

2015

Lens and Camera

Blogs

By

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Introduction

This free e-book is a collection of blogs posted here and there on the Internet via various photography websites on what I happen to be working on at the time. I make no claims about fine finishing this text, but just offer it to those who might enjoy reading or get something out of it. Also, I may even change my mind or contradict myself, as I continue to progress in my own education. This volume covers topics such as the Nikon D810, industrial lenses, some mirrorless, the Zeiss Otus series of lenses, and so on. There might be something in here worth browsing through.

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Many free instructional videos here:

<https://www.youtube.com/playlist?list=PL5xDr8mWUwrzi4bxY978O1DQykUj-S2l>

Many free e-books here:

<http://spiritgrooves.net/e-Books.aspx#PhotographyLe>

The Ordinary in Extraordinary Lenses

By Michael Erlewine

I love the line in the film “The Outlaw Josey Wales,” when Chief Dan George takes a piece of colored candy from his pocket and says to Clint Eastwood, “All I have is a piece of hard rock candy. But it’s not for eating. It’s just for looking through.” That’s what lenses are all about, looking through. However, many cheap lenses have all kinds of aberration and faults that make them painful to look through.

I do my best to avoid these kinds of uncontrolled lens aberrations. I have spent years seeking out better and better-corrected lenses, what are called apochromatic (APO) lenses, where as much of the distortion and aberrations have been removed as possible, leaving what could be characterized as a pure transparency, just a clear medium that we can see through. But here is the ironic part.

When we finally refine our apochromatic lenses until nothing impedes their transparency, I find that something of great value is missing or has been lost in some of those lenses. Like those trace elements in sea salt that the body so desperately needs, something similar happens in fine lenses. What I call a “forensic” lens, a lens that is absolutely flat and actually copies whatever it sees (a “relay lens”), has little of interest to relay.

I am putting aside for this discussion the artistry of the photographer who can make almost any lens dance. Here I would like just to discuss the lenses themselves.

In the last analysis, when we have removed all the defects, all aberrations, distortions, etc. that we can, we end up with a relay or copy lens. What you see is what you get. It is at that point that I find that certain imperfections in the lens themselves may have meaning and use, if they can be controlled. Oddly enough, I am reminded of my first real-life or dharma teacher, an 81-year-old man who was a traveling initiator into a Rosicrucian order, who had the little finger of one hand permanently slightly bent. He would say to me that this imperfection was all that there was keeping him in this world.

Of course, I had no idea what he meant, but it could be something like I am describing here with lenses, that when all is said and done (as for correcting a lens), that the best lenses have some remaining twist, differential, or “fault” that allows us to see through them into a world that is not simply a copy of what we ordinarily see, not just a relay lens. Instead, that ever-so-slight defect is what gives a lens character and makes it different or special from what I label as a pure copy or forensic lens. I am asking about lens character.

I have struggled to find highly-corrected APO lenses, lenses free and clear of all distortions, etc., only to find that with the vanishing aberrations sometimes go the very thing that led me on in my search for clarity-in-lenses in the first place. What kind of Catch-22 is that? And what kind of life-message is that? For me, it is a particularly profound one.

I have assembled scores of lenses that can be used for close-up and macro (or micro) photography. Some are more corrected than others. The best are apochromatic to one degree or another of refinement. The worst, the least-corrected lenses, cast color-

fringing that destroys the “sharpness” of that particular lens. I have few of those kinds of lenses left in my collection and never use them.

When I look into the “best of the best” apochromatic lenses, as I mentioned, I find ones that are extremely flat and very clear. You would think that was enough, the sheer transparency and clarity, a lens that transmits a perfect copy of the world out there. Yet, oddly enough, this kind of “copy lens,” what I call a “forensic lens,” is not satisfying to me.

It appears that along with the vanishing aberrations, as we correct a lens, often goes that differential or angle of interest that has led me on all this time in my search for marvelous lenses. I admit that this is hard to explain or put into words. Some of you will know what I am talking about here and can comment in your own words.

It is the defects in life that make it challenging, that slow me down (bring me down) into actual experience, something that for a “thinker” like myself I tend to avoid. In a similar way, I am finding that in the last analysis, in the last judgment, so to speak (the most recent, anyway), I am sorting out APO lenses into two groups. On the one hand are those that are essentially relay lenses, copy lenses, free of almost everything but their own transparency, and on the other hand are those lenses that have some small (but to me beautiful) defects remaining that ever-so-slightly alter the image so that what I see through that lens takes me out of the pure copy-world I am so familiar with and puts me into an altered space where I somehow see beyond the ordinary.

I know that many of you reading this will say that I am overthinking things, but am I? An example would be

the EI Nikkor APO 105mm f/5.6 enlarger lens. It is absolutely highly corrected, not only in the entire visible spectrum, but even beyond both ends of that spectrum and into the near infrared and near ultra-violet. Yet, and here is my point, this lens has a distinct character or draw.

Perhaps, when we correct any lens, when we distill it down, removing (or controlling) all the aberrations, etc., what is left is some “distillate,” some trace effects that become what we call the character of that particular lens. Perhaps this is what that elusive term “micro-contrast” is all about. And perhaps some APO lenses have very little trace-character to them or they have a trace-character that does not satisfy us in some way that we require. I can't say for certain.

Then there are lenses like the CRT Nikkor-O, a lens that makes no pretense in terms of being highly corrected, but nevertheless is very fast (f/1.2) and has high resolution, but at the same time has admirable defects that are almost unpredictable, but so lovely.

So, for me at least, the bottom-line here is that I have run the gamut of most of the APO lenses I can find to fit the Nikon F-mount and have begun to modify my previous desire to find the “Holy Grail” of APO lenses, which has now morphed into: I want highly-corrected APO lenses that, nevertheless, have a distinct character or distillate that projects me beyond the obvious ordinary into the extra-ordinary. In other words, the extraordinary only can be found through the lens with a touch of the ordinary, some beautiful defects.

This article is not meant so much as a statement, as it is a question. What are your thoughts about this, for me at least, dilemma?

[Photo taken with the Voigtlander 125mm APO-Lanthar f/2.5]



The Repro-Nikkor - A One-Trick Pony

By Michael Erlewine

A rare (and unusual) industrial lens is the Repro-Nikkor 85mm f/1.0, which is somewhat of a one trick pony. It weighs a whopping 640 grams (1.41 lbs.) and is faster than probably any lens you own. It is amazingly sharp, but designed for only a single reproduction ratio, that of 1:1. It is entirely reversible; you can mount it front or backward and it can serve as a relay lens.

The Repro-Nikkor has an unmarked aperture ring that goes from f/1.0 to f/8, and the lens itself consists of 12 elements in 8 groups. The lens has 53mm external threads, with 48mm internal threads. The lens is five inches long, with a diameter of 2.5 inches, and is built like a tank, an elegant one at that. To hold one in your hand is an experience. It is so heavy.

As a reproduction lens, it was designed to function from 0.9x – 1.1x at a standard wavelength of 400 – 650 milli-microns. The lens is highly corrected, because it is a super copy-lens, with 0% distortion and 0% vignetting. It resolves at an incredible 200 lines/mm and has an image area of 24mmx36mm (42.2 mm circle). The lens has an overall working distance of 8.82 inches and no way of focusing it.

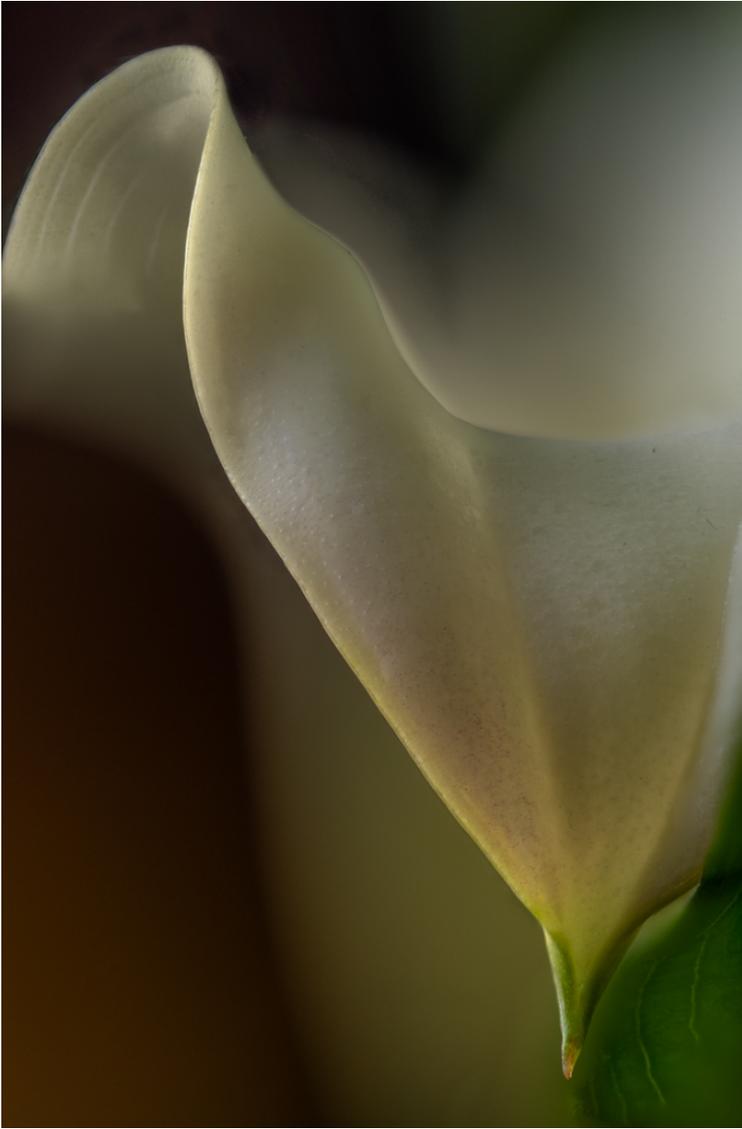
In other words, it has no helicoid, but it can be mounted directly on the camera, and the camera on a focusing rail or on a bellows system. You won't find a clearer lens with more light in your viewfinder, anywhere. And now for that one-trick this pony does.

Since it is designed only to be used at a 1:1 reproduction ratio, you don't need to own it unless you want to work in a true macro range at exactly 1:1, in

which case it is sharper than sharp, with a strange ethereal quality when used wide open. It has very limited range of use. The Repro-Nikkor is a very specialized lens. It does one thing very well, but that's about it. I happen to like that one thing... a lot. It turns up on Ebay once in a while.

Here are a couple of images with this lens, a photo of it, and a quick shot of it mounted on Novoflex Castel focusing rail with the Nikon D810. The camera sits on the Swiss-Arca Cube C1 geared-head, on a RRS tripod. There is an old Zacuto Z-Finder on the back, to help magnify the LiveView screen.







The Wild-West World of Industrial Lenses

By Michael Erlewine

We are not quite at the point of dumpster diving for exotic lenses, but real close. Those of us into still-photography probably have at least heard about the virtues of the legendary Nikon's 58mm f/1.2 Noct-Nikkor or the Voigtlander 125mm f/2.5 APO-Lanthar that has cult status. These lenses often go for thousands of dollars each on Ebay, now that their secret is out. I wish I had known about them when they cost next to nothing. There is one genre of great lenses that are still in their heyday, price-wise, meaning you can find a bargain for very little cash, and that is among the field of industrial lenses.

They don't often go to infinity, but there are literally hundreds of models of industrial lenses of very high quality that almost no one knows about, including me. Take the large high-end flatbed scanners, We are still in the days of the Wild West when it comes to the great lenses to be found in them. Yes, the industrial lenses we have already found and tested turn up on Ebay for high dollars, but you can also find them in used or junked scanners of the right brand and models. One thing we do know is that in order to scan and copy something like 35mm motion-picture film or high-end art, the lens has to be very flat and highly-corrected, in other words, apochromatic. And it has to be super-sharp. To me that sounds like a recipe for a premium lens.

