

THROUGH MY EYES

My thoughts on the subject of nature photography

Where would you start if someone asked you to teach what you know about photography? The subject is as simple as “point and shoot” and as complex as f-stops, resolutions, depth-of-field and “fast glass”, just to name a few. Interesting concept if you get lost in it all, but my real answer is that photography begins through your eyes.

I was fortunate a few years back to be singled out to travel the country and deliver presentations on a subject that many thought to be complex. My talent, as I was told, was that I had the ability to take a very complex subject and make it simple. If this is true, then my thoughts on the subject of photography, and particularly nature photography, should be simple to tell and simple to understand. Let’s see if that might be true.

The Beginning . . .

I think it stands to reason that the beginning is a description of the tools of the trade, with a little common sense thrown in. I’m going to throw in a lot of life’s little experiences throughout to help illustrate my points.

I had gained a reputation with my local film processors as a good photographer and we often shared prints with others, just to hear the reaction. One day I was shown a most beautiful photograph of a sunset in some remote vacation island. It was not only beautiful; it was picture perfect, worthy of National Geographic. A little old lady that used a Kodak Instamatic took it. Not a Nikon or Canon, but just a simple point and shoot. She saw what she liked, she pointed and she shot. Her reward was the capture of a memory forever. Your reward is understanding up front that it is not the means, but the results.

The Camera . . .

The camera is the means by which light is captured on photosensitive film. Some cameras are so simple that the only control the user has is to point the camera at the subject and push the button when ready. Other cameras take a master’s degree to figure out. Everyone should RTM (read the manual) to understand how the camera works, but all cameras that are used by professionals and serious amateurs are going to have a few “essentials” to consider when pushing that button.

The camera body – The body houses the film (or the sensor in the case of digital) and the brains. The more brains, the more control. The more control, the greater the photographer’s chances are increased to take the photo of a lifetime by design and not by chance. However, despite the complexity, there is a bailout button called automatic (boo, hiss). If you are really into creative photography, and understand the principles of what you’re doing, why would you want to set your expensive camera to automatic? That would be like eating a peanut butter and jelly sandwich, while downing it with Dom Perignon. While I admit there are times that automatic helps, it should be the exception in your photography, rather than the rule.

The Settings – The settings are the primary controls for what you want to do with the photograph you are taking. They are usually (but not always) mounted on the right top of the camera body and consist of **A** for aperture, **S** for shutter, **M** for manual and (boo, hiss) **Auto** for automatic. It is a relative statement to say that to make a priority setting of one control, there is a relative setting of a corresponding control. For example, if you decide that you want to set a shallow depth of field

(a subject to come later), the camera will automatically set the shutter speed (also later) to complement the aperture chosen. The exception to this is when you think you are so good at what you do you choose the manual setting. In this mode, you set the aperture and the speed of your own choice, without benefit of the compensations made automatically in the other settings.

Aperture – this is another name for the f-stop. It actually means the width of the opening of the lens when the photograph is taken. F-stops are numerical ratings that can range from a low of f1.4 to a high of f45. The lower the number, the wider the opening and the greater the amount of light to hit the film. The physics of light, lens and film combine to offer something called depth-of-field. Depth-of-field is that point where everything in the photograph comes into focus to the point where everything in the photograph goes out of focus. The lower the number, the smaller the depth-of-field will be and, conversely, the higher the number, the greater the depth-of-field. I'll talk more about this later.

Shutter – This is the speed at which you wish to take the picture. Photographs of fast motion, such as birds in flight, animals running, sporting events, etc., will take a much faster shutter speed than say, a family portrait (not my favorite subject). Shutter speed also goes in the other direction and would generally be used in low light conditions, or in a situation where you would want to slow the motion down to capture a certain effect. A good example is the photograph of a waterfall or mountain stream that is intentionally set for a slow shutter speed to give the soft, almost velvet appearance of the water in movement.

Manual – You really have to know what you're doing (or be tremendously lucky) to be good at the manual setting. Use of the manual setting generally comes after years of

experience and the knowledge that comes with it. Some photographers use the manual setting to achieve a certain effect in the shot, perhaps decreasing or increasing the light to highlight something and changing the shutter speed to blur some of the action, thus highlighting the motion of the event. Still other photographers make the choice of using an independent metering system that they have greater confidence in, as opposed to the exposure meter in the camera. I would suggest you at least try the manual setting. Luck does play a big role in the art of photography.

