

How to choose a digital camera

and how to create good photos once you have the camera

Text and photos
by Bruce Philpott

Friends ask me how they should choose the digital camera that's right for them. All I can offer are a few tips and some of my prejudices, and maybe a few techniques I use in photography. I've tried to write something here for everyone: I hope beginners will benefit from the first part of this article but they may not ready for the more technical parts...yet! (*Just wait!*) Intermediate photographers may find they already know most of the first part of this article, but I encourage them to read on. It's likely there's a technique in here they don't use... *yet!*

The number of **megapixels** your camera will have (how many thousands of dots your photo will be made up of) is the most important decision you'll make in choosing a camera, so I've written

a "sidebar" on that topic which takes up the entire next page.

Second most important is **versatility**. Zoom lenses lend versatility to a camera. Want a "rule?" **Ignore digital zoom.** Yes, most cameras have a digital zoom, but (although it gives you a bigger picture on the camera's screen) it degrades image quality just as if you'd enlarged that number of pixels when you had the image on your computer, so I never use digital zoom, even though my camera has one. **Optical zoom**, on the other hand, enlarges the picture that's put on those pixels. It's the same as the zoom lens on a film camera: What you see is what the "film" is recording. How much an optical zoom enlarges (say 10 times compared to four times) should be a factor in your decision to buy a camera. (Most cameras have both digital and optical zooms.) The greater the optical zoom range, the more versatile the camera will be. The question only you can answer (like the megapixel question) is whether or not a broad range zoom is worth the money to you.

Another part of versatility is **exposure versatility**.

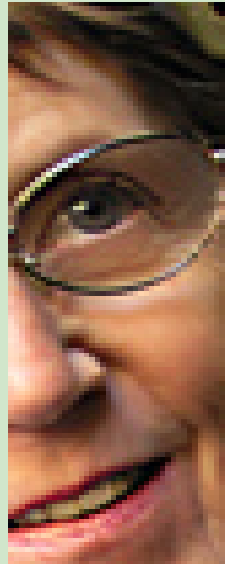
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How many megapixels do you want in a camera?

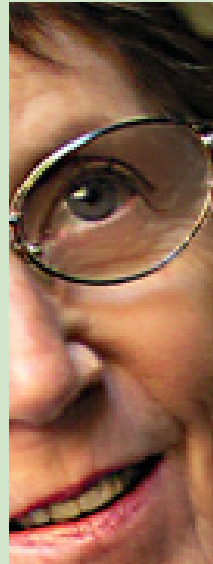
or, "what does 'image resolution' mean?"



The entire
photo



2 megapixel
camera



3.5 megapixel
camera



5 megapixel
camera

The number of megapixels will determine how enlargeable your photos will be. If you crop your photos, you lose some enlargeability because you're beginning with fewer (of the) pixels. The cropped slices at the right of the full photo are portions of an 8"x10" enlargement. The larger the print size you're "shooting for," the more you need lots of megapixels. The problem is that when you're shooting pictures "just for fun" is when you find you've taken something you want to make into a huge wall enlargement.

It does take a camera longer to "digest" all of those pixels, though. Fortunately, my Olympus C-5050 allows me to choose my image resolution any time I want. I can set it to a **low image resolution** and get **snapshot for the web** and take them as fast as I can depress the shutter release button. I can also fit whole tons of low resolution pictures on my memory chip.

If I want special photos for wall hanging enlargements, though, I choose the maximum setting (using all 5 megapixels, uncompressed). I

know I won't be able to fit as many of these high quality photos on my memory chip, but something I hadn't realized in buying my first digital camera was that it takes these higher resolution pictures longer to "process" (digest) in the camera, so I lose the spontaneity of being able to squeeze off repeated shots in quick succession. I'm sure the higher quality the camera the faster the processor. Some cameras even seem to have a "buffer" which can temporarily store the images as they're being processed, allowing sports photographers, for instance, to capture quick successions of images.

Even when I don't need fast shooting capability, I find that my posed group has to wait longer (at high resolution) for me to be able to check the results of the photo I just took. The image has to digest, then when I press the "preview" button it has to re-process the image for me to see on the screen.

This slow "recovery" time isn't much of an inconvenience since I get to choose my image resolution "on the fly."

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I want to have complete manual control of my exposures, but I also want to be able to hand my camera to someone unfamiliar with it and just say, “Press here halfway (to auto focus), then press all the way down.”