For decades there have been many high-end copy scanners made and each one of them has one or more lenses in it. I realize that not everyone is interested in specialized close-up and macro lenses,

but those of us who are would do well to pay attention to what's available in the industrial lens market. I have been writing here recently about some of the "found" and better known industrial lenses, but there are probably dozens of exquisite industrials waiting out there for someone to find and test. I will mention just one that I wager few of you know about, one of the earlier Scitex scanners, a company later bought by Creo, and still later picked up by Kodak. These were high-end flatbed scanners that had inside them three Rodenstock lenses with a very high degree of apochromatic correction:

Rodenstock Scitex S-3 89mm f/5.0
Rodenstock Scitex S-3 67mm f/4.9
Rodenstock Scitex S-3 110mm f/5.0

I have one of the above lenses, the Rodenstock Scitex 89-S3. This lens was designed for the CREO (formerly Scitex) high-end film scanners, in particular the "CREO Supreme II," with over 5000 ppi resolution, which cost around \$45,000 dollars. Resolution and color were of paramount importance for the scanner, so every effort was made to meet APO specs. This lens is not only rare, but it apparently is a true apochromatic. The full-metal handcrafted barrel is fully round, with a fixed aperture, no aperture blades, and a rear mount that will take a M39x1 adapter to Nikon F-mount.

My personal sojourn into exotic lenses started with the brilliant work of Bjørn Rørslett, some of which can be found here:

http://www.naturfotograf.com/lens_surv.html

In recent years, I have been helped and guided into the "industrials" world by Dr. Klaus Schmitt and his

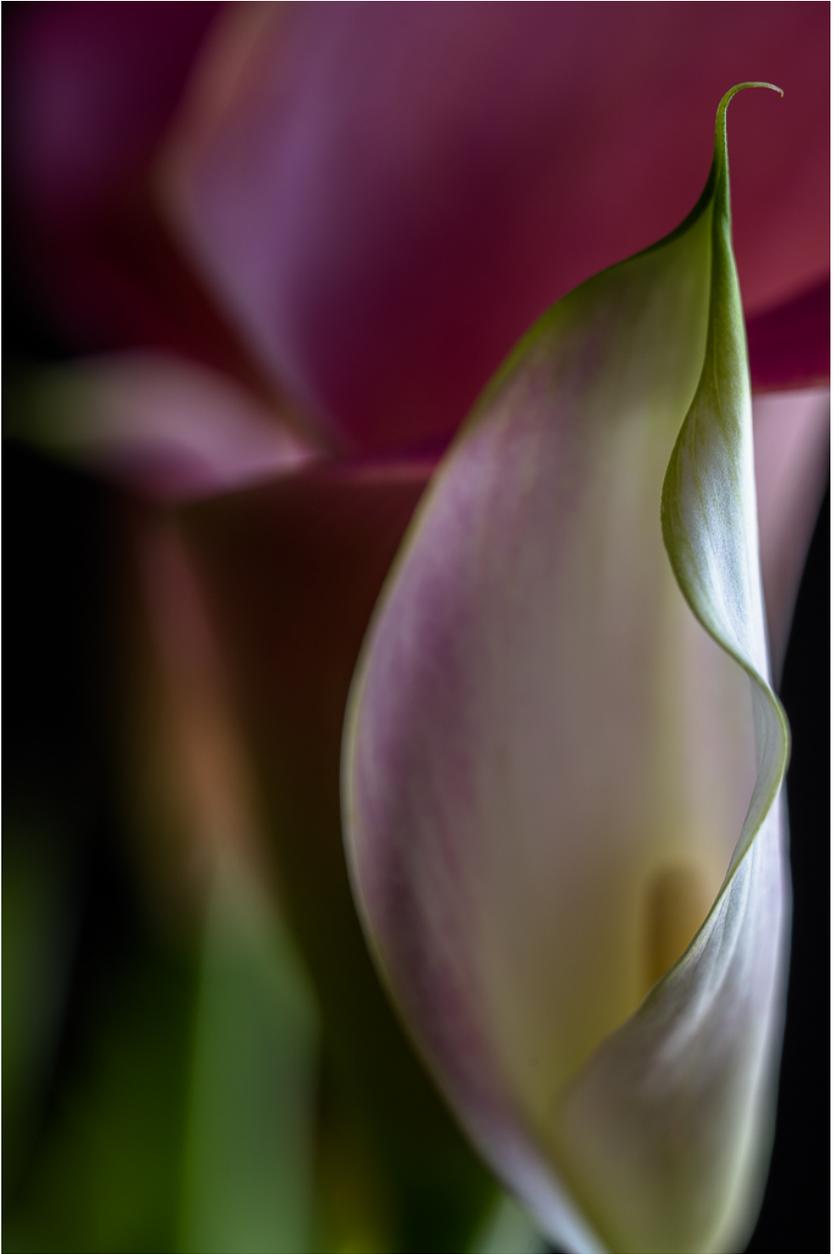
incredible “The Macrolens Collection Database,” which can be found here.

<http://www.macrolenses.de/start.php?lang=en>

However, as mentioned above, there is nothing stopping us from doing a little research into high-end scanners and searching Craig’s List or even a junkyard for old scanners and copy machines. Make sure the lenses have not been stripped out of them.

I include a picture of one of the CREO Eversmart Supreme II flatbed scanners, the Rodenstock 89-S3, and an example photo taken yesterday with this lens. The Rodenstock is mounted on a Nikon PB-4 bellows, and happens to have a small helicoid on it, here just used for extension. The rig is the Nikon D810, with a Zacuto Z-Finder viewer on the back so that I can better see to focus in Live View. All this sits on the Swiss-Arca C1 Cube geared-head and one of the Series-3 RRS tripods. It is still dark out when I took this photo, but you can see a $\frac{3}{4}$ -Stop diffuser behind, and a piece of black velvet to your left.







The Nikon Multiphot – The MacroNikkors

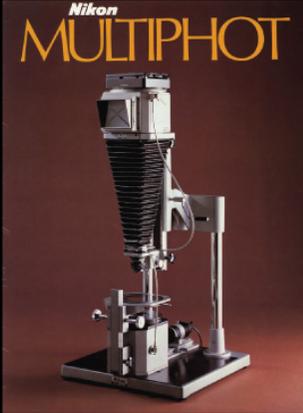
By Michael Erlewine

The Nikon Multiphot system is a large table-top enlarger-like device with a very long bellows used for magnifying objects. The Multiphot was designed to cover the area of magnification from 1:1 up to something like 10x, the point where regular microscopes come into play. This machine was designed for large-format 4x5 photography, although it also came in a 35mm Nikon F-mount version. The Multiphot typically came with four lenses, usually called the Macro-Nikkors, which are quite rare and expensive on the used market.

For my work, the Nikon Multiphot system with its Macro-Nikkors (four high-magnification lenses) is a mixed bag. Let's review the Macro-Nikkors, which are single-coated lenses, as they were not intended to be used except in the laboratory. When used outside in daylight, they may be prone to flare. I have mostly used them in the studio, but the 65mm and 120mm I have used in the field. The four lenses are:

- 19mm f/2.8 (white colored ring)
- 35mm f/4.5 (blue-colored ring)
- 65mm f/4.5 (yellow-colored ring)
- 120mm f/6.3 (red-colored ring)

THE MACRO NIKKORS



Nikon Multiphot System



Macro-Nikkor 135mm f/4.5



Macro-Nikkor 65mm f/4.5



Macro-Nikkor 120mm f/6.3



Original Multiphot Lens Case

THE MACRO NIKKORS



Macro-Nikkor 19mm f/2.8



Macro-Nikkor 135mm f/4.5



Macro-Nikkor 65mm f/4.5



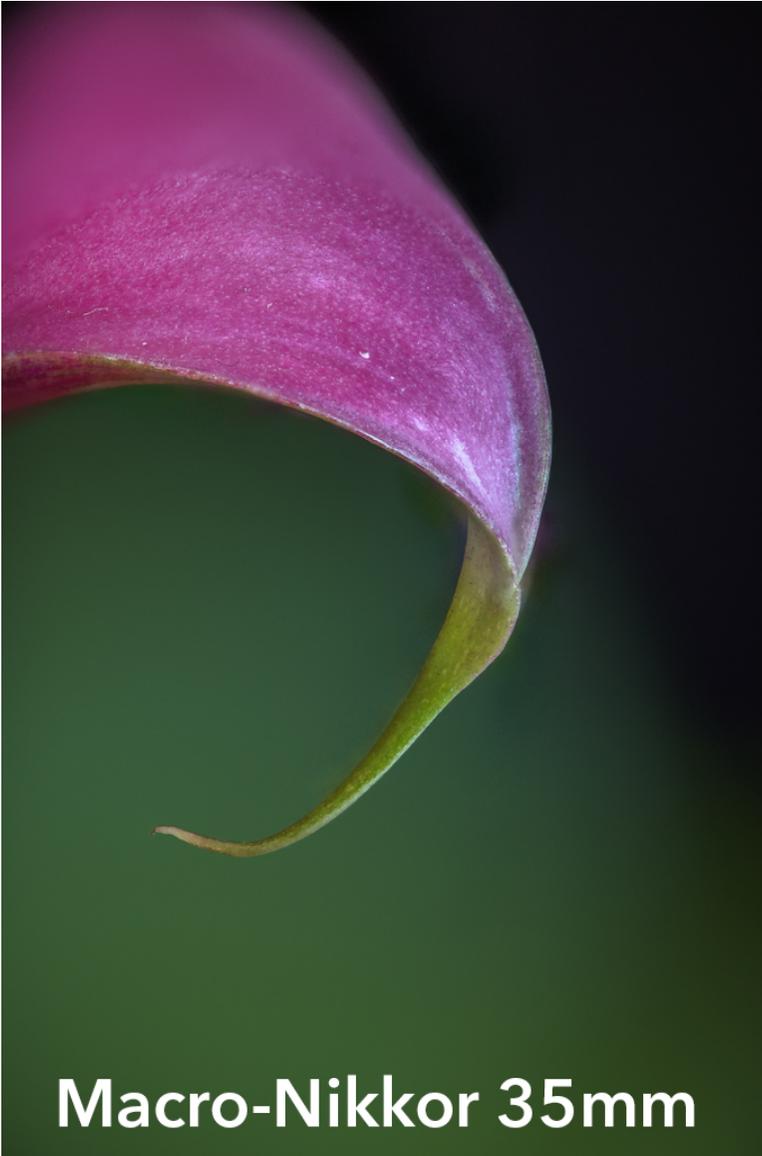
Macro-Nikkor 120mm f/6.3

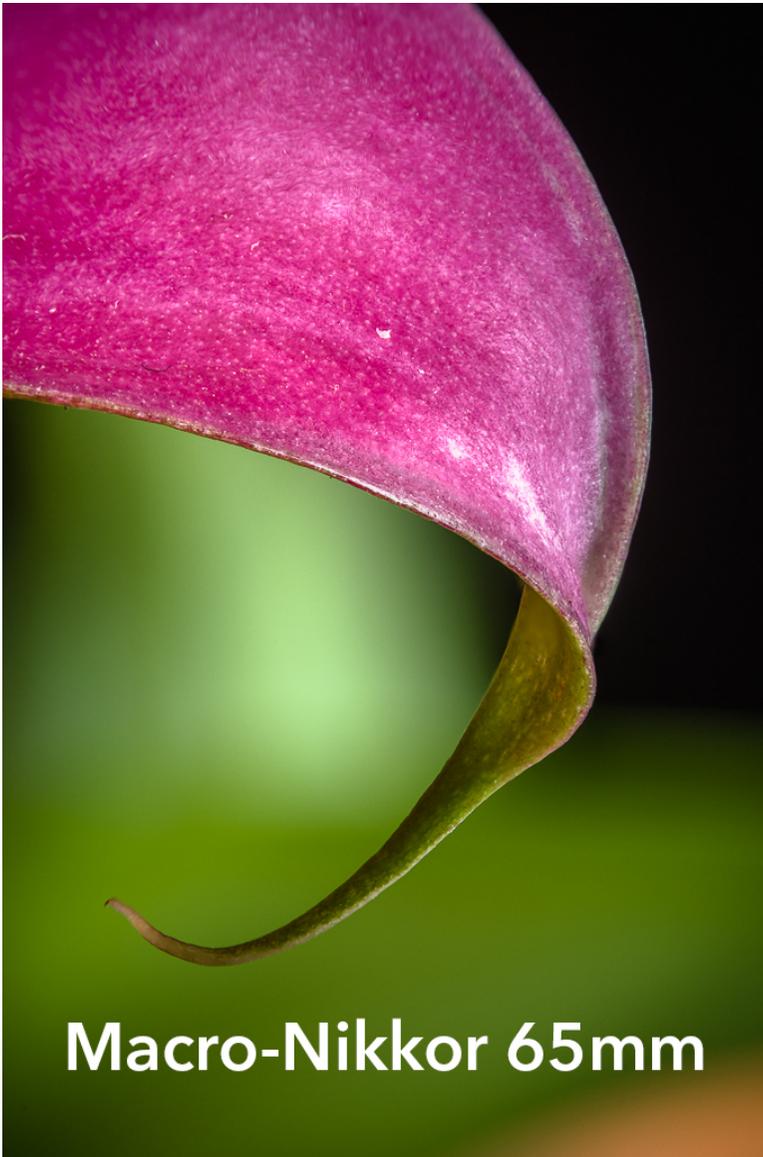
Macro-Nikkor 19mm f/2.8

The Macro-Nikkor 19mm f/2.8 is designed for 15x-40x, (marked 20x on the lens barrel), too high for anything I do, and not something one would take into the field. This lens has a RMS microscope screw mount, so an adapter to Nikon-F has to be obtained. Typically, this lens is used in the studio on a tripod, as the working distance is only about 20mm or so. I don't use (or even own this lens) because I seldom shoot macro greater than 1:1.

