

by Michael Erlewine

Year 2012: Close-Up and Macro

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Articles
by
Michael Erlewine

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**This book is dedicated
to
Macro Photography**

*May any merit this book may accrue, however
small, be dedicated to all sentient beings and
help to bring each and every one of them to the
realization of the true nature of the mind.*

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Essay: Industrial Macro and Close-Up Lenses for Stacking

The world of industrial macro and ultra-close-up lenses is especially fascinating to the focus stacker. These very sharp and often highly-corrected lenses, some of which are very fast, can have a very narrow depth-of-field. Most are industrial or process lenses used in scanners, enlargers, copy cameras, and other dedicated tasks.

For example, ultra-sharp industrial lenses are used to project the photomasks on mass-produced silicon wafers from which the final computer chips are made. Other uses include the lenses used in very expensive high-tech color scanners, where in addition to ultra-resolving power, the lens also has to be highly corrected (APO) to handle subtleties of color. Use of these lenses in enlargers and other process photography is worldwide and scores of such lenses exist.

Process lenses with very small apertures do not tend to provide high resolution, so some of these exotic Nikkors tend to be very fast (like $f/1.0$ and $f/1.2$), and at the same time are very sharp wide open. In fact some industrial Nikkors record diffraction even wide open and certainly do so if stopped down at all. Others have only the single aperture. Many can be stopped down, but not to good effect.

It is important to point out that these industrial lenses differ in quality from the lenses we commonly mount on our DSLRs in that many of them have been produced to a much higher standard of quality than an ordinary camera lens. They can be faster, sharper, and more highly corrected than the F-mount lenses we are used to buying. And there are many industrial lenses on the used market waiting for people like us to determine how useful they are for our work.

Most industrial lenses do not have a convenient F-mount adapter to fit our DSLRs. Instead, they have RMS (microscope), M39 (Leica), and M42 (Zeiss), and still other non-standard mounts. Some are even threaded for microscope use. Others have tubes and built-in extension that have to be factored into whatever mount we devise. Many shine on bellows or when we mount them on a DSLR with an

added helicoid. Fortunately Ebay is full of relatively inexpensive adapters to convert most of these various threads to Nikon F-mounts.

The upshot is that today many of these rare macro lenses function as collector's items, rather than be used for photography. They are also popular among coin collectors and related hobbies where very exact (flat) close-up photos are required. Many of these lenses, because of their very narrow depth of field, are not attractive to the typical nature photographer. Also, some are so slow as to make focusing through a viewfinder difficult to impossible at low light levels.

Narrow depth-of-field does not deter focus stackers, because we simply stack that narrow depth-of-field as deep as we wish. These exotic industrial lenses can be very fast or very slow. I like the very fast lenses because they tend to give good bokeh, and I can stack as much narrow depth-of-field as I wish.

On the other extreme are the very slow industrial lenses. Their bokeh is not going to be much, but some of them are extremely sharp and/or well color-corrected. Color correction is a big issue. Some of these exotics are true APO (or nearly so), while others have earlier coatings and/or are not color corrected to the degree I would wish.

You are correct if you get the idea that these exotic industrials are an area not well plumbed by focus stackers, but one with great promise. Unfortunately, these lenses are not inexpensive, mostly because they are sought by collectors as copy lenses or just to place in a display case, I guess. The best of the rare industrials make even the Voigtlander 125mm APO-Lanthar look inexpensive by comparison, prices in the range of \$8,000-\$10,000 a copy. Ouch!

However, putting the best-known and most prized industrial lenses aside, there are numerous industrial lenses out there that seemingly (to my knowledge) have never been checked-out and put to use in general macro photography. Ebay is filled with used enlarger lenses and the like. I guess we are waiting from some lens

expert to tell us which ones are exceptional, but since they are not expensive, we should check these out for ourselves.

And we focus stackers are kind of on our own as for guidance in these areas. The fact is that although some few photographers comment on them, even fewer seem to use them to any great extent as far as I can see; at least not many photos are out there to view, except of the compound eye of a bee or dragonfly. Most of the discussion I have found for these lenses are by coin collectors or microscope fans. Nature buffs like me seldom talk about them.

Part of my own interest in the exotic Nikkors was the natural result of exploring lenses, but the advent of the Nikon D800E was another really big factor. The increased resolution of the D800E propelled me to break out of the box of the standard macro lenses and wander into the field of the exotics. And it has been a learning experience.

There is a multitude of enlarger, copier, scanner, and other types of industrial lenses. Many can be had for almost nothing and it is anyone's guess how good they are. These lenses don't go to infinity; they are close-focus-only lenses. And for the most part they don't have a Nikon F-mount, but rather a variety of threads, some very obscure. So finding and using these lenses is no waltz.

These are not walk-around lenses and many require special handling, mounts, have a limited focal range (or just one!), are or are-not color corrected, and on and on. In other words, they can be a hassle, but if you are already focus stacking, you are used to taking your time and threading through various hassles.

Why should we use these industrial lenses and how? What can they do for us?

The answer is: for several reasons. One of my favorites is bokeh, bokeh, bokeh. Since many of these exotic macro lenses are very, very fast and also very, very sharp, you can be sure that your background is isolated into nice bokeh. Fast lenses bring a very narrow depth-of-field, which is perhaps why they have not been used more by general photographers.

But we focus stackers don't care about a narrow depth-of-field. We can carefully stack that very narrow, yet very sharp, depth-of-field until we have created as much of the subject in focus as we wish, leaving the background nicely blurred. Using these lenses, I like to highlight some very detailed part of the subject to make clear to the viewer that we have that sharpness, and perhaps sharper than they could imagine. And then, I like to let the surrounding background bokeh just run wild and do crazy things not only with blur, but with color. The CRT Nikkor 55mm Oscilloscope lens is very good at producing bokeh with zen-like lumps of color.

And good bokeh and blur is not the end of it. Many, but not all, of these industrial Nikkors are very highly corrected, in fact, true APO lenses, or about as near as we are going to get. So not only are they very sharp, produce fine bokeh, but their color IQ is subtle and fine. So the best industrials are fast, wide, sharp, and APO corrected. It is this color correction that most fascinates me.

To repeat, perhaps the only reason these industrial lenses have not been more utilized until now is that who out there wants great bokeh, fine color, but only a very narrow slice of focus. But with focus stacking, it is up to us how much of the subject we want in focus. Therefore, I suggest these exotic industrials will only go up in price, not come down, as more of us find out their special qualities and learn to use them. This leaves the uncorrected industrials.

First, they are very few. There are some lenses that are very sharp, but not well corrected or perhaps have earlier single coatings, etc. These lenses are still very useful where refined color is not demanded, or where blocks of color have little micro-contrast and can be controlled in post. Most industrial lenses are, by definition, manufactured to a high standard.

As for myself, I dove in head first and have a small collection of these industrials, including some classics. Have I mastered them? Nope, but at least I got my feet wet and am in the midst of a broad (but not exponential) learning curve. I very much like what I am finding, although much of what I am finding is my own inexperience and lack of technique with this particular group of lenses. This only makes it more fun.

These industrial lenses I consider as a palette that I can hopefully learn to paint with. I am now acquainted with the palette. It is time to be more creative.

Of course, I tend to view my own work as an endless Odyssey through lens-land that has no goal other than the learning process itself. I have never reached that pot-of-gold at the end of the rainbow and, over time, have stopped even considering it. That being said, I have progressed on my journey, which originally was one for greater depth-of-field, greater resolution and sharpness, but which now has morphed into the realization that sharpness ultimately (at least for me) depends on color and color correction, including other distortion, as in APO lenses.

I'd like to believe that I have all the lenses I could possibly need, but am afraid that every next day brings new ideas to check out, and that, as often as not, this dictates new lenses. And while I try to resist buying any more, the day usually comes when I stop resisting and just buy the darn thing.

I do feel that I have completed my initial testing of the Nikon D800E camera, plus taken at least a brief tour through industrial lenses, and am ready now to settle in for some more creative work.

I am indebted to many of the Nikongear folks here, including Akira, nfoto (of course), and particularly Klaus D. Schmitt, and others.)



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Photo D800E, Leica 60mm, Elmarit, Zerene Stacker

Lens List of “Optimum” Aperture Settings for Focus Stacking

This list is probably only of interest to focus stackers, and then only if you want a rough guide as to what aperture you might use to get maximum resolution when stacking. This list includes common and not-so-common lenses that I have been able to get my hands on.

I know this is probably an exercise in futility because the optimum aperture setting for “sharpness” depends upon sensor size and other factors but, putting that aside, there is at least general agreement among photographers as to where the ‘sweet spot’ for resolution is for most lenses. Some simply say to stop down the lens from being wide open by two stops, and that will be ideal. However that is not always the case.

In putting this lens list together I have looked at various MTF graphs, diagrams, written suggestions, and my own experience to give a rough idea as to what aperture you might want to be to stack using a lens. Most are fairly obvious, but there are some surprises that are worth being aware of.

I should add that it can often be better to stop down to even narrower apertures than ideal, because the gain in depth-of-field (even with the added refraction) sometimes gives the appearance of greater resolution (in my experience) in the finished photo.

This list is sorted by focal length, followed [in brackets] by the so-called sweet-spot, and then by a more standard description of the lens.

Lens List of “Optimum” Aperture Settings for Focus Stacking

014mm-24mm [f/4] Nikkor 14mm-24mm AF-S f/1.28 G ED
016mm [f/11] Nikon Nikor 16mm f/2.8 Fisheye
024mm [f/5.6] Nikkor 24mm WA PC-E F/3/5 ED
024mm-70mm [f/4-f/5.6] Nikkor 24mm-70mm AF-S f/2.8 G ED
024mm [f/5.6] Nikkor 24mm f/2.8
028mm [f/5.6] Nikkor 28mm f/2.8 AI-S035mm [f/4] Nikkor 35mm f/1.4 G
035mm [f/4.5] Macro-Nikkor 35mm f/4.5, MultiPhot
040mm [f/4] Voigtlander 40mm Ultron f/2.0 SL II
045mm [f/5.6+] Micro-Nikkor 45mm f/2.8 PC-E Tilt/Shift
050MM [f/4] Nikkor 50mm f/1.8 AIS
050MM [f/4] Nikkor 50mm AF-S f/1.4 G Lens
050mm [f/4] Nikkor 50mm AF-S f/1.4 D
050mm [f/4] Zeiss 50mm f/2 ZF.2 Makro-Planar
050mm [f/4] Nikkor 50mm f/1.2

055mm [f/4] Micro-Nikkor 55MM P Auto NJK 55mm 3.5 (comp, Ai, Kit 63)
 055mm [f/5,6-f/8] Micro-Nikkor 55mm P Auto 55mm f/3.5
 055mm [f/5,6-f/8] Micro-Nikkor 55mm f/2.8 AIS Manual Focus
 055mm [f/5,6-f/8] Micro-Nikkor 55mm f/3.5
 055mm [f/5,6-f/8] Micro-Nikkor 55mm f/3.5 Compensating \$177
 055mm [f/8] Micro-Nikkor 55mm f/3.5 P.C Auto
 055mm [f/1.4-f/4] Nikkor 55mm f/1.2 CRT Oscilloscope
 055mm [f/8] Nikkor 55mm f/3.5 P.C. Auto
 058mm [f/4-f/5.6] Voigtlander 58mm f/1.4 Nokton
 060mm [f/5.6] Micro-Nikkor 60mm f/2.8 D Lens
 060mm [f/5.6] Coastal Optics 60mm f/4.0 APO
 060mm [f/5.6] Micro-Nikkor 60mm f/2.8 G Lens
 060mm [f/8] Leica Macro Elmarit-R f/2.8 60mm
 065mm [1st Ring] Macro Nikkor 65mm f/4.5 Multiphot
 070mm-180mm [f/5.6-f/8] Micro-Nikkor 70mm-180mm AF f/4.5-5.6 D
 070mm-200mm [f/4] Nikkor 70mm-200mm AF VR II F/2.8 GII AFS ED-IF
 074mm [Wide Open] Carl Zeiss S-Planar f/4 74mm Macro
 085mm [f/5.6] Micro-Nikkor 85mm f/2.8 PC Tilt/Shift Lens
 085mm [f/4-f/5.6] Nikkor 85mm f/1.4 D
 085mm [f/4] Nikkor 85mm F/1.4 G
 085mm [Wide Open] Nikkor 85mm f/1.0 Repro Macro
 089mm [Wide Open] Rodenstock Scitex-S3 89mm
 090mm [f/3.5] Voigtlander 90mm f/3.5 SL
 095mm [f/3.3] Printing Nikkor 95mm f/2.8
 100mm [f/5.6] Kiron (Lester A. Dine) 100mm f/2.8 Macro
 100mm [f/4] Zeiss 100mm F/2 ZF.2 Makro-Planar
 100mm [f/4] Leica 100mm Apo Macro Elmarit R Lens F2.8
 100mm [f/4] Leica Elpro 100mm 1:2-1:1 Close-Up Lens R
 105mm [f/5.6] Micro-Nikkor 105mm F/2.8 VR Lens
 105mm [f/5.6] Micro-Nikkor 105mm P F/4 Macro Bellows Lens
 105mm [f/5.6] Micro-Nikkor 105mm P F/4 Macro Lens
 105mm [f/4-f/5.6] Nikkor 105mm F/2.5
 105mm [f/5.6] Micro-Nikkor 105mm f/2.8 AIS Manual Focus
 105mm [f/3.3] Printing Nikkor 105mm f/2.8
 105mm [f/5.6] El-Nikkor APO 105mm f/5.6
 120mm [1-3 Ring] Macro-Nikkor 120mm f/6.3.MultiPhot
 125mm [f/5.6] Voigtlander 125 F/2.5 Macro APO-Lanthar
 135mm [f/2.8-f.4] Nikkor 135mm AF DC f/2
 150mm [f/4] Printing Nikkor 150mm f/2.8
 180mm [f/5.6] Voigtlander 180mm APO f/4
 200mm [f/5.6] Micro-Nikkor 200m AF F/4 ED-IF Macro
 300mm [f/5.6] Nikkor 300mm AF-S f/4 ED IF

Making the Nikon D800E Transparent in the Process

Ultimately our cameras and lenses should be transparent in the photographic process. Every new camera or lens challenges this and none for me more than the Nikon D800E. I am kind of wrapping up my own personal version of testing of the D800E, using a wide variety of close-up and macro lenses, and am finally ready now to begin to concentrate more on composition and just taking photos, etc.

This has taken some months because (for me) the Nikon D800E is a very different camera to use, both when shooting and in post-processing. I have learned a lot and had a lot to learn.

As many have already written here, the D800/E is not for everyone. It is not a walk-around camera IMO. It has a great price-point, but not as robust a build as I might wish. That being said, it is small, light, and fits on the Nikon PB-4 bellows without extenders and having to use the PB-6.

The D800E can be hard to focus for detailed work, mostly because the LCD and viewfinder don't make it easy to see what is going on. I bet tethering would help in the studio, but I have not gotten that far or made the time to check that out yet. I am still working on the low-hanging fruit, as they say.

Although I was warned that only the finest lenses could be used with the D800E, my own experience is that it brings out the best in all the lenses I have tried. Perhaps this is saying the same thing. And since I only have good lenses, that is a moot point.

