



Epic multi-shot panorama, captured in Iceland. What looks like snow here is really green moss on the side of the volcanic rock. You see the dark lava field in the foreground. The tiny, isolated figure to the right is one of our photo tour participants – she is actually wearing a black parka. Black clothing photographs white in IR.

*X-E2 + XF35mmF1.4 at f/5.6, 1/280 sec, ISO 400*

# INFRARED PHOTOGRAPHY WITH FUJIFILM: PART 1

————— Lee Varis —————

Fujifilm cameras offer tremendous advantages for this magical realm of the unseen. Lee Varis explores the ins, outs and throughs of infrared converted Fujifilm cameras, and showcases many creative possibilities! Part 1 concentrates on black and white infrared. Stay tuned for part 2, where Lee delves into colour.

I've been enamoured with digital infrared for the last several years and shot with infrared film before my first digital camera, so my experience with the medium is extensive. What started out as a casual flirtation many years ago with film turned into a fully fledged love affair once I transitioned to the mirrorless Fujifilm system.

The first thing I'm asked when people find out about my involvement with infrared is: "I heard that Fuji had an infrared camera, is that what you're using?" The answer I give is: "No, I simply had a regular camera converted for infrared." The story is a bit more complicated than that, however.

I was an early adopter of the Fujifilm mirrorless cameras and became an X-Photographer early on. Fujifilm had announced that they were producing an infrared version of their X-T1 and I immediately requested a camera. Then a brief news article about the camera came out in Wired magazine, in which they jokingly referred to it as the first camera that can see through clothes (this is, of course, absurd – infrared is NOT X-ray photography). That joke completely killed the general release of the camera! The Japanese took great offense at the suggestion that they were going to provide a camera that could see through clothing. They do make an infrared camera, but only sell it to forensics departments at the police or FBI.

So, the general public cannot buy an infrared camera from Fujifilm, but one can always convert a digital camera to one capable of capturing the otherwise invisible infrared spectrum. The

conversion process starts with removing the IR hot filter from the surface of the sensor and replacing it with another filter that suppresses more or less visible light and transmits most infrared wavelengths. These filters are named to correspond with the wavelengths that they allow to pass.

[Life Pixel Infrared Camera Conversions](#) provides six different IR filters with descriptive names that correspond to: 830nm (B&W infrared only), 720nm, 665nm, 590nm, 470nm, something they call a 'Super Blue' filter (very unique as it behaves completely differently than all other infrared filters because it actually has two distinct pass bands) and finally a clear full spectrum filter that passes visible, UV, and IR—this last one is basically what Fujifilm does with their infrared camera! (Please note that nm = nanometers. Visible light proceeds from the shortest 400nm to the longest 780nm.)

Mirrorless cameras are ideal for the conversion because the WYSIWYG electronic viewfinder allows you to see the look of infrared while you capture the image! Once you've decided on a camera to convert, you need to decide on what kind of conversion to do. I currently have an X-E2 in a 'standard' IR conversion (passing wavelengths from near infrared around 780-1300nm with a small amount of red light at 720nm, thus the filter designation of 720nm), an X-T1 in a 'deep B&W' IR only of 830nm and an X-Pro2 in a 'super colour' IR of 590nm. The following shows the different results straight out of camera, as well as a regular colour shot with my X-T3.



**830NM**

B&W only infrared

*X-T1 + XF18-135mmF3.5-5.6 at f/8, 1/60 sec, ISO 1600*



**720NM**

Standard infrared includes a little 'red' light

*X-E2 + XF18-135mmF3.5-5.6 at f/8, 1/75 sec, ISO 400*



**590NM**

'Super colour' IR passes some visible light from red to yellow

*X-Pro2 + XF18-135mmF3.5-5.6 at f/8, 1/1220 sec, ISO 400*



**REGULAR COLOUR**

Regular colour blocks IR but passes full red, orange, yellow, green, cyan, blue & violet light

*X-T3 + XF18-135mmF3.5-5.6 at f/8, 1/320 sec, ISO 400*

You can see that the deep black and white, infrared-only filter is the darkest, requiring more exposure, with the regular colour using a normal IR blocking filter being the lightest and requiring less exposure. The IR conversions I am using all block different levels of visible light while passing most wavelengths of near infrared.

So, now that we have an infrared camera, what do we do with it? Look at the difference between the 'deep B&W', infrared only capture compared to the regular colour capture—it's clear that green plants generate a lot of extra luminosity. The trees look like light

sources in the comparison images. The sky, which is lighter in the regular colour image, is darker in the black and white IR image, and this is one of the main points of interest with infrared. The more visible light that is included with infrared luminosity, the less contrast is exhibited in the image. So, the colour infrared images are softer in contrast, but they still have this odd reversal of tonal strength, and that is the interesting feature of infrared images!

Certain subjects really lend themselves to infrared capture effects. The classic infrared look is black and white landscapes with trees and sky. The 'deep

B&W' 830nm IR is an obvious choice if you are only interested in black and white, but any of the other IR conversion types are suitable with an appropriate black and white conversion. Also worth noting is the fact that any of the other infrared conversion types can be turned into a 'deep B&W' 830nm type by using a Wratten 87C filter in front of the lens. Trees and foliage become much lighter, often verging on white, and skies go dark, sometimes black, depending on the position of the sun relative to the scene.

