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## Purpose of this Guide

This guide to digital photography is designed to help you take better photographs, through better composition, knowledge of lighting techniques, use of good judgement and utilization of the digital camera's unique capabilities.

Although there are imaging software package available to enhance, modify, and correct poor images, it is faster, easier, and better to make the adjustments while you are on-site.

Knowing what makes a good photograph, being able to make the appropriate adjustments to accommodate the lighting situation or shot composition will help you move from being a picture taker to a picture maker.

## Unique value of digital photography

The unique value in using digital photography is that you can see right away what your picture is going to look like and delete the unacceptable photos and reshoot right there.

It saves time lost in processing the film, money in development costs and in having to travel back to the site to reshoot when the photo doesn't turn out as expected.

Digital cameras allow you to shoot and reshoot until you get it right. Never leave a photo shoot with room on your storage media. Shoot and shoot and shoot!

*It is the not the camera that takes a good picture. It is the person behind it!*

## **Pixels**

Digital Photographs are made up of hundreds of thousands or millions of squares called pixels. Computers and printers use the information stored in a digital camera to specify the brightness and color of each pixel. This process of painting a picture with individual pixels is called bit-mapping.

The number of pixels in an image determines its quality. The more pixels that are present, the higher the resolution. The higher the resolution, the less pictures you can take. Cameras can be adjust to several modes to accommodate your intended use of the finished product.

### **Low resolution Mode**

Low resolution image mode, known as Basic, Normal, SQ1, or SQ2 on digital cameras, are appropriate for images that will be used on websites or powerpoint presentations. The advantage is the reduced size of the files and the low resolution mode of projection devices do not affect the quality of the image.

### **High resolution Mode**

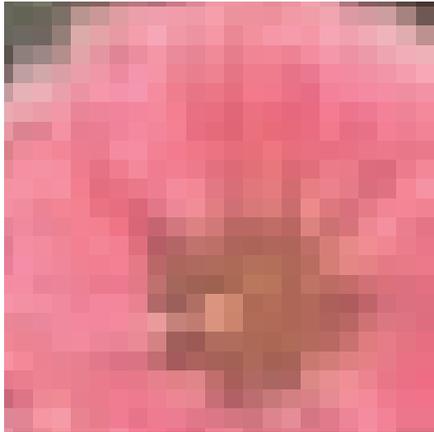
High resolution image mode, known as Fine, SHQ, or HQ, are used for printing. Higher resolution images pack more pixels per square inch, giving a more complete picture.

If you are not sure what you will be using your images for, use a high resolution setting so that you can have all options available when you decide what you need. You can always turn a high resolution into a low resolution photo by altering it in a photo editor program.

*When in doubt, shoot in high resolution mode.  
When not in doubt, shoot in high resolution mode.*

*You can always reduce the resolution but you can't increase it. Shoot as if you are going to use the photograph in a publication.*

## Examples of Resolution



### **10 Dots Per Inch**

Unusable--10 dpi is reserved for simple line drawings and has no use in photography.



### **100 Dots Per Inch**

Notice the loss in detail of the center of the flower. More than adequate for the Web or Powerpoint Presentations.



### **300 Dots Per Inch**

Notice the clear delineation of the center of the flower--the smooth edges on the petals--the heightened contrast in the shadows.

All of these images were developed from this resolution--just reduced in size.

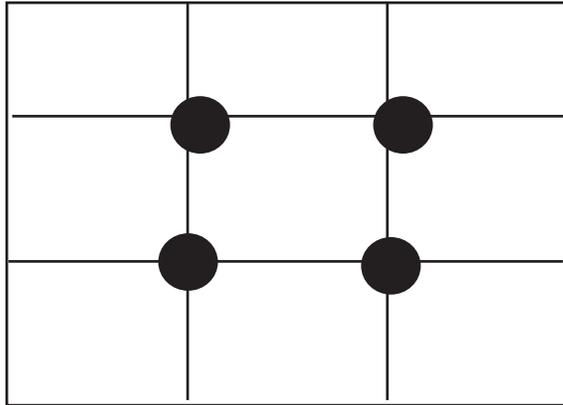
You cannot get a 300 dpi image from a 100 dpi shot. Always shoot at the highest resolution when possible.

## Rule of Thirds

### Example

Avoid centering your subject in the center of the frame. Visualize the frame like below. Divide it into thirds. You will have 9 boxes. Where the lines intersect is where the focal point of your photo should be.

If it is a person, have them looking into the center of the photograph. In other words, if the person is looking left, place them on the right side of the photo. If they are looking right, place them on the left side of the photo.



#### Bonus Tip

In layout, photos with a person or animal looking right are placed on the left side of the page and those looking left are placed on the right side of the page. There's a reason for this.

We are taught as children to read from left to right. The photo on the left side of the page encourages us to look toward the right. The photo on the right side of the page encourages us to look left and below.

