\_BW



11\_TSA\_Filmlook\_BW



12\_TSA\_Filmlook\_BW



13\_TSA\_Filmlook\_BW



14\_TSA\_Filmlook\_BW



15\_TSA\_Filmlook\_BW



16\_TSA\_Filmlook\_BW



17\_TSA\_Filmlook\_BW



18\_TSA\_Filmlook\_BW



19\_TSA\_Filmlook\_BW



20\_TSA\_Filmlook\_BW



22\_TSA\_Filmlook\_BW\_sky01



23\_TSA\_Filmlook\_BW\_sky02



24\_TSA\_Filmlook\_BW\_dark\_sky



24\_TSA\_Filmlook\_BW\_TryX



25\_TSA\_Filmlook\_BW\_TryX\_hell



26\_TSA\_Filmlook\_BW\_TryX\_HighKontrast



27\_TSA\_Filmlook\_BW\_TryX\_Standard



28\_TSA\_Filmlook\_BW\_TryX\_Standard\_dunkel

**TSA\_Filmlook\_BW:**

A selection of black-and-white looks with differing color sensitivity and contrast, as well as differing degrees of shadow and highlight detail.



The source image



01\_TSA\_Filmlook\_Retro\_BW



02\_TSA\_Filmlook\_Retro\_BW



03\_TSA\_Filmlook\_Retro\_BW



04\_TSA\_Filmlook\_Retro\_BW



05\_TSA\_Filmlook\_Retro\_BW



06\_TSA\_Filmlook\_Retro\_BW



07\_TSA\_Filmlook\_Retro\_BW



08\_TSA\_Filmlook\_Retro\_BW



09\_TSA\_Filmlook\_Retro\_BW



10\_TSA\_Filmlook\_Retro\_BW

**TSA\_Filmlook\_Retro\_BW:**  
A selection of retro-style monochrome emulations, some of which include heavy vignette, edge, and glow effects





The source image



01\_TSA\_Filmlook\_Retro



02\_TSA\_Filmlook\_Retro



03\_TSA\_Filmlook\_Retro



04\_TSA\_Filmlook\_Retro



05\_TSA\_Filmlook\_Retro



06\_TSA\_Filmlook\_Retro



07\_TSA\_Filmlook\_Retro



08\_TSA\_Filmlook\_Retro



09\_TSA\_Filmlook\_Retro



10\_TSA\_Filmlook\_Retro



11\_TSA\_Filmlook\_Retro



12\_TSA\_Filmlook\_Retro



13\_TSA\_Filmlook\_Retro



14\_TSA\_Filmlook\_Retro



15\_TSA\_Filmlook\_Retro



16\_TSA\_Filmlook\_Retro



17\_TSA\_Filmlook\_Retro



18\_TSA\_Filmlook\_Retro



19\_TSA\_Filmlook\_Retro



20\_TSA\_Filmlook\_Retro



21\_TSA\_Filmlook\_Retro



22\_TSA\_Filmlook\_Retro



23\_TSA\_Filmlook\_Retro



24\_TSA\_Filmlook\_Retro

**TSA\_Filmlook\_Retro\_Color:**

Color retro-style effects including radical color shifts, simulated bleaching, and faded Polaroid, vignette and glow effects. Some of these looks include Brush and Gradient filter effects, so please reset these in the context menu (reached via a right click) before applying a different preset to your original image.



Sascha Steinhoff

## Software-based **Analog Film Emulation**

The time will probably come when we have all had enough of the super-polished look of our digital images. This is the right moment to revive the aesthetics of the analog past and use software plug-ins to emulate the look of legendary Kodak, Ilford, Orwo, or Polaroid films.

In the past, a photographer's choice of film had a strong influence on the look of an image but today's digital world has, in contrast, become almost drearily monotonous. Many photographers hanker for the times when every change of film produced a new and exciting look—although the love of all things analog seldom stretches to actually taping up the bathroom windows and once again splashing about with chemicals in a home darkroom. With the right software you can give your digital images an analog look in an environmentally and user-friendly way.

Image editing programs, such as *Adobe Photoshop* and *Nikon Capture NX2*, include filters for adding grain to images during post-processing. The Nikon filter is actually called Add Grain/Noise and does exactly what it says, although it doesn't include profiles for individual film types. *Photoshop* doesn't provide individual film profiles either, and the effects produced by its Texture > Grain and Stylize > Emboss filters don't really look like analog film grain at all.

If you have the time and the know-how you can, of course, use *Photoshop* to produce just about any effect you can imagine (see also page 68), but specialized software is an easier alternative, and there are a surprising number of film simulation tools available. The ones we describe here are all capable not only of adding grain to images, but also of reproducing the specific color characteristics of individual film types. Many of the programs on the market support either grain or film-type effects, but *Grubba Software's TrueGrain* (US\$49.95), *Alien Skin's Exposure 2* (US\$249.00), *Nik Software's Silver Efex* (US\$199.95) and *Color Efex* (US\$299.95), and *DXO's FilmPack* (US\$99) are the only ones we could find that do both. The freeware program *VirtualPhotographer* also provides some film looks to experiment with.

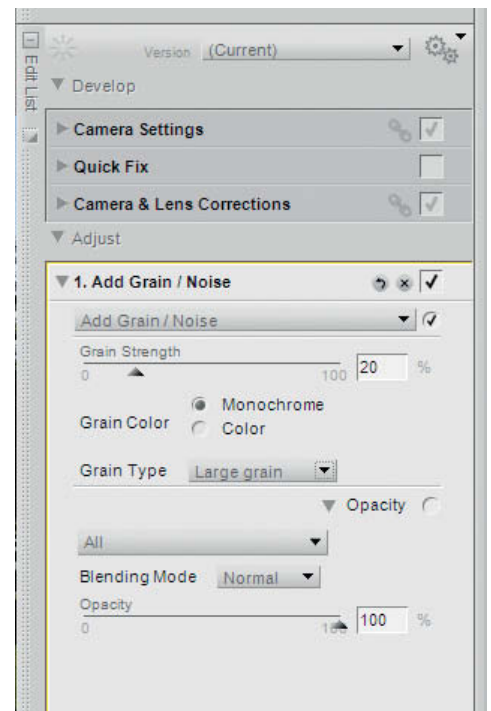
## TrueGrain – Real Scanned Grain instead of Digitally-generated Noise

*Grubba Software's TrueGrain* takes the unconventional step of forcing its users to download six files which then have to be installed in the correct order! The program itself is only 2MB, but the five additional film packs use up a whole gigabyte of disk space. You will need a broadband connection to acquire a copy of *TrueGrain* as it is only available via download.

*TrueGrain* is a standalone program and doesn't integrate into the operating

system or other programs like a plug-in, making it fast and easy to use. The program's simplicity is also due to the relatively small number of film profiles and options it offers. Compared to *DxO's* 50-odd films, *TrueGrain's* range of just 16 black-and-white profiles is a little disappointing. *TrueGrain* only supports monochrome profiles and, while it offers a profile for *Fuji's Neopan 400*, it doesn't, for some reason, include *Kodak's* much-loved T-MAX 100.

*TrueGrain* uses a unique approach to producing authentic-looking film profiles. Its grain structures are not generated digitally, but are instead based on empirical information collected from scans of real analog images made using the original films. The program even includes individual profiles for the different formats available for each film type—for instance, for *Kodak's T-MAX 400*, you can choose between six different grain profiles, ranging from 110 pocket format right up to 6 × 8 medium format, and, of course, including the classic 35mm stock. These individual profiles are, however, all based on scans taken from the same 6 × 9 original, with the smaller formats simply using a cropped detail from the original in order to ensure that the grain size remains correctly proportioned. The *Ilford Delta 3200* profile is, unfortunately, based on a slightly damaged negative. The resulting irregularities in the grain structure can actually increase the authenticity of an individual image, but might be irritating to a more observant viewer if they showed up in consecutive images of a batch. The *Delta 3200* profile was the only one in our test that displayed such anomalies, and—it has to be said—even those were quite difficult to spot.

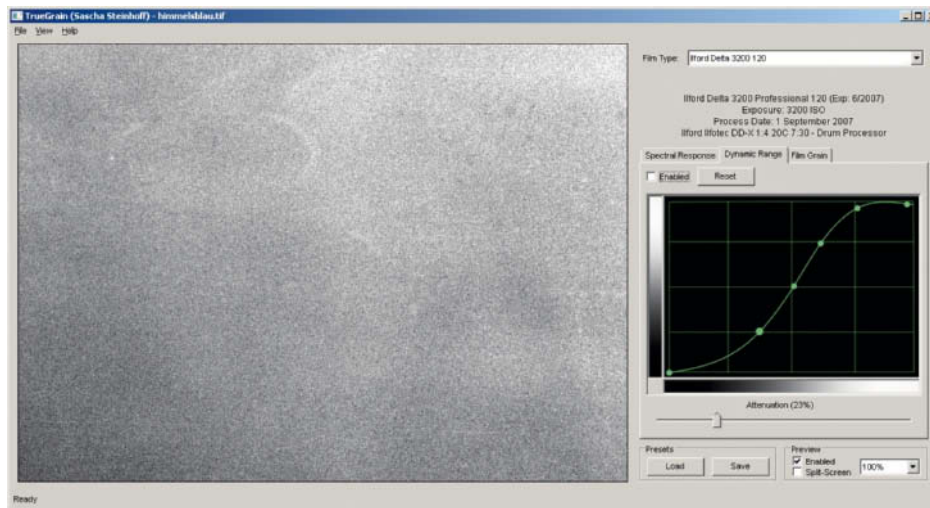


High-end photo editors such as *Nikon Capture NX2* already include generic grain filters, but the results are not as good as those produced by the specialized tools tested here

*TrueGrain* is easy to use—there is not much to select except film type, film format, and grain intensity. The program does include sliders for adjusting curves and colors, as well as various color filters, but you can just as well make these kinds of adjustments using *Photoshop's* own tools. One slightly irritating bug switches



*TrueGrain* is a specialized, pure monochrome tool with a fairly well balanced choice of film profiles.



Scans of original negatives form the basis of *TrueGrain's* grain tool. Slight negative damage and inconsistent grain structures add to the authentic look of the images the program produces.

the emulated image view back to the original image if you try to shift a detail view using the computer mouse. Even the fastest dual-core processors took a couple of seconds to redraw the preview image, so I quickly learned not to scroll around my images too much. On the plus side, the program's batch processing mode is very intuitive to use, making processing large numbers of images a snap.

*TrueGrain's* strength lies in its simplicity and its extremely authentic, slightly grubby-looking results, which are better than those produced by all of its rivals. The relatively low number of available profiles and concentration on monochrome film types limit its usefulness, but the low price makes it extremely good value for what it does.

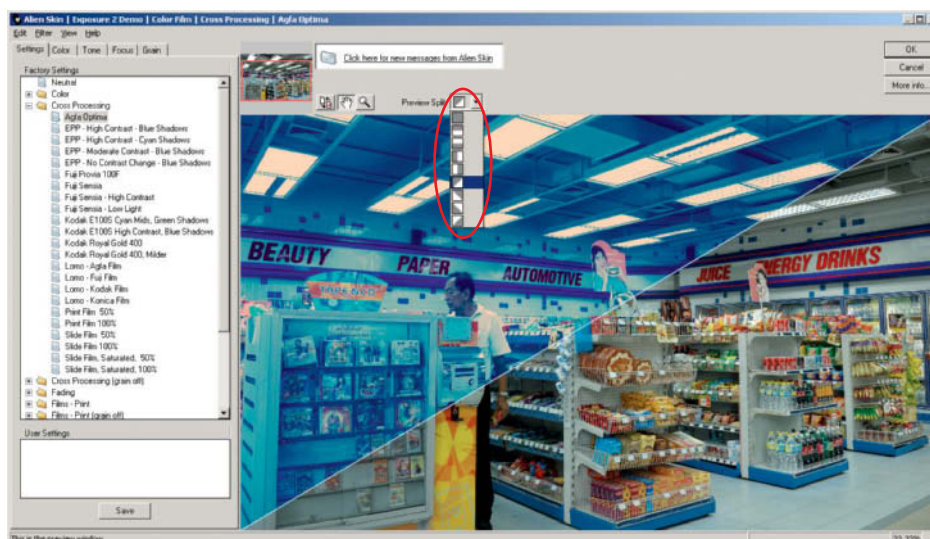
### Exposure 2 – Weakness in the Monochrome Department

*Alien Skin's Exposure 2* consists of two *Photoshop* plug-ins for emulating monochrome and color film types. The monochrome module has 12 different film profiles, including such exotics as Polapan instant film and Agfa's Scala monochrome slide film. Each profile is available in various forms (with or without additional grain, with or without color filters), making it easier for less experienced users to find appropriate settings. The program also includes a range of standard sliders and curves functions for making various manual image adjustments, but only the Color tab has an Undo button for automatically reverting to the original unchanged image.

The effects in the Tone, Focus, Grain, and IR tabs all have to be undone manually if you make a mistake. On the plus side, the program scores with such goodies as the preview/original split screen, which allows you to check the effects your selected filters will have before applying them. None of the standard monochrome film profiles look really authentic, due largely to the program's synthetically produced grain effects. Nor are its special effects, such as Tri-X Salt and Pepper, particularly impressive.

You can switch from monochrome to color mode during processing, and the broad choice of color film profiles includes negative, slide, and Polaroid film types. You can choose from about 30 basic profiles, all of which have a number of variants. We would have liked to see more high-speed film types; the fastest on offer here is the GAF 500 (ISO 500) profile. This film is a real rarity and was one of the very first high-speed slide films to hit the market. GAF 500 was developed using the E-4 process that was superseded by E-6 in the mid-seventies. The quality of the various profiles is variable. The Velvia profile produces images that look as if the saturation slider was simply turned up to maximum, but the Kodachrome 64 profile was the best we tested.

We couldn't find any reference to batch processing functionality in the PDF manual, but *Exposure 2* is a *Photoshop* plug-in, so batch processes can be performed using *Photoshop* actions anyway. The program is generally not well suited to processing large numbers of images quickly. In order to open a new image, you first have to close the plug-in and return to *Photoshop*, which is laborious and time-consuming. The same is, however, also true of the other plug-ins (*Silver Efex* and *Color Efex*) in our test. The standalone apps (*TrueGrain*



In addition to its film profiles, *Exposure 2* also offers a huge variety of additional filters, settings, and effects, as well as a flexible split screen mode

and *DxO FilmPack*) are much simpler to use in this respect.

*Exposure 2* does not produce very realistic grain structures, and the quality and functionality it offers make it difficult to justify the US\$249.00 price tag.

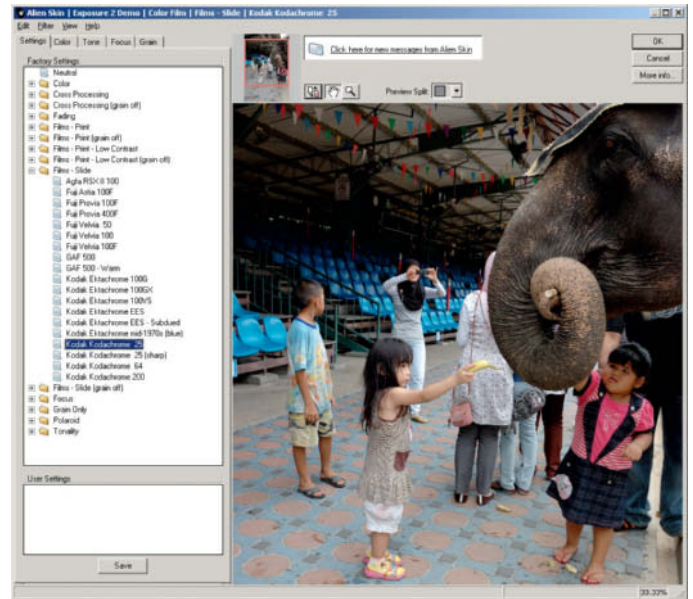
### Silver Efex Pro – Lots of Choice and Chopped-up Histograms

Nik Software's *Color Efex Pro* includes a number of monochrome film profiles but, if you need a greater choice of authentic-looking profiles and a broader range of settings, *Silver Efex Pro* is a better choice. Once installed, *Silver Efex* can be found in the *Photoshop* Filter menu, and includes 18 monochrome profiles, each with a large range of individual settings. In addition to standard color and tone value settings, there are also color filters, an edge-burning tool, and even an Ansel Adams-style zone mapping system built in.

The U Point® Control Point technology that many readers will know from *Capture NX2* is also included, and is a great aid to processing targeted image areas, especially for less experienced users. Control points are a unique Nik feature and are a real boon with no *Photoshop* equivalent. Most of the plug-in's other settings can be just as easily made using *Photoshop*'s own filters and tools. The only real difference is in the interface, with Nik just taking the prize for elegance. The plug-in includes so many options that I often had to scroll through the palettes, even when using a 24-inch monitor, which makes it slightly less user-friendly than I would have liked. On the other hand, the ability to show/hide and undo the individual processing steps (film type or color filter, for example) is extremely useful. The overall look and feel will be familiar to *Capture* users and is a great aid to retaining an overview of complex chains of adjustments. The plug-in also includes easy-to-use, folder-based batch processing functionality.

The 18 monochrome film profiles are the core of the plug-in's toolset, and cover most well-known film types, although we would have liked to see a profile for Agfa's Scala monochrome slide film too. Our first few conversion attempts produced unexpected results, with the histograms for our T-MAX 3200 and Ilford FP4 images ending up skewed and unusable. Increasing the grain filter increased the effect, although it didn't appear to be directly related to the actual grain algorithm. The Kodak Panatomic images weren't affected by this problem. Instead of just overlaying the existing image with a filter, *Silver Efex* produces its grain

**Alien Skin produced the best-looking Kodachrome simulation in our test.**



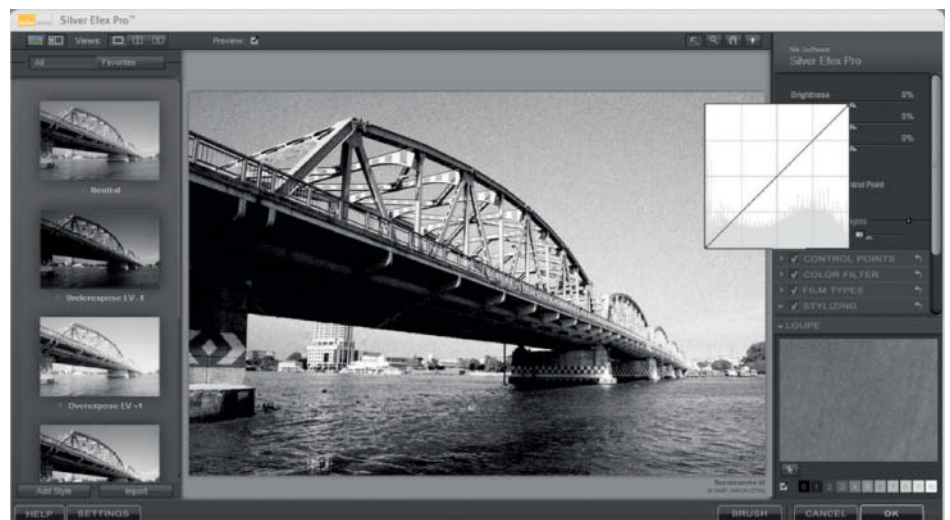
effects by producing an entirely new image based on the original film's silver halide crystal structure. Unfortunately, the resulting effect is too symmetrical and therefore less authentic than the looks produced by other programs that use scanned originals to emulate grain.

At the end of the day, *Silver Efex* offers a good range of settings, although some of these are superfluous as they are already available in *Photoshop*. Exceptions here are the excellent Control Points and the zone mapping system, which both represent genuine advances in functionality. *Silver Efex* is fine for batch processing, but the nuts and bolts of the built-in tools aren't as good as the glossy user interface

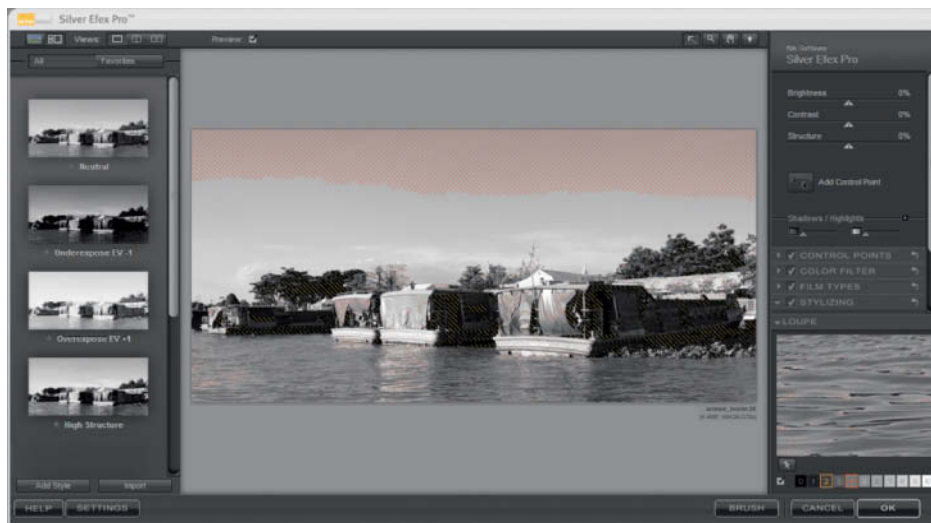
might lead you to expect. The inaccurate histograms and artificial looking grain effects are not worth the US\$200 asking price. One bonus is the edge-burning tool, which offers a unique way to add analog characteristics to your digital images.