Anyway, some of my very best lenses rise to new and greater heights (in my opinion) when mounted on the D800E, especially the corrected APO lenses. My very nice D4 sits on the shelf gathering dust because I am not done exploring the D800E.

And post processing is now very different than it was with previous Nikon bodies. Since I stack photos, the individual layers of a D800E stack are more than 200 MB each. When you consider that some stacks are more than 100 layers deep, the resulting processing slowed my computer down big-time. In fact, I had to go out and buy a new much-faster computer just to make the stacking software

tolerable. Even with a very-fast, over-clocked, water-cooled computer, it is still slow. But it is worth the wait.

The IQ and resolution of the D800E are remarkable and very satisfying to me. Since I seldom use auto-focus, I don't know whether my copy needs adjusting, but I have seen no problems.

Anyway, I feel I have begun to have the hang of the D800E and am ready to just photograph with it, and am done with experimenting for the time being. I read all kinds of negative posts about this camera, reasons why not to buy it, and so on. However, I can only see the bright side. It is the most useful camera I have ever owned, and by far. And all that hype about moiré patterns was just not true, at least for me. Of course, I am a nature photographer, but I have seen no moiré patterns yet.



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Photo taken yesterday with the Nikon D800e, Leica 100mm f/2.8 APO Elmarit-R, and Zerene Stacker.



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Nikon D800E, CV-125, Zerene Stacker

Stacking Blues with the Coastal Optics APO 60mm

Bellows, focus-rail, or helicoid, those are my main choices. As mentioned before, as far as moving the entrance pupil on the lens, the best options are, in order, Bellows with the front standard fixed, the lens helicoid, and (last but not least), the focusing rail.

Here are two shots with the Coastal Optics 60mm APO Macro f/4 lens. I can't mount the lens on the bellows and expect any rewards, so I have only the second two choices.

The first image is shot on a focus rail, with 112 focus layers, while the second image is shot with the lens helicoid and 12 focus layers. Here is the problem with this lens.

Of course it is a great lens, but they made this ridiculously-short focus throw of 210 degrees. For comparison, the Voiglander 125mm f/2.5 APO-Lanthar has something like 630 degrees of focus throw, and that Leica 100mm APO Macro Elmarit-R f/2.8 has a 710-degree focus throw.

So if I mount the CO-60 on a focus rail, I am moving the camera and lens, thus causing the most difficulty for any stacking software to resolve.

And if I use the lenses own helicoid, it has such a short focus throw that each tiny movement takes too large a bite of the subject and I end up with something like 12 layers of focus.

So, once again, photography has shown me that there is no such thing as a free lens.

These shots are taken with the Nikon D800E, CO-60 APO lens, and Zerene Stacker.

This image taken on a focus rail.



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Is Ultimate Sharpness Apochromatic?

Chromatic aberration is something photographers must live with, the idea of color fringing due to the fact that different colors focus at different distances from a lens. If two wavelengths of light (usually red and blue) are brought to focus in the same plane, the lens is called achromatic. If three or more wavelengths of light are brought to focus in the same plane (at the same distance), the lens is termed apochromatic, as in APO lenses. The idea is we would like to have all the colors focus on the same plane, like on our sensor.

“APO” is a term rather loosely used by lens manufacturers. Not all lenses labeled “APO” are really properly corrected, so just having the term “APO” on a lens does not guarantee any particular degree of correction. However, there are certain lenses that photographers seem to agree do deserve to be called apochromatic, macros such as the Coastal Optics 60mm f/4 APO, the Leica 100mm Elmarit-R f/2.8 APO, and the Cosina/Voigtlander 125mm f/2.5 APO-Lanthar. And there are others.

I don't have the technical expertise of some of our members here, but I do have a pretty good eye for images. In recent years I have been searching for the Holy Grail of Sharpness in lenses, a true Odyssey, for sure, and probably a bit of a fool's errand, as some have pointed out.

In brief, my journey lead me through the best of Nikon's macro lenses, on into lenses like the Voigtlander 125mm (and the others pointed out above), and finally into the extremely sharp industrial Nikons, such as Macro Nikon Multiphots, the Nikkor CRT, the Repro macro, the Printing Nikkors, and others.

Although the industrial Nikkors were indeed very, very sharp, their resulting photos still left something to be desired. It would seem that sharpness alone is not enough, and that part of what I was calling sharpness really turned on how color was handled. In other words, color treatment very much affects what I was calling 'sharpness,' which brings me to the apochromatic lenses.

When all was said and done, I seem to end up using the three APO lenses mentioned above, the Voigtlander, the Leica, and the Coastal Optics. I have many other fine lenses, such as the Zeiss

50mm and 100mm Makro-Planars, but (to my eyes) their more “contrasty” look (for lack of a better word) detracted from their use in my work. Yes, they are very sharp, but part of sharpness (so I argue here) is color, and the Zeiss lenses are not true APO lenses. And that apparently (to my eye) makes a difference.

Then, when I did a lot of work with the various industrial Nikkors, which indeed are as sharp or sharper than the above mentioned lenses, the results left something to be desired. So, ‘sharp’ by itself is not all that sharp, so to speak. In fact, in the end my idea of sharpness turns on color. I was surprised.

Perhaps the industrial Nikkors lack the modern coatings or something, so I have to be careful what photo environments I use them with. Where subtleness of color is not key, they work fine, but where refined color is paramount, I had best use other lenses. Hopefully some of you reading this will have the proper explanation for what I am only able to see as a difference.

All of this was pre-Nikon 800E. With the advent of 36 megapixel images, all of this becomes (for me anyway) much clearer. What was something I guessed at with the Nikon D3s and D3x, becomes more obvious with the D800E. It is clear from the D800E photos that uncorrected non-APO sharpness lacks something that APO-corrected lenses appear to have, as in: what I am looking for, call it sharpness or whatever.

My question and reason for writing this is to seek other opinions on this and explanations for what I am seeing.

Am I crazy to think that ultimately sharpness, depends on color, like: perhaps resolving the color fringing with APO lenses?

Are the ultra-sharp industrial Nikkors missing something, like APO corrections, and if so what?

Do the higher resolution (megapixels) of cameras like the D800E make all of this more obvious?

What does that tell us we want in a lens for fine color work?

I apologize in advance if I misunderstand any of the technicalities involved here, so set me straight please.

Entrance Pupil Problems with Stacking

Since I started using the Nikon D800E, I have had some minor but annoying problems with stacking the resulting images. It has nothing to do with the D800E, because the problem happens in the stacking program, not in the camera. And the problem is....

The two main modes of stacking, PMax and DMap, no longer line up perfectly exactly. There are some very slight differences between the two modes to the effect that when I try to retouch using one on the other, there are slight differences that make the retouching not worth it in some cases.

The good news is that DMap by itself (with the D800E) is almost perfect in this higher resolution. I have asked around and no one can explain why it should suddenly be so much better.

Meanwhile, the problem of the two modes not working so well together I took up with Rik Littlefield, the author of Zerene Stacker. Littlefield is incredible in that he is unerringly interested in every facet of not just his program, but all stacking and related topics. He studied the problem and suggested the problem is the following.

In the stacks I have been doing, I place the camera and lens on a focus rail and move the whole ensemble incrementally forward for stacking, as opposed to fixing the camera/lens on a tripod and turning the lens helicoid. This Littlefield pointed out can make a difference.

He said that the entrance pupil for the lens determines how stacking programs can handle the images. The ideal situation is if the entrance pupil in the lens stays fixed, and the camera incrementally moves on its own. He pointed out that there is no chance of this when we move both camera and lens together as a unit on a focus rail, but that instead by turning the helicoid to stack, with some lenses the results will be better. In particular lenses such as the Nikon 35mm f/1.4G, which has back-focus this will work. "IF" lenses, since they are internal focus lenses will cause problems when I stacking by moving the camera and lens as a unit.

Best of all would be to use a bellows, fixing the front standard (with the lens) and moving the camera on the back standard while the

lens stays stationary. In this way, we are sure the entrance pupil does not move at all.

The problem I have with this solution is that with a lens like my old favorite CV-125mm APO, it is not useful to mount that lens on a bellows and move the camera from behind, because the lens was built for its particular dimensions and is drastically altered when used with a bellows. It is what it is, and that is why it is a great lens. Start messing with it, and it gets ordinary fast.

However, an enlarger lens like the APO EI-Nikkor 105mm works perfectly as a bellows lens, since it was originally designed as an enlarger lens, so I tried that.

Sure enough, the resulting PMax and DMap images matched perfectly and there are no more problems with stacking this way. Now, I can't stack everything on a bellows, because I will continue to use all of the various lenses I love, but I do understand that I have a solution at hand with the bellows, should I need it.

As to why the greater resolution of the D800E brought this problem to my attention in the first place, I have no idea other than perhaps the finer detail brings it out. Any ideas?



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Nikon D800E, APO EI-Nikkor f/5.6 105mm, Zerene Stackerm using Nikon PB-4 Bellows and fixed front standard.

A Better Mousetrap? The EI-Nikkor APO

These are just my first couple of shots using the EI-Nikkor APO 105mm f/5.6. And, although I have not even figured out what kind of extension tubes, etc. I want to use for this little beauty, I can at least tell myself that this is a remarkable lens. The fact that it is an APO lens fits right into my theory that this kind of color correction within a lens is what I like. Just my two-cents.

The light is gone here for the day, but I can't wait to see what this rare lens will do. I have been tilting at windmills for lenses for a long time. Every once in a while I get lucky. This is a wonderful lens, even at first meeting, perhaps a match for the CV-125, at least in my work.

Pardon my compositions. I am just firing off a few shots.



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Nikon D800E, EI-Nikkor APO 105mm f/5.6, Zerene Stacker

More on the APO EI-Nikkor 105mm

The APO EI-Nikkor 105mm f/5.6 is very much used and in demand by coin collectors and astronomy buffs. This may be what drives the price so high. It is sought for.

It has a 39mm thread that I converted to a 42mm, so that it will fit some of the adaptors around here. I tried it with various heliocoids and different extensions, and end up liking it best on the Nikon Bellows PB-4 with some extension. I am still just learning to use this lens.

I am not a lens-testing expert, but to my eye this lens is as fine a lens in its own way as my favorite Voigtlander 125mm APO. It has a different draw and qualities, but I like what it does.

I notice that the coin collectors use and rate all of these industrial Nikkors. Some of the posts I read rate the Printing Nikkors 95mm and 105mm higher than the EI-Nikkor APO 105mm, and perhaps for sheer sharpness this is true. But I have both Printing Nikkors and their handling of color does not even come close to the 105 EI-Nikkor APO. So, I see lenses mean different things to different users. The astronomy buffs, those who take deep-sky images really like the APO 105 EI-Nikkor, as do I.

I have quite a few of the better lenses for close-up and macro stacking, and I like them. But I can tell already that the EI-Nikkor APO has a very special quality, as does the CV-125mm. It could be just my eyes or because the lens is the new kid on the block, but so far I can't find anything I don't like about it. What are your thoughts? Here are some not really finished images to give you an idea how this lens performs.



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Nikon D800E, APO EI-Nikkor f/5.6 105mm, Zerene Stacker

Nikon D800E: The Return of Short Stacking

I continue to experiment with the Nikon D800E with close-up and macro work, so those of you not interested, I can well understand if you just ignore these posts.

I have tested the D800E in standard focus-rail mode (many layers) and in single-shot mode and it works well. Now I am checking out the D800E for short-stacks, meaning stacked layers of anywhere from two to a dozen layers to see how it works.

I gave up short stacks some time ago because they were too prone to artifacts and came up short (no pun intended) compared to larger, more traditional, stacks of dozens to one-hundred or more layers.

The long and the short of it is that the D800E, once again, shows it stuff making short stacks, at least for my work, once again viable. Perhaps one of our techsperts can explain just why, but I can show you that short stacks do work well with this camera. Perhaps it is the large sensor size or the fact that it appears we can push lenses toward higher apertures with this camera.

In fact, in my experience so far, in contrast to what I was warned by experts (that only the finest lenses could be used with a 36mm camera), even 'good' lenses seem to work better with the D800E. I can't say why, but it seems true.

In these examples I am using the relatively good macro lens, the Micro-Nikkor 105mm, f/2.8 VR macro lens, although I normally would use the CV-125 APO, the Coastal Optics 60mm APO, the Leica Elmarit f/2.8 APO lens, or one of the Zeiss Makro-Planar lenses. And I will be using them soon, as well.

But here, I am using the 105mm VR lens. The images, in order are:



(1) Lily – Micro-Nikkor 105mm, f/2.8 VR macro lens, Seven layers, ISO 250, f/10, 1/25 sec



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(2) Sweet Pea - Micro-Nikkor 105mm, f/2.8 VR macro lens, Nine layers, ISO 250, f/5.6, 1/200 sec



(3) Rose – Micro-Nikkor 105mm, f/2.8 VR macro lens, Twelve layers, ISO 250, f/f.6, 1/200 sec



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(4) Rose – Micro-Nikkor 105mm, f/2.8 VR macro lens, Forty-four layers, ISO 250, f/f.6, 1/200 sec

You can compare the 12 layer to the 44 layer rose. Yes, the larger stack is better, but by much less of a margin than if I had shot it on any of the earlier Nikon bodies, as far as I can see.

All of the images were shot by rotating the focus barrel, except for Number 4 (44-layer), which was shot on the Novoflex Castel-L focusing rail.

Summary: D800E for Close-Up/Macro Work

So Far, So Good, with some Caveats

I have written some of this elsewhere, but will incorporate it here for those who missed it and want a summary. The Nikon D800E is IMO a game changer for close-up and macro nature photography. Whether used to stack photos on a rail or taking single-shot photos of live critters, the camera excels. I know there are autofocus (and probably other) problems floating out there, but I assume they will be resolved by a firmware upgrade or camera replacement. I have not run into them, but neither have I tested for the autofocus problems. This is not to say the camera does not present new challenges. It does.

D800E: Studio and Focus Stacking

I have extensively tested the D800E in the studio (or outside when winds are calm), mostly on a focus rail, and the camera is outstanding for this kind of still-life work - stacking. All is good and this has been well documented (at least by me). The camera is sharp beyond any others I have ever used. Period.

Even with limited single-shot experimenting, it seems to me that the D800E will curtail some amount of my focus-stacking work by replacing stacking with single-shot photos, especially in the field. Where before I could not stack because of the ever-present wind in the flatlands of Michigan, now I am encouraged to try single-shot outdoor photos, either with an increased shutter speed or waiting for a momentary lull in the wind.

This will almost certainly increase my still life work in the field. Until the D800E came along, I mainly waited for a period of calm regarding wind, and did my stacking during the calm. Those periods of calm are rare here. Now I will see what single-shots can do.

However, I stack in the studio regularly, at least in the winter. I am encouraged to approximate focus stacking with either a single-shot carefully set up or a short stack of perhaps one to three layers. I continue to be amazed at the amount of detail a single shot of a still life will give me with the D800E. All I have to do is pay attention to ISO, aperture, and the other factors that I would normally.

I can (without regrets) say that I will be taking more one-shot still-life photos in the field and be sacrificing very little, especially since my focus stacking technique has been moving more and more toward have a limited area in focus and letting the rest go to bokeh or whatever.

