Getting Started with Digital Imaging
Getting Started with Digital Imaging

Tips, Tools, and Techniques for Photographers

Joe Farace
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Digital photography has changed the way people record, store, print, and share pictures. The basic rules of photography have not changed. Matters such as making the best exposure to express the subject, using different lenses for a unique point of view and working with various shutter speeds to express motion are all a part of the digital photography experience, as they are for film photography. It’s still about “writing with light;” but it’s more like working with a word processing program than a typewriter.

The essential digital difference is that pictures are now composed of large amounts of information: codes that represent color, brightness, and edge contrast. Digital pictures can be made up of millions of these codes, which require computation to integrate them into what we see as a photograph. But it is within these codes that the real excitement and creative opportunity in digital photography resides, as they can be easily changed to correct things like poor exposure and color, or radically changed to create fantasies and dream pictures that could only exist in a digital world, and in your own imagination. Luckily, none of us need know the intricacies of computers or code writing to accomplish these tasks. Both camera and image processing software allow us to make changes that affect both how the original image is recorded and how we can enhance that image later.

We see those changes happen in real time, the instant after the shutter release is pressed on the camera liquid crystal display (LCD) and on the computer monitor after an effect is applied in image processing software.

Digital photography is both art and craft. The art is what makes photography a very powerful form of self-expression, one that allows us to record both precious memories and our own unique view of the world. The craft is in understanding the potential: what you can do with a digital photograph, and how to do it. It is an amazing combination of science and poetry, a powerful medium that allows for a great deal of creativity and play. And, with today’s camera and software technology, there is greater access to this visual experience than ever before. While being visually aware and open to creative possibilities is as important now as it was with film photography, your ability to realize your personal vision, and to make consistently good pictures whether they be family portraits, vacation pictures or even fine art, is made so much easier via the digital route.
You might not agree that digital is easy if you are just starting out. By easy I
mean that digital gives you the ability to be more experimental, more productive,
and more creative with less toil. Image effects that could take a day in the old
darkroom environment are now available with one click of the mouse. Having the
ability to set the image characteristics of every frame you shoot is surely easier
than having to change film mid-roll. And being able to share your pictures with
one click e-mailing beats making prints, putting them in an envelope to mail
them off, and hoping they get to family across the country in one piece.

I can think of no better guide on your digital photography journey than Joe
Farace. Joe has been working with and reporting on digital photography since its
inception. As the Editor of Shutterbug magazine, to which he contributes articles
and regular columns, and in various workshops in which we taught together, I
have had the good luck to be able to work with him and appreciate his knowl-
dge, his photographic skill, and his ability to communicate both. He has always
displayed the unique ability to make great pictures and explain how he made
them, as well as to communicate the skills required in a way that makes it acces-
sible and fun for his readers.

If you’re new to digital photography Joe will open the creative door for you. If
you’ve delved into the craft and want to learn more, his writing and photography
will bring a deeper understanding of what might at first seem complex and dif-
ficult tasks.

I trust that you will find this book invaluable in enhancing your digital photog-
raphy experience.

George Schaub
Editorial Director, Shutterbug magazine
Books like this one are not created in a vacuum and many wonderful people contributed to its production. The most important being Elsevier’s Emma Watson whose idea for a book about digital photography coincided with my own desire to update “Digital Imaging: Tips, Tools, and Techniques.” This new book’s title may be a little overreaching, but the content is as complete as I could make it while injecting an element of fun that I think is necessary for working with digital photography.

I would like to thank George Schaub, my Editor at Shutterbug magazine, for writing the forward to this book. I also like to thank all of the software companies whose products appear within these pages. Without their help and assistance, this book would not be as comprehensive as it is.

Finally I would like to express my deepest gratitude to my loving wife Mary who has endured my photographic obsessions for more than 20 years. She is the inspiration that gets me up in the morning and her encouragement and support show up in every image.

All of these wonderful people have contributed to help me produce the good that you will find in this book and made it as complete as it could be. Any mistakes are mine alone.

Joseph Farace
Brighton, Colorado 2006
The Photo Marketing Association’s *US Photo Industry 2006: Review and Forecast* reports that digital camera sales are on the rise, and will continue to rise through early 2007. Last year, 41.1% of US households owned a digital camera, and that figure is expected to grow to 52.4% this year. Once again, digital cameras are expected to outsell film cameras, and 82% of all cameras sold in 2006 will be digital. As anybody who read my work over the years might guess, I attend a lot of car shows and can’t remember the last time I saw anybody—participants or observers—shooting film.

So, as pundits have reported so many times before, is film dead? I don’t know. I still occasionally shoot film using Leica single lens reflex and Hasselblad rangefinder cameras, but almost all of my negatives (I seldom shoot slides) are scanned using an Epson (www.epson.com) or Microtek (www.microtekusa.com) scanner and printed on Canon (www.usa.canon.com) or Epson ink-jet printers. Sometime during that trip from capture to output, those silver-based images are transformed into pixels, manipulated, and printed on decidedly non-digital paper. Is the final print digital? Who cares? It’s a photograph. How I arrived at what you see on the paper is unimportant, only the image and its impact on the viewer matters (see “Digital Dreams”).

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**Digital Dreams**

I like panoramic photographs; that’s one reason I still shoot film using a Horizon 202 (www.kievusa.com) or Hasselblad (www.hasselblad.com) Xpan. Sometimes I make photographs using a digital SLR and crop them into a panoramic shape. Which one of these two images was made with film and which one with digital? Which one became a $4 \times 12$ foot mural that was displayed in a car dealership’s service department? From the reproduction here you can’t tell, can you? More important, it doesn’t matter. For the record: The drag racing image was made with a Canon EOS 1D Mark II (a digital SLR); the car show was captured on film with a Kiev USA Horizon 202.
This photograph of cars at The Good Guy’s show in Fountain, Colorado was made using a Horizon 202 panoramic camera and Kodak 400 NC color negative film. Exposure was 1/250 second at f/16, determined by a Gossen Luna Star F2 hand-held meter. Image was scanned using a Microtek (www.microtekusa.com) ArtixScan 120tf film scanner that’s well suited for scanning medium and panoramic format film. © 2005 Joe Farace.

This photo of Bill Lagoni driving his O’Meara Ford-sponsored dragster was shot with a Canon EOS 1D Mark II using a 75-300 IS zoom lens set at 75 mm. Yes, I was that close to the action. Exposure at ISO 200 was 1/320 second at f/11 in Aperture priority mode. The camera was panned during exposure. © 2005 Joe Farace.