That means I want a camera that has “**modes**” of **use**. That may be just one **programmed** automatic mode where I have no control at all, and another mode that’s fully **manual** and gives me no exposure information. That’s a difficult choice. I like more choices of how to control my exposure.

Before I speak about deciding upon methods of controlling exposure, let’s talk about **exposure**. A very brief lesson: The amount of light that is recorded (light which reaches the “film” or CCD) is controlled by two things together:

- (1) The **shutterspeed** (how long the shutter is open – *see examples on the next page*) and
- (2) the size of the “aperture,” or **f-stop**, the hole the “film” sees

through. Those are funny numbers like $f/2$ and $f/5.6$ (that’s what the f stands for... funny numbers).

All you have to **know** is two things: Obviously the larger the hole, the more light comes in. Funny numbers are backwards, though: The larger the number the smaller the hole. $f/8$ lets in half as much light as $f/5.6$. **If you cut the light in half with f-stop, you have to double it with shutterspeed to balance the light.** The better automatic modes let you choose either shutterspeed or f-stop, and the camera will compensate the one you didn’t adjust to balance the exposure.

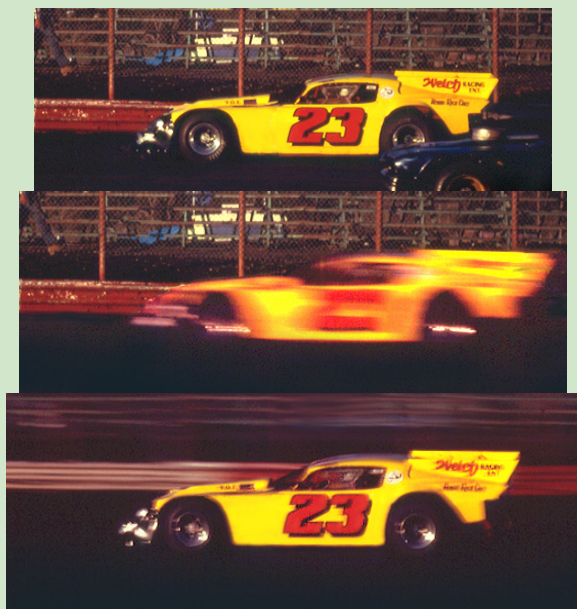
Oh, yes, the **other** thing you need to know about f-stops: That’s the cool thing... f-stops control how deep your **depth of field** is!



Choosing a Depth of Field

A shallow Depth of Field (at left) is what you get by using a small number f-stop. You’ll have more in focus at a larger number f-stop (above). **Think of: $f/2$ = two in focus, $f/8$ = eight in focus.**

Choosing a Shutterspeed



A fast shutterspeed (top) will freeze the action, but it makes for a static, “parked car” photo. A slow shutterspeed will allow the action to blur. Best of all, pan your camera with the 80 mph car to freeze the subject and give motion blur to the background (bottom).

Depth of field? That’s how deep the plane is that’s in focus. (See photos on the previous page.) There’s an area out there which your camera is focused on, say that tree 50 feet away. Now using a *deep* depth of field you’ll have many things in front of and behind the tree *also* in focus. Using a *shallow* depth of field, maybe just the tree will be in focus. Now here’s the cool, easy to remember part: **The larger the f-number the deeper your depth of field!** You can think of: **“At f/2 I have two things in focus; at f/8 I have eight things in focus.”**

That’s one of the most important exposure facts. Taking this a tiny step further, you can see that if you do want a very deep depth of field, (as I do) you’ll be using a small (large number) f-stop, (a tiny hole) so the camera (or you) will have to increase the light hitting the “film” by slowing down the shutterspeed.

Either you or your camera must **balance f-stop and shutterspeed** to find one of the possible

combinations that will allow the appropriate amount of light to reach the “film.”

What it comes down to is this: If you want to be sure lots of stuff is in focus, you’re forced to use a slow shutter speed (among the choices you might have).

Some cameras let you choose only the shutterspeed. What many people don’t realize is that by choosing your shutterspeed, you’re forcing the (automatic) camera to a certain f-stop. A slow shutterspeed will force a deep depth of field.

Some cameras let you choose only the f-stop... it doesn’t make any difference: you’ll force the shutterspeed to change when you change the f-stop! Way cool!

I **used to** point out to my students that a deep depth of field distracted from the main subject (say, in a portrait) which should be the only thing in focus. That’s when we took photos on film and didn’t have the control of them afterward that we do now using **Photoshop** or **Photoshop Elements**.