### Color Efex Pro 3.0 – A Universal Tool with a Large Range of Film Profiles

Nik Software's *Color Efex Pro* is available as a plug-in for *Capture NX2* and *Adobe Photoshop*. We tested the *Photoshop* version. *Color Efex* doesn't include any monochrome film profiles, but is able to



The scrambled histograms that *Silver Efex* produces are more than just a cosmetic error



*Silver Efex* is the only program in our test that includes an Ansel Adams-style zone mapping system

convert color images to black-and-white, albeit without applying the characteristics of any particular film type. As its name suggests, this plug-in is squarely aimed at producing color film effects, and the Pro version includes a good range of useful color filters. For this article, we limited ourselves to testing the profiles designed to reproduce the look of particular films.

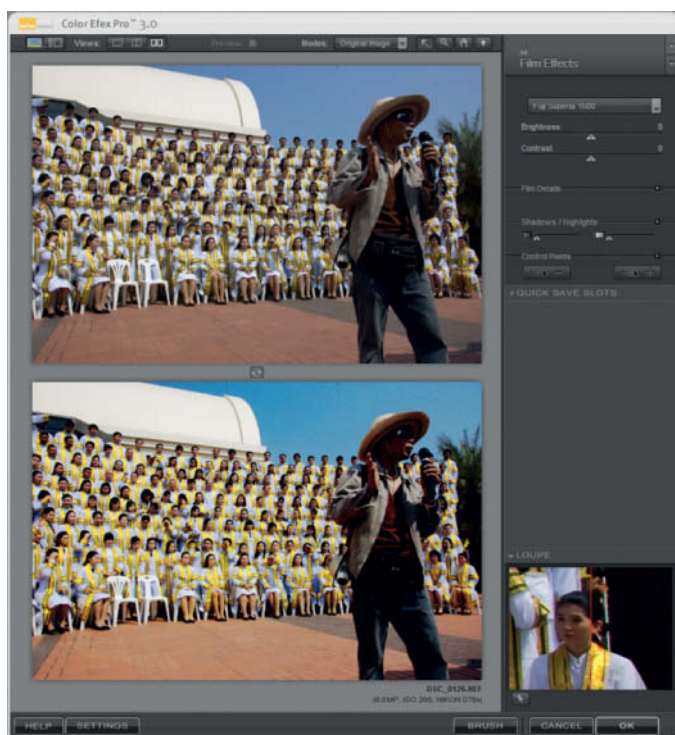
The Film Effects filter (available only in the US\$300 Complete Edition) offers 33 different film profiles based on information taken from the original film, adjusting color, contrast and grain intensity accor-

dingly. The Complete Edition of *Capture NX2* costs US\$179.95. The plug-in also includes Film Grain, Cross Processing, Infrared Film, Infrared Thermal Camera, Old Photo, and Vignette filters, none of which are based on particular film types. The individual film effects mostly include enough individual settings to achieve satisfactory results without having to resort to the use of additional filters.

The majority of the slide and negative profiles emulate Fuji and Kodak films, while Optima 400 is the only Agfa film on offer. We would have liked to see a Polaroid

profile or two, and Fuji's Velvia is only available in the ISO 100 version, even though the ISO 50 film has a much more individual look. The plug-in's film profiles are all packed into a single drop-down list, but we would have preferred to see separate lists for slide, negative, and other film types. *Color Efex* is more complicated to use than *Silver Efex* and does not allow you to undo or hide individual processing steps, although the split screen function is flexible and really quite useful. The built-in zoom tool has only three slightly clunky steps, and the Zoom to Fit setting didn't always select the correct zoom factor during our test, leaving parts of the desktop unused and displaying the image at an unnecessarily small size. Zooming manually to 100% didn't help either and only displayed a small image detail, even when viewing relatively small 6-megapixel files. The PDF manual doesn't mention batch processing but, as with all other *Photoshop* plug-ins, batch tasks can be performed using *Photoshop* actions anyway.

The color reproduction in some of the film profiles was slightly odd, with Fuji Velvia 100 and Kodachrome 64 images looking surprisingly similar. If you have worked with both types of film, you will know how different Fuji's candy colors are from Kodak's strong but subtle tones. The differences between the individual Fuji films types Velvia, Provia, and Astia were, however, consistent. The plug-in's grain effects suffer from the same malady as all the others in our test (except *TrueGrain*) and look artificially uniform. Real film always shows some anomalies, either in the form of slight damage to the film surface or inconsistent distribution of silver halide grains, and emulated grain simply can't reproduce such inconsistencies authentically.



Old for new: Side-by-side Preview (for comparing "before" and "after" images) is one of the more useful features in Nik Software's *Color Efex*

### DxO FilmPack – Great Colors but Weak Grain

DxO's *FilmPack* can be installed either as a *Photoshop* plug-in or as a standalone application, although the plug-in's small, Windows 95-style interface is not particularly attractive and is quite difficult to use. We much preferred the standalone version. The program's biggest drawback was the lack of a split screen mode,

although you can revert to the original image view using a single mouse click. Just like *TrueGrain*, *FilmPack* automatically switches views when you select a new image detail.

*FilmPack* offers the largest range of film types in our test, and includes more than 50 slide, color negative, monochrome negative, and cross processing profiles. But even this huge choice has omissions, and we would have liked to see Agfa's Scala included. We liked the user interface although, like *TrueGrain*, it has only a limited range of settings. Unfortunately there is no online help available, and the PDF we found at the DxO website turned out to be a quick start guide. The stand-alone version does not seem to have batch processing functionality, making processing a large number of images tedious and time-consuming. Here too, you can use the plug-in version in conjunction with *Photoshop* actions to perform batch tasks.

Like *Silver Efex*, *Color Efex* also tends to break up the histograms it produces, but less severely than its sister program.



*FilmPack* takes a similar approach to producing grain effects as *TrueGrain*, using scans of film originals as the basis for

its profiles, although the actual grain effects are produced by superimposing the sampled grain patterns on existing images.

## Our Test Methods

It is difficult to judge the color characteristics of photographic film objectively, and even a "typical" Velvia look isn't always consistent. Although Velvia is always developed using the same, standardized E-6 process, the slides that come back from the lab by no means always look identical. The film's well-known magenta cast doesn't appear on every film. Different production batches can also produce differing results. Color negative films developed using the C 41 process are even more prone to anomalies, as not all photo labs account for the orange mask built into C 41 films during the development process, and varying results are almost guaranteed.

The sheer number of monochrome development processes is confusing. Most large labs simply use the same chemical "brew" for developing all monochrome films; knowledgeable black-and-white photographers shudder at the thought.

In short, there are a huge number of factors that influence the final analog images, making our opinion of the authenticity of the looks produced by the

software in our test extremely subjective. We judged the test software to the best of our ability, and using all our collective experience.

### In-camera Film Simulation?

If you want to apply analog-style filters to digital images, well exposed, noise-free image files are the best source material to use. Source images should also be free of color casts and shouldn't display too much contrast. JPEGs need to be shot at a high quality setting, and the fewer compression artifacts a source image displays, the better the test results and final images will be.

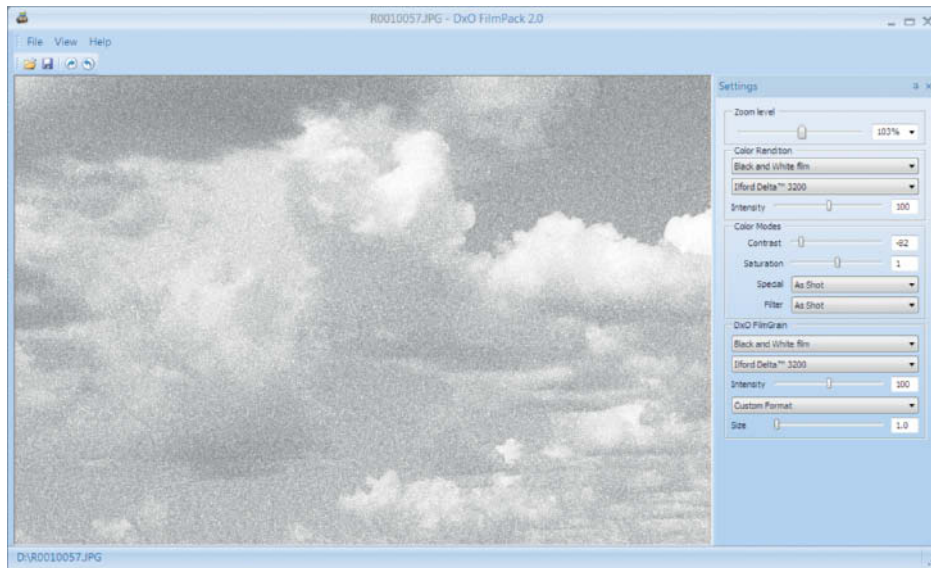
Although digital cameras have many great qualities, producing analog film looks is not part of their everyday repertoire. Japan's Fuji corporation manufactures analog film stock and digital cameras, and its S5 Pro DSLR, FinePix F70EXR compact, and FinePix S100FS bridge cameras are exceptions to this rule, and have built-in emulation tools that apply a film look (Velvia slide film, for example) to images during exposure.

This functionality is not, however, a real alternative to the software programs we tested, as it only affects a shot's color and contrast and does not include any form of grain simulation. Some photographers recommend increasing ISO speed in order to produce grainier images, but the resulting images normally only display increased noise, not authentic-looking grain.



Photo: Fuji

The Fuji S5 DSLR has built-in film emulation functionality designed to imitate the colors of classic Fuji slide films



DxO's *FilmPack* produces grain effects that are much more realistic-looking than the results you can achieve using standard *Photoshop* filters, but even these are not as authentic as the look produced by *TrueGrain*.

in spite of being scan-based, didn't blow us away.

*FilmPack* is great for adding historical colors to digital images. The grain effects are a lot better than the poor-quality *Silver Efex* offering, but nevertheless look a little too sterile for our taste. If you are more interested in applying monochrome profiles to your images you will be better off using *TrueGrain*, but *FilmPack* is nevertheless a good value all-rounder.

This approach means that *FilmPack* uses much smaller files, but the results nevertheless end up looking too smooth. The flaws and authentic-looking grain distribution that *TrueGrain* produces are lacking in the finished *FilmPack* images, although some users will see it as an advantage that inconsistencies that are not present in the first place cannot then be reproduced throughout a whole batch of images. The default settings produce results that are much too weak—the soft grain attributed to Kodak T-MAX 3200 is not at all like the original film.

The grain preview function in the standalone version didn't work on our Windows 7 test system. The Zoom to Fit setting (the one we use most often)

doesn't display the selected grain, and the effect only becomes visible if you zoom into the image—an irritating limitation for regular users. The colors are consistently good, and the Fuji Velvia 50 results were particularly convincing, even if DxO fails to emulate the magenta cast that the real film often displays. The *FilmPack* Kodachrome look was not one of the better ones in our test.

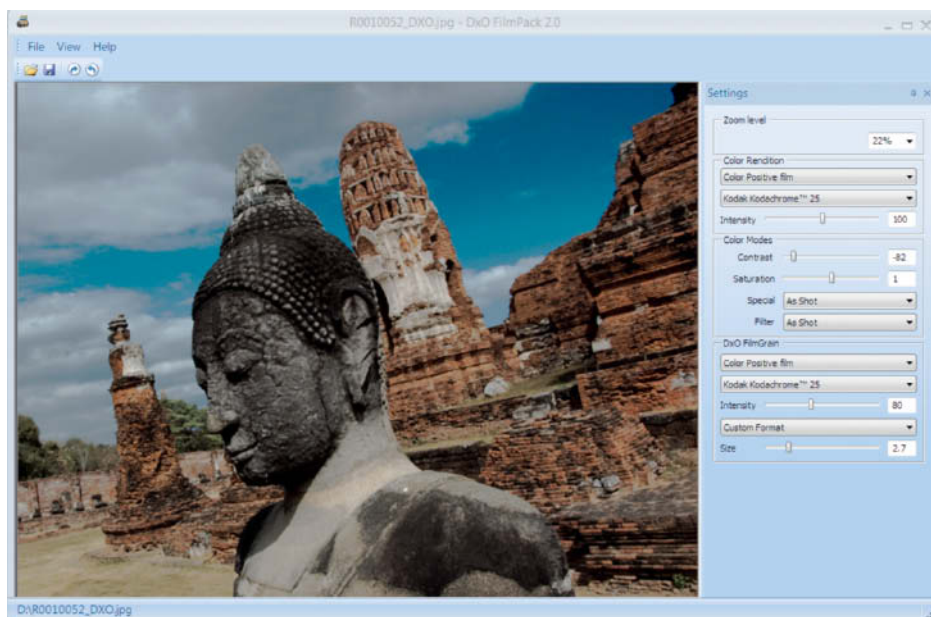
We like the program's intuitive handling, which is easy to learn for beginners and experienced users alike. The need for a split screen preview, the grain preview problem, and the lack of a batch processing mode might make *FilmPack* less attractive to regular users, although the colors were very good. The grain effects,

## Conclusions

The artificial grain effects produced by most of the test programs were, to be honest, not great. The only one that produced a convincing emulation of the unique, irregular look of real analog film was *TrueGrain*, with its scan-based emulation system.

The color film effects were a mixed bag, and all the programs tested produced inconsistent results. If you want to produce images for a specific film type, you are well advised to install a test version of your chosen software before buying in order to check whether you can satisfactorily reproduce the look of your favorite film type. All of the film profiles we tested produced better results than standard *Photoshop* tools, and we can certainly recommend any of the test packages to less advanced *Photoshop* users. Grain is less of a concern in color film profiles (especially the slower ones) and all of our test candidates produced acceptable results in this category. All of the color grain effects were better than the standard grain tools included with *Capture NX2* or *Photoshop*.

Observant viewers can tell when digital images are tweaked to look old or are overlaid with scans, especially in the case of monochrome images, due to the fact



*FilmPack* is designed primarily for applying film profiles to digital images and includes only a few, limited image processing tools. *Photoshop* is a better alternative when it comes to general image manipulation.



that digital images always look more uniform than real slides. Film cannot be kept absolutely flat in the camera, and long periods of storage combined with the inevitable loss of image quality during the scan process produce the anomalies and inconsistencies that native digital images simply do not have. Digital images are too clean, and lack the scratches, blotches, creases, tears, and blurry patches that even the most carefully handled slides usually have. Working with large, flatbed scans the way *TrueGrain* does is a great

step toward producing a better analog look, but we really need to be able to choose between multiple scans for each film type in order to produce an authentic analog look for multiple images taken from a single batch. We would also like to see more specialized tools and plug-ins for producing artificial ageing and analog image anomaly effects. *Silver Efex* was the only program in our test that already has these types of tools built in.

All of the programs tested are available as fully functional trial versions. Due to the

huge number of film profiles on offer, we were only able to make a limited number of test images, and our judgments regarding color reproduction are, of course, subjective. None of the trial versions produced watermarks or other unwanted markers, and we were able to save all our test images without complications. If you are simply fed up with the super-consistent colors in your digital images, the tools in our test can help you to reproduce the fascinating look of the analog past.

*All photos by Sascha Steinhoff* (jr)

## The Problem with Grain

Most people either love or hate grain effects. Grain has been an unavoidable side-effect since the analog photographic process was invented, and it is up to the viewer to decide whether to simply accept grain as part of the deal, or to elevate it to the status of its own art form. Some photographers see grain as having its own intrinsic artistic value, while others consider it to be a pre-historic image error that can, thanks to digital technology, at last be eradicated. Interestingly, such discussions are usually centered around “grain” in a global sense, although grain is a multi-faceted phenomenon that is influenced not only by the photographer’s choice of film but also by a large number of other factors too. One thing is certain: “classic” film grain plays an extremely minor role in our contemporary, digital times.

Different types of film display vastly differing grain structures, although all film types generally become less grainy during processing. The more sensitive a film, the grainier it will be—this effect is especially obvious if you compare different members of the same film family. For example, Kodak’s T-MAX 100 grain is almost invisible in normal enlargements, while T-MAX 400 has visible grain at just about every magnification. The high-speed T-MAX 3200 stamps an unmistakable high-grain look on every photo. The “higher ISO = more grain” rule is not absolute, however, and a modern ISO 400 film can have finer grain than a slower film manufactured in the sixties or seventies. Grain quality can also vary

from batch to batch, and some film types are even available in cheaper amateur and more expensive professional versions. In the case of “professional” film stock, the manufacturer guarantees that grain and color reproduction remain constant by ensuring that the film is subject to stringent production and storage quality control.

Exposure and development also influence grain structures, as these only take on their final form in the lab. Shorter exposures increase grain, and an ISO 100 film that is exposed and developed as if it were an ISO 400 film will display more obvious grain than if it is handled according to its nominal sensitivity. A film’s definitive grain structure is fixed once

the development process is complete, but most consumer-level photographers never get to see a film’s “true” grain in unadulterated form anyway.

The best way to produce a genuine-looking print from a classic monochrome negative is to make an enlargement either in your home darkroom or at a specialist lab where the entire workflow still takes place using analog equipment. In order to keep costs down, most contemporary prints are made in large, mass-production labs that use digital machinery to scan negatives before printing them. This means that all negatives are subject to the inevitable loss of image quality that scanning causes.

As soon as you view a scanned negative or slide on a monitor, what you are seeing is a second-generation digital interpretation of the original grain structure. Purists only really get to see a film’s true grain structure if they view slides in the traditional fashion using a high-powered magnifier and a light table. Even projected slides display additional optical noise that increases with the projector’s distance from the screen.

All these factors contribute to the regrettably subjective nature of our test. The testers’ experience compensates to some degree for this subjectivity, but doesn’t alter the fact that true grain is an inconsistent, illogical phenomenon. This fact alone means that even grain emulated by randomized algorithms still tends to appear artificial.



Photo: Fujifilm

Since its introduction in 1990, Fujifilm’s Velvia slide film, with its bright, almost garish colors, has helped redefine the look of slide photography

## Test Images for different Fuji Velvia Filters

Fuji Velvia's typical color reproduction separates it from the slide film crowd. Although its candy colors have often been slated as having a "Disneychrome" look, Velvia (especially the

ISO 50 version) has achieved the status of a modern classic since it was introduced in 1990. We tested the authenticity of each program's Velvia filter using the default settings.



Our source image was shot using a Nikon D70s and displays neutral colors and modest contrast. The blue sky, the white hull of the boat, and the dark water make it ideal for trying out the strong colors associated with Fuji's Velvia film.



*Color Efex* only has a Velvia 100 filter. Nik Software's programmers seem to have given their film profile even brighter colors than the Alien Skin Velvia 50 filter in spite of the original film's more subtle color reproduction



Alien Skin takes Velvia 50's "Disneychrome" nickname a little too literally, and turns up color saturation too far. In this case, less would have been more. This doesn't look like a classic Velvia image.



We liked DxO's Velvia 50 profile best. The colors are strong but not over-saturated, producing a well-rounded Velvia look. Purists might wish for a little more of the well-known Velvia magenta cast.