As you might have already noticed, I will be using a web-centric approach to the products and services that are mentioned in these pages. Whenever I mention a company’s name for the first time, I will also list in parenthesis the addresses (URL) of web sites where more information about that particular product or company can be found.
FANTASTIC FOUR
Digital imaging consists of four phases that are not too different in intent from the traditional silver-based imaging process:

To illustrate the four phases of digital imaging, the original headshot of Leah was made using a Canon EOS 20D and 60 mm EF-S macro lens. A Lowel (www.lowelego.com) Ego Light was used along with an F.J. Westcott (www.fjwestcott.com) reflector to light the portrait. Exposure at ISO 400 was 1/200 second at f/3.5 to minimize depth-of-field. The color variations of the original image were created using nik Color Efex (www.niksoftware.com) and the black and white used Pixel Genius PhotoKit (www.pixelgenius.com). All four versions of Leah’s portrait were combined into a single document using Adobe Photoshop CS2’s Layers function. I’ll show you how to make an image like this later in the book. © 2005 Joe Farace.

Capture: This occurs at the moment—decisive or otherwise—when the shutter clicks, but digital photography extends that metaphor by providing other ways of capturing images of people, places, or things. It can also occur/happen when you digitize a slide or negative that was originally shot on film.
Some people, such as my pal Rick Sammon, make wonderfully realistic photographs of butterflies; but I prefer interpretive image making. This original photograph was made at the Butterfly Pavilion (www.butterflies.org) in Westminster, Colorado using a Canon EOS 20D and a 60 mm EF-S macro lens. Exposure in manual mode was 1/60 second at f/13 with lighting provided by Canon’s Macro Ring Lite MR-14EX. Special effects were created with nik Color Efex’ Duplex: Color filter. © 2005 Joe Farace.

**Enhance:** Some of the enhancements you can make in your desktop darkroom are similar to what you might accomplish in a traditional darkroom, but with digital you can produce something seen only in your mind’s eye. In the digital darkroom, you have the all of the advantages of cropping, adjusting brightness and contrast, or tweaking color while working with the room lights on.

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**Output:** This is the step where computer hardware and software collide with traditional print making to produce output that, when done properly, cannot be distinguished from a sliver halide photograph. To make sure this phase of the process matches what you *created* in the digital darkroom, it helps to have a large, color-corrected monitor.

**Presentation:** You can make prints using an ink-jet printer or at a kiosk in Wal-Mart then and place them in a conventional album, but there are many other ways to use digital images that are, *truly* digital. Using photo sharing web sites such as SmugMug (www.smugmug.com) you can share photographs with family and friends around the globe. See what’s possible by taking at look at my own SmugMug page (http://farace.smugmug.com).
CAPTURE THE SUN
As far as getting involved in digital imaging, the good news is that you can be as digital as you want to be! The advantages of both purely digital capture and digitizing film are many, and include the following.

Recycling: Once you’ve captured an image onto a memory card, you can re-use that CompactFlash, Secure Digital, or Memory Stick, many hundreds of times. Not only is this media re-usable, it’s editable. Every digital camera includes an LCD preview screen that lets you see the captured image immediately. If someone’s eyes are closed, you can erase the photo where they have their eyes closed and re-shoot it right there on the spot.
**Flexibility**: Scanners are now so inexpensive that anyone who owns a computer can also afford to purchase a flatbed scanner, such as the $99 Epson Perfection 2480, and use it to digitize prints whose negatives have long ago been lost and turn them into twenty-first century digital images.

This photograph of Leslie was snapped at the very instant a bug flew in her mouth! It’s a funny picture to be sure, but seeing the result on the preview screen gave me the opportunity to reshoot, plus gave us both a big laugh. ©2004 Joe Farace.

The Epson Perfection 3490 Photo has an affordable $99 price tag. It has an optical resolution of 3200 dpi (dots per inch) combined with fast USB 2.0 connectivity, making it the best photo quality scanner at this price point. Photo courtesy of Epson.
Convenience: When your memory card is full of images you can copy them onto writable CD discs that cost just pennies each, and stack them in a compact space. Who knows, by using the right digital asset management software, you might finally be able to keep track of all of your images and find that picture of your dad on his old sailboat.

ARTIFICIAL LIES *aka Le Manipulateur*

When initially setting up your digital darkroom you’re going to need image-editing software along with the output devices to print digital images. Digital imaging software is available in three broad categories.

Beginners can use snapshot software that offers basic manipulation techniques such as cropping, changing brightness and contrast, and useful features like red-eye reduction. Some *free* programs that fall into this category include Apple Computer’s (www.apple.com) iPhoto, and Google’s Picasa (www.picassa.com) for Microsoft Windows.

Picasa is a *free* Windows-based image management, Web sharing, and enhancement program that offers one-click photo repairs and lets you e-mail, print, make gift CDs, instantly share via their “Hello” feature, and post pictures on your own blog. © 2005 Joe Farace.
Intermediate users work with programs that add more capabilities for image editing, often including features that let them produce special effects. Applications in this class often accept plug-ins that allow you to extend the capabilities of the program from within. Windows-based software in this category includes Corel’s (www.corel.com) PaintShop Pro and Ulead’s (www.ulead.com) PhotoImpact. MediaChance’s (www.mediachance.com) $49 PhotoBrush is a Windows-only best buy.

PhotoBrush is a $49 Windows-based program that combines image editing and artistic media painting. The latest version adds RAW file support for over 100 different cameras and PhotoBrush not only accepts Photoshop-compatible plug-ins (more on them in Chapter 9) but also can read and write Photoshop’s PSD files as well. © 2005 Joe Farace.

Serious image makers use professional-level tools that have the most powerful capabilities but also demand a serious digital imaging computer. This category is dominated by Adobe (www.adobe.com) Photoshop CS; and while there have been challengers over the years, there are few competitors left. Corel’s Painter offers professional-level tools and lets you produce images for the Web, fine art, or separations for prepress applications.
HOME FIELD ADVANTAGE

Software is one area of the digital imaging process that has decided advantages over traditional photography. When you commit to a camera system and make a corresponding, and sometimes hefty, investment in lenses and accessories, switching brands can be too expensive for most photographers. Digital imagers, on the other hand, can assemble a digital software toolkit that contains products from many different companies, all of which are complementary, and some of which share software components.

When working with digital images, manipulation techniques fall into several categories:

Enhancement: After capturing an image, the next step is to make it look as good as it can. Some of the tools built into image enhancement programs, such as Levels and Curves, may be tricky for beginners to wrap their brains around, but inexpensive add-ons such as PhotoTune’s (www.phototune.com) 20/20 Color MD let you tweak an image by making a series of choices between two alternatives.

Retouch: Since photography began, portrait photographers have retouched negatives with pencils and dyes, applying artwork and airbrushing to improve on nature’s little imperfections. Photoshop-compatible plug-ins, such as Kodak’s (www.asf.com) Digital GEM Airbrush Professional, lets you smooth skin, reduces harsh shadows and highlights, minimizes imperfections, and preserves details such as hair, eyelashes, and eyebrows.
Restoration: Repairing old faded and damaged photographs used to be the province of the specialist, but now anyone with a little patience to learn a few...
new digital tools and tricks can use image-editing programs to fix old scratched photographs and make them look like new again. The good news is that the original and often fragile print is left untouched and undamaged by the process.

