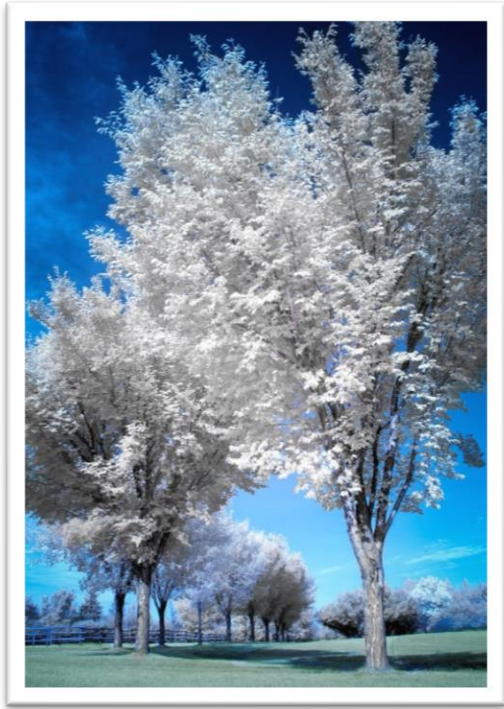


IR 101

(article by Robert Burkholder)

A while back I had an old camera body I wasn't using much anymore converted to shoot infrared (IR). What a change! Old, overworked subjects yield entirely different and interesting results. Here is an example:



Foliage often comes out white because leaves reflect a lot of IR light while skies are darker than with visible light photography. Other reasons I like IR photography include: stunning B&W images; skin tones are improved in B&W including the removal of freckles and blemishes; it is an interesting technical challenge; and the optimum time to capture IR images is in bright sunlight. Instead of shutting down photography over the mid-day while I wait for the golden hours, I get out my IR camera.

Interested? I am still a beginner but here is what I have learned so far.

There are three methods to shoot infrared:

1. Infrared film: Pre-digital this was the standard and only option. Today IR film is hard to find and even harder to develop unless you process it yourself. You can find IR film online (Amazon, Henry's) so it remains a possibility if you still have a film camera.
2. Filter: A filter that passes only IR light such as the Hoya R72 can be attached to the front of a lens. This is the least costly and easiest way to venture into IR photography with a digital camera. The downside is most digital cameras already have a filter in front of their sensor to filter out IR and UV light. With visible light that filter keeps images crisp but adding another filter to the lens that removes visible light effectively

yields a strong neutral density filter. Losing 16 stops is not unusual which means high ISO with long exposure times are unavoidable.

3. Camera conversion: Here the IR/UV filter in front of the camera sensor is replaced with a different filter, one that removes visible light but passes a selected IR frequency. The conversion is not too hard. You can do it yourself if you have the right tools and some basic skills, but you risk seriously damaging the camera if you lack either. Most go the route I chose and have it done professionally. There are several companies offering the service. Two of the biggest are LifePixel (www.lifepixel.com) on the west coast and Kolari Vision (www.kolarivision.com) on the east. Both sites have extensive documentation to walk you through the process and help you get started with a converted camera.

I went with Life Pixel at a cost of \$350 US dollars for a standard camera conversion.

Admittedly, it was a little disconcerting shipping off a perfectly good camera to strangers in another country, but Life Pixel was wholly professional and delivered exactly when they said they would.

Camera conversion is the only option I have personally used to shoot infrared. The rest of my comments apply to the conversion option.

As part of the process for a standard conversion, I had to specify what frequency IR filter to install in my camera. That determines the look of my IR images. The web sites mentioned above helped a lot with my choice.

An alternative to the standard conversion is a 'full spectrum conversion' which removes the existing IR/UV filter but does not replace it with anything. In this case, an appropriate filter needs to be placed on the front of the lens before taking photographs. This approach is much more versatile than the standard conversion as filters with different frequencies can be easily changed plus the camera can still be used for regular visible light photography by using an appropriate visible filter. The downside is the additional filters add to the cost and slow the camera down.

O.K. Let's say you had a camera converted and out you go to snap a few shots just to see what things look like now. It will probably look something like this.