## Comparing the Effects of various Film Profiles

The images on this page show just how different the results of applying various profiles to the same source image can be

The RGB source image (Nikon D70)



The source image was shot in the late afternoon, and the setting sun produced a slight yellow cast

The Alien Skin Agfa Optima Cross Processing profile



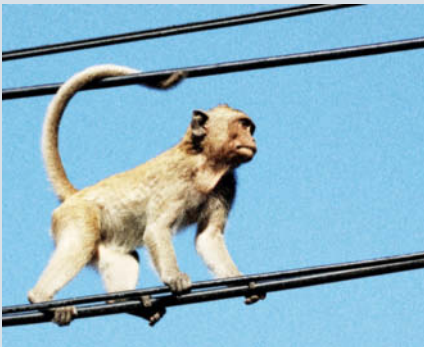
The cross processing profile included with *Exposure 2* displays strong color shifts

The Alien Skin Lomo Fuji Cross Process profile



The color shifts are even stronger in *Exposure 2*'s Fuji Provia Cross Process profile

The *Color Efex* Fuji Superia 1600 Profile



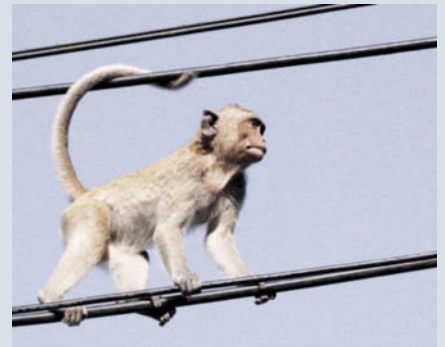
High-speed film generally displays more grain, shown here in the *Color Efex* Fuji Superia 1600 look

The *Color Efex* Kodachrome 64 profile



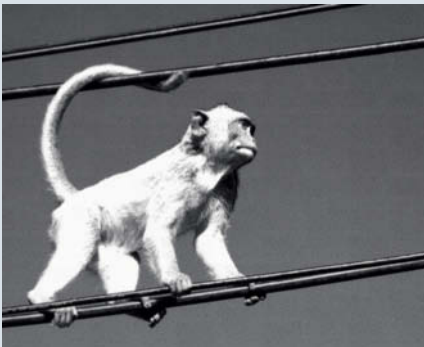
The *Color Efex* Kodachrome 64 filter faithfully reproduces the classic look of seventies magazines

The DxO *FilmPack* Polaroid Polachrome profile



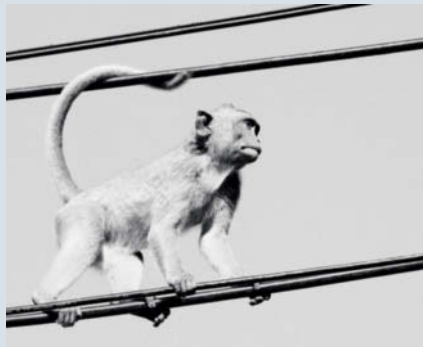
DxO's Polachrome filter even includes the original film's famous distinctive stripes

The DxO *FilmPack* Rollei IR 400 Profile



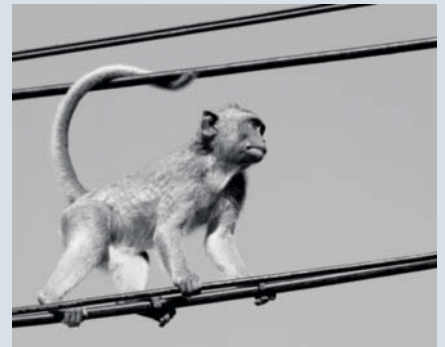
DxO's Rollei IR 400 profile simulates the look of a fairly sensitive and extremely grainy infrared film

The *Silver Efex* Ilford FP4 125 profile



The *Silver Efex* ilford FP4 profile produces virtually no midtones

The *Silver Efex* Kodak Panatomic X 32 profile



Kodak's Panatomic X, with its extremely low ISO value of 32, displays virtually no grain at all (Profile: *Silver Efex*)

## Comparing Grain for Different Film Speeds

The RGB source image



The *TrueGrain* Kodak T-MAX 400 profile with additional grain dialed in

The *TrueGrain* T-MAX 3200 profile with added grain

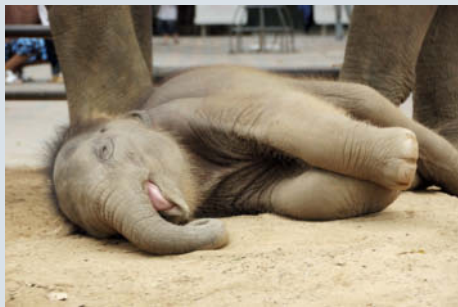


The *TrueGrain* T-MAX 3200 profile without added grain

Converting a colorful source image using a medium speed monochrome film profile produced a completely different mood. Even though it is subtle, the grain effect still changes the overall feel of the image.

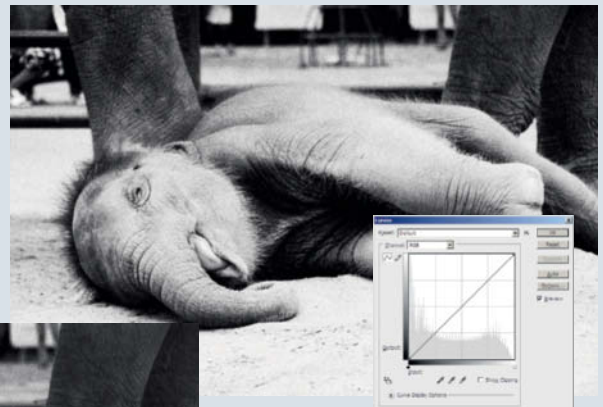
Grain contributes strongly to an analog film look. The coarse grain of a high-speed film, such as Kodak's T-MAX 3200, give even monotone image areas (such as a blue sky) a life of their own. The loss of some image detail is the inevitable result of applying a coarse grain structure to the image.

## Simulation of Film T-Max3200 with *TrueGrain* and *Silver Efex*



The RGB source image

Different programs produce widely differing results from the same source image, especially when using monochrome film profiles.



The *Silver Efex* T-MAX 3200 profile



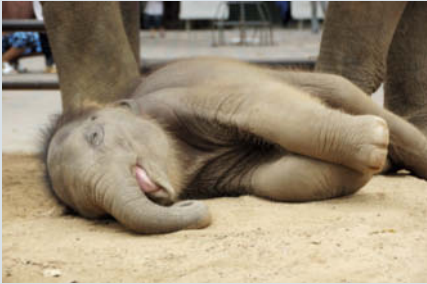
*TrueGrain* and *Silver Efex* T-MAX 3200 looks

*TrueGrain* handles the same image much more gently. The histogram is clean and the fine skin textures have been retained in spite of the coarse grain effect.

Here, you can see that the *Silver Efex* T-MAX 3200 profile is almost useless if used with its default settings. Fine textures disappear completely and many parts of the image are simply washed out. The broken histogram helps to underline the poor quality of this profile, and the effect is just as evident if the grain filter is deactivated.

## Test Images for Different T-MAX 3200 Filters

Our test programs had to demonstrate their abilities on a range of everyday subjects. Here, we used each program's default settings applied to a photo of a baby elephant. In order to keep the results as genuine as possible, we also avoided using any additional (USM or similar) filters.



Because monochrome conversion algorithms tend to manipulate the image curves anyway, we deliberately left the contrast in this source image unchanged.



*Silver Efex* produces an overly strong grain effect, resulting in too much loss of detail and a washed-out overall look. This is not an authentic analog look.



The conversion to monochrome using *Exposure 2* worked well, but the overall look is not convincingly analog.



*TrueGrain* produced the best test results, with the size and structure of the grain closely resembling the original. If you want to print your images or view them on a monitor, we recommend you adjust the curves too.



*FilmPack* produced generally pleasing results, although the grain structure is too fine and too consistent to really compare with the original T-MAX 3200 stock



The image still displays a typically smooth, digital look, even after applying the *Capture NX2* grain filter



Ralph Altmann

# More Than Just an Update

## Photoshop CS5

Adobe describes the introduction of CS5 as the most important update in the company's history and is calling the event a "milestone". We grabbed a copy of the new Photoshop release and took a look at what it can and can't do and who it is aimed at.

It is 20 years since Adobe released the first version of *Photoshop*. The program led the way from the start and quickly became the de facto worldwide image processing standard. Today, its name is synonymous with digital image editing.

*Photoshop's* popularity among non-commercial users was hugely increased by the fact that, up to version 7, it could be "freely" (if not legally) copied. With the release of the first Creative Suite in late 2003, Adobe put an end to rampant copying by introducing a hardware-based registration process of a type now used in many up-market software packages, including Windows. Full versions of the program are expensive, but regular users know that they get their money's worth. If you already own an earlier version, Adobe's moderate upgrade prices (see table) make it easier to get to grips with the latest CS5 release. User-friendliness and the range of correction tools included with the package have improved enormously since the release of the oldest upgradable CS2 version. *Photoshop's* traditional strengths lie less in spectacular editing effects (other companies are more innovative in this respect), but more in its overall interface design, which is squarely aimed at use within a professional digital image processing workflow. Full color management, 16-bit and 32-bit color depth support, and comprehensive non-destructive image editing functionality (using layer masks, adjustment layers, and Smart Objects) are just some of the professional-grade features that make *Photoshop* stand out from the crowd. Most of the improvements in the CS5 version are incremental, but some distinct advances have also been made to its selection tools, image content manipulation functionality, and the range of optical error correction features, which now includes profile-based lens corrections.

### Color, Color Spaces, and Color Depth

*Photoshop CS5* no longer includes a No Color Management option. This serves to ensure that all your digital image processing takes place in a color-controlled environment, but makes it more difficult to create your own color profiles or to print neutral color targets. If you don't want to do either of these things (and most users don't during normal processing), this shouldn't cause problems, and Adobe has promised to solve the dilemma with a new plug-in anyway.

For advanced users, *Photoshop's* color management systems are—in spite of their complexity—exemplary in their usability and

## Photoshop CS5 Guide Prices

Update from/to (in US\$)	Photoshop CS5	Photoshop CS5 Extended	CS5 Design Standard <sup>1</sup>	Photoshop CS5 Extended "Students and teacher"	CS5 Design Standard "Students and teacher"
Full version	1010	999	1299	299	449
Photoshop CS2, CS3, CS4 or Photoshop Extended CS3, CS4	296	349	899		
Photoshop CS5	–	349	849		
CS4 Design Standard	–	–	499		
Photoshop Elements 6,7,8 (Windows) Photoshop Elements 4,6,8 (Mac-OS)	599	899			

<sup>1</sup>Contains *Photoshop CS5*, *Illustrator CS5*, *InDesign CS5* and *Acrobat 9 Pro*

reliability. *Photoshop* is also one of the few image processing programs that fully supports 16-bit color depth and images saved in the L\*a\*b\* color space. 16-bit processing is a must if you shoot with a modern, RAW-capable camera that captures tonal values at full color depth. Today's standard RAW color depth is 14-bit, equivalent to a range of 16,384 tonal values, while some high-end cameras can differentiate between more than 65,000 tonal values. Today, the 32-bit color depth already available in HDR images is starting to become commonplace. *Photoshop CS5* offers a range of 32-bit tools, including a new one for adjusting HDR tones, which we will discuss in more detail later.

Adobe has improved color selection and mixing functionality and you can now opt to have a color picker appear directly where you click in an image. A freely accessible online database of color styles (called "Kuler") that has been around since CS4 was launched is

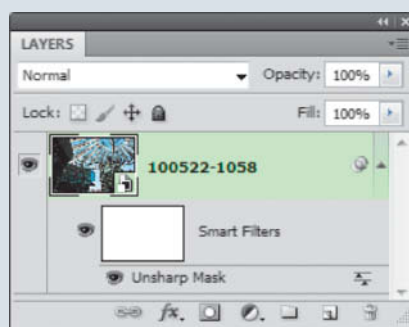
now directly accessible from the CS5 interface—a boon for graphic artists.

### Correcting Images

*Photoshop CS5* still uses *Adobe Camera Raw* to perform its demosaicing (i.e., to interpolate and assign RGB colors to the grayscale tonal values that make up a RAW image file) as well as for making a range of other adjustments to RAW images.

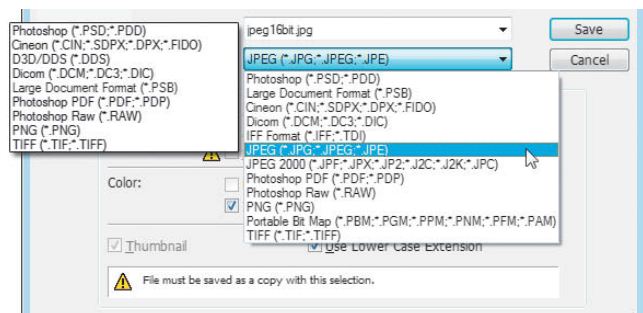
Since the introduction of CS4, *Adobe Camera Raw (ACR)* has also been capable of processing JPEG and TIFF images. The 6.0 version and the new 6.1 version include improved interpolation algorithms for RAW conversion. *ACR* cannot be updated separately, so you will need to purchase either *Photoshop CS5* or *Photoshop Elements 8* (as standalones or as part of a suite) in order to enjoy the advantages of *ACR 6.1*. *ACR* is often capable of producing more dynamic range

## Smart Objects and Smart Filters

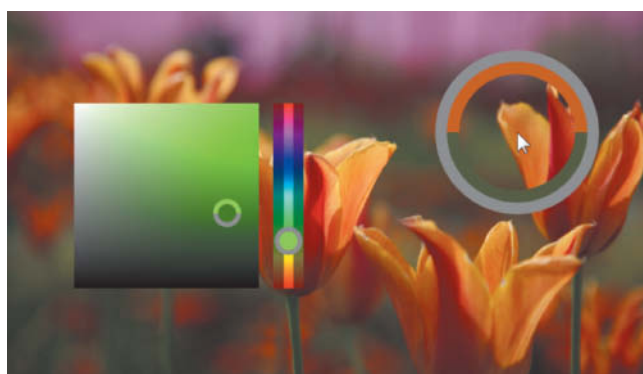


"Non-destructive editing" means that any adjustments you apply to your image do not affect the original image data, and that the adjustment parameters are instead stored separately within the image file. Smart Objects apply the same concept to all *Photoshop* filters and tools, with the exception of the Brush tools. Filters that are not available as adjustment layers (such as

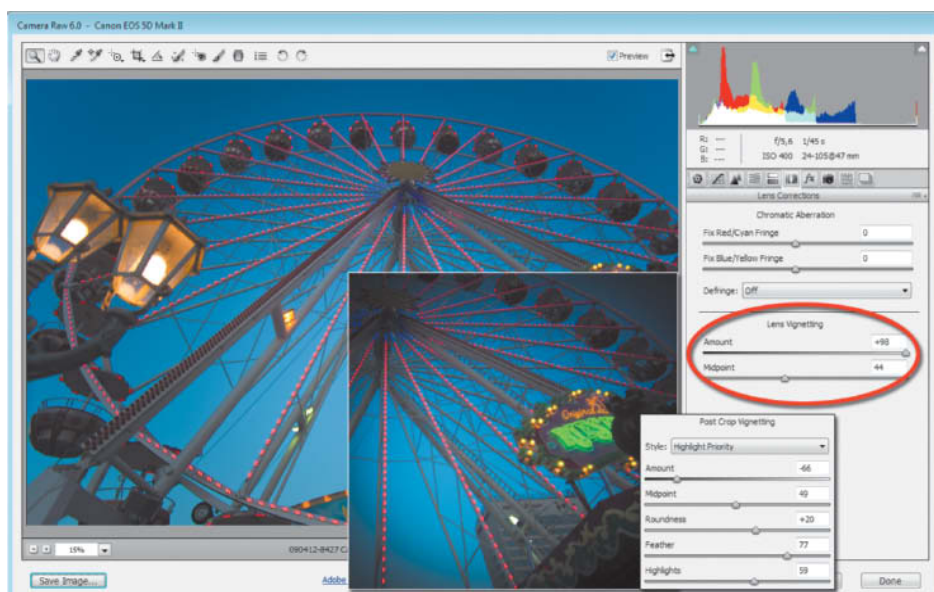
Sharpen) can be applied to layers that have been converted to Smart Objects. This even works for the Transform, Crop and Image Size tools, and is a great advantage if you are working on images that are shared between multiple Adobe programs or users. A RAW image that has been optimized in *Lightroom* can be seamlessly integrated into a *Photoshop* file and passed on to *DreamWeaver* or *InDesign* for publication while preserving the original image data and allowing you to fine-tune your adjustments later. All Smart instances of an image are adjusted automatically if changes are made to the original. The main disadvantages of Smart Objects are the large size of the image files they produce and the fact that Adobe hasn't fully integrated the Smart idea into its overall interface concept, making some Smart steps quite tricky to perform.



Does this mean we can at last save JPEGs as 16-bit files? Unfortunately not. Images are still converted to 8-bit before they are saved, as indicated by the warning at the bottom of the dialog.



Direct color selection: pressing Alt+Shift+Right click (Windows) or Control+Alt+Command key (on a Mac) opens the color picker at the current cursor position. The circle on the right appears if you select a color using the eyedropper.



You can not only remove unwanted vignettes, but also apply your own vignetting effects in *Adobe Camera Raw (ACR)*—even to images that have already been cropped. The illustration shows the *ACR* 6.0 interface. The 6.1 version also includes distortion correction functionality.

Content-aware scaling allows you to protect important image details from adjustment during image resizing by saving selected content in an alpha channel. Other adjustments to the protected content are not possible.

(and thus providing more detail) in RAW images than can ever be provided by JPEG images shot using the same camera. In contrast to camera manufacturers' proprietary RAW converters, *ACR* supports a wide range of RAW formats that is constantly being updated. It also includes tools for correcting color temperature, brightness, contrast, sharpness, vignetting, and chromatic aberrations. Lens error correction tools were introduced with the 6.1 version in June this year.

*ACR*'s noise reduction tool bases corrections on a file's Exif metadata and has three new sliders that combat detail softening when you adjust color or brightness and preserve contrast when you adjust brightness. *Photoshop* has a similar tool that can be found under Filter > Noise > Reduce Noise.

The *ACR* Adjustment Brush is, however, unique. You can use the tool to mask image areas that you can then modify using one or more of the seven adjustment types: Exposure, Brightness, Contrast, Saturation, Clarity, Sharpness, or Color. Each effect is marked with a pin icon at its application point and you can select the Show Mask option to show the effect of your adjustment in the image preview. These changes are non-destructive, and you can adjust the size of the area covered and the strength of the effect later. This tool is really fun to use! The only way to make similar adjustments in *Photoshop* is to use Smart Filters or large numbers of adjustment layers and layer masks.

The Targeted Adjustment tool works in a similar way, but has no brush function and therefore cannot be applied locally. Once you have activated the tool, you need to select a mode (Hue, Saturation, Luminance, Grayscale Mix, or Parametric Curve) from the context menu in the preview window. Clicking on your image then imports the color and luminance parameters at the current cursor position into the tool and uses these as a basis for subsequent corrections. Dragging the mouse then performs a context-sensitive adjustment—for example, clicking on a blue sky in Saturation mode automatically opens the Saturation tab in the HSL/Grayscale panel and activates the Blues slider. Grayscale Mix mode is designed for making precise adjustments to the grayscale values in color images that have been



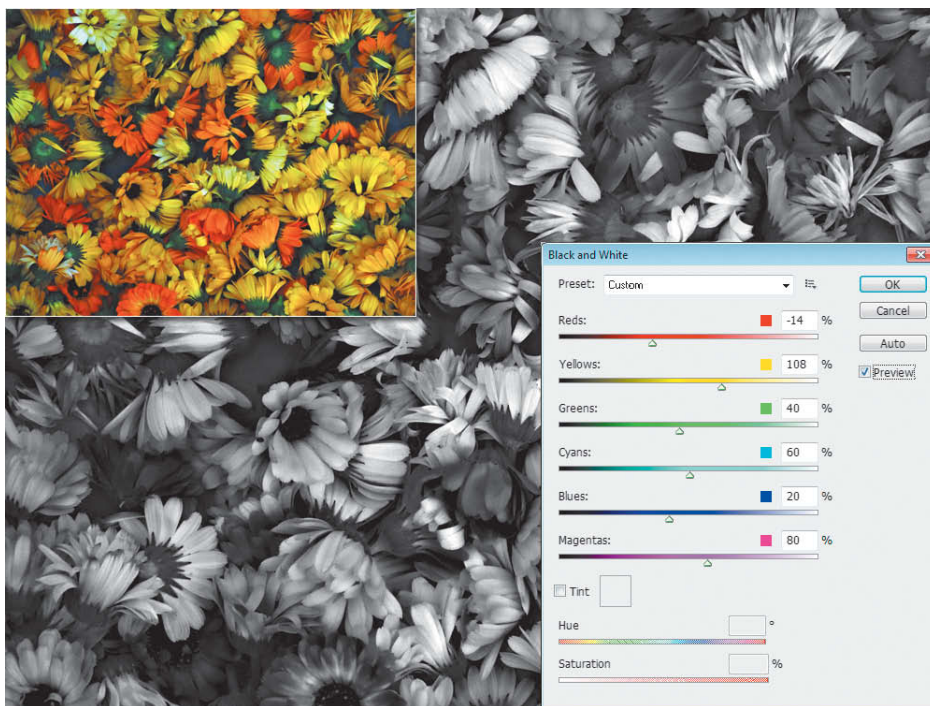
converted to black-and-white. You can also make this type of adjustment directly via the slider panels, but Targeted Adjustment is more intuitive to use. The same is true of the ACR Graduated Filter tool, which produces more balanced contrast, just like a physical graduated filter mounted on a lens, and can be applied using most programs that support layers. There are also Color and Sharpness sliders built into the filter for fine-tuning your results. The ACR version of the tool requires you to set start and end points, angle, and any additional fine-tuning parameters for the filter. Selected correction parameters are saved in the program's database or in a separate XML sidecar file, making all adjustments non-destructive, even if you save your results in JPEG format. Adjustments are then applied on the fly when you open your image in Lightroom or Bridge, while non-Adobe programs can only open the original version of images that have been adjusted this way.

