

Sooner or later, most of us want to take some pictures of our pens. Sometimes we just want to share with internet friends the excitement over a new pen we've made, very often it is to populate a website, for sales, or just to show in a personal gallery. Taking good pictures is not all that difficult, and in the digital age the necessary equipment is no longer very expensive or the realm of photo pros. In this article I will show you how to take good pictures and prepare them for web publication. I will cover equipment selection, setting up the shot, and post processing.

Photography has been an interest of mine since I was a boy. When I was 14 I bought my first 35 mm SLR with the money from my first summer job. Color processing was more expensive, so I used black and white film, and did my own processing. There were always weeks between taking a photo and the finished print. Today, we can take pictures in beautiful colors, with highly automated cameras, see the result instantaneously, and have a photo published on the web the same day! Many of the same basic photography principles apply today as they did then. I only broke into the digital processing a few years ago. For the first few years, I successfully used a scanner to take my pen photos. Then, at the 2003 Pen Show in New York, I attended a seminar by David Isaacson, and that got me started in using a camera. Somehow I had never given it that much thought, I think I figured it'd be too involved. I got home and started experimenting, and kicking around techniques with my friend Jay Pickens who helped me overcome the initial hurdles.

There are many ways to photograph a pen. It is impossible to cover all there is to know about pen photography in a single article! So let's narrow the field down a little – I will concentrate on what I call my 'catalog shot'. It is a simple picture, showing the pen nicely, and pretty much the same for every shot. The alternative is what I call the artistic shot, where the pen is arranged in an interesting surrounding, or using some props. I will just touch on the artistic shot. It is typically a perspective shot, while my catalog shot is straight on. Setting up an artistic shot does not necessarily take longer, once you have developed the basics. Getting efficient with it is just a question of practice!

The Equipment

The camera

It goes without saying that to take a digital photo, you need a digital camera. But which one? There are an incredible number of models, and new ones appear all the time. Chances are you already have a suitable camera! If not, I will give you some pointers of what to look for.

A digital camera is often primarily categorized by its 'megapixels'. More megapixels means more resolution, and better pictures. However, since these pictures are for the computer screen or a web

site, there are some obvious limitations in what can be displayed. Today's most popular computer screens are typically 1024x768 pixels (a pixel is an individually displayed point). Multiply these numbers and you get the megapixels: 786,432 or about 0.7 megapixels! Even the highest resolution monitors are not much above that. So you really don't need the latest and greatest high-megapixel camera! You probably have to crop the picture or scale it down to fit a computer screen, or rather to fit into a website where there needs to be some more room on the screen for text information. And of course the higher the resolution, the slower the picture will load. There are some advantages to higher resolution cameras, e.g. you can zoom in on a detail and show it at acceptable resolution. But you can get by with a by now somewhat dated 2 or 3 (or less!) megapixel camera.

Digital cameras of the point and shoot variety generally offer a lot of automation. But results can often be improved with manual settings. Luckily, there are cameras out there that offer a full set of manual controls in addition to the fully automatic point and shoot modes! And you don't have to be a photo expert to use most of these features. My latest compact digital point and shoot is an Olympus SP-310. The camera absolutely amazes me, it's incredible what it packs in a sub-\$300 package! This is the camera I will use for most this article. I will use automatic features wherever possible, and will describe the settings and some of the manual options. I think those that are comfortable with the manual settings don't need my advise!



If you take a camera, put a pen on a background, and take a photo, you will often be disappointed. Usually the pen is too small in the frame, and the picture is not exposed properly. The camera has a lot of built-in intelligence, adjusting exposure for common scenes, and pens do not rank amongst those. Picture 1 is a shot made in fully automatic mode, no special settings, on a Canon S30 (3 megapixel) camera. I don't need to point out the deficiencies of this shot. We need to get the right focus, fix the lighting, and fill the frame with the pen.



A very important feature to look for in any digital camera you consider for pens is a macro mode. Sometimes, the macro mode is automatic, on other cameras you have to specifically set it in a menu, or via a button on the camera. Using the macro mode lets us get closer to the subject. Picture 2 is taken in macro mode, on the same camera, still in full automatic mode. Notice how the camera's intelligences throttles the light output to get a much more reasonable exposure, in addition to getting better focus!