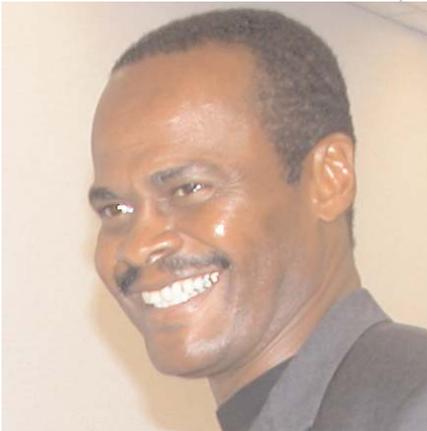
Effective placement of photos or graphic objects controls what the eye sees first by designing in the way that the eye is trained to look for information.

#### On the cover

Notice the third photo in the top row directs you back and below to the second line. Notice the angle of the third photo in the second row directing the eye back toward the left of the page. Notice the third photo on the third row and how the light on the left pulls your eye toward it.

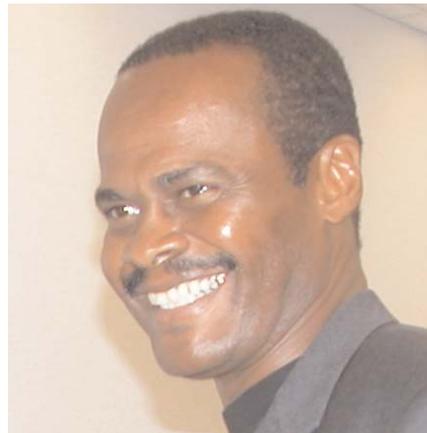
## Layout Without Utilizing Knowledge of the Human Eye

Because the human eye expects to receive visual input in a specific way, the layout below is confusing. The photos do not direct you toward each other. The eye is confused and bounces back and forth with no clear direction on where to look next.



Looking left off of the page takes the viewer away from the document. Same thing with the cow on the right--eye is drawn off the page.

Wide space in between separates the images and gives a feeling of disconnectedness.



Good layout achieves its communication purpose and increases the chance that your document will be read.

## Composition

### 1. Rule of Thirds

When composing a picture, divide the scene into thirds both vertically and horizontally. Where lines intersect is a good location for your subject. Keep the horizon line in either the top third or bottom third of the picture.

### 2. Take pictures from the front, not the backs of people.

Pictures are more interesting when the subject is in detail. Use the zoom function or move in on your subject to get a good shot.

### 3. Experiment, take lots of shots!

You are not paying to print out your photos, so the more photos you have to choose from, the better chance that one will be good.

Play with your camera, press all the buttons and find out what they do. Bring the photos up on your screen and see the results.

### 1. The Flash.

Set on automatic, the flash will do exactly that when it thinks it is necessary. A flash is not as smart as you, so you might need to manually turn it on or off depending on your lighting situation.

In highly lit areas, a picture of people with hats on will probably yield a very bright picture with dark faces in the shadow of their hats. To avoid this, manually turn the flash on so that it lights up your subjects face.

Another example is taken photographs from inside a vehicle. The low light situation might trip the flash, which will reflect off a window, ruining the shot.

This is easily avoided by switching off the flash.

### 2. Macro Mode.

Photographing flowers for identification?

Snapping detail shots on irrigation emitters? Use the Macro setting (depicted by a flower on most cameras).

This allows you to get relative close to your subject while keeping it in focus. Make sure you switch back your setting when you finish shooting close up.

### 3. Use multiple frame mode to shoot many pictures in a row.

This is a great way to capture action!

Digital Photography has changed the way we take and use pictures. The ability to snap hundreds of photographs and print only those we want creates an efficient and environmentally effective system to document our work.

Low resolution image mode, known as Basic, Normal, SQ1, or SQ2 on digital cameras, are appropriate for images that will be used on websites or powerpoint presentations.

High resolution image mode, known as Fine, SHQ, or HQ, are used for printing. Higher resolution images pack more pixels per square inch, giving a more complete picture. If you are not sure what you will be using your images for, use a high resolution setting so that you can have all options available when you decide what you need. You can always turn a high resolution into a low resolution photo by altering it in a photo editor program.

### **What resolution should I save at?**

Depending on how you obtain an image, the file will most likely come in one of the graphic formats mentioned on the first page. Digital cameras often save pictures as JPEG, some have a TIF option.

If only a JPEG is available on your digital camera and you want to use the picture on a printed page, use the highest resolution setting, a number that will give a pixel dimension like 1600x1200.

At this point, you have recorded as much information as possible and you can always make the file smaller later.

### **How can I change the image size?**

To change the size of your image, open it up in MS Photo Editor. Choose the Image menu and scroll down to Resize. Photo Editor's default measurement is inches, so change the units to pixels if you are using the image online. When you email pictures by inserting them into Netscape Mail program, make sure your image is no larger than 600x800 pixels. This is a standard monitor size and allows people to view your photos without having to scroll through the image.