The CS5/ACR 6.1 package introduces long-awaited profile-based lens correction tools for removing converging lines and barrel or pin-cushion distortion, and further underlines Adobe's encroachment into terrain previously occupied by specialty programs such as *DxO Optics Pro*. The same tools are also due to be included in Lightroom 3.0. The Lens corrections dialogs and, surprisingly, the results they produce are not identical in *Photoshop* and *ACR*. *ACR* has an additional Amount slider while *Photoshop* includes a grid that you can superimpose on the image preview to help you judge your adjustments effectively. In order to achieve satisfactory results, all profile-based adjustments require you to install the correct profile for the lens used to take the photo you are correcting.

Lens type and other lens information are extracted from an image's Exif metadata. Lens Profiles are saved in the Adobe\Camera-Raw\LensProfiles\1.0 folder. At the time of testing, there were more than 300 profiles available, mostly for Sigma zoom lenses, iPhones, and a handful of other lenses from various well-known camera manufacturers. Adobe intends to continually expand the lens profile database and has created its Lens Profile Creator software to enlist the help of its users. You can use the software, together with a printable test chart, to create profiles for camera/lens combinations that have not previously been profiled.

### Making Image Adjustments using Photoshop CS5

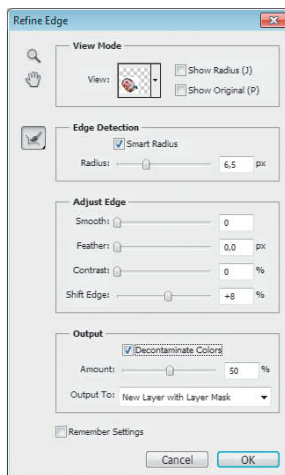
Up to and including the CS3 release, *Photoshop* included only the Extract tool for



*Photoshop's* Black and White mode helps to preserve fine tonal differences that would normally disappear when you convert a color image to grayscale. You can adjust the grayscale values of each individual color channel simply and directly using your mouse.



We used *ACR* to level the horizon and intensify the blue of the sky with the Targeted Adjustment tool. The original image is shown at top right. The settings we used are shown at bottom right. We also used the adjustment brush to mask the statue so that any further adjustments we made were limited to the statue area.



**The Quick Selection tool is great at recognizing the basic shapes of objects, but doesn't pay any attention to irregular outlines, necessitating fine-tuning with the Refine Radius brush.**



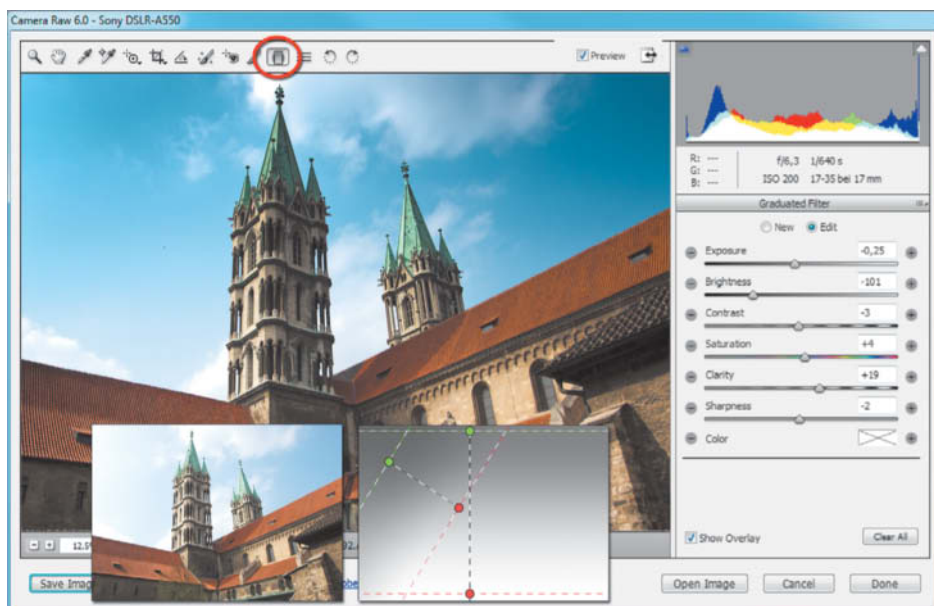
making selections. The tool couldn't compete with specialty plug-ins such as onOne Software's *Mask Pro*, which Adobe still offers for download although its own Quick Selection and Refine Edge tools now perform the same tasks just as well. In its CS5 incarnation, the

Refine Edge tool has been given Smart Radius functionality that automatically adjusts the radius setting to the type of edge you have selected, and the Decontaminate Colors check box that automatically removes color fringes by replacing affected pixels with the

color from nearby pixels. With a little practice, these tools—together with the various available view options—make complex selections much simpler. You can deal with hair or other semi-transparent objects using the Refine Radius brush included in the Refine Edge dialog. *Photoshop* is spookily good at correctly recognizing which pixels belong to a selection.

*Photoshop* has become extremely good at recognizing edges, outlines, and patterns within images, and is verging on achieving true object recognition. This advanced functionality has been further integrated into the Spot Healing Brush tool and the Fill command in the form of the "Content-aware" option. Here, *Photoshop* analyzes the pixels surrounding your selection and replaces them with any patterns it recognizes. As an example, you can use the Spot Healing Brush to simply and invisibly remove telegraph wires from an image. Larger objects, too, can be quickly and simply removed without trace. The function even takes image noise into account. The more easily recognizable the patterns in your image, the more reliable the results—the tool duplicates backgrounds that consist of brick walls or bushes almost perfectly. The function is, however, extremely processor-hungry and quickly reaches 32-bit *Photoshop's* 3GB memory limit if you try to replace large image areas. This type of tool really requires the 64-bit version of the program to function smoothly.

Repositioning rather than simply deleting objects often improves a composition. Once you have selected an object and repaired your background, you can place your object anywhere you like within the image and even use the Puppet Warp tool to manipulate it separately from the rest of the image data. This new tool lays a visual mesh over your selection and allows you to drastically distort specific image areas, while leaving other areas intact. Applications range from subtle image retouching (such as shaping hair) to total transformations (such as repositioning arms or legs). CS4 already included the similar Content-aware Scaling function, which allows you to scale image backgrounds independently of important foreground detail. Puppet Warp was supposed to deliver almost miraculous results, but requires a great deal of care if it is to be applied successfully. You can only really achieve realistic-looking results if you save your masked areas in a separate alpha channel and scale the rest of your image moderately. *Photoshop* can automatically mask skin tones, but cannot prevent you from accidentally warping your subject's



**Here, we used the Graduated Filter tool to darken the sky. This only works if the sky isn't overexposed. We used one horizontal and one diagonally positioned filter (shown in the small image in the center) with slightly different settings to achieve the result you can see here.**

haircut or clothes! The tool is programmed to protect complex patterns and distort simpler ones, such as sky, grass, or water. *Photoshop* is not yet capable of recognizing people, but it won't be long until it can.

## Merging Multiple Images

If you are not able to capture your planned image due to technical limitations related to composition, depth of field, or dynamic range, you can always take multiple photos of a single subject and merge them together into an optimized image later. The *Photoshop* Photomerge tool (found in the File > Automate menu) analyzes the content of an image sequence and generates a merged image file based on the results. If you are making a panorama, we recommend activating the Vignette Removal option, as *Photoshop* then automatically adjusts the brightness at the edges of the overlapping images. You can, however, make the same adjustments manually if you prefer. The tool also automatically aligns the individual images according to matching content and

## Data Security Issues

*Photoshop* is stable and crashes only rarely but doesn't, as yet, include the built-in background save functionality that is a standard feature of many other image processing programs. It is always better to press Ctrl+S once too often than not often enough. Even the best non-destructive correction tools aren't worth a penny if there is a sudden power cut. Automatic saving of correction parameters uses hardly any memory and is simple to implement. Ironically, *Photoshop* is already capable of (optionally) saving all correction parameters in the History Log.

There have been a number of occasions over the years when we have lost all of our

settings due to unsaved correction parameters. Resetting complex corrections is painstaking work and other paper format or printer settings can be destroyed by a crash too. *Photoshop* saves presets in the Users\\AppData\Roaming\Adobe\Adobe *Photoshop* CSX\ folder and we recommend that you backup this folder regularly. The program settings are stored in the \Settings sub-folder in the Adobe *Photoshop* CSX Prefs.psp file, which you can simply delete and replace with a saved version if something goes wrong. If the file is empty, corrupt, or missing, *Photoshop* will automatically activate its default settings at startup.

automatically generates layer masks for each source image. The Photomerge dialog includes a choice of five layout options, most of which are suitable for panorama use. The

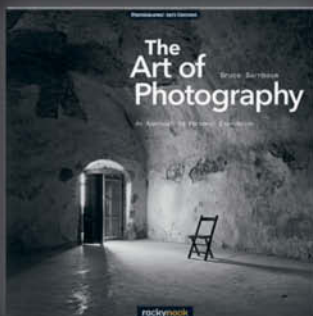
Perspective, Cylindrical, and Spherical projection types all distort source images where necessary, while the Collage and Reposition projections only rotate or scale, making it

# Fine Art Photography

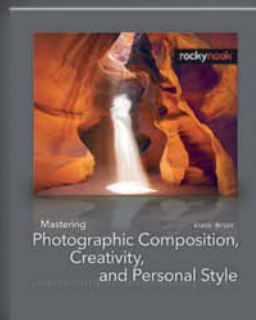
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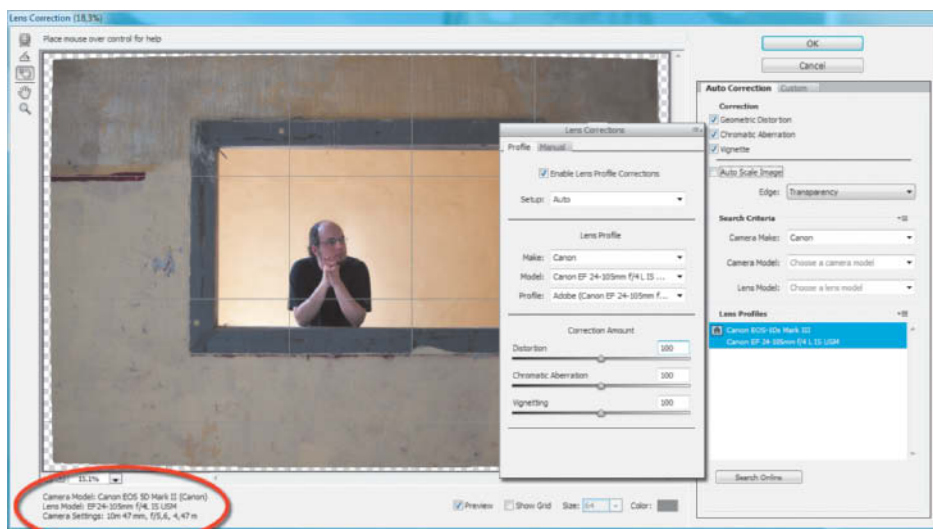
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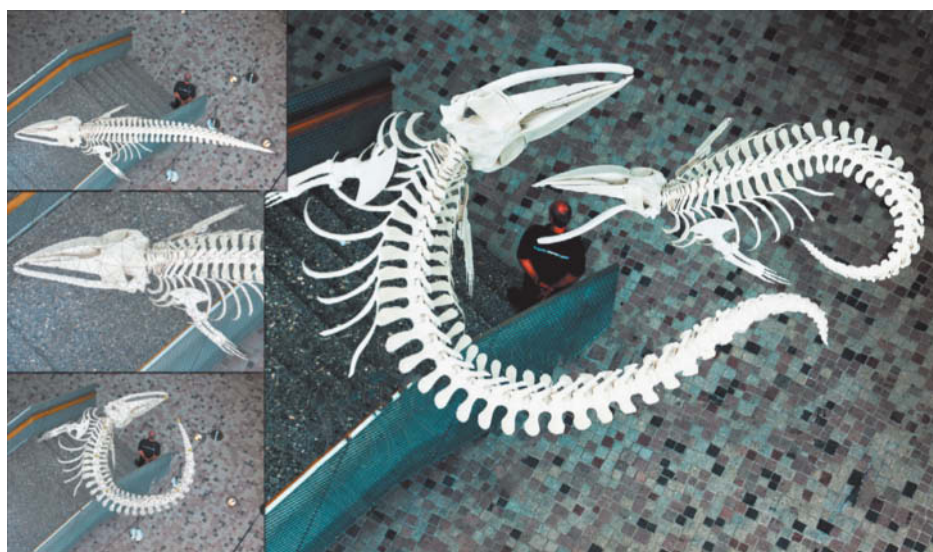


CS5's improved Lens Correction tool automatically recognizes the lens used and loads the appropriate profile from the built-in database. The ACR Lens Corrections dialog (shown in the smaller image) includes three additional sliders for adjusting correction amounts. Both programs allow you to make fully manual lens corrections or to manually fine-tune corrections made automatically by the software.

necessary to shoot for these two projection types using a distortion-free lens and a tripod with a panorama head. The Spherical projection type produces 360-degree panoramas that can be transformed into three-dimensional views using the 3D functionality built into the Extended version of *Photoshop*.

The Auto-Align Layers command (in the Edit menu) is another great aid to post-shoot composition. The dialog is also an integral part of the Move tool, but doesn't include the

projection options that make it possible to rotate, scale, and mask individual images. These functions, along with the search for appropriate overlaps, are left to the Auto-Blend Layers command in the same menu, which is also capable of blending images to include only the "best" (i.e., ideally exposed and focused) pixels from each source image. You can also use these tools to merge several photos with shallow depth of field into a single image with much greater depth of field.



We used the new Puppet Warp tool to bend the whale skeleton. The original image, shot at the oceanographic museum in Stralsund, Germany is shown on the left

In this case, *Photoshop* automatically aligns images that were not taken from precisely the same position.

## Creating HDR Images

Just as you can merge multiple images to increase your camera's angle of view, you can also merge several differently exposed photos to create an image with greater dynamic range than your camera is designed to capture. *Photoshop* has included High Dynamic Range (HDR) functionality for a while now, but CS5 has at last incorporated these tools into a user-friendly dialog. Creating HDR images with 32-bit color depth is relatively simple, but the results can only be effectively displayed or printed if they have been tone-mapped for 8-bit or 16-bit output first.

You can select your source images using either Bridge or the Merge to HDR Pro dialog in the Automate menu. There are three output modes: 8-bit, 16-bit, and 32-bit. If you select 32-bit, *Photoshop* opens your image using 32-bit color depth, but offers no further user-adjustable settings. The White Point Preview setting only alters the appearance of the preview, but not of the image itself. We recommend always activating the Remove Ghosts option, as ghosting cannot be repaired later.

The 8-bit and 16-bit output modes give you access to various tone-mapping dialogs, although Local Adaptation is the only one that is of real interest for day-to-day HDR uses. The dialog includes a number of useful adjustment tools, including a reduced-functionality tone curve dialog that allows you to fine-tune the distribution of tonal values within your image more precisely than you can using the sliders. The HDR Curve dialog doesn't show the position of selected pixels on the curve, and lacks the anchor point and the shadow/highlight clipping functionality included in the *Photoshop Curves* dialog.

*Photoshop* irrevocably resamples your tone-mapping settings into the image data and displays the finished image at the selected color depth. You can, however, work non-destructively if you open your merged 32-bit image and save it immediately. The resulting image won't look particularly spectacular, but does include all its original pixel data and can be converted at any time (along with any adjustments you make) to 8-bit or 16-bit color depth using the Image > Mode command. This method automatically opens the HDR Toning dialog, which allows you to zoom into the preview, and includes all the same adjustments and tools as HDR Pro and the more familiar *Photoshop Curves*

Both *Photoshop* und *ACR* tend to chop the tops off buildings if you use the Auto Scale Image option in the Lens Correction tool (see the detail image below right). To work around this problem, uncheck the option, select a lower scaling factor in the Custom tab, and crop your image manually.

dialog. In future, we would like to see HDR previews that can be zoomed to more than 200% and a Smart Object-compatible HDR Toning tool. CS5 does allow you to open 32-bit HDR images as Smart Objects, but the reduction of bit depth that this involves automatically clips all “unnecessary” tonal values before you have even opened the tone-mapping dialog. Maybe our wishes will be implemented in CS6!

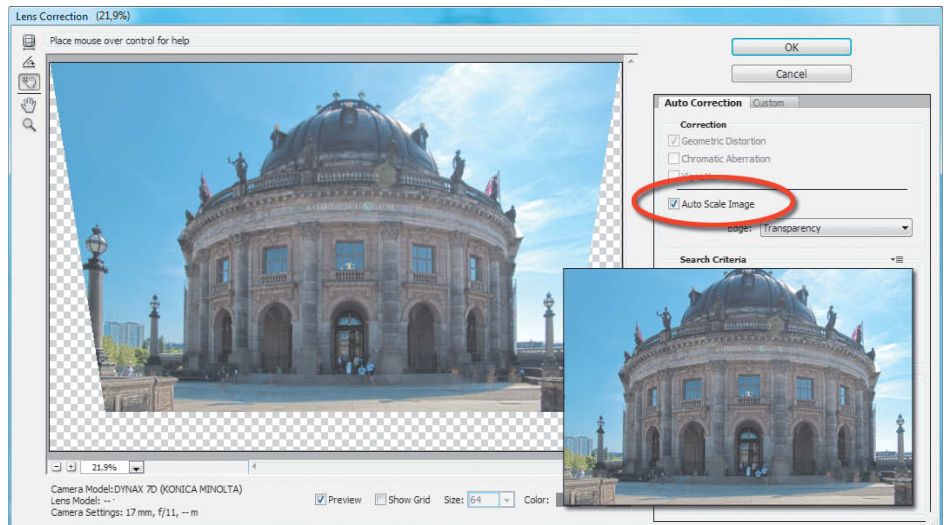
The HDR Toning settings are also available in the Image > Adjustments menu, where they can be applied to any open image. This allows you to apply surreal-looking HDR effects to conventional 8-bit images. Surprisingly, you can apply HDR toning to 32-bit images without affecting their native color depth, but whether this actually has any practical use remains to be seen. We can imagine using multiple, layered applications to produce especially subtle or surreal effects.

### Conclusions

The important changes in CS5 that we haven't discussed here include support for 64-bit systems, which makes processing very large image files faster and more reliable. 3D and scientific functionalities are only available in the more expensive Extended version of the program. CS5's many other features also include interface customization, new brush and color mixing tools, and the new CS Review online team support system.

*Photoshop* really is the “Swiss Army knife” among today's image processing programs, and has a tool for just about any application you can imagine. It includes many functions that you would have to acquire separately if you want to use them with cheaper programs from other manufacturers.

CS5's improved tone-mapping dialog now includes all the most important HDR tools and settings. It is great to be able to use anchor points to create “Corners” in the tone curve.

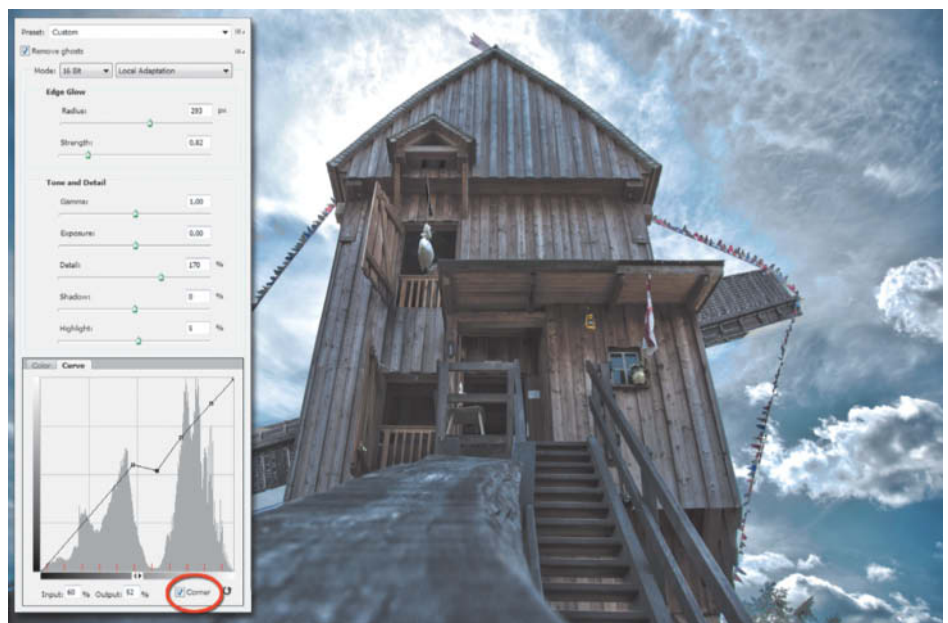


For a working graphics studio, the US\$999 list price for CS5 Extended is relatively easy to justify, but hobby photographers will often prefer to invest that kind of money in camera gear. Nowadays, there are many full-featured image processing programs available as shareware or for free, while cameras and lenses still cost money! If you own an older version of *Photoshop*, Adobe's sub-US\$200 upgrade price for any version since CS2 makes the decision to test CS5 a lot easier and adds up to the equivalent of a US\$40-per-year subscription price. You can also upgrade from *Photoshop Elements* 6.0 and higher (Windows) or 4.0 and higher (Mac).