Automatic – the automatic mode makes all the settings for you – aperture, exposure and speed. There are times when this is good and can be used to your advantage. This is the rare time when something is happening before you, you want to shoot it, and you don't have the time to make decisions on aperture and speed – roller skating in a buffalo herd would be a good time to use the automatic setting. My objection to the use of automatic is more economical than creative. By way of illustrating – when I was in Viet Nam, the PX was great at selling expensive cameras, such as Nikon, Canon, Pentax, etc., at ridiculously low prices. Everybody bought one. Trouble is, no one could figure out how to use it. They were status symbols ('yeah, I shoot exclusively with Nikon – take bad pictures, but that Nikon sure is a Cadillac'). The automatic setting on a Nikon or Canon brings forth a very expensive point and shoot. Why bother? Remember the little old lady and the sunset? If you're independently wealthy, have money to burn and are so caught up in appearances, go for it. In fact, I know a very unethical mail order firm that will fix you right up.

Really Stupid Proof – there are some cameras that have (and I own one) icons, or picture symbols that you choose to take a certain kind of photograph. There is a face for

portraits, a mountain for landscapes, a flower for close-ups, a moon for night scenes, a runner for fast action and probably a few more that I haven't seen yet. You make one of these settings based on the picture you want to take and the camera automatically makes pre-settings to maximize the shot. For example – you're in the North "Jawja" mountains and want to take the shot. The landscape (mountain icon) setting will automatically choose a wide depth of field to ensure everything from the barrel of the lens out to infinity is in focus. Basically this is stupid proofing your camera and I find nothing wrong with that if you get the desired result. In fact, right now is a good time to introduce my number one rule in photography: THERE ARE NO RULES!

Other Features – There are other features of the camera (and I am generally making reference to a 35mm camera at the upper end of the market) that you need to be aware of as it is the synergy of all of these controls that will give you the ability to bring home (pardon me bass fishermen) that "wall hanger."

Exposure meter – if you ever lay awake at night wondering how the camera knows the exact setting to make that perfect photograph, go back to sleep. Almost all cameras (even the point and shoots) have an internal exposure meter that measures the average of all light that would enter the camera at the moment of button pushing. The more quality cameras have a rather elaborate meter that can be set to measure (1) the average of all light, (2) a small area (center weighted) and (3) an even smaller area (spot meter). You would use the average setting when the subject of the photograph is everything you see (landscape). You would use center weighted when you need to have an average of the total subject, but there is a specific point of focus in the shot that

demands the attention more than anything else (portrait). You would use the spot meter when the only thing you care about is the subject itself and all else in the photograph becomes unimportant (the eye of the tiger). What most people fail to understand about exposure is that all exposure meters are set to expose to a gray scale. Years ago, Great Yellow Father (Kodak) decided the standard of all averaged light is 18% (18% of what I am not sure) and you can buy an 18% gray card from Kodak iff'n you want to. But why want to? Here's the catch – the meter sees pure white (snow, beach sand, etc.) as 18% gray so if you're not careful the photograph of the sunrise on newly fallen snow in Innsbruck Austria (trip of a lifetime) could come out looking like mush. More advanced meters will compensate for this but my caution is that you really want to learn more about exposure. When all else fails, bracket (taking 3 – 5 shots of the same subject, each with a little more or a little less light). That gets expensive with film, but the success factor is increased considerably. One other little trick I learned in my early photographic childhood – meter off the palm of your hand. This approximates the 18% gray card reading. Hold the camera with the right, point it to your outstretched left hand (or vice versa if you're a southpaw) and take the meter reading. No you do not have to focus on your hand – in fact it would be better if you didn't. However, you do want the light shining over your shoulder to do this – not directly into your face (and blocked by the shade of your hand – duh!).

The Battery – I got up early one morning, walked down to the beach before sun up, set up and waited. At the magic moment of sunrise, I pushed the button and took a photograph – of nothing, because the battery died right then and there. Never, I repeat, ever, get caught without a spare battery for

your camera because Shaw's Law # 39 states that all batteries will die at the moment the National Geographic shot of a lifetime occurs. In fact, this is in the small print of all camera battery guarantees.

The Tripod – There is a reason that there is a small hole on the bottom of the camera. It is not the umbilical cord where the camera was born. It is the receptacle for a tripod. Regardless of how good you think you are, you cannot take a sharply focused photograph of many subjects, particularly with longer (and heavier) lens and slower shutter speeds with any degree of success without a tripod. I cannot tell you how many of my photographs, taken without the tripod, are “almost” in focus. Buy the best you can afford, but be sure you have one and use it as much as you possibly can. An add-on that I like is a plunger, a cable release that screws into the shutter button giving you an extension of the button. More importantly, it takes the shake out by mechanically releasing the shutter, thereby eliminating any movement that would cause the focus to be less than ideal. If your camera doesn't accept a plunger, set the camera on timer (delayed shutter release) and let-er-rip. Anything you can do to eliminate movement at the moment of button pushing, do so.