#### SCENIC OVERLOOK IN NOVA SCOTIA

Green farmland, white puffy clouds – what more could you ask for?

*X-E2 + XF18-135mmF3.5-5.6 at f/8, 1/320 sec, ISO 400*





#### **CAPTURED IN ICELAND**

The grass lights up and contrasts nicely with the black volcanic sand. Another plus with IR is added structure in clouds with an overcast sky. Normal full colour captures only show a blank white sky.

*X-E2 + XF18-135mmF3.5-5.6 at f/13, 1/15 sec, ISO 1600*

One useful strategy with IR is to look for contrast between things that emit infrared and things that don't – think organic versus inorganic.



Another thing to look for is a scene where there is a heat source that glows red. Hot glowing things emit a tremendous amount of IR as seen in the following examples.

**CAPTURED IN A GLASS FACTORY IN MURANO, ITALY**

The molten glass normally glows a dull red, but with IR it becomes a full-on light source, adding a lot of drama to this scene.

*X-E2 + XF18-135mmF3.5-5.6 at f/5.6, 1/140 sec, ISO 3200*



**HOT AIR BALLOONS IN CAPPADOCIA, TURKEY**

Every time a balloon released, a blast of flame it would light up with infrared.

*X-E2 + XF18-135mmF3.5-5.6 at f/8, 1/320 sec, ISO 400*



**HOT SPRING IN YELLOWSTONE NATIONAL PARK**

Although it doesn't glow red, the hot steam lights up more effectively in IR.

*X-E2 + XF18-135mmF3.5-5.6 at f/8, 1/320 sec, ISO 400*



**CLOUDS OVER THE OCEAN IN CUBA**

*X-E2 + XF18-135mmF3.5-5.6 at f/8, 1/320 sec, ISO 400*



**CLOUDS OVER THE NORTHUMBERLAND STRAIT, FROM NOVA SCOTIA, CANADA**

*X-E2 + XF18-135mmF3.5-5.6 at f/8, 1/1500 sec, ISO 800*



**APPROACHING STORM CLOUDS IN YELLOWSTONE NATIONAL PARK WITH A VERY COOPERATIVE BISON POSING FOR ME IN THE FOREGROUND**

*X-E2 + XF18-135mmF3.5-5.6 at f/8, 1/1500 sec, ISO 800*



**THE FOREST IN MY  
WIFE'S FAMILY PLOT IN  
NOVA SCOTIA, CANADA**

Green foliage everywhere with a very active IR effect creates that dreamy, misty glowing light. The problem becomes how much contrast to add without completely killing the effect!

*X-E2 + XF18-  
135mmF3.5-5.6 at f/5.6,  
1/850 sec, ISO 800*

Foliage captured with the deep black and white IR has a kind of 'glow' that can create a dreamy quality, but it can also be problematically soft in contrast, sometimes to the point of looking blurry. Standard IR captures exhibit the same soft contrast in foliage, though not quite as strongly due to the mixture of visible light that is present. The Dehaze slider in Lightroom/ACR can be your friend here!

**BUCOLIC SCENE IN NOVA SCOTIA**

This rendered in a kind of white-on-white soft contrast mitigated a bit by the strong side lighting.

*X-E2 + XF18-135mmF3.5-5.6 at f/22, 1/100 sec, ISO 800*







#### **A PORTRAIT OF ME IN TANZANIA**

Captured with standard 720nm IR converted to B&W in Lightroom. Pale, pale, pale — but look at the creepy, dark eyes!

*X-E2 + XF18-135mmF3.5-5.6 at f/22, 1/100 sec, ISO 800*

IR photography of people can be very interesting, though frequently a spooky ghostlike effect is the result, especially with 'deep B&W' IR-only captures. Eyes go very dark, skin glows very light, and perhaps counterintuitively dark clothing renders much lighter!

Sometimes that spooky look is appropriate, especially if you're going for that vampire effect.



**AN ENCOUNTER WITH A VAMPIRE AT VENICE CARNIVAL**

The pale glowing skin really works here. Compare this to the colour image and notice how the black clothing renders almost white, reducing the contrast with the red.

*X-E2 + XF18-135mmF3.5-5.6 at f/2.8, 1/180 sec, ISO 1250*



**FULL COLOUR IMAGE FOR COMPARISON**

*X-T1 + XF18-135mmF3.5-5.6 at f/5.6, 1/180 sec, ISO 1600*

**MEDIEVAL MAIDEN AT VENICE  
CARNIVAL**

Alabaster glowing white skin,  
and super dark eyes can be  
attractive.

*X-E2 + XF56mmF1.2 at f/22,  
1/400 sec, ISO 1600*



Once you get familiar with the IR effect, you start to see scenes that can translate well into IR captures. The key, in the beginning, is to experiment a lot – shoot anything and everything in IR. I make a point of always carrying an IR converted camera body with me when I go out to shoot because I never know when a great IR capture opportunity will present itself. The more you work with IR, the easier it gets to pre-visualise the final IR result. I think it is a bit easier to start with black and white IR, though I recommend getting a Standard IR 720nm conversion as your first one, because that has the potential to get decent colour IR as well as great black and white IR without too much work. After you have more experience, you might decide to go full-on into the intense black and white IR of the 830nm, but just be aware that if you go that route, you will be limited to black and white only!

Colour infrared is another beast that I will explore in part 2 next month, and I will go into post processing IR a bit more then. Stay tuned!