Be careful if you buy an old, upgradable copy of CS2. These are often not as cheap as you might think, and you run the risk of acquiring pirated or incorrectly licensed

software if you don't buy from a reputable source. Adobe provides information on how to recognize pirated software at [www.adobe.com/aboutadobe/antipiracy/](http://www.adobe.com/aboutadobe/antipiracy/).

There are significant discounts available to students and teachers on all versions of the program (see the table at the beginning of this article). Adobe has recently begun to allow educational software to be used commercially, but evening-class students no longer qualify for discounts. Student versions are only slightly cheaper than upgrades but are themselves not upgradable. After the unspectacular CS4 update, which was ignored by many regular users, the release of CS5 is an important step for Adobe. Content-aware adjustments and profile-based lens corrections are our favorites among the program's new time- and energy-saving tools. (keh) **ct**





Klaus Gölker, Jobst-H. Kehrhahn

## More Photoshop for Your **Elements**

Photoshop Elements 8 can do much more than you think. There are many ways to enhance its functionality, whether you want to use layers, 16-bit processing, or additional plug-ins. And all these extras are free!

# Get the Most from Elements

Many Photoshop Elements users have, at one time or another, considered upgrading to a “proper” version of Photoshop. Two things make the move less attractive: the first is the high price, and the second is the fact that a number of important Photoshop features are now available for Elements.

Many digital photographers start their image processing career using *Photoshop Elements*. *Photoshop*’s inexpensive little brother offers well-rounded, basic functionality for retouching digital images and scans.

However, the differences between the two programs become increasingly obvious the more experience you gain. Many retouching functions can only be effectively applied using layers and layer masks.

For more information on this topic see also the *How Layers Work* section below and the *Elements 8* video tutorial included on this issue’s free DVD.

The problem is that *Elements* cannot create layer masks on regular pixel layers the way *Photoshop* can. However, masks are still part of the *Elements* adjustment layer functionality that you can use to make non-destructive changes to image color and hue. This makes it possible to use adjustments layers and clipping masks to work around the inherent limitations of *Elements* and to combine them so that they behave just like a *Photoshop* layer with its associated layer mask.

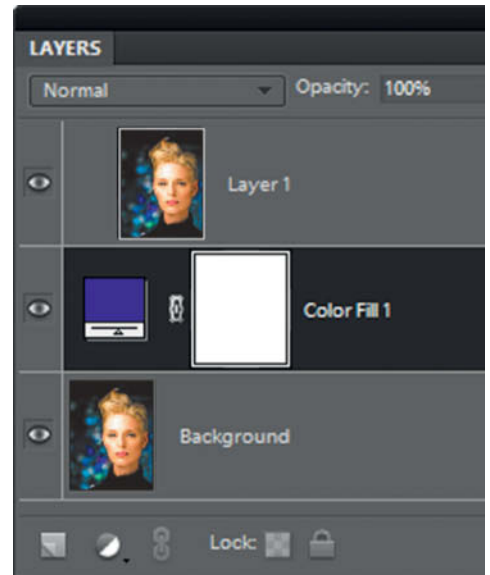
## Tip #1: Clipping Masks and Adjustment Layers

This trick involves turning an adjustment layer into the base layer of a clipping mask. First, place your adjustment layer on top of the layer stack so that it influences all the layers below it. To change the effect hierarchy, you can place the layer you want your mask to influence above the adjustment layer and create a clipping mask for it by pressing Ctrl+G, which converts the adjustment layer into the base layer and determines which parts of the image layer above “show through”. The following steps describe how to apply the procedure to a fill layer:

### Step 1: Create a mask

- Open an 8-bit image file
- Create a copy of the background layer using Ctrl+J or the Duplicate Layer command in the context menu
- Create a fill layer (Layer > New Fill Layer > Solid color)
- Click on Layer 1 (the new copy of the background) to activate it
- Shift-Ctrl (or Layer > Arrange > Bring to Front) moves Layer 1 to the top of the layer stack
- Use Ctrl+G (or Layer > Create Clipping Mask) to create a new clipping mask for Layer 1

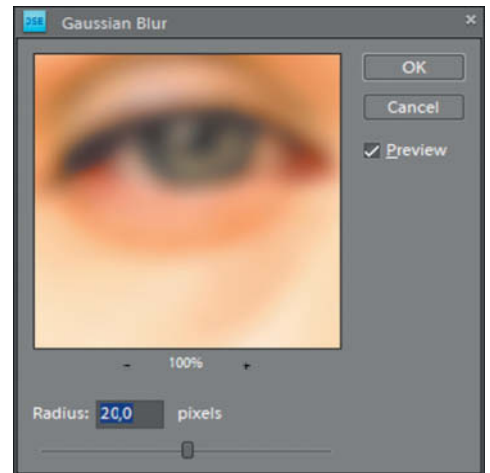
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### Step 2: Apply an effect

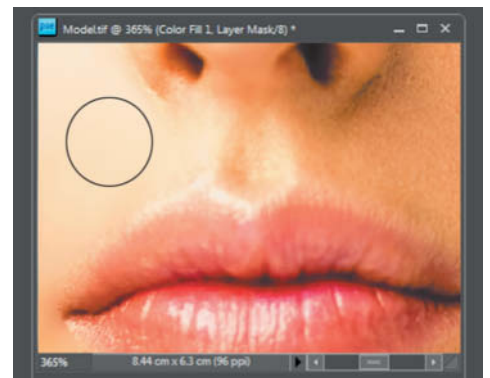
The clipping mask doesn’t yet affect the image because the background layer and Layer 1 are still identical. This is how to apply an effect to clean up the skin tones in a portrait:

- Click on Layer 1 to activate the clipping mask
- Because the Color Fill 1 layer is currently white, the entire image appears in soft focus when you apply Filter > Blur > Gaussian Blur



### Step 3: Restrict the effect

- Click on the Color Fill 1 layer mask thumbnail to activate it
- Use Ctrl+I to invert the mask. The previously white mask is now black, allowing the original background image to show through without the soft focus effect
- Select a white or gray brush and “paint” the portions of the image that you want to appear softer. Only the non-black, masked parts of the original image now show through.



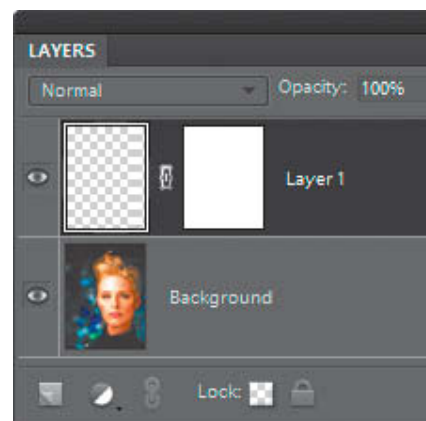
## Tip #2: Cut & Paste a Dummy Layer Mask

Photoshop Elements generally loads PSD files without complaint, even if they contain elements that the program doesn't support.

The same is true for layer masks: if you save a PSD file to include an empty layer with a linked layer mask, Elements displays the layer thumbnail and the link.

## Step 1: Create a layer mask

- Open an 8-bit image and the *layer\_mask.psd* file
- Position the two images next to each other (Window > Arrange > Tile) and click the PSD file to activate it
- Drag the layer thumbnail to the image you want to process, creating an empty layer linked to the layer mask



## How Layers Work

A layered image is constructed in a similar way to old-fashioned stop-frame animations. First, a background layer is drawn and subsequent layers are superimposed on the background by drawing on transparent cels, called "Layers" in the Adobe world.

In an image processing context, "alpha-channel transparency" ensures that image layers can possess different degrees of opacity. Image layers remain separate and can be individually processed using the Layers panel (accessible via the Window menu).

Elements saves multi-layered images in PSD or TIFF formats. The Layers panel usually opens automatically when the program starts.

The main advantages of working with layers are:

- Multiple layers can be combined to form a single image
- Layers can be partially transparent, allowing you to cover or uncover selected image elements. Transparent elements have a gray checked background to help you remember which they are.
- Layers can be independently positioned on the image canvas
- Layers are freely scalable and transformable
- Layers can be linked, producing combined images which can then be processed as a

unit. Linked layers can be unlinked and processed individually at any stage.

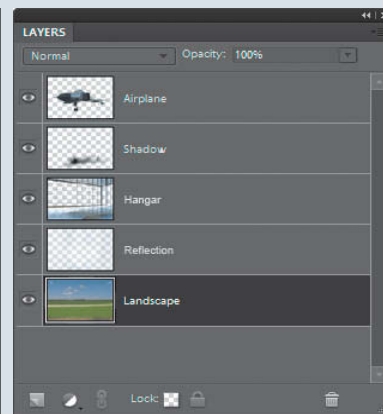
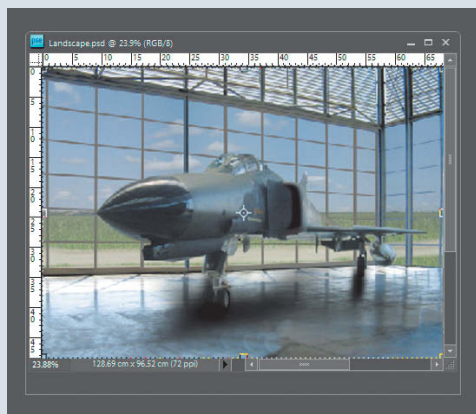
- The order of layers in a layer stack can be altered at will, allowing the user to determine which elements of an image cover which others.
- Layer opacity is adjustable
- Layers can be duplicated at will
- Individual layers and combinations of layers can be imported from other images
- Layer blending modes allow you to apply a range of different color and light effects to an image

Image data is always associated with a specific layer, but selections are not. This means that you can save selections and apply them to other layers or images—for example, to mask specific image elements. A layer has to be active in order for a selection to be applied to it.



The individual layers in an image:

1. Airplane
2. Shadow
3. Hangar
4. Show-through layer with reflection effect
5. Background landscape



The resulting image and its corresponding layers in the Layers panel



### Step 2: Fill the empty layer

- Activate the background layer
- Use Ctrl+A, Ctrl+C, or Select All; followed by Edit > Copy to copy the background layer
- Click the chain icon to unlink the empty layer and the layer mask
- Activate the unlinked, empty layer
- Use Ctrl+V to paste the copied background layer into the empty layer
- Click between the layer and the layer mask thumbnails to re-link them
- Use Ctrl+V to paste the background layer



### Step 3: Apply and limit an effect

Effects such as a soft focus filter are first applied to the image layer. You can then limit the effects of the filter by painting the areas you want to leave intact (here, the area around the subject's eyes) into a black foreground layer. You can also invert the layer mask using Ctrl+I and paint the areas you want to adjust white or gray.

## How Adjustment Layers and Layer Masks Work

Adjustment layers are a mechanism that you can use to select specific areas within an image and apply a correction to them without permanently altering the image, the layer, or the selection. Adjustment layers apply corrections to a separate, newly created layer that is located above the layer you want to adjust. The correction itself is superimposed on the image, leaving the original image data untouched. This also means that you can undo any changes you make at any stage. If you delete an adjust-

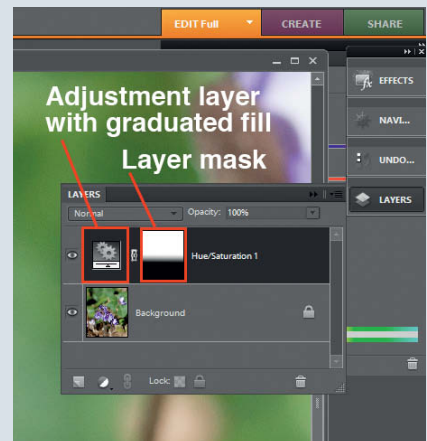
ment layer, your image will appear exactly as before. An additional advantage of adjustment layers is that the correction itself can also be fine-tuned. Layer masks are used to exclude selected image areas from the current adjustment without actually deleting the pixels concerned.

Layer masks can be colored black to mask or white to unmask selected pixels. Gray masks partially mask the selected areas, but allow the selected pixels to "show through" to the image layer. Deleting or hiding a layer mask makes all image pixels visible.

Layer mask functionality is available in *Photoshop Elements* in the form of clipping layers or using the *Elements+* plug-in. Some tools, such as Smart Brush or Photomerge, use internally generated layer masks to achieve their effects.

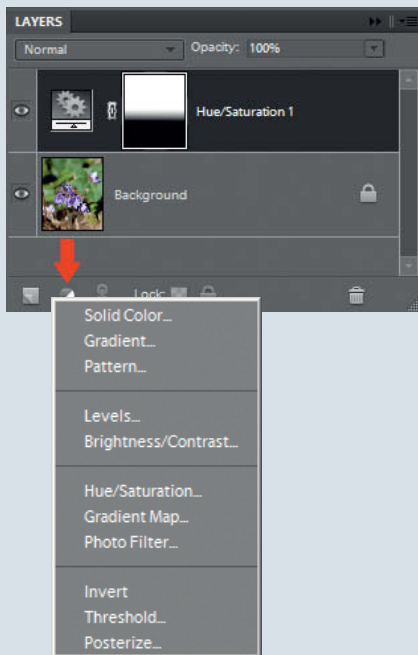
Because they don't affect the original image data, image adjustments performed using adjustment layers are termed "non-destructive". *Elements* is designed to make direct adjustments that alter the image data immediately when a correction is applied. This "destructive" editing is not a problem as long as you have a specific idea of how you want your finished image to look. If your changes don't turn out the way you expected, the program allows you to undo individual steps and recall earlier image states during a single session.

Adjustment layers and layer masks can also be combined. The effect applied using an adjustment layer can be adjusted by double-clicking the layer's thumbnail in the Layers

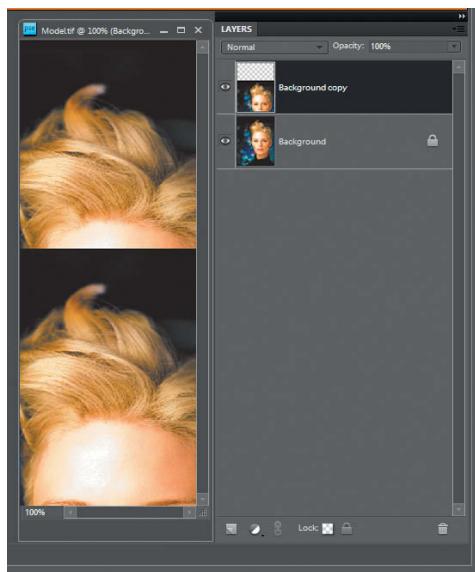


The Layers panel, showing an adjustment layer and the layer mask created automatically by applying a Smart Brush adjustment. The mask is superimposed on the image background and alters its appearance without altering the image data.

panel, while the layer mask acts like a selection, limiting the area to which the effect is applied. If you no longer want to apply the change made by an adjustment layer, you can hide the layer by clicking on the eye icon at the left of the appropriate entry in the Layers panel, or simply delete it. To save adjustment layers and layer masks with an image file, save them to PSD format. Saving to other formats interpolates the changes you have made into the image data, altering it permanently.



The adjustment layer menu in the *Elements* Layers panel

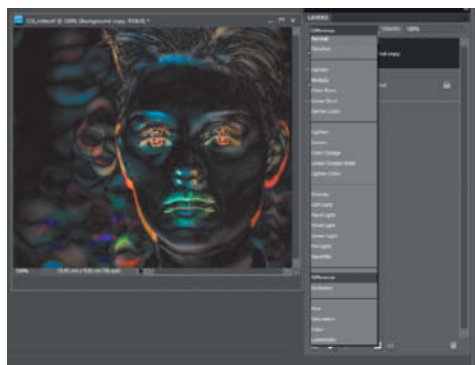


### Tip #3: Using Layers with 16-bit Image Files

*Photoshop Elements* has only a few tools that support 16-bit processing, and Layers functionality appears to be switched off in 16-bit mode. For example, if you import a 16-bit image using Adobe Camera Raw, the Duplicate Layer option is grayed out. Ctrl+J or right-clicking the background layer does not have any discernible effect either. But there is a workaround:

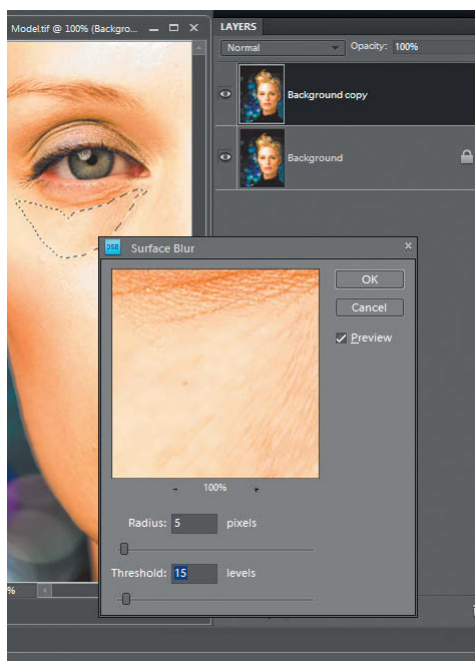
#### Step 1: Create a new layer

If you use the Move tool and the Alt key simultaneously to shift your 16-bit image upward, *Elements* creates a copy of the background layer in which the content is shifted slightly out of frame.



#### Step 2: Align your image

To “un-shift” the background copy, activate it and switch to Difference blending mode in the menu at the top left corner of the Layers panel. You can now shift the copy layer until it exactly covers the original background layer. The image preview will then appear black. Now switch back to Normal blending mode to show your original image.



#### Step 3: Process your image

Unfortunately, most of the tools that you can use in 8-bit mode, including the brush tools that are so important to the masking process, are still not activated. It is also impossible to open 16-bit files that already contain layers and adjustments. The tools that do work are:

- Clipping masks (Ctrl+G)
- Rectangular Marquee
- Lasso, Magnetic Lasso, and Polygonal Lasso
- Quick Selection tool
- Most noise reduction, blur, and adjustment filters
- Many commands in the Edit menu, including the Transform command, which is useful for eliminating converging lines in architectural photos

Instead of masking specific image areas using a brush, you can use the Lasso and Fill tools to make selections.

## Educational Discounts

Advanced tools like *Elements+* or *Smart-Curve* bring *Elements* functionality much closer to the level offered by *Photoshop*, although fundamental differences do remain. If you are no longer satisfied with the *Elements* toolset and you are in full-time education, either as a teacher or student, you might qualify for an educational license, which saves up to 80% on the purchase price of a full *Photoshop* or Creative Suite license. Further details are available at <http://www.adobe.com/education/purchasing/qualify.html>.

## How to Cut & Paste in 16-bit Mode

If you use the normal Ctrl+C and Ctrl+V commands to cut and paste image content in 16-bit mode, *Elements* requires you to first convert your image to an 8-bit format. However, if you use Shift+Ctrl+V (or Edit > Paste in Place) the program pastes perfectly, even if you are copying content from other 16-bit images.

# SmartCurve and Elements+

These two plug-ins help to work around a number of Elements limitations: **SmartCurve** implements full-featured tone curve functionality and **Elements+** enhances the basic Elements functionality to include a raft of features that are normally only available in full Photoshop versions. **SmartCurve** is included on this issue's free DVD.

Elements doesn't include the familiar *Photoshop* Curves functionality, but does have its own Enhance > Adjust Color > Adjust Color Curves command. This command adjusts the tone curve using sliders, but has no anchor point functionality.

## SmartCurve

This free plug-in, which is included on this issue's free DVD, is simple to install. Unpack the zipped file and copy it to the C:\Program Files\Adobe\Photoshop Elements 8.0\Plug-Ins folder. *SmartCurve* is then available in the Filter menu under easy.Filter > *SmartCurve* when you restart the program.

*SmartCurve* functionality is not available as an adjustment layer, but this limitation is simple to work around. Simply create a layer mask as described above and edit the image layer in the clipping mask using *SmartCurve*. Use a white brush to de-mask the image areas that you want to adjust. If you want to

brighten the whole image, all you have to do is copy the background layer and brighten it using *SmartCurve*.

*SmartCurve* also includes support for the CMYK, L\*a\*b\*, and HSB/HSV color spaces. The L\*a\*b\* model is perfect for brightening images: simply selecting the Luminance color channel applies all *SmartCurve* adjustments to the luminance channel only.