Bringing Up the Rear – There remains a few odds and ends that complete the camera body. From top to bottom: (1) some cameras have a built-in flash that works quite nicely about 90% of the time. The other 10%, it gives everyone the dreaded “redeye” effect, which is why they make flash attachments and Photoshop. The more advanced photographers own a flash attachment, and some can be quite elaborate. What you need to know is that the little metal plate on the top of the camera is the point to attach the flash. Known as the “hot shoe”, you just slide the flash into the grooves. That

gives metal-to-metal contact so the flash is synchronized with the shutter.

(2) Some cameras have a depth-of-field preview button (pop-quiz: What is depth-of-field) that allows you to preview what is and is not in focus prior to taking the photo. Since almost all 35mm cameras are “through the lens”, meaning what you see is what you get, the image will darken down according to the aperture setting (remember **A?**).

(3) A timer is a time delay device that allows it to automatically trip the shutter release from 8 – 10 seconds after it is tripped. This is good if you want to be in the photograph, but its more professional use is to eliminate as much camera shake as possible.

(4) What good would a camera be without a rewind button? The more current cameras allow for automatic rewind at the end of the film role. Others force you to press a small button (or two) to signal the camera to rewind the film. Some are so sophisticated that you can start and stop rewind to take advantage of double exposure techniques. Overall, the main function is to get all of the film back into that little light tight canister. To do otherwise would expose your film to light under conditions that would make all your prints look like a black cat on a moonless night.

(5) A few other gimmicks are diopters that change the strength of the view screen to accommodate aging, tired eyes like mine. Be careful with this to make sure what you see is what you get because you might see a focused picture through the lens, when it is actually persuaded to be in focus through your eyes, but out of focus in reality. I think the worst photographic print is the one that is just ever so slightly out of focus.

(6) The last button is probably a small button that allows you to attach and unattach your lens to the camera body. Since the lens has a habit of being as expensive, if not more expensive than the body, this is a good button to have

around. You wouldn't want that 80 – 400mm vibration reduction, \$1,500 zoom lens just flopping around loosely at the end of the camera body. That little sucker plays an important role so become familiar with it.

The Lens . . . since we are talking about the lens, now is as good a time as any to get further into the subject. A lens is a device consisting of several pieces of finely ground glass, housed in a metal container with many moveable parts that let you finely focus the image as you take the picture. A few lines back I discussed the synergy of camera, lens and film but I think the heart of any system rests with the lens because the photograph is only going to be as good as the lens can make it. For this reason, lens tend to be single most expensive part of the camera system and while you can get good lens for under \$500, most professional quality lens are much more expensive, many costing several thousand dollars. Now make no mistake – you can still take a bad photograph with a good lens, but it is hard to take a great photograph with a bad (cheap) lens. That said, here is what I think you need to know about lens.

Those Silly Millimeters – lens are defined in millimeters, or the focal length from the very front of the ground glass to the film plane (which is that flat piece of metal inside your camera that lets the film slide across as each exposure is made). If you're into the physics of light, you can gag on theory, testing, resolution, etc., but I don't think this is what the average photographer really needs or wants to know. What I want to know, as an average photographer is what the lens does and how I can best put it to use, so my theory goes something like this. Lens range in size from something around the 17mm range all the way up to 600mm (or more) and the reason is the length of the lens determines how much area in front of the camera is covered. Think of this like looking through a

keyhole. The farther back you are, the less you will see through the keyhole, but if you move your eye right up to the keyhole, you can see a fairly good bit on the other side. The people on the other side might not be too happy about you looking, but you can sure see a lot. The lens is essentially the same – a shorter lens gives you greater viewing area, while a longer lens gives you less. But, with magnification added, you get things far away brought up close into the photograph. Additionally, we sort of divide lens length into specialties: a 17mm to about 35mm is known as wide angle. A 50mm lens is called the normal lens, but is probably the least usable lens in the bag. Around 70 or 80mm, you begin to get into the lower region of the telescoping “zoom” lens – back to that in a minute. The portrait lens weighs in at 105mm. I don't know why but I'm told it has to do with the characteristics of the glass. This focal length is best suited to capture the face without picking up on the imperfections – something that I, and millions others, appreciate. When we get to a 200mm lens, we are approaching the first episode of a true telephoto lens. From that point on, the lens can really get longer and more expensive. A ten thousand dollar lens is often in the bag of the professional.

Pop Quiz – I've given you a hint. If a 105mm lens is used for portraits, what are the rest best designated for? Think

Lens Speed – Now we start looking into the other part of the lens and that is lens speed, known by the pros as “fast glass.” The aperture of the lens, in conjunction with the aperture setting on the camera, dictates how much light is let in to the film plane. The lower the number (f 1.2 is the fastest I've ever seen), the more light is allowed. To maintain quality, additional ground glass lens are added, known as elements, internal to the lens casing. Of course, this drives the cost up, but also the level of quality. Many good lenses can be

purchased for a few hundred dollars that are not as fast, but can take just as good a picture. You just lose a bit of functionality that is probably only important to a pro.

