Film in a Digital Age

Getting the most out of your film images in a digital world

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Choosing a film format

There are several types of formats, or sizes, to choose from and hundreds of different cameras from dozens of brands. I've never been too worried about brand choices when it comes to cameras because it's always going to come down more to film type than camera make. When choosing a format or camera think more about the features you need for the type of images you want to create and less about the name on the camera.

I'm going to talk about the three main formats of film being used today and why you would want to use each one. There are also many styles of cameras within these formats, from rangefinders to SLR's to view cameras, each having its own special uses but all can work well for landscapes and some will work better for portraits or fast moving subjects and light. In general, as the format gets larger the cameras become significantly heavier, less automated, and arguably more difficult to use. Smaller formats are great for travel and quick shots, but larger formats will make the best print enlargements while having incredible control over depth of field and overall image quality.

The various film formats I use shown to scale on a light table. All images were taken on color slide (positive) film and are true color.

35mm Film

35mm film is probably the most familiar format. Everyone has likely seen or used one of these cameras at some point. The cameras ranged from very simple designs that don't even have a battery to state-of-the-art devices that were the foundation for the modern digital SLR.

This format had its heyday well over a decade ago and in my opinion has largely been replaced by digital cameras. That doesn't mean there aren't plenty of applications where one might still want to use 35mm film. The speed and size make this the quickest, easiest, and lightest of all film formats.

You may want to use it for travel or portrait shoots, but if your end goal is to make large prints of detailed landscapes you'll likely be left yearning for something more. I started in this format just as full frame digital cameras were starting to fill the

Lens Movements

This is one of the biggest advantages of large format cameras, giving you the ability to add depth and a look that can't be replicated any other way. It's also something that can be hard to wrap your head around and master so let's look a little deeper at the basic movements you will use on a view camera: tilt, rise, swing, and shift.

Lens Tilt

This is one of the most used movements for landscapes, commonly used to get a nearby foreground subject in focus with a distant background. It's a very simple movement to apply and usually just a little bit does the trick.

The image below shows a real-life example of the diagram at bottom right. When you focus on just a flower that's a few feet away you'll never get the background in focus no matter how much you stop the lens down. You could try to do a hyperfocal focus where you focus at a point between the foreground and background and stop the lens down, but this works much better on the smaller formats and with lenses that have focus scales written on them. Even then, the long focal lengths of large format film sizes means you still wont get everything tack sharp.

The only way to overcome this is with a small amount of lens tilt. There's no need to make any fancy calculations in the field, it's mostly a visual adjustment that takes a bit of practice to get the results you want.

Focus on the Goods

When shooting a scene on large format film where objects are both near and far, you need to choose the *most important* subjects and make them sharp. With large film you'll never get all this in focus without movements even if you stop down to f64 so you have to make sacrifices.
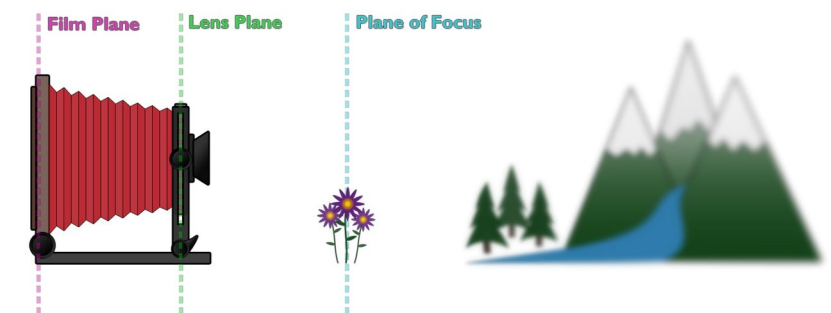
For this image the flowers and the mountains were most important so I tilted the lens to where they were both sharp. The out of focus mid-ground helps to separate the flowers from the forest. Shot at *f*16.