Macro-Nikkor 35mm f/4.5

The Macro-Nikkor 35mm f/4.5, which I have used, although somewhat sparingly, can be used on a standard DSLR, although it too is designed for high magnifications, optimized 8x – 20x, but marked 12x on the lens barrel. I have used it, mounted directly on a Nikon body, with the camera on a focus rail. This lens has a RMS microscope screw mount, so an adapter to Nikon-F has to be obtained.





Macro-Nikkor 65mm f/4.5

The Macro-Nikkor 65mm f/4.5 is everyone's favorite of the set, being actually usable for macro and even close-up work. It is optimized for 2.5x – 10x, and marked 5x on the barrel. This lens has a Leica M39mm thread, for which an inexpensive adapter to Nikon-F can easily be found on Ebay.



Macro-Nikkor 120mm f/6.3

The Macro-Nikkor 120mm f/6.3 (12 cm on the barrel) is optimized for 1.2x – 4x), but marked 1x on the barrel is quite usable on a bellows. This lens has a Leica M39mm thread for which an inexpensive adapter to Nikon-F can be found on Ebay.

All of these four Macro-Nikkors are very sharp, so resolving power is not a problem. What is a problem is the fact that as far as I can tell, none of these lenses are highly color-corrected and it shows in the photos it produces. They are very sharp, but to my eyes the color is kind of crude, crude enough not to recommend itself IMO. These lenses were made for magnifying objects at 1:1 or higher, rather than for color-copying film, etc. of one kind or another. In other words, these are not enlarger or film-scanning lenses, which have to be more color corrected.

The color is not horrible; it is just not lovely, and there is not a lot you can do about it in post to improve it, or: why bother? And these lenses are collected and are expensive.

The takeaway from experience with the Macro-Nikkors for close-up work is that my initial search for very “sharp” lenses has to be amended with a clause “... provided they are highly color-corrected,” – apochromatic. Sharpness by itself does not make a fine lens for my work. A good example of this are the Zeiss Makro-Planar 50mm and 100mm macro lenses. The build is incredible and they are very sharp indeed, but Zeiss did not go the extra mile to color-correct them, so there they sit on my shelf. I keep trying them, because they are such nice lenses and a 50mm macro lens is hard to find. But each time I use them I am reminded once again by the various

aberrations they exhibit to put them back on the shelf. I eventually sold mine. I just did not use them.

Summary:

If you're a micro-photographer, shooting is at 1:1 and above, verging on lab work, these lenses fill the bill. However, chances are you don't have a long-enough bellows to get the ultimate out of the lenses. You would have to have the Nikon PB-6 bellows (plus PB-6E extension) to approximate what the Multiphot bellow system (300mm) provides.

If you want to use these lenses for "normal" photography, forget about it. They are meant to be used fairly wide-open, and if you use higher apertures to get greater depth-of-field, diffraction will stand in your way. However, if you are a focus-stacker, these lenses are great for stacking focus, provided you don't expect highly-corrected color.

As for myself, I have grown accustomed to highly-corrected color, so these lenses no longer are acceptable for me, unless I just want to magnify something and have it sharp.

The Macro-Nikkors do require special adapters and since I don't tend to use extended bellows, I use them in two ways:

(1) Directly mounted on the camera, and then the camera and lens mounted on a focus rail, in order to focus. These lenses have no way of focusing otherwise.

(2) The other method is to mount them on a bellows, which is what I do most of the time.

These are very sharp lenses that don't go to infinity, must have special adapters, and then have to be mounted on some focusing device (rail or bellows).

They are not well-corrected, so the color IMO is a little harsh. And they are very expensive. Still, I have three of them and do use them occasionally, but usually only to remind myself why I don't want to use them often.

I find myself liking the 120mm lens from this group. It has quite nice color and is more in the range of what I do, which is close-up photography.

Stacking: The Devil and the Deep Blue Sea

By Michael Erlewine

My struggle with stacking focus has been going on for years. Lately, mostly because of the advent of the new Zeiss Otus series of apochromatic lenses, I have segued into deciding should I stack at all. What I have been doing recently is stacking photos at a wide-open (and fast) aperture and, after the stack, I also take a separate traditional single-shot photo at the highest aperture I can get away with. I compare the two results, the stacked image and the single-shot photo. The results are fascinating and somewhat disturbing.

Before I sing whatever praises I may have of focus-stacking, let me explain what I find disturbing about this comparison. For one, unfortunately the process of stacking images alters the color in the image somewhat and I find it very difficult to match that color later in post. Until I started taking (along with a stack) a single-shot photo at high apertures, I was mostly unaware of the differences between the two because I am not in the habit of developing the stacked-layers before I stack them, but only the final stacked image. In other words, I seldom see what the developed layers for a stack look like compared to the final stacked image because I never develop them.

Aside from a color-shift between the stacked and none-stacked photos in the comparison, the single-shot image also seems to have more luminance. Another effect (I may be imagining) is that the stacked shot has more trouble softening reflective-light (highlights) resulting in a bit of unwanted (and unneeded) contrast. The resulting effect is that the

stacked image is a little crude or harsh compared to the traditional single-shot photo.

As for the merits of the stacked image, with it I am better able to control what is in focus and what is bokeh. That is the advantage of focus stacking. And most of all, by stacking at low apertures, I can keep the subject in sharp focus while having the background be whatever I want it to be, like a lovely bokeh. I can't do that with a single-shot photo at high apertures because the increased depth of field also overwrites any sense of bokeh that is present, so, once again, there is no free lunch.

One compromise I could try is to take a single shot photo at high aperture and a second shot wide open and paint in the bokeh background from the second shot into the first in post. However, I don't like the artificiality of this approach, not to mention the endless retouching it brings into play. I do enough retouching with stacked images as it is.

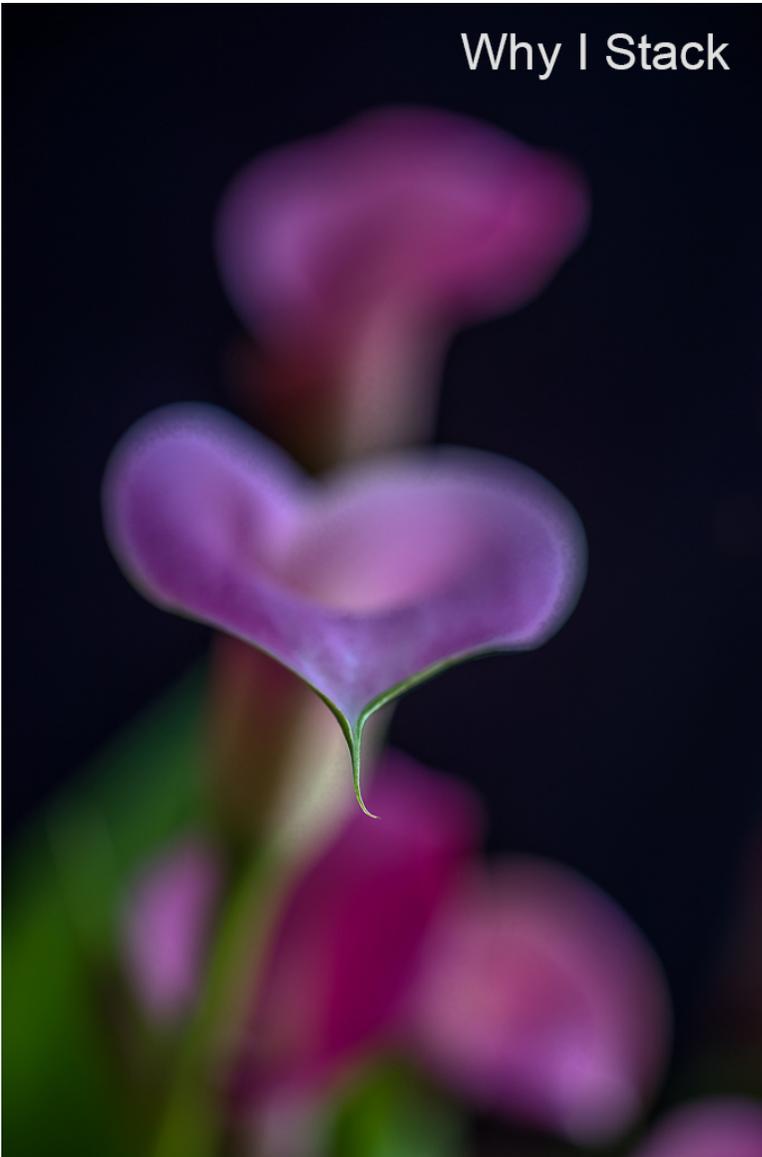
In summary, I feel I have pretty much explored the possibilities of shooting at low and high apertures, stacked or not-stacked. Perhaps this exercise could be more conveniently described as developing my technique. In that case, after all these years I consider my technique more-or-less developed. Perhaps I am finally ready to take some photos.

Here is a stacked photo and a single shot photo taken at a high aperture. Note that the stacked one has a slightly more limited view because the stacking process, especially on a focus rail (as this one), restricts what is in frame. Notice the loss of contrast in the stacked image. It is also less bright. I know. I am probably splitting hairs here.

My takeaway so far is that I will be taking more single-shot photos going forward. However, as this separate stacked photo demonstrates, I also will continue stacking. Stackers out there, what are your thoughts and your experience with this conundrum?

Nikon D810, CRT Nikkor-O, Zerene Stacker

Why I Stack



Single-Shot Photo



Stacked Photo



APO: Single-Shot Photos vs. Focus Stacking

By Michael Erlewine

Every once in a while I get the itch to share what I am doing photographically as regards technique, in particular when I am going through some kind of transition technically. There is no question that I am moving into the bleeding-edge of digital video, in particular 4K-resolution (four times the size of HD images) and trying to record it, but that is another story. I posted something on video the other day. I am also transitioning (or threatening to) with my traditional still photography. That's what I would like to comment on here.

I mostly shoot close-ups and macro photographs of nature. I have been photographing nature since 1956 when I was fourteen years old, and intensely studying nature since the age of six. All that is pretty straightforward. Where it gets more complex is when, without intending to, I began to mix my dharma meditation practice with my photography. I have recounted this story a number of times, so no need to detail it here. You can read about it in the book "Experiences in Mahamudra," which is available as a free digital download here or as a paperback (costs money) on Amazon.com.

http://spiritgrooves.net/pdf/e-books/Experiences_Mahamudra.pdf

In my own way I took a page from the Zen Buddhists and could probably write a book called "Zen and the Art of Photography," since I learned Insight Meditation and beginning Mahamudra Meditation through doing photography. In that process, fueled by seeing something about the nature of my own mind while

gazing through a camera lens, my photographic technique became increasingly involved and somewhat elaborate. Or: it became, technology aside, very simple.

I already knew, as all serious photographers do, that any photograph has a single plane of focus and that often the eye is drawn to a particular point of greatest focus in that plane on any given photo, leaving the rest of the photo less in focus or even blurry. The amount of any photo that is in focus is determined by the depth-of-field, and most photographers struggle to get more depth-of-field. Depth-of-field is typically controlled by varying the aperture of a lens. If the lens aperture is wide open (wide apertures like $f/1.4$ and $f/2.$), the depth-of-field is very narrow, so only a thin layer of the photo will be in focus. The rest will be blurry.

If the lens aperture is very narrow or small ($f/11$ and $f/16$), the depth of field will be deeper and much more of the entire photo will be in focus. In this case the camera becomes like one of those old pinhole cameras. But there is a problem. It is called "diffraction," and it is a simple law of nature, much like gravity. There is no getting around it.

When the lens aperture gets very narrow, the light has to squeeze through a tiny hole and it actually bends as it shines through. This bending causes the final image on the camera sensor to degrade and soften, actually making the image less sharp. So the photographer is caught between the devil and the deep blue sea, as they say. If we open the lens aperture very wide, there is little depth-of-field. If we narrow it down we get greater depth-of-field up to the point where diffraction kicks in, after which the image softens dramatically.