**Creativity:** Digital imaging software empowers user to produce images they could only dream of. Years ago I labored many hours in a wet darkroom to produce a composite image showing what an historic statue would look like when moved to a different location. Digital imaging applications that have Layers function, such as Adobe Photoshop CS, let me do a better job in much less time, and I don’t have to work in the dark with smelly chemicals.

Only part of this photograph, that I call “Colorado Hot Rod,” was made in Colorado. I originally shot the car shot in Fountain, CO in 2004, but Bob Geldmacher photographed the background image in 1971 using color slide film. (Hiding under the hot rod there’s a shot of my then-new 1971 Porsche 914 and me.) They were combined using Photoshop CS’s Layers function and finished with nik Color Efex filters. © 2005 Joe Farace/Bob Geldmacher.

**PRINT THE IMAGE**

Making your own prints using a desktop darkroom eliminates a trip to a photo lab and is a lot faster than going to a 1-hour lab. I think that’s one reason many pros like digital imaging, and many amateur photographers as well. You can even have your own desktop minilab. All-in-one devices, such as Canon’s Pixma MP760 let you print high-quality proof sheets and snapshots directly from memory cards without using a computer.
Printing your photographs doesn’t have to be complicated. To make your
next ink-jet printing session produce the kind of output you want, here are a few
tips:

Read the manual: It’s usually short and contains helpful information on the
printer’s driver, which is the most important bit of software needed for achieving
optimum results. The manual has all kinds of other information about what type
of media works best at what settings, and highlights other features, such as how
to make borderless or double-sided prints.

If you decide to use paper different from what the printer manufacturer offers,
take the time to read this media’s instructions to learn which driver settings are
compatible with the paper and will produce the best results. Since this is an imper-
fect world, go to the paper company’s website to look for the latest recommenda-
tions or even printer profiles to achieve more precise results.

Out here in the real world there are lots of variables and not every paper and
ink combination works together the way you might like. Before making a big
investment in papers, purchase a sampler pack or small quantity of the paper and
make a few prints with your own test files. Write notes about the printer driver’s
settings and paper used on the back of the prints and file them for future refer-
ce. Don’t be flummoxed by this quick start guide to printing, there’s a lot more
in Chapter 11.
PRESENTING THE IMAGE
The last part of the digital imaging process gives the concept of output a world-
wide dimension and opens the door to what you can do with your photographs
after you’ve captured, manipulated, and output them. Because of the Internet,
you can now share digital images with friends and family anywhere on the planet.
What’s more, you can create presentations that combine still images with video
clips, music, and graphics to tell a story.

Photo sharing: Instead of mailing a photo album across the country to friends or
relatives, you can post them on a web site such as WebShots (www.webshots.com).

Not only to photo sharing web sites such as WebShots.com make it convenient for people anywhere in the world to view these photographs, they also let family and friends order reprints from the images directly from the on-line service taking you out of the re-order loop. Photo courtesy of WebShots.com.

Build your own web site. If you have aspirations to sell your photographs to the public, having a website gives you the same storefront on the digital highway as much larger gallery operations. Even if you don’t want to sell your images, having a personal web site gives you a way to communicate with others in ways that could have only been dreamed about 10 years ago.

Assemble a digital album: . . . and record it onto a CD-ROM disc. With inexpen-
sive album software, such as, E-Book Systems’ (www.ebooksys.com) FlipAlbum
CD Maker, you can turn your family photographs into a presentation complete
with musical accompaniment and special effects transitions between images.
The best advice I can give about going digital is to have fun with your image making. Don’t be so serious or the playful, experimental aspects of digital imaging will get lost.

TORN CURTAIN
The computers I used for this book are the same ones I use every day: An Apple Power Macintosh G4 with two 40GB internal hard drives, DVD-R drive, built-in Iomega Zip drive, and an external SimpleTech 300GB FireWire drive. My Windows machine is a 2.6GHz Compaq Presario with 160GB of hard disk space, CD-RW, and DVD drives. In the digital imaging universe, these are what I would call middle-of-the-road machines. I know photographers working with less complex computers, and others working with more extensive systems. Digital imagers working with systems with more power, larger memory, and higher capacity storage will be able to produce the effects in this book faster than I was able to, while those with smaller, slower systems may have to be more patient.

All of the images and effects produced in the how-to sections of the book were created using both computers. This was done for a very practical reason: Not
every software program is available for both Mac OS and Windows environments. Programs that are platform-specific, like the Windows-based Ulead System’s PhotolImpact, were run on my Presario computer. Cross platform software packages, such as Adobe Photoshop CS2, were run mostly on my Power Macintosh system and occasionally on Windows.

Most of the photographs were created using digital, 35mm, 6 x 6, or 4 x 5 film formats. Film images were digitized with a Microtek ArtixScan 120tf or Epson Perfection 4870 Photo scanner. Unless otherwise credited, all of the photographs you see in these pages are copyright Joe Farace.

A word about quote and subheads: I’m a movie buff. All of the quotes that start each chapter are from movies and the occasional TV show. Some of the subheads also reference some of my favorite films. If you get the references, great. If you don’t, don’t worry about it, just ignore it and read the text.

TWO-MINUTE WARNING
Before jumping into Chapter 1 I want to share a few important “rules” about how I create my personal digital images:

Keep it simple: it’s a cliché but true nonetheless. Start with image capture and making sure the image you make isn’t cluttered, makes a strong point and tells a story, the simpler that story is, the easier the photograph will be to “read.” It’s also true for image enhancement and manipulation. I prefer to use one or two steps rather than many different steps for the simple reason that we are dealing with binary numbers represented as pictures. Software crunches those numbers and over time there are minuscule rounding errors that occur; keeping these number of steps to a minimum minimizes these errors and maximizes image quality.

The “20-minute” rule: I have discovered that if I can’t make the final image look the way I have previsualized in 20 minutes, I am never going to do it. I have spent hours working on an image wasting paper and ink trying to make an image file to look like what I dreamed it should be. Fuggedaboutit. Sometimes it’s just doesn’t happen. Try to capture it on the file the next time and learn from your mistakes.

Let the tools do the work; use Power Tools: You can build a house with a hammer and manual saw but the work goes faster with power tools. I like to use digital power tools too, so I’ll be introducing you to Photoshop-compatible plug-ins and Actions that make quick work of digital effects and do a great job at the same time.