Nowadays, with auto-focus (“ought to focus”), **I try to get as much depth of field as I can** and blur the background in Photoshop later if I want to. (I cover this in my article on Photoshop basics.) ***I want to be sure everything I want is in focus when I take the photo.*** Sometimes you won’t realize your subject is out of focus until you enlarge it, so I go for a deep depth of field.

As I mentioned, to get this deep depth of field, you’ll often wind up with a relatively slow shutterspeed, which means using camera support.

I have a wonderful ten pound tripod I no longer have to use. Little digital cameras don’t make a shutter vibration when they take a photo, so all you need is a little bit of help like a \$20-\$30 tripod from WalMart. Get one that has a gizmo that attaches to the bottom of your camera full-time, allowing you quickly snap your camera onto and off the tripod. These little tripods (eye level when you’re standing and they’re fully extended) are light

enough to take hiking and compact enough to store in the car.

Back to exposure (and you thought we were done): Something I love about my Olympus C-5050z is that not only does it have a fully automatic “**Program**” mode for me to hand to a stranger, and a **full-manual** mode, it has a **shutter-priority** automatic mode (I choose the shutter speed and it chooses the f-stop) AND an **aperture priority** mode (where I choose the f-stop and it chooses shutter speed) AND it lets me **override** the exposure decision it wants to give me.

When I push my “preview” button after taking the photo to see how it turned out and I see that everything is exposed nicely except my subject(!), I get to tell the camera to allow more or less light to reach the “film” on my next try.

If I’m photographing a backlit subject, say someone walking on a roof with the bright sky behind them (even if the sun is behind me or even hidden behind the house), the camera’s going to try to compensate for all of that bright background by turning the rest of the photo (the subject) dark.

I’m often photographing a dark sculpture against our white house and have to override the exposure as is explained in the camera’s manual. (Cameras are all very different about their buttons although they do the same thing.) Thank heavens for that “preview” button!

OK, now the coolest thing about the Olympus I have: “My Modes.” There are eight of them! The owner of the camera gets to decide upon different sets of circumstances she* often finds herself in and set special modes for these circumstances.

For instance, if the camera’s in the mode I set as my #1 MyMode, the moment I turn the camera on (or go to that mode from another mode) it provides the highest resolution (Raw 5MP), goes to the maximum telephoto (which I’d use for a portrait) and a very slow shutter speed in shutter-priority, and turns off the flash. (Once in one of the MyModes I’m free to vary any of the settings, but that’s the starting point.)

In the #2 MyMode I’ve set up, the settings are similar, but use a slight compression. I don’t get quite the quality, but I get more photos on the memory chip(s) and they take less time to digest. (More about “digestion” on page two, the megapixel page.)

I’ve set up my #3 MyMode to be a higher compression and allow auto flash. That’s for when things are happening really fast and I might want a lot of photos to just record the event. They won’t be very enlargeable, but I won’t run out of “film.”**

I don’t need eight MyModes, really, but having several of your own “starting points” is far more convenient than having to decide flash or not, decide exposure mode, decide how much memory to allocate, etc. each time you turn on your camera. I just switch from one MyMode to another and if all else fails, I flip to Program which makes all of the decisions for me.

Recently I took photos of fireworks. I set MyMode #4 to be fully manual, f-8, two-seconds



shutter speed, manually focused on infinity. I used MyMode #2 most of the day, and flipped to MyMode #4 when I took the fireworks photos and they turned out fine.

One very minor complaint about my camera: I

* I use “she,” rather than “he” or “s/he” because it saves the trouble I run into when I have to use a possessive (“their”?), and besides, no one complains when I use “she” instead of “he.”

** I’ve invested in a couple of 256K chips for my camera, so running out of “film” is no longer a problem. Naturally the higher megapixel camera you get, the faster it’ll use up the available memory.

have to remove that cool tripod gadget from the bottom of my camera every time I change batteries. That may be true of all cameras, too.

My next camera may be Olympus' C-8080 Ultra-zoom. Not only does it have 8 megapixels, it also takes far less time to set its autofocus and autoexposure (there's quite a lag after pressing the shutter release on many digitals, making it difficult to "capture the moment."), and has a brighter viewfinder.