JPEG is not a stable format since each time you save a JPEG the file loses information. Therefore it is wise to convert the JPEG files you wish to print to TIFF or EPS files before you start making any changes to the file.

### **Resolution**

When a picture is scanned or a digital picture taken, the device assigns a pixel to each ray of light it is able to capture. When printed, these pixels are represented as spots on paper. The better the printer, the more spots it can print. To change resolution in PS Photo Editor, go to File--->Properties--->Resolution

Output Device Pixel per inch (ppi)

Computer screen 72 ppi

Color printer 300 ppi

Let's start with one surprising fact: A pixel has no size or shape. It's actually an electrical charge, stored in the computer language of ones and zeroes. A pixel gets its size from the device you use to display or print it. This is very different from your traditional inch-by-inch measurement system for film photography. Digital photography is more fluid.

It is important to have a brief understanding of the relationship between pixels and digital image sizes. This controls the quality of your digital photography (the sharpness of your images when they are displayed and printed), and it controls the size of your digital files (how much room they take up on your hard drive or floppy diskette).

Since pixels stored in an image file have no physical size or shape, let's think of them as photosites. Each pixel that is captured by a digital camera or a scanner contains one very small piece of color. The individual photosite

has nothing to do with the sharpness or size of the composite photo. What determines the sharpness and final size of the photo is the output device. Output devices (computer monitors and printers) have the ability to spread pixels over a small or large area.

For example, if the pixels in an image are squeezed into a smaller area, "perceived sharpness" increases. Images on high-resolution screens and high-resolution printers look sharper only because the available pixels are grouped into a small area—not because there are more pixels.

When pixels are enlarged by a device, the image is spread over a larger area and the image's "perceived sharpness" decreases. If enlarged past a certain point, the squareness of the individual pixels will begin to show and we say the image becomes "pixilated."

### **EXAMPLE**

This is why the icons, text, buttons and images on your computer screen will resize themselves if you change the resolution settings of your computer monitor. To demonstrate, go to the Window's Start menu. Select settings. Then select Control Panel. When the Control panel opens, doubleclick the Display icon to show the Display Properties dialog box. Then click the Settings tab on the dialog box and look at the value for Desktop Area (also called Screen Area).

If you increase or decrease this value, the images will display either larger or smaller on your screen. You are changing the display resolution—squeezing the pixels tighter together or spreading them farther apart.

Computer monitors are measured two ways: in resolution (quality), and in physical inches of display space (like a TV). Resolution is specified by a pair of numbers indicating the screen's width and height in pixels. For example, a monitor may be low-resolution 640 x 480, medium resolution 800 x 600, or high-resolution 1024 x 768 or above. Resolution is important because the size of each pixel displayed on your screen is determined by the resolution of the screen.

When displaying images on the screen, it is important that the viewer be able to see the entire image without having to scroll it. So when you prepare digital images for screen display or for sending by e-mail, be sure to resize them slightly smaller than the standard resolution of most monitors, which is 640 x 480. You'll want your image to have a width of 600 pixels or less and a height of 400 pixels or less. If you e-mail an image larger than

this size, you are creating an unnecessarily large file that will take a long time to download, and your recipient will have difficulty viewing the image.

At your own workstation, keep in mind that the

physical size of your monitor will affect the sharpness and size of displayed images. For example, if you open a photograph that is the standard e-mail resolution of 600 x 400 pixels on a small 15-inch computer monitor and also on a large 21-inch monitor, this same image will display at different sizes. Why? Because on the larger monitor the pixels are spread out across the screen. This may look like a larger image, but it's not. It's still 600 pixels wide and 400 pixels tall; but these pixels are stretched across the 21 inch space. Therefore the image looks larger and less sharp.

Digital images are measured in pixels per inch (ppi) whereas printers measure in dots per inch (dpi). For our purposes, we can use the two interchangeably. Again, since pixels have no real size of their own, the resolution of the printer is going to regulate the output size of any printed digital image. Fortunately there is an easy equation that predicts the outcome.

Since digital images are described in pixels and photographs are sized in inches, you have to convert from pixels to inches. To do so, you divide the image's dimension in pixels by the resolution of the device in dots per inch (dpi).

Convert the dimensions for a 1500 x 1200 image,

printed on a 300 dpi inkjet:

Width:  $1500 \text{ pixels} \div 300 \text{ dpi} = 5''$

Height:  $1200 \text{ pixels} \div 300 \text{ dpi} = 4''$

(prints at 5'' x 4'')

Convert the dimensions for a 1500 x 1200

image, printed on a 600 dpi laser printer:

Width:  $1500 \text{ pixels} \div 600 \text{ dpi} = 2.5''$

Height:  $1200 \text{ pixels} \div 600 \text{ dpi} = 2''$

(prints at 2.5'' x 2'')

## Scanning Digital Images

Let's say you scanned a photograph that is 6'' wide using the scanner

resolution of 300dpi. Your digital image is 1800 pixels (6 x 300) wide. Now you want to print it on your 600 dpi laser printer at the best quality possible. The laser printer's maximum resolution is 600 dpi, so here is the output size:  $1800 \text{ pixels} \div 600 \text{ dpi} = 3''$  wide.