Zoom, Zoom – The zoom lens, in my opinion, is probably the most useful lens in the bag. The purists will argue that this is a cheater lens – feeling that the better glass is a lens of one dimension. Maybe so, but I can't afford them, so I use telephoto, or zoom lens. They come in variable focal lengths and match the need for all occasions. For example, you can get a zoom lens that is rated at 17mm – 35mm, or you can get a zoom lens rated from 70mm – 300mm. And just for good measure, some will be rated as macro lens – but more on that later. The zoom lens gives you an added bit of control to generally compose a far away subject that you decide will give you the best photograph. It will also allow you to take a photograph of, say, a bear in the woods at a safe distance. So if you wanted to photograph a bear, you would use your longest telephoto lens and frame the bear by zooming in and out until you have the composition you want. Or, you could use your 50mm lens to photograph that bear and take several nice close-ups that your next-of-kin can publish, since we all know that bears do not like the taste of cameras as well as they do the taste of the idiot behind the camera.

Macros (or is it Micro?) – For my art major mind, macro versus micro is big versus little. A macro lens takes a very small object and brings it in close, such that you see the object as it really is. Some photographers refer to this as seeing something in a one to one ratio. What it means to you is that you can get some really neat photographs of little stuff and make it look like it is much bigger than it really is, sort of like a microscope does with the cell of a leaf. The macro lens can be unique, i.e., all it does is magnify, or it can be versatile, as one function of a lens that has several

functions. I have both, but I use the versatile lens at least ten times more than I do the unique lens because the fixed macro is 105mm and I have to get a lot closer to my subject than I would with my 70mm – 300mm macro zoom lens. In my youth, I could get down on my stomach and photograph the smallest mushrooms. In my old age, I let the lens do the walking, while I stand and take the picture. I can still get the same results. The longer focal length lens just allows me to place some distance between the camera and the subject. It really comes in handy when you want an up close and personal photograph of, say, a rattlesnake.

The Basic Lens Kit – You can go hog wild with lens. This will become the second most expensive part of your system (betcha can't guess what is the most expensive). If you can afford it, buy OME (original manufacturer equipment), i.e., Nikon lens for a Nikon camera. However, many of the third party lenses, such as Sigma and Tokina, offer quality lens at a reasonable price, at least as it compares to the OME lens. If I had it to do over again, I would have one wide-angle lens, one medium telephoto with macro and one long telephoto lens to fill my bag. Anything more is overkill, at least in my opinion. Avoid the gimmick lens at all costs as they are poor substitutes for whatever they are advertised to do. For example, you won't find a bargain in a 600mm lens for \$19.95 (as seen on TV). One thing you may want to consider is the new image stabilizer (Canon) and Vibration Reduction (Nikon) lens that help you hold a sharp focus at greater focal lengths. The general rule of thumb is that you would never use a speed setting that is lower than the focal length of the lens. For example, if you are shooting with a 300mm lens, conventional wisdom says you would not hand hold a shot that would be slower than 1/250th or 1/500th of a second. The IS and VR lens allow you to

hand hold the lens to a much slower speed. With my Nikon 80-400mm VR zoom lens, I can hold the speeds down to 1/30th of a second without much difficulty. The only drawback to this lens is they ain't cheap. Plan on spending well over \$1,000 for one of them.

Filter This – Filters are supplemental items that do many special things to a photograph. They screw into the front of the lens and are sized based on the size of the front of the lens, measured in millimeters. Probably the most important filter that you definitely want to have in the bag is the UV (ultraviolet) filter. Its purpose is to diffuse the ultraviolet light in the atmosphere, particularly the haze (it's also called a haze filter) seen in the mountains and at the ocean. While it doesn't eliminate the haze, it does help a bit. But, the greater use for this filter is to protect the front element (glass) of the lens. If the glass gets scratched, replacing a filter is a lot cheaper than replacing a lens. This filter should almost be a permanent part of every lens, unless you are using a different filter, say, a polarizing filter.

The polarizing filter cuts glare from the sun. It is usually circular, with one fixed lens and one lens that can be moved in a circle. The movement, when held at right angles to the sun, will cut the glare and definitely enhance the quality of the photograph, particularly in nature photography.

Now I'm going to stop talking about filters because these are the only two that I would recommend to anyone except the most advanced and serious photographer. And, if you are an advanced and serious photographer, you probably already know more than I do, and have a gazillion filters that do everything from making 3D images to making X-Ray photos of ladies walking around in thin summer dresses. I personally don't think you need much more than the UV and polarizing filter.

I Got My Camera, My Lens, My Tripod And My Accessories – What Next?

