

DIGITAL IMAGING SIG NOTES –Gary S. Resnick

DIGITAL IMAGING IS EXPLODING

Everyone seems to have or want one...

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Biggest innovation in photography in over 100 years

COST FACTORS: Digital cameras are getting cheaper and better.

Film camera – costs to buy film, cost to develop, cost to make reprints, and another trip to developer

Digital camera – after initial purchase, pictures are free. Cost for photo paper if making prints

WAITING TIMES:

Film camera – must wait until film is developed. If you wish copies another trip to the developer, another waiting period

Digital camera – instant gratification, shoot a whole bunch of photos, keep what you like, discard the rest, retake the ones that didn't come out well. Copies are as simple as a few clicks of the mouse on your printer.

CONVENIENCE: No waiting to send vacation or special event pictures to your friends or family. Not limited to rolls of film with 20 or 36 exposures. With a large size memory card (more about this later) you can take hundreds of pictures and e-mail them or print them immediately.

SOME BASICS

PIXELS: At the heart of every digital camera is an electronic sensor that records the image. It is composed of millions of picture elements called pixels. These do the actual recording of the image in a series of microscopic electronic dots. The greater the number of pixels, the sharper the image. 1,000,000 pixels = 1 megapixel. The highest quality film camera may take pictures with the equivalent of 12,000,000 pixels. The human eye has the equivalent of 20 megapixels.

Digital camera capability is measured in megapixels. If you see a specification for a camera resolution that is 1600 x 1200, multiply these two numbers together and you get 1,920,000 pixels. This is a 2 megapixel camera. The larger greater the number of pixels, the greater the clarity of the image and the larger a print that can be made from the image. If you are going to just e-mail pictures or view them on your computer screen or TV set, you could not tell if the photo was taken with a 2 megapixel or a 5 megapixel camera. It would only become apparent if you were trying to enlarge and print the picture.

ZOOM LENSES: 2 TYPES – Optical and Digital

Optical zoom lenses actually magnify the image. You can shoot telephoto or wide angle photos with no loss of quality. A 4X optical zoom lens has the zoom range from about 34mm – 140mm.

Digital zoom is an electronic trick that will magnify the center of the field of view, but decrease the quality of the image. It reduces the total number of pixels used to record the image. If you are looking for a camera, choose one with an optical zoom lens in addition to the advertised digital zoom.

MEMORY CARDS: These record the images. Different manufacturers use different types and they are not interchangeable. Most digital cameras are sold with 16 or 32 mb memory cards. A 256 mb card (about \$40 or so) allows you to take several hundred pictures. Can be reused. Transfer your pictures to your computer, delete the images from the memory card, start all over again.

VIEW FINDERS: 2 Types – LCD and optical

LCD – liquid crystal display –acts like a miniature computer screen. Allows you to see image and to see what you have just recorded. Uses a lot of battery power and may be difficult to see in bright sunlight.

Optical – just like that on the camera you are now using. Not a through the lens system and may not show the true field of view. May end up cutting off heads, arms or legs.

CHOOSING A CAMERA

Three major categories we might choose: entry level, mid-range and prosumer. (term comes from combining professional and consumer). The prosumer cameras of 2 -3 years ago are now essentially in the mid-range both price wise and feature wise.

ENTRY LEVEL: This might be the camera of choice for folks who look at photography as a way of recording memorable events. These cameras have relatively few “bells and whistles”. May have 2 – 3 megapixels , small LCD display, weak flash unit, small view finder, fairly small memory card. May not have an optical zoom. Cost \$150-\$200. Some on sale for about \$100. Can make prints up to 3”x5” or 4”x6”. It may even take very short, low quality movies.

MID RANGE: Have a better lens system, 4-5 megapixels, a zoom 3X-4X optical zoom lens, high flash output, larger LCD viewfinder, controls that will allow the user to change shutter speed, aperture, longer movie sequences, and several other features and controls that will be covered later. Costs \$300-\$400. Capable of making 5"X7" and even 8"x10" enlargements.

PROSUMER: Up to 5-6 megapixels (some up to 8 megapixels), high quality zoom lens usually 4X – 6X, but may be greater, an optical viewfinder coupled to LCD for ease of focusing, manual control over myriads of features. (the instruction book that came with my camera is 205 pages long – all in English) Do I know how all the capabilities of my camera – no way) Can take longer movies, enlarge photo up to 11"x14". Costs now in the \$400-\$600 range.

PROFESSIONAL CAMERAS: Costs from about \$1,000 – over \$8,000. Not discussed here. If you are in the market, go to a high quality camera store like Precision Photo in Austin. These are not available at Circuit City or Best Buy

SPECIALITY CAMERAS: cell phone cameras, Dick Tracy wrist watch cameras, key ring cameras, all sort of possibilities. Not very useful except for sending pictures from 1 cell phone to another. Some newer cell phones have higher quality digital cameras, but most are low quality (less than 1 megapixel).