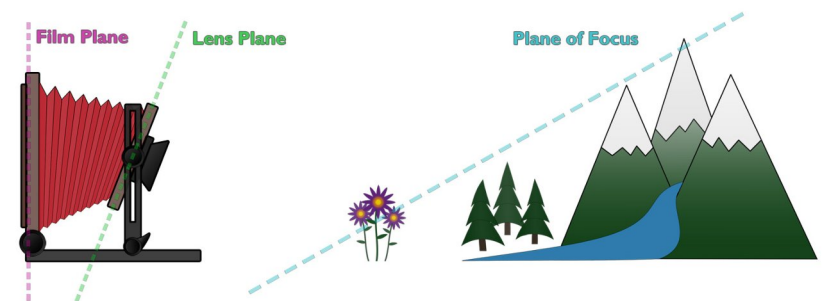**Lens Tilt Example**

Film Plane · Lens Plane · Plane of Focus

Camera focused on flowers, no lens tilt - forest and mountains are blurry

Film Plane · Lens Plane · Plane of Focus

Lens tilted, aperture stopped down - entire image is acceptably sharp

Choosing the right film for the scene

This is one of the more important topics and the subject of my most popular blog post, so I'm going to go in to some real detail here. There is a great deal of difference between all of the film types and it's prudent to know when you might want to use each one. It's also quite a subjective matter as you may have other uses in mind for a particular film, so I'm going to tell you some of the traits each film has in my experience to help you make a better decision while shooting.

We're going to focus mostly on color film and its use with landscapes, if you've followed my work then you know that it's my specialty. It's also good to know which films you can actually get your hands on, so I'll include notes with each film and their current 2023 availability in the United States. We will also cover the few black and white films I've used and there will be a cheat sheet table for reference here: **page 66**

Color Positive vs Negative

First things first, there are two major types of color film we will cover and the difference is quite huge. Then we can go into the details of the various brands and lines of film that I have used and have several sample shots for each one. At right there are two sheets of film - shot at the same place within minutes of each other - on a light table. The one on top is a color positive film (also called a transparency or slide) and the one on bottom is color negative film (also called print film). As you can see they are quite different.

**Positive film** gives you an image the way you saw it when you snapped the shutter. It also produces rich, saturated colors and strong contrast. Due to these characteristics, it is very important that the exposure is perfect when using positive film. There is not much room for error, overexposed areas will quickly become completely white and unusable, underexposed areas

Color Positive Film (Provia)