The next item is now the most expensive part of your camera system – the film (unless you are using digital which I will discuss later). Film will get you coming and going. In the industry, a system like this is referred to as “the blades,” as in razor and blades. You buy the razor once, but you buy the blades forever. It is the same with camera and film. The cost can get quite high and if you are into photography seriously, you better have deep pockets because (1) the cost of film - \$5.00; (2) the cost of processing film - \$8.00, (3) the cost of having a print made - \$11.00 - \$25.00, or more and (4) the cost of seeing your print framed, hanging and admired – priceless!

Again we stick with 35mm. The film will come in two sizes, 24 and 36 exposures. I like the 36 exposure roll because I don't have to stop and change film as often. Your next decision is film speed, or ISO (International Standards Organization). Film comes rated as 100, 200 and 400 ISO. The higher the speed, the faster the film, which means you can photograph a subject in dim light with much greater chance of success using 400 ISO than 100 ISO. However, the drawback is grain (although newer technologies are reducing this somewhat). Grain gives the print a less than detailed image. In some cases, this can be very attractive and in others, you just want to toss it.

Another gimmick that photographers use, and processors hate, is called pushing. To push your film, you set the film speed of your camera different than the rated speed of the film. For example, you are in dim light and need a faster speed of film, but all you have is ISO 100. Change the film speed setting in your camera to ISO 200 or 400 and

shoot away. You cannot mix and match this however. The entire roll of film must be shot at the same speed, regardless of what you set it to. The other drawback is that many film processors really hate it when you push film to a speed other than its published rating. I don't know why because all they have to do is run it with all the rest of the film being processed at that speed. In any event, ask before you push and tell them that you have pushed it to a speed other than its official rating. Your other big decision is, print or slides. Personally I like print film because it lends itself to what I want to do – make big prints. You can do the same with slides, and many professionals will only deal in slide, or transparency film. This is because slide film will reproduce for print (magazines) easier than print film. Again, your choice depends on what you want to do with your finished product – frame it and hang it, or wait until you have a captive audience to show off your recent trip to Guacamole. As for brands – this is again a personal preference. Try them all and stick with what you like – not what somebody else uses. If we followed the leader, the only film we could buy today would be Fuji Velvia. It's a super film, but I find Kodak Royal Gold to be just as good and we need to be buying American.

Your Friendly Neighborhood Drug Store – ain't what it used to be. Millions of photographs are being processed by Eckerd's, CVS, Wal-Mart, and any other one-stop-shop mart on almost every street corner. Most of these places hire kids off the street, teach them photo processing by the numbers and then turn them loose on the unsuspecting public. But, there are those that are doing the work because they like what they are doing and are generally

good at it. This is the secret. Find that kid! Teach him, or her, what your standards are, and use only that kid to do your work. If you strike up a relationship, you would be amazed at the quality that a little TLC and extra time will give you. I make no joke about it. I train my processors and use them exclusively. If they move to another store, I will follow them. If they quit, I start training another that I think will give me the quality I expect. I once had a young lady that I thought was quite good. On one batch of photographs that I had enlarged, they looked like she drug them through the Hoover vacuum cleaner. When I asked her to do them over, she very rudely stated that they were not equipped to be a professional lab. I pointed to the sign that said 8 X 10 prints - \$3.95. It didn't say bad 8 X 10 prints, or dusty 8 X 10 prints. If you're going to offer the service, then give the customer what they pay for. I wasn't expecting a gallery quality print, but I was expecting some quality control that would give me a decent print. Needless to say, they were the last set of prints she did for me (perfectly, the second time around). Other processors, and probably more appropriate for what we want to do, are the mail order labs, such as Dale. Check these out in the back of the photo magazines and pick one that fits your style and your budget. Then stick with them.

Drum Roll Please – to this point, I have focused (pun intended) on the basics of photography. Now I think its time to begin the thought process that drives us to what we want to do and stimulates that creative button that is buried within the reality of all of us. Close your eyes now and think of the time you took your best photograph.

“The eye is the only true judge of art” – Rod McKuen

If I asked you to tell me if I wrote this tutorial in Word or WordPerfect, could you? Would it even make a difference? I think people get so caught up in the “getting there” that they forget why they went there in the first place. My intention of this rhetoric is to now focus your attention away from the means and to the end, which is what photography should be all about.