But the second photograph you want to scan is a landscape scene and you need to print it 6'' wide in order to see the details. This time, do the math backward. Start with your 6'' desired print size: 6'' width x 600 dpi printer = 3600 pixels of width needed in the digital image.

Next ask yourself, "How do I scan a 6'' photograph to get 3600 pixels of width?" Take  $3600 \text{ desired pixels} \div 6'' \text{ photograph} = 600 \text{ dots per inch}$  needed in scanner resolution.

## REMEMBER

If you open a digital image in a photo-editing program like IrfanView (free-ware) and enlarge or reduce it, you will change the pixels per inch value of the image.

Why might you want to change the pixels per inch in a digital image?

- (1) You accidentally scanned it at a really high dpi resolution which created a huge-sized file; your hard drive is very low on memory and can't save big files; and you only need to print the image as a small picture on a 300 dpi color printer
- (2) You have a high resolution image that you used on a display and you need to e-mail a low resolution copy to someone in Athens who will view it on a 640 x 480 screen
- (3) You took a photograph with the digital camera and want to print it out on the 600 dpi laser printer at a very specific size

## **Danger!**

There are many ways to resize digital photographs. When you use the wrong method; such as the simple resize feature in MS Word, PowerPoint or Excel; you are sacrificing the quality of your image because these programs use interpolation and you cannot control the pixel count during the resizing process.

Interpolation always reduces photographic quality. You want to avoid any software that uses interpolation when resizing digital images.

Here is why. Interpolation never adds new detail to the image. When an image is made larger, extra pixels are added randomly, their colors are assigned randomly, clarity is lost and the file size gets a lot larger. When an image is made smaller, pixels are deleted and details are lost forever.

## **How can you resize an image without using interpolation?**

The best (and safest) way to resize an image is with a photo-editing program that does not automatically interpolate during the resizing process. This will preserve the number of pixels in your image, therefore preserving the quality of the photograph.

## **Keep it simple**

Is that a photo of your friend? Or is it of the store signs, the car and the hydrant on the curb? Simple photos turn out the best, because the eye isn't distracted by too many things. So don't feel like you have to capture everything in one picture.

## **Frame your shot**

Composition is the name of the game. Pay attention not just to your subject but to what surrounds it. Is there a tree branch in the background that looks like it's coming out of your subject's head? Move your subject or your camera before you take the picture, so the tree branch is at the edge, framing the frame. Frequently, photos turn out better when the subject is off-center, because centering the subject makes it too static. So don't be afraid to move around.

View your subject from different angles - up, down, left, right - until you find an angle that pleases you. Or try turning your camera vertically to catch a different perspective.

## **Put The Sun Behind You**

A photograph is all about light so always think of how the light is striking your subject. Your best bet is to move around so that the sun is behind you and to one side. This front lighting brings out color and shades, and the slight angle (side lighting) produces shadow to indicate texture and form.

Hard light comes directly from the source, such as a bright sunny day or a bare lightbulb. Soft light is light that is scattered by clouds on an overcast day, or filtered through trees. Most photos look best with soft light.

## **Photography Tips**

Shoot early or late in the day, when the light is softer. And cloudy days are your friend - the light actually intensifies the colors of flowers, trees, and the whole outdoors. But angle your camera down to not fill the frame with gray and make good use of the lighting.

### **Use the fill-flash**

When shooting people outdoors in hard light, use the fill-flash to lighten eye and nose shadows which otherwise show up as dark and unsightly shadows. Fill-flash also brightens subjects in the shade, without sacrificing background detail.

### **Turn off the flash**

Don't use the flash when shooting far-away subjects, such as landscapes.

When you use the flash at these times, your camera really doesn't know how far away the subject is and overexposes the foreground.

### **Taking a great scenery shot**

Include a foreground in scenic pictures, such as a rock, animal or tree, but keep it to the side of the frame and lock the focus to not distract from the overall view.

If you have a zoom camera, use the wide-angle focal length (28mm to 38mm). Non-zoom point and shoot models are equally capable of taking good landscape shots, because they have a short single focal length, allowing for more of the scene to be taken in.

### **Use Proportion**

The beauty of an image is often in its proportions. A popular technique with artists is called the Rule of Thirds. Imagine the frame divided into thirds, both horizontally and vertically, like a Tic-Tac-Toe board. Now place your subject on one of the lines or intersections.

### **Get great people shots**

Move closer - but don't get any closer than 3 1/2 feet or your subject will wind up out of focus. To reduce background, turn your camera vertically.