## Elements+

This Windows and Mac plug-in (more information can be found at <http://elementsplus.net>) includes a wide range of enhancements. The extended demo version includes:

- **Channel Mixer:** a flexible tool for adjusting colors and creating monochrome image versions
- **Curves:** a powerful tool for adjusting brightness, contrast, and color for a single tonal range or combinations of tonal ranges.

- **Layer Masks:** *Elements+* allows you to create, delete, and edit layer masks just like *Photoshop* does, giving you full non-destructive editing functionality.

The demo version's tools are divided into four different categories:

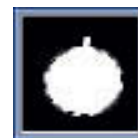


**Color & Tone:** in addition to the Curves and Channel mixer functionality included in the demo version, the full version also includes tools called Exposure, for performing fine adjustments to brightness and contrast, and Vibrance, for adjusting the intensity and contrast of individual colors. The Black and White Layer option can be used either to convert color images to monochrome or to give them an individual tint.



**Selections:** these options allow you to switch between selection and masking modes, making selection and editing of complex objects in

*Elements* much easier. Masking mode uses brush tools to make corrections, and gives you direct access to alpha channels, which are here used as masking channels.

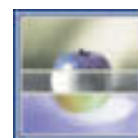


**Masks:** creates layer masks with a range of editing options that include vector and filter mask functionality.



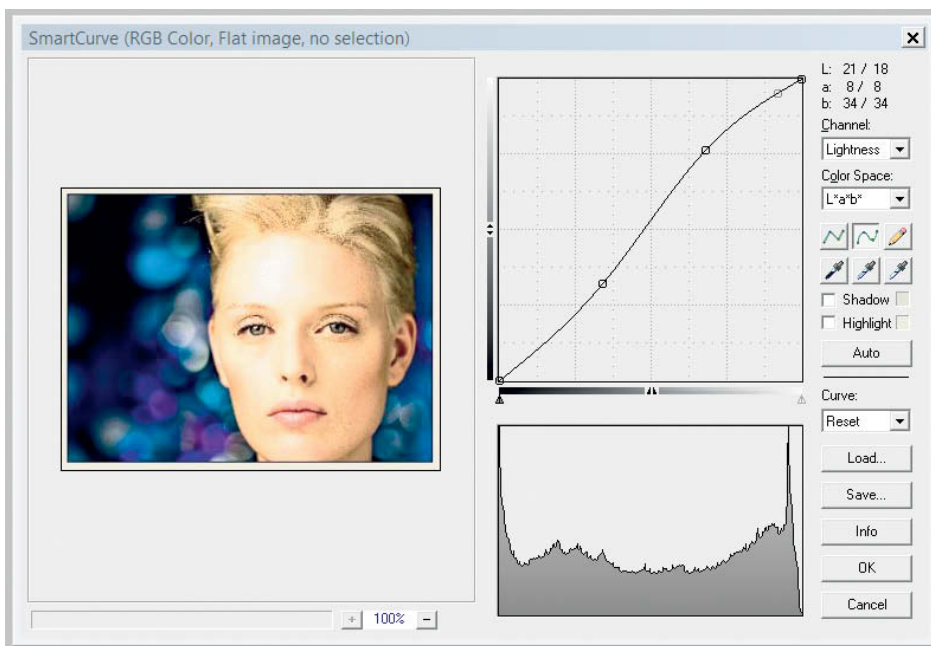
**Scripts:** includes various scripts and function calls. The Batch tool offers similar functionality to the *Photoshop* batch tools, although the demo version doesn't include as many options as the full version.

The full version of *Elements+*, which costs the princely sum of US\$12, includes four further sets of tools:

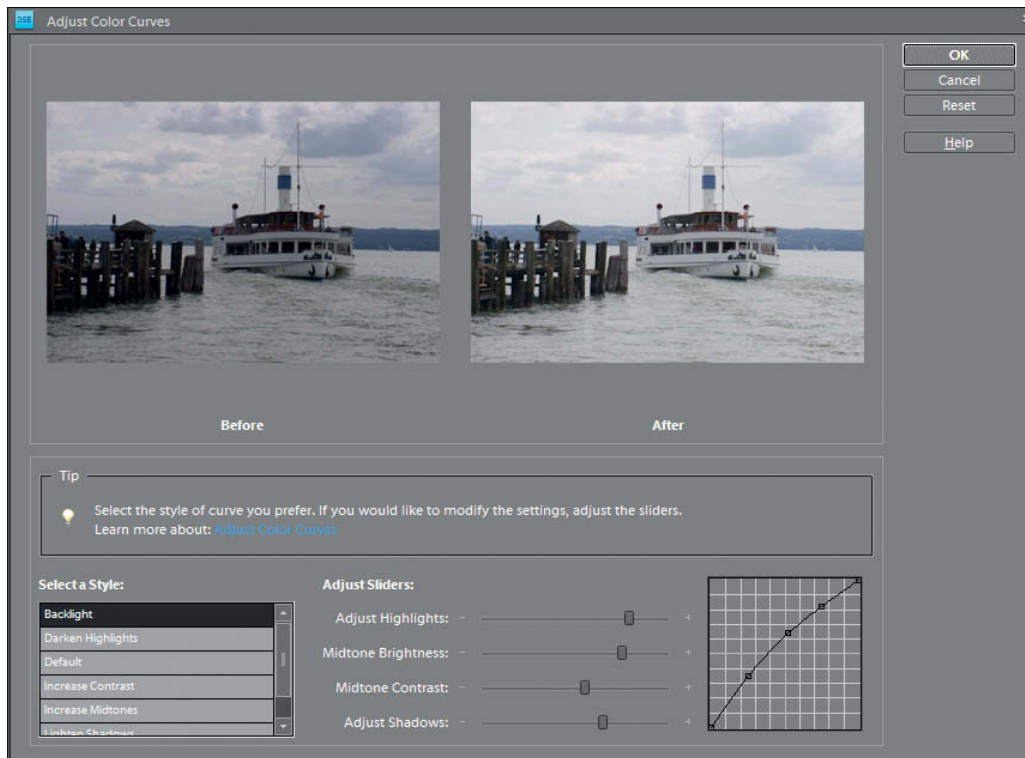


**Layers:** functionality for layer grouping and conversion to Smart Objects, which are extremely useful if you want to edit objects and

images using multiple Adobe programs. Smart functionality is also the basis for the application of Smart Filters, which allow you to fine-tune or delete your corrections after you have applied them. *Elements+* has its own separate set of Smart Filter tools. You can also apply layer styles, such as



The free *SmartCurve* plug-in includes fully functional tone curves functionality for 8-bit and 16-bit image files



The built-in *Elements* Curves functionality (Enhance > Adjust Colors > Adjust Color Curves) includes several preset styles. These are easier to apply than *Photoshop* curves, but are less user-definable.

drop shadows or bevels, to individual layers—functionality that is otherwise only available in the *Elements* Effects panel.



**Paths:** this tool enhances the Custom Shape tool, allowing you to create and edit paths in selections, text layers, shape layers, or vector masks.

using the tools found in the Image > Shape menu. We would also like to see a Path tool for creating custom shapes, but this is not yet included in the *Elements+* toolset.



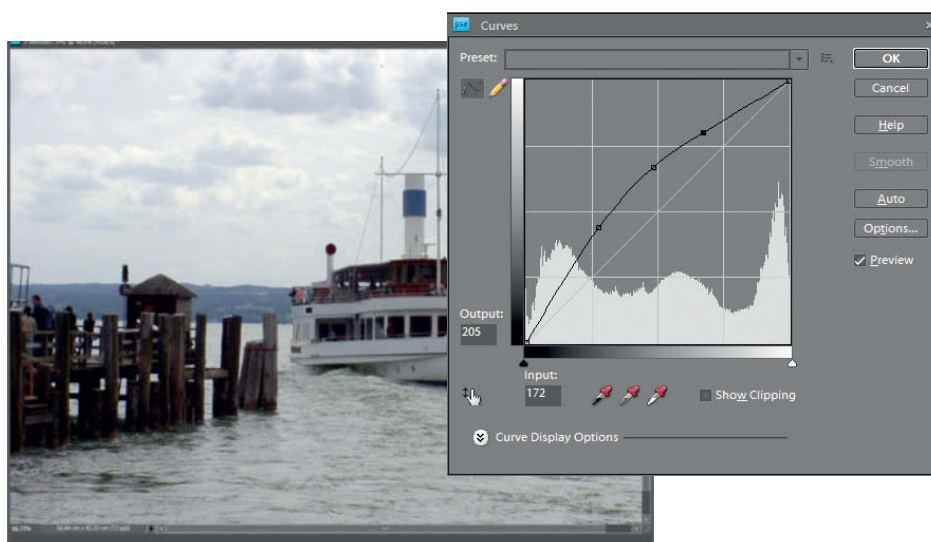
**Smart Filters:** the effects produced by Smart Filters are not resampled into the original image data and can be adjusted after they have been applied.

Paths are vector shapes that can be transformed and filled. In contrast to selections, they are independent, editable shapes and can be selectively edited. You can move and position them at will using the shape tools, and you can transform, scale, or distort them



**Text:** is a great enhancement to the standard *Elements* text tool and allows you, amongst other things, to create text that follows a curved path.

You can also adjust the width and height of text without changing the size of the typeface—just like *Photoshop*—and fine-tune the distance between individual letters.



*Elements+* enhances the standard *Elements* Curves functionality

## Setting up Elements+

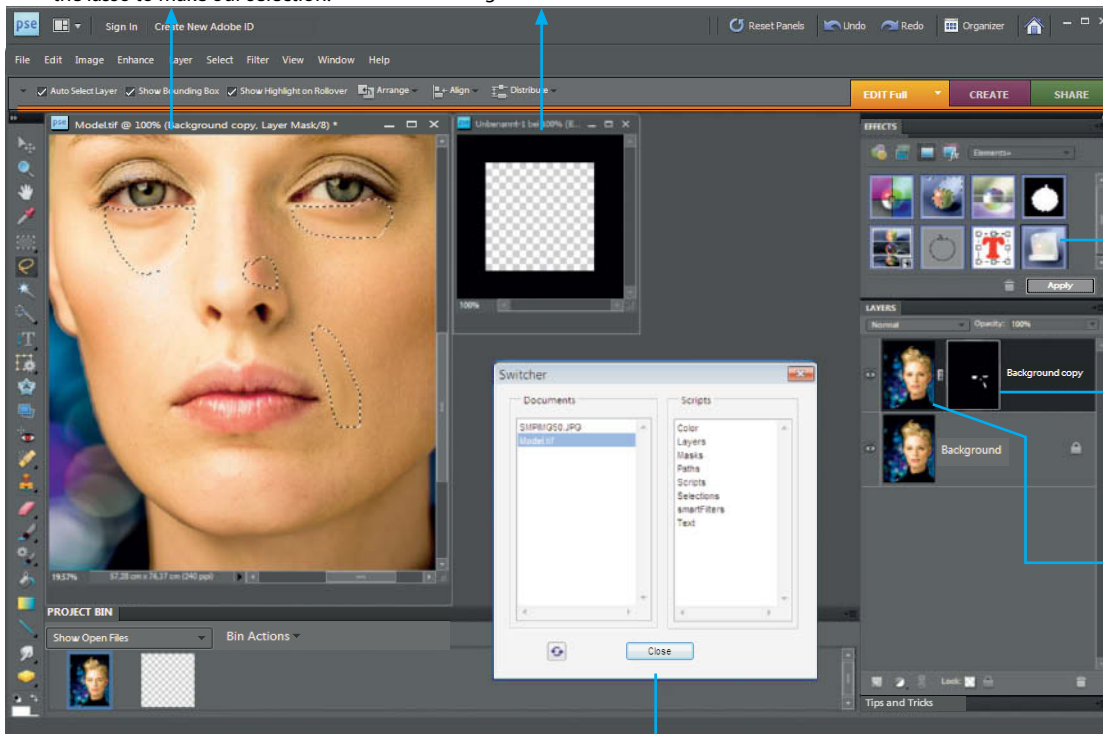
Once *Elements+* is installed, you can find it in the Effects panel in Full Edit mode. Select Photo Effects and click the *Elements+* menu item. The *Elements+* toolset icons will now appear in the Effects panel.

The default language is English. The Favorites option in the Scripts window contains an item called E+ Options, which you can double-click to select language and appearance options.

*Elements+* is controlled exclusively via the Effects panel and does not add any tools or menus to the *Elements* interface.

**16-bit Image:** We wanted to smooth the skin texture for selected parts of the face in this image. Because brushes are not active in 16-bit mode, we used the lasso to make our selection.

**8-bit Image:** *Elements* cannot run scripts in 16-bit mode, so we opened and activated a second, 8-bit image, giving *Elements* internal access to our 16-bit image.



**Elements+ Scripts:** The Switcher, which is used for creating 16-bit masks, can be found in the *Elements+* Scripts toolset.

**Layer Masks:** The image areas that are not masked in black allow effects applied to the linked layer to shine through.

**Layer Thumbnail:** We edited this image using the Gaussian Blur filter.

*Elements+* includes tools that allow you to create and edit masks for 16-bit images

**Switcher Window:** Open documents are listed on the left. This is also where you can switch between the active 8-bit and 16-bit images.

## 16-bit processing with Elements+

*Elements+* supports 16-bit processing, but only if you load an 8-bit image simultaneously with the 16-bit image you want to process. You can then use the *Elements+* Switcher, which is found in the Files entry in the Scripts menu, to switch between the 8-bit and 16-bit images and make adjustments to both. The necessary steps are as follows:

- Load an 8-bit image using Ctrl+N
- Open the 16-bit image you want to process
- Create a 16-bit layer as described above (i.e., by moving the background layer while pressing the Alt key)
- Select the 8-bit image and activate a layer
- Select the *Elements+* Switcher and click the Files entry in the drop-down menu. This lists all open images. Select your 16-bit image.
- Select the Masks toolset and click the round green button at top left

- *Elements+* will open a second window that includes the Show All (white mask) and Hide All (black mask) options. Select Hide All.

You can now begin editing your image. Here are the steps involved in smoothing skin texture in a portrait:

- Activate your 16-bit image
- Select the Background Copy thumbnail in the Layers panel
- Apply the Filter > Noise filters > Median filter. The image appears not to change due to the active black mask.
- Select the area you want to edit using the Lasso
- Select the layer mask thumbnail
- Apply Edit > Fill Selection. Here, the foreground color determines how strongly the applied Median effect shows through. If you don't want to fine-tune the effect, simply invert the mask using Ctrl+I.
- Repeat the above steps for all critical image areas until you are satisfied with the results

## Who needs Elements+?

*Elements+* goes a long way toward making *Elements* as versatile as *Photoshop* at a fraction of the price. *Elements+* has slightly "wobbly" handling and its interface is not as smooth as *Photoshop*, making it less suitable for use with complex projects. The plug-in is squarely aimed at enthusiasts and semi-professional users who are generally happy with the level of functionality offered by *Photoshop Elements*, but who now and again require extra tools or enhanced functionality.

*Elements+* also has a couple of weak points. The Exposure and Vibrance sliders stick to the cursor as soon as you apply a correction. Any adjustment layers you create using *Elements+* cannot be subsequently fine-tuned, as *Elements* itself interprets these as originating in *Photoshop*. To alter an adjustment layer, you have to delete it and duplicate your desired effects in a new layer.

# More Photoshop Elements Plug-ins

In addition to **Elements+** and **SmartCurve**, there are many other great free and commercial plug-ins available to help you get better results with Photoshop Elements. The following sections describe some of our favorites—the ones printed in bold type are included on this issue's free DVD.

**virtualPhotographer** by OptikVerve Labs ([www.optikvervelabs.com](http://www.optikvervelabs.com), Windows only) is designed to boost the brightness, color, and contrast adjustments included in the Elements Enhance menu. The tool includes more than 50 one-click and adjustable filters for applying soft focus, high-contrast, or black-and-white effects to your images. This is a versatile tool for giving your images a polished finish.

**AAA Options** (8bf.net, Windows only) is a collection of free filters with its own interface window. The Fix tab includes color, focus, and exposure adjustment options that allow you to make selective corrections similar to the ones you can apply using the *Photoshop* color balance tools. The Filter tab offers various ways to produce grain and posterization effects, while the Frame tab includes tools for producing virtual frames.

The Buzz tab includes options for smoothing your images, and the Hue tab allows you to adjust color and create duotone images. The Blur tab produces amazing effects based on layer modes and a Gaussian Blur tool. The Simplify tool transforms images to look as if they were painted or drawn. The Median feature includes radius, opacity, and a range of blend mode settings.

Cybia Software ([www.cybia.co.uk](http://www.cybia.co.uk)) manufactures commercial plug-ins for *Photoshop*, Adobe Premiere, Bryce, Poser, and others programs. The company's **The Works** package is a collection of 8 freeware filter sets that includes the **ColourWorks** plug-in, which modifies image color values in different ways, from subtle corrections to dramatic artistic transformations. The individual settings are all user-adjustable. The Inverse filter allows you to invert the colors of scanned color negatives—a function that is not included in the Elements menus, but that you can apply using the Ctrl-I keystroke.

The following is a list of the freeware filters included with **The Works**:

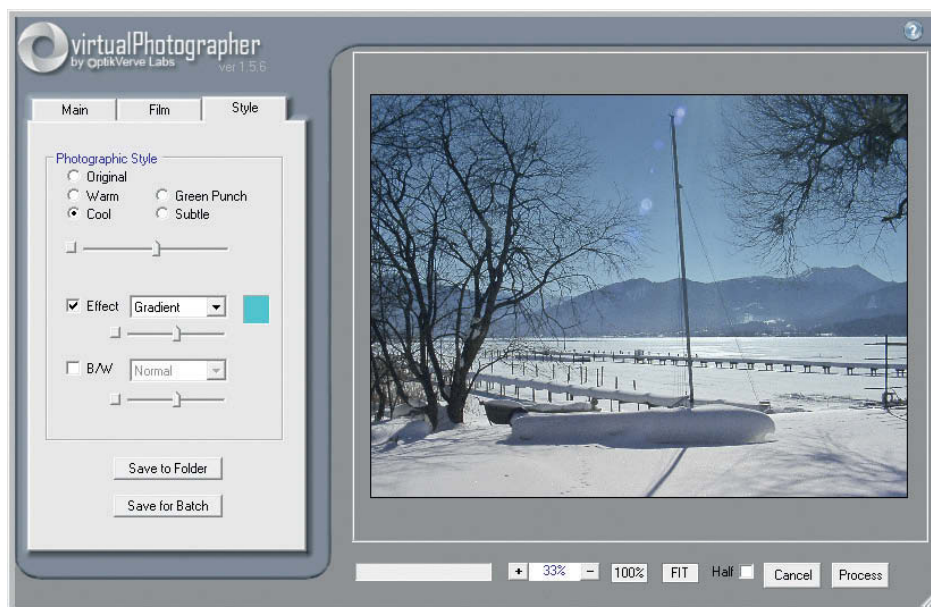
- **ColourWorks** is described above.
- **EdgeWorks** creates dramatic edge and color modifications and produces intense, highly stylized photo transformations. This tool is also useful for creating texture effects.

- **ScreenWorks** provides you with a quick and easy way to add detailed or repeated texture overlay effects to selected image areas. Simply add the pattern to your image layer, or color the layer background white.
- **EmbossWorks** gives you a choice of quick and easy embossing styles. These are great

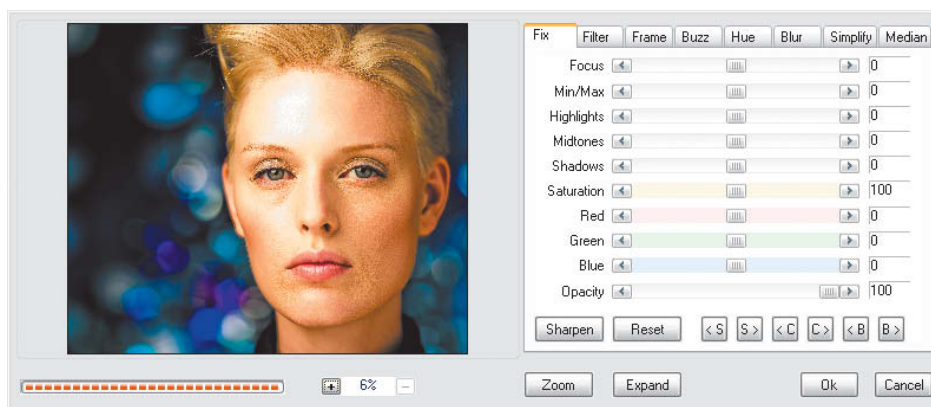
for adding a sense of depth to otherwise flat-looking images.

- **SwapShop** switches image color values, and is great for experimenting with surreal or artistic styles.
- **MasterBlaster** is a simple effect for "blasting" intense color into your images. It is ideal if you need to add dramatic impact to your work, or if you just want to give an image a strong overall color cast.
- **Mezzy** allows you to create various grain and mezzotint effects.