FUN WITH DICK AND JANE
All photographs—digital or silver-based—combine elements of reality with imagination. How these elements are combined is up to the photographer, but there is no denying that digital imaging has presented the creative image maker with some powerful tools. In this book, I’ll introduce you to some of those tools and show you how you can use them for your own digital explorations.
Not every aspect of every possible imaging technique will be found in these pages. There are many ways to produce any kind of creative photographic effect. That’s why photography is still just as much art as it is craft. Some writers and gurus may insist there is only one way to produce an image, but I don’t agree. This book has been designed to show you one way of creating digital images, not the only way. You should use my meanderings as a jumping-off point for your own explorations, not as a destination.

Kevin Elliott, of Mac MD (www.macmdcare.com) recently gave me some advice I’d like to pass on to anyone wishing to get started in digital imaging. “When a photographer has achieved a certain level of skill, they expect to compress the time it takes them to get into digital imaging,” he told me, “when they really have to start all over again.”

In this book, traditional silver-based photography meets digital imaging. It’s not just a new edition of “Digital Imaging: Tips, Tools, and Techniques” but also a new approach for amateur photographers and aspiring pros who want to work with digital images. I try to take you “behind the screens” to show you how to use the tools—not just the software—that can be used to produce prints or digital image files for via e-mail or posting on the World Wide Web.

Joe Farace
Brighton, Colorado 2006
Welcome to the Digital Darkroom

Pardon me, boy, is this the Transylvania Station?

Photography, as we know it, is going through its most profound changes since William Fox Talbot shocked the Daguerreotypists with his concept of “the negative." Since its beginnings, photographers have continually worked with some kind of camera and darkroom. Over time, these tools have changed in form but not in...
function. Just as the format of the camera you use defines the kind of imagery you can produce, the kind of computer you decide on using can have a bearing on the kinds of digital images you are able to create.

There’s an old photo lab saying that states: “speed, quality, and price—choose any two.” That may hold true for traditional photographic services but the way Moore’s law has been applied to digital imaging means you can have all three—when you choose the right computer! For the digital imaging computer buyer, speed, quality, and price have been replaced with price/performance, total cost of ownership, and return on investment. The computers that digital imagers prefer to use will, for the most part, parallel the kinds of cameras they are using now. In general, this boils down to three categories of computer-using photographers.

For amateur shooters who use digital point and shoot cameras, the most important factor in selecting a computer is price and performance. These computer users will be satisfied with computers that meet the minimum system requirements for the kind of entry-level image-editing software they may choose to run.

Photographers who prefer state-of-the-art digital SLRs will want state-of-the-art desktop computers for their digital imaging work and will want to consider the total cost of ownership. This includes both the time spent on learning the system and the cost of maintenance and upgrades.

Professionals and those photographers working in high-end digital SLRs or medium format digital cameras need workstations that can handle the large files produced by digital images created with such cameras, and will be looking for workstations that provide a return on their larger investments by speeding up the time it takes to process large images in large quantities.

You can convert color digital images into black and white inside the digital darkroom, or capture them directly as monochrome files as I did with this photograph of Tia Stoneman using a Canon EOS 5D. Exposure was 1/160 second at f/6.3 in Program mode. ISO was set at 400. © 2005 Joe Farace.
BACK TO THE FUTURE

If you buy a digital camera just to save money on film and processing you may be in for a surprise. While it’s true that someone who shoots lots of slide or negative film can quickly amortize even the purchase of a new $3000 Canon EOS 5D, there’s more to this equation than just the cost of the camera and a few memory cards.

The Origins of “Digital Darkroom”

One of the first digital imaging programs available was called “Digital Darkroom” and was produced in 1989 by Silicon Beach Software. With this program, Silicon Beach programmers, Ed Bomke and Don Cone, introduced the world to the concept of graphics software plug-ins. When Aldus Corporation purchased Silicon Beach’s products, Digital Darkroom became a part of that company. When Adobe Systems acquired Aldus, Digital Darkroom was abandoned in favor of Photoshop. As time passed, MicroFrontier (www.microfrontier.com), producers of the photographic software Enhance and Color-It!, purchased the right to the name “Digital Darkroom” and now offer some pretty cool software for the Mac OS and Windows under that name. During its time between homes the words “digital darkroom”—now with lower-case “d’s”—came into widespread use, as a way to describe desktop imaging, and it is under those conditions that the term is used in this book.

One of the biggest differences between the worlds of film and digital photography is the start-up cost. After purchasing a film camera you can take the exposed film to any minilab in the country and they’ll gladly make prints from the exposed film for a modest charge, but when you purchase a digital camera you also buy into the concept of the digital darkroom. For some computer users this may just mean a few hardware or software upgrades along with a new peripheral or two, but if you’re starting from scratch, MacWorld magazine once estimated that, depending...
on your digital imaging goals, the cost of establishing a digital darkroom can go as high as $6500. But I don’t believe it has to cost that much. Here’s why . . .

A SHOT IN THE DARK
A few years ago I sold all my traditional darkroom equipment, lock, stock, and tongs. After sitting untouched in my new home’s basement for several years, I decided it all had to go. I loaded enlarger, lenses, carriers, and trays into my car, and took them to a local photo show, selling them to practitioners of silver halide printing for below bargain prices. Why? Many years before my fire sale, I happily made the transition to the digital darkroom and now that all of these boxes upon boxes of traditional darkroom gear are gone, I haven’t looked back.

Assembling your own digital darkroom isn’t complicated or expensive and is much like putting together a camera system: you can tailor the equipment to meet your specific applications and budget. You can build a complete system for less than $1500 or spend more than the cost of a shiny new BMW 3-Series; it all depends on your budget and what you’re trying to accomplish.

DON’T GO NEAR THE WATER
Much like you can make photographs with a $3000 Canon EOS 5D or a $20 Holga (www.freestylephoto.biz/holga.php), virtually any new computer system can be the basis of a digital darkroom; but digital imaging, like the devil, is in the details, so here’s how to start assembling your new darkroom.

Any camera, and I mean any camera can be your entrance to the digital darkroom. This is the actual Zero Image (www.zeroinage.com) pinhole camera that I use to make photographs. The camera uses 120 films and has no shutter, no lens, no controls of any kind but it can make pictures! Don’t believe me? Look at this. © 2005 Joe Farace.
Budget-minded digital imagers could start with the least expensive Mac Mini, iMac, or Microsoft Windows-based computer they can find. As I write this, you can purchase a new Mac Mini from the Apple Store (www.apple.com/store) for $600. This gets you a 1.5-GHz Intel Core Solo processor, 512-MB memory, a 60-GB hard drive, CD-RW/DVD-ROM drive, and built-in WiFi and Bluetooth. You’ll need a $100 monitor, a $20 keyboard, and a $20 mouse, or you can use these items from your old Windows machine. If you spent another $200, and got another copy of Windows, you’d actually be able to run both Windows and Mac OS on this one computer.