Don't snap until your viewfinder shows just the right expression and gesture from your subject. Use the flash: it can soften hard light by filling in shadows under the eye, nose and chin.

When taking photos of children, get down to their eye level, and keep them entertained with a toy or treat so they'll stay still long enough for you to get some pictures. can get dull. Use the Rule of Thirds to add variety and interest.

## **Eye contact**

Direct eye contact can be as engaging in a picture as it is in real life. When taking a picture of someone, hold the camera at the person's eye level. For children, that means stooping to their level. The subject doesn't always need to stare at the camera. All by itself that eye level angle will create a personal and inviting feeling that pulls you into the picture. Lock the focus

If your subject is not in the center of the picture, you need to lock the focus to create a sharp picture. Most auto-focus cameras focus on whatever is in the center of the picture. But to improve pictures, you will often want to move the subject away from the center of the picture. Usually you can lock the focus in three steps. First, center the subject and press and hold the shutter button halfway down. Second, reposition your camera (while still holding the shutter button) so the subject is away from the center. And third, finish by pressing the shutter button all the way down to take the picture.

## **Just don't say "cheese"**

If you photograph people, try not to ask them to smile. Instead, photograph them with natural expressions. Emphasizing "natural," of course, means that you'll need to spend some time putting them at ease first. Natural expressions are fleeting. If you're not prepared to shoot and you say "wait, don't move," your subject may become self-conscious trying to hold an expression or pose. Instead, just shoot whether you're ready or not, and keep shooting as you make the necessary camera adjustments.

## **Keep People Busy**

When photographing people, keep them busy! Your pictures will have a feeling of lively spontaneity. To avoid stiff, static poses, prompt your subjects to be active. Their expressions will be more relaxed and natural. Take more than one picture of your subject

It's what all the professional photographers do. People's expressions change ever so slightly, or something may suddenly appear in the photo you didn't expect. The challenge with "capturing the moment" is that time is made up of a lot of moments, so the more photos you take, the more moments you have to choose from.

## **Bracketing with a SLR (film) camera**

Always expose for the most important highlight. When in doubt about the correct exposure, take several 'bracketed' shots. You 'bracket' around a shot by taking one regular shot, then a second shot slightly darker (-1 stop) and a third shot slightly lighter (+1 stop). Some cameras offer this as an automatic feature. Digital Tips

## **Maximize image quality**

If you want digital images only for your online album or e-mail, don't worry too much about image quality. However, if you're planning to make or order excellent prints, keep the following in mind.

## **Shoot in high-resolution modes.**

### **Use minimal compression --**

Select the highest-quality JPEG format, with the least compression, such as the Fine or Hi option.

### **Think twice before using TIFF mode --**

Some high-end digital cameras can capture images in TIFF format. Theoretically, this produces the highest picture quality, because the images are not compressed. If you plan to make oversized prints, you might want to use this option, but remember its drawbacks. Image recording time will be much longer.

Depending on the camera, this can be as long as 45 seconds. During the wait, you may be frustrated by missing photo opportunities. And TIFF files can be very large, so your memory cards will fill up quickly.

### **Optical vs. digital zooms**

If you're just breaking into digital photography, or have only dabbled in it somewhat, then you may not know that many digital cameras come with two zooms - optical and digital.

The optical zoom functions just like the zoom on a 35mm film camera and allows you to move (zoom) in closer to your subject. Since it uses conventional lenses it provides the best resolution.

The digital zoom "blows up" the image and crops in on the part you see on the LCD, reducing the resolution. So if you're looking to capture high-resolution images from a distance, make sure you pay closer attention to the size of the optical zoom rather than the digital or total digital + optical zoom.

### **How many pixels do I need?**

That depends on the size of your photographs. The more pixels you have, the larger the prints can be. For good quality, a 4" x 6" print generally requires a camera with a million pixels, or 1 megapixel. An 8" x 10" print requires at least 2 megapixels. And with a 4-megapixel camera, you can easily make 11" x 14" prints.

If you simply plan to email your images, a digital camera with a million pixels or less will do the job, as long as it offers a resolution of at least 640 x 480.

You've heard this before: Digital cameras do all the work. You just push the button and great pictures magically appear. The better the camera, the better the photos. Isn't that right? Heck no!

The truth is that you can make great photos with a simple consumer point-and-shoot camera, or take lousy shots with the most expensive Nikon. It's not the camera that makes beautiful images; it's the photographer. With a little knowledge and a willingness to make an adjustment here and there, you can squeeze big time photos out of the smallest digicam.

To help you down the road to great image making, here are ten tips that will enable you shoot like a pro (without maxing out your credit card on all that expensive equipment).

## **1. Warm Up Those Tones**

Have you ever noticed that your shots sometimes have a cool, clammy feel to them? If so, you're not alone. The default white balance setting for digital cameras is auto, which is fine for most snapshots, but tends to be a bit on the "cool" side.