Photographers have tried (ever since the camera was invented) to get around the law of diffraction, but with little success. As mentioned, diffraction is a law of nature, pure physics, which brings me to my own involvement with this issue.

Years ago, as I gazed, day after day, through ever sharper lenses at flowers, critters, and tiny worlds, I wanted to not only see more of what I was photographing (greater depth-of-field), but I also wanted to see ever more clearly (what is called 'sharpness'). What we call "sharpness" is a combination of camera resolution and acutance. Resolution is too complex to go into here, but (although this is not the whole story) it is typically expressed by the number of pixels involved. For example, my Nikon D800E is a 36 MP camera.

Acutance has to do with how the edge contrast within an image is handled. While the resolution captured in a photo is fixed, acutance can be variable and manipulated in post-processing, after the photo is taken. High acutance can also be baked into a highly-corrected lens.

To make a long story even longer, in my mixing of photography with mind training, I pushed my lens apertures as far as I could, but eventually ran out of improved results. I wanted to see deeper (depth-of-field) and have the results sharper (which for me turned on acutance). How to do this?

To get (at least the appearance) of greater depth-of-field I began to learn to stack focus. Focus stacking is very simple, but also very tedious. Instead of a single photo, we take a series of focused photos, layers actually, starting at the very front of our subject and moving gradually to the rear of the subject. We end

up with a series of focused layers, from front to back, each layer clearly focusing on one section or slice of the subject. Then, using software, we combine these layers (which can be in the hundreds!), taking the sharpness of each successive layer, and we build a single image where the entire subject appears in perfect focus -- a stacked photo.

And so I wandered into the world of focus stacking, which involved taking ever more photos to obtain a single resulting photograph. And this took much more time, of course, than a single photo, which meant my subject could not move even a tiny bit or that movement would disturb the final image. Since at the same time I was stacking focus, I was practicing Insight Meditation, I actually enjoyed the elaborate procedure involved in stacking focus. It made my mind clearer and clearer as I proceeded, but that clarity was also tied to photography. In other words, if I wanted a clear head I had to go out and photograph nature, etc. As mentioned, that is another story.

I also found that sheer sharpness (resolution) by itself was not satisfying. Yes, my photographs were sharper, but they also became increasingly "contrasty," if that is a word. They became caricatures of themselves, so to speak, a kind of focus version of HDR. In fact, most of my "sharpest" lenses exhibited this quality. They were indeed 'sharp', but increasing less natural than what I saw with my eyes. And for me, photography is entirely impressionistic. I wish to capture in a photograph what my mind sees through my eyes -- that kind of thing.

So I banged my head up a dead alley for a while until I noticed something. There were lenses, very few in fact, that were somehow softer and more natural than others, and I began to collect them. These were what

are called APO lenses, apochromatic. In a nutshell, APO lenses are simply lenses that are more highly corrected than others. In particular their acutance (edge handling) is improved (think purple fringing). Various kinds of aberrations present in most lenses are corrected until the aberrations are removed. But this process of refining used in APO lenses is very expensive, at least APO lenses are.

In APO lenses I began to find what I always had looked for, sharpness that was also soft and natural in nature, basically an oxymoron. By this time I had a collection of some of the finest lenses made for DSLR cameras in the world. Once I saw the beauty of APO lenses, most of my lens collection was left on the shelf. I never used them again.

Instead I used APO macro lenses like the Coastal Optics 60mm f/4 APO, the Leica 100mm f/2 APO Elmarit-R, and the Voigtlander 125mm f/2.5 APO-Lanthar, especially the Voigtlander which, for me, was the best all-around APO macro lens I owned. And with these APO lenses, I stacked focus, hundreds of thousands of images, and then some.

And in my search for the best APO lenses, I wandered into the realm of industrial lenses, very expensive lenses that are highly corrected, like the lenses that are used to do cinematic film transfers. Some of these lenses (Printing Nikkors) originally cost \$12,000 or more, but as film gave way to digital delivery, these lenses would come on the market for perhaps several thousand dollars. They are pristine.

And I got into enlarger lenses like the EI-Nikkor 105mm APO lens. The long and the short of it is that once again I found that APO lenses gave me the results I had been looking for, although some of these

industrials lacked the modern coatings we find in more modern lenses. I also found industrial lenses that had not been highly corrected, and could immediately tell the difference. And my focus-stacking technique changed.

Instead of pushing to smaller apertures, I sought out lenses that were fast and sharp wide open, which meant that anything not in focus had dreamy bokeh -- out-of-focus areas. Then, using wide apertures (very narrow depth-of-field), like a laser, I would paint in detail by stacking focus, leaving the remainder of the photo an impressionistic blur. I liked the results.

My point is that I explored focus-stacking for many years, gradually learning to get results that represented what I saw in my mind through my eyes. I managed to write a number of books on focus stacking, many articles, and literally hundreds of posts to forums on the topic. And I produced a free series of 20+ videos on focus stacking and related subjects. They are here:

<https://www.youtube.com/playlist?list=PL5xDr8mWUwrzi4bxY978O1DQykUrj-S2I>

And here comes the kicker:

In the fall of 2012, Carl Zeiss introduced the APO Sonnar T* 135mm F2 telephoto lens, followed about a year later with the Zeiss Otus 55mm f/1.4 APO Distagon T* ZF.2, both available in the Nikon mount. Since these lenses are not close-up or macro lenses, I dilly-dallied around for quite a while trying to ignore them. But careful reading of reviews and hands-on reports eventually found me buying both lenses. And I have not been the same since.

I was no stranger to Zeiss lenses. I owned the 50mm and 100mm Zeiss Makro-Planar (and others), but always found them not corrected well enough for my work. In other words, they were not APO, and so I was not much impressed with Zeiss lenses except for their build.

These two new Zeiss lenses (135mm and 55mm APO) were more highly corrected (IMO) than any of the many great lenses I own. In fact, there is no point in using most of the lenses in my collection any longer and I began to sell them off. IMO, which is all I have, they don't hold a candle to the new Zeiss Otus Series.

And now that spring has been coming after a brutal winter, I am out in the woods comparing stacking focus with the new Zeiss lenses and just taking traditional single photos. I find that with these new Zeiss lenses I can push the aperture very high, all the way to f/16 and still not be bothered "much" by diffraction. What this does is make it less and less useful to stack focus. What's the point? Focus stacking by definition introduces unwanted artifacts into the finished photo which require (at times) extensive retouching to remove.

I have had to reevaluate what my photographic intentions are beyond technique-for-techniques-sake. And I find that my original goal is still intact, representing my mental and visual impressions through photography. Focus stacking was just a means to do that. It kind of scares the Bejesus out of me to consider bypassing stacking focus and all my years to master it, but increasingly I find I may be doing just that.

Here is a single-shot photo at f/16 (drastically reduced) taken recently of a May Apple flower, including a closer crop (100%) of the flower itself. Yes, I could perhaps produce a sharper image of the flower by stacking it, but at the expense of messing with the color (which stacking cannot help but do), but why bother. And did I mention that a wind was blowing most of the time when I took this photo? That alone would have marred a stacked photo.

For much of my work, these new lenses from Zeiss make stacking unnecessary. I wonder what other focus-stacking photographers using the Zeiss for close-up are finding out? Let me know.

ADDENDUM

For me things began opening up with the Nikon D3x, and really reached a plateau with the Nikon D800E, but still fell short of whatever dream is in my head.

That dream became real with the Zeiss APO lenses, the 135mm Otus 55mm, and others. They are really special. In fact, I have dozens and dozens of lenses sitting on the shelf that I will probably never use again. There is no reason I can think of to keep them except to say I have them, and that gets old. Who cares?

Today I seldom even use my CV125 lens, and that was my all-time walk-around lens for years (for close-up). I am amazed at what a large sensor and these new Zeiss lenses can do. I will sell my old lenses and buy more APO Zeiss in that series as they come out. If only Zeiss would make an APO macro lens of the same quality, but they tell me this is unlikely. I have written them a number of times. They say they have to sell 10,000 lenses to go to the trouble of making such a lens.

If I don't learn to take amazing single-shot photos, I stack focus. We don't have to see well to stack focus. We can step through an area and have a sharp photo, IF we want to put up with the degradation of color that stacking introduces.

With the Zeiss 135mm APO, I stack or shoot a single photo and crop out and still get great resolution.

According to Rik Littlefield, designer of Zerene Stacker, my choice of software for stacking photos, the software works best and with the least artifacts under these stacking conditions, in order of preference:

- (1) Lens on a bellows, keeping the front standard static and moving the camera on the back standard.
- (2) Use the heliocoid (focus ring) The Voigtlander 125 has one of the longest focus throws of any lens I own, so you have plenty of leeway.
- (3) Focus on a rail.

I have shot hundreds of thousands of photos with the CV125 and stacked. It works fine for me, as long as I remember that stacking is a sampling technique and by definition causes artifacts that have to be retouched-out in post. This is why I am enjoying single-shot photos with the new Zeiss APO lenses. I can push the aperture all the way to f/16 and still get a pretty good photo... and plenty of depth-of-field. The caveat is that I miss the bokeh.

My favorite way of stacking, however, is to use very fast lenses wide open, where the depth-of-field is very shallow. I used the DOF like a laser brush and paint in as much focus as I wish, leaving the rest in great

bokeh. I can even have more than one level of the photo in focus if needed.

I turn the helicoid just a wee amount and/or adjust the aperture for more depth-of-field, if needed, like: smaller apertures. If I am stacking I set the aperture for that lens at its sharpest, often around $f/4$ or $f/5.6$.

You guys have the idea. There are different ways to stack focus. As mentioned, the one I perhaps enjoy most is using a very fast lens that is sharp wide open to paint in focus just where I want it, leaving the rest as bokeh or even encouraging big lumps of out-of-focus color. I will post a few old examples here, since I don't have the time just now to make new ones.

I know that diffraction is a law of nature, not something we can play with, so I am not making that claim. Regardless, that is pretty much the net effect I experience, and I blame it on the fact that APO lenses are highly corrected. There is no way I can push any of the standard Nikon lenses that high without seeing a loss of some kind.

The Otus 55mm APO only goes up to $f/16$, but I am very happy with many (not all) single-shots taken at that f -stop with that particular lens. Perhaps some of our techsperts can explain why. If they say it is just my imagination, then I am grateful to have a good imagination.

The following shot was a stacked shot using the D800E and the CV125 APO lens, my old favorite.



What I am experimenting with now are single-shot photos that have some of the character/quality of stacked images. Here is one I posted elsewhere that gives you an idea of what the Zeiss Otus 55mm APO f/1.4 lens can do with one shot. This one at ASO 200, f/4. Obviously other lenses could take this photo, but my point (at least to myself) is that this lens (and its brother the 135mm APO) do a better job, at least for my work.

If you have a chance to try these new Zeiss APO lenses, I would be interested in how you like what they can do.

I hope to have more time to show the differences between stacked photos and single-shot photos using the Zeiss APOs. Here is one single-shot photo taken today on the D800E with the Zeiss Otus 55mm APO f/1.4.



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Also included is a crop (100%) of a fly sitting on the bud of the Queen Anne's Lace to show how detailed that is.



Ok. What follows are two quick shots taken this morning of a budding Milkweed plant, one shot as a single f/16 photo, the other as a stacked photo. Both with the Nikon D800E and the Zeiss Otus 55mm APO f/1.4. They are marked which is which, although you can tell from the bokeh background of the stacked image.



Copyright © Michael Erlwine 2014

Stacked



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Yes there are differences. Are they worth battling the Michigan (flatlander) wind? Not always. A single shot gives me even more time to think about composition, etc.

Here is a good example of a single-shot photo and a stacked photo using the Nikon D800E and the Zeiss Otus 55mm APO f/1.4

In Praise of Specialized Lenses

By Michael Erlewine

I am a Nikon user, which was just the luck of the draw. Of course I have the requisite lenses, like the triumvirate, Nikon 14-24mm, 24-70mm, and 70-200mm lenses, but I seldom use them. The reason why is not hard to explain. While they are remarkable lenses in their own way, none of them are highly corrected. Somewhere along my journey of photography, I began to see the difference in lenses and ceased to find satisfaction in the ordinary degree of lens correction. Too bad for my pocketbook!

In the process of searching for what I originally called ultimate “sharpness” in lenses, which of course I initially assumed (falsely) was a just matter of better resolution, I gradually realized that resolution alone was not the answer. So I then fell into deciding that acutance (micro-contrast) made all the difference in what I was searching for. That held my attention for a while. Micro-contrast is very satisfying (and important) indeed.