When I went shopping for a digital camera I made a list of "must haves" for my camera. It turned out all of the cameras I considered had these features, but I'll list them for you anyway:

- Auto exposure lock
- Auto focus lock
- "Hot shoe" for external flash
- The ability to opt for no flash
- Tripod socket
- Powered by batteries I can buy anywhere (I use rechargeables when I can)
- Either a self-timer or ability to work with a cable release (my camera came with a remote control!)
- A "macro" focusing mode for ultra-close-up photography
- The ability to view how the photo I just took turned out

Accessories:

To solve the problem of seeing my LCD screen in bright sunlight, I used to keep a black t-shirt handy to use as an old fashioned photographer's drape, but recently I purchased a nifty tiny folding hood for my screen (\$20) that velcro's on when I need it to shade it in bright light.

My camera's batteries seem to die without notice. I love having a camera powered by AA batteries! I use rechargeable batteries and I carry a spare set in a little zippered pouch which will either hang on my

camera strap or snap to my belt. It also holds lens cleaning tissue and that folding hood I mentioned.

Many cameras have an integral lens cover, but mine has the old fashioned snap-on kind, which I find inconvenient, so I've replaced it with a screw-on clear filter. "UV," "Skylight," there are several names for it, but it's just a clear filter.

Camera Tips:

A lofty point of view

If I'd like a higher vantage point, such as when all



I can see through the camera is the backs of a bunch of heads, I put my camera on my tripod with its legs extended but together, set my exposure and put the camera on self-timer. I then hold the tripod up in the

air by its feet, holding it as steadily as possible. After the shutter has gone off, I check the results using the "preview" button.

Reflected flash

If you're using flash, watch out for reflective surfaces. Of course, you don't point your camera at a mirror (or have your subject pose in front of a mirrored wall), but window glass behind sheer curtains or even polished furniture or paneling will cause a distracting light flare, too. Besides avoiding photographing the distracting reflection of your flash, *photographing things at a slight angle often provides a more interesting composition.*

My favorite portrait lighting

In the training and experience I've had as a family portrait photographer, I came to prefer a huge, soft, directional light for portraits, with just a little bit of "lack of light" from one side.

A cloudy day in the snow, for instance, gives me the best huge, soft light source I can

imagine, but it's so even that my subject will have no modeling (3D look of their facial features), so I position them next to a dark building or tree (even if it's out of the picture) to subtract some of that beautiful, soft light.



We don't often have cloudy, snowy days, but I've found how to get that soft, somewhat directional light nearly every day: I get all ready to take the photo near sundown, and take the photo just after the sun has gone over the horizon. I find a location where the sun isn't "setting" over a tall building or hillside, but near the horizon. This is most easily found at the seashore, up on a high hill, next to a lake (it doesn't have to be in the photo), or a large parking lot (hopefully it's out of the photo). I don't like using a golf course as my "open space," because it causes my light to have a green cast.

The photo on page two was taken just inside a huge warehouse door with a large expanse of sky outside. The large doorway provided my large, soft light source, and the shaded interior of the warehouse subtracted light, giving modeling to her features.

A sneaky candid technique

This isn't fair to do to unsuspecting adults, but I'll do it with camera shy kids or animals: I'll point my camera at my subject (pretending to be interested in something behind them), and set my f-stop and

shutterspeed. Then I take advantage of my camera's auto focus: I'll rest the camera on a table or even let it hang at my side on its strap and squeeze the shutter release at an appropriate moment.

My camera makes an artificial shutter click sound to let me know it has taken the picture(!). Reading my camera's manual, I see that I can turn that sound off to be stealthy if I wish.

The best photo accessory

It used to be said that the best photo accessory you could buy was a large waste basket (for your bad photos). Another thing we used to say was that film was the cheapest thing in your camera bag. These days we don't have the expense of film to hold us back, so take many, many pictures, discarding the most obvious rejects as you go.

There's an excitement about taking photos. Once you've captured an image, though, calm down and look at it on your screen. Picture it with a frame around it. Picture it on a magazine page. Could you improve on the photo? How could you do it better? Would it look better as a vertical? Take it a couple of more ways you didn't think of at first.

Photoshop

After creating images with my digital camera, I improve them in Photoshop. Most photos can stand at least some cropping and exposure adjustment. I've written a brief article like this one about my favorite Photoshop techniques which you can download from:

<http://brucephilpott.com/photos>

Bruce Philpott is an award-winning professional Portrait and Fine Art photographer. He was trained at West Coast School of Professional Photography at Brooks Institute in Santa Barbara, CA.

Philpott taught photography for thirteen years in Petaluma, Rohnert Park, Novato and Napa. More recently he has specialized in commercial photography and package design.

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