Color Negative Film (Ektar)
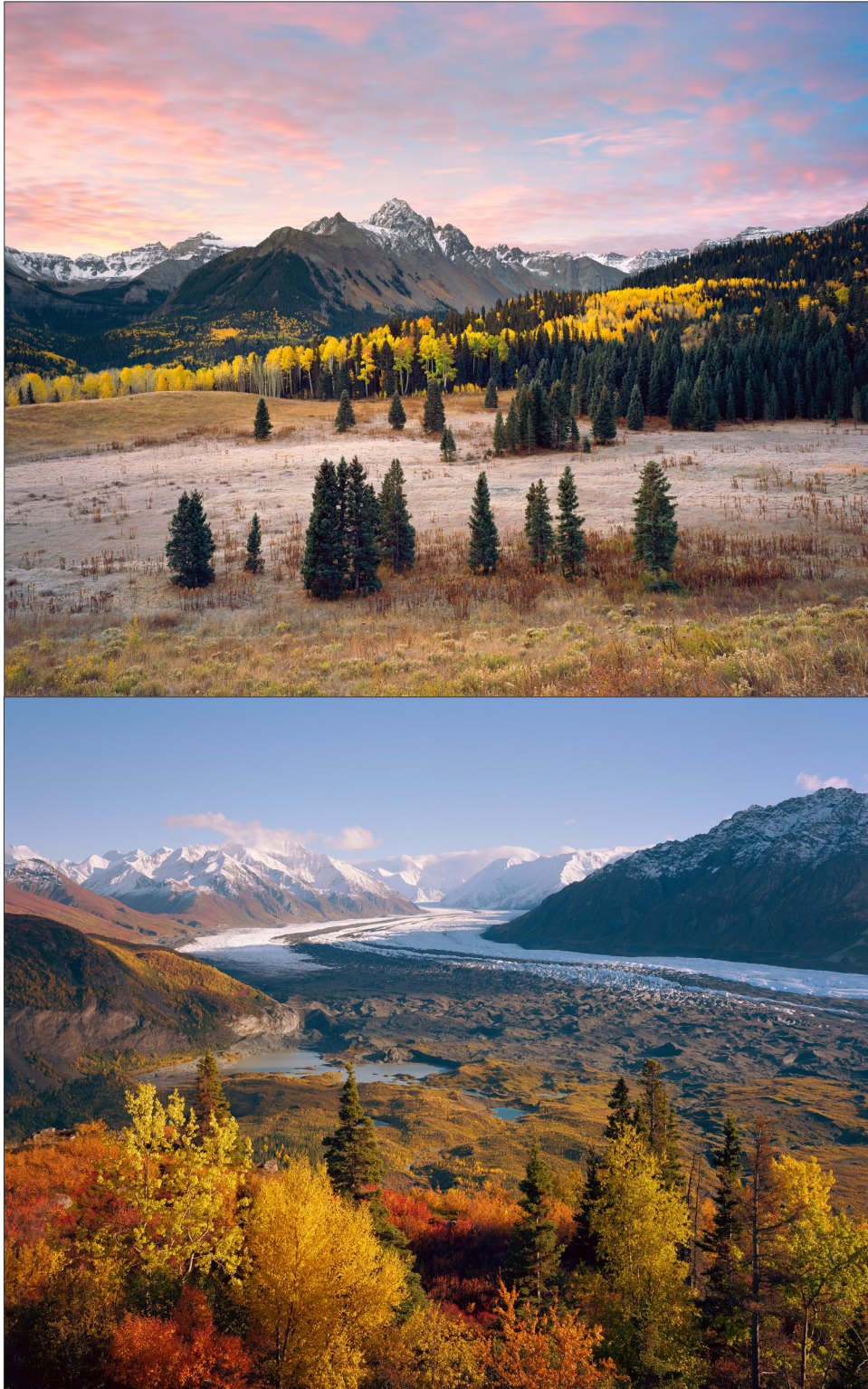
If you're willing to go through the extra work of color correcting negatives after the shot, Ektar will reward you over and over. You'll find that the level of detail the film can hold is downright amazing! Vibrant sunrise hues and deep shaded mountain valleys can be managed together with ease, such as the image at top left. Even a slide like E100 would struggle with images like this.

On a recent extended trip to Alaska, I ended up shooting for nearly three months without seeing any results from my film. I was confident that Ektar would be the film to use more than any other because it can just handle whatever crazy and uncertain conditions might come your way. For the good majority of scenes I would shoot one sheet on Ektar and another on slide (usually E100). Part of this was done for the sake of a backup on such a long adventure, but it was also because I wanted to see many images on both types of film. While I absolutely love most of the slide sheets, there were often times when the Ektar image beat it out slightly in terms of extra shadow detail or color in the highlights.

After developing all of the film, I would often use a sheet of slide film on my light table as a target for color when scanning the sheet of Ektar. As we will talk about in the scanning section, color negatives have a lot of room for interpretation. The image at bottom left was one that looked quite nice on the E100 version, but there was more information - especially in the shadows - to work with so the Ektar sheet became the winner.

Top: "Sneffels Meadow Sunrise" - Colorado, October 2021
Ektar 100 4x5, 90mm lens - 20 seconds at f22, 2 stop soft GND filter

Bottom: "Matanuska Autumn" - Alaska, September 2022
Ektar 100 4x5, 125mm lens - 1/15" at f22, no filters

A 4x5" view camera in its natural habitat. Cameras like this don't come with a light meter so we need to get the exposure right ourselves!

Your film camera may or may not have a light meter on it, but either way that meter itself can't guarantee you perfect exposures. Whether the meter is built into the camera or you are using a separate one, it's just a tool that tells you how much light you will need to achieve an "accurate" exposure. A light meter has no artistic skills and it doesn't know if it's being pointed at black lava rock or a snowy glacier. It's up to you to make these judgments, and to have the skill and experience to get the most out of your film.