Not sure I would do one-shots in the studio when I have the opportunity to stack, but I am starting to believe I just might. There is something nice about have no artifacts in a photo. In fact, this camera brings new life for me in taking single-shot nature photos, which for me is saying something. I will no doubt be doing more walking around.

One-Shot Nature Photography

As mentioned, I have done considerable field testing of the Nikon D800E for single-shot autofocus live-action shots. I am very pleased with the camera, but like everything else there is no free lunch. Well, perhaps with the D800E there is a little free lunch.

I have not been able to use manual focus APO lenses like the CV-125 or the Coastal Optics 60mm APO in the field for single-shot photos due to difficulty with manually focusing on fast-moving critters. Single-shot manual focus, in general, is very difficult with this camera. I have been resigned to using what autofocus macro lenses I have, like the Micro-Nikkors 105mm f/2.8 VR and the Micro-Nikkor 200mm f/4, and find so far that the 105mm VR is the most flexible. It is a solid lens. The 200mm, while sharp, adds too much darkness to the viewfinder for my comfort. I have yet to try some of the wider autofocus Micro-Nikkors, but they are on my list. So what have I learned from the single-shot work?

Single-Shot: ISO

The D800E is less tolerant than I hoped when it comes to ISO. I find that the ISO needs to be as low as I can get it, largely due to the need to crop tightly, thus making noise more visible. In fact, because of cropping, noise is a large factor. Even ISO 400 is too high for comfort, and ISO 200 also produces noise when you crop it small enough, obviously. I am trying to hold to ISO 200, unless forced upward, but that is asking a lot.

My guess is that we will generally see more noise in this kind of nature photo than in the past or that some noisy areas will be cloned solid in Photoshop, which is worth it in some cases.

Single-Shot: DOF

As for Depth-of-Field, we are not stacking here, so the old rule of push the aperture as narrow as possible holds sway. Yes, there seems to be some additional leeway toward higher apertures with the D800E, but for most work f/11 is about as high as I want to push it. I tried higher apertures and for fine still life work (with the finest lenses) I can perhaps get away with it. For most work, f/11 does a pretty decent job of putting things in focus. I am somewhat impressed with f/11 for single shot detail.

Single-Shot: LIGHT

Since I am shooting at f/11 when I can, that means I need light and more light. I am shooting a lot in full sun and that means that harsh highlights and light-related considerations are now a problem. Still they seem (so far) easier to deal with than the additional noise from too little light. What this tells me is that, as usual, good technique and some luck will be important. Like all new equipment, in time we will master what we can. Right now, it is still new.

Single-Shot: SHUTTER SPEED

Obviously this varies, but the shutter speed greatly affects the freezing of motion with fast-moving critters, and too low a shutter speed adds unwelcome movement and noise. I push the shutter speed as high as I dare, which means I am in full sunlight more often than I wish. In the past I have avoided full sunlight with a passion, but here (at least for now) I have no choice.

Focusing with the Nikon D800E

I will leave aside the autofocus problem that is being discussed elsewhere, since I have not tested my camera for that. I can say:

Focus Stacking: No problem, since it is manual and incremental. Works perfectly.

Autofocus: So far seems to work well with the Micro-Nikkor 105mm VR. All is well.

Manual: This camera is a royal PITA to manually focus. Think of it this way: the same great detail the camera delivers in output requires the same degree of technique going in, i.e. focusing. It is a bear to focus manually because you can't see well enough in the LCD screen. Perhaps live view would help and in the studio, tethered to a laptop would probably be wonderful. However, in the field, in standard conditions, trying for pinpoint focus is going to require a learning curve on all our parts. Although totally understandable, manual focusing for a single shot is my least favorite feature of the Nikon D800E, even though I expected it.

Unexpected

And there is another effect I am experiencing with the Nikon D800E that is harder to put my finger on. It has to do with 'process'. I am so used to the very tedious process of focus stacking that I almost feel guilty just taking one photo and moving on. I am all about process for working with the camera meditatively, getting my mind right. With a single shot, I have hardly begun letting the mind rest.

I know that I will adapt to whatever adjusted process is required, so I am not really worried. It does give me more pause to consider composition, color, and perhaps most important the whole idea of photos as impressionistic. With so much tedious technique perhaps removed or at least limited, I seem to be increasingly interested in photography impressions, so watch out. I might be changing... again.

My guess is the D800E will be in short supply because of its qualities, unless Nikon decides to cut it some more slack on the production line.

I have posted many photos using the D800E in recent weeks. See the Macro Forum for examples.

Photo: The photo shown here is a single-shot photo taken with the D800E and the Micro-Nikkor 105mm f/2.8 VR lens, with ISO 400, f/11, and 1/25th of a second, taken in some wind. It is not an inspired photo, but just an obligatory sample to show how the D800E can take a reasonable one-shot photo with some depth of field. Yes, If there were not wind, I could focus stack this more

perfectly, but one thing the D800E is starting to do is make we want to concentrate more on composition and mood. That's not all bad.



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Single-Shot D800E Macro Redux

This is my second bout of Nikon D800E single-shot photos, this time with the Micro-Nikkor 105mm f/2.8 VR, and also the Micro-Nikkor 200mm f/4, just for fun.

Any worries about the D800E for single shot live subject when I was away from home with no proper lens were vanquished today with only a short shoot. Here are three (rough finish) photos, the first two with the Micro-Nikkor 105mm, and the third with the Micro-Nikkor 200mm.

This tells me that with only a little work, anyone could take this quality close-up/macro photos, so I reverse my doubts of the other day about not recommending the Nikon D800E across the board to macro shooters. It is a great stacking camera and perhaps an even better single-shot live-subject camera.

The first two with the 105mm were shot at ISO 1600, 1/1000 of a second, at f/11. I would drop the ISO in the future down lower.

The third photo with the 200mm were ISO 500, f/11, and 1/500 of a second.

Since it is difficult to impossible to stack live subjects, the Nikon D800E can approximate stacking by using narrow apertures (in this case f/11), fast shutter speeds, and as low an ISO as can be tolerated. In other words, all of the barriers we are traditionally used to, with the exception that the detail of the the D800E produces IMO a more acceptable result than with other cameras. This is my experience so far.

As for the Micro-Nikkor 105mm f/2.8 VR lens. Since it offers VR, is fairly fast, has a decent focus throw, and is sharp, this may be (IMO) the best macro lens to use with fast-moving live subjects. I can't think of another with the flexibility of the 105mm VR, can you?



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Focus Stacking in a Box

The Nikon D800E is proving to be a real game changer for me and I will tell you why. Since, for some reason, it seems I can push aperture beyond $f/11$ with some lenses and the result has a pretty good depth-of-field. Of course, bokeh becomes a problem as in: there isn't much, but the allure of a one-shot photo with no artifacts and decent DOF field is tempting.

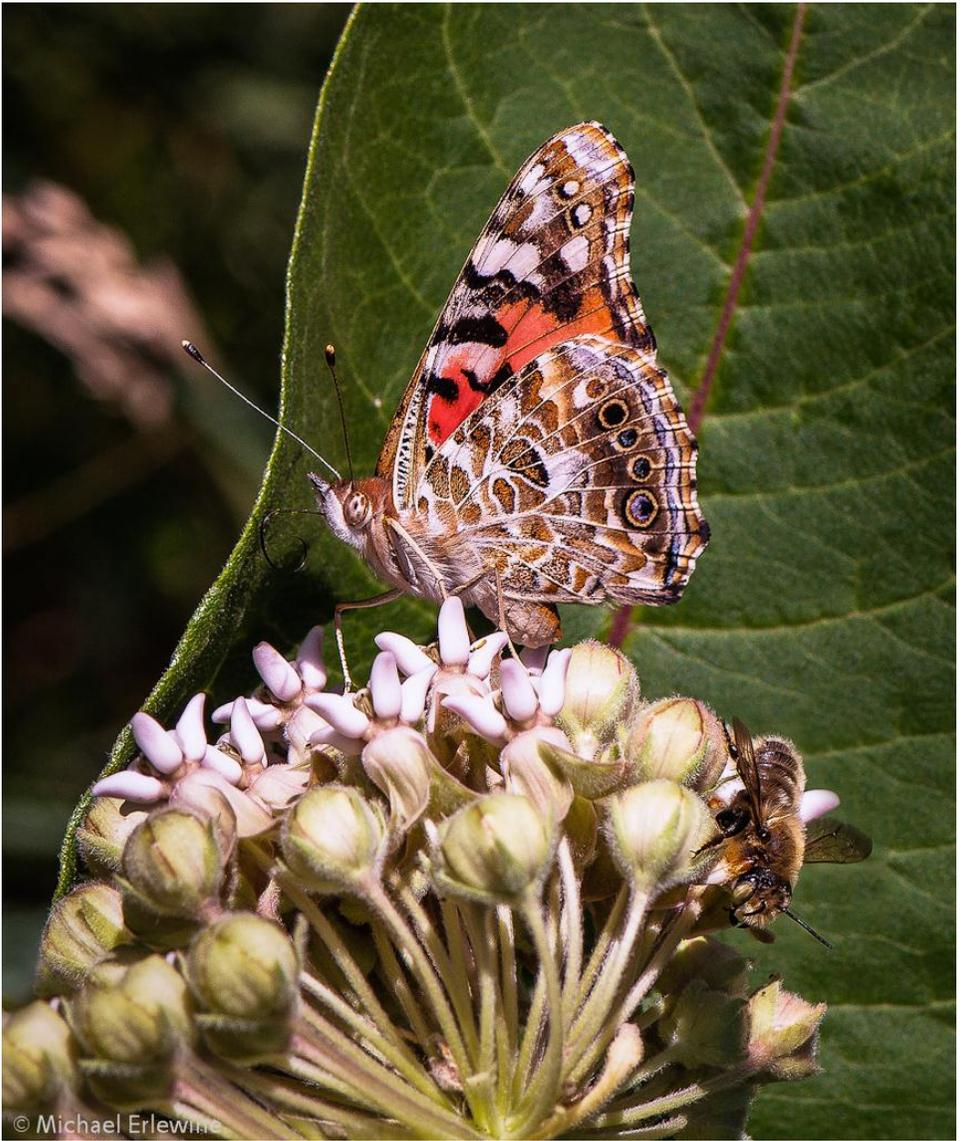
And, of course, with live subjects there is no contest. Live critters can seldom be focus-stacked, except on rare occasions or very early on a cold-ish morning.

I find myself asking the question, what is it that I want? Am I so addicted to stacking that the process itself is a big part of the appeal (which it is) or am I just after photos. The answer is both.

Aside from the process, it is true that the effects of focus stacking on the finished photo itself is part of the charm of that technique.

The process of photography for me is very healing, but that process is not limited just to focus stacking. Any repetitive technique is something I can respond to. Putting the process aside for the moment, as for the resulting photo, I don't care what process is used as long as the finished photo captures what I am after, usually with some emotional character.

This shot taken with the Nikon D800E, $f/13$, 500th, ISO 400 is a two-layer stack, but I have dozens of good single shots which tells me that the single-shot D800E photo will replace some part (perhaps a good part) of my photos. There is no reason to stack if I can get what I want with a single shot. I include a couple of single shot photos below.



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Nikon D800E, Micro Nikkor 105mm f/2.5, f/13, ISO200, 500th

D800E -- To Stack or Not-to-Stack, That is the Question

Well, I am going to continue to stack, of course, but the Nikon D800E gives me pause for thought.

This shot was taken with the Nikon D800E at ISO 400, shutter at 1/500th, f/11, in bright morning full sunlight. I have 70 other shots of the same quality, which took all of ten minutes to shoot. The lens is the Micro-Nikkor 105mm f/2.8 VR.

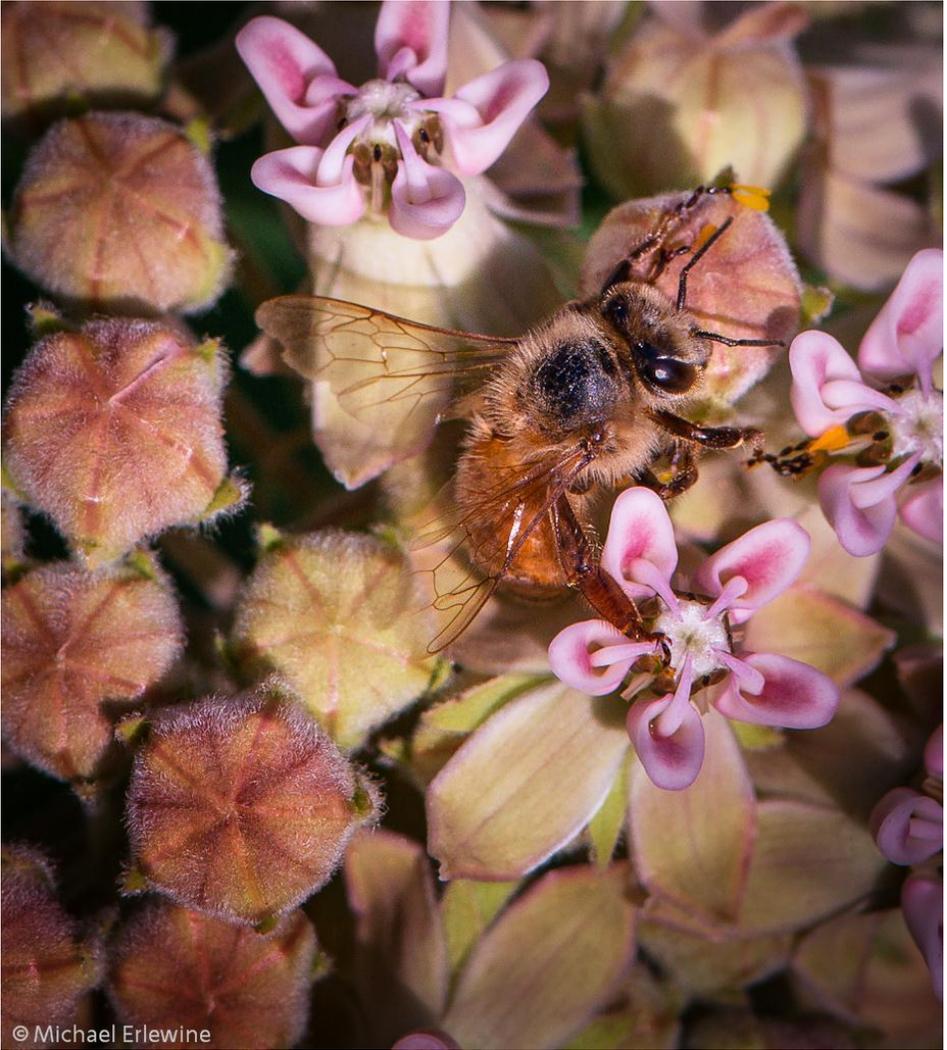
Yes, an overcast day would be better or I could put up a large diffuser between the Sun and these Milkweed flowers and the shots would be pretty near perfect. And I could fiddle with the color and saturation more, for sure. But consider this:

Chances I would NEVER get this honeybee to hold perfectly still for a decent stack, and the DOF at f/11 is not too shabby. The D800E does better with small apertures than my Nikon D4. That is a fact IMO.

An auxiliary thought is how many plants and still life would come out just as well with a single shot? Probably many of them is the answer that comes to mind.

Is the Nikon D800E a dream camera for close-up/macro nature shooters. I would say "Yes." Will it replace some stacking? The answer is again "Yes," at least for me.