When shooting outdoor portraits and sunny landscapes, try changing your white balance setting from auto to cloudy. That's right, cloudy. Why? This adjustment is like putting a mild warming filter on your camera. It increases the reds and yellows resulting in richer, warmer pictures.

Figure 1a is shot outdoors in a mountain environment with the white balance set to auto. Figure 1b shows warmer tones thanks to using the "cloudy" setting and a pair of Costa Del Mar sunglasses over the front lens. (Canon PowerShot S200, Program mode)

If you don't believe me, then do a test. Take a few outdoor shots with the white balance on auto, then take the same picture again with the setting on cloudy. Upload the images to your computer and look at them side by side. My guess is that you'll like the warmer image better.

## **2: Sunglasses Polarizer**

If you really want to add some punch to your images, then get your hands on a polarizing filter. A polarizer is the one filter every photographer should have handy for landscapes and general outdoor shooting. By reducing glare and unwanted reflections, polarized shots have richer, more saturated colors, especially in the sky.

What's that you say? Your digital camera can't accommodate filters. Don't despair. I've been using this trick for years with my point-and-shoot cameras. If you have a pair of quality sunglasses, then simply take them off and use them as your polarizing filter. Place the glasses as close to the camera lens as possible, then check their position in the LCD viewfinder to make sure you don't have the rims in the shot.

If your camera doesn't accept filters, then you can still achieve the effects of a polarizer by placing your sunglasses over the lens. Figure 2a is shot normally without any filtration. Figure 2b is shot during the same session, but with sunglasses placed over the lens. Notice the enhanced colors and deeper sky tones. (Canon PowerShot S200, Program mode)

For the best effect, position yourself so the sun is over either your right or left shoulder. The polarizing effect is strongest when the light source is at a 90-degree angle from the subject.

### **3. Outdoor Portraits That Shine**

One of the great hidden features on digital cameras is the fill flash or flash on mode. By taking control of the flash so it goes on when you want it to, not when the camera deems it appropriate, you've just taken an important step toward capturing great outdoor portraits.

In flash on mode, the camera exposes for the background first, then adds just enough flash to illuminate your portrait subject. The result is a professional looking picture where everything in the composition looks good. Wedding photographers have been using this technique for years.

Figure 3. By placing the subjects in the open shade beneath a tree and turning on the fill flash, both the boys and the background are properly exposed. (Canon PowerShot G2, 1/250th at f-4, flash on)

After you get the hang of using the flash outdoors, try a couple variations on this theme by positioning the subject so the sun illuminates the hair from the side or the back, often referred to as rim lighting. Another good technique is to put the model in the shade under a tree, then use the flash to illuminate the subject. This keeps the model comfortable and cool with no squinty eyes from the harsh sun, and this often results in a more relaxed looking portrait.

Remember, though, that most built-in camera flashes only have a range of 10 feet, so make sure you don't stand too far away when using fill flash outdoors.

### **4. Macro Mode Madness**

Remember as a kid discovering the whole new world beneath your feet while playing on the grass? When you got very close to the ground, you could see an entire community of creatures that you never knew existed.

These days, you might not want to lie on your belly in the backyard, but if you activate the close up mode on your digital camera and begin to explore your world in finer detail, you'll be rewarded with fresh new images unlike anything you've ever shot before.

Even the simplest object takes on new fascination in macro mode. And the best part is that it's so easy to do with digital cameras.

Figure 4. Nature looks much different, and sometimes more compelling, at close range. (Canon PowerShot G2, Programmed exposure, spot meter, Close Up mode, flash off)

Just look for the close up or macro mode icon, which is usually a flower symbol, turn it on, and get as close to an object as your camera will allow. Once you've found something to your liking, hold the shutter button down halfway to allow the camera to focus. When the confirmation light gives you the go ahead, press the shutter down the rest of the way to record the image.

Keep in mind that you have very shallow depth of field when using the close up mode, so focus on the part of the subject that's most important to you, and let the rest of the image go soft.

## 5. Horizon Line Mayhem

For some mysterious reason, most human beings have a hard time holding the camera level when using the LCD monitors on their digicams. The result can be cockeyed sunsets, lopsided landscapes, and tilted towers.

Part of the problem is that your camera's optics introduce distortion when rendering broad panoramas on tiny, two-inch screens. Those trees may be standing straight when you look at them with the naked eye, but they seem to be bowing inward on your camera's monitor. No wonder photographers become disoriented when lining up their shots.

Figure 5. How do you square up an image in the LCD viewfinder so it appears "level" when you view it later on the computer? Look for nature's horizontal lines and use them as guides. Sometimes you can use the line where the sky meets the ocean, other times you can use a strip of land as your level. In this case I used the shoreline of a mountain lake to help me align this composition. (Canon PowerShot G2, Aperture Priority exposure set to f-8, polarizer filter)

What can you do? Well, there's no silver bullet to solve all of your horizon line problems, but you can make improvements by keeping a few things in mind.