Most 35mm cameras and many medium format cameras will have a light meter built into them. Some of these will be in

perfect condition and can be considered accurate and usable, others will have meters that don't take modern batteries or even old selenium meters that can no longer be trusted to give a reasonable reading. Whatever meter your camera has, you need to compare it against another meter that is known to be good so you can count on it to be true. If you're shooting large format or your camera doesn't have a meter you can trust, then we need to use an external meter especially on slide film.

While I may be a die-hard film user, I think the metering process has been sped up greatly with the help of a small digital camera to meter light with. I may never show any images from a digital camera but for the past decade it has played a very important role in my exposures. Just as some traditional photographers would have used a Polaroid to check exposure on the scene, I have become a huge fan of using the histogram and LCD display on a digital camera. I'm not going to encourage anyone to go spend a chunk of money on a digital camera, but there's a good chance many of you already own one.

Here are a few other options for light meters:

- A hand held **Incident** meter records the light falling on the meter, which is useful for studio/portrait photography and when you can get the light meter into the actual area where you are shooting. You could also use this for intimate scenes where the lighting is even.

- A **Reflective** or spot meter records the light hitting the subject, which is useful for landscapes with varied light and when you can't place a meter in the location you are shooting such as distant mountains in sunlight when you're standing in shade. This is the type of meter that will be built

Below is a chart that shows the reciprocity characteristics of several films, feel free to Google the sheets for films you don't see here. Several film types will say they are not recommended beyond a certain time, but that just means it's up to your own experimentation. Since each film starts to need compensation at different times and each manufacturer has a different way of calculating this, it gets tricky to make a table but this should still help with a starting point.

Fuji is excellent at supplying this info, but Kodak pretty much just advises doing your own testing. When in doubt, always feel free to experiment! You can see there is a large variation between the different emulsions, with slide films doing rather well aside from Velvia 50 and black and white films needing a huge amount of exposure compensation.

There are metering apps for smartphones that have reciprocity failure compensation calculators for several emulsions such as *Reciprocity Timer* for the iPhone or *Reciprocity* for Android if you like to be exact. I just keep the idea that I need to add time during long exposures in the back of my head and typically don't run into troubles.

Film Type	Reciprocity Failure Exposure Compensation (in stops)				
Velvia 50	0 up to 2"	+1/3 at 4"	+1/2 at 8"	+2/3 at 16"	+1 at 32"
Velvia 100 (And Astia)	0 up to 60"	+1/3 at 120"	+1/2 over 240"	+2/3 at 480"	
Provia 100	0 up to 120"	+1/3 at 240"	Not specified beyond 240" by Fuji, see below		
Kodak E100 (New)	0 up to 16"	+1/3 at 60"	+1/2 at 120"		
Kodak Ektar	0 up to 10"	+1/3 at 20"	+1/2 at 30"	+2/3 at 60"	+1 at 120"
Kodak Portra (160 and 400)	0 up to 2"	+1/3 at 4"	+1/2 at 8"	+1 at 16"	+1.5 at 32"
Ilford Delta 100	0 up to 1/2"	+1 at 4"	+1.5 at 8"	+2 at 16"	+2.5 at 32"
Ilford HP5 400	0 up to 1/2"	+1 at 4"	+1.5 at 8"	+2 at 16"	+2.5 at 32"

Provia is an outstanding film for long exposures due to its lack of any reciprocity failure up to 2 minutes. Even beyond that the compensation is very minor and hardly a problem for exposures of several hours.

Provia 100f 4x5, 135mm lens - 20 seconds at f22, warming filter and hand dodging the sky.

I just use a separate small polarizer on the digital camera so I can quickly meter for the scenes without any math, making adjustments to exposure compensation as needed.

To use a polarizer, simply turn the filter while looking through the camera. If you have a rangefinder and can't look through the actual lens you can take the filter off and just view the effect with your eyes, then put it back on the lens in the same orientation. You don't need to use a polarizer all the time, in fact I rarely do these days aside from waterfalls and occasionally to darken the sky. If there's any reason to believe the filter will do more harm than good then leave it off! Here are a few times when I would recommend *not* using one:

- When the skies are clear and the filter would cause a dark wedge from uneven polarization.

- When it may create too much contrast by over darkening the sky.

- When the added filter density may slow down shutter speed too much, causing problems with objects blowing in the wind or other long exposure complications.