But then, very gradually, like the sun coming up, it dawned on me that the icing on the cake, the tip of the top, so to speak, was not just resolution and not just acutance, but lens correction, you know, all the hideous fringing we try to ignore or do away with. Somehow, perhaps almost subliminally, I could see the difference just by looking at photographs taken with highly-corrected (APO) lenses.

And that discovery started me on my journey of finding highly-corrected lenses. I have written extensively about the virtues of apochromatic (APO)

lenses, those lenses that are carefully corrected for the various aberrations and so on.

Unfortunately, Nikon does not have many highly-corrected lenses in their current offerings. So I found myself wandering off-campus into other brands, lenses from Leica, Voigtlander, Zeiss, and so on. Of course, many of these lenses did not fit the Nikon mount, so in my search for APO lenses I found myself (with help from experts) rigging various mounts, searching for helicoids, and converting lenses to the Nikon F-mount standard.

To recapitulate, I first gravitated to higher-resolution cameras (Nikon D3x), and then to those without AA (low-pass) filters (Nikon D800E, D810), D7100) which improved micro-contrast, and finally to apochromatic (highly-corrected) lenses. These three steps together brought me what I was looking for in my original quest for “sharpness,” in particular that last step, APO lenses.

Pretty soon I wasn't using Nikon lenses for much of anything other than family photos and a few other things. Instead I was using highly-corrected lenses like the Coastal Optics APO 60mm f/4 macro (forensic lens), the Leica Elmarit-R 100mm f/2.8 APO macro, and most of all the Voigtlander 125mm f/2.5 APO-Lanthar lens. This last lens, the Voigtlander 125mm was, for my work, the perfect macro lens. It was fast, had a focus throw (lens barrel) of a whopping 630 degrees or so, went to 1:1, and was highly corrected.

At that time, I knew of no other lens that had all those qualities. Of course I had a pile of Nikon macro lenses (200mm Micro-Nikkor, 70-180mm Zoom Micro-Nikkor, many Micro-Nikkor 105s, etc.), but they all were not well corrected. Then, with the help of a few lens

experts, I fell down the rabbit-hole into the world of exotic industrial lenses. Now here (and with expensive telephotos lenses) is where Nikon shines!

This group includes lenses specially made to view computer monitors (CRT-Nikkor-O), transfer Hollywood films (Printing Nikkors), reproduce “whatever” (Repro Nikkor), and grace photo-enlargers (EI Nikkors). And it was not just Nikon, but incredible industrial lenses can be found from Zeiss and many others. In fact, the world of fine enlarger lenses has barely been touched so far. Much research remains to be done.

And these industrial lenses really are exotic. Some are very fast, like the Repro-Nikkor, with a wide f/stop of f/1.0 and no focusing mechanism. Another is the 55mm CRT Nikkor-O (oscilloscope) at f/1.2. And the enlarger lens EI Nikkor 105mm APO lens f/5.6, with its marvelous almost 3D qualities. I could go on, pointing out lenses like the classic four lenses for the Nikon Multiphot machine (19mm f/2.8, 35mm f/4.5, 65mm f/4.5, and 120mm f/6.s) or the Zeiss Luminars, the Leitz Photars, etc.

Years ago I learned about many of the lenses from the brilliant lensman [Bjørn Rørslett](#) at this site:

http://www.naturfotograf.com/lens_spec.html

Most of these industrial lenses are a major PITA when it comes to mounts. Most are none-standard, so I have a whole box of adaptors, helicoids, and several bellows to help them out. And they are not walk-around lenses either; most don't go to infinity, some only work at one distance, like 1:1, and so on. Why bother?

“Bother,” because within their limited range, they offer some incredible opportunities for photographers. At least I think so. And in the midst of all of these exotic lenses, along comes Zeiss with their Otus line of APO lenses, which opens up another vast doorway to photographers.

I had a number of Zeiss lenses prior to the Otus series, lenses like the Zeiss Macro-Planar macros, the 100mm and 50mm, and others. While the Makro-Planar macros were very sharp, they also were very not color-corrected, so their resulting photos were too “contrasty” and color-fringy for my work.

However, the new Zeiss Otus APO line (55mm, 85mm, 28mm, and 135mm) are just of incredible quality when it comes to correction. Although they are not made for close-up, I am making them work close because the results are worth it. I use small amounts of extension to bring them close, although as a rule I never use extension.

Anyway, those are some thoughts about the value and beauty of specialized lenses. I would love to hear about some of the special lenses readers use, if you have time.

I have many free articles, books, videos on lenses and close-up photography for those who want to learn more or see examples. You kind of have to dig around a bit on the site. Look under Macro-Stop, but also “Free e-books” and Articles:

MacroStop.com

This image, taken yesterday, was taken with the Nikon D810, a bellows, and the EI Nikkor APO 105mm f/5.6 enlarger lens, one of the Nikkor exotic industrials.



I have not tried the Sigma Art series. I have my hands full with the lenses I already have. Those of us who wander off-campus into exotic lenses well know that aside from the regular advice that “a good photographer can use any lens,” in reality these special lenses not only have character, but they make our job a lot easier. The Nikon APO EI Nikkor f/5.6 enlarger lens, a rare lens and very different from the more common EI Nikkors, is one of those lenses.

And I can't help but point out that this lens is extremely well corrected. According to the original literature, the APO 105mm EI Nikkor was corrected not only for the three primary colors (R,G,B), but for the entire visible spectrum, as well as the near infrared and new UV light. They claimed that light transmission at the edge was as good as center. And these lenses are coated so that flare-free images can be produced. It has 8 blades, with .06% distortion.

The lens expert Ctein extensively tested 90 enlarger lenses and of them all, he wrote that the 105 APO-EI Nikkor was the most perfectly-made enlarging lens available. He detected no aberrations of any type, and said it was the “one true APO on the market.”

I am a user, not a tester, but I believe him, because this little lens produced even more amazing images than the new Zeiss APOs. They have an incredible 3D quality. Here are some images I took with the Nikon D800E that show (to me at least) this quality. What do you think?







Update: The Sony A7s (vs. the Nikon D810)

By Michael Erlewine

When reading this, keep in mind that I am a close-up photographer. It probably does not make sense to compare the Nikon D800E and the new Sony A7s, but I find myself doing it anyway because the A7s is the first mirrorless that I really like. Yes, the Lumix GH4 makes for some powerful 4K video, but for some reason I still don't think of it as the "tip of the top," as they say. I will keep the GH4 for video, but I might actually love the Sony A7s. Go figure.

Of course it will take time for me to learn to put what I want in all the buttons where I want them, etc., so right now I am just going to see if it will do the job for what I need it to do. It looks like it might, which is rare. Every other mirrorless camera, including the A7r, the Sigma Merrill, Nikon V1, and so on, I sent back. Close, but no cigar, as they say.

But this little beauty, the A7s, perhaps has too much going for it to return, at least not yet. And I am still depending some on auto-ISO and whatever they call their auto-mode. The color is remarkable good, certainly better right out of the camera (without special WB attention) than my D800E. The A7s automatically finds an acceptable (to me) compromise on light, mostly by doing what it wants with the ISO. I do find that it will push the ISO higher than I would, of course, and there is some noise that results from that, which I can dial out.

The A7s can (just) support the big lenses I use, and I have done it on and off rails. I prefer on-rails because the "e-mount>Nikon" adapter I have is not the best, and I have ordered a better one. Even so, I feel more

comfortable with the Zeiss Otus on rails than on the A7s hanging in midair. It makes me nervous.

As for the 12MP? Small, but it could be considered really nice as some have pointed out. I guess that I can shoot 12MP if I have too. I just have to scale down any need to crop.

Note: Later in the evening of the same day, in a more somber mood.

I did a video shoot of a concert with the A7s on a rig last night and, while the video is pretty good, I am not certain it is as good my 10-bit ProRes and will take grading with ease. Hmmmm. I did not expect that. I assumed the video would be exemplary. No longer sure about that.

If I wait until late fall 2014, there will be 4K video out from the A7s to an external recorder for another \$2K outlay. I am sure that quality will be great, but I might return the A7s for now, wait to see what happens in firmware updates for this camera, and buy another copy when everything settles down. Am I chickening out? I might be.

I may have to be content with my ugly-duckling Lumix GH4 with its internal 4K video and hope it turns out to be a swan over time, since it appears to be "The Little Engine That Could," as the old children's book said. I also have a Sony FS700, the BlackMagic Pocket Camera, and a NEX 30 camcorder to work with.

Dreaming a little farther yet, my hunch is that the Nikon D810 will be perfect for my work, and a big hit as well with the general audience, relative to other high-end DSLRs. For me, if it works like I imagine, they finally will have made Live View usable with a seamless display so that I can enlarge and focus with

more ease. I would like a great EVF, but Live View will do if there is a big improvement, which I read there is.

I like these new mirrorless cameras, at least the idea of them. For sure I would like have an EVF to magnify focus with, a total asset for my work. I need magnify-assist one way or another with the fine focusing I am doing with lenses (like the new Zeiss APOs) that are not meant for close-up. I do it anyway and crop out.

So I am not as sold as most others in having a smaller camera body. I hear those of you out there who like smaller bodies, but I have never really minded the larger bodies, and the D800E is smaller than my Nikon D4 was, etc.

I don't care for most Nikon lenses, but I still feel their bodies are the best for my work and I very much believe that the forthcoming D810 will be a sleeper, meaning: it will be more successful than folks are now imagining. It will be enough if it is successful for my work, of course. In other words, when it comes to new cameras and lenses, "dream on" is my motto.

LATER: I did sent the Sony A7s back, and the Nikon D810 turned out to be the finest camera I have ever used, in large because of its native ISO of 64 and a more usable LiveView for fine focus.

Photo with the Nikon D800E and the Nikkor 105mm VR lens.



Printing-Nikkor 150mm Micro/Macro Lens

By Michael Erlewine

This is a very rare lens, one of the best macro lenses ever made, and this can take pictures at over 1X and up to 4X the original size. You can mount these to a standard Nikon Mount Camera with a BR5 reverse screw mount adapter and an M2 Macro tube. This lens was originally sold for \$12,500 and was used for Motion Picture Printing. Now that we are moving to digital movies, these Printing Nikkors are turning up. This lens came from Twentieth Century Fox's old film printing department.

Nikon made four Printing-Nikkor lenses (I have three of them, including the 150mm), but this one is the sharpest and is the best range for my work.

This is my favorite lens, along with the CV-125mm APO and the new Zeiss 135mm APO. As far as I can tell, this is an APO lens, fully corrected. I have never seen the 150mm Printing Nikkor on Ebay until recently. I use it on a bellows.



Remarkable: El Nikkor APO 105mm f/5.6

By Michael Erlewine

I continue to be impressed by the degree of correction and general overall look of the El Nikkor APO 105mm, not to be confused with the more available non-APO form of this lens. This image was taken with the Nikon D810 in broad daylight, using Zerene Stacker. What is interesting to me is the white-color of the opening flower (on the right), which was very pale white, and that paleness comes through. This lens is also very sharp.



Studio in a Shoebox

By Michael Erlewine

Although I have a large studio, I find I am not using it much of late. After all, it is almost one block away, a distance that in these latest Michigan winters I am loathe to walk. Instead, I recently built a very small studio in an upper room in our house. Mostly I do close-up and macro photography, so when it comes to room-space, less is enough. At the worst, it means that I have to move carefully and slowly, but close-up and focus stacking already demands that, so why worry?

This small studio has a skylight and two large Anderson casement-style windows facing south, so there is plenty of light. It also has an elevated loft, which means the room can double as a guest room in a real pinch.

As for a studio in a shoe box, I say that because at the dollar-store I can buy plastic shoeboxes with lids for 1\$ each, which is much less than any deal on Amazon.com. I use the dollar shoeboxes (and a labeler) to store all kinds of photography stuff, which means that I can usually find stuff when I need it. My other storage device are those bin-compartment organizers that handymen (and handywomen) use, you know, the flat plastic boxes of bins with a lid that have a handle, etc. You can carry them around.

And aside from the open space, I have a large closet filled with more shoeboxes with gear, lenses, focus rails, bellows, and all kinds of stuff. This is my attempt to keep the main floor area of the room open and clear, so that I can move around, build little sets, use backgrounds, lights, and whatever I need.





The Character of Lenses

By Michael Erlewine

Lenses have character, at least some of the best ones do. I am sure character can be traced down to some mechanical this or that, exactly how well corrected or “how” they are corrected, and so on. I can’t speak to that, but I do know that lenses can be special.