BEFORE YOU BUY - Determine your needs in advance. Don't become a casualty to the megapixel war. More is not always better. If your major interest is taking pictures of grandkids, e-mailing , and/or making prints 4X6" or 5x7" prints a 3 megapixel camera will work fine. For an 8x10" print, you might opt for a 4 megapixel camera. A 3 megapixel camera that takes pictures well in all light conditions, may be a better a choice than a 5 megapixel camera that is difficult to focus in low light conditions.

If you take close-ups or pictures of flowers, you might wish to look for a camera that has a macro focus mode. If you do a lot of hiking, battery life may be a more important consideration than the number of pixels.

You need to determine how you plan to use your camera before you make a decision. Just because a camera has all the latest bells and whistles doesn't mean it is the best for you.

Go to stores like Circuit City, Best Buy, Office Depot, etc. and ask questions, handle the cameras, make comparisons between features. I strongly recommend that you do some basic homework at one or more of the following web sites to see actual reviews of cameras and read expert opinions:

www.dpreview.com

www.steves-digicams.com

www.imaging-resources.com

www.megapixel.net.

BATTERIES – If your camera uses disposable AA batteries, they may last less than _ hour. Thus rechargeable batteries are a much better choice. Get a good battery charger and carry a couple of sets of rechargeable batteries with you when you are planning to take lots of pictures. (Keep them charged) Nickel hydride batteries are much better than nickel cadmium batteries. Some cameras take special lithium ion batteries. They are much more expensive, but last longer.

OTHER CONSIDERATIONS -Whether the following are important to you might be factors to consider prior to choosing a particular digital camera. The greater number of features you might find necessary, the higher the cost of the camera.

SHUTTER LAG/BURST RATE – How great the time delay is between when you snap the shutter and the image is being “written” to the image file. Smaller delays are better so there is less lag times between pictures. Good cameras should have a burst rate of 1 – 2 images per second.

COMPRESSION/RESOLUTION - This is a measure of how accurately the image is recorded with the least loss of color range and sharpness. Cameras can normally store the image as JPEG (Joint Photo Experts Group) or TIFF (Tagged Image File Format). TIFF files are much larger. JPEG better for sending e-mail photos. Compression might be listed as superfine, fine and normal. Resolution as large, medium and small.

AUTO EXPOSURE BRACKETING – Allows the user to take 3 different exposures of the same shot to insure the picture will be properly exposed.

MOVIE MODE – The ability of the camera to take a brief movie sequence. Quality can range from poor to very good – time of movie can be from 15 seconds to as long as several minutes depending upon the camera model.

STITCH MODE – This feature enables you to shoot multiple images and then put them together later into a panoramic photograph.

LENS QUALITY – Expect a lens with an f stop of f/2.8 in a good quality camera. Expect about f/3.5 in a less expensive model. I chose a model with an f/2.0 lens so I can shoot in lower light without a flash.

ADJUSTABLE SHUTTER SPEED - Should have settings to 1/1000 or 1/2000 of a second for action photos. There should also be a range of slow shutter speeds for longer possible exposures. At least a 1 second delay. Can be as long as an 8 - 15 second delay for exposures taken on a tripod at night.

ADJUSTABLE ISO SETTINGS – Similar to choosing film of different speeds for different conditions. (might range from ISO equivalent of 50 – 400). ISO of 150 is fairly normal.

ADJUSTABLE APERTURE SETTINGS – Enables you to select landscape, portrait or macro settings for different depth of field choices.

ADJUSTABLE PHOTO EFFECTS – Enables you to select degree of sharpness or emphasize color saturation and contrast.

WHITE BALANCE CONTROL – Controls how the camera “sees” light from different light sources. Might be adjustable for daylight, cloudy days, tungsten or fluorescent light sources.

SPOT METERING – Enables you to select the “spot” on your image that you wish to have the light meter read.

CAMERA SIZE – I opted to buy a larger camera. I have big hands. My wife has a much smaller camera that she keeps in her purse with some extra batteries. Guess who always has a camera ready when the opportunity provides and whose is sitting at home. There is a great selection of compact cameras out there. Find the one you like and enjoy the advantages of digital photography.

WHERE TO BUY A CAMERA – That is the next question. After all your research you should decide on a brand and model. You can then price compare at the following web sites:

www.pricegrabber.com (over 60 dealers listed)

www.CNetshopper.com (lists over 50 dealers)

www.yahoo.com (lists about 20 dealers)

If you decide to buy over the net, be very cautious. Prices may look to be too good to be true. Many of the “deals” offered “grey market” merchandise. They are bought cheaply overseas and do not offer a U.S.A. warranty. The manufacturer will not warranty the product. Also be careful of deals on E-Bay. You have to know what you are doing.

We bought from one dealership in N.Y. – B&H Photo. They were not the cheapest, but came highly recommended:

www.bhphotovideo.com. We were very satisfied with their service.

CONFUSED????

Go to the computer club website: www.sctxcompclub.org

Look at the Digital Camera SIG portion of the website, check out the camera inventory section. If there is a club member using the type of camera you have researched, call the person, ask questions. Also, look at the section called on-line resources. Do some further research. Go buy the camera you have researched, read the manual, set your new camera on the automatic mode and let the computer inside the camera do the work for you. Take lots of pictures. Take the Digital Camera 101 class. **ENJOY!!!**