Picture 3 was taken using an ancient Olympus 220L (640x480, 0.3 megapixel!, non-zoom) in fully automatic mode, macro setting, using the built-in flash. The camera was on a tripod. Not even all that bad, is it? Some of the things that can stand improvement is the color – the background was a white sheet of paper, it is hardly white now. The shadows are very harsh, and especially at the nib give a little bit of a distorted view. Often, the metal parts will have high glare – though this was not the case in this particular shot.



Picture 4 was taken with a current generation camera, the Olympus SP-310, in a similar mode. The



automation made different choices. To me, the picture looks a little closer to reality. E.g. the color of the metal parts, despite the glare in Picture 4, looks better. The real difference shows up when I blow up the picture and zoom in on the nib. That is where the advantage of a higher resolution camera come into play. Compare Picture 5, a closer crop of Picture 3, with Picture 6 which is a closer crop of Picture 4.

The light tent

Next, we need to improve on the hard lighting and hard shadows. A softer, more uniform lighting makes a big improvement, and is much more tolerant of a wider variety of pens. Shot with just the camera's flash, often there are highlights that get washed out – completely overexposed. Depending on the camera's flash, the shape and plating of the metal parts some pens are more susceptible to this than others. So you can check the camera's manual (or go through the menus) to see if your camera has a way to throttle the light output of the flash. It's referred to as flash exposure compensation. One general comment: There is a lot you can fix in software later on if you're so inclined, but you cannot simply compensate an overexposed picture using post-processing software. When the camera's sensor is overloaded, there is basically no information in those washed-out areas, and you cannot get any detail back in (unless you start painting). A good device for soft lighting is a 'light tent'.



If you search the net for 'light tent' you get numerous hits, in many sizes, and over a wide price range. A typical light tent is shown in Picture 7. It is a collapsible frame, spanned with white nylon fabric. You can make your own light tent – make some sort of structure out of suitable rods, and drape thin white fabric over it. I came across some nice instructions on the web, see sources. I have tried of commercial light tents, and found that they are good for perspective shots, and that good lighting of a pen is still not trivial, if you want a gentle highlight to show off the finish. Picture 8 is an example taken in a light tent – there was minimal post-processing in



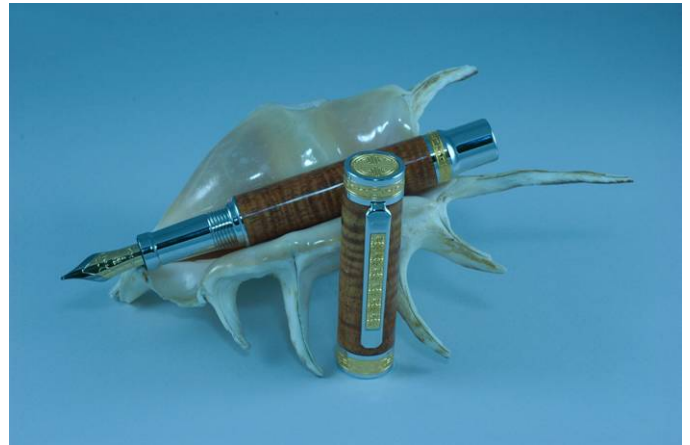
software. Being able to catch a nice highlight without creating all sorts of other problems is the tricky part – I used a 3rd handheld light source to take this shot.

The lights and 'White Balance'

Traditionally, still-photographers have used daylight balanced 500W light bulbs with a relatively short life (and a steep price). These bulbs get extremely hot. When using these, I was always worried about setting a rug on fire or my light tent which is made from thin nylon fabric. I have also used inexpensive work-lights available at home improvement centers – the heat issues are the same. These days, you can get daylight balanced compact fluorescent lights inexpensively; they remain cool, and have a long life. You can find such lights on the internet. I have also found them at Walmart, or Home Improvement Centers. I like the 30W trumpet style, but even higher output ones are available, I have seen them up to 55W! More output is better since it'll let you use shorter exposure times. You need some sort of reflector mount: I use clamp-on reflectors from Home Depot. You can see these lights in use in Picture 7.

