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Off-Beat Applications for a Digital Camera

Andrew Davidhazy
Imaging and Photographic Technology Department
School of Photographic Arts and Sciences
Rochester Institute of Technology

Introduction

Probably like many photographers these days I had been wrestling with the decision to buy a digital camera or wait until either the resolution improved or the prices came way down. Well, I finally decided I could wait no longer and invested in one of the under $1,000 cameras to help me deal with a significant amount of work related to the World Wide Web and the Internet.

The camera I chose was one that I felt could be "adapted" for a variety of purposes, much like I have adapted my conventional, film, cameras for unusual tasks and uses. Granted that I could have bought specialized equipment to perform each of the tasks I had in mind but doing this would go against my "experimental" nature.

Among the applications I wanted to explore was the use of the camera as a film scanner, to allow me to photograph slides and negatives with the eventual purpose of using these images on my webpages or to send them as attachments to e-mail. Another application I wanted to explore was the use of the camera on a microscope or telescope to capture images made by these instruments. Another situation I wanted to explore (later accomplished) was the use of the camera in my high speed photography lab to capture events "frozen in action" by the light of a 1 millionth of a second electronic flash. Finally, of course, I also wanted to get involved with a digital camera to make personal images or snapshots.

The camera I decided on was an Agfa ePhoto 1280 with a 1:3 ratio f/2.8-3.5 zoom lens, a liquid crystal display, an "equivalent" film speed of 100 and a maximum resolution of 1280x960 after PhotoGenie(TM) processing (a non-linear artificial intelligence based reconstruction program). Maximum CCD resolution is 1024x768. The color depth is 30 bit in, 24 bit out. This article is an update on where I am so far and what remains to be done.

Focal length converters and close-up lenses

One of the very first things I did once I had the camera in my hands was to reach in my "salvage" bin and retrieve an old set of afocal lens converters that were designed to be used on a Sony video camera. I wanted to see if I could widen the wide setting and lengthen the long setting by the simple expedient of adding these converters to the 1280. The wide angle one would shorten the focal length to 50% of the lens' original focal length, while the telephoto one would lengthen the lens to 1.4x the original focal length. With these I essentially had a range of 25mm to 160mm equivalent on a 35mm camera.
Preliminary results were encouraging. I simply held the converters in front of the camera's lens and zoomed the full range. No problems.

Next I tried to find a filter thread adapter to change the camera's thread to that of the converters. This meant a step-down ring going from 46mm to 37mm. Although it is possible to find 37mm size filters, at the time I could not find a step-down adapter.

At this time I got a bit sidetracked and as I pondered about the step-down adapter I became absorbed by the problems posed by the camera's 46mm filter thread. Since the 46mm thread is a rather odd size I decided to first get a step-up ring that would increase the diameter to a more standard 49mm and at the same time provide metal threads instead of having to repeatedly use and wear down the graphite threads of the camera.

Once the camera was fitted with its "new" filter thread I was able to attach various items that I had originally used on a Pentax camera that took 49mm accessories including filters and a full set of diopter or close-up lenses.

Then, since step-down rings were not readily available to me, I decided to sacrifice a 37mm filter (that I did have) to provide the threaded mount that would allow me to attach the Sony afocal converters to the camera. I cut a 37mm diameter hole, which barely accommodated the outside threads of the filter ring, in a rigid sheet of plastic of 45mm diameter and I glued the filter ring into it so it was flush with the sheet's surface.

The 45mm circle then easily fitted within the camera's 46mm filter threads and I held it in place by screwing in the 46mm to 49mm step-up ring, this time functioning as a retaining ring. In fact, the presence of the 37mm filter in this place did not interfere with the attachment of 49mm filters or lenses or step-up rings to the 46 to 49mm, now a "retaining", step-up ring. Eventually I removed the 1A UV filter from the 37mm filter although this was not strictly necessary.