When shopping for polarizing filters you will see that they come in a linear or circular type. This difference denotes a specific way that light passes through it. They both have the same effect on images but cameras with autofocus or through-the-lens metering will need a *circular* polarizer. If you're using a completely manual camera you can save the money and use a linear polarizing filter. These are becoming increasingly rare.

Color Correction Filters
Most film that you buy these days is only available in daylight balance, meaning that it is designed to have the correct color balance (also known as white balance) during daylight hours

Without Filter
(Simulated)

With Filter
(81B warming filter)

The difference without a warming filter can be rather large on some slide films, especially Provia. If left unfiltered, the highlights can become so blue that they can't be recovered with post processing after scanning. Provia 100f 4x5, 90mm lens - 4 seconds at f32, warming filter

when the sun is shining strong. Back before digital made color corrections far easier, there were films made for various other shooting conditions such as warm toned film and tungsten balanced film for using with indoor lighting. If you're not shooting in daylight conditions there's a good chance you need to use a filter to achieve the proper colors.

Some people may ask, "why not just correct it in Photoshop after scanning?" This is a very reasonable question in a modern time when digital post processing is a common part of film

photography that some people just don't enjoy. All you have to do is mail it to them and exchange the effort for a good lump of money. You can even tell them to push or pull the processing if you made a mistake during exposure or desire non-standard processing. If all you shoot is color film and not all that much of it, labs can be a great way to go for the time being.

Develop the film yourself

If you want more control in the developing process, want quicker turnaround times, or shoot a lot of film and want to save a serious amount of money you may want to consider developing the film yourself. It doesn't really take nearly as much effort as people think to get started with film developing, you don't even need a dedicated darkroom in your home. If you just want to try black and white film it's even easier, but let's demystify the process of color film developing as well.

As a comparison of costs, developing a roll of film at a lab typically costs between $10 to $12 for either black and white or color. Developing color film yourself brings the cost closer to $4 a roll, for black and white it's more like pennies. A small initial investment of equipment and chemicals can save you a lot of money down the road.

There are a lot of factors to keep in mind before deciding to develop film on your own. It's not the right answer for everyone so here are some things to consider:

- How much film do you shoot? Color chemicals do not last very long. Once you've opened the $150 kit of concentrates, you need to use it all within a few months. That kit can easily

Black and white film is incredibly easy to develop at home. Delta 100 4x5, 135mm lens - 1 second at f45, orange filter

develop 72 rolls of film or 150 4x5 sheets. For lower volume shooters you can buy $30 C-41 kits and $60 E-6 kits that will do a dozen rolls of film and last about 6 weeks. Will you shoot that film much before the chemicals are wasted?

- B&W film chemicals are far cheaper and last much longer. A concentrate bottle of HC-110 can be used for a couple years and fixer and stop bath are used over and over before they are exhausted. While color developing processes are rather set, B&W is supposed to be controlled by the photographer to get the best results with different film and developer combos.

Sample Negative Scan

Again, I'm going to start with an image that will challenge both us and the scanner software. I don't want to use easy examples for this because I really want you to learn manual color control, so we're going to go with a sheet of Ektar that was shot into the sun with a three stop reverse GND filter. The dynamic range of this scene is rather insane with the sun being about as bright as the film can handle and the deepest shadows bordering on underexposed. Underexposure results in stronger and somewhat weirder colors on negative film so that's another challenge we will have to overcome.


"Cholla Garden" - Kofa Mountains, Arizona - March 2017
Ektar 100 4x5, 90mm lens - 8 seconds at f32, 3 stop reverse GND filter