Perhaps nfoto or someone more technical than I am can explain here (I know it is somewhere else) why we can get away with such small apertures and still not have the photo suffer as much as in earlier Nikon cameras.



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Single-Shot Live-Subject Macros with the Nikon D800E

Not sure why I am sharing this: It is not because these are acceptable results, but rather to discuss the challenges that the new D800E offers when it comes to manual focus. I was at an event for a few days, but not one I imagined I would be using macro lenses, so I only brought one, the Voigtlander 125mm f/2.5 APO-Lanthar, just as an afterthought. I also brought the Nikon 800E, although I was there to shoot with the Nikon D4 and the Nikkor 24-70mm and the 70-200mm. Anyway...

In the early morning one day I had time for some macro shots using the D800E and the CV-125, so I took some single shot photos. It was just a little windy, so stacking on a rail would have been fruitless.

The results were anything but encouraging, not because there is anything wrong with the D800E that I can see, but because of my own lack of technique. There was not quite enough light for very high apertures, so the DOF was shallow and it shows. It was hard to get enough of the subject in focus to feel comfortable.

While most of the problems I ran into would be solved if I stacked focus (on a static subject), since I could create my own facsimile of DOF, taking one-off shots proved to me how critical the focus is with this new camera. It was frustrating to say the least. And, it is hard to see in the tiny LCD whether you really have the focus or not.

I should have brought the Micro-Nikkor 105mm f/2.8 VR lens. That would have helped. Trying to focus moving subjects with the CV-125 in only medium light was painful. However, I can say this:

The camera is great and even from these relatively unfocused shots I can see that if I do my homework, that very high-quality shots are possible in the future. But this camera will separate the men from the boys (so to speak), and there is a real learning curve here for single-shot focus on live subjects. Ouch!

After this experience, I am not so quick to recommend this camera for everyone. It is going to be very painful for those without the

patience to focus this baby. Again, a VR auto-focus lens would help, and I have not tried to figure out whether my copy of the D800E has the right/left focus problems. Not sure how to do that. What is an easy test for that?

So my takeaway is embarrassment at my own technique, and the sense that I need a lot of light for one-offs, higher apertures, and that an autofocus lens would help a lot. I would want a tripod, even for these shots and, at least for now, I have to be ready for a workout. I felt clumsy with the D800E. This camera is demanding when it comes to focus. And as wonderful as this camera is, it appears to me at the moment that for this kind of work, it is a specialty camera, not a general camera, at least in my opinion.

Of course, I am still a little daunted by the experience, and I can only blame myself for the results. However, I am peaked to try it again soon.

All shots with the Nikon D800E, CV-125, and an aperture perhaps at $f/5.6$ or lower, not enough DOF for what was needed.



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Atmospherics with the Nikon D800E: Almost Ready

I have been working for weeks to get a handle on using the new Nikon D800E. I have spent most of my time learning to master the techniques I generally use with this new camera rather than go for any artistic flare or what I like to call “impressions” or “atmospherics.”

Here is a good example(first photo) of what I call atmospherics using the Nikon D3s and the Nikkor-O CRT 55mm f/1.2 lens taken earlier this year. It combines in-focus, out-of-focus, color, and composition that is to my taste, perhaps too obviously “pretty” for many of you.

Photography in my opinion is about all impressions, in this case my impression of what is beautiful. Thank goodness we each have our own impression of beauty, which is half the fun in having a site like this – diversity, different ideas of beauty.

The D800E is definitely more of a technical challenge for me than the many earlier Nikon bodies I have used. It is a bit unforgiving when it comes to subject movement, focus, and for stacked photos it requires a very solid tripod and head. When it is on, however, it is really on. And being ‘on’ is my problem, not the cameras. Here is a photo (2nd photo) of a young snapping turtle that I posted earlier which shows me what the D800E can do when camera and technique converge. I am happy with this shot. It is taken with the Voigtlander 125mm f/2.5 APO-Lanthar.

I am almost ready to try for some atmospherics with the new Nikon 800E. How are other 800E users faring?



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Macro Detail with the Nikon D800E

This is a little rough, but it gives you some idea of the detail available with this camera. The young leafhopper on the page is difficult to see in the original, but the white call-out box shows it at 100%. This is finer detail than I have had with any of my previous Nikon cameras, as we might expect. Please excuse the quick layout here, but I am getting ready to leave town but some of you might appreciate the detail scale here. I do.

Also, another image with fine detail.



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Will the D800E Make Focus Stacking Obsolete?

Probably not, but it sure gives stacking focus some very real competition, at least in my opinion. It is still early in my examination of this new camera, and I am sticking to the CV-125 APO lens rather than try a bunch of them, because I know it so well.

I must say, there is a very clear case to be made that taking a single shot photo with a good lens on the Nikon D800E and pushing the aperture as narrow as possible produces good images.

I am just learning and the weather has not cooperated (winds too high) and I have other business-related goings on to attend to, but what I see is startling, at least to me.

This will all come out in the wash, I am sure, and I am not enough of a techspert to say anything definitive, but it looks at first glance that taking a single shot with the D800E at narrow aperture is very interesting.

The first photo shown here is a stacked photo (68 layers) taken at f/4 with the CV-125, and the second is a single shot taken with the CV-125 at f/16. I did not have time to match the shot or even the tweaking, but looking at these two is enough to give me pause.

Of course high apertures will kill the bokeh that we get with wider apertures..

Those of you with a the D800E that stack, what is your experience please?





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Macro with D800E vs. Medium Format: First Thoughts

This is just my opinion, so take it with a grain of salt. I just know what I like. The more I use the Nikon D800E, the more I am impressed. As mentioned before, such a powerful engine deserves to be in the large pro-sized DSLR Nikon body, but here it is at a price that most serious photographers can afford. And it is a pro-performing camera in most respects.

Unless some huge flaw in the design appears, this camera will be a game changer, not only in price/features, but also in sheer clarity and power.

Yes, the battery is too weak compared to any of the Nikons I have had recently. It is not terrible, but I notice that I have less time than before. I like to have several batteries on hand, so it does not practically affect me, but I still don't like to see something I once had taken away.

This camera is small and light that I probably can get away with using a lighter tripod and head than I have been lately, which means I can travel farther afield without tiring. There is no way that the D800/E is not shaking things up. It has shaken my world up, for sure.

I know the D800E is not a medium format camera, but my recent experience with two Mamiya cameras and a couple of Leaf 33 MP digital backs makes the D800E look pretty good. In fact, the heaviness of the RZ67 Mamiya that I used and the primitiveness and non-functionality (at times) of the Leaf 33MP digital back were not worth the trouble, at least since the Nikon D800E now is an option.

The bottom line for me is what I like in medium-format cameras I see in what I am getting from the Nikon D800E. I am willing to accept that perhaps the D800E may not be up to the large MF digital backs, but all things considered, the D800E is close enough or even closer to what I hoped to get from the medium format systems. Plus I get to use the (by comparison) very elegant Nikon camera interface. No comparison to the Leaf GUI. Here are a couple tests from today. Photo: Nikon D800E, CV-125, Zerene Stacker



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Micro-Nikkor 60mm f/2.8G: A Macro Lens Worth Considering

I see a lot of requests for a single macro lens to start out with. It is not an easy task to come up with just one lens that can do the job and still not break the bank. The usual recommendation is one of the Micro-Nikkor 105s, because of working distance. The 60mm macros are usually dismissed because of their short working distance.

I have managed to acquire quite a few really expensive macro lenses, so I have my pick when I shoot. So I am surprised to find myself using the Micro-Nikkor 60mm f/2.8G lately, the newest version of a classic Nikon lens. I know the early version, the 60mm f/2.8D lens really well, as I used it for years carefully shooting some 30,000 fine art prints. But when the newer body/sensors came along it did not seem to measure up for really fine work IMO. I still use it for copy work.

The minimum close focus distance for the 60mm-G is 7.28" (18.49cm), which is real close. And the lens goes to 1:1 magnification, which is relatively rare in macro lenses. It is fast enough at f/2.8 and has nine blades, which makes the bokeh acceptable. It sells for around \$600, which makes it on the low end for a quality close-up/macro lens.

For my work, I don't care for most of the standard Micro-Nikkor 105mm f/2.8s, and that includes the newer VR version. Yes, I use them sometimes for hand-held insect shots (VR, auto-focus), but that is about it. And I have recommended the 105mm because it also goes to 1:1, is somewhat fast, with a close focus of 12" (30.48 cm), has nine blades, etc. Its price tag is \$879.00.

But this little Micro-Nikkor 60mm f/2.8G is a sweet little lens, something that a beginning (and advanced) user will find useful. No, it is not a long telephoto like the 105mm, but quite a bit wider. Some lenses just have a special something, and this lens, in my experience, is one of them. At \$600, the 60mm-G is something most serious shooters can get their pocketbook around.

I am adding this lens to my field bag, which says a lot because I do not like to carry lenses around. No, it is not perfect and I would not use it for landscapes, but for in-close macros, I can't find a lot wrong with it.

Here are a few shots I too with the 60mm-G today, taken with the Nikon D3s and Zerene Stacker. The subject is some African daisies, the Gebera, and the light, just what was coming in from outside through a window.

I am not claiming these as great shots, but they do show me that here is a really decent lens for close-up work, one that is not expensive, but really does a nice job.

A Macro Studio in a Tiny Room

This is my lazy-man's instant studio; just add light. Actually I have a real studio, but it is far from where I live... almost a city block away... and I am too lazy to walk there or drive. That studio is big, 40x20x15 feet... and has all kinds of lights, tripods, video stuff, etc. But of course I don't use it.

But instead of going down there, I have commandeered this smallish room and spend most of my winter photo time in it. This is a shot taken with the Nikon 16mm Fisheye lens. I didn't bother to correct for distortion because you can see more this way.

What you can't really see are scores of lenses and what not jammed into every corner of the room. There is a fully tricked Mac Pro sitting on the floor to the left, and to its right a Window's 7 laptop.

The lights on the stands you see are Lowel Blenders, three of them, which are not hot to the touch and allow you to have both Tungsten and daylight, either each alone or mixed in any proportion. I have a lot of "hot" lights, but these are much easier to use and you never get burned... or burn down the house.

At the back is one of two windows where the plants hang out and that is a ¾-stop Lastolite screen over the window that moves aside... plus there are tons of diffusers, most of which you can't see because they are collapsed or elsewhere.

The tripod is one of the medium RRS tripods, which I like pretty well, with a BH-55 RRS ball head on it, on which is the Novoflex Castel-L focus rail, and a camera.

The whole room is thrown together and changes from day to day. It is nothing special but I like it even though it is cramped and funky. Since I do mostly close-up work, it is just big enough to play in. However, I do have to move very carefully and slowly around the place.

I've shown you mine; how about showing me yours? We can't all have large studios.



The Exotic Nikkors

The exotic Macro-Nikkors and other industrial Nikkors don't usually show up on the radar screen of most Nikon users. I ignored them for years. For one, what could I do with them? Many have such a narrow Depth-of-Field (DOF) that a shot taken with these lenses captures the eyebrow of a gnat and the rest is bokeh. Or some of these exotic lenses are designed to only be sharp at a 1:1 magnification ratio, so how many times do you need that? You get the idea. They are indeed "exotic."

I only have a few of these exotic macro lenses and don't intend to buy more unless one of them compels me, which has happened a lot lately. For one, they are very expensive. Many end up on display in a museum or stored in someone's collection where they are never used and seldom even seen. I don't intend to do that.

And when I first encountered them, the photos taken with them, although interesting, did not appeal to me all 'that' much, usually a single shot with literally one point of the photo in striking focus and the rest a blur. At best they were interesting, but more often they appeared IMO to be kind of repetitive. Also, keep in mind that they represent almost the opposite of what I have been doing for years, which is stacking focus. So please forgive my bias here please.

In my focus-stacking work, almost everything in the photo can be in focus if I wish, and the tendency of my aperture use is toward the "narrow as possible without succumbing to diffraction." I have literally spent years stacking focus at the edge of diffraction, so these exotic lenses were about the last thing I wanted to mess with. And I don't like high magnifications, either. Looking at the compound eye of a dead fly on a pin is not my idea of nature photography, no offense intended. Again: just my bias speaking.

But then I saw some photos of flowers by NikonGear.com member Akira, using the CRT Nikkor 55mm f/1.2 lens. Here is the link:

<http://nikongear.com/live/index.php?/topic/39064-chrysanthemum-through-crt-nikkor-5512/>

Now, I liked these shots and the effects that Akira achieved and told him so. This rather bizarre Nikkor lens designed for viewing CRT monitors and even curved to handle those screens caught my fancy. Sure, shots taken with the lens were all blurry except for a single point or plane, a razor-sharp slice of life. But that little slice WAS very, very sharp AND the contrast between it and the general blur was also sharp. I liked the effect.

Now I have to be clear. There is something inside me that for years has strived for sharpness in a lens. And that something was at odds with another part of me that I can only describe as the “impressionist” in me. The impressionist part of me didn’t give a damn about sharpness but likes to paint in broad colorful strokes. Well, those two parts of me came together in this Nikkor CRT lens, except that I was not happy with that single point/plane of sharpness. Remember, I stack focus.

There was a desire inside me that wanted to paint with sharpness like this Nikkor CRT lens painted with blur. Then somewhere along in here I had what was (for me, mind you) a significant insight. Since I loved the broad strokes of blur of the CRT Nikkor, but was less than satisfied with the pinpoint of sharpness it provided, why not stack the sharpness just enough to create a real plane or section of it that is set off from the background blur or bokeh. Aha!

It was not long before my whole shelf of sharp, sharper, and sharpest lenses, the ones I used to push aperture as high (narrow) as possible were set aside. And in their place, I began to use the complete other end of the lens, the end where it is wide open. By being wide open (and fast!), I was assured of throwing as much of the image as possible into blur, leaving only what I chose to have sharp.

And by stacking sharpness, I moved beyond using these exotic lenses like the Nikkor-CRT with their (for me) small slice of focus,

into images with a clear layer or section of sharpness contrasted with a wide areas of bokeh. I could point out by focus stacking layers what I wanted the eye to jump at, and at the same time treat the rest of the image like an impressionistic painting.

In that move, I satisfied two opposite desires within me in a single image. I was really satisfied with the potential of this technique, and it did not take me long to prove this to myself. Thanks to those of you who suffered through my posts!

After all, it is only myself I have been trying to please with my photography all these years. It is only recently that I even began finishing any image beyond minimal adjustments. I had never found what I was looking for. Perhaps now I have, although I am just at the beginning of using this (for me) new medium.

And my interest in lenses changed as well. Instead of thinking of sharpness as pushing apertures higher to the edge of diffraction, I began to yearn for wide-open lenses that blurred everything except for the narrow depth of field which they featured. All I had to do is stack that narrow depth of field, and let the lack of DOF give me a bokeh-covered canvas upon which I could paint some focus. I liked that. I still like it.

Exotic Lenses

With that insight, suddenly all of the exotic macro lenses that held little interest for me, appeared in a different light. Some of them were very, very sharp, even though that sharpness only appeared in a razor-thin layer. I didn't want lenses that were not fast because they gave me too much DOF and I lost the impressionistic sense of blur that formed the bokeh.