The lights are positioned outside of the light tent, the white walls of the tent diffuse the light and help get rid of the glaring highlights. You can play with positioning the exterior lights, but it will not make all that much difference. I use these same compact fluorescent lights in another setup I will briefly describe later.

Most cameras, in automatic mode, will make an adjustment for the lighting conditions, or attempt to do so. You will know if the setting is right when a white background actually comes out white instead of reddish or bluish. You also have the option to override the automatic white-balance (which is what this setting is called) Take a series of shots, going through all the settings, and see if there is one that works. Pictures 9 and 10 show the problem, all the conditions are the same, but I chose different white balance settings. Each picture by itself may look OK, especially if you don't know that I used a neutral gray background, because the brown pen is not



terribly sensitive. But as you use these settings on other pens that are more into red or blue tones, or white like antler, these color shifts can be very disturbing! Picture 11 shows the correct colors – the background I used was actually gray



Often the auto-choice fails, and none of the presets give the right results, especially in mixed lighting conditions, when you have the compact fluorescents along with some other ambient source, either daylight or room lighting. If the camera has a fully manual white balance setting, you can use a white sheet of paper (or a 'gray card', available in most photo stores). You need to follow the instructions in the camera's manual. It typically involves making an exposure of a white surface (or the gray card I mentioned), under the correct lighting conditions of course. The camera computer then calculates a compensation to force that shot to white, and these settings are retained. So until you replace the setting, this algorithm will be applied automatically – and you get natural looking lighting: white will be white, and the other colors will be mapped properly. This white balance is very important! Most people don't find it all that easy to compensate for that in a photo processing program later! If you have a true white in the picture, it is a little easier, you can tell the most image processing programs 'this is white' and it will make an appropriate correction. However, the easiest time to correct this is when taking the picture, of course – less work later!

The Magic Pyramid

I don't have a permanent spot for my photo setup, and found taking up the dining room table with tent and lights to be somewhat problematic, since I have a family competing for the same space. Not to mention the tripod trip-hazard. Luckily, I found another cost-effective, compact solution – it is called the Magic Pyramid, and this is what we will use in the following. (Picture 12)



The Magic Pyramid provides a solution to 2 problems: it generates the uniform lighting I want, and it mounts the camera. The latter is important, if you want to achieve consistent results. Alternative mounting methods would be a tripod, or a copy

stand. I would not recommend handholding a camera if you want consistent shots. I love the compact solution the Magic Pyramid offers! It is a fabric tent like other light tents, and can be folded flat for storage. The camera is mounted on a bracket supported by a ring platform that snaps into the top of the tent. Obviously this device would have problems supporting my quite a bit heavier SLR, but is perfect for the compact point and shoot.

Taking a picture with the Magic Pyramid, with the camera in automatic mode, you will notice that you still have the highlights because the lighting is determined by the built-in flash. You can force the flash to remain off, and you will get a uniformly lit pen. You probably want to add external lighting, and the aforementioned compact fluorescents can be used. You may find that the lighting is just a little *too uniform*, the finish you have worked so hard to achieve on the pen does show with sufficient glamour.

There is an alternative to fiddling with white balance: the camera's flash is daylight balanced, and the built-in setting for flash is usually correct. So this is what we will use here. To provide the soft, omnidirectional lighting I want, I bought a pair of slave flashes on ebay. These inexpensive flash units (a pair cost me less than \$30 delivered) will sense the flash from the camera flash, and fire without delay. You can see one of them in Picture 12, clamped in a very special highly sophisticated stand.. Such



strobes provide a fixed output, and are not tied into the camera's auto-exposure system. I found out right away that these 2 add-ons have a lot of power, and they overpowered the camera's sensor resulting in a very overexposed photo. There are a couple of ways to compensate: you can move the slaves further away, reducing the light that reaches the subject, or you can add something to block or rather absorb some of the light. I found that 2 layers of white typing paper reduced the light just right. This is the setup shown in Picture 12. I prefer the blocking approach to moving the strobes further away because of the extra real estate the latter consumes. The direct flash still makes for a rather hard contrast, see picture 13.