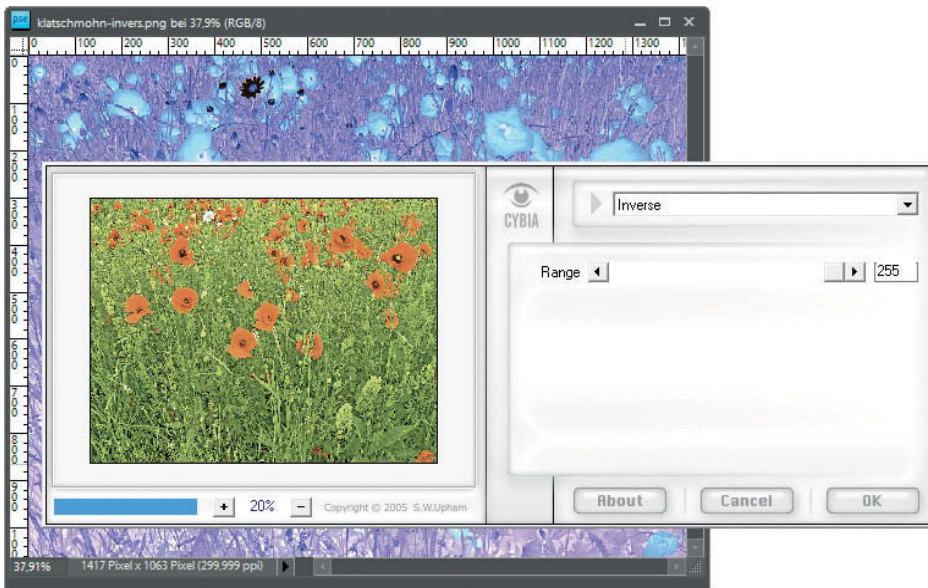
Cybia also manufactures the free **Fotomatic** collection of eight plug-in filters for use with *Photoshop* or other compatible host applications. These include a series of effects based on traditional photographic equipment and techniques. Cybia is also the maker of *Image Inc.*, a standalone freeware program designed for quick and easy image blending.



The *virtualPhotographer* program window showing the settings we used to apply a color gradient to the sky in this photo



AAA Options makes *Photoshop*-style color adjustments possible in *Photoshop Elements*



**Inverting a scanned color negative using the *ColourWorks Inverse* tool**

Rather than extending the Elements tool-set, some plug-ins simply produce better results than the program’s own tools. The *Elements Magic Extractor* tool is very good at selecting high-contrast objects with well-defined edges, but is less effective when it comes to selecting fine details, such as a portrait subject’s hair. The freeware **GML Matting** plug-in, produced by a team of graphics students at the University of Moscow, produces much more detailed and consistent results. The tool’s interface is easy to learn and includes comprehensive tooltips, making it relatively simple to master complex selecti-

ons. The software is available (for Windows only) at [graphics.cs.msu.ru/ru/science/research/imageprocessing/matting](http://graphics.cs.msu.ru/ru/science/research/imageprocessing/matting).

One example of the many free noise reduction plug-ins that are available is the Hi ISO Noise Reduction filter by Alexander Belousov ([www.unicontel.com](http://www.unicontel.com), for Windows and Mac). The plug-in is simple to use and has a limited range of settings, making it ideal for image processing beginners. The tool de-noised our test image extremely effectively without producing the softening and graying effects that the *Elements Reduce Noise* filter often produces.

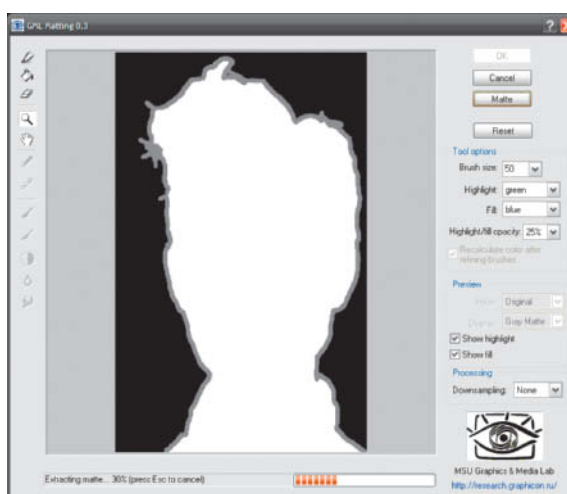
Red Paw Media ([www.redpawmedia.com](http://www.redpawmedia.com)) offers a range of free plug-ins for Windows and Mac, including *Hot Pixel Noise Remover*. This is useful for selectively removing the over-bright pixels that often result from shooting with long shutter speeds or high ISO values.

There are many sharpening plug-ins available, including *High Pass Sharpening*, which is available from [www.photo-plugins.com](http://www.photo-plugins.com). This plug-in works in a similar way to the Elements Adjust Sharpness tool, but its Hard Light and Overlay settings produce very different results.

*Photoshop Elements* offers only the Highlight Skin Tones option and a number of Blur tools for improving portraits. *virtualPhotographer* is a free alternative for producing soft focus effects. *Porcelain*, *SuperSmooth*, *Improver*, and *Radiance* are other free plug-ins for retouching skin blemishes and producing soft focus effects.

Xero Graphics ([www.xero-graphics.co.uk/freeware.htm](http://www.xero-graphics.co.uk/freeware.htm), Windows only) also offers a filter called **Clarity** that emphasizes image details in a similar way to the Clarity filter in the *Elements Camera Raw* editor. This is just one of the interesting freeware plug-ins included in the Xero collection.

You can produce effects similar to the ones produced by Xero’s plug-ins using the Red Paw Media *Beautifyer* ([www.redpawmedia.com](http://www.redpawmedia.com)). Face Control by Redfield ([www.redfieldplugins.com](http://www.redfieldplugins.com)) uses a single slider to gently adjust facial expressions—for example, to make faces appear younger. The *Photoshop Liquify* filter offers similar, but less radical ways to make a subject’s lips appear



**Extracting a portrait:** The original image is on the left. The selection produced by *GML Matting* can be seen on the right

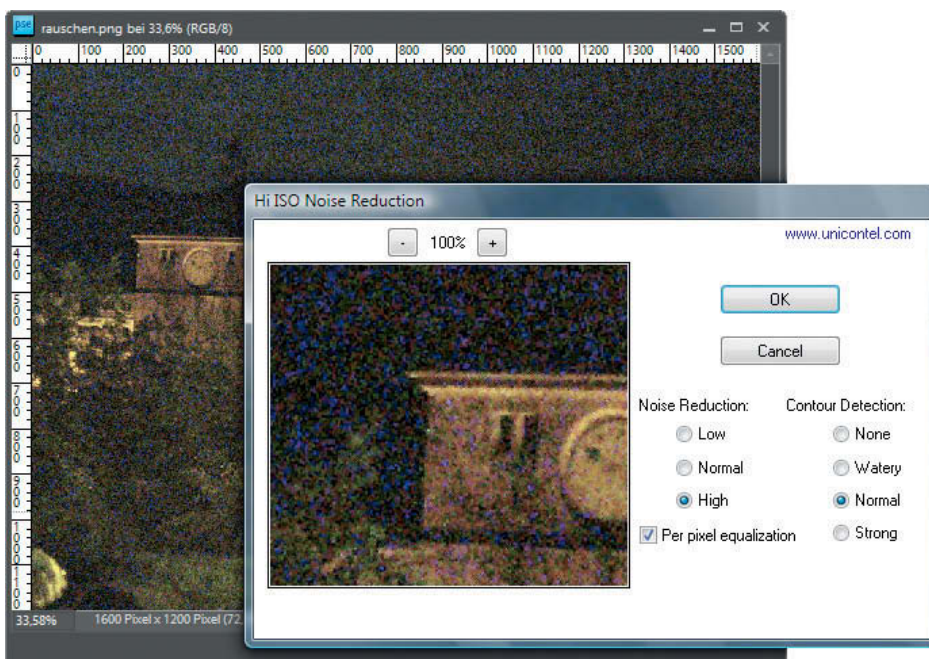
**Reducing color noise with the Hi ISO Noise Reduction filter**

fuller or her eyes larger. The plug-in is available for free download along with other filters, including *Water Ripples*, which produces more realistic-looking results than the *Elements Ripple* filter.

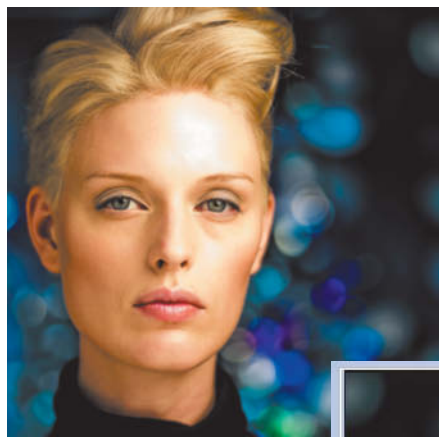
The freeware *Dreamy Photo* filter by Auto FX Software ([www.autofx.com](http://www.autofx.com)) is available as a plug-in and as a standalone program, and produces dream-like ghosting, soft focus, and zoom effects.

*Luce* by Antonino Perricone blends virtual radial or directional light sources into your images ([amicoperry.altervista.org/luce/index.html](http://amicoperry.altervista.org/luce/index.html)).

Flaming Pear ([www.flamingpear.com](http://www.flamingpear.com)) manufactures commercial plug-ins for Windows and Mac systems, but also offers a range of free plug-ins, including *Ornament*, *ChromaSolarize*, *Tachyon*, *Ghost*, *Solidify*, *Vitriol*, *RGB/HSL*, *Circle to Square*, and *Make Cube Tile*. These simple slider-based and one-click tools make it quick and easy to create interesting and unusual distortion, black-and-white, and color effects.



**Harry's Filters offer a wide range of image adjustment options**



**The Porcelain filter allows you to produce soft focus effects and to make skin tones more radiant**



**Luce helps you to add subtle lighting effects to your images**

Larger collections of filters are often supplied as executable program files which include a choice of target applications.

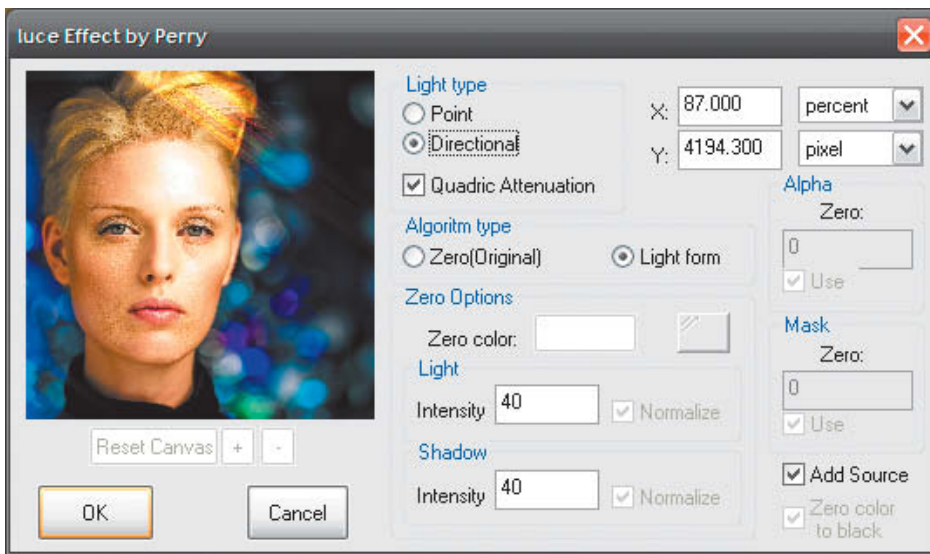
If you want to try out some of these filters you will need patience, as it can be tricky to find the settings that best suit your images and your personal work style. Many filters produce widely differing results when they are applied to different images, even if you use the same settings. Among the commercial plug-ins available from some of the better-known software Manufacturers are the Knockout masking and selection tool and the *KPT Effects* filter collection by Corel, as well as other plug-ins manufactured by Akvis, Nik, or OnOne Software. Topaz Labs is a relatively new player in this arena. All of the manufacturers mentioned offers Windows and Mac versions of their products and serve the professional graphics market and other high-end users who are not satisfied with options offered by the built-in *Photoshop* toolset.

There are also professional-grade noise reduction, sharpening, exposure correction, black-and-white, and scaling plug-ins available. These can, however, cost as much as US\$300, and raise the question of whether it is worth spending more on a plug-in than on your image processing program.

The Russian/Canadian Akvis company offers its products with deep discounts for non-commercial users, and Topaz Labs' products are reasonably priced at between US\$30 and US\$80. Older versions of the Corel *Knockout* and *KPT* tools are available more cheaply in bundles such as the *Photoshop Powerpills* published by Franzis in Germany ([www.franzis.de](http://www.franzis.de)).

Many plug-in manufacturers offer bundles that are cheaper than the individual plug-ins they contain and all manufacturers (with the exception of Corel) offer free trial versions of their software for download. Most manufacturers also offer video tutorials with useful tips on how to use their products. These tutorials can also help you to decide whether a particular plug-in is right for you before making a purchase. (keh)

**Sinedots is great for producing graphic image backgrounds**



The ZIP file on this issue's DVD includes 32-bit and 64-bit versions of the plug-ins, so be careful to copy the correct version to your *Elements* Plug-ins folder.

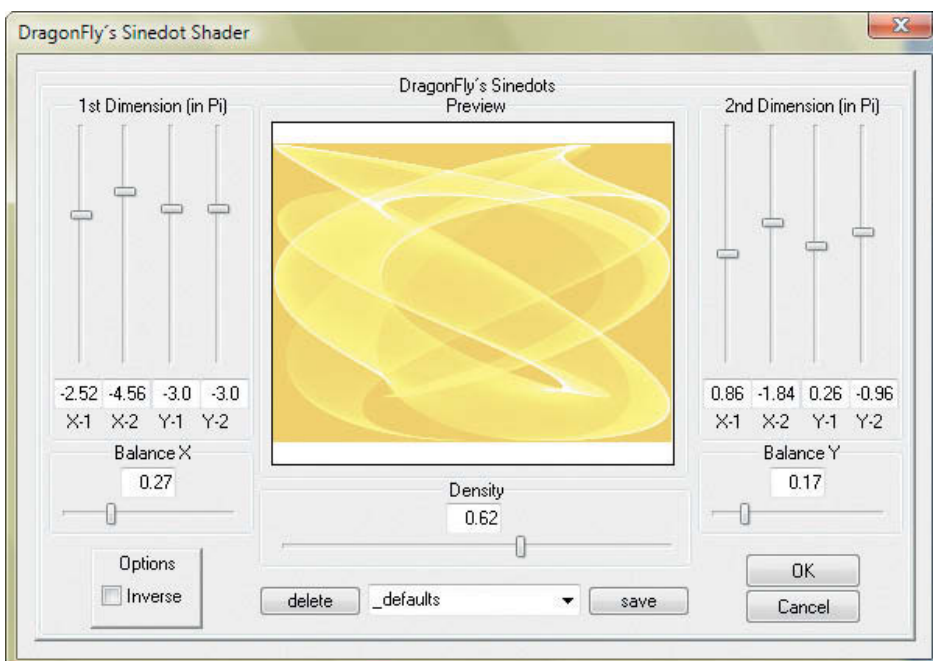
**Harry's Filters** is one of the best-known collections of free distortion, color adjustment and patterning plug-ins for Windows and Mac. They can be found, along with many other freeware and shareware offerings, at [www.theplugsite.com](http://www.theplugsite.com).

**Sinedots II** by Philipp Spöth ([www.philipp-spoeth.de](http://www.philipp-spoeth.de), Windows only) produces graphic effects that are similar to the abstract screensavers included with some operating systems.

3D Shadow, by Lokas Software produces 3D shadows with correct perspective for

objects and type ([www.artistic-effects.com/3d-shadow](http://www.artistic-effects.com/3d-shadow), Windows only).

Most of the filters we have mentioned are available for download as zipped 8bf files. 8bf is the native *Photoshop* and *Photoshop Elements* plug-in format. Once you have unzipped a file, all you have to do is copy it to your Adobe program's Plug-ins folder and restart the application. You can also copy folders containing multiple filters to the Adobe Plug-ins folder. The Windows path is *C:\Program Files\Adobe\Photoshop Elements 8.0\Plug-Ins*, and the Mac equivalent is *[Local Disk]://Programs/Adobe Photoshop Elements 8/Plug-Ins*. ABR brush sets have to be copied separately to the *Presets/Brushes* folder.





Thomas Saur

## Build Your own **LED** Mini-Studio

LED flashlights are the best choice if you want to set up a flexible and reasonably priced tabletop photo studio. They don't need cords, they don't radiate heat, and they are bright, easy to use, and affordable. Our examples show you how to light tricky subjects and create professional-looking photos. One typical application for LED studio lighting is shooting images for use in online auctions.

LED flashlights are very bright, run efficiently for a long time on one battery charge, and do not get hot—a combination of features that makes them very attractive as a light source for your home mini-studio. The flashlights we chose from the wide range offered by LED Lenser are, from left to right: the X21, with automobile headlight brightness (US\$299.95), the easy-to-handle P17 (US\$109.00), the P14 (US\$75.00) and the compact P7 (US\$89.00).



You know the feeling—that gem has been lingering unused in the basement for ages and now you want to auction it off online and make some money out of it. So you grab the digital camera, pop up the built-in flash and snap away. The resulting pictures are disappointing, to say the least, which means the auction probably will be too. Attractive pictures can catch the attention of prospective purchasers, so they have to be photographed as professionally as possible.

How are really good product photos taken? Well, avoid using the flash from the front as it leads to flat-looking, passport-like images. Only an independent source of light located separately from the camera, can make the most of the three-dimensionality of a subject and reproduce the texture of the materials it is made of.

The pros use flash equipment and various light shapers to get excellent results, but for financial reasons, amateurs usually have to

make do with a shoe-mount flash, which lacks a modeling light to control the placement of the light source. Construction site lamps, which are popular and cheap, could be a good alternative. However, you can only control the light they produce to a limited extent, and they aren't very energy efficient. Moreover, much of the energy is converted into heat, and it is dangerous to use hot lighting equipment in a setting with flammable material.

## Creating White Light using Blue LEDs

A light-emitting diode (LED) does not emit white light, but radiates in a comparatively narrow wavelength range of 10 to 20 nanometers. In layperson's terms, the light of the LED appears to be of a single color, whereas the spectrum visible to humans ranges between 430 nm (blue) and 670nm (red).

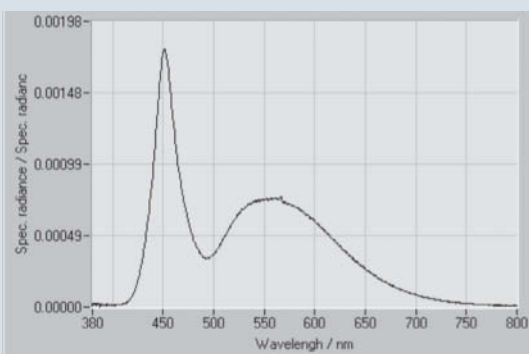
There are several different ways of producing white LED light. In the LED flashlights used here, the LEDs are blue and are covered by a fluorescent coating. The blue-violet light of the LED transforms the coating into a broad spectrum that comprises

the entire visible range with a maximum of 580 to 600 nm. When the flashlight is switched off, their yellow layer makes these pseudo white LEDs easily identifiable.

Cree Inc manufactures the LEDs used in LED Lenser flashlights. The fluorescent layer consists of a yttrium aluminum garnet (Y3Al5O12), which you may already have heard of in connection with YAG, the laser technology of the same name, and which absorbs most of the blue light and emits it as a photon with less energy – in other words, with a larger wavelength. Physicists call this effect Stokes shift.

The spectrum deviates from that of a light bulb. There is a 450nm peak, followed by a local trough and the broad-spectrum light of the YAG layer. Depending on the layer, the light appears blue, white or warm white. With the flashlights we used, the color temperature is between about 6000 and 8000 K. The LEDs' color-rendering index (CRI) reaches 70 to 90 (compared to 100 for a light bulb). However, in a photographic context, the characteristics of the LED spectrum are more important than the color temperature, which can be easily corrected edited later during image processing. A color surface that has many color components around 450 nm appears very bright. Blue color surfaces around 480 nm, where the local trough lies, appear darker than they do under ideal lighting.

The combination of a blue LED and a YAG layer for white light is especially favorable, because blue LEDs have the highest light yield and because one layer is enough to obtain white light. Other methods of creating white light consist of several of these layers or of luminous, closely-spaced, red, blue and green LEDs. The efficiency of the LEDs built into the flashlights is about 13 percent, which is clearly lower than a non-coated LED. Nevertheless, an LED in a battery-powered flashlight is extremely bright, at approximately 200 lumens.