A Windows-based package from e-Machines (www.emachines.com), such as the W3107, costs $398.99 and features a 1.8-GHz AMD Sempron chip, 512-MB...
Getting Started with Digital Imaging

DDR random access memory (RAM), 10B hard drive, DVD ± RW, and an included 17-inch flat cathode ray tube (CRT) monitor. Since computer prices and specification change faster than even digital cameras, this will probably change based on when you’re reading this, but you get the picture.

As I write this, a new Apple MacBook with an Intel Core Duo processor costs less than $1100 and is an ideal entry-level computer for digital darkroom workers that want to work in the Mac OS. Torn between the Mac OS and Windows? We’ll get to that in just a bit. Product shot courtesy of Apple Computer; insert shot © 2005 Joe Farace. (Note: You’ll need a shot of a MacBook instead of an eMac, and the W3107 from e-Machines.)

When it comes to a computer’s processor, faster used to be better, but now computer makers have hit a speed wall. Instead, they’re adding processor cores to speed throughput. Intel’s Core Duo is just such a system, now appearing in both Macs and PCs. But you don’t need to worry much about it. Adobe’s Photoshop Elements 4 (www.adobe.com) requires only an Intel Pentium III or 4 or Intel Centrino (or compatible) 800-MHz processor. You’d be hard pressed to buy a new computer at those speeds. I’m currently running the Full Monte Photoshop CS2 on a 600-MHz G4 Power Macintosh with 768-MB RAM. Would I like more power? Yes, but I’d like to own a Chevrolet Corvette too.
PERMANENT AND TEMPORARY STORAGE

You can never have too much RAM, so get as much as you can afford. Even for the least expensive system, I urge beginning digital imagers to have a minimum of 512MB, but more is always better. If the computer you’re considering won’t allow you to increase the amount of memory, choose another one. Photoshop Elements 4, for example, requires only 256MB of RAM, but that doesn’t include the operating system and all the other stuff computers need to operate.

I hate to contradict Mies van der Roh, but when it comes to hard drives, more is more. The 80–100-GB hard disks included in our theoretical start-up systems are more than adequate, but more space is always useful. With 80-GB hard drives selling for under $65 at places such as www.dirtcheapdrives.com, it makes sense to upgrade or add to the puny drive that’s already installed in your computer. Two drives are better than one: I have two 120-GB drives inside my Power Macintosh G4. When there’s a problem starting from the main drive, I have another operating system installed on the second drive enabling me to start the computer and fix problems on the other drive. This is a trick I learned from Kevin Elliott (www.macmdcare.com) who also partitioned my main hard drive so that one boots from Mac OS 9, the other from OS X, giving me even more flexibility.

If you store all your digital images on the computer’s hard disk, you’ll quickly run out of space. That’s why your digital darkroom should include at least one form of recordable media. Most photographers currently use writable CD-R and DVD-R discs, and who can blame them? These discs hold lots of image files and cost a few pennies each. Re-writable CD drives are popular and many inexpensive computers include CD-RW drives as standard equipment. One of the optical storage technology’s biggest claims to fame is longevity. Good-quality CDs have an

expected shelf life of 30 years, making them a good choice for anyone worried about long-term storage (be sure to buy quality name-brand discs) but format longevity is another question. As the prices of writable drives and media drop, DVD becomes a more attractive storage option. Instead of storing megabytes, DVD discs store gigabytes of image files, meaning you’ll have fewer discs to store and locate.

I have a 300-GB external (FireWire) drive, mostly to keep image files stored. Keep in mind the corollary to the “More” rule; backing up is harder to do. And you better back up. Every image file on that 300-GB drive is also backed up onto a CD or DVD disc.

You are going to need a way to capture images, but instead of connecting your digicam to your computer with the included cable to download images, purchase a card reader that reads all kinds of media. Even if your current camera only uses one media type, you never know what your next camera will use. Devices such as Belkin’s (www.belkin.com) Hi-Speed USB 2.0 8-in-1 Media Reader and Writer let you drag and drop images files to a computer, or even from one media card to another. Since it operates under the speedy USB 2.0 protocol, it’s fast. If your computer is still using the original, slower USB, don’t worry. The reader/writer is backward compatible. You should still strongly consider adding a USB 2 card if your older computer has an open slot. They are inexpensive and speed up your workflow more than you might imagine. (Note: There’s more on card readers in Chapter 2.)
THE MONITOR AND MERRIMAC
They’re big—and getting bigger—they take up lots of desktop real estate, generate heat, a bit of radiation, and can give you headaches if you stare at them...
too long. CRT displays have been around a long time, and while some underly-
ing hardware components have been improved during that time, notably in size, resolution, and even reduced radiation, the underlying technology is more than 60-year old.

One of my pet peeves is how expensive monitors have remained relative to overall system cost. If you’ve been shopping recently, you know that there are some bargain monitors out there and while some of that downward price pres-
sure can be attributed to competition, the real reason is the growing popularity of liquid crystal display (LCD) flat-panel displays.

Bigger is better, and larger monitors have become more affordable. You should get the largest monitor your budget permits. Over time, I’ve migrated to LCD monitors for both my machines. Older LCD screens were not adequate for critical digital image manipulation, but after Apple introduced their Studio Display series, the ball game changed dramatically. I have a 22-inch Apple Studio Display on my Power Mac G4 and a 20-inch Apple Studio Display on my Compaq. Yes, I have an Apple monitor on my Windows computer!

The Apple Cinema Display features a 22-inch active-matrix LCD that delivers a wide-
format design with 1600 by 1024 pixels and has a wide (160°) horizontal and vertical viewing angle for maximum visibility and color performance. It supports 16.7 million saturated colors, for use in all graphics-intensive applications. Photo courtesy of Apple Computer. Inset photo © 2005 Joe Farace.

After I upgraded my Power Mac G4 with a 22-inch Cinema Display, I decided to move my 20-inch Apple widescreen monitor to the Compaq, which proved easier than you might think. Older Cinema Displays used a propriety—big shock here—Apple Desktop Control (ADC) connection, so the first thing I needed was
an adapter that would convert ADC to standard DVI (digital visual interface) as well as provide power. The solution was Apple’s $100 DVI to ADC Display Adapter, not to be confused with its $29 ADC to DVI connector cable. The second piece of the puzzle was installing a video card that’s equally at home inside a Mac OS or Windows computer. This turned out to be an ATI Radeon 9600 Pro and the quality of the image on the 20-inch Cinema Display is spectacular.

High rollers will be glad to know that the ATI Radeon 9600 Pro video card supports Apple’s 30-inch HD display. The board requires a computer with an AGP (Accelerated Graphics Port) slot, so before installing make sure yours has one.

**MONITOR CHECKLIST**
Before plunking down your hard-earned cash for a new monitor, there are many characteristics and features you should consider.