One of the lenses I like to use that has “character” is the industrial (enlarger) Nikkor, the EI Nikkor APO 105mm f/5.6. It does not go out after dark and it likes to be on a bellows, but it does produce outstanding photos if treated right.

I mount this lens on the Nikkor PB-4 bellows, fix the front standard to the lens, and move the back standard with the camera. I use it for close-up photography and get results with, well, character.

And I have posted recently about the character of the CRT-Nikkor-O. Here are two stacked shots taken with these lenses with character, the first shot taken with the CRT-Nikkor and the second with the EI Nikkor APO.

As you can see, the CRT-Nikkor is sharp, but it lends itself to rapidly going out-of-focus, often to nice effect. And the EI Nikkor APO 105 has an almost 3D sense about it that I don’t find in other lenses.

Perhaps you have lenses that you consider have special character. Let’s hear about them and include an example please. Some of them are real characters.

Here is the EI Nikkor APO 105mm

Here is another photo I took with the D800E and the EI Nikkor APO 105mm

A couple of things:

"A picture is worth a thousand words"

How about showing images of the character of a lens that we like in this thread, rather than just a verbal description, whether the lens is "old, new, borrowed, or blue," as they say.

Another point: It is perhaps problematic to separate the character of a lens from our compositional components – everything but the character. Of course, we use the lens for the character, so hopefully you see my point, a Catch-22. Here is a simple photo taken with the D810 and the Zeiss 135mm APO lens. However, to my mind this does not show the character of the Zeiss 135mm, but it is interesting to me for composition reasons.

And while I am at it here, this first photo is a very "plain" image, without any HDR effects or brilliant colors, etc. For my money, and just to share here, I personally like more subtle photos than I believe many readers do, so I would not tend to post this kind of photo here, although I like it a lot. Instead, I would post something like the bright image that follows, which is also taken with the Zeiss 135mm APO. It does show some of the character of the 135mm, aside from its bright colors and sizzle.

I can't believe that I am the Lone Ranger in loving more gentle colors and treatment. What do you think?









Nikon D800E, Zeiss 135mm APO

This lens is a match for the D800E sensor and perhaps better. I can't tell technically, but my eyes say so. Perhaps one of the lens experts can tell somehow.

Here are two shots of very, very finely articulated flowers, about as fine as I can imagine.

The first shot is a single shot at $f/16$, 1/8th second, ISO 200.

The second shot is a stacked shot at $f/2.8$, 1/250th second, ISO 200.

I am sure you can't see what I see with 4912x7360 pixels in ProPhoto RGB, so I will summarize.

The stacked shot gets more detail, but at the expense of a lot of artifacts not present in the single shot. In other words, the single shot does not go as deep in DOF as the stacked, but it goes deep enough and has no artifacts.

The stacked shot (PMax comes closer than DMap with this fine stuff) goes deeper, but has artifacts, and other problems, like a color changes, noise, etc.

In summary, this new Zeiss APO goes a long way toward duplicating what a stacked shot provides without sacrificing color, noise, and DOF. This is particularly true if we are doing wide close-ups rather than extreme close-up, which requires cropping with the Zeiss.

My reaction? Believe it or not, I am going to push the aperture as far as I can and take single shots when there is a lot of delicate hair, fibers, etc. on the subject.

As for the earlier comment by someone somewhere: "Is the Zeiss APO a CV-125 APO-Lanthar" killer? I would say yes it is. It costs less than the Lanthar and bests it in all ways except 1:1, and macro, and maybe there too.

The color on the Zeiss is easier to handle in post than the CV-125, which has problems with reds, oranges, and yellows when it comes to saturation. The CV-125 under-saturates; the Zeiss saturates very well, sometimes oversaturating just a bit.

Sharpness? No contest. The Zeiss is all over the CV-125 and probably every other lens I own.

The Zeiss is big, heavy, bulky, and has a long hood. Does this bother me? Not if it keeps performing as it has.

Unless the tech guys show some defect, the Zeiss 135mm APO is a game changer in my opinion, at least for me.

And you know I love the CV-125mm!



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The Nikon D810 and Medium Format

By Michael Erlewine

No, the Nikon D810 is not a Medium Format camera and in some ways that is a good thing. I had a Mamiya RZ67 Pro II and a Leaf Aptus 33MP digital back, which I no longer own. I still, however, have about 10-11 lenses of the finest RZ glass, including some of their APO lenses.

The interface of the digital back of the RZ67 was so primitive (so horrible) that any Nikon user would recoil on contact with it. What I did like about the system was the larger viewfinder and the sense of composing right on the screen. As it turns out, the MF lenses were not up to what I am used to with my Nikon cameras, and so I eventually found myself not using it and sold it. I the sold off the RZ lenses as well.

What I am writing about today is how very much this new Nikon D810 resembles that medium-format system in approach. I am not trying to compare the photographic results. Others are busy doing that I am sure. What I am remarking on is how wonderful that new larger LCD is and the ability to see images clearly in LiveView and to enlarge it at will. It seems so spacious, especially with a wider lens like the Zeiss 55mm. Well, it is a little wider than most of my macro lenses.

I find myself not using the OVF viewfinder at all, but instead just using LiveView, standing back like an artist and composing right in the frame. And then zeroing in on any point of focus and nailing it cold. This is going to change how I do photography and it already feels so natural and creative. Of course many

of us have been waiting for something like this for years. I know I have.

It is too early for me to say too much about the new sensor, but it seems to have a lighter or more delicate touch with color than the D800E. I definitely will have to grade raw images differently than I now do, but it is a happy challenge.

Here is a quick photo with the D810 and the Otus 55mm APO Zeiss, plus a 100% crop of the little grasshopper to show detail. It was possible using LiveView to isolate several of these flowers separately, punch in the focus, and then stack the layers, giving sharpness to parts of the image and not to others.

I am not yet comfortable with the new sensor. It is different that the D800E and will take work on my part to understand and take advantage of.





The State of Stacking Focus

By Michael Erlewine

I have stacked focus for many years, moving up through many different cameras, mostly Nikons, but also a medium-format Mamiya system, and several mirrorless cameras.

The sweet spot in all that work has been the Nikon D800E, with its 36 MP and no AA filter. I have even looked into stacking video clips and had a special frictionless slider built for that purpose. That is a separate article.

In the course of all of this I have shot many hundreds of thousands of photos, plus published several books on focus stacking and scores of articles, and created some 20+ video tutorials, all of them free of course. I would never want to be a professional photographer. It is far too difficult these days. I have made my living in other ways. And now to the point:

Years ago I went on an odyssey to find lenses that were "sharp," whatever that means, lenses that had high resolution. I have written exhaustively on this and in the beginning the experts either ignored me or made fun of me. And here is why:

My research and tests showed me that the search for sharpness finally turned on how well a particular lens was corrected. I gradually found my way to more highly corrected lenses. My point is that putting lenses together of equal sharpness, the sharpest lens (again and again) IMO turned out to be the lens that was most highly corrected for the various aberrations, and so on.

I ended up using lenses like the Coastal Optics 60mm f/4 APO forensic lens, the Leica Elmarit-R 100mm APO macro, and especially the legendary Voigtlander 125mm f/2.5 APO-Lanthar, and others. These are the lenses I found were the best for focus stacking or any other work. I also got deep into the various Nikkor industrial lenses, lenses like the four Printing Nikkors, the El Nikkor APO lens, and others. They were all highly corrected lenses.

However, I still could not get much of a witness to my claim that sharpness in lenses (all things being equal) finally turned on their degree of correction. I assumed these great lens experts knew what they were talking about. It turned out that this was not always so. What interested we was not what interested them, for the most part.

All of this changed when Zeiss brought out the first in their series of special APO lenses, the Zeiss APO Sonnar 135mm f/2 lens. By this time I had accumulated a great number (like 80) of very high quality lenses, for the most part close-up and macro lenses. The Zeiss 135mm APO had a minimum focus distance of 2.62 feet (0.8 m), so (since I am a close-up photographer) I at first dismissed it out-of-hand as a lens I would ever purchase, not to mention that it cost \$2000.

But over time, what I read about this lens led me to believe that indeed it was highly corrected, so much so that even with extension tubes the results were very good. I am not a believer in adding glass to good glass, and I have tested this. I own about every possible diopter, teleconverter, and so forth that is available and none of them ever improved a shot. I own them, but avoid them at all costs.

Still, I was intrigued by the reports I was reading on the new Zeiss 135mm APO Sonnar, so finally one day I just pulled the trigger and ordered one.

I soon found out that the 135mm Zeiss was indeed exceptional, so exceptional that it outclassed all of the highly corrected lenses I already owned. And although the near focus distance was a distant 2.62 feet, I found that I could crop out and resolved fine detail better than with any of my other lenses. And the color and contrast were great.

I already owned both the 50mm and 100mm Zeiss Makro-Planar lenses. And while these two lenses have a sterling reputation, I never used them because they simply were not well enough corrected and I could always see the difference. Of the two, I liked the 50mm Zeiss Makro-Planar most, perhaps because I had so many other fine lenses around the 100mm mark. Anyway, those lenses sat on the shelf, and I had come to assume that Zeiss lenses were very 'contrasty' and lacked correction. This probably was the main factor that kept me from trying out the Zeiss 135mm earlier than I did.

Anyway, suddenly here I was using the Zeiss 135mm APO lens all the time and being knocked out by its performance. I didn't bother adding extension to it, but found that I could crop out what I wanted from a 36 MP shot on the Nikon D800e and use that.

Then along comes the second in the new Zeiss series, the 55mm f/1.5 Otus Distagon lens in Nikon mount. By this time I was already a believer in this new series and, despite the price tag of \$4000, I pre-ordered that lens as soon as it was announced.

Again the Otus 55mm APO lens was a total winner, producing just incredible photos. And finally I am coming to the point of all of this writing:

The new Zeiss lenses, especially the 55mm Otus, are so good that I found I could push the f/stop much higher than I could with other lenses. I had learned, as we photographers all know, that high f/stops (f/11, f/16, f/22, or what have you) flirt with diffraction, with the result that sharpness and the depth-of-field attained is washed out by the softening of diffraction. And I know that is a law of nature, like the law of gravity, and that we don't break the laws of nature.

That being said, I found that I often could shoot at even f/16 (the highest f-stop on the 55mm Zeiss) and, depending on the subject matter, I got incredible depth-of-field and paid a very small price for it in diffraction results. How could that be?

And I tested many single shot photos with the Zeiss 55mm against a multi-layer (100 layers) stacked photo from the same lens and the single shot was acceptable as a "stacked photo." Of course there are tradeoffs.

The stacking process, in post, messes with the color and introduces various artifacts, so the retouching in post of complex stacked photos is pretty much mandatory. So, here I was comparing a carefully stacked photo of many layers to a one-shot photo taken with the 55mm Otus at f/11 or f/16 and choosing to go with the one-shot photo. That was news!

Now, with a one-shot photo I could not push focus as deep as I could by focus stacking, but the depth-of-field was deep enough to capture the effect that I liked

from stacking focus. And prior to this I had been going exactly the opposite way, which I will sidebar here.

Since early-on I found that I could not push the aperture into the high numbers without suffering diffraction consequences, I had gone in the opposite direction. I developed a method using the best wide-angle lenses that were sharp wide open and were very fast, ones that had an extremely narrow depth-of-field. And I used that very sharp depth-of-field like a laser paintbrush to paint in (by doing many stacked layers) just that part of the image I wanted in extreme focus, and let the natural bokeh that fast wide-angle lenses provide just run wild in the background.

This produced an impressionistic and often ethereal look to the photo. I loved what you can do with sharp wide-angle lenses (of which there are few great ones).

And suddenly with these two new Zeiss APO lenses, my original dream of finding the holy grail of natural depth-of-field focus was coming true. I could take a one-shot photo and have outstanding depth-of-field with one shot. The only downside I found is that, by definition, I then lost the dreamy background bokeh that wide-open lenses bring. However, if I wanted that, all I had to do is shoot one blurred background photo and paint it into my one-shot photo. I did that maybe once. It was too laborious and goes against my grain.

However, with this method, the endless artifacts necessarily caused by stacking photos were gone. Keep in mind that focus stacking, like making music CDs or video DVDs, is just another digital sampling technique, meaning that we sample, taking some of the image, but by definition, leaving gaps behind of

what we don't record. And those areas not sampled are what cause, naturally, many of the gnarly artifacts that we focus stackers have to retouch out. Even worse, the stacking process messes with the color, and that is even harder to restore, if it is even possible.