To avoid the direct flash, I diverted the camera's flash with a playing card which you can see in Picture 13 also. The camera used here is the older Canon S30 (a slightly dated 3 MP point and shoot). This way the camera's flash does not contribute to the exposure. But it is not blocked completely, only the direct path is blocked, it still triggers the slaves. A shot taken with that setup is Picture 14.



On some newer cameras, like my Olympus SP-310, you can set the output of the internal flash, when slave strobes are being used. There are 10 levels of adjustment. The lowest level is just perfect! The internal flash will add just enough highlight to provide a sharp highlight that show the pen finish, and it will trigger the slave strobes that provide the main lighting. If the camera has trouble focusing or the exposure is not correct, (and your camera has it), you can use spot mode for exposure meter as well as for focus. That means the small center of the screen (usually marked with a little square or circle) determines focus and exposure. Just make sure this spot is on your pen. Picture 15 shows the result. The Olympus SP-310 did not need the spot modes.



Most digital cameras offer several exposure modes in addition to all-automatic: I like using A (aperture priority) and choose a small aperture (high number) to make sure the whole pen is in focus.

The shot

So now everything is set! Here is the final setup, and one recipe for success:

1. The camera, an Olympus SP-310. Settings: A (aperture priority) exposure, with the aperture set for 8. Macro mode. Flash set for slave strobes, level 1. White balance automatic. The rest is all default/auto: Focus mode: intelligent (iESP, default). Meter: intelligent (ESP, default). Picture quality: any. Resolution: any. If you choose more than 640x480 you will

have to change it later in post-processing. You may find that setting 640x480 will produce results that you can use directly without making any further changes

2. 'Magic Pyramid' light box
3. 2 slave strobes, each shielded appropriately with white typing paper. A few inches form the light tent. 2 layers work for my strobes, yours may differ.

That's it! Take a background of your choice, and take shot after shot! You can simply lift the Light Pyramid with camera off, replace the pen, and take the next shot. An old handwritten letter or sheet music make popular backgrounds, as in Picture 16.

This section 'the shot' is very short, and for good reason: Once you have made the basic setup, there's not much to do or think about any more



Alternative setup:

I do confess I have a different setup, one I have used for a long time, and still use most of the time. It is shown in Picture 17, and I'll describe it briefly. It gives me a more flexibility, at considerable extra cost and with a larger space requirement, but the basic principles are the same. The camera is a Nikon D70 SLR with a 60 mm macro lens. It is held on a copy stand, and triggered by a wireless remote. Settings are fully manual, white balance and exposure determined with a gray card. The distance from camera to pen is not varied, that way every picture has the same magnification, and you can make direct size comparisons between various pens. The 'light tent' is a white lamp shade. In this setup I use 2 30W compact fluorescent lights from the sides, set at a slight angle. The bulbs are held in 12" reflectors from Home Depot. A third light is handheld, it peaks over the perimeter and puts a highlight where I want it on the pen.



Composition

Obviously you want to make the most out of the shot, show the pen in the most advantageous way. This is not glossy magazine advertising, it doesn't involve a supermodel holding a pen: the pen is it. So the pen should fill most of the available space. This means, a diagonal arrangement works best, for a cap-less pen, or a closed capped pen. You can use the camera zoom to have the pen fill as much of the space as you want, but avoid crowding it into the corners. You also want to think about how to display the clip, since it is an important feature: if you put the pen on a flat surface, it will roll over, and the clip will be down, away from the camera. Often the clip is a feature you really want to show, not hide. You can either have it face up, towards the camera, or show it in profile, parallel to the background surface. To keep the pen in position and not have it roll over, I use something called kneaded rubber, available in arts supply stores. It will not interact with the finish of the pen, and leave no marks.

Post-processing

The shot you take, straight out of the camera, may not always be exactly what you want. Sometimes the camera will not allow you to frame the shot exactly how you want it, often the resolution is too high so the picture will be too large. There are numerous software tools out there to help fix these issues. Most cameras even come with a CD containing suitable software. There are very capable inexpensive or free tools available on the net. One free program I have tried that allows you to do everything I show below is GIMP. But normally I use a program called Paintshop Pro which I consider excellent and totally up to any job I've needed it for yet. I have had it through many versions and am reasonably familiar with it, though I have not taken advantage of many of its features. I'll use it here to show the steps I perform frequently.