**Color:** Monochrome monitors have gone the way of the dodo bird and passenger pigeon. If you haven’t already noticed it, almost every monitor sold today features both color and high resolution. Gamers demand it, digital imagers require it, and software designers have turned even the most mundane office application into a desktop or Web publisher, which is why color viewing has become de rigueur.

**Type:** Where previously the major decision was between color and monochrome, the new choice is whether to purchase a CRT or an LCD flat-panel display. While some desktop monitors are CRTs, the space saving flat-panel monitors are beginning to take over; but the migration to the newer monitors has been slow, hampered by their high cost. Meanwhile, CRTs have become more affordable, and you can purchase a much larger glass monitor than a flat-panel display for the same money. Don’t be confused by monitors labeled “flat screen” and those
labeled “flat panel.” A flat screen monitor is a classic glass-tubed CRT whose face is almost completely flat instead of the slightly rounded face found on most traditional monitors. Many others have emerged recently that have a standard curved tube with a flat-faced lens on the front that brings the image to a flat focus in front of you; not quite the same thing, and focus and distortion can be a problem. A “flat panel,” on the other hand, is always an LCD screen.

Besides higher cost, LCD screens are not without a few problems of their own. Dead pixels can occur in screens used in laptop or desktop computers. A standard LCD screen can have an occasional dead pixel that will display as black or green—no matter what’s displayed on the screen. On the other hand, LCD screens use less power. A typical 17-inch CRT uses 100W, while an equivalent-sized LCD screen needs less than 40. Whether you can measure these savings on your electric meter each month may be difficult, but you will conserve more energy with a flat-panel display.

Space: It’s not just the final frontier, it’s something too many monitor buyers overlook when shopping for a new display. Most LCD screens occupy a smaller footprint and take up one-third less desktop volume than a traditional monitor. CRT makers aren’t throwing in the towel. Some companies have introduced
short-length monitors that take less space than traditional glass monitors with the same screen size. My view is that if monitor companies brought more compact CRT monitors at more aggressive prices to market earlier, nobody would be using flat panels except well-heeled early adopters.

*Monitor size:* When comparing CRT monitors, keep in mind that a monitor’s size refers to an approximate diagonal measurement of the monitor’s tube, not what you can actually see on the screen. In the past, manufacturers routinely overstated monitor screen sizes in much the same way that TV set builders have been doing for decades. A lawsuit challenging this long-standing industry practice and was settled by several companies and the terms of the settlement state that all monitors built after a certain date must be described by their actual viewable area. The settlement states that: “Defendants cannot refer to the computer display as 15 inches unless the viewable area is also disclosed.” One of the big differences between flat screens and glass CRTs is that LCD screens measure their actual size, and that’s why a flat-panel monitor will always provide more usable work area than a CRT of the same stated size.

Other than screen size and resolution, the next most important factors in evaluating your choice of monitors is dot pitch, refresh rate, and whether the monitor is multiscan or interlaced.
Resolution: This is a measure of the degree of sharpness of what you see on the screen and is measured by the number of pixels that are displayed across and down the screen. The ratio of horizontal to vertical resolution is typically 4:3, the same as TV sets, but that's changing. Apple's Cinema Displays use a wide-format design similar to that used by HDTV and have a resolution of $1600 \times 1024$ (at least mine does; newer models will differ). This format allows the Cinema Display to display two pages of graphics or wide screen movies without seeing a letterbox effect.

Shadow masks: All CRT monitors have a shadow mask, which is a thin screen that's attached to the back of the screen preventing the outer edges of the electron beam from hitting the wrong phosphor dots. Any distortion caused by heat from the beams can disturb the beam's accuracy that results in a loss of color purity. Some manufacturers produce this screen from a metal called Invar, which has an extremely low coefficient of thermal expansion and thus produces a better on-screen viewing experience.

Dot pitch: The classic definition of dot pitch is that it's the diagonal distance between the red (center) dot of two adjoining pixel triads on a monitor as measured in millimeters. Most people acknowledge that it's the distance between two pixels of the same color. Dot pitch can vary, but the smaller this number, the sharper the on-screen picture will be. Instead of dots, Sony's Trinitron CRT tubes use vertical stripes, so their dot pitch ratings are similar, but not exactly the same as non-Trinitron tubes.

Refresh rate, a.k.a. vertical scanning frequency: This is a measure of the maximum number of frames that can be displayed on a monitor in a second as measured in Hertz (Hz). Hertz is a measure of electrical vibrations and 1-Hz equals one cycle per second. If the refresh rate is too slow, you get flicker. While many monitors measure refresh rates from 60 to 85Hz, with some even higher, most people won't notice any difference at rates higher than 75Hz.

Multiscan or interlaced? MultiSync is a trademark of NEC, but many people use that term incorrectly when describing any multiscan monitor. On a typical monitor, a scanning beam starts at one corner and traces a single, pixel-wide horizontal line, then goes on to trace the next line. How fast the monitor makes both horizontal and vertical scans varies depending on the kind of graphics card used by the computer. A multiscan monitor automatically matches the signal sent by the graphics card and does all the work of making sure the graphics board and your monitor match.

ROCKET’S RED GLARE
One of the biggest problems facing computer users is glare from the monitor. While more and more CRTs have some kind of anti-reflective coating, this feature is far from universal, and even “non-glare” monitors experience some level of glare. In fact, one of the many advantages of flat-panel displays is that they produce much less glare than the shiny glass used on many CRTs.
Computer Vision Syndrome is caused by monitor glare that can create symptoms such as eyestrain, headaches, and fatigue. The best solution is to place your monitor where glare is not a problem, but this is not always possible. Glare can be solved with products such as Polaroid’s anti-glare filter, which also includes a conductive coating to eliminate static and dust problems, which can magnify the effect of glare. If you want more aggressive glare protection, consider a Circular Polarizer that eliminates 99% of the glare while enhancing contrast by 18 times. Polaroid’s filters include a built-in grounding strap to eliminate static electricity. When shopping for glare shields also look for the American Optometric Association Seal of Acceptance.

Where you sit in relation to your monitor is important too. Your screen should be between 18 and 31 inches from your eyes. When looking at the center of a screen, your head should be angled slightly downward. If you need to refer to another document as a point of reference, place that document at the same height and angle as the screen by using a document holder. If your monitor is too low, use a support to move it to a more comfortable height.

Don’t forget the very low-frequency and extra low-frequency radiation that emits from the sides and back of a monitor. These days most monitors adhere to Swedish Tjanstemannens Central Organisation (www.tco.se/index.htm) standards for radiation emissions, but you should check your monitor’s specifications to ensure they meet or exceed TCO standard.