**The 450nm peak of the blue LED is clearly visible in the spectrum of the light emitted from the flashlight. It is overlaid by the light emission of the YAG layer, which coats the LED and absorbs much of the blue light.**

In any case, construction site lamps are far from ideal for quickly setting up and dismantling a home photo studio. They are not easy to handle and positioning them can be quite a fuss.

### LED lamps: an alternative

In the search for the ideal light source for a do-it-yourself mini-studio, the decision fell on LED flashlights, which have become a popular choice now that they are affordable. As LEDs do not radiate heat, they are very versatile. They have enabled flashlights to reach a luminous flux of a couple hundred lumens.

Dealing with multiple sockets and wires has become a thing of the past, so the mini-studio can now easily be set up taken down in different locations. LED flashlights can take rough treatment and can even survive being dropped. In comparison to mobile flash units, LED flashlights allow better light adjustment, so you don't have to take endless flash shots until you get your lighting right.

There are also LED lights with power cables. They cost less than heavy duty flashlights but are not as flexible in their use and, in particular, don't have the focusing mechanism that is already integrated in the flashlights we have described here. Online discount stores stock a range of flashlights, from small ones that cost only a few dollars but are not bright enough for our purposes to ones that are 40 cm long and as bright as car headlights.

For the photographs taken here we used flashlights from LED Lenser ([www.zweibrueder.com](http://www.zweibrueder.com)).



**Even the little P7 (at the bottom) can be used as a mini-studio light source. Its advantages are its low weight of 200 g (including batteries) and compact size. In comparison, the X21, which weighs 5 lbs and is 16 inches long, needs a more stable mount for this type of use.**

The somewhat large and unwieldy top model X21 (for about US\$299.95) can bring on an illumination power of 1070 lumens, which is almost as bright as a car headlight. We used the cheaper P17 (195 lumens, at about US\$109.00) and P14 (210 lumens, at about US\$99.00) for our homemade photo studio. The flashlight's operating time is several hours; the operating time of more than 100 hours stated by the manufacturer refers to the first of several levels of brightness. The smaller models fit into any jacket pocket and are perfect for travel. We also used

the even smaller P7 for US\$89.00 (200 lumens). No matter which flashlight you choose, it should have a variable light beam.

These flashlights can produce illumination with an intensity of between 400 and 800 lux for a surface area of half a square meter. The illuminance drops considerably when it is reflected by light shapers. When 200-lumen flashlights are used, the exposure times for digital SLR cameras usually make it necessary to use a tripod.

With the heavyweight X21 and its 1070 lumens, no tripod is required. The hand-held



We used zip ties to fix the flashlight to a mini tripod for our tabletop photo studio



A normal camera tripod came in handy for larger objects



Retailers offer LED table lamps with a practical flexible neck. A pleasant background light can be created with yellow card.



The tabletop studio for minimalists: an LED flashlight (LED Lenser P7) zip tied to a mini tripod and a painted stretch-mounted canvas as a background are sufficient for simple lighting tasks.



Two LED flashlights allow you to light the background and the object (the P14 and P17) separately. The main light reflects off a Styrofoam board to light the vase indirectly. The beam of the second flashlight focuses a soft cone of light in the background.



The black amplifier case is illuminated well enough to make the glow of the valves clearly visible

flashlight can be used as a supporting light source in outdoor photography. It is of little use in bright sunlight (up to 100 000 lm) but comes in handy on dreary days (about 3000 lm).

The lights used here are made of blue high-performance LEDs with a yellow fluorescent coating. This layer is clearly visible to the naked eye so this LED type is easy to identify. The resulting curve (see Creating White Light using Blue LEDs above) has a blue/violet peak and a broad frequency spectrum from blue/green to deep red with a slump in the blue part of the spectrum. The result of this unusual spectrum is that the light produces strong blue tones even though the light appears to be white.

The deep blue in the portrait (see photo on page 143) is due to this special LED characteristic. These LED lights are not suitable for photo shoots that require exceptional color fidelity, such as when photographing food and textiles, or art reproductions. However, we had no objections to the color rendering for the objects we photographed here.

The LED light is dazzlingly white and displays a color temperature of 6000 to 8000 K. The resulting minor color cast can be compensated by the camera's automatic white balance or at the post-processing stage. A yellowish surface or even a handkerchief reduces the color temperature by 1000 or 2000 K. In contrast, cheap flashlights that cost only a few dollars emit blue rather than white

light. If you want to use them as background light, you should think about using color gels, which can be bought cheaply in retail photography stores. Otherwise, try reflecting the light off a suitably colored surface.

The flashlight's strongly focused light produces hard-edged shadows when applied directly. At close subject distances, image artifacts from the camera's lens system and caused by the LED can appear on the object. These irregularities are distracting, especially in background lighting. A light diffuser in front of the light, for example a layer of tissue paper, can resolve the situation but please do this only with LEDs, as tissues are easily flammable and should not be used with lamps that get hot.

### Fixing and Background

Flashlights are lightweight, so small lampstands or tripods are all that is required to position the lights. For a few dollars you can find what you need at yard sales, photography flea markets, and online auctions. The best way to attach the lamp is to tie it to the

pan-tilt head of the tripod with zip ties. The advantage of zip ties compared to duct tape is that they can be quickly removed.

Microphone stands with flexible necks are very practical. A medium sized flashlight fits into the microphone clamp. You can then adjust the light beam with the flexible neck. By the way, you will also find that microphone clamps can easily be attached to the screw thread of a camera tripod with an adapter ring.

A paper roll serves as a backdrop for the mini-studio. For small objects, an inexpensive 15-inch wide paper roll will do the trick. The roll of paper can be attached to the wall and rolled down over a table. For the basic tabletop studio we still need black and white cardboard and a roll of aluminum foil to make a light shaper. It helps to build multiple reflectors and absorbers before you get started so you can concentrate fully on your photography.

### Pure Minimalism

We used a variety of objects to test the LED lights for their suitability as a light source in mini-studios. A small LED light is enough for quick photographs, as the picture with the cat statuette shows. All we needed for this setting was the handy P7 zip tied to a mini tripod and a painted canvas background (bought at a discount shop for a few dollars).

All is still a long way from professional lighting, but it is certainly better than just pressing the shutter button. The result is considerably better than using flash.

### Classic Sculptural Lighting

Just two or three LED lights are necessary to create simple professional lighting effects in your own mini-studio. The brightest possible LED light should be used as the key light, which illuminates the object either indirectly

### Standard Equipment for a Mini-Studio

Sample Budget	
LED Lenser P14	US\$99.00
LED Lenser P7	US\$89.00
Second-hand mini tabletop tripod (e.g., on eBay)	US\$30.00
Additional items (styrofoam board, card)	US\$20.00
<b>Total</b>	<b>US\$238.00</b>

### Manufacturers and Suppliers of LED Lights

LED Lenser	www.ledlenserusa.com	Manufacturer with a large selection of its own lights
CFR Lights	www.cfrlights.com	Shop for Olight, Fenix, EagleTac and TerraLux
Optics Planet	www.opticsplanet.net	Reseller with a large selection from various manufacturers
Lohenstein	www.lohenstein.de	LED lights
MagLite	www.maglite.com	MagLite LED models



A P17 LED light is enough to put the Lumix camera in the right light, producing the soft main light by reflecting the light beam off the Styrofoam board, while the reflector made of aluminum foil serves to highlight contours on the right side of the camera



via a Styrofoam reflector or through a diffuser made of white cloth or a handkerchief. This ensures that the key light highlights the contours of the photographed object.

The second, medium-bright light (100 to 200 lumens) brightens the background from a distance with a soft beam, emphasizing the subject's outline against the background. This light should not produce any additional shadows on the object, because multiple shadows from various lighting angles can create unrest in the image. The LED light's angle and position should be modified until the ideal illumination is found. The colorful vase was photographed in such a setting. The vase is well defined stands out clearly from the background.

If the object has both black and shiny reflecting surfaces, you can manage with just two flashlights if you arrange them skillfully, as shown in the picture with the Lumix camera. A further light source is not required, but can be very useful for additional effect lighting or brightening dark image areas.

For the illumination to be completely free of shadows, the subject should be illuminated indirectly by several light sources or reflectors from various directions. Each light source outshines the shadow of its opposite light source. To take pictures of reflecting objects, it is advisable to make a light tent of white cloth. This is another situation where the low heat factor in LED lights is a great advantage, as a pillowcase

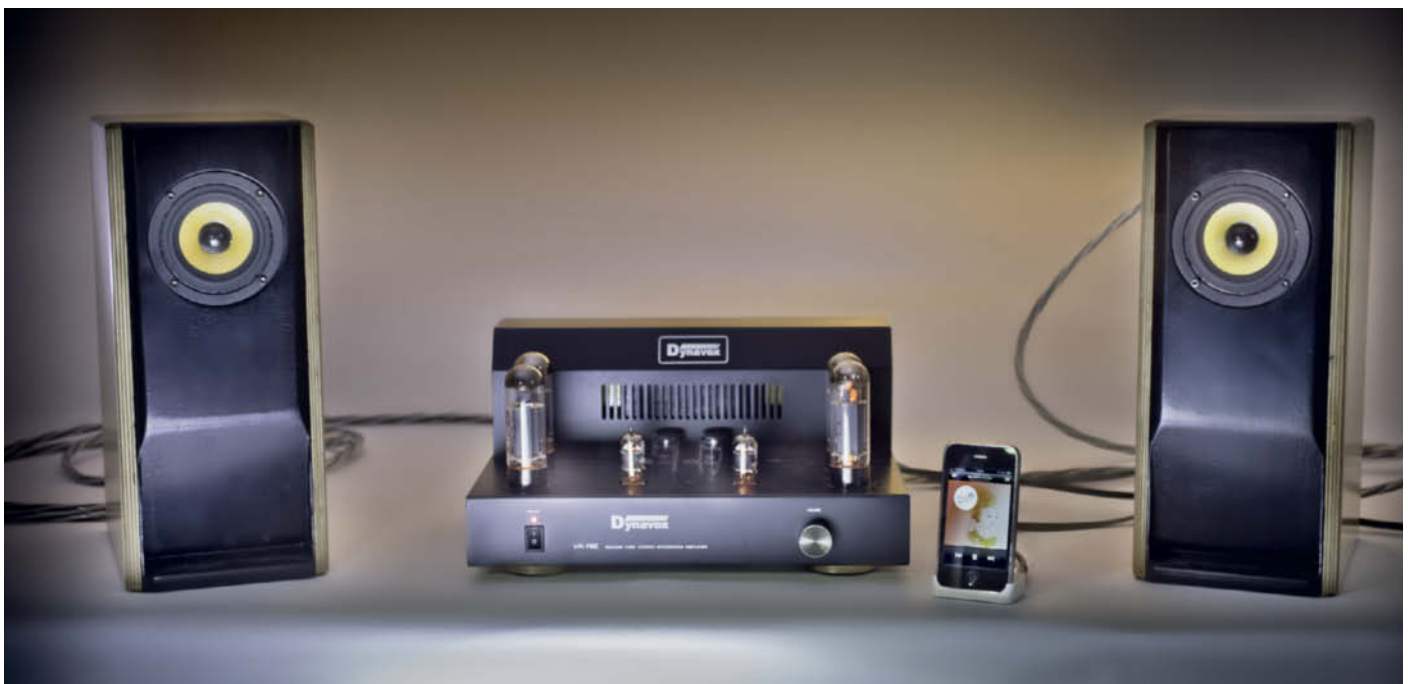
or duvet cover makes a cost-effective light tent.

### Professional Lighting with Light and Shadow

In order to figure out how well a low budget lighting system meets professional demands, we set ourselves the task of photographing the previously mentioned valve amplifier including two loudspeakers. The subtle sheen of the loudspeaker's varnish and the surface of the amplifier are challenging for a photographer because of the discrepancy between highly reflective and light absorbing surfaces. We also wanted to show the warm, satisfying glow of the amplifier's valves.



Our first attempt at direct illumination failed: the hard LED light burns out too many details, the iPhone's display is overexposed, and the glow of the valves on the amplifier is not visible



Balanced lighting that brings out all the details was achieved once we used indirect lighting through the Styrofoam surfaces below the amplifier together with a soft light beam in the background

A flash is out of the question—it would outshine the glowing of the coils in the valves. As if this weren't difficult enough, we added an iPhone with its display lit to the ensemble, with the aim of capturing it without any reflections in the final image.

The first lighting attempts using the LED lights were not very satisfactory. Illuminating the components produced bad results because of the hard light of the LEDs. The contrast range was too great and image details were lost. Only reflecting the light indirectly with a Styrofoam board below the amplifier and a soft light beam in background created a balanced and dimmed lighting situation. The exposure time had to be extended accordingly so that the glowing coils would

become visible. We adjusted the brightness of the iPhone display to the exposure time. The results speak for themselves.

### Portrait Photography using LED Light

LED flashlights can be used in portrait photography. Please follow the manufacturer's safety instructions and never shine the light beam directly into your model's eyes. We either directed the light beam through a thin cloth or reflected the light indirectly via a Styrofoam board or umbrella reflector to create a soft diffused light.

The very bright X21, with almost 1000 lumens, produces enough light to achieve

an acceptable shutter speed or ISO setting using an indirect flash umbrella. The slightly cool to neutral color temperature can be neutralized either by using the camera's white balance control or later using a Raw editor.

Incidentally, the umbrella is ideal for brightening portraits when outdoors, due to the LED flashlight's portability. Alternatively, a golden umbrella can be used to achieve better skin tones.

### Conclusion

Flashlights have only become bright enough for use in mini-studios since highly efficient LEDs were introduced. They encourage



experimentation with lighting and reflectors because they are focusable, very robust and practical, and inexpensive. The basic equipment for a studio, consisting of three LED lights, two or three small tripods and material such as Styrofoam and aluminum foil, will cost you a little more than US\$130. For a top class set up with 1000 lumens you may have to spend US\$400 or more.

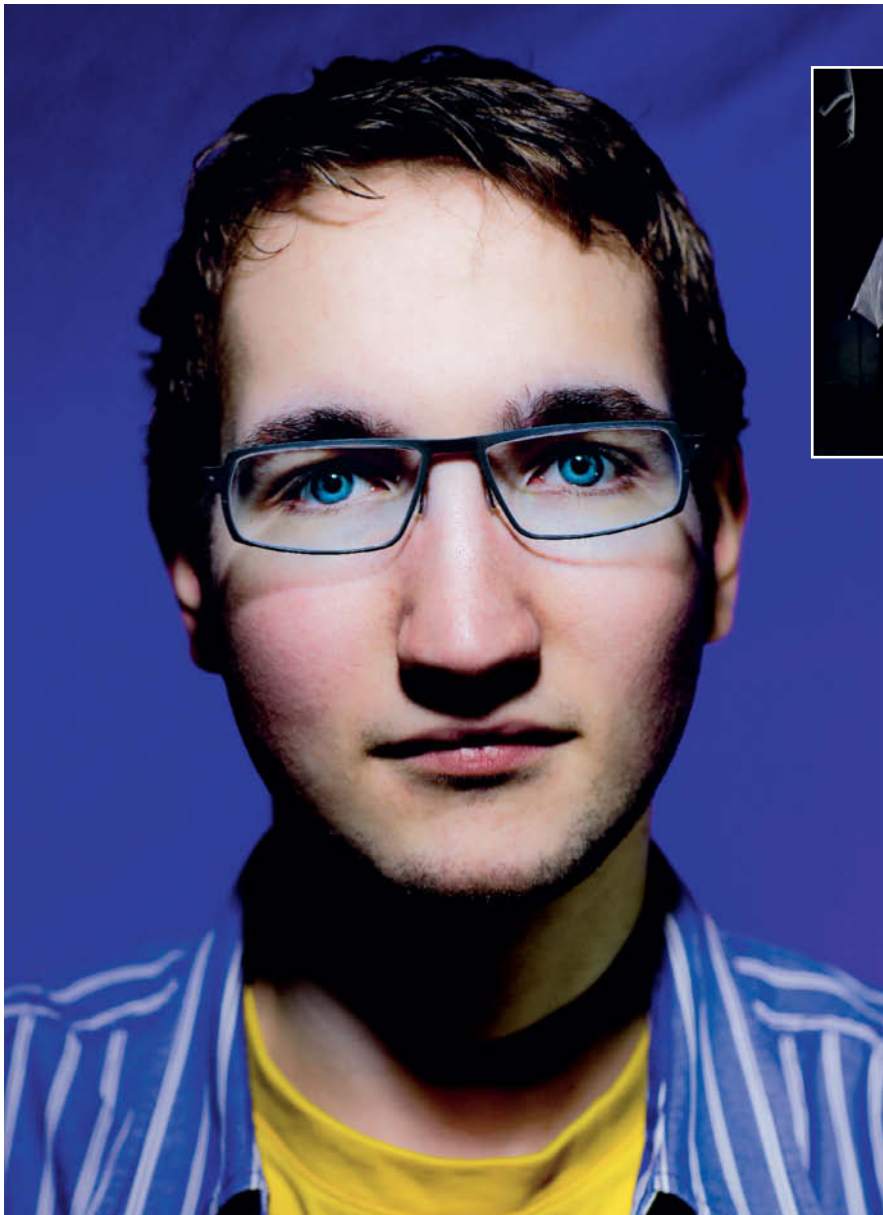
Depending on the purpose, you can find cheaper, though less mobile, alternatives. Foldable table-top studios including halogen lights are available at around US\$100. These portable mini-studios have a comparable or even higher level of illumination but are not as flexible as our tripod-based set-up and can also get very hot. LED flashlights are better for experimenting.

### LED Lenser LED Lights

	P7	P14	P17	X21
Focusable	✓	✓	✓	✓
Light diameter in 3 feet distance	4.7"–31.5"	3.9"–47.2"	5.9"–51.2"	7.1"–295"
Number of LEDs	1 (Cree)	1 (Cree)	1 (Cree)	7 (Cree)
Lumens	200 lm	210 lm	195 lm	1070 lm
Batteries	4× AAA	4× AA	3× D	4× D
Length / Diameter	5.5"/1.4"	8.5"/1.8"	13"/2.1"	16"/3.6"
Weight (incl. batteries)	7 oz	13.8 oz	27.9 oz	4.8 lbs
Retail price	US\$89.00	US\$99.00	US\$109.00	US\$299.95

There are pitfalls to watch out for because of the special light characteristics of LEDs. The white looking light is good enough for producing acceptable colors; however, it fails to render images with absolute color fidelity throughout the entire visible spectrum. The

intensely focused light makes home-made reflectors and gels essential. After the few attempts you will quickly get a feel for how to illuminate an object correctly, which we hope will also be reflected in the results of your future online auctions. (jr)



A flash umbrella, a powerful LED flashlight and a helping hand, since there wasn't a tripod at hand, are enough to illuminate a portrait picture. The portrait clearly shows the excessive blue caused by the pseudo-white spectrum that characterizes LEDs.



A powerful LED light reflected off a Styrofoam surface to the left in the picture. Light diffused this way has similar characteristics to light from a softbox, producing finely differentiated tonal values. ct

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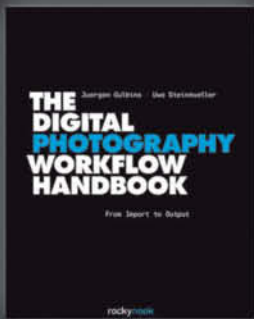
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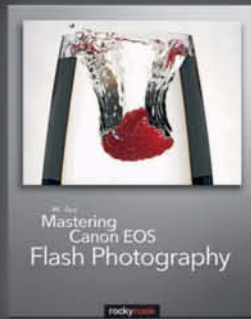


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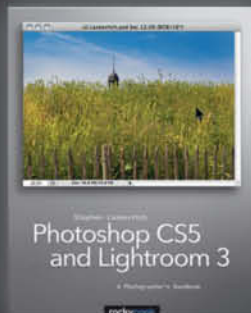
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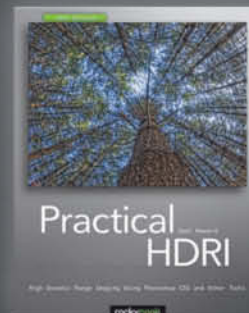


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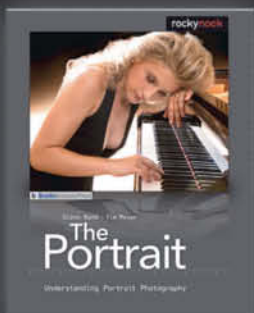


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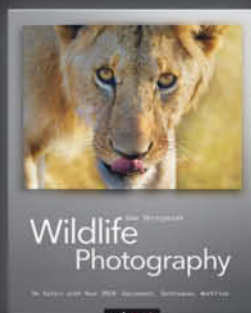


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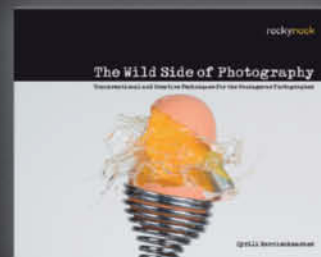


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