So, here I stand at a crossroads, with my well-worn path of focus stacking heading off one way, and going another way is simply learning to take almost perfect one-shot photos with these highly-correct Zeiss lenses. The truth is that I already find myself walking the path of the one-shot photo, because..... the results are better. Ultimately all of my passion for photography depends on capturing in a photo the beauty of what I see in my mind. I am not a technique person for its own sake. Never was. I use technique to get an effect.

I go where the beauty goes, and that seems away from so much focus stacking. Sure, I will stack product photos or photos where pushing depth-of-field is paramount, and lack of perfect color is not important.

But that aside, the purity of color, sharpness, and lack of artifacts makes single shots with these new Zeiss lenses the obvious choice. In fact, I am already culling through my collection of great macro lenses, many of which I will never use again because they lack the quality I can now always get with the new Zeiss lenses. I keep them around just to say I have them, but I never use them and never will again. So I will sell them and buy whatever next Zeiss APO lens comes down the pike, in this case an 85mm APO, I am told.

So that's my story. It should interest those of you who stack focus.







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The Video Scene – My Take

By Michael Erlewine

While I have been away from this forum, I have been mostly learning video, so perhaps a quick overview of my experience will interest those of you who are not up-to-speed on video. At least it might help explain my interest in it. I am not expert, so be warned.

I have been interested in video from the time I watched my dad's 16mm home video and that was a long time ago. Then, as digital camcorders became available I tried this or that one, but never really mastered the learning curve. Video is very different from still photography in many ways. Then, more recently, some years ago now, I worked with Panasonic's HVX200 (an HD camera), but still didn't manage to really get control of all that is involved. I also had a couple of Sony VX2000 camcorders along the way and so on. Then came Nikon DSLRs with internal video.

In the beginning, I certainly thought video on DSLRs was a fad, at least at first. My view that video would never last did not turn out to be true, but only because it succeeded in transforming itself in quality and became more and more useful.

The real problem with DSLR video is 8-bit color, especially with large megapixel sensors, which translates to 255 possible values per channel, plus pixel-binning and line-skipping, which causes all the video artifacts we hate to see. As a delivery system for video, 8-bits is good enough for much of the DVD video we watch on TV because the image is baked-in, but it does not really allow us work with that video much in post. In other words, if your video is perfect

right out of the camera (or down-sampled successfully in post), 8-bits will work as a final delivery format (to watch), but try to grade it or work with it as we do with raw files, and it won't hold up. It breaks down easily. All of the DSLRs I have used have this 8-bit color problem.

Even so, for some time the "DSLR Look" kind of ruled the amateur and indie video scene. For one, the ante-in was relatively inexpensive, and you could get real 1080p output at 24 or more frames. A whole scene sprung up based on DSLR-based video. Clients demanded it.

Then DSLR cameras began to offer HDMI video out in a stream larger than 8-bits if you had an external recorder. In fact, you could get 10-bit Apple ProRes out of cameras, recording to something like the Pix 220i or 240i from Sound Devices. I have worked with the Pix 220i and this 10-bit video looks much better, often with a flatter profile, one that could be graded in post successfully. And my Pix 220i allowed me to plug in two XLR audio lines directly, allowing me to bypass the camera's internal inferior pre-amps. I got good sound.

10-bit color offers 1023 values per channel, four times the accuracy of 8-bit, and is pretty much mandatory for chroma-keying. All owners of sophisticated DSLRs are used to grading raw, so the idea of grading video in a similar manner seems natural.

And so, until recently, we are in a period (perhaps winding down) where those DSLR HDMI ports allowed various external monitors to be plugged in, as well as outboard recorders that give us 10-bit ProRes or the equivalent.

The period when DSLR 8-bit video color was considered acceptable is winding down. The DSLR 8-bit output, instead of being the new whiz-kid on the block, is now instantly recognizable as 8-bit and no longer in demand that much. We have already moved on.

Meanwhile the specter of 4K 10-bit (or higher video) has appeared, first in dedicated pro and prosumer video cameras and now in DSLRs like the Panasonic Lumix GH4, which offers internal 4K-8-bit color that is pretty darn nice I have to admit. And this fall the GH4 will output 10-bit ProRes to an Atomos external recorder.

While there are 4K TVs appearing, few are counting on 4K to sweep the industry as far as viewing movies and what not. That is not the idea. What is happening is that more of us are shooting in 4K and then dropping it into a 1080p timeline where it looks really, really good. In addition, using the 1080p timeline, we can punch into the 4K and do simple pan & zooms. The net effect is that one camera can now do where before we had to have two cameras on the subject.

This is especially useful in interview situations, where we can record in 4K and then pan & zoom in the 4K on a HD timeline, allowing us to have both a distance shot and (at will) zoom in close and still be at 1:1 resolution. In effect, we can do our own dolly shots without a dolly. This is really a great feature of 4K.

I have been using the Sony FS700 FF camera for some time, mostly shooting in 4K>HD, meaning I am shooting in 4K, but outputting it as 1080p for post. This is done by an external recorder, the Odyssey 7Q from Convergent Design. The result is outstanding and very gradable. I can shoot in Rec709 (800%) or in

s-log2, a flat profile that preserves the maximum dynamic range for superior color grading in post. "s-log2" is like working in raw. Convergent Design will (hopefully) soon release a firmware upgrade that will give a compressed 4K, which should be even better.

Right now the new darling is the Panasonic Lumix GH4 mirror-less camera (\$1,699.99), which I must say is a pleasure to use. I just did a three-camera shoot of a concert and I recorded 8-bit 4k internally in the GH4 and got to work with an EVF that I could punch in and nail focus.

In addition, the advent of the new Sony A7s DSLR camera (coming this July) brings with it a new caveat, a 4K sensor with very large photosites that appears to produce really lovely lowest-light 8-bit video, including 4K 8-bit out to an external recorder. This is the first time I have seen 8-bit video output spoken well of, so I can't wait to see what this means for myself.

In the A7s, the FF Exmor CMOS sensor is only 12MP, with exactly 4K filling it up such that the photosites are much larger (huge) than with most DSLRs and invite much more light. The ISO on this camera goes up to a ridiculous 409,600 and can take useable photos in the dark. Sony is being innovative here, bucking the trend and going back to the future with a 12MP sensor that allows huge photosites. We used to talk about how the photosites on the D3 were larger than subsequent Nikons, if I remember right.

Just as important, Sony is reading the entire 4K out of the sensor at once, with no line-skipping or pixel binning, so there will be no moiré or other artifacts. Of course this is what kills all the large-sensor DSLR video, line-skipping and the like. Since the A7s lacks

a global shutter, there will still be the much-hated rolling-shutter effect with video.

In addition, cameras like the BlackMagic Pocket Camera (\$995) offers 10-bit 4:2:2 ProRes that is very nice, and gradable. I find that the Blackmagic Pocket Camera works best in the studio, in controlled conditions, and with good lighting. It does not have many bells and whistles, but it puts out a great image if you have enough light and perhaps don't depend upon it for sound. I am really impressed by that image.

So there you have a rough overview of my take on the video scene. Keep in mind that I am not an expert in this field and it has been a long and tough learning curve for me. I'm basically a still-camera guy. Moreover, it has been obscenely expensive, not just for the cameras themselves, but for the seeming endless paraphernalia that one has to buy to take advantage of the quality of this new video.

If I have misunderstood something, I apologize. You can get great detail on a site like DVXUser.com, but hopefully this account will be useful to some.

IMO video is here to stay and rather than have camcorders warp to the DSLRs, it is perhaps more likely that the DSLRs will eventually shape-shift toward being camcorders.

P.S. This is a lot of information and it may be too condensed. If you have questions, I will try to expand on whatever is unclear.

[Photo of the Sony FS700 with the Convergent Design Odyssey 7Q monitor/recorder in the studio.]



Zeiss 135mm API, f/2 and Depth-of-Field

By Michael Erlewine

I can read the various MTF and other lens-testing charts, but they are only as meaningful in my work as I can implement them in the studio or field. In other words, I am not much of a lens tester myself, except though actually using the lens for my own work. I am certain that any given lens reaches greatest resolution at a certain f/stop, just as the experts tell us. No doubt. However, what I really want to know is about what kind of curve the particular lens creates from its widest to its narrowest aperture and how does that curve affect my particular work. That's the curve I actually use. In other words, is it "sharp" wide-open or does that sharpness start a couple of stops later, and how long is that sharpness maintained? What kind of curve do we have, sharp or gentle?

As someone who stacks focus, I don't stack focus at the same aperture that I use for taking a traditional single-shot photo. With a one-shot photo I tend to, of course, push the aperture higher (narrower) to get as much depth-of-field as I feel I need for a particular shot, which often is as much as I can get without degradation of the image through diffraction. Yet when I stack focus, I don't worry about using a narrower aperture to get my depth of field, but rather I use focus stacking to create the apparent depth of field.

So, for focus stacking I want a single aperture on the lens-curve that marks the point of greatest resolution for that lens. In summary, I don't try to stack with narrow apertures, but almost always with a single aperture for the lens that is considered its peak-

resolution, what commonly is called “sharpness,” although that is a rather nebulous term. That way, every increment of the stacked layers has maximum resolution and therefore the resulting stacked images shares that too.

Not to be confusing, but sometimes I stack not at the point (aperture) of greatest resolution, but just a little higher (narrower) if I am trying to create a little additional faux micro-contrast for that image. I take advantage of the greater depth-of-field obtained at a narrower aperture and record the additional depth-of-field as if it were greater acutance – micro-contrast. I am still undecided whether this actually helps, but it is a concept I am playing with. Normally I stack at the aperture that the testers (or my eyes) tell me has the most resolution for that lens and leave it go at that. The point here is that I come up with my own idea of what aperture curve will work for the job at hand, i.e. what I can get away with.

All photographs IMO are impressions, our own mental and psychological impressions of what we see out in the world, given the caveat that much of what we see, our impressions, come not from the outside, but from our own mind and approach. Because focus stacking is a form of lossy sampling, a stacked photo is almost an impression of an impression, so to speak. I don't easily fall into believing that what I am photographing out there in the world has a reality greater than my own impressions and approach. Let's take the recent Zeiss 135mm APO as an example, and the following are just my thoughts on how I use this lens for close-up photography.

The Zeiss 135mm is sharp wide-open, so I don't have to add a couple of f/stops to achieve better resolution. With this lens wide-open, I get a depth-of-field (DOF)

that is razor sharp. With that ultra-thin slice of DOF, I can literally paint focus, layer by layer, until I create what we could call a block of focus that represents what I want in that image to be sharp and in-focus. Because the lens is fast and wide open, whatever I don't layer-paint is automatically blurred or part of the bokeh of the image. Note that this is the opposite of much traditional advice for focus stackers, i.e. that we push the lens as high as we can without suffering too much diffraction and then stack. I am going against tradition here because I like the results better. Now, back to the Zeiss APO 135mm lens.

With traditional one-shot photos, when I am not stacking, I find that from the Zeiss 135 APO I can get usable resolution and acutance all the way to up to something like $f/13$, which is a long way. Yes, by then I am recording diffraction that bothers me (and way before that), but I often can get by with it. If I don't need peak sharpness for the particular subject, I can shoot at $f/16$ and inject some little bit of needed clarity or contrast in post. Beyond $f/16$, I am getting too much diffraction and image-degradation to venture there.

Since I am primarily a close-up photographer (rather than a macro photographer), much less a micro-photographer, the lack of extreme detail at $f/16$ with the Zeiss 135mm APO is often acceptable, diffraction and all. In fact, I have an ongoing battle going on within me whether to do a lot less stacking and a lot more taking single-shot traditional photos.

I am also experimenting with what I call "short-stacks," where I take two or three shots that capture the particular areas in a photo I want to be in high-focus and stack that. I find that with these new Zeiss APO lenses do actually work much better than I would

have guessed for short stacks. Years ago, when I was first starting out with focus-stacking, I did short stacks because I was lazy, and the results were that I had way too many artifacts in the final images.

But with, as I have mentioned in many articles now, these three new Zeiss APO lenses (135mm, 55mm, 85mm), this short-stack technique seems to work out very well indeed. And I don't even stack them in the ordinary way. Yes, I use Zerene Stacker with short stacks, but when retouching I have a different approach. Ordinarily, I retouch artifacts only, but with the short-stack approach I tend to just paint in from each of the layers just the main part that layer has in perfect focus, kind of in a whole-cloth sort of way. Most of us used to this in Photoshop. I do have to pay attention to where these layers overlap, but I have been surprised how successful that has been.