The really fast AND sharp lenses allow me to punctuate the blur of the background with sharply defined focused signatures that complement the bokeh. I like the idea of a piece of the image in focus and the rest just an impression, like you see in some of the great draughtsman in history: pencil in something clearly and leave the rest as a sketch. This appeals to me somehow, not that I compare myself to these artists.

So, my mantra became: find lenses that were fast wide open AND also sharp. And, as it turns out there is a whole genre or two of lenses that fit this description in the industrial and Macro-Nikkors. However, they are expensive. I am not sure why. Ouch! I can't believe they are that useful except to the extreme micro photographers or to be used as museum specimens. Whatever the reason, they can be hard to find and cost a lot of money. Oh well, time to sell off what I can bear to part with. And I did.

So that is the state of the union of myself and this (new to me) technique. I am at the low end of the learning curve but am very hopeful. I have done enough testing to know that the technique works. All I have to do now is work it.

And of course, now that I have an interest in these very fast and wide and sharp lenses, I see that I am not alone. It did not take me long to find articles that nfoto had written (that oh-so-fierce bear of the north) long ago. Perhaps no one has tried to stack these lenses as much as I intend to, but the footprints are there for me to follow.

So I thank all of you for your inspiration and comradeship, especially Akira, kds315, Bob Friedman, Paisa, Bruno, Armando, Fons Baerken, Mexecutioner, and many others. And of course, nfoto, who always manages to appear at the right time with just the right information.

I feel that I have, after many years of searching, found something of what I was looking for, scratched an itch, gained some satisfaction, and am coming closer to expressing in photography what I see in my mind.

And I can't wait for my Nikon D800E to arrive.

Comparing Common Focusing Rails

Many of us have had a go-around or two with various focusing rails for close-up and macro work. I know I have. I am writing this not because I am an expert on rails, but because it appears I have made all the mistakes and in my search for a good focus rail have unintentionally gradually accumulated enough of these devices to compare them to one another.

In general, the more you pay for photography equipment, the better the quality you get. However, with focusing rails in my experience this does not hold up. You can pay a lot for a rail and still have one that does not function well. This article is a guide to a few of the more common focusing rails with notes as to my experience. These are my opinions only.

What is Needed in a Focusing Rail?

The problem with most rails is that most of these rails have ¼” screw on the top and a female 1/4” screw thread on the bottom. If like me you are used to using quick-release clamps, these have to be added to the rail, increasing instability and making the rail more vibration prone. I am not about to screw a camera on and off a rail or screw a rail on and off a tripod more than once or twice. Period. Been there, done that. Sooner or later something gets stripped.

That being the case, then I need some sort of quick-release system on both ends, a female to the tripod and a male to the camera. I favor the Swiss-Arca clamps and will-never-use-again any of the Manfrotto quick-release clamps. They can release without my asking. And I personally prefer the clamps with traditional knobs for tightening as opposed to the lever-type release. Some of the lever types can catch a sleeve or whatever and release without my permission.

Therefore, what this means right out of the starting gate is that I am adding a quick-release clamp to hold the camera and an Arca rail to the bottom of any focus rail. So I am adding things to the top and bottom of the focus rail and the moment I do this I start to introduce instability into the system. Yes, I tighten them all down with Allen wrenches where possible.

However, some rails just have a ¼" screw with a little knob underneath for tightening (and hard to get to) to attach the quick-release clamp. That knob tends to work loose and the whole thing swivels. So, for starters, I need to apply Threadlocker to that thread to keep it from moving around. Tight stable functionality is required for rails, IMO.

Some focusing rails come with a built-in Arca rail on the bottom and a quick-release Arca clamp on top, but these are few. Otherwise, as mentioned above, we have to add clamps, each one of which makes the whole set-up less stable. The Novoflex Castel-Q does have an Arca-style Quick Release clamp, however, their quick-release clamp does not accept any of the RSS and Kirk quick release rails I have, so it is useless. What standard are they using? Go figure. Some considerations in selection a focusing rail include:

Two-Way Movement

Some focusing rails have two stages, one forward-backward, and the other side-to-side, like you see in microscope stages. I have no use for these, since forward-backward movement is all I use. Having two rails at a right angle to one another IMO just adds another level of instability. The Velbon Super Mag Slider is one of these, so I just undid the horizontal gear and set it aside. I would use only the forward-backward rail, if I were to use that rail. I don't use that rail anyway for other reasons.

Vertical Layers

As mentioned above, a key problem to be aware of is how many layers of stuff you clamp or screw on top of one another. For example, if a focusing rail has a ¼ inch screw on the top, I am not about to screw my camera base on and off every time I used the rail. Therefore, some kind of quick-release clamp is needed, which immediately gives us one or more layers of instability. It is easy to have a rail system of so many layers that the whole thing wobbles at the slightest touch. Every vertical layer you add tends to make the rail less stable.

Weight

You might think that the weight of the rail is not important and the lighter the weight, the better. Therefore one made out of aluminum like the Noviflex Castel Mini must be perfect. It weighs only 0.63 lb (286 g). On the contrary, I find it beneficial to have weighty rails whose own massiveness act as a partial damper for the camera mirror and release. The Minolta is good and heavy in this way, as is the Olympus and a few others. It appears to me that I don't want to put something less substantial between my tripod head and camera. It should all be solid.

Vibrations

Vibrations occur any time we touch a knob or press the shutter release, and of course when we put the mirror up. Something I do to measure the degree of vibration is to very gently rest the pad of one of my fingers against the rail or tripod. I can feel every bit of vibration and, believe me, it is there no matter how gently we move. And an assembly of rail parts that are lower, heavier, and more squat is what we are aiming for.

Summary of General Considerations

- (1) The focusing knob must smoothly turn without requiring force that will move or jar the setup.
- (2) The rail must move smoothly without sticking or sticking-and-then-jumping.
- (3) The rack must neither move too slow or too fast at a turn. This is perhaps personal.
- (4) The focusing rail must be heavy enough to act somewhat as a dampener.
- (5) Materials. Aluminum, IMO, is too light and soft a material. The best ones are metal, and heavy metal at that, like chrome-covered brass.
- (6) Hard plastic/nylon gears are good, provided it is handled carefully. It never needs oiling and always works very smoothly. They Olympus rail has this. I like it a lot.

(7) The rail must be compact and as low to the tripod as possible. In other words, as little vertical height as possible.

(8) The rack must be lockable, when used vertically.

(9) The rack must be strong enough to support camera and lens without 'creeping', although this is difficult to get and still be able to move the rail forward.

Design

There are different approaches to designing a rail, one being two hollow tubes, the other some sort of solid central rail that is geared, and a third, a central screw arrangement.

TUBE STYLE: If the tube-style is made of aluminum or otherwise too light, it tends not to dampen enough. However, if the tubes are chrome-covered brass or some such heavier metal, this can work fine.

CENTRAL GEAR: However, my experience finds the central geared rail (like in the Olympus and Novoflex Castgel rails) a more stable arrangement for my work. Also, if this type has a hardened plastic geared rail, it works smoothly and oil-less-ly.

SCREW: Then there are the rails that have a central open screw that turns, moving the camera. Perhaps this works well on very expensive rails designed for scientific microscope use, but the lower end examples (like the RRS) rails are just not good enough. Also, the open screw with oil on it invites accidental touching, which transfers the oil to the fingers, and then to... who knows where? Not my favorite feature.

And for some reason, most of these focusing rails are not inexpensive. And the cheap ones are not worth having. You cannot judge the quality of a focusing rail by its price.

In the posts that follow I will look at a few of the more common focusing rails. These are my opinion of rails that I have actually tried out, and your take may differ. I offer this in the hope that it will save others the expense and frustration I have gone through. Let me hear your experience please.

The rails I use and recommend are:

Novoflex Castel-L

Olympus Focusing Rail

Minolta Focusing Rail

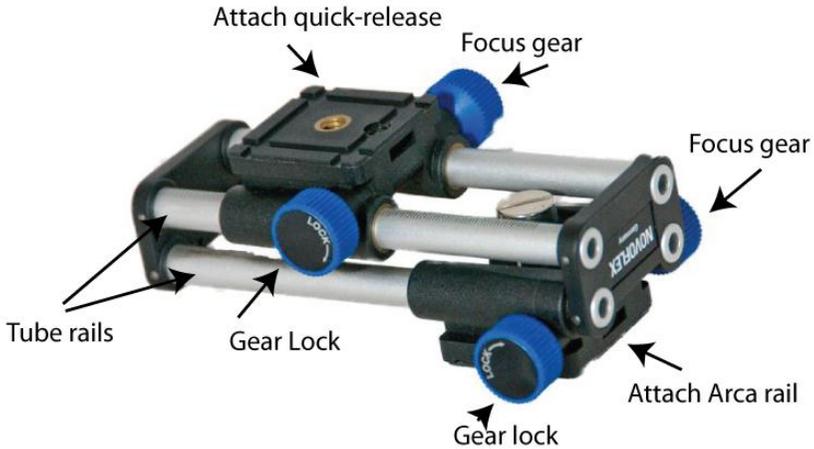
Many of us have had a go-around or two with various focusing rails for close-up and macro work. I know I have. I am writing this not because I am an expert on rails, but because it appears I have made all the mistakes and in my search for a good focus rail have unintentionally gradually accumulated enough of these devices to compare them to one another.

In general, the more you pay for photography equipment, the better the quality you get. However, with focusing rails in my experience this does not hold up. You can pay a lot for a rail and still have one that does not function well. This article is a guide to a few of the more common focusing rails with notes as to my experience. These are my opinions only.

Novoflex

Novoflex offers several focusing racks. Of the three I have used only one of them is IMO worth having. Let's look at them.

Novoflex Focusing Rack Mini



Novoflex Focusing Rack Mini - Small

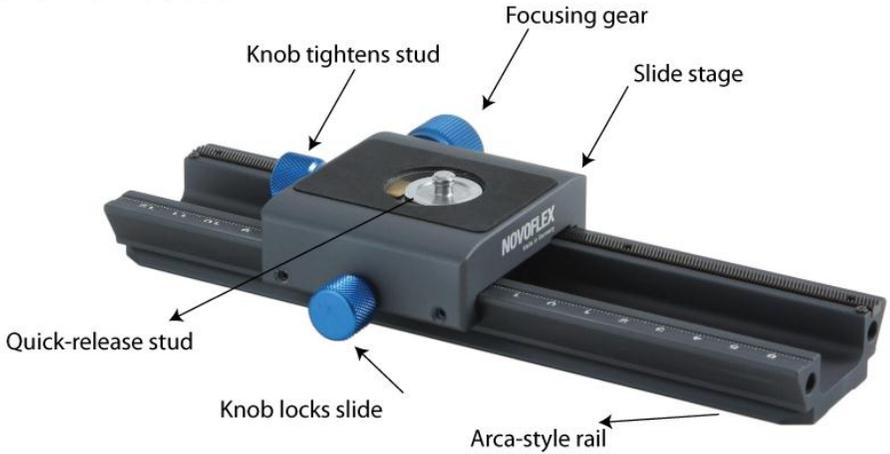
0.63 lb (286g)

Maximum movement 5.3" (134 mm)

Let's start with the Novoflex Focusing Rack Mini. The design rests on two hollow aluminum tubes. I find this whole rig too light, unable to absorb much vibration, and just not 'good enough'. I have one, but never use it. The whole heft and feel of this rack is cheap and light. The rack gears on my copy are not smooth, but instead randomly jerky at the fine level. And at \$248.00, it was not inexpensive. Some of the other Novoflex racks are fine, but this one really is inferior IMO.

I DO NOT recommend this rail

Novoflex Castel-L



Novoflex Castel-L Focusing Rack -

15.9 oz (450 g)

Maximum movement 5.5" (140mm)

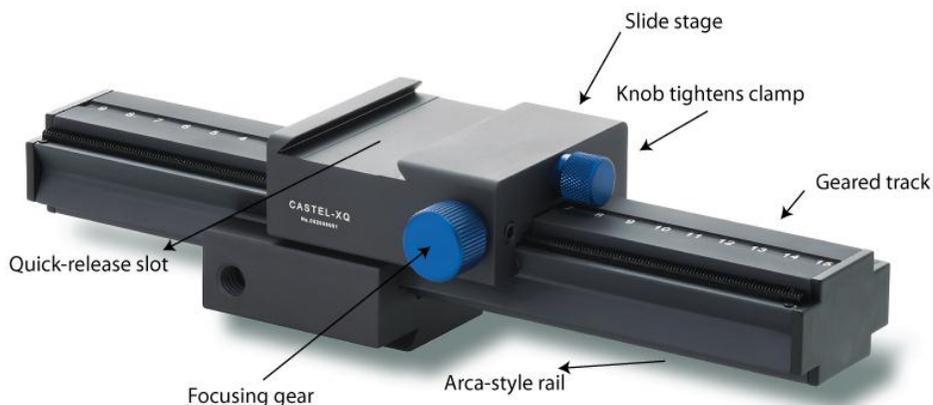
The Novoflex Castel racks are much more solid, but only one of them is worth having, and that is the Castel-L Focusing Rack shown here. This is the one with its own version of a quick release, but it is not “quick”, but does work well.

This is a very compact rail with an Arca-type bottom rail that goes right onto your tripod head. It also has a round release $\frac{1}{4}$ " screw on the top that can be tightened into place with a small knob. While not elegant, this form of quick release actually works well. You will have to add a RRS or Kirk quick-release plate on the top of the $\frac{1}{4}$ " screw, but that is all. So only one additional layer (the quick-release plate) needs to be added. The price at B&H is \$330.99

P.S.

Novoflex also offers a two-plane focusing rail that they call the Novoflex Focusing Rack Castel XL – Heavy Duty. It has the workable removable $\frac{1}{4}$ " quick release plate that is in the Castel-L system. If you need a two level extendable rack, this would do a good job but costs \$463.99. I recommend this rail.

Novoflex Castel-Q



Novoflex Castel-Q Focusing Rack with Arca-Type Quick Release

15.9 oz (450 g)

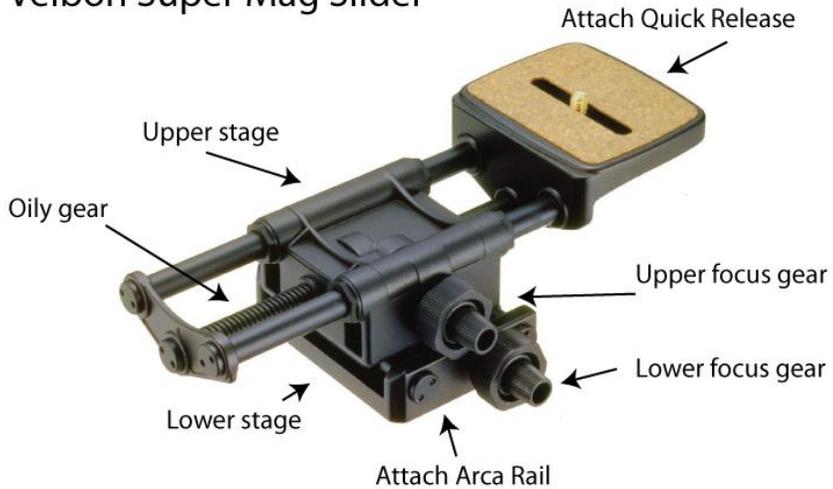
Maximum movement 5.5" (140mm)

The Novoflex Castel-Q Focusing Rack with Arca-Type Quick Release built in is a big disappointment. The so-called Arca-type quick release plate does not accept any of the Kirk or RRS quick release plates I have. It does not open wide enough. I have no idea what standard it is following, but as is, it is unusable. I sent it back.