What makes a photograph good? A good photograph is one that appeals to someone, anyone. While I am not a fan of baby pictures, they do appeal to someone and are, by my definition, a good photograph. They might be poorly composed, poorly lit, or the baby just might be ugly but the fact remains, the photograph is appealing to someone. It is sort of like my Daddy once told me – there is no such thing as an ugly woman. All women are beautiful – some are just more beautiful than others. Same with photographs. The thing we have to sort out is where does your talent lie? Luck or skill? Remember the photograph described earlier, made by the little old lady? Just a hunch, but I would guess her talent is to the far right of the luck meter. You do agree, don’t you? Well, in the spirit of point, counterpoint, I can also argue that she had the skill to recognize a potentially good photograph and she took it. Therein lies the difference. The lucky will point and click, indifferent to what they think they might be photographing. A good example is the family picnic, where Uncle Obert pulls out the new 1.2 megapixel camera he got out of the corn flake box, gathers all 493 family members into a glob, steps back 64 feet, points that sucker in the general vicinity of the glob, stands there for about 14 minutes pretending to be focusing the camera, tells everyone to say “cheese” (except Aunt June who yells “sex”) and then finally takes the

picture. To add insult to injury, Uncle Obert tells everyone to stay put so he can take another picture, just in case “the first one doesn’t turn out.” He then does the same thing he did two sentences above. Conversely, compare Uncle Obert with the professional wedding photographer. The desired outcome of both photographers is roughly the same, but the professional goes about his business with honed skills that will give a photograph of the same glob of people a decidedly different presentation. This anecdote becomes your challenge. Photography has very little to do with the camera, but everything to do with the knowledge of the camera, the skills to use the camera as a tool to capture the art of writing with light and the eye at the viewfinder.

Halleluiah, I saw the Light!

In its simplest terms, photography is all about light. You take a light tight box, expose the inside of the box to light, through a combination of an opening in the lens, a predetermined amount of time for the light to come into the box and a set speed for the film to react to the light. Miracle of all miracles, you are photographing a scene (it doesn’t matter what it is) that is created solely on an amount of light illuminating an object in front of the camera. Don’t believe me? Take your camera in a very dark room, click the shutter and tell me what you get. What you have to figure out is how to use that light to your advantage.

KISS Me, Quick! Most of you know KISS is the age-old adage to Keep It Simple Stupid. Let me see if I can (as I promised at the beginning of the tutorial).

1. If you want only your subject in focus, and everything else out of focus, use the lowest (widest) aperture you can. Anything that is less than an aperture of f5.6 should handle this situation.
2. If you want everything in focus, use a higher f-stop. Most manufacturers have

decided (and it is a good rule of thumb) that your sharpest aperture will be f8. This is probably because all elements of speed, depth-of-field and lens quality are built to a standard at this f-stop. I don't know this for a fact, but it's my story and I'm sticking to it.

3. If you want to stop motion, use a higher shutter speed. In fact, the general rule of thumb is to use a shutter speed that is the equivalent, or higher than the focal length of the lens you are using. For example, if you have a 300mm telephoto lens, use a shutter speed of at least 1/250. It will be even better if you use 1/500 to ensure maximum sharpness and to stop motion.

4. If you want to show motion (such as the velvet effect of flowing water), use the slowest shutter speed you can muster. Shutter speeds in the 1 – 2 second range, or longer, are not uncommon for this effect. You can also cheat a little by doing what is called “panning” the shot. In panning, you focus on a single object that is moving, but move the focused camera with the subject. The outcome should be a subject in focus, with everything else out of focus, but lines of the background giving the appearance of motion.

Another Way of Looking At It (or Math 101) – Add 50 and 50 and you get 100. Add 25 and 75 and you get 100. Add $33\frac{1}{3}$ and $66\frac{2}{3}$ and you get 100. The easiest way I can think of to define photography is that an appropriate combination of a shutter speed and aperture will equal 100, or a perfectly exposed photograph. It just depends on what you want to do with the photograph that is going to dictate the correct shutter speed in combination with the correct aperture.

Let's Go Digital – To this point, I have tried to stay within the basic tenets of photography, even though it was slanted toward film based photography.

About two years ago I purchased a digital camera (Nikon D100) and have not looked back since. In fact, the only time I have shot film since buying digital was when a friend asked me to do some industrial photography for him, which required a larger file that I could muster out of the digital camera. Recently I was preparing for a show and as I was rewriting my biography, it occurred to me that digital has allowed me to combine my art skills with my technical skills (which should make my daddy satisfied that he did not waste a lot of money on my college careers). What I do today with digital, I would have never been able to do with film (to a degree), and that is control the print from start to finish (meaning I have no one to blame but myself). The basic principles are the same (meaning aperture and shutter speed must still add up to 100), but the technology is slightly different.