This photograph of a classic Jaguar XJ-S was made out “in the real world”: using a Pentax K100D and 70–150-mm lens. Exposure in Program mode was 1/350 second.
OUT HERE IN THE REAL WORLD, AND I DON’T MEAN MTV
What kind of computer should you buy? One answer is based on Farace’s immutable rules of the computing universe: No matter what kind of computer you buy, it will be replaced by a cheaper, faster version within 6 months. Don’t let that depress you. Start by purchasing the most powerful computer you can afford. The bad news is that even the most advanced personal computer will be technically obsolete in 18 months. Maybe you’ll be lucky and stretch it to 2 years, but most likely not. Nibbling away at this obsolescence is what I call the “mud flaps” factor. Over time, many computer users add software that makes their computer easier (or cooler) to use. Sooner or later, all of these bits and pieces take their toll, reducing the amount of available resources on the computer, creating conflicts and incompatibilities.

Building a digital darkroom, it turns out, is similar to building a traditional one. Based on your budgetary constraints, you assemble the tools that match the kinds of images you want to produce. I think its possible to assemble a digital darkroom containing all of the components that I have outlined, for less than the cost of a traditional wet darkroom, and you don’t have to soak your fingers—or tongs—in chemicals or work in the dark.

Asking about the kind of computer I use is as relevant as knowing the kind of camera I use. It doesn’t matter if I use a Hasselblad or Canon (I use both) and you already own 12 different Nikon lenses and several bodies. The same is true for operating systems. You can tailor the equipment to your specific applications and budget. You can build a system for less than $1000 or spend more than the cost of a shiny new Mini Cooper S; it all depends on your goals and budget.

Since 1984, I’ve been using both Mac OS and Windows operating systems, but today 90% of my imaging is done under Mac OS X, the rest under Windows XP until recently. I always advise people to purchase a computer that provides the best support. Not customer support; all computer companies provide universally bad—although some strive for intolerable—customer support, I mean the kind of help you can get from a friend; in my case, Mac MD’s Kevin Elliott.

Windows on a Mac?
The big news for the future is that while digital imaging software may be available in both Microsoft Windows and Mac OS versions, both kinds of programs can be run on one kind of computer: An Intel-based Mac. Apple's Boot Camp software allows Windows XP software to run on any Intel-based Mac OS computer. As I write this, Boot Camp is available as a public beta (www.apple.com/macosx/bootcamp), but is expected to be part of the release of the next update to the Mac OS, code-named Leopard. You’ll still need to install a copy of Windows because “Apple Computer does not sell or support Microsoft Windows,” but Boot Camp will burn a CD of all the required drivers for Windows so you don’t have to scrounge around the Internet looking for them. When it finally arrives, will Vista run under Boot Camp? I’ll be surprised if it doesn’t.
OPERATION SWORDFISH
You would think that the choice of operating system boils down to the Mac OS or Windows, but it's not that simple. The GIMP (GNU Image Manipulation Program) is a free open source photo retouching and image authoring program, and while some of its fans claim it's just as good as Adobe Photoshop, it's not. It is, however, hands-down the best free image-editing program available, and better than many programs that cost a hundred bucks or more. GIMP was originally a Linux-based product, but now is also available for Microsoft Windows and Mac OS X, which is built upon a UNIX framework.

Free image editing never looked this good. The GIMP was originally a Linux-based product, but now is also available for Microsoft Windows and Mac OS X, which is built upon a UNIX framework. © 2004 Joe Farace All Rights Reserved.

Before installing the GIMP, Windows users must first download and install the GTK run-time environment, and Mac OS X Panther users have to install X11. (It’s on Apple’s OS X CD.) The official website of the GIMP (www.gimp.org) contains all the information about downloading these files along with the scoop on installing and using the GIMP with these operating systems. This comprehensive site includes the source code, serves as a distribution point for the latest releases, and provides information about the GIMP community. If you are Mac OS user on a dial-up connection and the thought of downloading 40MB of data sounds unappealing, the MacGIMP Project (www.macgimp.org) sells a CD for less than 50 bucks. Windows users will need a broadband friend or a lot of patience.
Once upon a time, there was a brilliant findlandssvensk (Swedish speaking Finnish) student named Linus (pronounced Lee-nus) Torvalds who was born in Helsinki, Finland. He wrote the Linux kernel: the essential part of the operating system for Linux. Linux was his implementation of Unix, without proprietary code. It has been made available to the world, essentially free, as part of the “open source movement.”

Open source is a method of licensing and distributing software that encourages people to copy and modify it freely. Today a Google search yielded a total number of 93,600,000 hits for Linux.

Computers can run Linux or UNIX, but for most computer users, the choice of an operating system still really boils down to a choice between the Mac OS and Microsoft Windows. All Apple Macintosh computers are currently shipped with OS X. Available in both Home and Professional versions, depending on your specific application, Windows XP—like Mac OS X—has been designed for ease of use, but has been controversial from its launch, with many formerly staunch supporters in the media highly critical of this version. Based on my personal experience with this operating system on my own desktop and at workshops, it has accomplished its goal of being more accessible, and is an image-friendly OS.

No matter what kind of computer you choose, I think you should make it “friendly” with the other major platform. It’s a great idea for your Windows computer to

Linux, Linus, but No Blankie
RIDING THE RESOLUTION CAROUSEL

It is inevitable that you will encounter more than one type of resolution. For example, device resolution refers to the number of dots per inch (dpi) that a device, such as a printer or monitor, can produce or display. Device resolution on computer monitor screens can vary from 60 to 120 dpi. (Note: Don’t confuse this with screen resolution, which refers to the number of dpi in the line screen used to reproduce halftone images.) A 21-inch monitor displays more pixels than a 13-inch model, and some monitors can even display various pixels per inch (ppi). If you don’t change the magnification level, what you see at 64 dpi is simply a closer look at the same image. Because the pixels are larger it appears to be lower resolution. Monitor screen resolution, to confuse things further, is also measured in lines per inch (lpi). This last one is left over from TV.

Image resolution really refers to the amount of information that is stored in an image file and is often expressed in ppi. The image resolution of any graphic
image ultimately determines how large a file is. This means that the higher the resolution, the bigger the file, and size determines how long an image will take to move, manipulate, store, or print. All this goes back to how many bits, bytes, kilobytes, and megabytes an image file contains, and completes the circular discussion of resolution that began with bits.

The bottom line on resolution is that you have to match the resolution of the image acquisition device and software to the output. Requirements for World Wide Web applications, because they are based on monitor resolution, are different from working with four-color magazine-quality output. By understanding resolution and what it means, you will be in a better position to evaluate equipment purchases and make the right choices.

GOOD RESOLUTIONS

Computer graphic communication uses a pastiche of buzzwords borrowed from the printing, design, and photographic fields, blended with a sprinkling of computer jargon. If some of these buzzwords seem strange to you, they’re collected in a glossary that can be found at the end of this book.