Had it worked, this would have been the most solid and compact focusing rack I have seen. As it is, don't bother with it. They offer an adapter that takes you to the regular Arca-style quick release, but what is the point of that? That would just be another layer. The price at B&H is \$330.99

I DO NOT recommend this type.

Velbon Super Mag Slider



Velbon Super Mag Slider Macro Rail

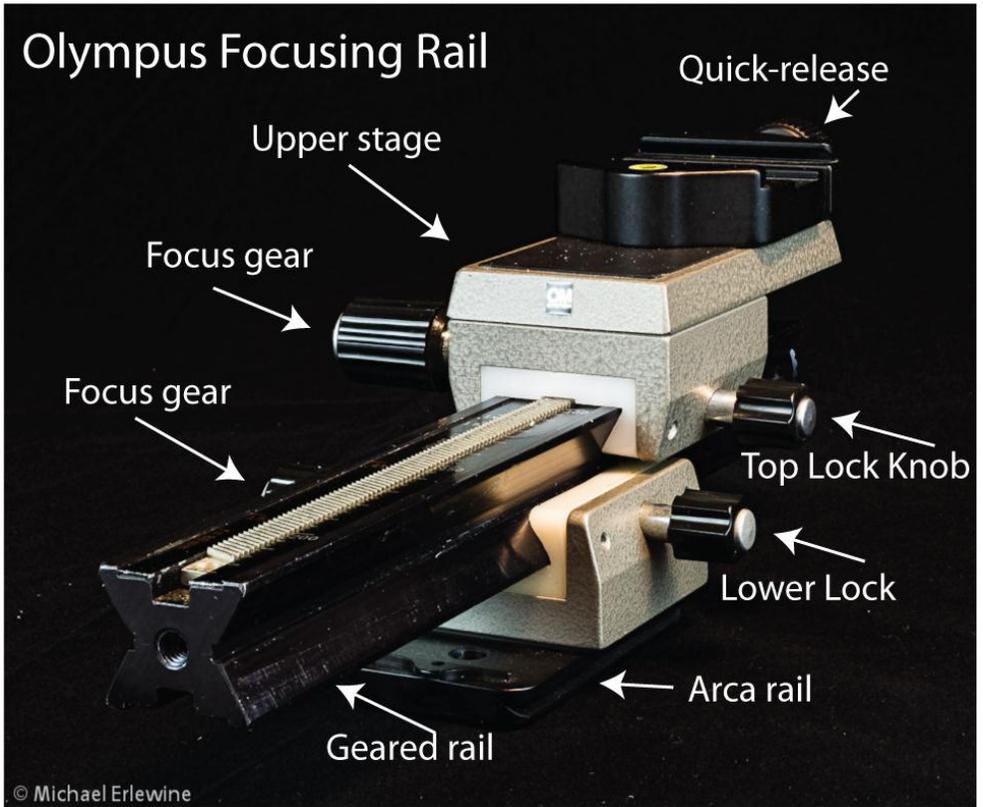
1.04 lb (470g)

Maximum forward movement 2.4" (50mm)

This relatively inexpensive focusing rail is too cheap for my taste. The knobs do not turn smoothly, the whole thing has too much vertical height, and it is clear that it is not heavy enough to dampen vibrations. It gets some good reviews, but not from me. The price at B&H is \$119.95.

I DO NOT recommend this rail.

Olympus Focusing Rail



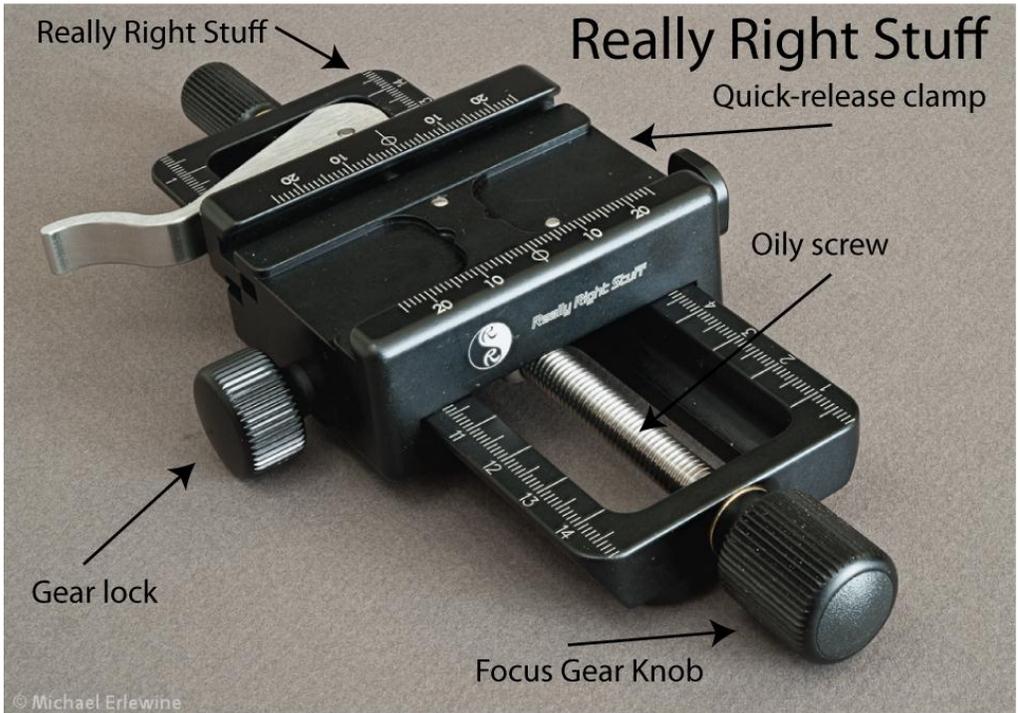
Olympus Focusing Rack

262mm using both gears

The Olympus Focusing Rack is one of my favorites. It is heavy, non-greasy, and the nylon gears are smooth as silk. Its two level rails allow a wide range of extension. It is my overall favorite, but not as compact as the Novoflex Castel-L. However, these rails are relatively rare on Ebay and not inexpensive.

I love my copy. It feels solid, works smoothly, and is heavy enough to absorb vibrations. The plastic or nylon gears require no oil and work perfectly. The two level stage allows me a very long amount of travel, should I need it.

I HIGHLY recommend this rail.



RRS Macro Focusing Rail

I have reviewed this rail in more detail previously:

http://nikongear.com..._1#entry321316

Here I will just recap: The rail looks good, is built well, and has the smooth tooling we have come to expect from RRS. However, and I am not alone in this appraisal, they missed the boat IMO. This design is fashioned on some of the highly-expensive microscope focusing devices, ones with a central oil-covered screw.

I found the oil, well, “oily” when I accidentally touched while trying to focus my camera. Worse, I found the focusing knob not smooth, but intermittently slightly jerky, something I cannot tolerate in a rail. Overall I was disappointed and returned the rail.

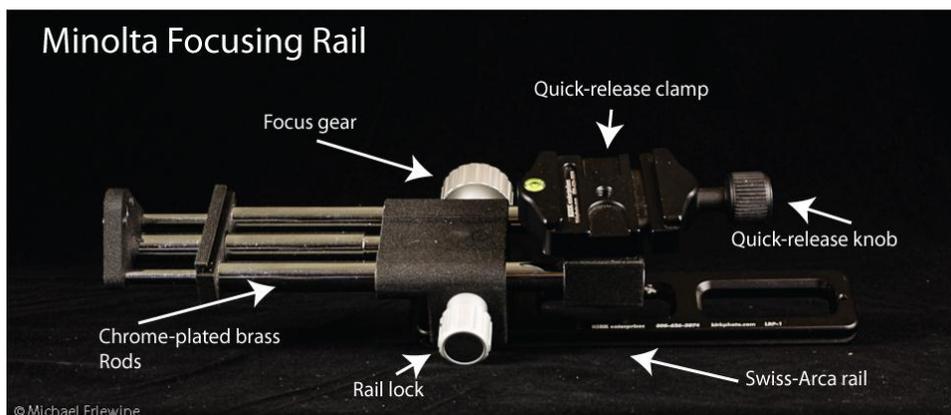
RRS rail costs \$345.

Weight = 15.2 oz / 428g

Total Adjustment Range = 9 in / 231mm

I DO NOT recommend this rail.

Minolta Focusing Rail



Minolta Focusing Rail

The Minolta rail comes up on Ebay often, but is no longer manufactured. It uses chrome-plated brass tubes and is quite heavy, which makes for good dampening. The gears are very smooth and the whole device is well designed and has a sense of heft and quality about it. You do have to add a quick-release plate to the top and a rail to the bottom, but I feel this is a very solid and useful rail.

I HIGHLY recommend this rail.

Liquid Focus

“Liquid Focus” is what I like to call stacking focus using the widest aperture of a sharp lens. I can just paint in focus with the razor-thin slices of the wide-open lens, or sometimes I imagine it is like dipping the subject in liquid focus, right up to whatever line I don’t want to cross. And I can choose a sharp line of demarcation or (by narrowing the aperture) a little more depth-of-field. It is also a little like the new 3-D Printing processes, where machines increment layers of substance to create complete three-dimensional objects.

In my early years stacking focus, I was always pushing the narrow end of the aperture, pushing for as much depth of field as I could get. Of course that was death on bokeh, brought on a struggle with diffraction, and was mostly an exercise in futility, when I could just as well been painting in focus exactly where I wanted it.

Then I spent a long time focus stacking by setting the aperture to the sharpest focus, usually somewhere around $f/5.6$. That showed better results than pushing the f-stop up to $f/8$ and $f/11$, where diffraction begins to set in, plus I lose much of my nice blurry bokeh. Still, neither of these is as flexible as wide-aperture stacking. And it is not a tribute to my native intelligence that it took me so long to discover the virtues of stacking wide-open, or perhaps a stop or two down.

Of course these two approaches are not mutually exclusive. You can use both and even single-shot photos become more appealing to me since I have received my Nikon D800E. I have to do a bunch of tests just shooting one layer as soon as I can tear myself away from my delight in stacking layers with this new camera.

And you can stack with variable apertures, if you are very careful with your histograms. Having several layers in focus, successively deeper in the shot also works (I tried it), but I don’t use it a lot. I am considering doing so, but all of this takes so long. With the huge file size from the D800E, it can take me an hour just to stack one photo, so I have had to relax and learn even more patience, which is good therapy for me. I am too much in a hurry anyway.

And for years I have been more than a little envious of the quality I can see in medium-format cameras and digital backs, so even if the

D800E does not quite reach the MF heights, it comes close enough IMO to move the bar closer to that hallowed format. The results are good enough to keep me busy and off the streets for a while.

Here is a photo (and a crop) with the Nikon D800E, CV-125, and Zerene Stacker. It is not supposed to be a finished photo, but just an idea of a swatch of focus across the subject. If you know early-morning foliage with fine dew, you can understand the coloring here.

On the next post is the crop. I will take some like this, with no stacking, as soon as the weather permits and there is no wind.



© Michael Erlewine



Notes on Medium Format

If you are a DSLR user and have ever glanced through an Ansel Adams book or seen some of those romantic photos of the large-format nature photographer with his tripod and gear out on a lonely mountaintop, then you may be open medium format equipment.

It's modular. You can have a lens mounted on a tilt/shift adapter mounted on a boxy camera with a digital back mounted on the back of that. And you can (if you wish) have all kinds of cables and wires running all over the place, tethers to your laptop, a cable release to the shutter, and another cable release to the lens for mirror-up release. And the whole thing is mounted on a really solid ball head and that on sturdy tripod. Going anywhere? Probably not too far, for this gear is big and heavy.

And we are used to all these various parts tightly assembled for us in a seamless and waterproof compact unit, our Nikon! With medium format equipment you have to assemble your kit from big, bulky pieces, putting it together like some kind of puzzle. And it is not waterproof and I am amazed it is even lightproof.

And the digital backs cost an arm and a leg, plus the GUI for even the best ones is years old, a shock if you are used to a modern Nikon DSLR. To top it off, you also better be good at rubbing your tummy at the same time you pat your head for the process flow of MF is a lot slower and more complex than using 35mm cameras. You have to like this kind of complexity to choose MF. If you don't, you will not be pleased.

For me it was like going back to the days of the old west where the photographer with his huge tripod and gear, black cloth over his head, was peering at the back focus pane, while holding up a pan of flash powder.

Getting into the MF camera systems has a bit of that feel. We are not used to technical cameras because we finally have graduated to the modern DSLR which did away with all that. MF is like a step back to the days of yesteryear. Why would I choose to do that?

The simple answer is to see if the results are better in any way than the Nikon DSLR systems. No other reason.

One fun experience was buying lenses for my MF system. Film-based medium-format cameras are a dying breed and that goes for their lenses too. Lenses that still sell on B&H for \$1629 are available for \$99 elsewhere and in mint condition or new. That was a change from forking over \$2K for a top-of-the line Nikon lens.

MF cameras use internal bellows focusing, so their lenses have no helicoid, no focus barrel. There is no way to use them on modern DSLRs. As the DSLRs came on, their value plummeted. Now that it looks like there will soon be an adaptor for Nikon that takes these MF lenses (adds a helicoid) so I am sure the price will go back up.