The Digital Difference – The primary difference is that with film, you are stuck with it forever. You can throw it away, make a print from it, stuff it in the closet, but once you take the photograph, you just bought the film and the processing to see the outcome. With digital, if you don't like the shot, you can delete it. With film, you are stuck with the same ISO (speed of the film) for all 24 or 36 exposures. With digital, you can change the ISO at any time to accommodate changing light conditions. With film, you set your exposure for what the meter recommends, regardless of the weather (sunny, shady or overcast). You also set your exposure for the digital camera, as you would with film, with one major exception – White Balance. In simple terms, white balance is the measurement of light (lumens) as temperature. A lower temperature would lean toward cool (blue) colors and a higher temperature would be warmer (yellow). Since every source of light can be measured, and every source of light is

generally different, this would explain why Aunt June looks like she had Yellow Jaundice when you took her picture in the kitchen, under fluorescent lights. White balance allows you to compensate for the temperature of the light so that she is miraculously cured in the photograph. Most digital cameras have an option to set the white balance to match the color conditions that you are shooting in, and this can be a real bonus in your photography. Recently my wife and I spent a wonderful weekend in the Nawth Jawja mountains, with this gorgeous creek running right behind it. Although it rained most of our stay, I changed the white balance of my cameras (yes I have more than one now) to make up for the cloudy, overcast days. The results were gorgeous (IMHO). With film you have few choices. You can choose print or slide film, you can choose the speed (ISO) of the film and you can choose the brand of the film, usually Kodak or Fuji. With digital you get to choose formats. These are decisions that you have to make that to the educated user, are based on what you want to do with the photograph. For the most part, the choices are relatively easy, as you will select to shoot either in .JPG (jpeg) mode or .TIF (tif) mode. These are formats that are mostly representative of the resolution, or size of the digital image, with compression applied to make the image manageable. The better cameras will even give you the choice of a small, medium or fine image. Again, these are loose definitions for the resolution, measured in pixels. A pixel is a dot of color, much like the dots you can see in the Sunday comics that are combined to make a picture. The more pixels, the better the quality of image, and generally, the larger an image can be printed and still retain a level of quality. These can also be referred to as DPI or dots per inch, again with the more DPI, the finer and/or larger the quality of the print. Now I do not want

to get into any major technical detail, but you need to understand that in order to take a digital image, you need to understand what each does, so you can make the decision as to which format to use. These pixels, or DPI, generally range from a low of 72 Kb in the small JPG format (used for e-mail, and sometimes a web based photographs) up to many megabits in a TIF format. Since I want to hang large photographs on the wall, I used to shoot in TIF format, which cost me 17 Mb every time I took the shot. This will eat up a compact flash card (small device that holds and transfers the images) in a hurry. For example, a 512 Mb compact flash card will hold about 30 images shot in the TIF format.

Now please take note that I used past tense to describe how I shot digital images in the past. There was a time that only the professionals shot in something called a RAW format. Only recently have the software manufacturers started to produce applications that convert RAW into one of the other usable formats. A RAW image can be compared to the negative film. It can be manipulated, but it can never be changed. Each digital camera manufacturer has developed their own proprietary RAW format (which is why it took software developers so long to warm up to RAW). For example, Nikon named theirs NEF and Canon calls their something else. There is no universal standard for the RAW format, so everybody gets to do their own thing. Only with the most recent release of PhotoShop, has RAW become a viable option for us weekend shooters to use. The advantage of shooting RAW (as opposed to shooting in the raw, which is not going to be a pretty sight) is that (1) the digital image is permanent, and copies are made when editing an image is to be done (and they almost always are) and (2) they are smaller in size, usually around 8 Mb, or about 64 shots to a 512 MB compact flash card. The

reason I make this comparison is to let you know that RAW gives you a distinct advantage over shooting in other formats and maybe, after I finish this basic tutorial, I'll add a digital tutorial that gets into much greater detail. The other reason

Don't Get Me Wrong – There Are Some Digital Drawbacks – Going digital is not only a big technical change, it is also a huge cultural change. There is a mindset that must be adjusted to the fact that a digital image is different from a print from film. The eye is the most receptive to dynamic range, meaning the breadth of tonal values that one can see. Film is second to the eye. Even for the best film made, you can't push film to capture the range of colors that the eye can see, or the brain can process. The digital image has a range even less than film, so the brilliance of an image that might be seen with film, may be difficult to achieve with the digital image. Now is that going to matter? Probably not much, but you needed to know this when engaged in conversation with someone that thinks they know it all about digital photography. A beautiful photograph is a beautiful photograph, no matter where it comes from. The point of departure from film to digital is primarily two fold: Cost and discipline.