Since the afocal attachments are quite light in weight with this improvised step-down ring in place the converters could be securely affixed to the lens. The camera could be used without much fuss or bother over the extended focal length range with no major or apparent loss of image quality especially at high illumination levels. A small and generally acceptable amount of unsharpness crept in when at low light levels the lens' aperture was forced to be wide open.
On the left is a photograph taken of a killdeer on its nest taken with the Agfa with its lens zoomed out to the longest setting and on the right the image obtained from the same vantage point but with a 1.4X teleconverter added to the camera's lens.

Then I found an old Spiratone fisheye converter lens. This is an extreme wide angle afocal attachment similar to the security viewers used in door to view a very wide angle view outside the door from inside. Since the Spiratone device was made for a large aperture camera lens it also worked perfectly on the 1280. At the widest angle setting I was able to make an almost full-frame fisheye image and as the lens was zoomed out it simply became an extreme wide angle lens. There was a little barrel distortion present but this typically did not present a problem especially since I was, in fact, after a "special effect" and technical considerations were of secondary importance.

Attaching the lens to the 1280 proved to be fairly straightforward and this was patterned after the installation of the step-down ring for the more reasonable afocal attachments. Since the Spiratone lens had a filter thread of 55mm, I simply placed a step-up ring on the camera and went from 49 to 55mm and so was able to screw the fisheye adapter onto the front of the 1280. Perfect! A little heavy compared to the weight of camera itself but the performance of the device was just great.

**Copying slides ala "Slide Scanner"**

The next project I tackled was the slide copying project. For this the solution is seemingly obvious, simply attach a close-up or diopter lens onto the camera's lens until the image of a slide fills the frame. This presented several problems among which the need to use a well corrected close-up lens of high power is the primary one if one expects high quality results. I could not achieve the desired magnification with simple close-up lenses and finally hit on the idea of using a lens from an old slide projector. My reasoning was that these lenses must probably be highly corrected and they are usually of fairly short focal length.

I found that the most suitable lens was a projection Ektar of f/2.8 aperture and 5 inch focal length. The main problem was that the lens elements were far too recessed in the barrel of the lens. For this lens to perform its function well its rear element needs to be placed as close to the front element of the camera lens as possible. So, I took out my hacksaw and sawed of the rear "hood" of the projection lens. With a file I finished off the rear edge and then used 2 part epoxy cement to glue another step up ring to the rear of the barrel. This one had a 52mm female thread at one side (large enough to accommodate the rear of the projection lens's barrel) and a 49mm male filter thread at the other. I made sure that the ring was glued square onto the lens so that once attached the optical axis of the projection lens would closely match the optical axis of the camera lens. Once everything was dry I attached the lens to the camera and got a perfect fit.
To make copies of my slides (and also color negatives) I use an old Durst color head intended for use with the 301 enlarger. I built a wooden covering for those parts around the head's lamphouse and finished it off with a metal top. Onto this top I attached what one might call a "copy-stand". It consisted of a metal rod to which I had fitted a sliding camera bracket. This not only can slide up and down on the rod but it also has a built-in method to adjust the position of a camera body attached to it closer and further away from the center of the rod. This allows the centering of the camera lens over the slide placed over the housing's light box.

The major problem that I encountered was that once one tries to mount the camera pointing down, with the tripod socket located off center in the lens housing of the camera, the weight of the camera body is large enough to make it very difficult to attach the camera securely, without it trying to slip and point in unexpected directions. The threads, being carbon fiber and not metal, also leave something to be desired in terms of inspiring confidence when one is tightening the bolt attaching the camera to the copy-stand's camera support bracket.

Once the projection lens (functioning as a high quality close-up lens) is attached to the camera it helps offset some of the off axis weight of the camera body but I always wished for a stronger set of threads in the camera or a more balanced layout for the camera.

In general the camera's built in focusing ability takes care of minor variations in focus and the metering or exposure system works quite well in terms of arriving at proper exposure for the slides or negatives. In extreme cases I have resorted to manual exposure control to obtain the best results. Finally, to transform color negatives to positive images I use Photoshop since it allows for easy control or shaping of curves to make the final results acceptable. Other programs, including Agfa's own could also be used although I have not done so myself mostly because I am used to Photoshop.