If the shot was taken under appropriate exposure and lighting conditions, there is generally nothing that needs to be done to correct color, brightness etc. There are a ton of knobs and adjustments, but it's awfully easy to arrive at something that starts looking artificial or unreal, since many of the adjustments are not independent. A little tweak here, an adjustment there, and you can find yourself straying far from reality without noticing.

If the pen is not properly positioned in the picture, you may want to rotate it into a position you like. Every program has a rotation feature. After the rotation, you need to use the crop tool to eliminate unwanted background. If the pictures are for a web site, you want a consistent size. Either specify the pixels you want in the frame, or give sizes with the right aspect ratio. E.g. 640x480. This gives me a 4:3 aspect ratio. In Paintshop Pro 8 and later you can lock the aspect ratio, and drag the frame

side or corner and move the frame around until it fits the pen just right. By locking the aspect ratio the sides will expand together. After cropping I resize the picture to the final output size you want – e.g. long side 500 pixel. The short side comes to 375. I like having a consistent picture size for my website. Others find variation adds interest.

So, under the best circumstances, there is very little post-processing to do. If you choose a background you like, you can be done quickly!

I usually go a different way, though. I digitally cut out the pen, and place it on the background of my choice. I do that for a couple of reasons. First, I think a beautiful background becomes boring if it is used a lot. So if I use a simple, computer-generated background, it's boring to begin with, and stays that way. It also does not detract from the pen! Another reason is that I put my pictures on websites that have a white background. If I have a background that fades into white around the edges, it blends in very easily on the page, the 'frame' disappears, and it looks more like the pen sits directly on the web page. It also avoids the crowding effects I mentioned earlier: a pen running right up to an edge does not APPEAR to be near the edge because the edge is not visible! I will outline the techniques I use to digitally cut out and place the pen.

The shot take 2: for digital cutout

The shot I set up is actually slightly different. I want to cut out the pen, and place it on a background of my choice using software. In order to make it as simple as possible to separate the pen from the background I shoot the pen with a uniform white background. The key concept is to select and delete the background and be left with the pen, rather than select the pen. This makes everything MUCH simpler! You can then compose the picture you want, adding the pen via cut and paste. There are many choices for the background in the final picture, you can base it on something realistic like a photo, or something you generate using graphics tools.



Because I digitally cut out the pen, its actual position on the background when I take the shot does not matter. I found that even at the lowest setting, the built-in flash throws a fairly sharp shadow, see Picture 18. This makes it more difficult to cut out the pen digitally. If I line up the pen exactly in the direction from camera flash to lens, as shown in Picture 19, the shadow is visible only at the end of the pen. The problem remains, but it has just shrunk tremendously in size!



The next change also has to do with the digital cutting. The software tool works best on a high contrast line. Because the white background is reflective, the underside and side of the pen gets extra light, and this softens the contrast where I need it most. So, I put down black paper right next to the pen! See Picture 20. This eliminates the reflection and gives a nice, hard contrast at the perimeter. The black paper is arranged to leave a narrow white outline around the pen. Picture 21 shows a part of picture 20 (left) next to part of picture 19 (right). The software has a much easier time recognizing the high contrast edge of the picture with the black paper! Why not just use a black background? I actually do need the white rim for that contrast edge!



So it is still a simple setup, and I am able to take many shots in a fairly short time. If I want to take an open pen, I either arrange cap and pen as shown, or I take 2 shots: one of the pen, and a second one of the cap. Of course I am careful not to change zoom between the shots, to get consistent sizing.



Post-processing take 2: Digital cut and paste

The first thing I do in Paintshop Pro is to rotate it horizontally and crop the pen very tightly. This is not absolutely necessary step, but I find it a little easier to work with the pen in a given orientation. And the less background there is around it, the less there is to select!