Yes, it's red. This is infra**RED** after all. What did you expect? But look closer. The image is also out of focus. That is because IR light focuses differently than visible light. If you don't adjust for that most, if not all, of your images will be out of focus. If you have your camera converted professionally the camera autofocus should be recalibrated for infrared light as part of the conversion process but the new calibration is accurate only near a single selected focal length. If you are content shooting at a single focal length: good to go. But if you want to use multiple focal lengths, either by switching prime lenses or zooming, you will have an autofocus problem.

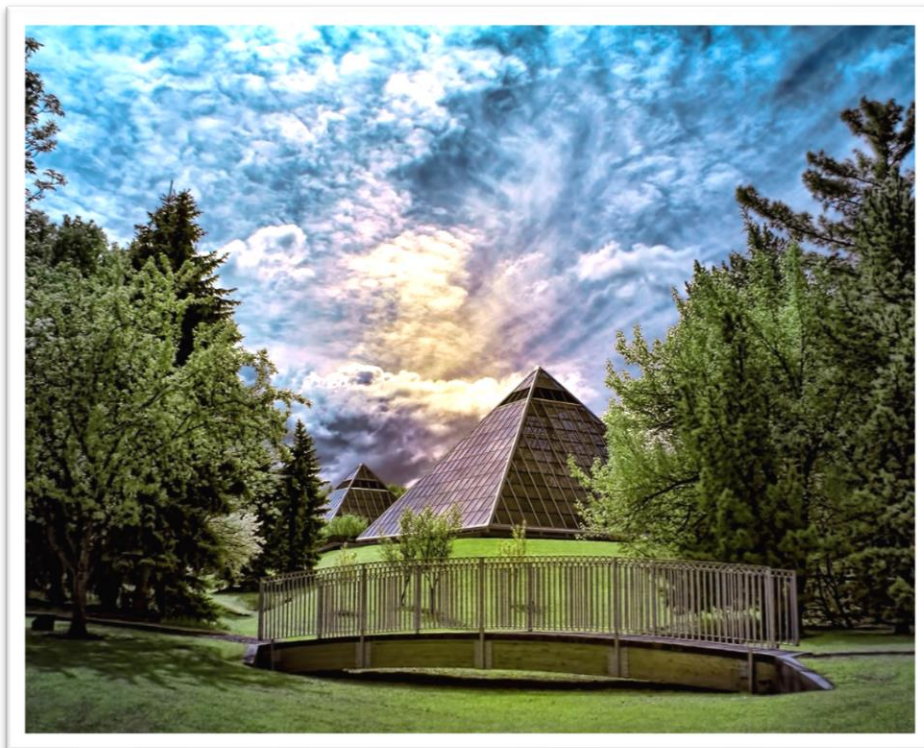
One way to solve the problem is to focus manually using live view. I use the magnify option in live view to ensure my focus is precise plus it allows me to focus on my selected scene elements. The method works well in that it achieves accurate focus, but it can be difficult seeing the live view image in bright sunlight. A viewfinder loupe that fits over the live view screen would be helpful here, but I have yet to try one myself.

Another option is to convert a mirrorless camera. Mirrorless cameras use the imaging sensor for autofocus which yields accurate focus with both IR and visible light without need of recalibration. Actually, this is the same process that enables manual focusing with live view on DSLR cameras. In both live view on DSLRs and with mirrorless cameras focusing is accomplished using what the imaging sensor actually sees. If I had it to do again, I would look seriously at converting a mirrorless camera. Unfortunately, I did not have an old mirrorless gathering dust on a shelf somewhere.

All right. We have the focusing issue resolved but what about all that red? The easiest way forward is to simply convert the image to black and white which yields the light foliage and dark, dramatic skies characteristic of B&W IR photography. Something like this.



Following these steps, it is possible to create stunning B&W images and terrific B&W portraits. But I think IR photography gets most interesting (and challenging) by staying in colour. Colour IR images often take on an otherworldly appearance. Here are a couple of examples.





Processing IR in colour gets a little complicated, though. For one thing, auto white balance is not going to work (consider the red image above) either in camera or in post process with typical processing software such as Photoshop. Although a little intricate, processing IR in colour is not too hard and a lot of fun. Perhaps a good topic for a future article, workshop or even a casual conversation? Or better yet, maybe you have some tips for me?