First of all, be aware that it's important to capture your images as level as possible. If you're having difficulty framing the scene to your liking, then take your best shot at a straight picture, reposition the camera slightly, take another picture, and then maybe one more with another adjustment. Chances are very good that one of the images will "feel right" when you review them on the computer. Simply discard the others once you find the perfectly aligned image.

If you practice level framing of your shots, over time the process will become more natural, and your percentage of level horizon lines will increase dramatically.

## **6: Massive Media Card**

Dig deeper into digital photography! In addition to reading the O'Reilly Digital Photography Pocket Guide by Derrick Story, you can also learn more helpful techniques like these by attending his all day workshop at the San Francisco Graphic Art Institute on Nov. 22, 2002. More cities are being scheduled.

When you're figuring out the budget for your next digital camera, make sure you factor in the purchase of an additional memory card. Why? Because the cards included with your new high-tech wonder toy are about as satisfying as an airline bag of peanuts when you're dying of hunger.

If you have a 2 megapixel camera, get at least a 64MB card, 128MBs for 3 megapixel models, and 256MBs for 4 megapixels and up.

That way you'll never miss another shot because your memory card is full.

## **7: High Rez All the Way**

One of the most important reasons for packing a massive memory card is to enable you to shoot at your camera's highest resolution. If you paid a premium price for a 3 megapixel digicam, then get your money's worth and shoot at 3 megapixels. And while you're at it, shoot at your camera's highest quality compression setting too.

Why not squeeze more images on your memory card by shooting a lower resolution and low quality compression settings? Because you never know when you're going to capture the next great image of the 21st century. And if you take a beautiful picture at the low 640 x 480 resolution, that means you can only make a print about the size of a snapshot, not exactly the right dimensions for hanging in the museum.

On the other hand, if you recorded the image at 2048 x 1536 (3 megapixels) or larger, then you can make a lovely 8- x 10-inch photo-quality print suitable for framing or even for gracing the cover of Time magazine. And just in case you we're able to get as close to the action as you had liked, having those extra pixels enables you to crop your image and still have enough resolution to make a decent sized print.

The point is, if you have enough memory (and you know you should), then there's no reason to shoot at lower resolution and risk missing the opportunity to show off your work in a big way.

## **8: Tolerable Tripod**

I once overheard someone say, "He must be a real photographer because he's using a tripod." Well, whether or not you use a tripod has nothing to do with you being a true photographer. For certain types of shots though, these three-legged supports can be very useful.

The problem is tripods are a pain in the butt to carry around. They are bulky, unwieldy, and sometimes downright frustrating. Does the phrase "necessary evil" come to mind?

For digital shooters there's good news: the UltraPod II by Pedco. This compact, versatile, ingenious device fits in your back pocket and enables you to steady your camera in a variety of situations. You can open the legs and set it on any reasonable flat surface such as a tabletop or a boulder in the middle of nowhere. But you can also employ its Velcro strap and attach your camera to an available pole or tree limb.

You might not need a tripod that often, but when you do, nothing else will work. Save yourself the pain and money of a big heavy lug of a pod, and check out the svelte UltraPod. Yes, then you too can be a real photographer.

## **9: Self Timer Fun**

Now that you have your UltraPod in hand, you can explore another under-used feature found on almost every digital camera: the self timer. This function delays the firing of the shutter (after the button has been pushed) for up to 10 seconds, fixing one of the age old problems in photography: the missing photographer.

Hey, just because you've been donned as the creative historian in your clan, that doesn't mean that your shining face should be absent from every frame of the family's pictorial accounting. You could hand your trusty digicam over to strangers while you jump in the shot, but then you take the chance of them dropping, or even worse, running off with your camera.

Instead, attach your UltraPod, line up the shot, activate the self timer, and get in the picture. This is usually a good time to turn on the flash to ensure even exposure of everyone in the composition. Also, make sure the focusing sensor is aimed at a person in the group and not the distant background, or you'll get very sharp trees and fuzzy family members.

Self timers are good for other situations, too. Are you interested in making long exposures of cars driving over the Golden Gate Bridge at dusk? Once again, secure your camera on a tripod, then trip the shutter using the self timer. By doing so, you prevent accidental jarring of the camera as you initiate the exposure.

## 10. Slow Motion Water

I come from a family where it's darn hard to impress them with my artsy pictures. One of the few exceptions happened recently when my sister commented that a series of water shots I had shown her looked like paintings. That was close enough to a compliment for me.

What she was responding to was one of my favorite types of photographs: slow motion water. These images are created by finding a nice composition with running water, then forcing the camera's shutter to stay open for a second or two, creating a soft, flowing effect of the water while all the other elements in the scene stay nice and sharp.