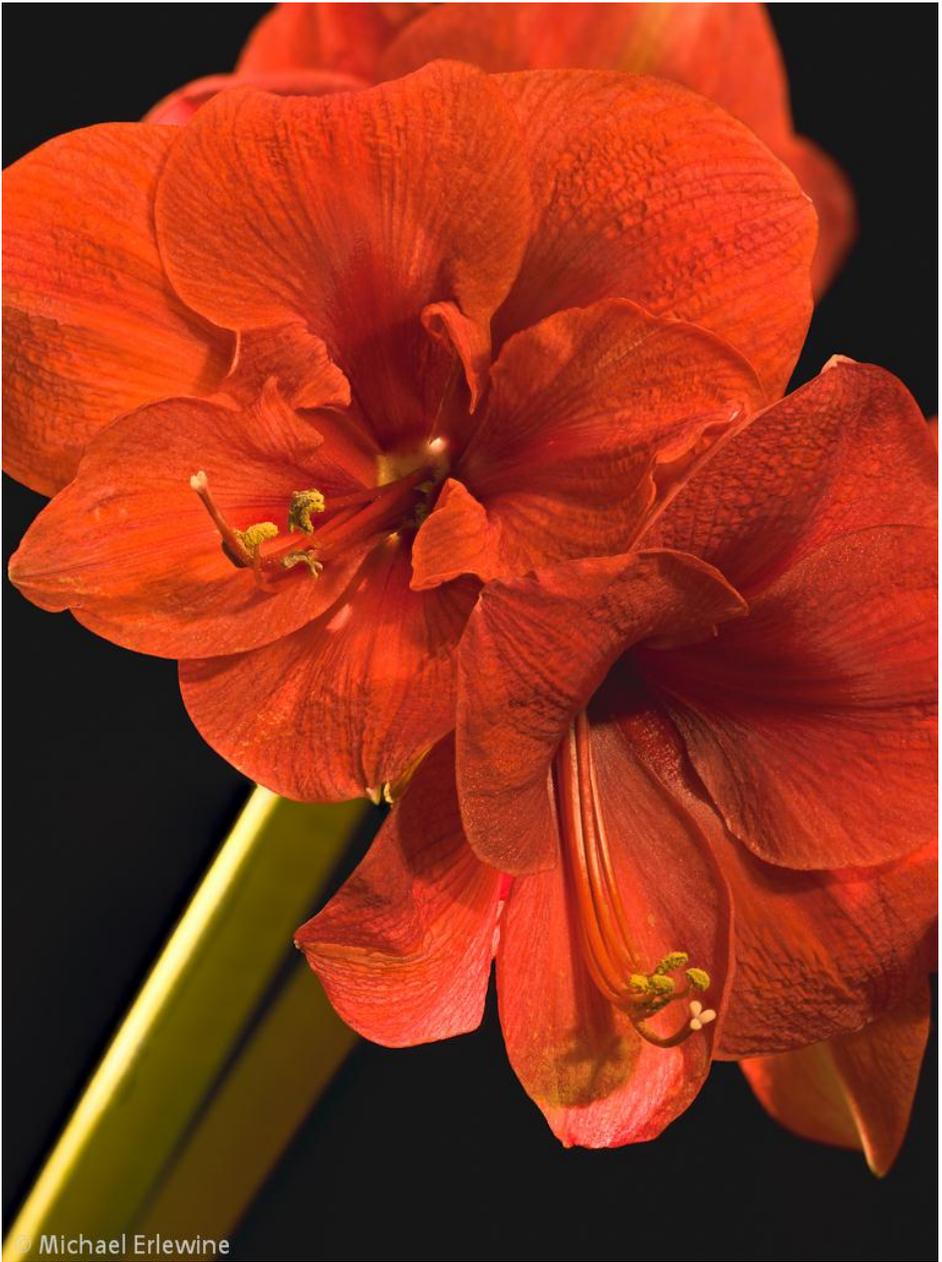
The question is: how good are these lenses compared to Nikon lenses? Or is it just the larger sensor size that makes the difference in MF? These are questions I am looking for answers to. Some of you out there may already have walked this road, so please share your experience.

I feel like Alice in Wonderland when she ate the mushroom and shrunk. The MF camera and all the lenses are so huge and heavy and they lock together more like plumbing pipes than lenses. I am so used to my little Nikon world.

As for toting this around in the woods. Right now it is all I can do to handle all the details of the procedures in the studio. However, once I learn the system and find the main lenses I can use best, I don't see why on a bright summer morning around dawn this system would not work really well. Of course, moving critters would be a problem but for still life, sure. The question is the resulting photos worth the trouble. You will have to decide for yourselves. So far it looks pretty good to me from where I sit.

Here is a photo taken today using the RZ57 Pro IID, the 33mpx Leaf back, and the 210mm APO lens. I have not finished working with the color, so put that aside. Here just look at the overall focus. This was stacked with Zerene Stacker. It looks pretty good. What do you think?

And this lens is many feet from the subject!



Macro Photography: The Process vs. The Results

This is something of a mini-essay, so please be warned and feel free to ignore what follows.

I have tried to discuss this concept in earlier postings on NikonGear.com but probably did not present it correctly, the difference (in photography) between process and results... and their relationship. In other words, I want to contrast here the 'process' of doing photography with the end result, the final photographs we tend to post.

Of course they are related and (for argument's sake) I am taking the side of the process rather than that of the end resulting photos to make a point. For the most part (and this is not meant in a derogatory way) this site is oriented more toward the final photos and not so much on the process of how we got there. I understand why this is so but am curious just the same as to what is lost in not sharing more of the process of taking photography.

This is a question each of us have to answer for ourselves: do we mostly photograph because we want to produce 'great' photos or is the process of photographing itself something we depend on and look forward to. For most of us, it is probably some of both.

And this may be especially true for beginners, those trying to learn to get the results that they admire in other's work. Beginners know little to nothing about the actual process that produced the results they seek because, by definition, they have not learned the process. They only have seen the results and like them.

The beginning photographer often tries to produce the final result without proper knowledge of the process required. This process is either consciously kept secret or is (more likely) simply an oversight on the part of the skilled photographers who are in the habit of only presenting their results and not their process. In other words, the photos we admire from our favorite photographers did not spring full-blown like Athena from the head of Zeus but are the result of a long (and often satisfying) technical journey we each must take. Why is sharing that journey important?

Beginners naturally try to skip the learning curve and just jump right to imitating the results they admire and that result is seldom satisfactory and too often tends to be brittle, constipated, and forced. It lacks the spaciousness and relaxation that comes from long practice and exploration – stretching out.

Part of the problem is that by focusing mainly on the result and generally ignoring (being ignorant of) the process, the best result is not achieved. On the other hand, not being overly concerned about the result but concentrating on (and learning to enjoy) the process is actually a quicker path to good results. This is true because learning and doing the process properly over time is what produces the best results.

Too much concern with the desired result (the 'great' photo) is counter-productive in that it obscures or tries to short-cut the process it takes to reach the result. And that process, as mentioned, is what actually produces the result, a Catch-22 if I ever saw one. You get the idea.

Communicating more about the process of learning a technique may actually produce better results more quickly than just posting the results. And I wonder how aware any of us are of the process it took to get from the beginning to where we are now for any technique. And some of us value the process more than the result. In other words, many of us like to do photography irrespective of our results. I am one of those people. But I also find that by thoroughly enjoying the process my resulting photos actually get better too.

I came to this concept by learning to focus stack. I get lots of questions about how to best go about stacking focus. And of course I try to share the technique. But any technique is literally the essence of our long experience and by definition is very compact or condensed. The boiled-down technique (written out) does not speak to the hundreds of thousands of photos that were taken or the many years of taking them. The current photo results, the technique I could tell someone in a few words, do not explain that it was this very long process that incremented the resulting technique.

The long learning process that actually produces any technique can perhaps be communicated in a few words. But how do we share the process? If I had not learned to love and look forward to the process, to years of focus stacking, I would never have had the endurance to take the journey that produces whatever results I can now manage.

In other words, it was because I did not care about the final result (and a good thing too!) as much as I cared for the process of being out there photographing that I have managed to learn anything worthwhile. At least for me it has taken years of process to get any results worth seeing.

My point is that it might be worthwhile sharing more about the process we go through in our photography as well as the resulting photos. Any thoughts or comments?

Focus Stacking: How I Got Started

I have been focus stacking for many years now. It has been a long, slow learning curve, one during which I have always been trying to scratch an itch inside me, searching for some kind of photographic expression that satisfies me and completes whatever I feel is missing in my vision of photography. I am sure many who are reading this have something similar going on.

My interest in stacking focus arose, like it has for most who use this technique, from attempts to achieve greater depth-of-field (DOF), usually by pushing apertures narrower and narrower, while at the same time trying to avoid the effects of diffraction. This is, of course, very difficult to do and IMO often a lesson in futility.

For a long time I switched back and forth between trying to get greater DOF through a single shot and trying to achieve DOF through focus stacking. Both are maddening in how close they come and still how far away from perfect they are. There is no free lunch. I went back and forth like this for years. I would attempt to focus stack, like the results, but be frustrated by the artifacts and imperfections. So I would switch back to traditional one-shot photography only to have the same experience.

Of course the moment I began to post stacked photos, I was labeled as that “focus stacker,” often considered a pejorative term. In reality I was just a photographer experimenting with a new technique. At this point I am pretty much in the focus-stacking camp, although using it sparingly rather than too much.

And I have paid my dues, doing many hundreds of thousands of photos on the way to learning how to stack focus. And the same goes for different lenses. I have tried all of the well-known macro lenses, some for considerable lengths of time. I used the legendary Micro-Nikkor 70-180mm Zoom for a couple of years, and of course some of the Micro-Nikkor 105mm lenses, and so on. I have over fifty lenses and most of them are macro or close-up lenses, but not all are Nikon.

In fact, my favorite all-around lens is the Cosina/Voigtlander 125mm f/2.5 APO-Lanthar, and I have written glowingly about it for years. It is still IMO the finest macro lens on the planet and I have

learned to use it well. As most of you know, once we learn to use any one lens well, we can pretty much pick up any other lens and know how to get the most out of it in short order. Many readers here could probably write the book or at least a chapter in “Zen and the Art of Using Lenses.”

Focus stacking, like many techniques, is meant to be used sparingly. Of course in the beginning I tended to over-stack photos, putting everything in the frame in sharp focus. This gets old fast and I began to learn that a little stacking is better than a lot. The thing about focus stacking that sets it apart from traditional photography is that with traditional photography there is only one main point of focus and one plane that it occurs in.

With focus stacking we open up the possibilities where the eye is drawn to by having much more in focus, so we have a choice where to look. It is our choice, not the photographers. When we stack focus we offer the viewer something closer to how our vision works in real life. In real life, even though the peripheral part of our vision is blurred, everywhere we look things are in focus. Focus stacking allows us to look where we want to, not where the photographer or lens dictates. This may seem like a subtle difference but I feel it is a main part of the charm of stacked photos.

WHAT LENSES?

I probably have scores of macro and close-up lenses by this time. I tend to wander through them, using first this one for a while, then another, and so on. Of course certain lenses are used more often and become my favorites because they best do something I need done. I mentioned that the Voigtlander 125mm APO is my very favorite because, of all the lenses I own, it can do more of everything I need than the others. I have put together a free e-book on macro lenses called “Close-up and Macro Photography: A Primer, Book Two: Macro & Close-up Lenses” and it can be found here:

<http://macrostop.com/>

In the history of macro photography, perhaps the most popular lenses are in the range of 90-105mm in length because these lenses generally give a little more room between your subjects and

the lens. This is especially true with live critters and the 200mm Micro-Nikkor is popular for that reason. It provides that extra bit of room.

And while true macro photography is 1:1 magnification or higher, I tend to be more interested in magnifications a little less than that, say in the range of 1:2. I really am mostly a close-up photographer with a little macro work thrown in. I lose interest as the magnification climbs above 1:1 and start to resemble what we might get from a microscope. I need more context around the subject to tell my story.

This means that I like macro lenses that are wider, in the range of short telephotos like 60mm. The 50mm Zeiss f/2.8 Makro-Planar lens is one of my favorites as is the new Micro-Nikkor 60mm f/2.8G lens. I also like and use the Coastal Optics f/4 60mm APO lens, and so on. Again, the book mentioned above has notes on some 42 lenses.

I am less of a “gotcha” photographer than I used to be, less into stalking critters or even hiking with equipment overland here and there. Of course I am getting older, so that is a factor, but not the only one. I also am doing more and more stacking on a focus rail and the number of layers I use keeps going up. Where I used to get away with a dozen layers, I often shoot over 100 these days. This makes working in the field more difficult, especially because here in Michigan where I live (it is very flat) we have wind too much of the time. Stacking 100 layers with no chance of wind is rare.

This means I do more and more studio work and less field work although I do spend time outdoors collecting samples of things to photograph back in the studio. Actually, on the days when the wind is calm I like to photograph in the field. When the wind is up, studio work is much more productive as I can control a greater number of factors. So let me review my history with focus stacking just a bit.

My initial attempts at close-up and macro photography found me pushing the macro lenses I had to higher (narrower) apertures in an attempt to achieve greater depth of field (DOF), but this was usually an exercise in frustration. The combination of less light at narrow apertures and the onset of diffraction was disappointing. And

always having the background in too much focus made for bad bokeh and blah photos.

So I stumbled on the idea of focus stacking, I don't know where. It could have been from John Shaw or another one of the well-known close-up photographers. I can't remember. At first focus stacking seemed a whole lot of trouble, like rubbing your tummy and patting your head at the same time. And my results were terrible. It surprises me that I did not just give up and walk away. I did in fact quit it a couple of times.

Somehow I persevered, although my first stacked images were not encouraging. I guess somewhere in my mind I knew stacking had some rewards for me. I thought it might help to scratch that itch I had always felt for photography. I am a nature photographer probably because I am a naturalist. I know a lot more about nature than photography. Having been raised by a mother who was a fine artist, I was early on imbued with a sense of color and composition. That has never been a problem for me. I have a good eye for the beautiful. Instead, the problem for me it has always been trying to get what I see in my head onto a digital image.

Aside from technical issues, there were a multitude of other issues that had to be sorted out relating to photography. What was I trying to achieve? Did I want my nature photos to be fit for a field guide? Was it realism I was after or some impression I wanted to capture? Was I hunting for specific nature subjects or was I a 'found' photographer, photographing whatever I came across? Did nature need me to add art to a photo or was I looking for the art in nature. All this had to be sorted out and that took a lot of time.

In the end I found that I was not a stalker of bugs and critters. I resented being invasive into their worlds, even if the photo was good. Although I am a realist, a simply realistic portrait of a scene is not satisfying to me, not that one exists. In fact, IMO all photography is impressionistic, the photographer's impression of nature and life. I am repelled by attempts to improve nature with human art. You can't salt the salt, and nature is perfect just as it is.

I am definitely looking for the art or perfection that is already in nature. And I am admittedly an impressionist, someone that

combines realism with the broad strokes and colors of impressionism. In other words, I believe each of us eventually finds our own style. For me it has taken a long time, but I am getting there. Now, back to stacking focus.

For me learning to stack focus has taken years. In the beginning I was turned off by the classical microphotography stacks of some insect's compound eye. It is not that I did not appreciate it, but after the tenth and 100th example, I was no longer moved. And that was the most popular kind of focus stacking at the time I discovered the technique. I had no interest in being cooped up in a studio when I could be out walking at dawn on a summer morning. No way.

So I became an advocate of what I called short stacks, usually less than ten and seldom more than fifteen layers to a stack. And I made it work, although looking back it is a hard row to hoe. And I did not like using focus rails and dragging that extra weight around in the field, so I sought out macro lenses with long focus throws. In short I made all the possible mistakes I could. I am a slow learner.

I did all I could to avoid paying the real bucks it takes to have a solid tripod. And the same with a high-quality ball head, although the experts I read all advised me otherwise. I am stubborn and hate to spend money I don't need to. In that case I needed to and it took me a long time to find it out.

There is no substitute for a solid tripod. There is no substitute for a good ball head. There is no real substitute for a focus rail for fine work, etc. I made all the mistakes I could. The good news is that I eventually learned. It just took me longer than most.

Influences

As for influences, they are several, none greater than nature herself. I have been a serious student of nature since I was six years old and a dedicated herpetologist through my teens. As for photography, I seriously learned to photograph when I was 16 years old when my father (a fine amateur photographer) loaned me his Kodak Retina 2a, a tripod, and a light meter and sent me on a six-week bus tour of the U.S., Canada, and Mexico with kids my own age. He carefully showed me how to use the equipment, never expecting I would follow his instructions. But I did, and meticulously.

When I returned from the trip, to my father's astonishment I delivered a whole slew of more than excellent slides, some of which still stand up to my best work today. Of course, I had no idea I had done well until my father told me, and I could not see my results until I returned and they were developed.