Here is a little tableau I have put together. I will have to show a larger view at another time, but I am focusing on the two-dollar bill, but have included some burlap (pleated) so that it rises up and we can see how much depth-of-field is available at the higher apertures. Perhaps some of you reading this will have suggestions for what kinds of objects I could additionally include.

These shots are not about color, but about resolution, diffraction, and depth-of-field. I notice that I can get away with f/11 (see the copper tacks), but with f/16 it is more iffy (but often still usable) for close-up, but not for macro. Lately my internal mantra seems to be "I always seem to go for high resolution," but am interested more in acuity (micro-contrast) in post. And I only do all of this with APO lenses, for the most part.

Your thoughts? Are these kind of images useful to anyone by myself?







Zeiss 135mm APO f/16

The Zeiss APO 85mm Lens in Close-Up Work

By Michael Erlewine

Because the new Zeiss APO lenses are so fine, I have been using them for my close-up work. I know. They are not intended for close-up, but who's looking. I am, and they work just fine up close. I can add 8mm or 14mm of extension and (surprisingly) no great harm seems to befall the images. And this goes for the most recent Zeiss Otus 85mm f/1.4 lens.

I am stacking photos with these new Zeiss lenses and then comparing them to a single photo of the same subject taken at f/16 to see how they compare. I can't make up my mind half the time which format is better, stacked or single-photo. I never even came close to having this choice with other lenses. As it turns out, I lean toward stacking images, although I find myself stacking in fewer layers or even taking just two shots of key focus areas and stacking those two to bring out a couple of focus areas. The new Zeiss APOs seem to allow this.

By stacking I can exercise better control, but at the price of artifacts and perhaps slightly worse color. With single shot photos I have to be careful to see that I get what I want in focus, and where the focus turns to blur is not always pretty. However, with stacking I especially like to use fast wide-angle lenses with a very narrow depth-of-field to paint or layer focus to create a block of the subject (or different blocks) in focus. This is just the opposite of the traditional method of trying to gain Depth-of-field by using narrow apertures.

This spring my plan is to work out with these three Zeiss APO lenses using a small amount of extension to see what I can get away with, what works and what

does not. And, as mentioned, on the other hand I want to see if I can perfect one-shot photos by pushing the aperture to f/16 and trying to dodge diffraction. Before the Zeiss, I never could get away with shots at f/16, although I had not tried for some years.

I am sure most folks will not be using these great APO lenses from Zeiss as I do. They were not intended for close-up work. I don't care. I go where the correction goes, and these APO Zeiss lenses are highly corrected. That's what I find I need.

Here are a few photos with the Nikon D810, the Zeiss APO 85mm (with 8mm of extension), and Zerene Stacker. This approach may interest a few of you.







Working in a Mini-Studio

By Michael Erlewine

Even though I have a large studio less than a block from my home, I find myself most often working in a very small space, an upper-story room in my home, at least during the cold months of winter. I have had to be inventive to make this space easy-to-use as a photographer. I like to kid myself that I don't need a large studio because I am doing macro photography.

I used to use (and still do in the larger studio) large collapsible reflectors and diffusers, some of them nine and even twelve-feet in size, but there is no room in my mini-studios even to expand one of these. And, as I am always building backdrops, I had to come up with a system to create and take-down backdrops in seconds. Here is what I am now using:

I have a simple system of "eyelet screws" positioned (one above the other for various heights) in the woodwork and walls of my small studio. I then have a system of hooked bungee cords that can crisscross the room every which way to create photo-clotheslines from which I hang various backdrops, often just a piece of black velvet velour. In addition, I have plastic-coated braided-wire hooks for the heavier stuff, like the $\frac{3}{4}$ -stop silk diffusers that I use to screen down the light.

The one thing this tiny studio does have is lots of light, including an overhead skylight and two floor-to-ceiling casement windows, which is why I have to screen it back. I also have a $\frac{3}{4}$ -stop door-sized diffuser hanging overhead, which I can slide out of the way on cloudy days.

Perhaps some of you have ideas to share for photographing in a mini-studio. I would like to hear about them.







Zeiss 135: On Nikon with Extension Tubes

By Michael Erlewine

I regularly use the PK-11a on the Zeiss Otus 55mm APO, but do not find extension very useful on the Zeiss 135mm APO. Instead, I shoot with no extension and then crop. It is very, very sharp, IMO, sharper than the Otus 55mm.

Here is a shot with the D810 and the Zeiss 135mm APO, and then a 100% crop to show the kind of resolution you get with with lens. I don't need extension, just cropping. And, as mentioned, extension does not seem so good with this lens.

I also tried out the Zeiss 135mm APO on the smaller mirrorless cameras like this Sony A7r (and also the A7s), and in this case the weight of the lens and the Nikon F-Mount adapter required support via rails as you can see from this photo. I sent both the A7r and A7s back. Mirrorless, for my work, is not quite ready for prime-time. In the case of the A7r, shown here, the shutter vibration was too much for a shot like this, in most cases.

The A7r is mounted on rails using a Swiss-Arca-style quick-release. The whole thing sits on a Swiss-Ardca C1 geared head, which sits atop a RRS tripod. That's a lot of gear and the vertical element of the whole setup makes any kind of vibration not helpful.

As mentioned earlier, I often use 8mm extension with the Zeiss Otus 55mm APO, but find it not needed for most of my work with the Zeiss 135mm APO. Here is the Zeiss 135mm on the Nikon D800E, a 100% crop, I believe.

Most of my work (and interest) is close-up, rather than macro, since I value the context that close-up photography allows. My Lightroom stats tell me I have taken some 13,000 photos with the Zeiss 135mm APO, and that is just one catalog. So I do like this lens.

I too like really stunning photos, but a lot of why I love these new Zeiss lenses is the micro-contrast they provide for photos that are not intended to be spectacular or just are not so.

The Zeiss 135mm excels at one-shot very-effective photos like the one shown here. Nothing special, but it has the character of the Zeiss 135mm APO lens that I like.

For my own self, when I look for my enjoyment, I like plain photos with good micro-contrast. I am not fond of HDR photos, for example. Unfortunately, photos in ProPhoto RGB in PS or Lightroom don't look as nice on the web in sRGB, do they? I have about a dozen or so albums at 2048 pixel size that give a better idea, and that can be found at MacroStop.com under Free e-books, and then Photography. Here is a link for one on micro-contrast that may be interesting.

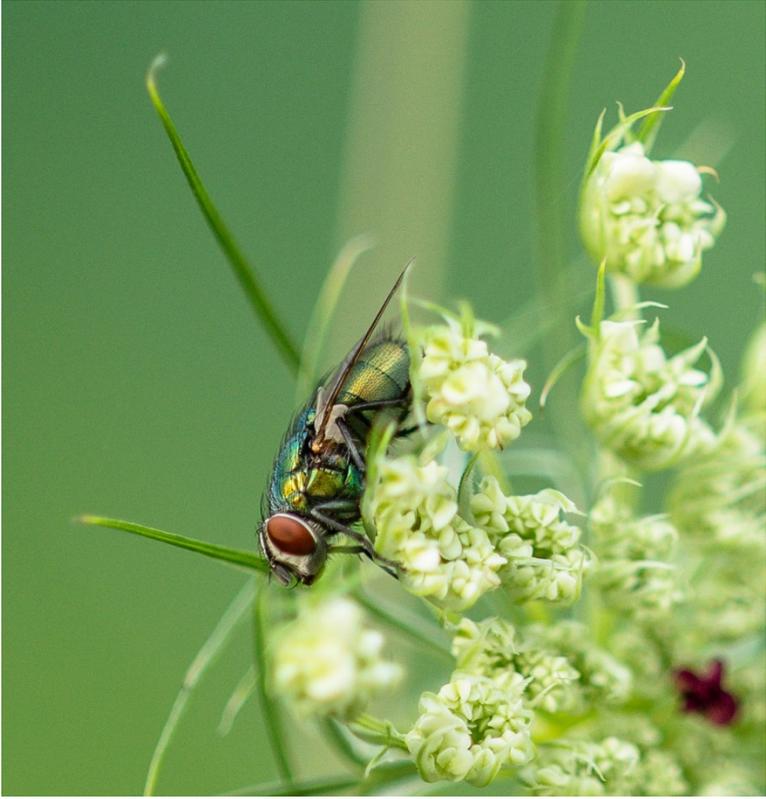
<http://spiritgrooves.libsyn.com/micro-contrast-in-photography>

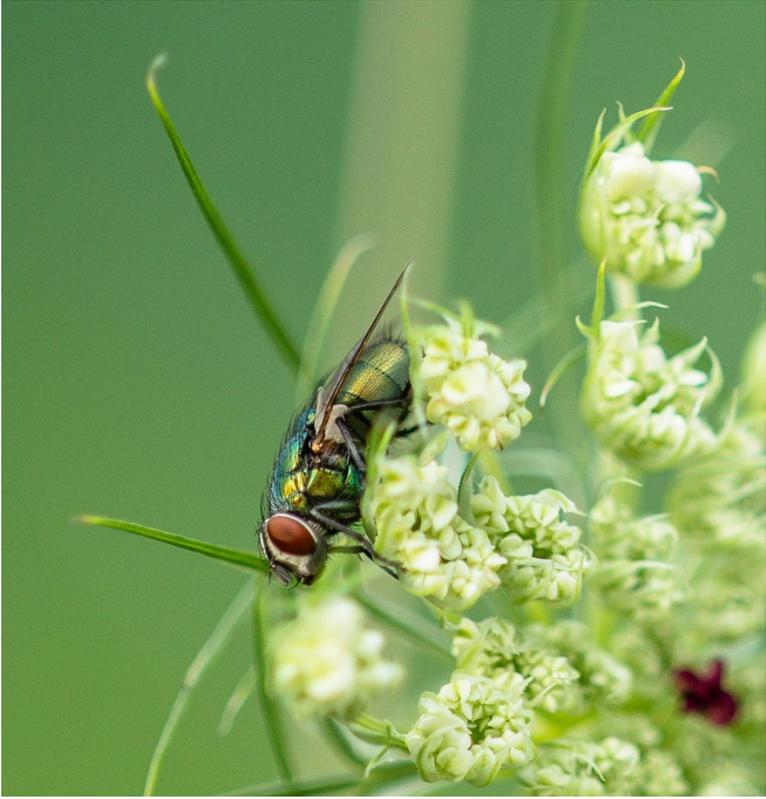
So far we are stuck with sRGB and Adobe RGB color spaces. Most browsers only support sRGB, and perhaps a few support Adobe RGB. I am told that ProPhoto RGB will not and cannot be supported by any known equipment. ProPhoto RGB as supported in Adobe Lightroom is only a partial set of what the ProPhoto Color Space includes. This is not generally known.

Experts point out that the Adobe ProPhoto color space is so large that existing monitors, etc. can only begin to cover it and, if I remember, they go on to say that they never will support it. The takeaway for me here is that those of us who like the ProPhoto RGB color space in Lightroom tend to think that we are looking at the whole standard, when we are not at all, but only a very small portion of it.

Since I don't print hard copies of photos, only I have seen many of my photos in their finest form. As we go for more extensive color space, the whole thing breaks on what our monitors can support and the software that interprets it. The experts claim that it is physically impossible to display the entire ProPhoto RGB color space. I may have some of this wrong, but someone may clarify it who reads this.











Divide and Conquer Your Road Case

By Michael Erlewine

I have all sorts of pieces of cut-foam lying around from my attempts to form-fit various camera equipment for my Pelican cases, mostly for the Pelican 1600. The problem is not with the foam, but with my every-changing mind and camera gear. I no sooner settle in to one cut-foam pattern when something new comes out that has to go into the case.

I wish I had found TrekPak dividers early-on, because they are what we call in the advertising business “evergreen,” meaning they never go out of style or have to be replaced. Instead of cut-foam or those hassle-prone stick-to-everything Velcro dividers, TrekPak offers rigid dividers that can be configured however I want, and they last from here on out.

This is a photo of one of a couple Pelican cases rigged for some of my video equipment, in this case the Sony FS700, which has output for 4K video and 10-bit Apple ProRes, and the Panasonic GH4 4K camera, etc. Those little red-cloth flags you see are fixed to anodized pins that just pull up from coupling dividers. The pins can connect dividers anywhere along their edge or you can opt to cut your own dividers.

This system is pricier than foam, but not if you add up how many times you have to recut foam or wish you had not cut it as you have. Just pull out a pin and re-pin it where you want. I like these because they are exact and offer a neat solution. I don't work for TrekPak or have any affiliation with them. I just like

this divider system. You can read more at:
<http://trekpak.com/>.



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