The tool I use to isolate the pen is called the magic wand tool. There are other selection tools for edge recognition, I chose the one that gives me the desired results with the fewest mouse clicks. The sensitivity of the magic wand is controlled by a tolerance setting, I find a tolerance around 30 works fairly well. Simply click in the white area, and see what is selected. The selected parts are surrounded by marching ants – that is what I was told they are by experts! Chances are the initial selection will NOT be the full background (Picture 22A). So I shift-click (which adds to the selection rather than make a new one) in more unselected areas until I got it all (Picture 22B). Now it is time to zoom in and go around the pen carefully. I switch to the point-to-point selection tool, and either add

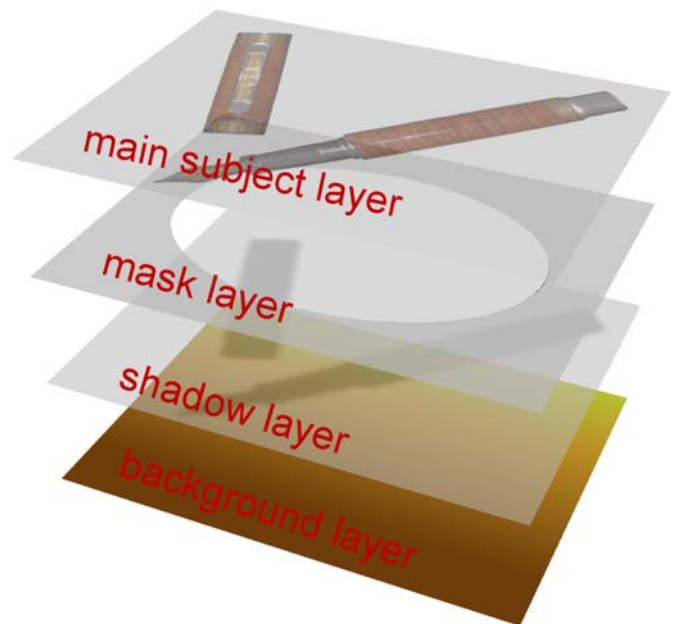


background pieces or subtract pen areas that were accidentally selected (Picture 22C). In this picture the obvious part is the piece of black paper in the bottom left corner. Trouble spots frequently are fountain pen nibs, clips, and the shadow at the end of the pen. With some practice the selection

process will get very quick. When I am satisfied, I invert the selection (ctrl-shift-I), and now the pen is selected. Here, to make it easier to see, I first deleted the selected background, as seen in Picture 22D. A separate window in Paintshop already has my background picture open. I have sized it so that the pen, when pasted in, will be the correct size, with no need to resize to get it to fit. Ctrl-C copies the selected pen into the clipboard, then I paste the clipboard into the background picture as a new layer – ctrl-L is the shortcut. A separate layer allows me independent manipulation of the pen, separate from the background. This is important, since I need to rotate it into a better orientation, and arrange it to my liking. See Picture 23. The same process is repeated for the cap, and it is added the same way, on its own layer.



I generally like to add a shadow, it adds a little depth and gives the shot some realism. Nobody will mistake my background for a natural setting – but I still like the shadow. Most photo processing programs have a shadow tool. In Paintshop it is under effects – shadow. Don't make the shadow too dense or too hard. In Paintshop, settings around 35 for opacity and 45 for blur work fairly well. I choose the option to put the shadow on a separate layer which allows me to manipulate the shadow by itself. The background I use is actually made up of 2 layers – a fullsize square A, and white mask C. The white mask has a hole allowing a view of the underlying colored or patterned rectangle. By changing the layer order to (from the bottom up) background rectangle A – shadow B – soft-rimmed oval mask C – pen D it appears as if the shadow is only on the visible part of the background, the oval actually appears as a positive feature. The stacking of the various layers is illustrated in Picture 24. The final result is shown in picture 25.



Once you master the basics of cutting out the pen, there are no limits to what you can do with it. You can apply effects that are built into Paintshop (or your software), and you can find any number of

special effect filters on the web. My advice is not to overdo these effects – often they are cute only once. But of course they are fun to play around with.

In summary...

Beautiful photos of your pens can be taken with most digital cameras, even older generations. It is neither terribly complicated, nor very expensive to assemble a few basic tools to get the job done well. I've shown you number of possibilities, including a compact, surefire system that allows you to create great looking pen photos with minimal effort. Good luck!

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