Anyway, my father was my first tutor. Much later in time I found the book "Close-ups in Nature" by John Shaw a fine guide. From there I kind of moved onto the web and into digital cameras. Once on the web I looked for interesting camera sites and came across Ken Rockwell. I tried to swallow his blogs hook, line, and sinker until I discovered that although some of his technical remarks were a good resource, his advice on equipment was way off the mark. In particular, his all-out recommendation to buy the Nikon 18-200mm Zoom (which even I could tell was a lousy lens) ended my trust in Rockwell. I looked elsewhere.

When it comes to lenses, two names stand out in my experience, those of Thom Hogan and Bjørn Rørslett. Hogan was very helpful, but Rørslett's analysis of lenses was indispensable for my learning curve. I came to depend on his recommendations and comments. Still do.

As for aesthetics, I have no major influences. I was raised by an artist mother and am thoroughly acquainted with both western and eastern art. From the beginning I have had my own inner vision of what is beautiful, based on my inner and outer experiences with nature. Nature has been my passion and my own inner vision my guide. Of course, I have loved many macro photos that I have seen, but I found no single photographer I wanted to emulate. However, there is one photographer that inspires me, not so much to imitate him, but just with the work he has done, and that is Fred Nirque. In Fred I find a brother on the path and his detailed panoramas are some of the most inspiring photos I have ever seen. I have zero nature photos on my walls, but one of Fred Nirque's photos, "Growling Swallet," might be an exception.

Nirque did inspire me to obtain some good panorama equipment, but I found that I am mostly a close-up photographer and don't really even do that much macro work. I find 1:2 magnification about my speed. I like mini-dioramas, tiny landscapes, those perfect world

that still exist in this sometimes worn-out world. If I get too close, as in macro, I lose some of the context I need to tell a story, the setting in which the jewel that is my subject is set. I like it a little wider.

Well, there you have some of my history. All my stacked work until recently are just experiments, ones that I am not particularly happy with at that. I have never found what I was looking for until now, but I feel that perhaps I am close. And that brings me to the present.

Wide-Aperture Stacking

In early January of 2012 I saw a post by “Akira” of a Chrysanthemum taken with the CRT Nikkor 55mm f/1.2. It was not a stacked photo, but it was a close-up and I liked the combination of sharpness and softness it presented. It started me to think differently about photo stacking and marks the beginning of a breakthrough in my work.

Perhaps I had been looking at the wrong end of the lens aperture all this time. For years I had tried to push aperture to the high numbers and narrow openings because that way I could get more DOF and detail. And I did this with stacking as well. Everyone knows that large, wide-open, apertures give us a very thin DOF, and I never wanted that. And I had steadfastly avoided even looking at a whole range of powerful Nikon lenses that were made for extreme close-up work. And many of them were very, very sharp, even wide open. What possible value could they be for my work? But then I began to see how they could be used.

What if I used these exotic sharp lenses wide open (or nearly so) and then stacked that very narrow depth of field to amass as much of the subject as I wanted in focus and just let the rest of the photo go to bokeh and blur? I experimented with what few lenses I had that were good for close-up work, and that were also both fast and sharp. I liked what I saw.

And then I got a copy of one of the exotic Nikkors, the CRT Nikkor 55mm f/1.2 lens. These babies are expensive! And I began to stack. And sure enough, stacking selective areas in the subject, combined with the broad sense of blur or bokeh, made for very interesting photos. After all these years I had found a technique that actually satisfied me. I felt like one of those gold miners who pan for gold for many years but never get a strike, and then hit pay dirt.

I had at last found something that I actually liked. As it turns out I don't see anyone else using this particular technique, at least to any extent.

I began to look for other exotic Nikkors, and they are exotic for several reasons. Most of them were not made with an F-mount, but rather for special equipment. They have off-size threads or no

threads at all. Some of them are designed for a single magnification range only, like 1:1. Anything outside of that range is not usable. Forget about going to infinity. Most lack some of the sophisticated coatings we find in newer lenses, and so on. One expert claims they are mostly museum pieces. Not anymore!

These exotic lenses are fast and very sharp. And they are expensive and rare. Perhaps they are expensive because they are rare and mostly purchased to display in museums or whatever. I can't say. I don't see many folks using them to make photos with that I have come across. Of course Bjørn Rørslett knows about these lenses and has written about them, or at least most of them. Another huge resource has been Klaus D. Schmitt (kds315), who has collected and archived the exotic macro lenses for years. Schmitt has helped me find these exotic Nikkors, shown me how to use them, and even built special mounts and helicoids for my work. Schmitt knows these lenses.

Impressionism and Surrealism

So what is it that I think I am doing? I am using very fast lenses that are sharp wide open to stack focus. Although these lenses have a razor-thin DOF, I am stacking that thin DOF to create a very sharp image of whatever size I want and allowing the rest of the photo to be well out-of-focus. I find the contrast of the very sharp stacked portions against the more dreamy bokeh of the background to scratch some itch I have always had inside of me, call it the realist meets the impressionist.

The sharply focused areas of the photo are featured against the broad pastel-like dreaminess of the background and I guess the subtext message the photo sends is something like:

“This crystal-clear reality we live in and believe exists is but an island of awareness suspended in a larger dream we are having, a dream painted in broad strokes and colors which has no past and no future, a product of our own mindstream.” Sorry, I had to do that.

I know this is somewhat abstract, but that is the kind of impressionism/surrealism I am trying (perhaps not yet successfully) to project.



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The Exotic Macro Nikkors: An Update

Coming into it I thought that getting to know this group of very exotic Nikon close-up and macro lenses would be an experience, but I assumed I would get a pretty good handle on it fairly quickly. As it turns out, these lenses are much more versatile than I imagined. When you factor in different extensions and helicoids, what appears as a simple task becomes much more complex, if not somewhat infinite in possibilities, not that I am complaining.

I am loving these lenses and my faithful Cosina-Voigtlander 125mm f/2.5 APO-Lanthar sits on the shelf gathering dust these days. That ought to tell you something right there, because I love that lens.

As of now I have six of these rare Nikon lenses, and I don't plan on getting any more. Of course I was not planning to get a second one, a third one, and so on. It just kind of happened. Klaus Schmitt is partially to blame. He pointed out the sweet points of these lenses to me, and that was all it took. Here is what I am now using:

Multiphot Macro-Nikkor 19mm f/4.5

Multiphot Macro-Nikkor 65mm f/4.5

Printing Nikkor 95mm f/2.8 1:2

Printing Nikkor 105mm f/2.8 1:1

CRT Nikkor-O 55mm f/1.2 1:2

Repro Nikkor 85mm F/1.0 1:1

I must say that these lenses are challenging, but most of all interesting and fraught with possibilities. I have yet to find any one of them that I don't like, or one that I like above all the others. Each one is so good at what it does. I sure don't want to take the whole set of them into the field, but I do wish I had them all with me.

The mounts for them alone are something to behold and some of them have mounts that are interchangeable. Also, some of them have extensions and all could take extensions. One even has two helicoids, so the range of magnification is great. And all of these lenses, I imagine, can be placed on a bellows, although I have not had time (or interest) to try that out just yet. There is too much going on with them just the way they are now.

And sharp? These lenses are way sharp. For years I have whined about trying to find some sharp lenses, and I consider the CV-125, the Leica 100mm Elmarit R, and the Coastal Optics 60mm sharp lenses. But these exotic industrial Nikkors are a whole other kind of sharp. I can't really say how sharp, because they are so different that I have not really finished evaluating them. Let's just say they are sharp enough to shut me up, at least for a while. And I am eagerly waiting for my copy of the Nikon D800E.

And at least two of these lenses are way fast, $f/1.0$ and $f/1.2$, a couple are $f/2.8$, and the other two are a dim $f/4.5$.

I have mentioned this before, but up until now I had no interest in these exotic Nikkors. After all, I could not push them for greater depth of field because they are not built for that. And some of them are so fast that you only get a razor's-edge slice of your subject. Of course, that was a hangover from my years before stacking focus, years when all I could think to do was push aperture high and narrow, and try to battle diffraction.

But of course I now know that you can stack razor-sharp slices of DOF until you accumulate whatever mass of focus you care to have. I missed that concept until recently. And some of these exotic Nikkors are both fast and sharp. And the "fast" quality provide something I can only call "beyond bokeh" as I knew it, more like a complete wipeout of the background, if you wish.

With this technique, you could run the line of sharp focus right up to anywhere you want and just stop cold. Not sure how much I want to do that, but it is nice to be able to do that if I wish.

For the most part, I have used these lenses in the studio, mounted on a very solid head (Swiss-Arca C1 Cube) on a very solid tripod (RRS). There is no reason you could not take all this outside on a very calm day, if you did not have to hike too far. Because they tend to require more stacked layers, the least breeze would be a problem, and for at least a couple of these lenses, you need lots of light. In fact, with the two Multiphots I tend to focus using the LCD rather than the viewfinder, because in minimal light (which I like) it is hard to see the subject through the viewfinder. But the CRT

Nikkor and Repto Nikkor are just the opposite. They are totally bright in the viewfinder, at least wide open.

I should stop writing about these little puppies because I have posted plenty about them already. I guess I am either just talking to myself or to those few here who are interested in the same approach. To me this is very fascinating stuff.

Here are a couple recent explorations, the first with the Repto 85mm and the second with the Multiphot 65mm. As you can see, very different takes. This is what is so much fun. I am nowhere near done playing with these things.

The Macro-Nikkor Multiphot 35mm f/4.5 Lens

The Macro-Nikkor Multiphot 35mm f/4.5 macro lens is one of two Multiphot lenses (the other is the 19mm) that are designed with an RMS microscope screw mount. Essentially, these look like microscope objectives, but are more than that, of course.

The other two Multiphot lenses (65mm and 120mm) use the standard Leica 39mm threads to Nikon F-Mount. Klaus D. Schmitt (kds315) was kind enough to send me a mount that converts the RMS screw mount to the M39mm Leica threads. This and a 39mm>Nikon F-Mount adapter and I am all set. I experimented with the 35mm with no real extension and also with added extension. Of course, I got two different results, one that interests me and another (with extension) that interests me not so much right now.

Straight out, with no extension the 35mm Multiphot is very sharp, but at f/4.5 the viewfinder is very dim, to say the least, and that is wide open. Close it down a notch and you will be looking in LiveView or at your last photo on the LCD screen. The eyes have it with fast lenses. This one is not fast.

Since I tend to follow in those great big tracks made by the Fierce Bear of the North (nfoto), I cannot but add by aye, and confess my yes that this is a lens that will shine indoors, but also work pretty well outdoors, at least when there is no wind, plenty of light, and a stable tripod and ball head. However, the distance from the lens to your subject is not very much, so be warned. If you are stacking, be prepared to really take your time and let that mirror slap die down.

Given those caveats, I really like this lens, although it is only about as large as my thumb. In fact, my whole Odyssey of late into these exotic Macro-Nikkors has quenched a thirst for sharpness that I have carried for years. These Macro Nikkors lenses are sharp! I can't wait until my Nikon D800E arrives.

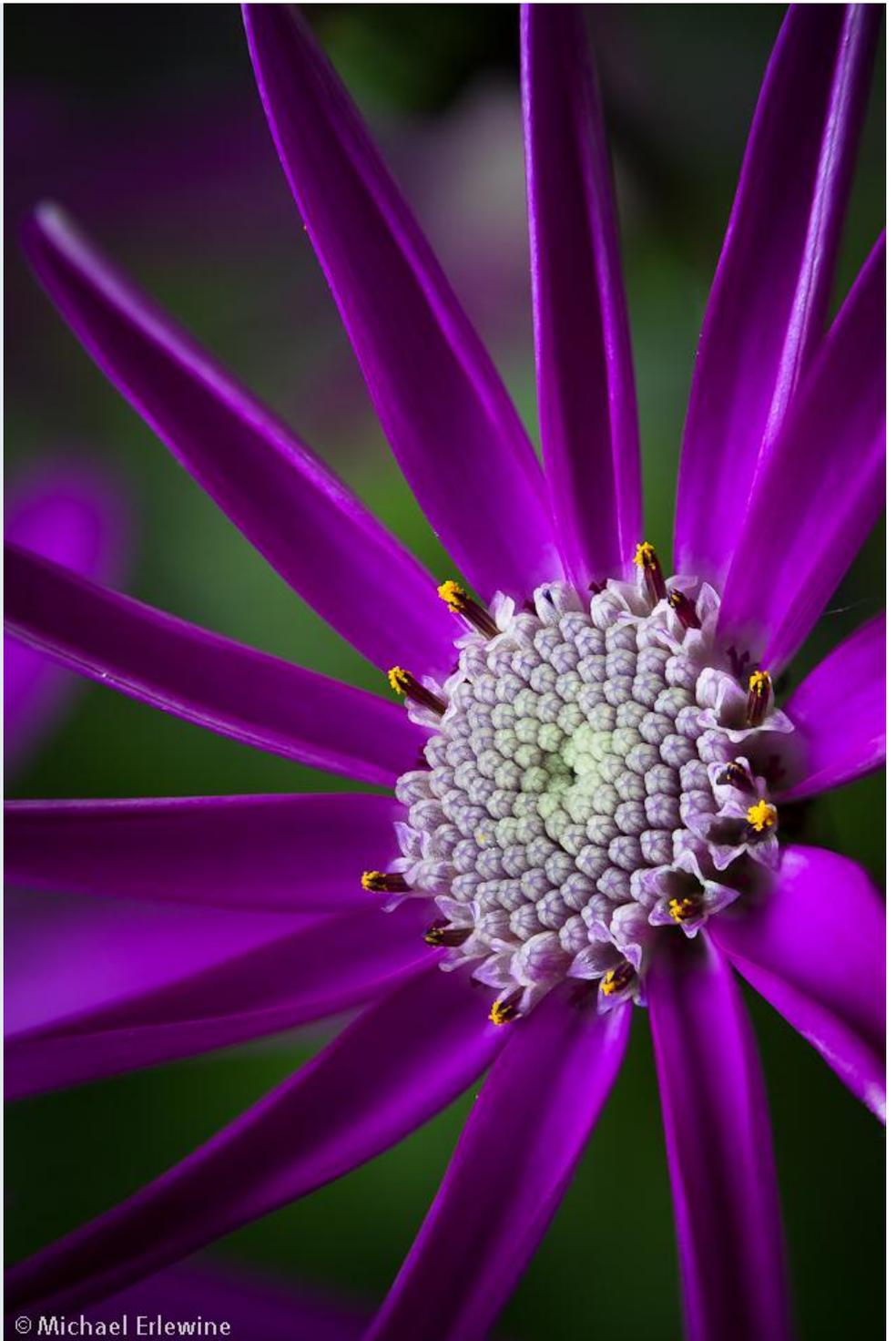
Here is a photo of the lens in action plus some shots taken with the 35mm Macro Multiphot. At f/4.5 you don't have that razor-thin depth of field you have with the Nikkor CRT or the Nikkor Repro, so more of your image will be in focus.

It seems that all of these so-called “exotic” macro Nikons are sharp and more specialized than your average lens. None of them are walk-around lenses. Also the color on the Multiphot 35mm is more critical to take care with. I imagine they lack some coatings. Perhaps kds315 or someone could explain about these lenses and their sensitivity to light.

I will also post a couple of photos done with extension next, so scroll down for that.

Nikon D3s, 35mm Multiphot f/4.5, Zerene Stacker





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