Scanning the film

Much of the scanning for this film is going to go about the same as slide scanning so make sure to read that section before you do this (page 161). Start up Epson Scan and switch the film type to "Color Negative Film" and start a preview scan.
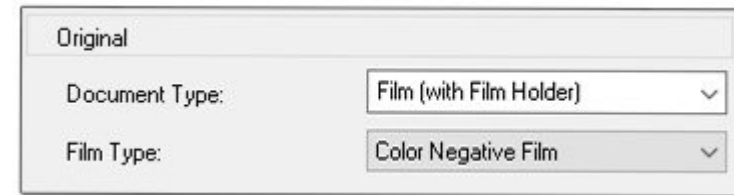
Once the preview scan is done, you're going to see some very ugly cyan film frames that barely resemble your image as shown below. Yuck! Now draw a box around the frame with the marquee and it should apply some auto correction.
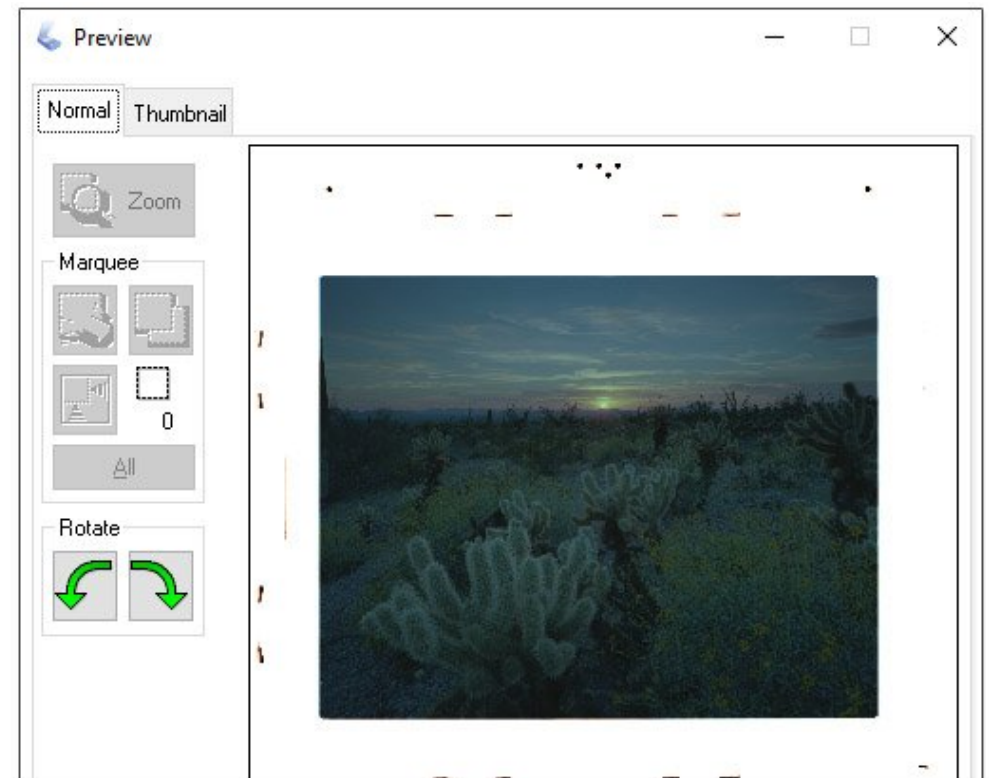
Film Base Subtraction Method

Now we're going to move onto the current method I use for inversions, which uses the border of the film as the base for color correction and setting the black point.

This works very well because I have a drum scanner which captures the entire frame including the borders, but you should be able to find a way to include just a tiny bit of film border in your scans as well. If you're using a scanner with a film holder, it would be possible to cut a notch in the holder that allows some of the border to come through. Be creative with your thinking and come up with a method to include just a bit of border, this method really helps during the inversion process.

Just as before we're going to take this scan that looks exactly like the negative and start with an inversion curves layer. Drag the left point to the top and the right point to the bottom, and fiddle with the colors by dragging down on red and up on green and blue. I highly recommend creating a preset for this curves adjustment, because you'll probably find it works for most of your inversions with maybe some mild tweaking for different film types.

If you have trouble getting this initial inversion layer to look close at all for you that's just fine, the next step and additional curves layers will get the job done. In the past I have even done just a basic inversion (with no work in the color channels) at this first stage and it's still possible to carry on with the rest of the process.

At top right are the adjustments that I use over and over, since each person will be using a different scanning setup it won't be quite the same for everyone but it should look somewhat similar for you. After this layer is applied the image will now be a positive, albeit a bit washed out and lacking in color accuracy.

Initial Inversion

Original Scan