I Thought Butterflies and Digital was Free – A butterfly, maybe, but digital is far from free. The first order of business is in determining what you want to do with the digital image. If all you want to do is to make a photograph to send to a friend by e-mail, you only need a camera with a small (2 or 3) megapixel rating. You will not be able to make a quality 8 X 10 print with a 3 megapixel camera. Conversely, if you want a wall hanger, a print nicely matted and framed, you will need a camera with a higher megapixel rating. The minimum you can realistically get by

with is 4 megapixels for an 8 X 10 and only if you are really good, can you stretch it to an 11 X 14. I went on a fishing expedition to Baja Mexico, and since we went there to fish, I took a small 4 megapixel camera with me. It was such a beautiful place that I wish I had my larger camera, but I had to make do, and I did come out of it with several nice 11 X 14 prints that are now on the walls of the guys I went with. But that was luck. To do what I do, which is the desire to exhibit (and sell) photographs, I want a camera with sufficient resolution (megapixels) to print up to a maximum of 13 X 19. Why such the odd size? Because for some reason, the paper manufacturers decided to make their paper that large. More importantly, that is the largest size print that I can make on my photo quality printer. A camera with a rating of 6 megapixels is just about right for that. Anything more (and there are cameras coming out now in the 12 – 14 megapixel range) is a waste of your money because you will still only be able to print at a maximum of 13 X 19, unless you want to plunk down several thousand dollars for a commercial grade printer. You can buy a good 6 megapixel camera now for about \$800 - \$1,000. In fact, some of the more amateurish cameras, such as the Nikon CoolPix series, will give you as much as an 8 megapixel point and shoot. That does not make much sense to me, but hey, it's your money. The next expense is the compact flash card. These are storage devices that contain the data that stores the images, that transfers to the computer that processes the images, to go to the printer, to be printed, so that the print can be matted and framed, so that it can then be hung on the wall. The compact flash card comes in storage sizes as small as 16 megabits, to as high as 4 gigibits. While the price is coming down, you will still need several of these to equate to a 24 or 36 exposure roll of film. For example, if you are shooting in

the recommended RAW format, every image you take will be about 8 megabits. With a 512 megabit compact flash card, you will get about 60 – 65 shots per card (this will vary because not every shot will be exactly the same size). I personally find the 512 MB cards to be the most useful because of the cost and the number of shots.

The Next Step – Where are you going to park your images, once you fill a card? There are several options so you just need to decide on what is best for you: (1) You can buy several compact flash cards and keep your images stored on them until you can upload to the computer. (2) You can buy a portable hard drive, a little larger than a pack of cigarettes, that allows you to store and view the images. One example is the Delkins e-Film Picture Pad (although I am not totally satisfied with it), and you can buy these with 20 – 80 gigabits of storage. There are others, probably better, so shop around. (3) The final solution is to upload directly to a laptop or tablet PC. This can be cumbersome if you are in the middle of a national forest, running from a bear. I take mine, but usually leave it in the car, so I don't have to lug any more weight than I have to and, I can run faster without it. This does make sense if your laptop has all of your imaging software, and is your ultimate destination, but the drawback of a laptop in the process of making the final image does not make this a really viable alternative. My laptop is just one step in my workflow. I can do some preliminary editing while in the field, and then finalize the image once I get back to base camp (home).

Where Do We Go From Here? - In your digital workflow, the optimum destination is to a workstation that has a large enough monitor (I use two monitors) to see the image and do the work, is powerful enough that you don't have to wait five minutes for the screen

to refresh (which means you want at least a gozillion megabits (one will do nicely) of RAM) and imaging software that you are comfortable with using. I use Photoshop because that is the professional standard. You may be comfortable with Photoshop Elements (a scaled down version of the real deal), or any of the many others on the market. The cheap way out is to plug your image filled compact flash card directly into the printer and hit the print button. This is definitely going to be the WYSIWYG (what you see is what you get) version of your image and eventually you might have that once in a lifetime photograph that was perfect just as it came out of the camera.

The Work Flow – OK, this will be quick because digital is a subject all of its own, and probably my next writing project. So here goes.

1. Take the photograph.
Remember to set your white balance, check your histogram, determine how much depth of field you want, and whether you want to shoot a static picture, or something in fast motion.
2. Fill up the compact flash card with images and then transfer the images to either a portable hard drive, a laptop, or leave them on the flash card.
3. Transfer the images from the flash card to the location of your image editing software (Photoshop, Elements, etc.)
4. Decide what you want to do with your image (snapshots, web, large print, etc.) and adjust the image accordingly.
5. Enjoy

All Good Things Must Come To An End – The wise teacher tells his student what is going to be taught, what is taught and then what was taught. In these few pages, my attempt was to simplify the mystery of photography. If

I was successful, I gave you some insight into the fact that it really is not a mystery at all. We just have a propensity to make simple things difficult. Some folks call it job security. All you have to do is remember that there are many ways to add up to one hundred. Use aperture to control your depth of field. Use the shutter speed to suggest motion (or lack of it). Decide what you want to do with your photography and then just go do it. A friend recently said to me that she wished she “had the eye for photography that I have”. My comment to her was that the only difference between her eye and my eye was the camera in my hand. If you don’t take the picture, you will never know what you are capable of doing. My most vivid memory is of two photographs that exist only in my mind because I did not have the camera in my hand. I can see them, but I cannot share them. What I hope I have shared is what I see “Through My Eyes”!

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