In general usage, the word resolution refers to how sharp or (as some people put it) “clear” an image looks on a screen or when printed or output as film. Any discussion of resolution must first look at two items that ultimately refer to what most people will agree is resolution: bits and pixels.

A bit is the smallest unit of information a computer can process. Because computers represent all data (including graphics) by using numbers, or digits, they are digital devices. These digits are measured in bits. Each electronic signal becomes one bit, but to represent more complex numbers or images, computers combine these signals into 8-bit groups called bytes. When 1024 bytes are combined, you get a kilobyte, often referred to as “K.” When you lasso 1024 kilobytes, you have a megabyte.

Pixel is short for “picture element.” Visual quality—or resolution—can be measured by the width and height of an image as measured in pixels. A computer screen is made up of many thousands of these colored dots of light that, when combined, produce a graphic image. On the screen, combinations of pixels, called triads, produce all of the colors you see. A triad contains three dots, one each for red, blue, and green. In a CRT monitor three electronic “guns” fire three separate signals (one for each color) at the screen. If all the three guns hit a single location at equal intensity, it will appear white on the screen. If none hit a target pixel, it will be black.

The higher an image’s resolution—the more pixels it has—the better its visual quality will be. An image with a resolution of $2048 \times 3072$ pixels has higher resolution than the same image digitized at $128 \times 192$ pixels. At low resolutions, images have a coarse, grainy appearance making them difficult to evaluate. Higher resolution is not without some cost: as the resolution of a device increases, so does its cost.
Bits are important to photo files because you often find a file or hardware device referred to as 24- or 30-bit devices. A 24-bit image has eight bits each for red, blue, and green. A 30-bit image has 10 bits for each color. More is always better.

**TRADING PLACES**

As in all computer applications, the resolution of a particular graphic image involves trade-off. As a graphic file’s resolution increases, so does its file size. Larger file sizes mean your computer system requires more space per image. If you have been wondering why the “normal” hard disk size exploded from 100MB to 100GB, look to the megapixel race still ongoing in the digital camera marketplace.

You may have heard the graphics and image-manipulation programs are memory hogs. That’s partially true. In order to work on a photograph, programs such as Adobe Photoshop require memory that is three to five times the size of the original image. To handle a 18-MB image file, you need between 54 and 90MB of RAM. Fortunately, Photoshop has a built-in virtual memory scheme (called a scratch disk).

A scratch disk is any drive or drive partition with free memory. By default, use the hard drive where the operating system is installed as the primary scratch disk. By using Plug-ins and Scratch Disks preferences (Photoshop > Preferences > Plug-ins & Scratch Disks) you can change the primary scratch disk and designate a second, third, or fourth scratch disk to be used when the primary disk is full. Your primary scratch disk should be your fastest hard disk. For best performance, scratch disks should be on a different drive from any large files you are editing. Scratch disks should be conventional (non-removable) media and a local drive; they should not be accessed over a network. Drives that have scratch disks should also be defragmented regularly.
“scratch disk”) that reduces RAM requirements by treating unused hard disk space as additional RAM. In this example, it means having at least 54 MB of unused hard disk space available. The program’s Preferences menu lets you specify where the program should go to get this hard disk space, and you can have primary and secondary disks to use as scratch disks.

If you do not have enough memory or scratch disk space, Photoshop can give you a “Not Enough Memory to Complete that Operation” error message. Fortunately, there is an easy enough way to find out if you will have problems before you start work on an image. Photoshop displays information showing how much memory that particular image takes in the lower left-hand corner of any image window. By clicking on these numbers, you have the option of displaying File Sizes or Scratch Sizes. While File Size information is interesting, I recommend you keep the window set to show Scratch Sizes. The number on the left side tells you how much memory all open windows are using and the number on the right tells you the amount of RAM available. If the first number is larger than the second, the difference is the amount of Scratch Disk space required. If you don’t have enough unused hard disk space—TILT!

The old drag racer’s axiom that “there’s no substitute for cubic inches” may be paraphrased to “there’s no substitute to RAM.” With RAM prices lower than they have been for a while, why not make a trip to the computer store and purchase a few memory modules for your computer? While you have the case off, why not stuff a 160-GB (or bigger) hard disk in there? You’ll use it.

THE BOTTOM LINE
The Windows vs. Mac OS controversy is a quagmire and is the digital version of the Nikon vs. Canon arguments seen on the Web and wherever photographers gather. Most digital imaging programs are cross-platform and while some are Windows-only, the introduction of Apple Computer’s Boot Camp software makes that a moot point. There is no doubt that Apple Computer hung on too long to hardware and software that was too closed. The Windows platform, on the other hand, was so open that often hardware and software components were not so compatible. No matter what system you decide on, one truth remains: Neither platform—Mac OS or Windows—is perfect, and when you make a decision between the two, you get all of the baggage that comes with either choice.

Do what you want with it. In the Mac OS or Windows debate what we have is the classic debate between intransigent forces. My Dad was a “Chevy man,” but other than a 1976 Chevrolet Blazer, I’ve owned more Fords during my life. Don’t lose sight of what imaging is all about: getting great images. The best hardware is whatever helps you get the best images. Just as a truly great photographer can create images no matter what kind of camera that he or she uses, the quality of a person’s digital imaging solution isn’t measured by what kind of computer they use.
This photograph of a vintage airplane was captured originally in color using a Canon EOS 20D with EF-S 10–22-mm lens. Exposure was 1/40 second at f4.0 and ISO 400. It was converted to monochrome using some of the techniques I’ll show you in Chapter 7. The film “frame” was also added digitally using a Photoshop Action that I’ll also introduce to you later. © 2005 Joe Farace.

More than half the households in the US have a computer, but most of them have more than one user. This results not only in the inevitable turf wars about who gets to use it, but brings up security issues as well. According to the National Cyber Security Alliance (www.csoonline.com), 86% of US broadband users have confidential information stored on their computers, and 79% use the Internet to send sensitive information, but two-thirds don’t have proper firewalls installed. Spyware, software that gathers information for outside sources and is installed without the user’s knowledge, can be found on 91% of broadband users’ computers. Yet, 86% of broadband users felt their computers were “very” or “somewhat safe.” Where does this stuff come from? Fifty-seven percent of Spyware comes from music downloads and other from seemingly benign sources.

The Windows versions of Internet Explorer seems the most prone to these sorts of attacks so the first step is tighten up its security settings. (If you’re already infected, it may be too late.) Start by opening Internet Options and go to the Security tab. In the ActiveX area, disable anything not marked as “safe and not signed.” For ActiveX marked “safe and signed,” set to the choices to “Prompt.” This approach did not work 100% of the time for me, so I installed a freeware program called Ad-aware (www.lavasoftusa.com) that will “quarantine” Spyware files. The company offers upgraded versions for a modest fee but the freeware version worked for me.

A Bugs Life?