You can create a painterly effect with moving water by mounting your camera on a tripod and slowing the shutter to an exposure of 1 second or longer. (Canon PowerShot G2, Aperture priority set to f-8, shutter speed 1 second, polarizer filter, UltraPod II tripod)

You'll need a tripod to steady the camera during the long exposure, and you probably should use the self timer to trip the shutter. If you camera has an aperture priority setting, use it and set the aperture to f-8, f-11, or f-16 if possible. This will give you greater depth of field and cause the shutter to slow down.

Ideally, you'll want an exposure of one second or longer to create the flowing effect of the water. That means you probably will want to look for streams and waterfalls that are in the shade instead of the bright sunlight.

Another trick is to use your sunglasses over the lens to darken the scene and create even a longer exposure. Plus you get the added bonus of eliminating distracting reflections from your composition.

### Final Thoughts

Most digital cameras, even the consumer point-and-shoot models, have a tremendous amount of functionality built into them. By applying a little ingenuity and creativity, you can take shots that will make viewers ask, "So what kind of camera do you have?"

You can tell them the answer, but inside, you'll know it's not the camera responsible for those great pictures. It's the photographer.

Derrick Story is the managing editor of O'Reilly Network and Mac DevCenter, coauthor of *iPhoto 2: The Missing Manual*, and author of the *Digital Photography* and *Digital Video Pocket Guides*.

### Make adjustments afterwards

#### Get close to your subject.

Many otherwise good pictures are simply too far from the subject. Keep in mind the minimum focus distance of your camera's lens.

## **Be patient.**

Waiting for the right moment to release the shutter can make all the difference.

## **Use Flash.**

Even outdoors in daylight, pictures will often benefit from using flash to fill the shadows. Flash can also freeze what might otherwise blur from camera or subject movement. Proper exposure of backlit subjects can be difficult without using flash. Remember most built in flashes have a working distance of 25 feet or less.

**Film and Light.** Controlling the amount of light that strikes film is critical for good pictures. SLR cameras do this two ways, by modifying the duration and intensity. The duration of the exposure is controlled by the shutter speed (amount of time light strikes the film.) Intensity is controlled by a diaphragm inside the lens. This is called the F stop setting.

**Film Speed.** 35 MM print film is available in several different speeds, 100, 200, 400 etc. This number is referred to as ISO. The main difference between each is the film's sensitivity to light. The higher the ISO number, the less light is required to properly expose the film. Therefore the higher the ISO number, the faster the film. 100 speed film is adequate for most situations and it's usually less expensive than faster films. 100 speed film is preferred for enlargements as opposed to 400. Enlargements made with fast film can have a grainy appearance and color saturation may not be as good as slower films. Films with an ISO of 400 or higher are only needed when light is limited or long lenses are being hand held. Kodak is promoting its Max film which has an ISO of 800. From my experience with this film, color saturation seems to be compromised. Grain is also more prevalent.

**Turn your camera.** 35 MM prints are rectangular. Pictures taken holding the camera in the horizontal position are called landscape format. Holding the camera at 90 degrees to horizontal produces what's called portrait format. Portraits of people usually work out better using portrait orientation, hence the name.

**Wait for the right light.** Pictures taken outdoors of scenery, buildings etc, will often look best if taken in early morning or late afternoon. If the sun is directly overhead, strong shadows and too much contrast between light and dark areas can result. A film's ability to show detail in light and dark areas of an image is limited. Night pictures often look best when there is still just a little daylight available, shortly after sunset or just before sunrise.

Use a tripod. Tripods are indispensable for creative and night photography. Tripods hold the camera motionless for night pictures and steady the camera when a long lens is used. If your camera has a self timer, (shutter release delay) using it and tripod will allow you to jump into the picture, maybe twice! This double exposure was made entirely on camera. When a tripod is not available, cameras can be supported on any flat stable surface. Fenceposts, tables, walls etc. A bean bag under the camera can help with lining up your shot in those cases.

Use a polarizer.

Polarizing filters are available for most SLR lenses. When used outdoors, they can dramatically improve images by reducing reflected light. On sunny days, skies will be a much deeper blue. This is most noticeable roughly 90 degrees to the angle of the sun.

In some cases overall color saturation will improve. Reflections from water, glass and painted surfaces will be diminished. Sunset pictures will sometimes benefit also. Polarizers reduce the light entering your lens by at least two f stops. Auto focus SLR lenses require circular polarizers to allow auto focus to work properly. A polarizer is not the answer for every outdoor situation.

## **Composition**

Remember some composition rules.

For outdoor scenic images avoid splitting the image in half with the horizon. Try to place the horizon 1/3 from the top or 1/3 from the bottom of your viewfinder.

For close up portraits of people, hold the camera in the portrait format and keep the eye level of the subject 1/3 of the way down from the top of the frame.

Avoid having a distant subject in dead center of a frame.

Things to remember when using zoom and telephoto lenses. When long focal length lenses are used, the slightest camera movement during exposure can result in blurred images. That is unless, your shutter speed is fast enough or the camera is supported by a tripod.