Audio Visual Presentations

A good friend of mine had once mentioned to me that she used the camera to capture all the slides that were shown at a lecture that she attended and this was the inspiration to look for other applications for the camera. To begin with I did exactly what she had done except instead of copying slides projected on a screen during a lecture I copied a set of my own slides I had prepared for a lecture. I was able to put the equivalent of a whole 80 slide Carousel tray onto one 4 megabyte SmartMedia card. Then, I borrowed a video projector and "played" the images in my camera into the video projector using the video out port of the camera. While not the greatest, the system was showing promise to be
used as an Audio Visual device of sorts. I had envisioned placing the illustrations for my talks into the camera and then using the camera as the device I would carry with me to professional conferences to show my illustrations with.

This would work I found out, but I was troubled by the fact that I thought I would have to recopy my illustrations each time I needed them. This promised to be much too time consuming. Then I remembered seeing that the camera has an "upload" function. This means it will accept image files provided to it from a laptop or desktop computer. The beauty of this scheme is that the images can be made, manipulated, arranged, etc. on the desktop and they only need to stay on a memory card for the duration of the talk or conference. After that the images can be erased since the originals are still safely stored in the main computer or auxiliary file storage device.

To use this function one needs to merely arrange the image files in the computer in obvious numerical title order ... such a 01, 02, 03, etc. This way the pictures will be put into the camera in the appropriate, preselected, order. Then, while the camera is connected to the computer and PhotoWise is running, ask it to open a new album. This album will, of course, be empty. Anyway, give it a name.

Now open this album from the desktop and drag your image files into this "album". Back at PhotoWise you open this album and you will see the pictures you moved into it neatly arranged in contact sheet or slide page order. You might want to make a hardcopy or print of this album 'cause that will give you a little "crutch" later giving you advance warning as to the order the pictures will be displayed later.

Finally the option to upload images to the camera becomes enabled (under CAMERA) once you choose the "Select All" option under EDIT. I guess you could select to transfer one at a time too - this is useful to insert images into a previously set-up sequence. Just be careful how you assign image numbers to begin with so you always have room to insert or replace deleted images, which of course, you can also do. A numbering scheme such as 010, 020, 030, etc. may make sense 'cause you can then always "insert" 015 between 010 and 020 while if you numbered consecutively you could not insert between numbers. You's be out of luck so to speak.

Now, once you have chosen "Select All" under EDIT choose the "Upload to camera" function under CAMERA. At this time you will "see" a progress bar and a beep will sound indicating that the images are getting transferred to the camera. Once done you can view them using the group-display option or individually scroll through them backwards or forwards using the +/- function of the camera. Not as fast as if one were to use a computer but useful for many purposes!

If the images you want to transfer are in the 600x400 range then a white border will appear around each of your images. To utilize the full screen of the camera you need to make the images larger than this, up to 1000x700 pixels in size. I also found that if the image files exceeded 300Kb, medium quality JPEG compressed or roughly 1.5 Meg in size the images will also fill or nearly fill the length or width of the frame.
Anyway, with a larger memory card higher resolution images can be transported easily and at a moment's notice the camera can be used to make photographs instead of serving in a playback role. So, after the "show" you can erase the memory card and start shooting because the original show is safely stored on the host computer or other storage media.

By the way, on 9/17/98 I showed 27 images from a trip I made recently to Tanzania to a group of photographers. Some of the images were positives made with the Agfa 1280 capturing the negatives and then Photoshop was used to adjust levels and invert them into positives as explained above. Anyway, the audience was impressed. The images took up a little over 6 Megs of an 8 Meg memory card.

**Conclusion**

All in all the camera has performed admirably for the "off-beat" applications I found for it. I wish there would be a way to extend the exposure time to a time of maybe 1 second. This would make it a lot easier for me to make some high speed photographs where the 1/1,000,000 second duration flashes provide the action stopping exposure required to freeze free flying bullets in their tracks. At 1/8 second the problem of firing the flashes within the exposure window is a bit tough to solve but this will be my next project. Stay tuned! (This was actually completed later and you can see the article [HERE](#).)

If you have questions or want to discuss any aspect of Agfa ePhoto 1280 applications fee free to write to me right [HERE](#) or later at andpph@rit.edu.